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DISTRIBUTION OF REGIONS BY THEIR FUNCTIONAL TYPE, AS A STAGE FOR ASSESSING THE SOCIO-ECONOMIC EFFICIENCY OF THE COUNTRY'S POST-WAR DEVELOPMENT

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The war is still raging, but it is already clear that advance planning is needed to ensure survival and prepare for Ukraine's recovery from the destruction caused by Russian aggression. The damage and losses caused by the aggressor to Ukrainian regions amount to billions of dollars, which are already being received and will continue to be received in the form of international technical assistance, reparations, investments, etc. These funds will be distributed across the regions, taking into account the extent of their destruction, in the relevant areas (priorities). This process requires clear arguments from the government and local authorities on the targeting of both funds and priorities that characterise effectiveness. Therefore, there is a need to find effective tools for assessing the socio-economic efficiency of post-war reconstruction. Thus, the purpose of the article is to develop a methodological support for the distribution of territories according to their functional purpose and practical implementation of the assessment of socio-economic efficiency of post-war reconstruction of the country. The conceptual foundations of the proposals presented in the article are based on current legislation, general scientific methods of cognition, theoretical and empirical orientation. On the basis of the matrix method, a system of coordinates is built to distribute the regions of Ukraine by their functional type. The choice of individual indicators as the abscissa and ordinate axes is substantiated. By converting natural indicators into relative ones, the initial data for the distribution of regions by their functional type are formed. For the purpose of further comparison of data, the average value for each indicator and region in the dynamics for five years is calculated. The proposed approach allows for a substantive approach to determining the priorities of post-war development, taking into account the typology of territories and their compliance with the basic conditions and opportunities for development, as well as the degree of destruction as a result of hostilities.

Keywords: socio-economic efficiency, region, regional development, functional type of territories, post-war reconstruction of the country.

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Introduction and problem statement

The current conditions for the development of Ukrainian society can be described as the most difficult in the recent history of Ukraine. The deliberate damage of infrastructure by the aggressor country, and in some cases its complete destruction, leads to catastrophic consequences, causing a rapid decline in the economy, rising inflation, impoverishment of the population, mass migration, etc. The war has made its own adjustments to the social, economic and environmental development of the regions of Ukraine. Since 2014, issues of post-

war development have been constantly on the agenda in the public space, including the problems of assessing losses and the effectiveness of measures to restore territories destroyed or affected due to the war. According to an assessment of Ukraine's recovery and reconstruction needs conducted jointly by the government of Ukraine, the World Bank Group, the European Commission and the United Nations, since the beginning of Russia's full-scale invasion of Ukraine, the restoration will require 411 billion US dollars, of which 135 billion will be used to compensate for direct damage to infrastructure [1]. At the same time, it is expected that the cost of reconstruction and restoration will last for 10 years and will require both public and private funds. All this forces relevant ministries, scientists, businesses, foreign partners and investors to unite to find and implement effective mechanisms for assessing the socio-economic efficiency of the country's post-war development.

Analysis and research of publications

On April 21, 2022, the president of Ukraine signed an order on the creation of the National Council for the restoration of Ukraine from the consequences of the war, and on May 2, the committee on economic development of the Verkhovna Rada presented a recovery plan [2]. Within the framework of this large-scale event, the Ukrainian academic community is working on finding effective scientific and methodological tools for post-war development. Local regulations are being developed that contribute to the implementation of development measures. Thus, the draft strategy "Ukraine – territory of opportunities", which is handled by the Department of economics of the National Academy of Sciences of Ukraine, clearly identifies "restoration of the pre-war level of quality of life of the population until 2027"; "achievement of the main socio-economic parameters of Eastern European countries until 2032".

The effective post-war development of the country is aimed at the works of I. Zablodska and Y. Rohozian, who, based on the analysis of the experience of developing the territory of Croatia after the armed conflict, proposed their own classification of territories that require special state support [3]. In the studies by E. Boichenko and N. Martynovych on the scientific and methodological substantiation of the investment attractiveness of territories in the context of restoring and stimulating the development of the post-war economy of Ukraine, a scale of investment promotion of the territory by classes, according to the level of its destruction, was developed [4]. S. Hrechana systematised and built a set of indicators for assessing the socio-economic efficiency of the development of communities and regions in the context of post-war recovery [5]. G. Podvalna, O. Bochko, V. Kuziak, N. Stasiuk raise the issue of effective transport provision in Ukraine, which would be appropriate after the war [6]. A significant contribution to the post-war development of the country was made by scientists of the Institute of Environmental Management and Ecology of the National Academy of Sciences of Ukraine, who, together with the Ministry of Environmental Protection and Natural Resources of Ukraine, developed a thorough scientific and methodological support for determining the amount of damage caused to land and soil as a result of emergencies and/or armed aggression and military operations during martial law.

Paying tribute to collective efforts, it is worth noting that Ukrainian science does not have sufficient experience in restoring or stimulating the development of regions in war conditions. To date, there is no appropriate tools for adapting existing scientific and methodological approaches to the post-war development of territories, which requires the search for ways of socio-economic reproduction of regions that would allow restoring the economic complex of Ukraine and the usual standard of living of the population as efficiently as possible in a short time.

Purpose of the article

The purpose of the article is to develop methodological support for the distribution of territories according to their functional purpose and practical implementation of the assessment of the socio-economic efficiency of the post-war reconstruction of the country.

Presentation of the main research material

Preliminary developments on the topic of the department "Development of territories of priority development in the context of armed conflict: assessment of effectiveness and efficiency" give grounds to assert the need to create a fundamentally new tool for assessing the pace of restoration of territories affected by the war. In previously conducted studies, the results of which are published in the article [7], the main conceptual provisions were formulated, according to which, before proceeding directly to the evaluation procedure, it is necessary to distribute territories according to their functional purpose, the typologization of which is fixed in the law of Ukraine dated 09.07.2022 No. 5323 "On amendments to certain legislative acts of Ukraine concerning the principles of state regional policy and the policy of restoring regions and

territories" [8]. According To Article 11[2] "For planning the restoration and stimulating the development of regions and territories, as well as for the purpose of introducing special mechanisms and tools by executive authorities and local self-government bodies, the following functional types of territories are defined":

a) restoration territories (T_r);

b) regional growth poles (T_{gp});

c) territories with special conditions for development (T_{scd});

d) territories of sustainable development (T_{sd}).

With this in mind, the article distributes regions according to the typologization stipulated in the law. Based on the matrix approach, it is proposed to form a coordinate system, the distribution of regions of Ukraine, to determine the position of a point on a plane that describes the correspondence of the region to a specific functional type. The "X" axis is the economic state, it is advisable to use the values of the gross regional product (GRP) indicator per 1 person. This is due to the fact that, firstly, we are talking about the distribution of regions, and secondly, unlike gross domestic product (GDP), on the basis of which the level of economic development of countries is traditionally assessed, GRP includes value added, which is reflected in quarterly national accounts by institutional sectors [9].

Value added is calculated as the difference between the output of goods and services (determined by their value and is the result of production activities of resident economic units in the reporting period) and intermediate consumption (material costs and payment for services) for each type of economic activity and sector [9, p. 7, 9]. This approach allows reflecting the results of the economy as a whole and answer the questions like "Who creates goods?", "Who makes a profit from them?" and "How much is there per 1 person?" In other words, we can reflect the economic essence without ignoring the social component, which the GDP indicator lacks.

The expediency of using GRP per 1 person as a determining indicator of economic result or efficiency is evidenced by the works of other authors in the field of regional economy and sustainable development. Thus, studies on measuring the effectiveness of the economy and social progress of Nobel Prize winners Amartya Sen, Jean-Paul Fitussi and Joseph Stiglitz present proposals for changing the statistical accounting system and the role of GDP in assessing "our life", which also allow us to argue for the choice of GRP as a determining indicator. [10]. A similar point of view is reflected in the works of G. Linden, J. Dedrick and K. Kremer, who studied global value chains using the economics based on the example of Apple's iPad and iPhone, calculating the number of people directly involved in the development, production, transportation and sale of the iPod, while establishing a significant difference in the salaries of certain groups of employees, questioning the objectivity of the traditional assessment of economic development of territories based on GDP [11]. Thus, we conclude that in modern conditions focused on sustainable development, GRP allows us to draw balanced conclusions regarding the efficiency of territorial economic development.

The Y-axis is the social status. In previous studies on this topic, special attention has been paid to social efficiency, and it has been found that social efficiency is viewed by scientists through human capital, social development, compliance with the planned state, result, goals, as a system-forming factor, etc. In general, it is worth noting that the problem of finding the optimal criterion for social effectiveness remains debatable to this day. Considering that, we consider it appropriate to consider social efficiency through social development and propose to understand the state of the social system characterized by effective development of the economy to ensure the social sphere (compiled by the author).

Relying on the above, it becomes obvious that the objective distribution of regions by social component should occur according to a set of indicators that would be placed on one axis. The implementation of such manipulation is possible due to the use of an integral coefficient, which combines a set of individual indicators that characterize the state of social development. Consequently, social efficiency, the «Y» axis, was reflected through the totality of the main socio-economic indicators proposed by the State statistics of Ukraine. These include:

a) population by region, thousand people, (N_p);

b) employment of the population in the regional context aged 15-70 years, thousand people, (E_p);

c) disposable income of the population per person, UAH, (I_p);

d) expenses of the population per person, UAH, (EX_p).

As already noted, to place all these indicators on one axis, it is necessary to calculate the integral coefficient by constructing five intermediate tables based on these indicators in dynamics over five years. This technique allows modifying cost indicators, both by abscissa and ordinate, into relative ones by dividing the value of the indicator by the region by its value

for the country as a whole, and the dynamic series allows taking into account changes over the period.

Official statistics were used to allocate territories. In particular, the initial and resulting tables with socio-economic indicators are based on the principles of the statistical collection "Gross Regional Product for 2021" [12], Statistical collections "Regions of Ukraine, 2017-2021" [13-17]. The use of the method is illustrated by the data for 2016-2020, since as of 20.03.2023 there are no statistics on GRP. In general, the assessment of the socio-economic efficiency of the post-war reconstruction of the country is carried out by two-level scheme:

Level 1: distribution of regions by functional types;

Level 2: assessment of each type of territory using separate methods for each type. Taking into account the research topic, in the future the author will assess territories with special development conditions.

Based on the obtained relative values, in order to harmonize the results and bring different-dimensional indicators to the general dimension for further comparison, the average value for each indicator and region was calculated. Average indicator (μ_{ij}) is calculated using the formula

$$\overline{\mu_{ij}} = \frac{\sum_{i=1}^{n} K_n}{n}. \quad (1)$$

The following are the results of practical testing of the territory distribution methodology.

Table 1 shows the initial data for the Y-axis – economic status. Table 2 contains intermediate data for X-axis – social status, namely, according to the indicator "population size" (N_p). All data on abscissa and ordinate are entered in the resulting table, which was used to distribute regions by their functional type, which are located on the coordinate plane (Figure).

The procedure for generating initial data was carried out in stages: 1) entering indicators from statistical collections in Tables; 2) converting

Table 1

Initial data for the "Y-axis – economic status" – GRP per person

Regions	GRP per person, UAH.					The ratio of GRP per person to GRP in Ukraine					μ
	2016	2017[1]	2018[1]	2019[1]	2020	2016	2017	2018	2019	2020	
Ukraine	55899	70171	84228	94632	101138						
Vinnytsia	46615	58296	71098	83133	88380	0.83	0.83	0.84	0.88	0.87	0.8
Volyn	34310	49937	58294	73192	75193	0.61	0.71	0.69	0.77	0.74	0.7
Dnipropetrovsk	75396	97043	114750	122298	126209	1.35	1.38	1.36	0.29	1.25	1
Donetsk	32318	39299	45936	49385	50124	0.58	0.56	0.54	0.52	0.49	0.5
Zhytomyr	38520	49700	62905	70225	76017	0.69	0.71	0.75	0.74	0.75	0.7
Zakarpattia	25727	34197	41706	48853	49538	0.46	0.49	0.49	0.51	0.49	0.5
Zaporizhzhia	59729	75196	85764	91452	99738	1.07	1.07	1.01	0.96	0.99	1
Ivano-Frankivsk	37220	46282	57030	63237	66245	0.66	0.66	0.68	0.67	0.65	0.7
Kyiv	74216	89904	112510	123216	135817	1.33	1.28	1.33	1.30	1.34	1.3
Kirovohrad	47469	55128	67743	77788	81166	0.85	0.78	0.8	0.82	0.8	0.8
Luhansk	14251	13873	16300	18793	20297	0.25	0.19	0.19	0.19	0.2	0.2
Lviv	45319	58183	70169	85177	94317	0.81	0.83	0.83	0.9	0.9	0.8
Mykolaiv	50091	60486	70325	82121	86750	0.99	0.86	0.83	0.87	0.86	0.9
Odesa	50159	62643	72731	82879	92823	0.99	0.89	0.86	0.87	0.9	0.9
Poltava	81145	105994	123722	134383	136608	1.45	1.51	1.47	1.42	1.35	1.4
Rivne	33958	42004	49038	58318	62485	0.71	0.6	0.58	0.62	0.62	0.6
Sumy	41741	51367	62943	70550	75815	0.75	0.73	0.75	0.74	0.75	0.7
Ternopil	29247	38563	46828	54821	60565	0.52	0.55	0.55	0.58	0.6	0.5
Kharkiv	57150	69409	86889	92835	97428	1.02	0.99	1.03	0.98	0.96	0.99
Kherson	36585	45486	52914	59972	66973	0.65	0.65	0.63	0.63	0.66	0.6
Khmelnytskyi	37881	49858	59576	65893	77153	0.68	0.71	0.70	0.69	0.76	0.7
Cherkassy	48025	59612	76881	86279	91817	0.86	0.85	0.91	0.91	0.9	0.88
Chernivtsi	23365	31495	37443	46135	50110	0.42	0.45	0.44	0.49	0.49	0.4
Chernihiv	41726	55139	69712	78098	85435	0.75	0.78	0.83	0.82	0.84	0.8

Revised data of regional accounts for 2017-2019 (taking into account changes in the NBU balance of payments)
Source: calculated by the author based on the data [7]

Table 2

Output data for the "X-axis – social status" – population size, thousand people (N_p)

Regions	Population size					The ratio of the population by region to the population by Ukraine					μ
	2016	2017[1]	2018[1]	2019[1]	2020	2016	2017	2018	2019	2020	
Ukraine	42584.5	42386.4	42153.2	41902.4	41588.4						
Vinnytsia	1590.4	1575.8	1560.4	1545.4	1529.1	0.037	0.037	0.037	0.037	0.037	0.04
Volyn	1041.0	1038.5	1035.3	1031.4	1027.4	0.024	0.024	0.024	0.025	0.025	0.02
Dnipropetrovsk	3230.4	3231.1	3206.5	3176.6	3142.0	0.075	0.076	0.076	0.076	0.075	0.07
Donetsk	4244.0	4200.5	4165.9	4131.8	4100.3	0.099	0.099	0.099	0.099	0.098	0.10
Zhytomyr	1240.5	1231.2	1220.2	1208.2	1195.5	0.029	0.029	0.029	0.029	0.029	0.03
Zakarpattia	1258.8	1258.1	1256.8	1253.8	1250.1	0.029	0.029	0.03	0.029	0.03	0.03
Zaporizhzhia	1739.5	1723.2	1705.8	1687.4	1666.5	0.04	0.040	0.04	0.04	0.04	0.04
Ivano-Frankivsk	1379.9	1377.5	1373.3	1368.1	1361.1	0.03	0.032	0.033	0.033	0.033	0.03
Kyiv	1734.5	1754,3	1767.9	1781.0	1788.5	0.04	0.041	0.042	0.042	0.043	0.04
Kirovohrad	965.8	956.3	945.6	933.1	920.1	0.022	0.022	0.022	0.022	0.022	0.02
Luhansk	2195.3	2167.8	2151.8	2135.9	2121.3	0.051	0.051	0.051	0.051	0.051	0.05
Lviv	2534.0	2529.6	2522.0	2512.1	2497.8	0.059	0.059	0.06	0.06	0.06	0.06
Mykolaiv	1150.1	1141.3	1131.1	1119.9	1108.4	0.027	0.027	0.027	0.027	0.027	0.03
Odesa	2386.5	2383.1	2380.3	2377.2	2368.1	0.056	0.056	0.066	0.057	0.057	0.06
Poltava	1426.8	1413.8	1400.4	1387.0	1371.5	0.033	0.033	0.033	0.033	0.033	0.03
Rivne	1162.7	1160.6	1157.3	1153.0	1148.5	0.027	0.039	0.027	0.027	0.028	0.03
Sumy	1104.5	1094.3	1081.4	1068.3	1053.5	0.025	0.026	0.026	0.025	0.025	0.02
Ternopil	1059.2	1052.3	1045.9	1038.7	1030.6	0.025	0.025	0.029	0.025	0.025	0.03
Kharkiv	2701.2	2694.0	2675.6	2658.5	2633.8	0.063	0.063	0.063	0.063	0.063	0.06
Kherson	1055.6	1047.0	1037.6	1027.9	1016.7	0.025	0.025	0.025	0.024	0.024	0.02
Khmelnytskyi	1285.3	1274.4	1264.7	1254.7	1243.8	0.03	0.03	0.03	0.03	0.03	0.03
Cherkassy	1231.2	1220.4	1206.4	1192.1	1178.3	0.03	0.029	0.029	0.028	0.03	0.03
Chernivtsi	908.1	906.7	904.4	901.6	896.6	0.02	0.021	0.021	0.021	0.021	0.03
Chernihiv	1033.4	1020.1	1005.8	991.3	976.7	0.024	0.024	0.024	0.024	0.023	0.02

[1]Revised data of regional accounts for 2017-2019 (taking into account changes in the NBU balance of payments)
Source: calculated by the author based on the data [8-12]

indicators to relative ones; 3) determining the average value for each year, region for each indicator; 4) summarizing the results in one Table 3. It is worth noting that by analogy with Table 2, the initial data for the "X-axis – social status" were compiled by indicators (E_p)- employment of the population in the regional context aged 15-70 years, thousand people; (I_p) – disposable income of the population per person, UAH; (EX_p) – expenses of the population per person, UAH.

After receiving the initial data, we divide the coordinates on the plane. The Figure shows that the regions of Ukraine are divided between three quadrants: territories of restoration, territories with special conditions for development and sustainable development. None of the regions fell to the territories of the regional poles.

The above fragment of practical testing of theoretical provisions proves the effectiveness and expediency of implementing this approach for further assessment of the socio-economic efficiency of the post-war reconstruction of the country. The proposed approach allows us to take a substantive approach to determining the priorities of post-war development, taking into account the typologization of territories and their compliance with basic conditions and development opportunities, as well as the degree of destruction as a result of military operations.

Conclusions from this study. In the article, based on a summary of previous theoretical and methodological developments, the applied problem of dividing regions by their functional purpose is solved. As a result of the conducted research, a number of conclusions and proposals were formed that form the basis for assessing the socio-economic efficiency of the post-war development of the country, the main ones of which are as follows:

On the basis of the matrix method, the author proposes to form a coordinate system for the distribution of regions of Ukraine in order to

Table 3

Initial data for constructing a coordinate plane

№	Regions	N_p	E_p	I_p	EX_p	X	У	lim
1	Vinnytsia (T_{scd})	0.04	0.04	0.95	0.91	0.8	0.49	$0,5 \le X_{scd}$; $0 < У_{scd} \le 0,5$
2	Volyn (T_{scd})	0.02	0.02	0.79	0.85	0.7	0.42	$0,5 \le X_{scd}$; $0 < У_{scd} \le 0,5$
3	Dnipropetrovsk (T_{sd})	0.07	0.09	1.24	1.15	1	0.64	$X_{sd} \ge 0,5$; $У_{sd} \ge 0,5$
4	Donetsk (T_r)	0.10	0.04	0.56	0.40	0.5	0.28	$0 < X_r \le 0,5$; $0 < У_r \le 0,5$
5	Zhytomyr (T_{scd})	0.03	0.03	0.91	0.92	0.7	0.47	$0,5 \le X_{scd}$; $0 < У_{scd} \le 0,5$
6	Zakarpattia (T_{scd})	0.03	0.03	0.71	0.78	0.5	0.39	$0,5 \le X_{scd}$; $0 < У_{scd} \le 0,5$
7	Zaporizhzhia (T_{sd})	0.04	0.04	1.15	1.09	1	0.58	$X_{sd} \ge 0,5$; $У_{sd} \ge 0,5$
8	Ivano-Frankivsk (T_{scd})	0.03	0.03	0.84	0.85	0.7	0.44	$0,5 \le X_{scd}$; $0 < У_{scd} \le 0,5$
9	Kyiv (T_{sd})	0.04	0.05	1.10	1.30	1	0.62	$X_{sd} \ge 0,5$; $У_{sd} \ge 0,5$
10	Kirovohrad (T_{scd})	0.02	0.02	0.88	0.92	0.8	0.46	$0,5 \le X_{scd}$; $0 < У_{scd} \le 0,5$
11	Luhansk (T_r)	0.05	0.02	0.35	0.26	0.2	0.17	$0 < X_r \le 0,5$; $0 < У_r \le 0,5$
12	Lviv (T_{sd})	0.06	0.06	0.96	1.01	0.8	0.52	$X_{sd} \ge 0,5$; $У_{sd} \ge 0,5$
13	Mykolaiv (T_{scd})	0.03	0.03	0.94	0.94	0.9	0.49	$0,5 \le X_{scd}$; $0 < У_{scd} \le 0,5$
14	Odesa (T_{sd})	0.06	0.06	1.07	1.20	0.9	0.60	$X_{sd} \ge 0,5$; $У_{sd} \ge 0,5$
15	Poltava (T_{sd})	0.03	0.03	1.04	1.00	1	0.53	$X_{sd} \ge 0,5$; $У_{sd} \ge 0,5$
16	Rivne (T_{scd})	0.03	0.03	0.82	0.82	0.6	0.43	$0,5 \le X_{scd}$; $0 < У_{scd} \le 0,5$
17	Sumy (T_{scd})	0.02	0.03	0.97	0.89	0.7	0.48	$0,5 \le X_{scd}$; $0 < У_{scd} \le 0,5$
18	Ternopil (T_{scd})	0.03	0.02	0.75	0.78	0.5	0.40	$0,5 \le X_{scd}$; $0 < У_{scd} \le 0,5$
19	Kharkiv (T_{sd})	0.06	0.08	1.01	1.25	0.99	0.60	$X_{sd} \ge 0,5$; $У_{sd} \ge 0,5$
20	Kherson (T_{scd})	0.02	0.03	0.87	0.95	0.6	0.47	$0,5 \le X_{scd}$; $0 < У_{scd} \le 0,5$
21	Khmelnytskyi (T_{scd})	0.03	0.03	0.90	0.91	0.7	0.47	$0,5 \le X_{scd}$; $0 < У_{scd} \le 0,5$
22	Cherkassy (T_{scd})	0.03	0.03	0.87	0.95	0.88	0.47	$0,5 \le X_{scd}$; $0 < У_{scd} \le 0,5$
23	Chernivtsi (T_r)	0.03	0.02	0.74	0.85	0.4	0.41	$0 < X_r \le 0,5$; $0 < У_r \le 0,5$

Source: calculated by the author

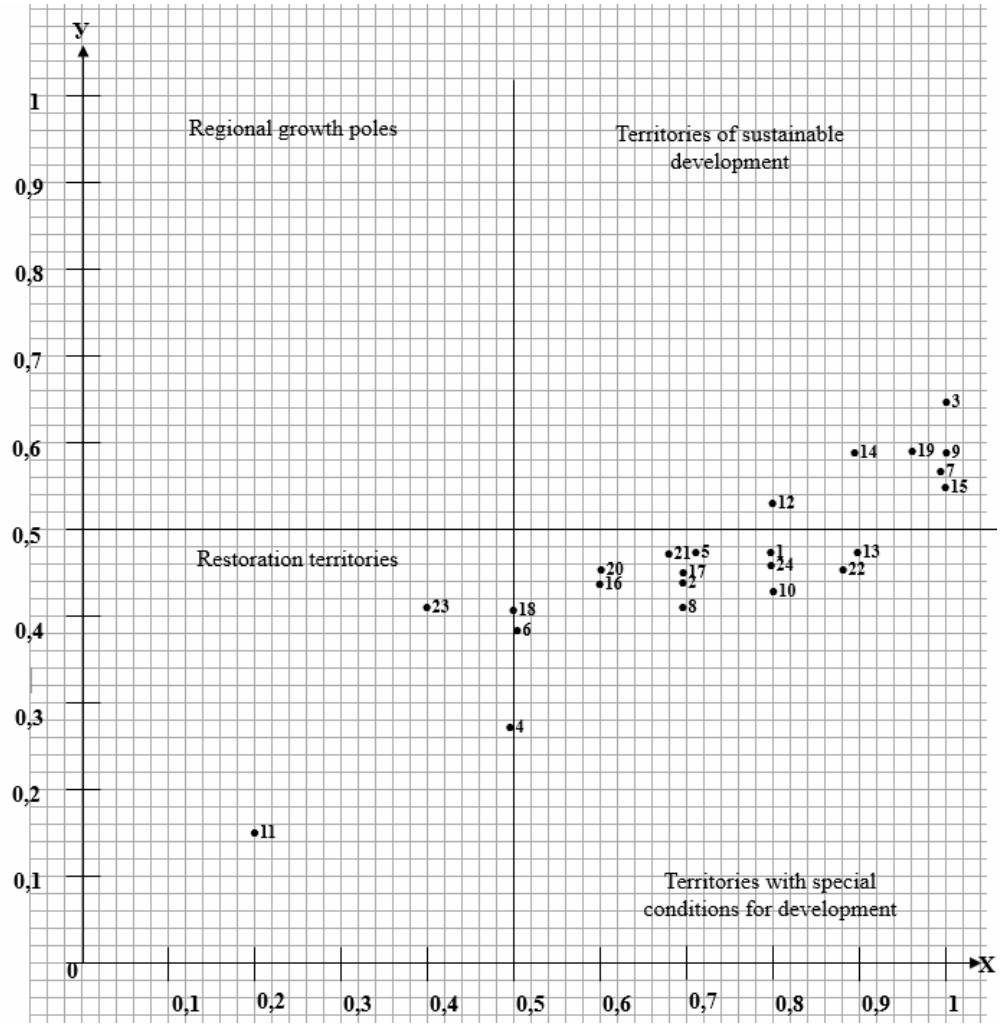
determine the position of a point on the plane describing the correspondence of a region to a specific functional type stipulated in the Law of Ukraine No. 5323 dated 09.07.2022 "On amendments to certain legislative acts of Ukraine regarding the principles of the state regional policy and the policy of restoration of regions and territories".

It is proposed to use the value of the gross regional product (GRP) indicator per 1 person as the "X-axis – economic status", and for the "Y-axis – social status", use a set of indicators that would be placed on one axis. The author substantiates the expediency of the author's vision for GRP per 1 person (X-axis) and a set of indicators, such as the population by region, thousand people, employment of the population in the regional context aged 15-70 years, thousand people, disposable income of the population per person, UAH, expenses of the population per person, UAH (Y-axis).

Based on statistical collections, initial data are generated for the distribution of regions by their functional purpose. The natural values of indicators, both by abscissa and ordinate, are modified to relative values by dividing the value of the indicator by the region by its value for the country as a whole. Based on the obtained relative values, in order to further compare them, the average value for each indicator and region was calculated.

Initial data were generated for the distribution of regions of Ukraine by their functional type and grouped by restoration territories; territories with special conditions for development; territories of sustainable development and regional growth poles.

Prospects for further exploration in this direction. The next stage of research is aimed at testing the assessment of territories with special development conditions directly. Scientific and practical recommendations on the distribution of territories by their functional type and assessment of the socio-economic effectiveness of the post-war reconstruction of the country will be sent to the Ministry of Community and Territory development of Ukraine.



Results of dividing regions by their functional type

Source: calculated by the author

REFERENCES

1. Updated Ukraine Recovery and Reconstruction Needs Assessment (2023). *www.worldbank.org*. Retrieved from https://www.worldbank.org/en/news/press-release/2023/03/23/updated-ukraine-recovery-and-reconstruction-needs-assessment [in English].

2. Plan vidnovlennia Ukrainy (2023). Viziia Vidnovlennia Ukrainy: "Sylna yevropeiska kraina – mahnit dlia inozemnykh investytsii" [Vision of the Restoration of Ukraine: "A strong European country is a magnet for foreign investments"]. *recovery.gov.ua*. Retrieved from https://recovery.gov.ua/ [in Ukrainian].

3. Zablodska, I., Rohozian,Yu., Khandii, O., Sieriebriak. S., & Litvinova, I. (2023). European experience in the construction of priority development territories after an armed conflict: a trajectory of sustainability. *Problemy Ekorozwoju*, *18(1),* 51-60. DOI: 10.35784/pe.2023.1.05 [in English].

4. Boichenko, E., & Martynovych, N. (2023). Investment attractiveness of Territories in the context of restoring and stimulating the development of the post-war economy of Ukraine. Proceedings of the *Modern trends in the development of financial and innovation-investment processes in Ukraine*. (Ukraine, Vinnytsia, March 2-3, 2023), Vinnytsia: VNTU, 211-213 [in English].

5. Hrechana, S. I. (2022). Sotsialno-ekonomichna efektyvnist rozvytku hromad i rehioniv: pobudova systemy pokaznykiv v umovakh povoiennoho vidnovlennia [Socio-economic efficiency of the development of communities and regions: construction of a system of indicators in the conditions of post-war recovery]. *Ekonomika ta pravo – Economics and Law, 4,* 43-56. DOI: https://doi.org/10.15407/econlaw.2022.04.043 [in Ukrainian].

6. Podvalna, H., Bochko, O., Kuziak, V., & Stasyuk, N. (2020). Economic efficiency of road transport vehicles of fleet and its impact on commercial indices and production plan of a

motor transport enterprise. Proceedings of the international conference on *Innovation, modern applied science & environmental studies*, 234. DOI:10.1051/e3sconf/202123400056 [in English].

7. Martynovych, N., Yemchenko, I., & Kulinich, T. (2023). From the territory of recovery to sustainable development: A methodological concept of effective socio-economic development of Ukraine after the war. *Problemy Ekorozwoju*, *18 (2),* 69-79 [in English].

8. Zakon Ukrainy Pro vnesennia zmin do deiakykh zakonodavchykh aktiv Ukrainy shchodo zasad derzhavnoi rehionalnoi polityky ta polityky vidnovlennia rehioniv i terytorii pryiniatyi 09.07.2022 № 5323 ["Law of Ukraine on Amendments to Some Legislative Acts of Ukraine Regarding the Basics of the State Regional Policy and the Policy for the Restoration of Regions and Territories"]. (2022). *ips.ligazakon.net.* Retrieved from https://ips.ligazakon.net/document/JI04786G?an=143 [in Ukrainian].

9. Sait Derzhavnoho komitetu statystyky Ukrainy ["Site of State Statistics Service of Ukraine"]. *ukrstat.gov.ua*. Retrieved from https://ukrstat.gov.ua/norm_doc/2023/106/106.pdf [in Ukrainian].

10. Amartya, S., Fitoussi, J. P., & Stiglitz, J. (n.d.). Mismeasuring Our Lives: Why GDP Doesn't Add Up. *The New Press. wcfia.harvard.edu*. Retrieved from https://wcfia.harvard.edu/publications/mismeasuring-our-lives-why-gdp-doesnt-add [in English].

11. Kenneth, L. Kraemer, Linden G. & Dedrick J. (2011). Capturing Value in Global Networks: Apple's iPad and iPhone'. *Personal Computing Industry Center*, *mronline.org.* Retrieved from https://mronline.org/2019/09/26/notebook-2-the-rate-of-exploitation/ [in English].

12. Nikitina, I. M. (Eds.). (2020). Statystychnyi zbirnyk: valovyi rehionalnyi produkt za 2020 rik. *[Gross regional product for 2020].* Kyiv: Derzhkomstat Ukrainy [in Ukrainian].

13. Verner, I. Ye. (Eds.). (2017). Statystychnyi zbirnyk: rehiony Ukrainy Ch. 1. *[Regions of Ukraine Part 1].* Kyiv: Derzhkomstat Ukrainy [in Ukrainian].

14. Verner, I. Ye. (Eds.). (2019). Statystychnyi zbirnyk: rehiony Ukrainy Ch. 1. za 2018-2019 rik. *[Regions of Ukraine Part 1. for 2018-2019].* Kyiv: Derzhkomstat Ukrainy [in Ukrainian].

15. Verner, I. Ye. (Eds.). (2021). Statystychnyi zbirnyk: rehiony Ukrainy Ch. 1. za 2020-2021 rik. *[Regions of Ukraine Part 1 for 2020-2021].* Kyiv: Derzhkomstat Ukrainy [in Ukrainian].

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РОЗПОДІЛ РЕГІОНІВ ЗА ЇХ ФУНКЦІОНАЛЬНИМ ТИПОМ, ЯК ЕТАП ОЦІНЮВАННЯ СОЦІАЛЬНО-ЕКОНОМІЧНОЇ ЕФЕКТИВНОСТІ ПОВОЄННОЇ РОЗБУДОВИ КРАЇНИ

Мартинович Н.О.

Війна триває, але вже сьогодні стає зрозумілим, що потрібне завчасне підготовки до відновлення України після руйнувань, спричинених російською агресією. Збитки та втрати нанесені країною агресором українським регіонам складають мільярди доларів, які вже отримуються та будуть надходити у вигляді міжнародної технічної допомоги, репарацій, інвестицій тощо. Ці кошти будуть розподілені по регіонах, з огляду на їх зруйнованість, за відповідними напрямами (пріоритетами). Даний процес потребує чіткої аргументації з боку уряду та органів місцевої влади цільової спрямованості як коштів, так і пріоритетів, що характеризують ефективність. З огляду на що виникає необхідність у пошуку дієвого інструментарію оцінки соціально-економічної ефективності повоєнної розбудови. Таким чином, мета статті полягає у розробці методичного забезпечення розподілу територій за їх функціональним призначенням та практичної реалізації оцінювання соціально-економічної ефективності повоєнної відбудови країни. Концептуальні основи поданих у статті пропозицій ґрунтуються на чинному законодавстві, загально наукових методах пізнання, теоретичної й емпіричної спрямованості. На засаді матричного методу побудовано систему координат, розподілу регіонів України за їх функціональним типом. Обґрунтовано обрання окремих показників в якості осей абсциси та ординати. Шляхом переведення натуральних показників у відносні, сформовано вихідні дані для розподілу регіонів за їх функціональним типом. З метою подальшого співставлення даних, здійснено розрахунок середнього значення по кожному показнику і регіону в динаміці за п'ять років. Запропонований підхід дозволяє предметно підійти до визначення пріоритетів повоєнної розбудови, з огляду на типологізацію територій та їх відповідності базовим умовам й можливостям розвитку, а також ступенем руйнації в наслідок бойових дій.

Ключові слова: соціально-економічна ефективність, регіон, регіональний розвиток, функціональний тип територій, повоєнна відбудова країни.

Distribution of regions by their functional type, as a stage for assessing the socio-economic efficiency of the country's post-war development

DISTRIBUTION OF REGIONS BY THEIR FUNCTIONAL TYPE, AS A STAGE FOR ASSESSING THE SOCIO-ECONOMIC EFFICIENCY OF THE COUNTRY'S POST-WAR DEVELOPMENT

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The war is still raging, but it is already clear that advance planning is needed to ensure survival and prepare for Ukraine's recovery from the destruction caused by Russian aggression. The damage and losses caused by the aggressor to Ukrainian regions amount to billions of dollars, which are already being received and will continue to be received in the form of international technical assistance, reparations, investments, etc. These funds will be distributed across the regions, taking into account the extent of their destruction, in the relevant areas (priorities). This process requires clear arguments from the government and local authorities on the targeting of both funds and priorities that characterise effectiveness. Therefore, there is a need to find effective tools for assessing the socio-economic efficiency of post-war reconstruction. Thus, the purpose of the article is to develop a methodological support for the distribution of territories according to their functional purpose and practical implementation of the assessment of socio-economic efficiency of post-war reconstruction of the country. The conceptual foundations of the proposals presented in the article are based on current legislation, general scientific methods of cognition, theoretical and empirical orientation. On the basis of the matrix method, a system of coordinates is built to distribute the regions of Ukraine by their functional type. The choice of individual indicators as the abscissa and ordinate axes is substantiated. By converting natural indicators into relative ones, the initial data for the distribution of regions by their functional type are formed. For the purpose of further comparison of data, the average value for each indicator and region in the dynamics for five years is calculated. The proposed approach allows for a substantive approach to determining the priorities of post-war development, taking into account the typology of territories and their compliance with the basic conditions and opportunities for development, as well as the degree of destruction as a result of hostilities.

Keywords: socio-economic efficiency, region, regional development, functional type of territories, post-war reconstruction of the country.

REFERENCES

1. Updated Ukraine Recovery and Reconstruction Needs Assessment (2023). *www.worldbank.org*. Retrieved from https://www.worldbank.org/en/news/press-release/2023/03/23/updated-ukraine-recovery-and-reconstruction-needs-assessment [in English].

2. Plan vidnovlennia Ukrainy (2023). Viziia Vidnovlennia Ukrainy: "Sylna yevropeiska kraina – mahnit dlia inozemnykh investytsii" [Vision of the Restoration of Ukraine: "A strong European country is a magnet for foreign investments"]. *recovery.gov.ua*. Retrieved from https://recovery.gov.ua/ [in Ukrainian].

3. Zablodska, I., Rohozian,Yu., Khandii, O., Sieriebriak. S., & Litvinova, I. (2023). European experience in the construction of priority development territories after an armed conflict: a trajectory of sustainability. *Problemy Ekorozwoju*, *18(1),* 51-60. DOI: 10.35784/pe.2023.1.05 [in English].

4. Boichenko, E., & Martynovych, N. (2023). Investment attractiveness of Territories in the context of restoring and stimulating the development of the post-war economy of Ukraine. Proceedings of the *Modern trends in the development of financial and innovation-investment processes in Ukraine*. (Ukraine, Vinnytsia, March 2-3, 2023), Vinnytsia: VNTU, 211-213 [in English].

5. Hrechana, S. I. (2022). Sotsialno-ekonomichna efektyvnist rozvytku hromad i rehioniv: pobudova systemy pokaznykiv v umovakh povoiennoho vidnovlennia [Socio-economic efficiency of the development of communities and regions: construction of a system of indicators in the conditions of post-war recovery]. *Ekonomika ta pravo – Economics and Law, 4,* 43-56. DOI: https://doi.org/10.15407/econlaw.2022.04.043 [in Ukrainian].

6. Podvalna, H., Bochko, O., Kuziak, V., & Stasyuk, N. (2020). Economic efficiency of road transport vehicles of fleet and its impact on commercial indices and production plan of a motor transport enterprise. Proceedings of the international conference on *Innovation, modern applied science & environmental studies*, 234. DOI:10.1051/e3sconf/202123400056 [in English].

7. Martynovych, N., Yemchenko, I., & Kulinich, T. (2023). From the territory of recovery to sustainable development: A methodological concept of effective socio-economic development of Ukraine after the war. *Problemy Ekorozwoju*, *18 (2),* 69-79 [in English].

8. Zakon Ukrainy Pro vnesennia zmin do deiakykh zakonodavchykh aktiv Ukrainy shchodo zasad derzhavnoi rehionalnoi polityky ta polityky vidnovlennia rehioniv i terytorii pryiniatyi 09.07.2022 № 5323 ["Law of Ukraine on Amendments to Some Legislative Acts of Ukraine Regarding the Basics of the State Regional Policy and the Policy for the Restoration of Regions and Territories"]. (2022). *ips.ligazakon.net*. Retrieved from https://ips.ligazakon.net/document/JI04786G?an=143 [in Ukrainian].

9. Sait Derzhavnoho komitetu statystyky Ukrainy ["Site of State Statistics Service of Ukraine"]. *ukrstat.gov.ua*. Retrieved from https://ukrstat.gov.ua/norm_doc/2023/106/106.pdf [in Ukrainian].

10. Amartya, S., Fitoussi, J. P., & Stiglitz, J. (n.d.). Mismeasuring Our Lives: Why GDP Doesn't Add Up. *The New Press. wcfia.harvard.edu*. Retrieved from https://wcfia.harvard.edu/publications/mismeasuring-our-lives-why-gdp-doesnt-add [in English].

11. Kenneth, L. Kraemer, Linden G. & Dedrick J. (2011). Capturing Value in Global Networks: Apple's iPad and iPhone'. *Personal Computing Industry Center*, *mronline.org*. Retrieved from https://mronline.org/2019/09/26/notebook-2-the-rate-of-exploitation/ [in English].

12. Nikitina, I. M. (Eds.). (2020). Statystychnyi zbirnyk: valovyi rehionalnyi produkt za 2020 rik. *[Gross regional product for 2020]*. Kyiv: Derzhkomstat Ukrainy [in Ukrainian].

13. Verner, I. Ye. (Eds.). (2017). Statystychnyi zbirnyk: rehiony Ukrainy Ch. 1. *[Regions of Ukraine Part 1]*. Kyiv: Derzhkomstat Ukrainy [in Ukrainian].

14. Verner, I. Ye. (Eds.). (2019). Statystychnyi zbirnyk: rehiony Ukrainy Ch. 1. za 2018-2019 rik. *[Regions of Ukraine Part 1. for 2018-2019]*. Kyiv: Derzhkomstat Ukrainy [in Ukrainian].

15. Verner, I. Ye. (Eds.). (2021). Statystychnyi zbirnyk: rehiony Ukrainy Ch. 1. za 2020-2021 rik. *[Regions of Ukraine Part 1 for 2020-2021]*. Kyiv: Derzhkomstat Ukrainy [in Ukrainian].