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«Український географічний журнал» включено до Переліку наукових фахових видань України в галузі географічних наук за спеціальностями 103, 106.

Категорія «А» (наказ Міністерства освіти і науки України 28.12.2019 р. № 1643), індексується в **Google Scholar**, **CrossRef Database**, **Ulrich's Periodicals Directory**

Свідоцтво Міністерства юстиції України про державну реєстрацію друкованого засобу масової інформації КВ № 23910–13750 ПР від 11.05.2019 р.

Рекомендовано до друку Вченою радою Інституту географії НАН України 27.12.2022 р.

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Інститут географії НАН України

Телефон: +380 (44) 234–04–92

E-mail: geojournal@ukr.net

Офіційний сайт журналу:

<https://ukrgeojournal.org.ua>

НАУКОВО-ТЕОРЕТИЧНИЙ ЖУРНАЛ.
ЗАСНОВАНИЙ У 1992 Р. ВИХОДИТЬ 4 РАЗИ НА РІК.
ЗАСНОВНИКИ: НАЦІОНАЛЬНА АКАДЕМІЯ НАУК УКРАЇНИ,
ІНСТИТУТ ГЕОГРАФІЇ.
ВИДАВЕЦЬ: ВД «АКАДЕМПЕРІОДИКА» НАН УКРАЇНИ.
ЖУРНАЛ ВКЛЮЧЕНО ДО МІЖНАРОДНИХ НАУКОМЕТРИЧНИХ
БАЗ ДАНИХ *INDEX COPERNICUS INTERNATIONAL*
ТА *SCOPUS*

SCIENTIFIC AND THEORETICAL JOURNAL.
FOUNDED IN 1992. PUBLISHED 4 TIMES A YEAR.
FOUNDERS: THE NATIONAL ACADEMY OF SCIENCES OF UKRAINE,
INSTITUTE OF GEOGRAPHY.
PUBLISHER: PH "AKADEMPERIODYKA" OF NAS OF UKRAINE.
JOURNAL IS INCLUDED IN INTERNATIONAL SCIENTIFIC
DATABASES *INDEX COPERNICUS INTERNATIONAL* AND
SCOPUS

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Restoration of Ukraine From the Consequences of the War by Means of Neo-Economy: Sectoral and Spatial Approaches

The purpose of the study is to show the need to strengthen the neo-economic component in the Recovery Plan of Ukraine. It is based on the projects available in the plan and proposed by us. The article also suggests the choice of relevant processes and forms of spatial organization in various sectors of neo-economy for the mentioned above projects. The article uses such research methods as theoretical analysis and synthesis, logical and historical, structural analysis, spatial analysis (the main one is to distinguish processes and forms of spatial organization of the neo-economy), typological, and forecasting. As a result of the studies, the necessity of switching to the neo-economic model of Ukraine's recovery and development was substantiated. The priority sectors of neo-economics are IT-sphere; Industry 4.0; military-tech; renewable energy; bioeconomics; transport-tech; e-commerce; "green" economy; creative economy; R&D; EdTech; MedTech; FinTech; InsurTech. 15 programs of the plan to the development of neo-economic sectors, distribution of processes of its spatial organization (location, relocation, localization), and creation of forms such as business incubators, startups, innovative enterprises, innovative concerns, innovative networks, innovative ecosystems of the "triple spiral" type, innovative clusters, innovative parks (industrial, technological, scientific), technopolis, competitiveness poles, smart cities, and C-regions. The novelty of the study is to prove the necessity to restore Ukraine from the consequences of the war on the basis of the development of neo-economics. The Plan for Ukraine Restoration, its national programs, and key projects are analyzed in terms of the development of neo-economics sectors, dissemination of processes, and creation of forms of its spatial organization.

Keywords: *restoration of Ukraine from the consequences of war (plan, approaches, programs, projects); neo-economics (sectors); economic model (raw material, neo-economic); spatial organization of neo-economy (processes, forms).*

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Відновлення України від наслідків війни на засадах неоекономіки: секторальний та просторовий підходи

Метою дослідження є обґрунтування необхідності посилення неоекономічної компоненти в Плані відновлення України — на основі наявних у ньому та запропонованих нами проектів і вибору для них оптимальних процесів і форм просторової організації неоекономіки. У статті використані такі методи дослідження, як теоретичний аналіз і синтез, логічний та історичний, структурного і просторового аналізу, типологічний та прогнозування. У результаті проведених досліджень було обґрунтовано необхідність переходу на неоекономічну модель відновлення та розвитку України, виокремлено пріоритетні сектори і проекти неоекономіки та визначено ключові процеси і форми її просторової організації. Новизна дослідження — запропоновано варіант доопрацювання Плану відновлення України на засадах неоекономіки в контексті секторального і просторового підходів.

Ключові слова: *відновлення України від наслідків війни (План, підходи, програми, проекти); неоекономіка (сектори); модель економіки (сировинна, неоекономічна); просторова організація неоекономіки (процеси, форми).*

Relevance of the research topic

Russia's full-scale military aggression against sovereign Ukraine, launched on February 24, 2022, violating basic norms and principles of international law, caused deep suffering for millions of Ukrainians, enormous destruction, and billions of losses to the national economy. It also arose such existential questions as the physical survival of the Ukrainian people and the political existence of Ukraine as a sovereign state. In these conditions, the restoration of Ukraine from the consequences of war is the task of the first priority. The Decree of the President of Ukraine Volodymyr Zelenskyy of April 21, 2022, was also aimed at its implementation No. 266/2022 on the creation of the National Council for the Restoration of Ukraine from the consequences of war [1].

The Council has already got involved in the work, and the *Recovery Plan of Ukraine* is proof of it [2]. It was presented by Prime Minister of Ukraine Denis Shmygal at an international conference held on July 4–5, 2022, in Lugano (Switzerland). Representatives of 40 countries who were present at

the conference signed a declaration on Ukraine's restoration.

The developers of the *Recovery Plan of Ukraine* were definitely aware that it is impossible to overcome the significant economic, technological and military backwardness of Ukraine. In order to be able to independently resist the aggressor, the Ukrainian economy should undergo structural modernization into a new economy (neo-economics). The mentioned above was reflected in 15 programs and in the majority of more than 500 projects on how to restore Ukraine. But will it be enough to switch to the neo-economic model of reconstruction and further development of Ukraine? It is also important to distinguish which sectors should be the main driving force in building a new economy in Ukraine. Of course, these issues require further research in the field of neo-economics. Regarding the study of processes and forms of spatial organization (PSO, FSO, P&FSO) of neo-economics, they should be deployed in the field of public(in particular economic) geography.

How much has the issue been studied and the main works

Before a full-scale Russian military aggression began, the matter with restoration of Ukrainian territories, in particular temporarily occupied territories of Donetsk and Luhansk regions, was analyzed in works by V. Gorbulin et al. [3], E. Libanova et al. [4], O. Vlasjuk and S. Kononenko [5], and other scientists.

The neo-economic development of Ukraine and its regions was investigated by Yu. Bazhal, V. Bilotserkovets, O. Butnik-Seversky, O. Vlasjuk, V. Geets, A. Gritsenko, S. Davimuka, B. Danylyshyn, O. Zavorodnya, M. Zveryakov, L. Fedulova, et al. Separately, the topic of the neo-industrial development of Ukraine and its regions was brought up by V. Vishnevsky, Ya. Kindzersky, E. Sheludko, I. Shovkun, et al.

Spatial aspects of the development of neo-economics, including P&FSO with an innovative component,

were investigated by I. Bystryakov, V. Zakharchenko, V. Koyuda, M. Melnyk, A. Mozghovyi, V. Nahirna, G. Pidhrushnyi, L. Rudenko, V. Semenov, I. Storonnyanska, S. Shchegliuk, et al.

The issue of neo-economic development in the context of the *Recovery Plan of Ukraine* is highlighted in many online publications. However, the war and destructions caused by it make us revise and strengthen some approaches as for the policy of Ukraine restoration on the basis of neo-economy, including P&FSO aspect.

The purpose of the study: to substantiate the need to strengthen the neo-economic component in the Ukraine Recovery Plan referring to the projects available in the plan and proposed by us and choose optimal P&FSOs for them.

Research methods

The article uses the following methods of research: theoretical analysis and synthesis to explain the conceptual (neo-economic) paradigm of restoring Ukraine from the consequences of the war; logical and historical methods are applied to explain the model of evolutionary development of the modern economy; structural analysis is used to distinguish sectors of neo-economics; spatial analysis is utilized

for distinguishing P&FSO of neo-economics; typological method helps characterize the programs of the *Recovery Plan of Ukraine* referring to the scope of economic sectors of P&FSO neo-economy; forecasting is used for assessing trends in the development of sectors, P&FSO neo-economy and the capabilities of individual programs and projects to be implemented.

Presentation of the main material

During the restoration of Ukraine, it is very important not to stray into a simple reproduction of destroyed objects. In order to avoid it, it is necessary to build a conceptual paradigm of the country restoration. Based on it, it is possible to fully update the political and social system in the country, improve the quality of the production system (improving it to the technological level of advanced countries in the world), integrate Ukraine into the world economy more, and thus, establish a solid foundation for further development.

By substantiating the paradigm of Ukraine’s recovery, we proceed from the fact that the entire world economy is now in the search for a new concept of growth, among which the main ones are [6, p. 3–4]:

- *the concept of a new norm*, which was proposed by one of the leaders of the investment company Pacific Investment Management Company M. El-Erian in 2009. In accordance with it, as a result of the 2008 crisis there will be (and in fact are) such signs of a *new norm* as a slowdown in economic growth; high unemployment rates; worsening of debt problems; a further shift in global economic activity towards those countries (led by China) that are having developing markets;
- *the concept of reindustrialization* which means that at the present stage we should expect a decrease in the intensity of industrial outsourcing to developing economies. It is based on the idea of *return* investments of multinational corporations back to developed countries and an increase manufacturing share in the GDP of these countries (primarily the USA and EU countries);

- *the concept of a green economy* which considers investments in the development and implementation of resource-saving and eco-safe technologies aimed at general reduction of anthropogenic pressure on the environment as the basic factors of economic growth.

The above-mentioned concepts help to explain separate structural and dynamic characteristics of the world economy but they do not give a clear answer about the conceptual paradigm of Ukraine’s recovery and development (the latter concept in part). We believe that it should be a *paradigm of neo-economic development* of the country because all other paradigms are existentially unacceptable. This is explained by the fact that neo-economics is an economy of knowledge, new information technologies, new business processes that provide leadership and competitiveness [7]. This is exactly what the economy of Ukraine currently and systematically lacks in a very difficult reconstruction period.

Neo-economics has not appeared out of anything, on the contrary, it is based on the solid foundation of the industrial economy and at the same time went through various stages of development. Accordingly, it is represented by the following segments: the service (post-industrial) economy, the information economy, the Internet economy, and the network economy (**Fig. 1**).

In terms of neo-economic development, Ukraine got stuck at the stage of service economy (before the war, service sector contributed up to 60% to Ukrainian GDP), but in its worst-case scenario—the “bazaar” economy, which absorbed millions of unemployed people and is, in fact, a sector of hidden

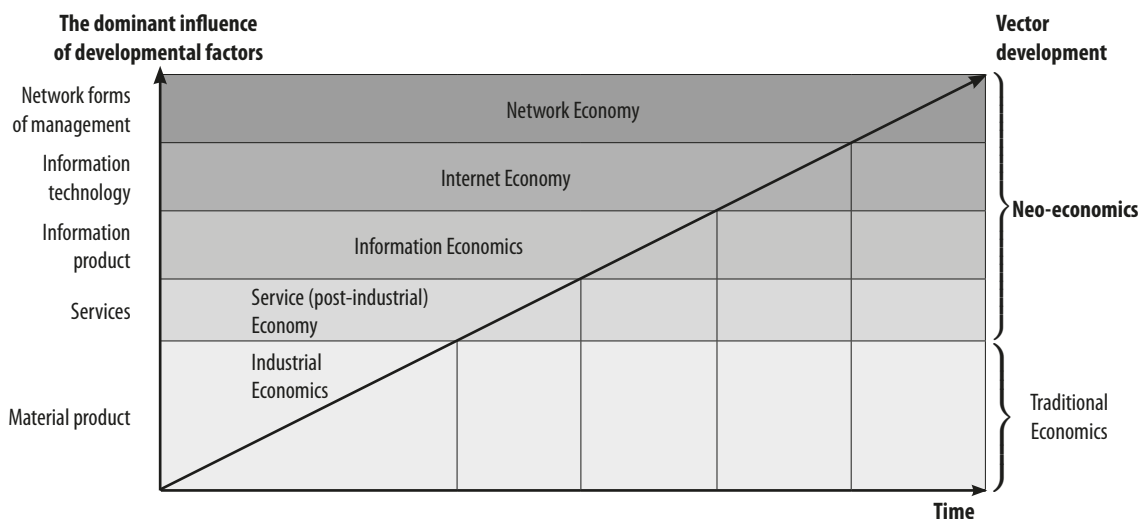


Fig. 1. Model of evolutionary development of modern economy [8, p. 59]

unemployment. Despite that Ukraine has managed to fit into global development trends over the past decade in terms of information and communication services, the share of this type of service in the Ukrainian export of services exceeded 46%, but it makes up a small share of the country's GDP—about 2.7% [9; 10].

The fundamental difference between neo-economics and traditional economics lies in the kind of assets. Neo-economics relies on human capital, ideas, knowledge, and brands, whereas traditional one is more focused on natural resources and industrial production [7].

The “stem cells” of neo-economics are considered to be *subversive innovations*. Clayton Christensen, the author of the theory of the type of innovation proved that it is based on the changing ratio of values in the market. For example, tablets and smartphones as product innovations that replace desktop personal computers from the market [11]. Moreover, the companies that own them are changing entire industries. So, *Amazon* and *Aliexpress* changed the idea of e-commerce, *Booking* and *AirBnb* influenced the efficiency and safety of the rental market, and *Uber* transformed the entire taxi industry [12, p. 33].

Subversive innovations primarily include information technologies and technologies developed on their basis: Big Data, cloud technologies, artificial intelligence, cloud computing, the Internet of things, robotics, 3D printing, etc. They are at the heart of sectors (*spheres, industries, etc.*) of neo-economics, and therefore are reflected in the name of some of them, although the list of these sectors itself is still under formation. Following the context of national programs and projects of the *Recovery*

Plan of Ukraine, we suggest distinguishing and focusing on such sectors as the IT sphere, Industry 4.0, Military-tech, renewable energy, bioeconomics, Transport-tech, electronic trade, green economy or GreenTech, creative economy, R&D (research and development sector), EdTech (new technology-based education), MedTech, FinTech, InsurTech (new technology-based insurance).

Under the circumstances of transition to a post-industrial society, we recommend defining three ways of building neo-economics sectors (Fig. 2).

The composition of the neo-economics sectors according to the Classification of Economic Activities (by sections, sections, groups, classes) should still be established. It will be relatively simple to do for some, such as renewable energy sectors whereas for others such as the green economy, it will be rather difficult.

Since innovation is at the heart of the neo-economics sectors, the *processes and forms* of their *spatial organization* also have an innovative component. As for the former, the *Recovery Plan of Ukraine* draws attention to the processes of placement (relocation) and distribution (localization) of innovative enterprises and industries. It also presents some neo-economics FSOs, which include: innovative business incubators, startups, innovative enterprises, innovative concerns, innovative networks, innovative ecosystems of the “triple spiral” type (as part of universities, innovative enterprises, and authorities), innovative clusters, innovative parks (scientific, technological and industrial), technopolises, poles of growth (competitiveness), smart cities and C-regions (with the active formation of knowledge economy) [13, p. 64–66].

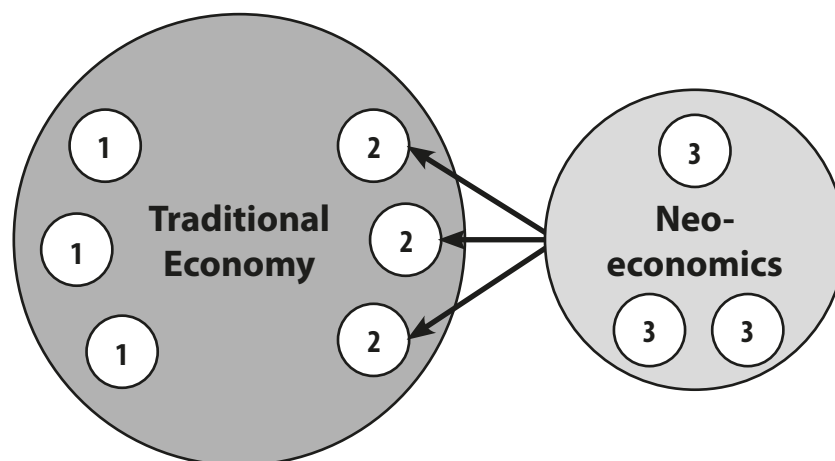


Fig. 2. Methods of forming components of neoeconomics:

1) by replacing the components of the old (traditional) economy; 2) by displacing them; 3) by forming them in a “bare place”

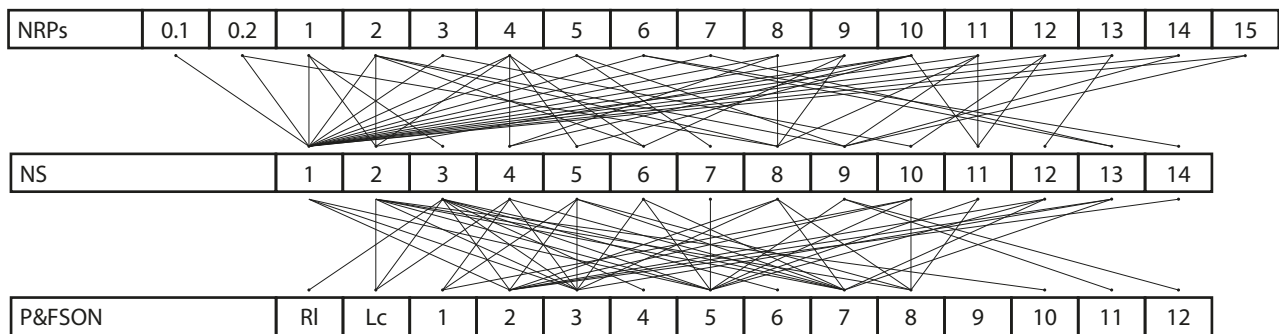
Within the neo-economic development paradigm, it is very important that the development of the neo-economics and relevant P&FSOs are properly reflected in the *Recovery Plan of Ukraine*. This plan includes 24 volumes and has a fairly clear vision of how Ukraine should implement the Ukrainian economical miracle and become a member of the EU and a representative of a democratic world. As has been already noted, the plan consists of 15 national programs in different sectors of the economy and public life, each of which contains a number of projects [2; 14; 15].

The amount of funding for the programs varies, but in total it is planned to raise about 750 billion US dollars. It is planned to use: 1) russian reparations and frozen assets of the aggressor country and its oligarchs (at least \$300 billion); 2) grants

and preferential loans of international financial organizations and partner countries; 3) private sector investments; 4) extra-budgetary contributions of individuals and corporations; 5) state budget funds.

The plan is designed for 10 years and involves three stages. The first (for 2022) is the stage for the implementation of the most critical projects (for mine clearance, repair, and construction of housing, roads, bridges, etc.); the second (2022–2025) is a stage for the restoration of destroyed infrastructure and the construction of a new one in accordance with European standards; third (2026–2032) is the stage of long-term modernization of the country.

The *Recovery Plan of Ukraine* means two key approaches: regional and parametric. The first approach is the responsibility of Ukraine’s partners for the restoration (referring to the Build back better



Conventions:

National Recovery Programs (NRPs):

- 0.1. Strengthening institutional capacity (< \$0.1 billion);
- 0.2. Digital state (< \$0.1 billion);
- 1. Strengthening defense and security (\$50 billion);
- 2. Aspiration for EU integration (< \$1 billion);
- 3. Recovery of the clean and protected environment (\$20 billion);
- 4. Energy independence and the Green Deal (\$130 billion);
- 5. Improving the business environment (\$5 billion);
- 6. Providing competitive access to capital (\$75 billion);

- 7. Ensuring macro-financial stability (\$60–80 billion);
- 8. Development of value-added economic sectors (\$50 billion);
- 9. Expansion and integration of logistics with the EU (120–160 billion);
- 10. Restoration and modernization of housing and infrastructure of regions (\$150–250 billion);
- 11. Restoration and modernization of social infrastructure (\$35 billion);
- 12. Development of the education system (\$5 billion);
- 13. Modernization of the health care system (\$5 billion);
- 14. Development of culture and sports systems (\$20 billion);

- 15. Ensuring effective social policy (\$7 billion).

Neo-economics sectors (NS):

- 1. IT sector;
- 2. Industry 4.0;
- 3. Military tech;
- 4. Renewable energy;
- 5. Bioeconomics;
- 6. Transport-tech;
- 7. E-commerce;
- 8. “Green” economy;
- 9. Creative economy;
- 10. R&D;
- 11. EdTech;
- 12. MedTech;
- 13. FinTech;
- 14. InsurTech.

Processes and forms of the spatial organization of neo-economics (P&FSON):

- RI—relocation;
- Lc—localization;
- 1. Innovative business incubators;
- 2. Startups;
- 3. Innovative enterprises;
- 4. Innovative concerns;
- 5. Innovative networks;
- 6. Innovative “triple helix” ecosystems;
- 7. Innovative clusters;
- 8. Innovative parks (industrial, technological, scientific);
- 9. Technopolis;
- 10. Poles of competitiveness;
- 11. Smart cities;
- 12. C-regions.

Fig. 3. The superposition of national reconstruction programs, the sectors of the neo-economy, processes, and forms of their spatial organization

principle) of individual cities and regions. In our article, we consider it as *spatial* because it is also focused on the development of P&FSO neo-economics. The second approach involves achieving European parameters in restoring individual sectors of the economy, including their transformation into sectors of neo-economics. Hence, it is logically regarded as *sectoral*.

In order to identify the possibilities for the implementation of the *Recovery Plan of Ukraine* on the basis of neo-economics, let us conduct a *superposition and analysis of national recovery programs, neo-economics sectors, and their corresponding P&FSOs (Fig. 3)*.

The recovery programs in the Plan are preceded by two blocks of projects on the basics of recovery. Their peculiarity is that they will directly or indirectly influence the implementation of projects of most programs and the development of their corresponding P&FSO neo-economics.

Unit 0.1. Fundamentals of recovery: Strengthening institutional capacity. The projects of these units are focused primarily on the development and implementation of new (complied with the EU) legislation to complete judicial reform, improve the corporate governance system, and conduct effective antitrust and anti-corruption policies, in particular fighting oligarchy. European countries are looking forward to the step even during its war with the Russian Federation. It becomes obvious that the implementation of projects depends at most on the development of the IT sector as a basic sector of neo-economics. The block, in particular, implies the implementation of a number of projects aimed to optimize the structure and powers of state and local authorities, as well as the digitalization of their work. It is also planned to create a single portal for the coordination of ProAid international technical assistance and HRMIS human resource management information system.

Innovative networks should be the main ones among the FPOs of the neo-economics of this unit. Some of them will have a clearly expressed territorial "binding," such as, for example, an information and analytical system for monitoring the capacity of territorial communities.

Unit 0.2. Fundamentals of recovery: Digital state. The projects of this unit, as well as the previous one, are intended for the further digitalization of Ukraine and, accordingly, should be implemented within the IT sphere. Together, they will contribute to the implementation of the State program *Ukraine is a digital hub for Asian and*

European trunk traffic. Especially important the unit is the project that ensures every Ukrainian citizen a universal social service based on the Unified Information System of the Social Sphere.

Projects for the creation of the Integrated Automated System of State Supervision, the Unified License Register, and the Integrated System for Monitoring Post-War Recovery Based on Open Data are also important. And the implementation of the project from the all-Ukrainian population census in 2023 will adjust (according to its results) most recovery programs.

The main FSO projects of this unit, in particular within the IT sector, will be innovative enterprises (companies), innovative clusters, and innovative networks. The largest IT companies include *EPAM, SoftServe, Luxoft, GlobalLogic, and Ciklum*. Lviv, Kharkiv, Lutsk, Kyiv, and Dnipro are the biggest IT clusters in Ukraine. The development of a framework document on the reconstruction and transformation of cities into smart cities opens great prospects within the creative economy. Some cities in Ukraine have already been moving in this direction. Thus, the concept of transforming Kyiv into a smart city was adopted back in 2017. Since then, the Ukrainian capital has become much "smarter."

Program 1. Strengthening defense and security. This program is the first priority among other programs for an important reason. Since the full-scale aggression of the Russian Federation once again emphasized the importance of achieving a high level of state defense capability at the expense of a developed defense industry. This can be achieved within a neo-economics sector such as Military-tech. In a number of sectors of neo-economics, it quite logically occupies the third place after the IT sector and Industry 4.0. It means that it is difficult or impossible to develop it without their proper functioning. Whereas the IT sector in Ukraine has yet to be sufficiently developed, even by means of outsourcing, things are more difficult with the development of Industry 4.0 [16; 17, p. 106]. We believe that among the reconstruction programs of Ukraine there should necessarily be a separate program for the development of Industry 4.0. Moreover, in the materials of the working group *Development of the military-industrial complex*, we noticed "the absence of technologies of the fifth and sixth technological structures" and "low level of automation and digitalization of production and management processes" in the defense industry [18, p. 7-8]. And the preconditions for it are becoming more and more significant. Thus, the

Ukrainian company IT-Enterprise has already been solving the tasks of Industry 4.0, in particular, the Manufacturing module and ERP system modules (resource and business process management), more efficiently than similar systems of competitors [19].

The first program includes a small number of projects, but these projects are very large-scale and significant. They are partially focused on Military-tech and are related to the implementation of state programs for the development of the aviation industry (for 2021–2030), research and development, development of new technologies and defense system in general and in separate areas (radar systems, armored vehicles, ammunition, and special chemistry, etc.). Defense Accelerator Projects (*Diia Tech & Defense*) and the Defense Technology Agency will help strengthen Military-tech being based on IT sector.

In the conditions of war, such neo-economics as relocation of enterprises and localization of production come to the fore. Therefore, the program facilitates relocation of enterprises on the territory of Ukraine and helps answer the questions and fix issues the companies may have with local authorities [18, p. 29]. As of September 26, 2022, 745 enterprises, among which there are innovative ones, have already moved to safer regions, 558 have resumed work in new locations [20]. As part of the Ukrainian military-technical cooperation with partner countries, manufacturing of foreign products (in particular drones at the Ukrainian-Turkish Baikar enterprise) are planned to ensure the localization of production but the degree of localization (the share of the local component in the cost of products) is not indicated [18, p. 34].

The main Military-tech FSOs will be startups (such as Kvertus, which produces anti-drone guns), innovative enterprises (SE *State Kyiv Design Bureau Luch*), innovative concerns (SC *Ukroboronprom*, whose organizational structure has not yet been defined). The strategy for the development of the Ukrainian defense industry until 2028 involves the creation of innovative (military-industrial) clusters, in particular, the manufacturing of cartridges together with the Czech Republic.

In addition, the program involves building innovative networks which should be arranged by the Defense Technology Agency, the Unified Information System for customers and participants in defense procurement, and the Weapons and Military Equipment Systems Life Cycle Management Center. Within the defense industry, it makes sense to develop FSOs of the “triple spiral” type. But it is

currently impossible due to a low level of cooperation between NAS scientific institutions of Ukraine, leading universities, and ammunition engineers. However, the extension of the Law of Ukraine *On Industrial Parks* to the defense industry can stimulate the creation of such FSOs in it [18, p. 22].

Program 2. EU integration. Since 2014 Ukraine has been striving for European integration by signing the Association Agreement with the EU. On June 24, 2022, the European Council granted Ukraine the status of a candidate member of the EU. Thus, it is planned to create an international coordination *Platform for the reconstruction of Ukraine* together with the EU. On the basis of neo-economics, Program 2 suggests the implementation of the following projects: Ukraine’s inclusion in the EU *Digital Europe* program—within the IT sector; joining SEPA (single zone of payments in euros) based on FinTech; ASAA Agreement on the assessment of compliance of Ukrainian industrial goods with European standards to ensure the development of Industry 4.0; infrastructure modernization that directly connected with the western joints with European countries based on Transport-tech; to ensure joint customs control with the EU Member States on the principle of “single window” based on Transport-tech and FinTech; raising understanding of what the EU is based on the IT sector and the creative economy.

The leading FSOs of most neo-economics sectors within the program are innovative enterprises and innovative networks. But such FSOs as smart cities (Kyiv, Lviv, etc.) and C-regions, for example, Odesa region, will play an important role in the creative economy sector, in particular, in the development of multi-level governance and territorial development institutions, as well as the development and implementation of partnership programs between cities and regions of the EU and Ukraine. This direction had been initiated in 2017–2019 for the implementation of the *Smart Region* regional state administration strategic plan, and now it is supported by the implementation of the Regional Development Strategy for 2021–2027.

Program 3. Recovery of a clean and protected environment. A “green” economy is a basic sector of neo-economics. It should be used for eco-modernizing industrial enterprises and heat supply plants for cities. The IT sector plays an important role in the implementation of the program. IT is needed to generate the projects for monitoring and auditing the environment. These projects are included in the Unified Environmental Platform

EcoSystem. The R&D sector is involved in the implementation of the program to prevent climate change and restore polluted areas.

The key FSOs of the green economy within the program should be startups, innovative enterprises, innovative clusters, and innovative parks. Moreover, startups should take the role of the “green” modernization driver, for example, Recycle Map takes on the development of an interactive map that shows various waste recycling points; *FoodBioPack* specializes in the development of biodegradable and edible packaging and utensils; V. Frechki deals with the production of paper from fallen leaves [21]. The IT sector in the program is represented by these innovative networks, and the R&D sector is represented by innovative parks (centers). It is intended to create an Innovative Technology Center to prevent and adapt to climate change.

Program 4. Energy independence and the Green Deal. The foundation of the neo-economics sector for this program is renewable energy, the development of which contributes to the decarbonization of the energy sector. The program is supposed to increase the production and nomenclature of equipment for using renewable energy sources to ensure the construction of electrolysis capacities and hydrogen production capacities. Definitely, the supply of hydrogen to consumers is possible exclusively on the basis of Transport-tech. The development of biofuel production (bioethanol, biodiesel, biomethane, biomass) is also an important project not only in the renewable energy sector but also in the bioeconomy sector [22, p. 480]. Therefore, even in the conditions of war, this production is growing at an accelerated pace. Thus, in the Vinnytsia region, the Regional Gas Company is supposed to connect a biomethane plant to gas distribution networks as well as begin preparing project documentation for *Yuzefo-Mykolaiv Biogazova Company* LLC in the first half of 2023. Within the Green Deal, it is planned to extend the operating life of power units and build two new ones at the Khmelnytsky NPP. The program also contains an item about building a new nuclear fuel plant and a storage facility for nuclear waste. By means of Industry 4.0 (using IoT technology), it is planned to build smart electric networks (smart grids), which will increase their energy efficiency.

The main point is in the production localization of value creation chains in the nuclear sphere and in manufacturing equipment for using renewable energy sources. We believe that it is critically necessary to localize the capacity of the entire

chain (cycle) of nuclear fuel production in Ukraine on the basis of specialized enterprises in Zhovti Vody, Vilnogradsk, Kamensky, and Dnipro. And innovative business incubators, startups, innovative enterprises, and clusters should become the leading neo-economics FSOs within renewable energy. And the process of their creation has already been clearly outlined. Thus, the Kyiv business incubator (hackathon IoT Hub) through training, expert, and financial support helped to grow SolarGaps startup, whose founders created window blinds with solar panels [23]. Very promising also looks *Sirocco* startup, whose specialists designed a wind power plant that does not make noise and works even at minimum wind speed [21]. By the way, both these startups have sufficient opportunities to turn into powerful innovative enterprises. The objectives of Program 4 are very close with the activities of *Energy of Sustainable Development* (Kyiv) innovation cluster. In Transport-tech, innovative hydrogen pipelines can become important FSOs, as a part (in the future) of the European Hydrogen Backbone. Within Industry 4.0, innovative (“smart” electric) networks will also play a key role. They will be able to coordinate the work of all their elements (generators, networks, consumers of electric energy) in order to ensure a sustainable electricity supply.

Program 5. Improving the business environment. The leading role in its implementation will belong to the IT sector since it enables further digitalization of business processes. *Prozorro* system allows monitoring purchases of goods, works and restoration services, done at the expenses that include costs of donors. The State Labor Service of Ukraine it is expected to create and implement automated information system, which will help to overcome the imbalance between the demand and supply in the labor market. The State Tax Service of Ukraine is expected to improve electronic system of taxpayers. The portal *Diya.Business* will offer educational and webinar projects, including foreign ones. By 2025, a new electronic customs system (MASP-C) will be launched in the EU, and subsequently in Ukraine, which will contribute to the growth of trade between them including e-commerce. A creative economy can help implement priority regional development programs of territories liberated from occupation and territories where hostilities have taken place.

The basic FSO projects within the IT sector and e-trade will be innovative networks, and the creative economy, i. e. smart cities and C-regions.

Program 6. Ensuring competitive access to financial assets. On the basis of neo-economics, this program can implement projects to introduce military risk insurance for investment projects (in InsurTech) and to introduce new financial instruments (based on FinTech), which will provide customers of banks in liberated from invaders territories with easier access to funds. The National Development Bank should be launched for financial and credit support of the latest industries and modernization of existing ones; it must also draw on FinTech, but at the same time be of the first priority for the development of Industry 4.0.

The leading FSO projects of the program based on InsurTech and FinTech, in our opinion, should be startups, innovative enterprises and innovative networks. A shining example of such startup is Monobank which over time turned into a powerful innovative enterprise (a financial institution without physical departments). Priority regional development programs for territories liberated from invaders should first of all consider BankID System of the National Bank of Ukraine (NBU), because it provides remote identification of bank customers, as well as NBU's System of electronic payments (SEP-4).

Program 7. Ensuring macro-financial stability. In the conditions of a full-scale invasion of the Russian Federation in Ukraine, when the economic activity of economic entities has dropped almost twice, the project on the implementation of the program to provide sources of funding for the state budget is of fundamental importance. It is also important that some of the projects of the Plan and programs for Ukrainian restoration should be funded with budget money. In order to promptly respond to the challenges of the budgeting, it is also planned to implement a project to create a Budget Office under the control of *Verkhovna Rada* of Ukraine. Ideally, both projects should be implemented on the basis of FinTech.

Among the PSOs of neo-economics optimization of territorial distribution of budget resources is the first priority, since on its basis it is possible to improve the situation with financing neo-economic projects. The system of distribution of basic (reverse) subsidies, which became temporarily inoperable in the conditions of war should be replaced with the system of horizontal leveling of local budgets based on taking into account real financial capabilities of the community. And innovative networks will become FSOs for the FinTech sector which means a consolidated network of managers

and recipients of the State Treasury Service of Ukraine, SEP-4 NBU, etc budget funds.

Program 8. Development of value-added economic sectors. The developers of this program emphasize the development of the IT sector as a foundation for the development of other sectors of neo-economics. Accordingly, projects for the development of the startup ecosystem (innovative hubs, accelerators, incubators, platforms) are considered to support the development of startups and the creation of the Open Data platform. However, not a single clear project in the Industry 4.0 sector is provided by this program, unfortunately. The program for the production of furniture (based on the development of clusters) only theoretically involves the use of technologies of this sector. It is not provided for special use of these technologies in metallurgy development programs. And the project for the production of 2.5–5 million tons of green steel in electric arc furnaces can rather be attributed to the green sector of the economy. Mechanical engineering is not expected for mass use of Industry 4.0 technologies. The main projects are arranging a hub of automotive components for automotive clusters in Central Europe and the development of battery production, as well as a project for the development of agricultural engineering. Projects in the field of agriculture and its agro-processing (in the sectors of “green” and bioeconomics) are anticipated to enable production of goods with high added value, but their implementation, even together with other projects, will not allow the Ukrainian economy to move away from the raw material model of development.

In the PSOs of neo-economics program the process of localization is leading. The work of researchers (L. Rudenko, A. Bochkovska, V. Chabaniuk, et al.) at the Institute of Geography of the NAS of Ukraine is important for implementation of projects involving comprehensive planning of spatial development, the use of land on the territory of communities and mapping of Ukraine territory and the introduction of the National Geospatial Data Infrastructure. As for neo-economics FSO within this programme, they are specific to individual sectors. In the IT sector, these are primarily startups and innovative networks, and in industry sectors with elements of Industry 4.0, as well as green and bioeconomics these are innovative parks and clusters. An example of innovative parks can be *UNIT. City* in Kyiv and *Promprylad. Renovation* in Ivano-Frankivsk, and the one of innovative clusters is *New Materials* (Kharkiv), *New Machines* (Dnipro), etc.

Furniture clusters (*Maramuresh* in the Solotvinsk community in Transcarpathia, etc.), which are supposed to be created, can only be conditionally attributed to innovative ones. Unfortunately, we cannot afford ourselves to set such task as the development of innovative concessions of world importance (groups of companies, corporations) such as Japanese **keiretsu** (*Toyota Group*, etc.) or Korean **chaebol** (*Samsung Group*, etc.) with the participation of structures and capital of the public sector, although there are opportunities for this in rocket and aircraft construction, energy engineering and even in the production of electronics. The point is that the war in Ukraine determined and polarized groups of countries with democratic and autocratic rule. And therefore, developed democratic countries (USA, South Korea, Japan, etc.) can transfer individual links of value chains in the production of electronics from autocratic countries (China, etc.) to Ukraine as a democratic country with a relatively inexpensive but skilled workforce.

Program 9. Expansion and integration of logistics with the EU. Most of the projects of this program are focused on expanding capacity and eliminating bottlenecks in logistics at the border with the EU, in particular due to the actual and probable blockade of Ukrainian ports by Russia. However, there are also some projects related to short- and long-term modernization of transport. Of course, long-term transport modernization projects should be based on Transport-tech. This should be the project for the construction of the Kyiv–Warsaw high-speed railway. The project to create a cluster for the development of railway transport TECH RAIL in the Lviv region may also be related to Transport-tech. The project to create a network of charging stations for electric vehicles corresponds more to the “green” economy.

The FSOs of neo-economics in Program 9 are partially defined by themselves. Transport-tech involves innovative (high-speed transport) networks and clusters (TECH RAIL, etc.), and within the “green” economy these are innovative enterprises (facilities), which can include, for example, charging stations for electric vehicles.

Program 10. Restoration and modernization of housing and social infrastructure of regions. It includes two blocks of projects. The first one contains projects to restore and develop regions through the launch of housing modernization programs, improve its energy efficiency based on the transition to centralized heating (using heat pumps) and biodiesel production in rural areas.

These projects, at least partially, should be implemented within renewable energy sector. Whilst the projects for processing of solid household waste and the use of gas from organic waste and sewage treatment plants in cities with the population of more than 100 thousand should be implemented mainly within green economy. Modernization of housing should be done within the projects related to production of thermal insulation materials, glass and windows as well as Industry 4.0 technologies.

At the same time, it is necessary to launch a re-training program for 150–200 thousand employees of communities and regions in the field of housing modernization, which should be based on EdTech. The projects connected with information systems for life support of communities and regions and the urban cadastre should be based on IT technologies. The second block of projects involves an increase in housing construction and infrastructure modernization relying on the best urban planning practices (starting with pilot projects in Bucha, Irpen, Chernihiv).

Many projects of this block are simply focused on the restoration of housing and are not directly related to the neo-economy. However, there are also projects close to it. In particular within the Transport-tech project that concerns modernization and electrification of urban transport, primarily in Kyiv, and within the concept “green” economy a project on the construction of buildings with close to zero energy consumption (NZEB) was introduced.

The process of localizing production, namely building materials, as well as buses and trolleybuses, is leading in PSOs of neo-economics within the program. The process of relocation of enterprises should find a logical continuation in providing them with centralized water supply and water drainage. In the Programs for regional development of such rural and border areas as the Ukrainian Danube region, the Azov-Black Sea region, the Ukrainian Carpathians, a leading place should belong to the neo-economics sectors. But Program 10 does not include it. Neither do the majority of development strategies in Ukrainian regions (only the strategy of the Kharkiv region development stands out for the better). Referring to this the Regional Development Program *Development of Regional Poles of Growth* acquires special importance. Its implementation can be based on the findings of researchers at the Institute of Geography of the NAS (G. Pidhrushnyi [24], etc.). And the development of comprehensive plans for spatial development of territorial

communities shown in Program 10 should be carried out according to a single method and unified geodata bases [25, p. 44].

The defining FSOs of neo-economics within Program 10 should be: renewable and “green” energy—startups and technoparks, Industry 4.0—industrial parks, EdTech and Transport-tech—innovative networks. A number of projects of the program are directly focused on neo-economics, in particular industrial parks and infrastructure for them. On their basis, it is planned to restore industrial production and employment of internally displaced persons. And the program for the development of regional growth poles should be made by creating competitiveness poles, based on French experience, and with a focus on cities and regions in which smart specialization programs are implemented (Kyiv, Zaporizhzhia, Odesa, Kharkiv, and other regions).

Program 11. Restoration and modernization of social infrastructure. This program is a logical continuation of the previous one. Within the “green” economy, it implies implementation of projects to modernize social infrastructure facilities. The project for creating opportunities for youth development (personal development, training, creativity and active leisure) is recommended to implement within EdTech and creative economy.

The main FSO of neo-economics within the program will be: “green” economy—startups and technology parks, and EdTech and creative economy innovative networks. A separate project of the program includes the construction of industrial parks, which can give a boost to the development of Industry 4.0. Thus, in Vinnitsa, the Crystal Park is being initiated. It aims at creating new high-tech and creative industries in the region.

Program 12. Development of the education system. It includes three blocks of projects. The first block concerns primary and secondary education, providing a short-term solution to the consequences of the war, improving the quality of teacher training and education as part of the reform of the new Ukrainian school. Some of these projects should be implemented within EdTech. The second block concerns projects in the field of higher and technical education with the involvement of the private sector, namely: ensuring the quality of universities based on European standards; investing in R&D and think tanks based on key universities; updating IT programs for top 5 universities; reform of vocational education. These projects, in addition to the EdTech sector, will also develop the R&D sector. The

third block concerns projects in the field of science. The main ones are focused on creating a grant system for researchers and Centers of Excellence (science parks). These projects are implemented on the basis of the R&D sector.

The key neo-economics FSOs within this program in EdTech are innovative networks whereas in the R&D sectors are innovative business incubators, startups, technological and scientific parks that can be created on the same basis. Therefore, for example, the *Kyiv Polytechnic* technopark is included in the scientific park of the same name.

Program 13. Modernization of the health care system. In addition to projects related to the restoration of health care system in the de-occupied territories and the provision of a number of rehabilitation medical services to citizens, a number of projects have a clearly expressed neo-economic direction. Thus, the project related to increasing databases in healthcare, creating specialized modules, creating a register of medicines, and strengthening IT infrastructure will be implemented within the IT sector development. Digital health project (for example, patient’s offices, telemedicine) also belongs to the same sphere.

Leading FSO neo-economics within this program are startups, innovative enterprises (medical institutions and institutions, for example, Heart Institute in Kyiv), innovative networks (related, for example, to the development of telemedicine) and innovative (hospital) clusters formed within medical reform.

Program 14. Development of culture and sports systems. In the block of culture projects, a project on the development of digital culture has neo-economic direction. It is directly related to the development of the IT sector. As part of the creative economy, projects will be implemented to develop the ecosystem for culture, memory, heritage, as well as the development of the film industry and audiovisual production, etc. The transformation of the education system in the field of culture will take place on the basis of EdTech. The second block of projects on financing the reconstruction and construction of mass and professional sports facilities does not tend towards the development of neo-economics sectors.

FSO in the program, in particular, in IT and EdTech, are innovative networks, and creative economy—innovative or creative clusters (for example, a cluster of creative industries in the Kherson region), smart cities and C-regions.

Program 15. Ensuring effective social policy. This program focuses on IT projects to launch a unified information system of the social sphere

and the program of integration of veterans (educational, health, employment, etc.), including at the local level. Projects referring to returning and reintegration of citizens are also focused on the IT sector, providing for the development of a single digital platform and an information campaign aimed at creating a positive image of returnees, attracting them to work—based on the implementation of short-term business plans. Mainly, on the basis of

creative economy, *Ukraine Returns Talents* national target program should be implemented. Moreover, entrepreneurs in the creative industry will receive various support and the launch of *Diia City*.

The main neo-economics FSOs within this program are: innovative (digital) networks for the IT sector, and as for the creative economy these are innovative centers, in particular, creative hubs, which are supposed to be arranged in all major cities.

Conclusions

The full-scale war of the Russian Federation against Ukraine has revealed a number of fundamental shortcomings in the reform and development of the national economy over the past decades. These shortcomings were fully manifested in the technological backwardness, economic weakness and military vulnerability of our country, which caused a huge number of casualties in the war and colossal material losses. It becomes obvious that the state policy of restoring the country should take into account the existing shortcomings in countries development. Namely, restoration should be considered as a “window of opportunity” for its structural modernization. At the same time, the formation of neo-economics is a historical chance for Ukraine to move (with the support of international partners and the active role of the state) from a raw material export-oriented model of development to a neo-economic model.

The recovery plan of Ukraine and its programs contain a significant part of projects focused on the

development of neo-economics. However, their analysis shows that projects that would be formed on the basis of the industrial and military power of Ukraine (within Industry 4.0) are critically few. Besides there are not so many projects for the development of other sectors of neo-economy as it should be if the goal of the plan is to switch to the model of neo-economic development. Apparently more attention should be paid to modernize P&FSO neo-economics. Much attention in the Plan is paid to enterprise relocation and localization of innovative production and such neo-economics FSOs as innovative parks and innovative clusters, while the role of forms such as technopolises and poles of competitiveness are underestimated. So, if we draw a historical analogy, we can state that the Plan for the restoration of Ukraine no longer resembles the Morgenthau Plan (with a clear emphasis on the raw material model of development), but it is still far from the Marshall Plan (with an emphasis on the development of modern industry and its P&FSOs features).

Novelty of research

The necessity of restoration of Ukraine from the consequences of war on the basis of neo-economics development is substantiated. The Plan for the Restoration of Ukraine, its national programs and

key projects are analyzed in terms of the development of neo-economics sectors, the dissemination of processes and the creation of forms of its spatial organization.

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The article was included in the editorial office November 30, 2022

For citation [Для цитування]

Zakharchenko, V. (2022). Restoration of Ukraine From the Consequences of the War by Means of Neo-Economy: Sectoral and Spatial Approaches. *Ukr. Geogr. Zh.*, 4, 23–36. [In English]. DOI: <https://doi.org/10.15407/ugz2022.04.023>

Захарченко В. І. Відновлення України від наслідків війни на засадах неоекономіки: секторальний та просторовий підходи // Укр. геогр. журн. 2022. № 4. С. 23–36. [Англійською мовою]. DOI: <https://doi.org/10.15407/ugz2022.04.023>