AGRARIAN-CONSTRUCTION CLUSTERS OF POST-COVID RURAL ONTOGENESIS: ECONOMIC-RESOURCE REFLECTION AND REGULATORY-STIMULATING SUSTAINABLE DEVELOPMENT PRIORITIZATION

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Abstract. *The article formulates the methodological principles, develops and tests the methods of evaluation, at the macro- and meso-economic levels, the appropriateness of state support for construction initiatives of enterprises of the agrarian-construction cluster based on ranking and biological classification of respective infrastructure projects, which –the methods – differ from the existing ones by involving an additional criterial plurality in terms of the location of its implementation the availability of the economic-natural reserve, an impact of natural-anthropogenic factors with subsequent ranking of criteria by strength in order to make the respective decision at the territorial community's level. Moreover, a system of criteria includes both traditional (budgetary-financial and socio-economic) and ecological-infrastructural criteria, which are determinative in the algorithm of making a decision on state support of the implementation of village-saving projects by agrarian-construction clusters subject to the need for rural renovation and involving agricultural lands in a market model of their turnover. This has also allowed to extend an existing construct of catalyzation of mechanisms of state support (assistance) for agrarian-construction clusters, in general, and rural construction in the countryside, in particular, with national economic, social, food, construction and financial-budgetary priorities and capabilities of a specific rural territorial location incl. the same for further development of social dialogue institutions involving a public-private partnership.*

Keywords: *agrarian-construction clusters, economic-natural reserve, rural areas, project, state support (assistance), rural renovation, state catalyst.*

JEL Classification: C40, L74, Q11,

Formulas: 9; fig.: 7; tabl.: 3; bibl. 44

Introduction. In the world, much attention is paid to the issues of improving the tools of state regulation of activities of agrarian-construction clusters associated with the use of natural resources and their economic activities being carried out at various locations. Without dwelling separately on the world practice of the formation of the system of regulation, in general, and of state support, in particular, widely highlighted in the scientific literature, we will note that back in the end of the 1960s – at the beginning of the 1970s, the USA have first started to create a new organizational-financial mechanism of state regulation having built it based on recommendations of the modern theory of management and having transferred, to a large extent, to the programs financing according to goals set. Concentrating on the priority directions of sustainable development has enabled, within relatively short terms, to solve the acutest problems incl. ecological problems [8; 23; 27]. An issue of carrying out state support for ecologically-economically-oriented project approaches of agrarian-construction clusters and their interaction are topical for Ukraine, which economy is distinct in

resource-raw material orientation and high natural resource intensity [49; 230]. Establishing such system in Ukraine refers to the beginning of the 1990s only, when many developed countries have already had considerable experience and serious achievements in this sphere. In this study and subject to actualizing a process of sustainable rural development, a special attention is suggested to be paid to comprehensive evaluation of the economic-resource reserve of ecologically-economically-oriented investment projects to improve the tools of state support of agrarian-construction clusters and justify an implementation location for such projects as an integral part of their management processes.

Literature Review. Problems of reforming state support (assistance), its sociologization and construction-economic orientation under the conditions of globalization, regional integration and differently vectored regulation of world food markets, formation of agro-industrial infrastructure in the countryside subject to sustainability of development of economic systems are covered in scientific papers by: M. Kropyvka, D. Krysanov, P. Kulikov, Yu. Lupenko, V. Mesel-Veseliak, V. Moldovan, H. Obikhod, I. Prokopa, S. Stetsenko, N. Ushenko, M. Khvesyk, O. Shkuratov, I. Shtuler; researchers of authoritative world institutions such as the Food and Agriculture Organization of the United Nations (FAO), U.S. Department of Agriculture, – A. Atkinson, D. Vincent, T. Josling, T. Johnson, C. Zulauf, J. Kirkpatrick, S. v. Kramon-Traubadel, Z. Lerman, S. Robinson, L. Stoeckel, L. Shtrive et al.

Aims. The purpose of research is based on studying and justifying theoretical-methodological approaches to and practical recommendations on the direction and mechanisms of state regulation (stimulation) of the functioning of agrarian-construction clusters in rural areas under the post-COVID conditions.

Methods. The article uses a set of general scientific and special methods of scientific knowledge, namely: a logical-semantic analysis – to deepen studying the strength of the relationship of a scale of the rural and construction economies with transformational processes in them; an analysis and synthesis – to evaluate the dynamics, structure and efficiency of institutional-spatial changes in the agro-sector of the economy of Ukraine as well as set factors impacting orientation of institutional-economic leverages of the functioning and development of agrarian-construction clusters; statistical comparisons – to study the efficiency of specific tools of the mechanism of state support and selection of ecologically-economically-oriented investment projects of agrarian-construction clusters; economic-statistical modelling - to establish a trend of the indicative-criterial plurality of the efficiency of development of the agro-sector resulted from a regulatory impact and their relationship through an innovative approach to a combination of multi-mechanisms of state support of agrarian-construction clusters; an abstract-logical method – for theoretical generalizations and formation of conclusions.

Result. It is worth noting that natural specifics of rural territorial locations and their economic-resource potential available is of great importance [14; 39] for the formation of ecologically-economically-oriented project approaches to improve the tools of state support for agrarian-construction clusters. A project decision classification matrix is offered, depending on territorial specifics of their

implementation location (Tbl. 1) and continuing to have an impact on making a decision on state support for implementation of ecologically-economically-oriented projects of agrarian-construction clusters subject to their economic-resource reserve.

Table 1. Rural territorial location classification for formation of ecologically-economically oriented project approaches to improvement of tools of state support for agrarian-construction clusters

Economic-resource reserve of rural territorial location	*Natural-anthropogenic factors*	
It is possible to implement the poly-projects within the economic-resource reserve of the respective location. Creation of conditions of renovation projects of agro-industrial construction in rural areas	*Development of economically efficient production, with its vectorization on energy- and resource-saving subject to introduction of best technologies available*	It is possible to implement project decisions, which adverse impact on the environment can be neutralized by applying ecologically-safe production or by means of compensation
Development of energy-safe types of agro-activities with the use of local natural resources for energy- and resource-saving subject to implementation of best technologies available	It is possible to implement the projects not associated with agro-industrial and social construction in the countryside but providing ecological improvement of the environment	*Implementation of ecologically-economically-oriented projects is not recommended for state support. Post-crisis, post-COVID, renovation and rehabilitation projects are supported*
It is possible to implement the projects aimed at development of ecologically-economically-oriented projects with use of an economic-resource reserve of a certain location	*It is possible to implement the projects providing ecological improvement of rural areas*	Implementation of stabilizing rural development projects

Source: compiled by authors

An algorithm of the evaluation and selection of ecologically-economically oriented investment projects for state support of the functioning of agrarian-construction clusters subject to an economic-resource of a certain location provides the following steps [10; 26]: analyzing available investment ecologically-economically oriented projects according to the information presented in the public domain; developing a system of criteria, according to which such projects will be evaluated; conducting a ranking of criteria by their strength; making the evaluation of such projects by each of selected criteria; calculating a final rating and selecting economically-ecologically-rationally-oriented investment projects. A system of criteria covers both traditional criteria of financial, budgetary and social efficiency, and also economic-ecological criteria – Fig. 1 [11; 18; 29–30].

Financial efficiency of the project. As the criteria of the financial efficiency of the project, its net present value, internal rate of return and discounted payback period are selected [7; 21; 35]. A need for a simultaneous application of several criteria is caused by the fact that various criteria of the financial efficiency may give priority to different projects; a simultaneous application of criteria enables to evaluate a project more objectively.

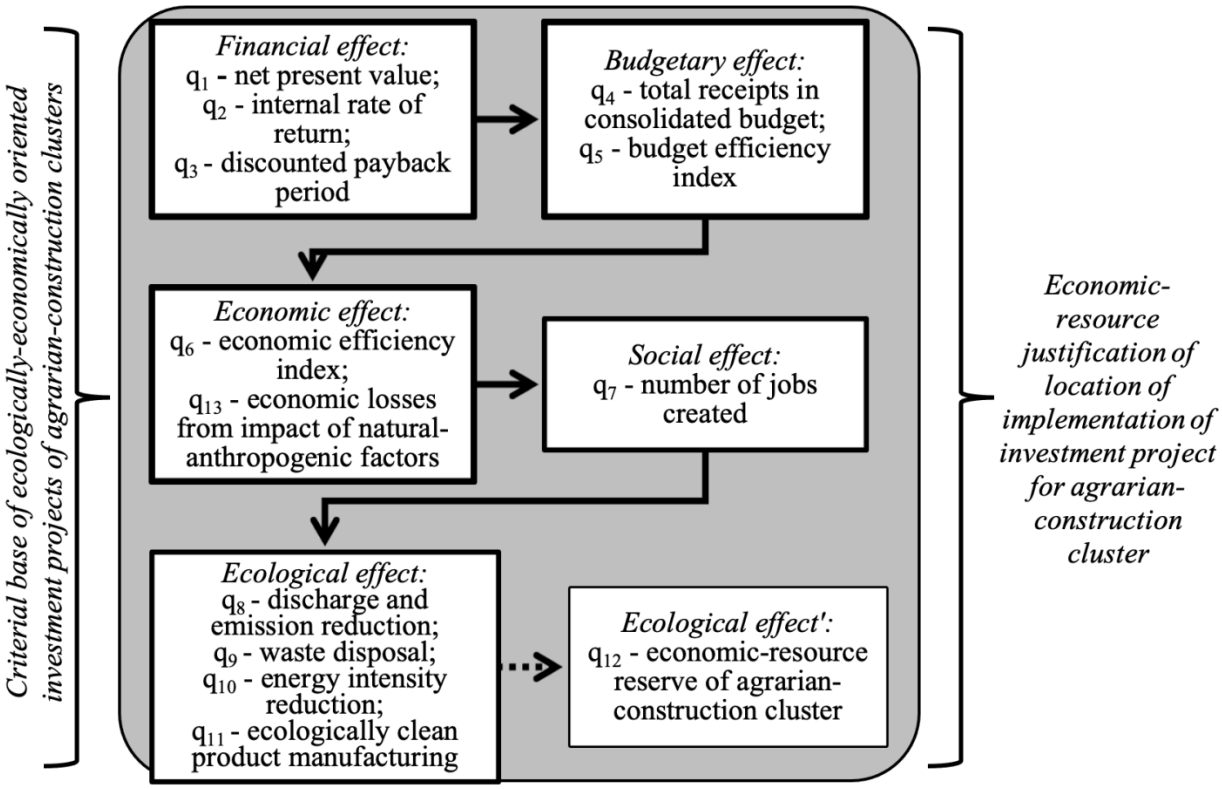

Figure 1. Criterial components of comprehensive evaluation of economic-resource reserve of investment projects for state support of agrarian-construction clusters

Source: compiled by the author according to [11; 18; 29–30]

The net present value (*NPV*) of the ecologically-economically-oriented investment project of agrarian-construction clusters is a sum of reduced-to-the-initial-point forecasted free project cash flows in the period of (*0...T*) and th terminal project value at the point of time *T*. Is calculated by the formula:

$$NPV = CF_0 + \sum_{t=1}^{n} \frac{CF_t}{(1+r)^t} \quad (1)$$

where CF_0 – zero period cash flow (initial investments); CF_t – period cash flow t; n – term of project (periods); r – discount rate.

The internal rate of return (*IRR*) of the ecologically-economically-oriented investment project of the agrarian-construction cluster is a discount rate, at which, with free cash flows of the investment project in the period of (0...*T*) and the terminal value of the project at the point of time *T,* the net present value of the project is equal to zero. For calculating, the formula is used:

$$NPV\ (IRR) = 0 \leftrightarrow CF_0 + \sum_{t=1}^{n} \frac{CF_t}{(1+IRR)^t} \quad (2)$$

It is provided that, with discount rate values exceeding the *IRR*, the net present value of the project is negative, and with values lesser than the *IRR*, it is positive. A discounted payback period (*DPP*) of the ecologically-economically-oriented

investment project of agrarian-construction clusters is such a period, for which a sum of discounted free cash flows of the investment project is equal to "0" (formula 3):

$$NPV\ (DPP) = 0\ \leftrightarrow CF_0 + \sum_{t=1}^{DPP} \frac{CF_t}{(1+r)^t} = 0 \qquad (3)$$

If a sum of discounted forecasted amounts of free cash flows of the project for the period *T* is negative, then the project payback period is not calculated, the value of the criterion is accepted as being "more or equal to 10 years, or not paid back".

Budgetary efficiency of the project. As the criteria of the budgetary efficiency of the ecologically-economically-oriented investment project of the agrarian-construction cluster, the net discounted revenue of the budget is selected. The net current value of the budget is calculated proceeding from the budget expenditures and revenues by a formula:

$$NPV_b = \frac{R_b}{(1+\kappa)^n} - \frac{\mathrm{P}}{(1+\kappa)^n} \qquad (4)$$

where R_b – budget revenues received from the project implementation; P – budget expenditures undertaken for the project implementation; κ – discount rate; n – period.

Economic efficiency of the project [9; 24]. By economic efficiency index of the ecologically-economically-oriented investment project of the agrarian-construction cluster is meant the indicator, from which it becomes clear whether a specific investment project has an impact on the gross regional product. This is a portion of the amount of the latter, which can be provided by implementing an ecologically-economically-oriented investment project. It is set as a ratio of the amount of the value added generated by the investment project in the prices of the previous year and the volume of the gross regional product of the previous year in the current prices under the conditions of the refusal to implement a project.

Social efficiency of the project [22; 36]. To evaluate the social efficiency of the ecologically-economically-oriented investment project of the agrarian-construction cluster, the authors offer a criterion characterizing the number of jobs in the agro-sector created at a certain rural location as a result of implementing an ecologically-economically-oriented investment project.

Ecological efficiency of the project [16; 37; 40]. Fig.2 presents the information needed to calculate the indicators of the ecological efficiency from the implementation of ecologically-economically-oriented projects. Evaluation of the ecological efficiency is conducted using a score method subject to opinions of competent experts.

A special place is occupied here by the "Economic-Resource Reserve of the Agrarian-Construction Cluster" indicator, which constitutes a ratio between an assimilating potential of a certain rural location and an actual anthropogenic load on the environment and shows additional opportunities for socioeconomic development in this area provided that an actual environmental load level is lower than an allowable impact level.

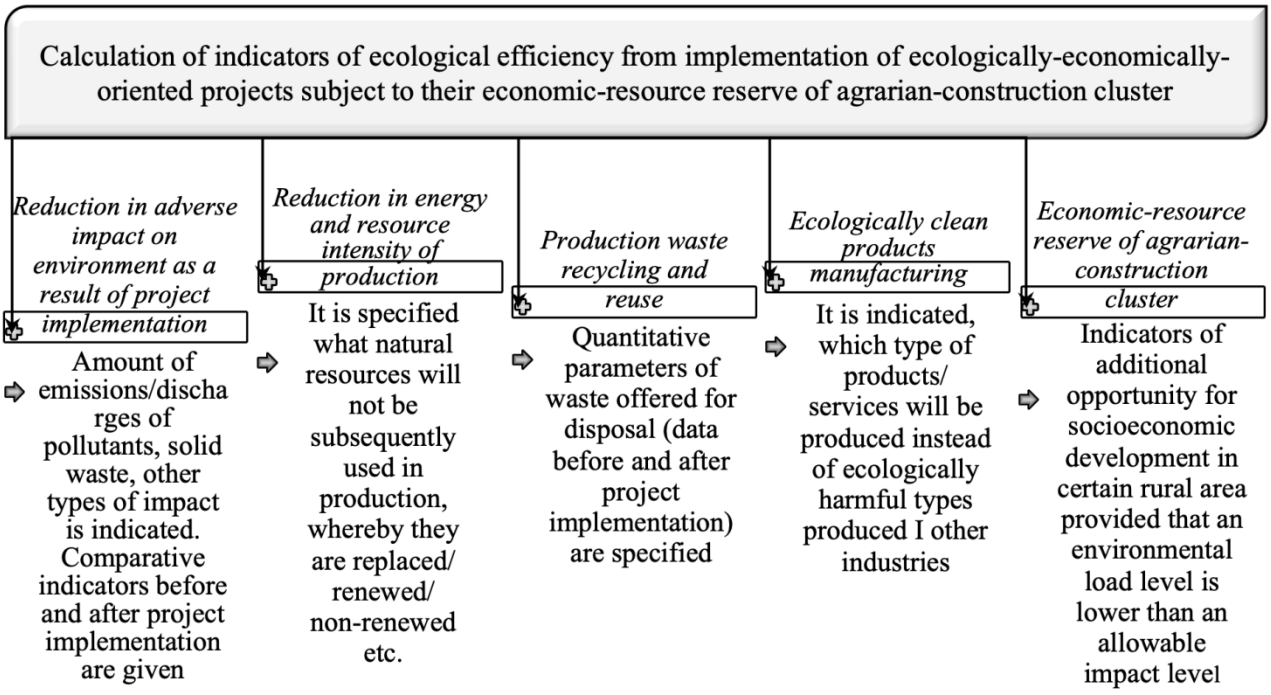

Figure 2. Calculation of indicators of ecological efficiency from implementation of ecologically-economically-oriented projects of agrarian-construction clusters subject to their economic-resource reserve

Source: complied by authors

For calculating, the formula is offered [4]:

$$ERRACC = \frac{AP}{AL} = \frac{\sum_{i=1}^{3} A_i X_i t_i}{\sum_{i=1}^{3} N_i k_i} \quad (5)$$

where ERRACC – economic-resource reserve of the agrarian-construction cluster, pcs.; AP – assimilating potential of a certain rural location, cond. t / year; AL – anthropogenic load on a certain rural location, cond. t /year; A_i *– evaluation of ecological-resource capacity of i natural environment, t / year;* X_i *– variation coefficient for natural fluctuations of major environmental substance content, t / year;* t_i *– pollutant mass to conditional tons conversion coefficient, cond. t / year;* N_i *– evaluation of i anthropogenic load on a certain rural location, t / year;* k_i *– anthropogenic load to conditional tons conversion coefficients (coefficient for ecological-economic harm of substance), cond. t / year.*

Evaluations of the efficiency of the implementation of the ecologically-economically-oriented investment project of the agrarian-construction cluster include a large number of criteria (Fig. 1), different in impact character and intensity.

To evaluate the final efficiency, it is needed to regard to both a separate impact of each factor and the same of certain groups of factors or all factors together. One of the options to solve a task is applying a systems approach providing a multi-criteria project evaluation [33]. Selecting an ecologically-economically-oriented investment project of the agrarian-construction cluster is an unstructured task for decision-making and is distinctive in that it is impossible to identify a mathematical relationship between parameters. In this case, we know the criteria and alternatives only. Multi-criteria methods meet the following requirements [15]: input information universality and processing, selection possibility by a lot of criteria, accounting for uncertainty. Relationships and ratios of projects offered for the selection are

established, by selected criteria, as a result of their pairwise comparison, criteria significance setting (by a utility function).

According to [1; 25], general setting a task consists in the following: given sets of projects $A = \{a_i\}_{i=1}^{n}$ and sets of criteria for their selection $Q = \{q_j\}_{j=1}^{m}$. Experts give grades x_{ij} (in scores, in unit fractions, within fuzzy logic) by each criterion under each project a_i. The result is the formation of a decision matrix (Fig. 3).

	a_1	a_2	…	a_n
q_1	x_{11}	x_{12}	…	x_{1n}
q_2	x_{21}	x_{22}	…	x_{2n}
…	…	…	…	…
q_m	x_{m1}	x_{m2}	…	x_{mn}

Figure 3. Decision matrix for selection of ecologically-economically-oriented investment project of agrarian-construction cluster subject to their economic-resource reserve

Source: calculated and compiled by authors.

Strength of criteria, one against the other, is established by a pairwise comparison procedure [5], which results are presented in Tabl. 2. The following relative significance scale is offered: from 1 – equal significance, 3 – medium degree of advantage, 5 – moderately strong advantage, 7 – very significant advantage, up to 9 – absolute advantage. To establish a significance of criteria, the so called pairwise comparison matrixes are formed, where a number in the interval from 1 to 9 is assigned to each criterion. Weights of criteria as results of expert evaluations show what fold a project is weightier than the other by a specified criterion.

Table 2. Evaluation of strength of criteria of ecologically-economically-oriented investment project of agrarian-construction cluster subject to their economic-resource reserve

-//-	q_1	q_2	q_3	q_4	q_5	q_6	q_7	q_8	q_9	q_{10}	q_{11}	q_{12}	q_{13}	Priority vector components	Criterion strength
q_1	***1***	5	5	5	5	7	7	0,3	0,3	0,3	0,3	0,2	0,2	1,8693	0,11064
q_2	0,2	***1***	2	2	2	2	2	0,3	0,3	0,3	0,3	0,2	0,2	0,97412	0,050037
q_3	0,2	0,5	***1***	2	2	2	2	0,3	0,3	0,3	0,3	0,2	0,2	0,87558	0,11064
q_4	0,2	0,5	0,5	***1***	2	2	2	0,3	0,3	0,3	0,3	0,2	0,2	0,78702	0,0407
q_5	0,2	0,5	0,5	0,5	***1***	2	2	0,3	0,3	0,3	0,3	0,2	0,2	0,70741	0,03658
q_6	0,1	0,5	0,5	0,5	0,5	***1***	2	0,3	0,3	0,3	0,3	0,2	0,2	0,61961	0,03204
q_7	0,1	0,5	0,5	0,5	0,5	0,5	***1***	0,3	0,3	0,3	0,3	0,2	0,2	0,55694	0,0288
q_8	3	3	3	3	3	3	3	***1***	0,3	0,3	0,3	0,3	0,3	1,66039	0,04528
q_9	3	3	3	3	3	3	3	3	***1***	0,3	0,3	0,3	0,3	1,96613	0,08586
q_{10}	3	3	3	3	3	3	3	3	3	***1***	0,3	0,3	0,3	2,13951	0,09667
q_{11}	3	3	3	3	3	3	3	3	3	3	*1*	0,3	0,3	2,13951	0,10167
q_{12}	5	5	5	5	5	5	5	3	3	3	3	***1***	0,3	2,8169	0,14567
q_{13}	3	3	3	3	3	3	5	3	3	3	3	3	***1***	2,225526	0,11507
-//-														19,6677	-//-

Source: compiled by authors

Investment projects from a formed list undergo a ranking procedure. At the first stage, the significance of the best projects by each criterion is established. A decision-making process scheme within this state is an ordinal procedure of expert's filling in pairwise comparison matrixes, which lines and columns are named after the projects' names. Then, for each project evaluation vector, a strength of projects is calculated, which represents the respective line of the decision matrix.

Each evaluation vector $\overline{x_i} = (x_{1i}, x_{2i}, \dots x_{mi})$ is established by a utility formula according to the formula:

$$U_i = \sum_{j=1}^{m} x_{ij} \times w_j \qquad (6)$$

The higher the value of the utility function is the better the project is. When making calculations of utility values, criteria strengths w_j [1; 25] may be taken into account.

The analytical hierarchy process developed by T. Saaty [31] is a variety of a factor model taking the strength of the economic-resource reserve into account. The analytical hierarchy process, from the methodological perspective, is a kind of a basis for solving tasks of the selection of alternatives by means of their multi-criteria ranking [34].

The process provides decomposing a problem and processing assertions of a person making decisions. A hierarchic decision-making model contains three levels: targets, criteria (factors) evaluated by their significance for the target, and alternatives evaluated by preference in respect of each criterion.

The result of calculations by this method is the ranking of all alternatives by all hierarchy criteria. The six multi-criteria selection models are divided: adaptive scheme – 1a, 2a, 3a; multiplicative scheme – 1b, 2b, 3b: "spatial pairwise comparison → weighted sum formation → analytical hierarchy process" (Fig. 4).

For each alternative option a_i, the evaluation x_{ij} is conducted by each of selected criteria $Q = \{q_j\}_{j=1}^{m}$. The evaluation is expertly conducted. Thereafter, through a pairwise comparison procedure, the strengths of criteria are established by a pairwise comparison of each alternative by each criterion. The next step is to convolve the vectors of evaluations to scalar evaluations of utility functions. Evaluations x_{ij} are given in scores (from 0 to 100).

To solve tasks within the analytical hierarchy process, pairwise comparison matrixes $A = (a_{ij})$ must be formed. To establish elements of these matrixes, it is needed to measure expert advantages in a certain ratio scale. The authors, subject to the Saaty's process [43], offered a special evaluation scale consisting of five major and four intermediary assertions (Fig. 5). To compare factors, it is needed to form a compatibility matrix and fill in it with values from a ratio scale. When the factor *i*, in comparing with *j* takes one of the above values, then factor *j*, compared with *i*, takes an opposite value ($\frac{1}{\text{value}}$).

I. Calculation of strengths of criteria by pairwise comparison according to pairwise comparison matrixes of decision alternatives under criterion q_j	*Ia. Establishment of strengths of criteria as an adaptive convolution:* $\frac{Sc_1}{y_{ij}} = 1$, if $a_i > a_j$, $y_{ij} = 0$, if $a_i < a_j$ and $y_{ij} = 0,5$, if $a_i \approx a_j$, $w_i' = \frac{w_i}{\sum_{k=1}^{n} w_k}$, where $w_i = \sum_{j=1}^{n} y_{ij}$ (7)
	1b. Establishment of strengths of criteria as a multiplicative convolution: $\frac{Sc_1}{y_{ij}} = 1$, if a_i equivalent to a_j, $y_{ij} = 3$, if a_i more significant a_j, $y_{ij} = 5$, if a_i substantially significant a_j, $y_{ij} = 7$, if a_i absolutely significant a_j, $y_{ij} = 9$, if a_i unconditionally significant a_j $w_i' = \frac{w_i}{\sum_{k=1}^{n} w_k}$, where $w_i = \sqrt[m]{\prod_{j=1}^{m} y_{ij}\ i,j \in [1.m]}$ (8)
II. Making expert evaluations of alternatives (projects) for state support by criteria in pairwise comparison procedures	*IIa. Establishment of strengths of alternatives as an adaptive convolution.* Calculating according to the ratio (7) of the strength value w_i' is evaluations of alternatives a_i by criterion q_i: $w_i' \rightarrow x_{ij}, i = 1, \dots n$ (9) Values obtained according to the formula (9) represent the respective line of the decision matrix. After conducting a series of pairwise comparisons m (by a number of criteria) for each alternative, it is possible to establish, from a filled in decision matrix, the evaluation vectors $\overline{x_i} = (x_{1i}, x_{2i}, \dots x_{mi})$, which convolve in a scalar evaluation of utility of the alternative according to the formula (9)
	IIb. Establishment of strengths of alternatives (projects) as a multiplicative convolution. Values of utility of alternatives are calculated according to the formula (8), where w_i are obtained from the procedure of pair-wise comparison of criteria and strength of their calculations under the formula (8). Evaluation of significance (strengths) of alternatives x_{ij} by each of criteria is established in the series with m pair-wise comparison procedures, in each of which the strengths are established by criterion q_i according to the ratio (8). In the ratio (8), the value m – a number of criteria – is replaced by n – a number of alternatives

Figure 4. Decision making in models of multi-criteria selection of mechanisms of state support of agrarian-construction cluster and industrial construction in countryside

Source: compiled by authors based on [34; 42–43]

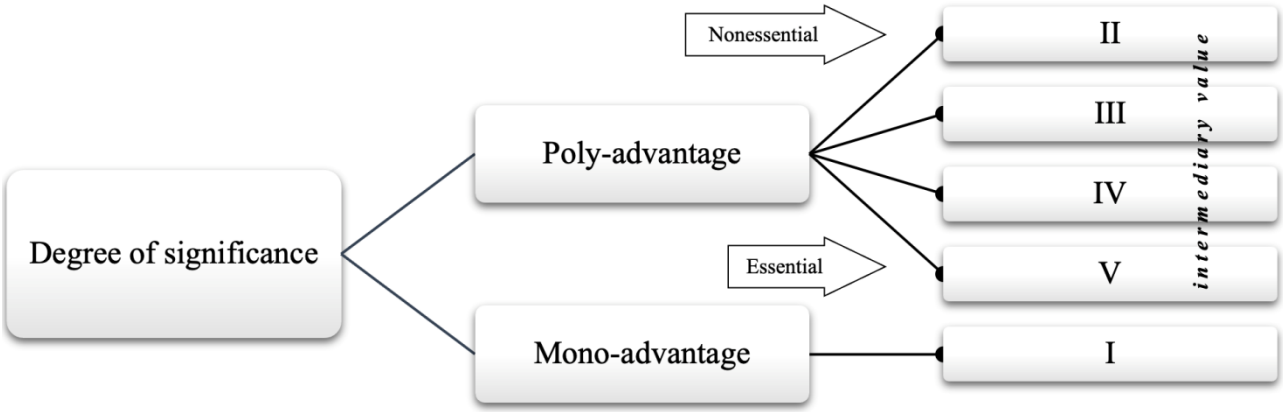

Figure 5. Ratio scale of selection of ecologically-economically-oriented investment project of agrarian-construction cluster subject to their economic-resource reserve

Source: compiled by authors based on [32]

After a pairwise comparison of factors, products are calculated by lines and then the root is found from the number of criteria – priority vector components. The strength of criteria is calculated by dividing the values of components of the priority vector of the criterion by the sum of the values of components of the priority vector. The hierarchy for the selection looks as follows (Fig. 6).

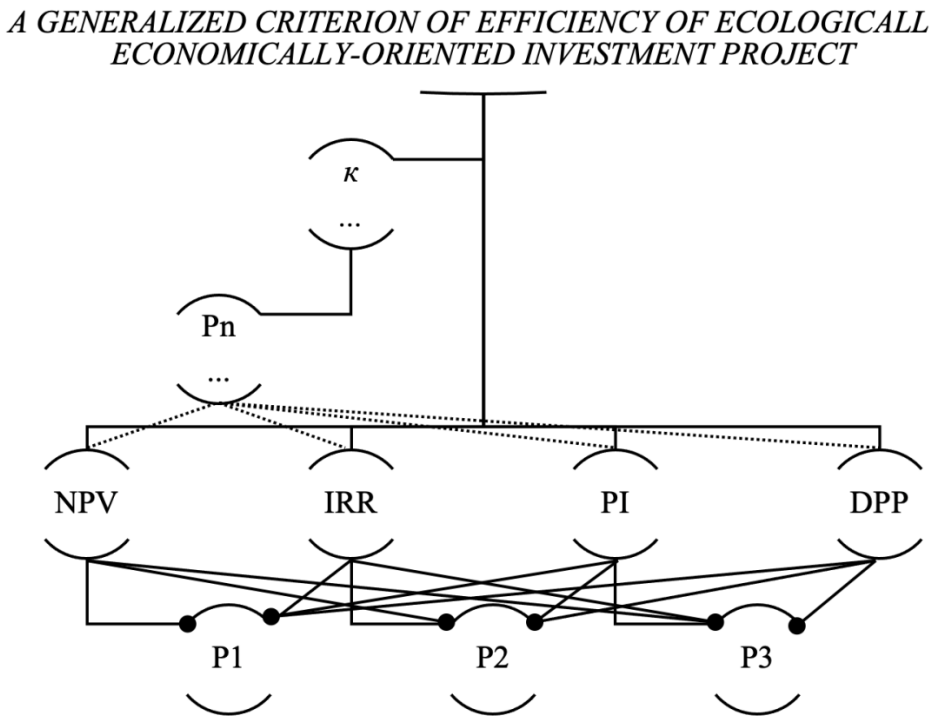

Figure 6. Hierarchy for selection of ecologically-economically-oriented investment project for state support of agrarian-construction cluster subject to their economic-resource reserve

Source: compiled by the author according to [32]

Similar to calculating the strength of criteria, the evaluations of alternatives by each criterion are calculated, whereupon, along with the strengths of criteria, the results are entered into a summary table where the global priorities of alternatives are calculated as a sum of products of the strength of the criterion by the evaluation of the means under the respective criterion. So, the analytical hierarchy process enables to make a decision having considered the alternatives from different perspectives, evaluate data inconsistency and minimize it through coordination procedures, conduct a synthesis of the problem of decision-making by calculating the final rating, evaluate the importance of taking each decision and factor having an impact on the decision priority into account. Basic advantages of the method are the simplicity of rating calculation and, most importantly, method's universality that manifests itself in its application in making decisions for state support in various industries of activities of agrarian-construction clusters.

Based on the results of testing a methodological approach developed by authors, it is found that, of 13 criteria of efficiency considered, the most significant criteria are: the ecological location reserve (14.6 %), an adverse impact of natural-anthropogenic factors (11.5 %), the net present value (11.0 %), the internal rate of return (11.0 %), clean products manufacturing (11.0 %). Ecological criteria of waste

disposal and energy saving reduction values of 9.7 and 8.6 %. The strength of the other six criteria is totally not more than 23 %. 444 investment projects [13] were included into a final list of significant ecologically-economically-oriented investment projects to provide state support for agrarian-construction clusters (on the regional principle) under the condition of the post-COVID reflection and reformation of local self-government and territorial organization of power in Ukraine, selected on the basis of the developed methods. A fragment of the final rating of priority investment projects grouped on the local-regional principle, is given in Tabl. 3.

Developing the methods was conducted according to the following basic principles:

– providing a systems and complex evaluation characterizing various aspects of implementing projects grouped on the local-regional principle;

– providing objectivity and unambiguousness of conclusions (expert evaluations) obtained on the results of the project analysis;

– providing comparability of evaluations of projects and possibility of their rating formation.

It arises from the analysis of the results that during ranking with the use of the methods developed by authors, the top ten priority projects include all directions of development of the water facilities construction, having raised, in this case, the ranks from 2 to 8 points as compared with an option of accounting ecological criteria and from 6 to 11 points as compared with an option of accounting traditional criteria only. Mineral-raw material complex projects are, as before, among the top twenty (but the number of projects reduced to 40), having decreased their ratings by 9 pointsв.

The number of projects of the agro-industrial direction, which, accordingly, are among the top twenty of the priority projects, increased to 70, having raised their ranking positions from 3 to 14 points as compared with an option of accounting ecological criteria and from 10 to 18 points as compared with an option of accounting traditional criteria only.

As to rural renovation projects, the situation has not changed.

Wholesale-food market construction projects decreased their ranking positions by 9 points as compared with an option of accounting ecological criteria and by 8 points as compared with an option of accounting traditional criteria only. Options are offered to evaluate ecologically-economically-oriented investment projects for the provision of state support of agrarian-construction clusters and meet three scenarios of development of respective rural locations [38]: a conservative scenario (meets capital contributions to investment projects selected subject to traditional efficiency indicators only); a moderate scenario (meets capital contributions to investment projects selected subject to traditional and ecological efficiency indicators); an economically-ecologically-rationally-oriented scenario (meets capital contributions to investment projects selected according to the methods offered by authors and having regard, inter alia, to the economic-resource reserve of agrarian-construction clusters developing under the influence of natural-anthropogenic factors).

Supporting priority directions of the implementation of economically-ecologically-rationally-oriented investment projects at the level of the efficient state

regulation will become a catalyst for the ecologically sustainable growth and development of agrarian-construction clusters (Fig. 7).

Table 3. Final priority rating of ecologically-economically-oriented investment projects for programs of state and regional support for agrarian-construction clusters (on regional principle)

Agrarian-Construction Cluster Projects	Number of Projects at Certain Location	Evaluation	q_{12}	q_8	q_{11}	q_1	q_{10}	q_9	q_2	q_3	q_5	q_4	q_6	q_7	q_{13}
Criterion Strength by Regions	–	–	*0,15*	*0,05*	*0,10*	*0,11*	*0,10*	*0,09*	*0,05*	*0,05*	*0,04*	*0,04*	*0,03*	*0,03*	*0,12*
Cherkasy	54	0,034	0,04	0,04	0,04	0,04	0,02	0,02	0,02	0,02	0,04	0,04	0,04	0,04	0,02
Vinnytsia	52	0,034	0,03	0,04	0,04	0,04	0,04	0,02	0,02	0,03	0,04	0,03	0,04	0,05	0,02
Poltava	51	0,028	0,04	0,02	0,01	0,04	0,02	0,02	0,04	0,03	0,03	0,04	0,04	0,02	0,02
Lviv	47	0,027	0,01	0,02	0,04	0,03	0,02	0,02	0,04	0,04	0,04	0,03	0,02	0,03	0,02
Kherson	30	0,027	0,03	0,02	0,04	0,02	0,02	0,02	0,03	0,04	0,02	0,03	0,03	0,03	0,02
Mykolaiv	27	0,026	0,03	0,02	0,04	0,02	0,02	0,02	0,00	0,05	0,05	0,02	0,04	0,01	0,02
Zhytomyr	22	0,026	0,03	0,02	0,04	0,04	0,02	0,02	0,00	0,01	0,04	0,04	0,04	0,04	0,02
Kyiv	22	0,026	0,04	0,02	0,04	0,01	0,02	0,02	0,03	0,03	0,03	0,01	0,03	0,04	0,02

Source: calculated by authors according to [13; 17; 32]

The ecological state of rural locations is of great importance in selecting investment projects. So, implementing investment projects in the rural area inclined to significant adverse impact of natural-anthropogenic factors can lead to disastrous consequences for the projects and, accordingly, for the development of agrarian-construction clusters, in general.

At the same time, the absence of the ecological reserve at the rural location precludes from implementing economically-ecologically-oriented investment projects associated with the industrial production having an adverse impact on the environment as the renovation potential of such rural area is exhausted.

Conclusion. Present-day realities are such that the conditions and principles of the provision of state support for an ecologically-economically-oriented investment project of agrarian-construction clusters must be changed. The main thing is not financing investment projects by the state but changing the business environment, by which the following is meant: in selecting projects for state support, the use of a project approach is welcome; financing from the state budget must be mainly applied for core infrastructure support; restructuring and expanding competitive selection mechanisms wherefore developing measurable criteria for the determination of the winners is required; projects with a high multiplicative effect for the economy must become the priority investment projects; the priority must be given to the public-private partnership projects as well as to other long-term instruments.

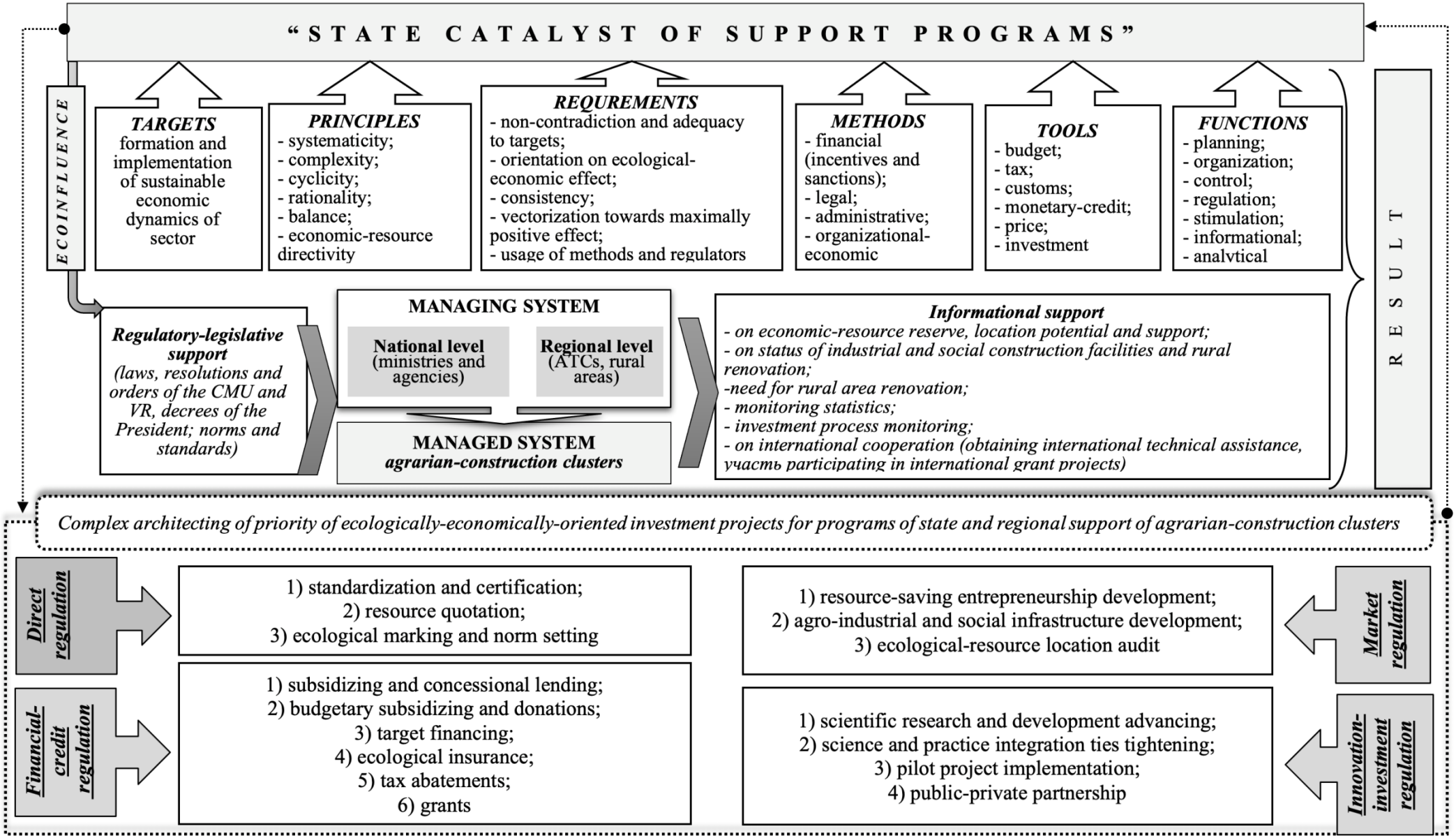

Figure 7. "State Catalyst" for programs of support of ecologically-sustainable growth and development of agrarian-construction clusters subject to their economic-resource reserve

Source: compiled by the author according to [2–3; 6; 19–20; 28; 44]

In addition to direct participation by the state and investment policy, an important direction of stimulating investor's ecologically-economically-oriented behavior may become: leasing payment compensation; tax payment deferral; special economic zone development; establishment of state funds for rural renovation development.

The first-priority thing in the formation of the priority of state support for agrarian-construction clusters subject to their economic-resource reserve is setting an aim, which in this study is formulated as follows: formation and implementation of mechanisms of state support of agrarian-construction clusters for sustainable rural development under the post-COVID reflection. This aim must meet the following requirements:

1) specific components of the "state catalyst" may not contradict one another and may not have a differently directed character;

2) all measures creating the prerequisites and incentives for introducing ecologically-economically-oriented investment projects must be adequate to the goals and tasks of sustainable development of rural areas, in particular, and the state, in general;

3) state support orientation on the economic-resource reserve;

4) agreement on a mechanism with objective inconsistency of interests of government and nongovernment entities;

5) stimulation to achieve the maximum possible result by attracting the minimum amount of investment resources;

6) use of economic management methods providing economic independence of management entities in establishing the goals, the ways and means of achieving the goals as well as economic and social responsibility for the results of their activities;

7) Application of organizational and economic regulators of the relationship between stakeholders of the ecologically-economically-oriented investment process at all management levels.

Functions of the "state catalyst" of support programs are the planning, organization, motivation, regulation and control, informational and analytical support in exercising which a wide range of legal, administrative, organizational, economic, financial (incentives and sanctions) and other methods is used. Complex architecting the priority of ecologically-economically-oriented investment projects for programs of state and regional support of agrarian-construction clusters must combine the elements of both state regulation and market self-regulation.

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