

Determination of Priority Financial Instruments of Regional Sustainable Development

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ABSTRACT

This research investigates features of financial regional management taking into account the levels of economic adaptability and potential of sustainable development. The author examined the approach to defining the level of regional sustainable development considering the interrelation of ecological and financial components. For the purpose of the paper, the main indicators of regional sustainable development – investment potential, fiscal potential, financial potential, labor potential, potential of natural resources, economic potential of households are allocated. As part of the study, the regional grading scale (self-contained, stable, problematic, stagnant, depressive, environmentally friendly, enough adapted, moderately adapted, slightly adapted, environmentally hazardous), depending on the value of the integrated indexes is worked out. The authors highlighted that given approach would promote development of the effective state policy of regional financial security and improve the quality of strategic administration by means of development of the most suitable for the financial possibilities and ecological situation strategies (state regulation, public private partnerships or ecological enterprise).

Keywords: financial support, potential, financial policies, level of sustainable development, ecological and economic adaptability.

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JEL Classification: E62, G28, O23, H72, R11

1. INTRODUCTION

The growth of global problems and exacerbation of ecological situation predetermine the need for searching for alternative mechanisms of economic and natural systems' interaction.

The annual increase in air and water pollutant emissions, deforestation, soil depletion reduce the assimilative potential of the environment, and thus characterizing aggravation of the ecological situation at global, national and regional levels. Since, most of the problems of socio-economic and environmental direction initially occur at the regional level and only then take on a global scale, effective process of financing environmental activities with the further development of financial models of ecological development, is promising for the implementation of ecologically oriented economic development.

2. GENERATION OF THE DATA

The works of local and international scientists, such as Z. V. Gerasimchuk, L. V. Zharova, E. V. Khlobystov, Y. M. Melnyk etc. are devoted to the research of fundamental, theoretical,

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methodological and practical aspects of environmentally sustainable development. O.I. Baranovsky, S.V. Zenchenko, R. A. Prokopenko, S. K. Harichkov etc. addressed the issues of financial resources formation and control at the regional and state levels. Taking into account the significant contribution of the scientists to assessment of ecological security and its separate components, the question of methodical providing of the assessment of financial and ecological security level as the integrated economic indicator remains unsolved. It characterizes financial and ecological relations among entities of regional environmental management system concerning the formation of conditions for the resource-saving use and reproduction of natural resources.

2.1. Basic material statement

However, the issue of forming an effective financial security system of the regional ecologically sustainable development requires further resolution considering the impact of financial instruments on the level of achievement of the objectives of sustainable development. The vector of ecologically oriented development, its characteristic signs and the principles define the key directions which improve the components of the financial security process.

The purpose of the article is elaboration and development of comprehensive theoretical and methodological concepts and practical recommendations concerning the process of improvement of the regional financial security.

Establishing modern models of sustainable development as an alternative to the extensive use of natural resources and violations of the laws of harmonious development depends on the meaningfulness and coherence of the main components of a financial security ecologically oriented development at the regional level. The lack of sufficient financial resources and coordination between the central and local authorities, inadequate at both the national and regional level of selection process methods and tools of finance, actualize the necessity of forming adequate mechanism to modern requirements of financial support for the sustainable development (M. Baranovsky, 2008)

2.2. Methods of economic adaptability and potential of sustainable development assessment

It is necessary to consider the degree of influence of individual entities on the environment, during the assessment of the regional potential for sustainable development. Therefore, we offer to perform a PSD for the subjects of this effect, allowing us to distinguish the following components of PSD: economic potential of local authorities, economic potential of business entities, economic potential of households, and potential of natural resources. The system of indicators to measure PSD is presented in Figure 1.

The main sense of the concept of "potential of regional sustainable development" is an integral reflection of its current and future capabilities transform inputs resources in the economic benefits, the most satisfying in this way, corporate and public interests.

Potential reflects the past or in other words the set of characteristics, accumulated by the system during its formation and those that contribute to the possibility of its functioning and development.

It is difficult to make a conclusion about the level of region potential exclusively based on the calculation of performance development and use of its individual components and comparing the effectiveness of policy control of several regions between themselves. Therefore, there is the need of

having one integral index, which will combine the total of all the constituents of potential and will allow comparisons between them in retrospective dynamics.

In order to align environmental and economic interests it is proposed to calculate the level of potential of regional sustainable development:

$$PSD = P_{nr} + (P_{lg} - P_{nr}) \cdot \frac{\rho_{nr lg} \cdot \sigma_{nr}}{\sigma_{lg}} + (P_e - P_{nr}) \cdot \frac{\rho_{nr e} \cdot \sigma_{nr}}{\sigma_e} + (P_h - P_{nr}) \cdot \frac{\rho_{nr h} \cdot \sigma_{nr}}{\sigma_h}, \quad (1)$$

- PSD - the potential of regional sustainable development;
- P_{lg} - the economic potential of local authorities;
- P_{nr} - the potential of natural resources;
- P_e - the economic potential of business entities;
- P_h - the economic potential of households;
- Σ - standard deviation;
- ρ - correlation coefficient.

Besides the level of regional potential to self-finance of sustainable development, state financial policy should consider the level of environmental damage caused by water and land pollution, waste, air pollution from stationary and mobile sources.

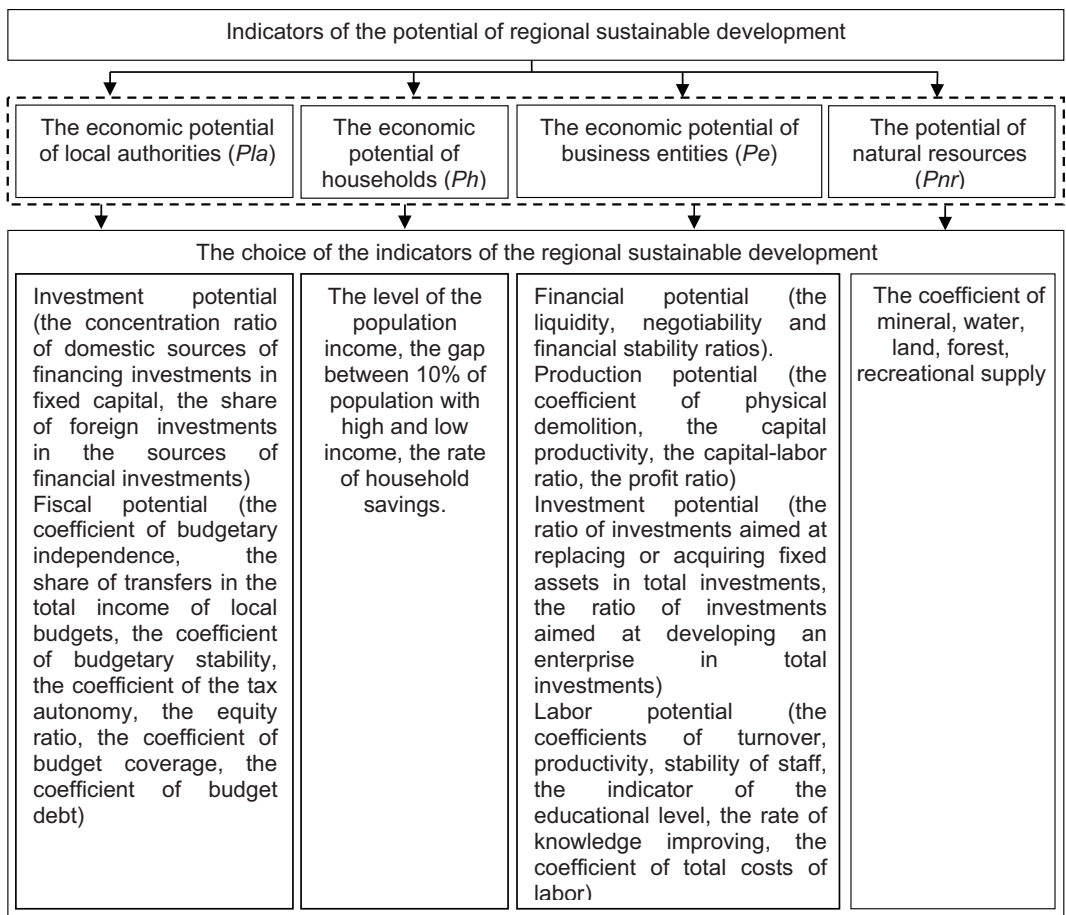


Figure 1. Indicators of the potential of regional sustainable development

The ability of the region to respond timely to environmental degradation due to preventive measures is proposed to evaluate using the indicators of ecological and economic adaptability. It is defined as the ability of the region to attract budgetary funds, funds of economic entities and households in order to implement environmental protection measures. Growth rate of such financing must be higher than growth rate of environmental load (L. F. Sokolenko, I. V. Tiutiunyk, D. V. Leus, 2017).

Economic and ecological adaptability reflects the actual level of compatibility, coordination of environmental and economic policy in a given space-time interval. Thus, the increase in the level of air and water pollution belongs to the main manifestations of eco-destructive impact of economic activity on the environment. The algorithm of calculation the level of regional economic and ecological adaptability is shown in Figure 2.

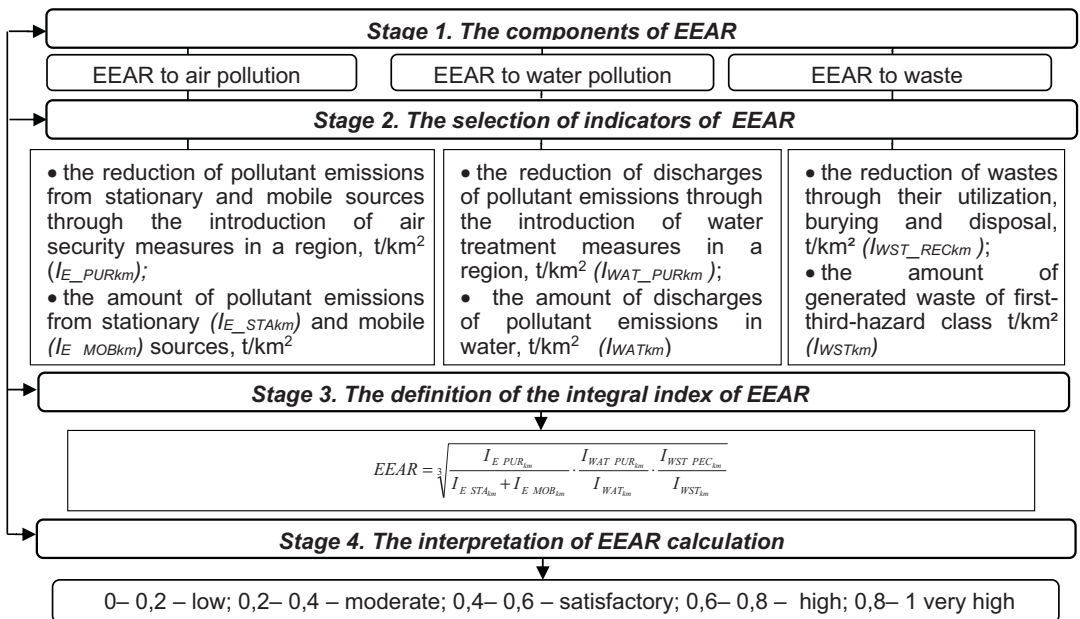


Figure 2: The evaluation of the economic and ecological adaptability of the region.

To compare the level of sustainable development of the regions it is necessary to calculate integrated indices for each component.

Furthermore, we consider appropriate to calculate the relative integral index, which quantitatively reflects the current level of balanced regional development and gives the most characteristic information relative to other administrative units.

Depending on the integral index we propose to allocate 5 levels of the sustainable development. Their characteristics and values are given in Table 1.

Table 1: The characteristic of levels of regional sustainable development

Regions in terms of PSD	Regions in terms of EEAR	Level	Characteristic
Self-contained	Environmentally friendly	0.8-1	Regions with high potential, which have the ability to generate sufficient resources to finance its development strategy and can transform it under the influence of exogenous factors.
Stable	Enough adapted	0.6-0.8	Regions with sufficient potential. Increase in the effectiveness of implementation of strategy of ecological and economic development and managing components of potential of the regional sustainable development is possible only if the transformation of the existing management system is provided.
Problem	Moderately adapted	0.4-0.6	Regions with medium potential caused by insufficient funding and poor transformational potential of the regional development strategy.
Stagnant	Slightly adapted	0.2-0.4	Regions with low potential. The lack of financial resources at the low level of innovation activity on the introduction of new technologies and technological readiness. The ability of the region to adapt to adverse environmental impact is rather low.
Depressive	Environmentally hazardous	0-0.2	Regions with a critical level of ecology and economic development. The rate of environmental pollution significantly outpaced the restoration of natural resources due to scarcity of resources and lack of an effective system of sustainable regional development.

Taking into account by the state authorities and local self-government the indicators of PSD and EEAR in the process of selection of the priority financial instruments will contribute to effective implementation of the socio-economic development strategy and ecologically-oriented measures. However, in our opinion, it is more important to forecast the levels of PSD and EEAR for the future and take them into consideration in distribution of state aid.

Taking into consideration the close links between indicators of PSD, EEAR and regional sustainable development, it is necessary to apply a matrix approach to the selection of the priority instruments of financial security of the region (Figure 3). In compliance with matrix approach an efficient funding process provides access to the region to a new level of its sustainable development, achievement of higher values of such indexes as PSD and EEAR and also the growth of potential opportunities to implement environmental measures.

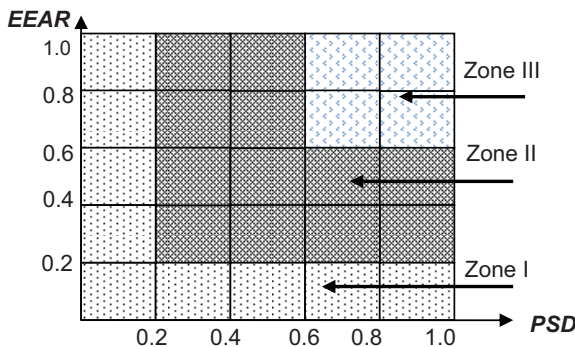


Figure 3: The Matrix of the ratio of potential of sustainable development and environmental and economic adaptability.

At the heart of this matrix is diagonal pattern, according to which regional sustainable development involves moving diagonal matrix with the lower left corner to the top right corner. In the implementation of these high potential opportunities in the region corresponding to high values of the coefficient of ecological and economic adaptability and back regions that have the highest amounts of environmental pollution and are characterized by low investment and insufficient own funds have the lowest value PSD and EEAR. In these regions it is especially advisable to invest (at improving environmental policy), and they should be a priority in the allocation of intergovernmental transfers. Furthermore, using the following matrix one can identify regions that are in a favorable development phase, namely, regions with a significant level of investment potential.

Regions that are characterized by a high susceptibility to the ecological factor, high opportunities to financing of regional development and the smallest contribution to deterioration of an ecological situation in the country belong to zone 1.

Zone II - regions that are characterized by high susceptibility to environmental factors, while having high potential for financing environmental activities; regions that are characterized by an average level of susceptibility to environmental factors and medium value of PSD;

Zone III – regions with high susceptibility to environmental factors, the largest contribution to environmental degradation in the country and low potential.

The adjustment of regional environmental policy, in view of regional group's results, occurs after creation of a matrix. The process of selecting appropriate methods of financial security should demonstrate a differentiated approach to regions with different zones of the matrix, depending on the ratio of the PSD and EEAR indicators (Figure 4).

In addition, it should be noted that in each country the process of applying financial instruments within the concept of sustainable development is different from strict government regulations, only using restrictive tools to use market-based mechanisms that provide incentives for businesses to finance environmentally oriented projects in a developed competitive environment. However, experience has shown, the existence of a large number of instruments does not only improve the efficiency of the process of state regulation of the region but also prevents it.

In order to improve the financing of regional development and based on the proposed approach to the ranking of regions we propose tipologization and selection of financial instruments to implement depending on the location of the region in the matrix.

In addition, the choice of the key sources of funding for regional development should be carried out considering the cycle of the area development and the length of time spent at the certain stage, as being at the stage of recovery over 2-3 years, in terms of cyclical development could mean reduction values of all parameters, and hence regional development strategy should focus not only on the support of the state, but also at preventing declines.

Thus, if the region of the third area of the matrix is at the growth stage, priority instruments shall be financial investments into the region, state support, participation in international grant activities, which help to apply international experience in implementing of ecologically-oriented measures.

At the stage of recovery state authorities and local self-government should create favorable conditions to support a given state by means of a different sort of supporting.

At the stage of decline it is necessary to apply concessional lending. Besides, the state support by application of transfer financing takes a special place under such conditions.

In areas with such level of potential opportunities and a low degree of environmental and economic adaptability, government support is a key element in implementing the strategy for regional development. Since high levels of anthropogenic load and insufficient financial resources may adversely affect not only the development of the region but also make a negative impact on the neighboring areas and the country as a whole. Therefore, such regions should be favoured in the allocation of public funds. To the region with this level of economic development it is necessary to apply more stringent instruments of economic regulation. Penalties for pollution should be relatively high. Since the major environmental polluters are subjects of entrepreneurial activity, the company will prefer not to violate environmental laws but to pollute the environment, regularly paying fines, determined by current environmental legislation.

Regions, which are included into the second group, with a certain level of potential opportunities may, in addition to administrative instruments, use soft loans to finance environmental protection measures. Rates on these credits should be significantly lower than the rates for regions that belong to the first group.

Those areas of the country with high potential and low coefficient of EEAR should first review its policy on the allocation of financial resources and seek to attract both domestic and foreign investors.

The first group includes regions with a high potential and, consequently, a high level of adaptability to environmental pollution. For such regions state policy should aim to promote an increase in the value of foreign investments. The participation of all economic actors in various international programs and grants designed to use the experience of advanced countries to move to a model of sustainable development.

Formation of a market economy requires the solution of environmental problems within the self-regulating market economy. It, in turn, requires the introduction of reliable economic mechanism of environmental management, thanks to which conditions for a sustainable development of the country and its certain regions will be created. In spite of the rather extensive system of local budgets and sufficiently large amounts of expenditure financed from the local budget, in modern terms of financing environmental activities at the regional level, is mainly due to two components - the own funds of enterprises, institutions and organizations and own funds of local budgets.

One of the reasons for this situation is regular qualitative and quantitative shifts in the mechanisms and instruments of financial regulatory environmental performance of regions, the imperfection of legislation on national security, which does not regulate legal duties, powers and responsibilities of local government from forming in Ukraine and its areas of sustainable development, principles of foreign and domestic policy, state regional environmental policy.

4. DISCUSSION AND CONCLUSION

Summing up the results, we can note that, adequate financial support for environmentally sustainable development of the region creates favorable conditions for the restoration of natural resources and the growth of its natural resource potential. Necessary condition for the development of the region is the ecological consistency of the economic and environmental interests, which allows to determine its reproductive potential due to channeling of resources to finance environmental projects purpose and creating a favorable investment climate, taking into account the relationships between economic and natural resource potential of the region.

Nowadays, a lot of researches developed an approaches that assess the level of financial and ecological potential separately. They are based on the different number of groups of indexes. In this study has been

proposed the integrated indexes of potential of sustainable development and ecological and economic adaptability.

In the article, we proposed to consider the correlation between economic potential of local authorities, business entities, households and potential of natural resources. This approach helps to receive more precise estimates and take into account synergistic effect due to mutual influence on each other.

In our opinion, suggested scientific and methodical approach to assessment of the levels of potential of regional sustainable development and ecological and economic adaptability allows:

- 1) taking into account interconnection between financial and ecological indicators of regional development;
- 2) to develop matrix approach to the selection of the priority instruments of financial security of the region;
- 3) to improve the efficiency of the process of financial secure of the region.

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