DOI: 10.63550/ICEIP.2025.43.78.013

Assessment of the Importance of Factors Affecting Environmental Safety

R. S. Fediuk[a], E. V. Levkina[b] and E. G. Gusev[c]
Far Eastern Federal University, Ajax settlement, Vladivostok, Russia
Russian Customs Academy Vladivostok Branch Vladivostok State Univer-sity, Vladivostok, Russia
roman44@yandex.ru; levkina.ev@dvfu.ru

Keywords: Environmental safety, factors, methodology, meso-level, management, econometric modeling.

Abstract: The purpose of the study is to assess the impact of a sample of environmental, social and economic factors on the environmental safety of the economic system. Research objectives: 1) identify and group the factors affecting environmental safety; 2) to assess the degree of influence of ecological, economic and social factors on environmental safety using econometric modeling; 3) establish the mutual influence and interdependence of interdisciplinary factors on environmental safety by consistently replacing dependent and independent variables; 4) to identify patterns for further development of management solutions to strengthen environmental safety. The subject of the study is econometric modeling to assess the impact of environmental safety factors. The object of the research is environmental safety. The main hypothesis of the study is that environmental, social and economic factors have a significant impact on environmental safety.The paper considers the time period from 2014 to 2024. The author's approach is based on the definition, grouping and assessment of factors affecting environmental safety. The results obtained can be used to study environmental safety and predict possible scenarios for the sustainable development of industrial complexes and regions. The Python programming language, Pandas and Numpy libraries were used for data processing, the Statsmodels library for working with statistics and hypothesis testing, and the Seaborn and Matplotlib libraries for plotting. Using mathematical modeling, the study verified the hypothesis of the interdependence and mutual influence of economic, environmental and social factors on the environmental safety of economic systems at any level.

1 INTRODUCTION

In the modern world, environmental safety issues are becoming increasingly relevant. Industry and various sectors of the economy have a significant impact on the environment, which requires careful analysis and study of the factors affecting the environmental situation. The interdisciplinarity of environmental safety involves establishing relationships between environmental, economic and social systems, which is especially important for developing sustainable solutions.

The environmental safety of a country, regions, industries, and enterprises depends on many factors, including political, economic, technological, and innovative processes, resources, materials, and substances used, as well as the waste management system. Mathematical modeling is one of the tools for accounting and assessing the impact of environmental factors. For example, modeling can be used to estimate emissions of pollutants into the atmosphere or water bodies as a result of industrial activities. Thus, the identified multicollinear dependencies make it possible to identify the most significant sources of pollution and develop measures to reduce them. In addition, mathematical modeling can be applied to assess impacts on biodiversity and ecosystems. For example, it is possible to model the spread of invasive plant or animal species caused by human activity and develop strategies to control them.

[a] https://orcid.org/0000-0002-2279-1240
[b] https://orcid.org/0000-0001-7764-251X
[c] https://orcid.org/0000-0002-6905-079X

At the moment, many studies have been accumulated on the application of mathematical modeling to assess environmental safety factors. For example, some studies are devoted to modeling greenhouse gas emissions in industry, while others are devoted to assessing the impact of industrial enterprises on water bodies. So, Kurbatova A.I., Tarko A.M. used mathematical modeling to assess the impact of atmospheric pollution by metallurgical enterprises on forest biogeocenoses. Based on the developed spatial model, the authors concluded that of the three species (spruce, pine and birch), birch is the least susceptible to pollution, as it is the hardiest and grows in harsher climatic conditions. The successful practice of using mathematical modeling as a tool for improving the management of technological processes in order to increase the environmental friendliness of production is the method of Petrov Yu.S. and Sokolov A.A. (Petrov, Sokolov, 2014). As a result of the research conducted by the authors on the modeling and distribution of anthropogenic emissions from mining and metallurgical enterprises, methods of electrohydrodynamic analogy, methods of electrical modeling in the Elektronics Workbench program and visualization by the module of the developed subsystem of analysis, management and decision-making were used. In the course of research, scientists have expanded the use of electrohydrodynamic analogy. New circuits for electrical and virtual simulation have been proposed. These schemes are now used in the analysis, management and decision-making system at the enterprise. "They help to analyze, process and visualize information about the man-made production cycle more effectively. Within the framework of this study, the hypothesis is put forward that the use of mathematical models provides extensive and multidimensional opportunities for a detailed analysis of environmental safety and identification of the strength of mutual influence between various determinants: economic, environmental, social" (Petrov, Sokolov, 2014). The purpose of the study is to assess the impact of a sample of environmental, social and economic factors on the environmental safety of the economic system. To test the hypothesis, the following tasks are set:

1) identify and group the factors affecting environmental safety;

2) to assess the degree of influence of environmental, economic and social factors on environmental safety using econometric modeling;

3) establish the mutual influence and interdependence of interdisciplinary factors on environmental safety by consistently replacing dependent and independent variables;

4) identify patterns for further development of management decisions to strengthen environmental safety.

2 RESEARCH METHODS

General scientific research methods (analysis, synthesis, comparison, logical interpretation, analogy), information collection method (content analysis), economic, mathematical and statistical method were used in the work. The information base for the research is the reports on the Rosstat website, the database of the unified Interdepartmental Information and Statistical System (EMISS).

3 RESEARCH METHODOLOGY

The algorithm of scientific research:

1) generalization of the experience of using econometric modeling to assess the degree of influence of factors on the resulting indicator;

2) "identification and grouping of factors affecting environmental safety;

3) assessment of the degree of influence of ecological, economic and social factors on environmental safety using econometric modeling;

4) establishing the mutual influence and interdependence of interdisciplinary factors on environmental safety by consistently replacing dependent and independent variables;

5) identification of patterns for further development of management solutions to strengthen environmental safety.

4 THE RESULTS OF THE STUDY

To verify the hypothesis about the mutual influence of various factors, including economic, environmental and social, a pool of mathematical models with sequential replacement of dependent and independent variables (factors) is proposed. This methodological approach will allow for an in-depth analysis of complex systemic interactions between these aspects, as well as identify hidden patterns that may remain unnoticed by traditional methods of observation. The Python programming language, Pandas and Numpy libraries were used for data processing, the Statsmodels library for working with statistics and hypothesis testing, and the Matplotlib library for plotting. Python allows you to determine the relationship between the environmental state of a system at any level and economic factors, and "Seaborn, Matplotlib, Pandas, and Numpy libraries were used to graphically visualize the source database for calculations and results" (Emtseva, Kiku, Mazelis, 2019). The Statsmodels library allows you to identify patterns and dependencies between the studied variables.

The gross domestic product (GDP), billion rubles, is used as an indicator characterizing the level of development of the country. GDP is an important indicator for analyzing economic growth, the standard of living of the population and the effectiveness of government policies. GDP can be achieved only with a balance achieved as a result of multiple interactions of three equal subsystems: economic, social and environmental. The following indicators, economic and environmental factors were also used for the analytical review: x_1 – investments in environmental protection, billion rubles.; x_2 – industrial production index, %; x_3 – population, million people; x_4 – taxes to the budget, million rubles, x_5 – air pollution, thousand tons; x_6 – incidence of common diseases, thousand people; x_7 – environmental protection costs, billion rubles. x_8 – total number of cities with observations for air pollution, units; x_9 – the number of unauthorized landfills of waste, thousand units.

At the first stage, it is planned to use GDP (y) as an independent variable. At the second stage, the independent variable will be "atmospheric air pollution", and at the third stage – "investments in environmental protection". At all stages, only significant strong relationships will be considered (correlation coefficient >0.8).

Stage 1. GDP is an independent variable.

The values of the indicators for 2014-2024 are presented in table 1.

Table 1: Baseline data for assessing the impact of environmental, social, and economic factors on GDP.

год	y	x_1	x_2	x_3	x_4	x_5	x_6	x_7	x_8	x_9
2014	79030	158,636	102,5	144	9694	30622	114989	269,8	177	17,
2015	83087,4	151,788	100,2	146,7	10790	30819	113926,9	292,1	133	25
2016	85616,1	139,677	101,8	147,2	13388	31623	115187,3	306,5	165	29,
2017	91843,2	154,042	103,5	147,6	16810	32066	114382,2	320,9	155	32,
2018	103861,7	157,651	103,5	147,8	20713	17069	114840,8	345,5	146	22,
2019	109608,3	175,029	103,4	147,8	21809	16952	114512,2	374,4	250	12,
2020	107658,1	195,962	97,9	147,9	19529	17295	111294,3	393,7	253	14,
2021	135773,8	299,408	106,3	147,4	27018	17207	125022,4	425,0	251	15,
2022	155188,9	306,887	100,7	147,0	32787	17174	130442,6	478,9	249	14,
2023	172148,3	371,292	104,3	146,4	36183	16952	120277,1	559,5	247	12,
2024	200039,50	375,289	104,6	146,1	42522	17093	138269,2	477,5	249	12,

Descriptive statistics for the indicators are shown in table 2.

Table 2: Descriptive statistics for the indicators.

	y	x1	x2	x3	x4	x5	x6	x7	x8	x9
count	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0	11.0
mean	[illegible]	[illegible]	[illegible]	146.9	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
std	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
min	79030.0	139.677	97.9	144.0	9694.0	16952.0	111294.3	269.8	133.0	12.5
25%	[illegible]	[illegible]	[illegible]	146.55	[illegible]	[illegible]	[illegible]	[illegible]	160.0	[illegible]
50%	107658.1	175.029	103.4	147.2	20713.0	17207.0	[illegible]	374.4	247.0	15.5
75%	[illegible]	[illegible]	103.9	147.7	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
max	200039.5	375.289	106.3	147.9	42522.0	32066.0	138269.2	559.5	253.0	32.3

Table 3 shows the Pearson correlation coefficients, the statistically significant of which are the correlation coefficients between y and x_1 (p-value = 1.42 e-06), y and x_4 (p-value = 6.02 e-09), y and x_5 (p-value = 0.017), y and x_6 (p-value = 0.00063), Y and x_7 (p-value = 6.23 e-05), Y and x_8 (p-value = 0.014), Y and x_9 (p-value = 0.03), x_1 and x_4 (p-value = 1.84 e-05), x_1 and x_5 (p-value = 0.034), x_1 and X6 (p-value = 0.0017), x_1 and x_7 (p-value = 3.60 e-05), x_1 and x_8 (p-value = 0.011), x_1 and x_9 (p-value = 0.024), x_4 and x_5 (p-value = 0.0082), x_4 and x_6 (p-value = 0.0014), x_4 and x_7 (p-value = 3.24 e-05), x_4 and x_8 (p-value = 0.013), x_4 and x_9 (p-value = 0.036), x_5 and x_7 (p-value = 0.0063), x_5 and x_8 (p-value = 0.0055), x5 and x_9 (p-value = 0.0029), x_6 and x_7 (p-value = 0.031), x_7 and x_8 (p-value = 0.0049), x_7 and x_9 (p-value = 0.023), x_8 and x_9 (p-value = 0.00096).

Table 3: Pearson correlation coefficients.

	y	x1	x2	x3	x4	x5	x6	x7	x8	x9
y	1	0,97	0,393	-0,041	0,99	-0,697	0,862	0,919	0,711	-0,651
x1	0,966	1	0,41	-0,144	0,939	-0,641	0,827	0,929	0,728	-0,67
x2	0,393	0,41	1	-0,106	0,414	-0,203	0,412	0,283	0,14	-0,124
x3	-0,041	-0,144	-0,106	1	0,066	-0,333	-0,2	0,112	0,096	0,187
x4	0,99	0,939	0,414	0,066	1	-0,747	0,833	0,931	0,72	-0,634
x5	-0,697	-0,641	-0,203	-0,333	-0,747	1	-0,445	-0,763	-0,771	0,803
x6	0,862	0,827	0,412	-0,2	0,833	-0,445	1	0,647	0,517	-0,457
x7	0,919	0,929	0,283	0,112	0,931	-0,763	0,647	1	0,777	-0,675
x8	0,711	0,728	0,14	0,096	0,72	-0,771	0,517	0,777	1	-0,849
x9	-0,651	-0,67	-0,124	0,187	-0,634	0,803	-0,457	-0,675	-0,849	1

The analyzed data reveals a significant and statistically significant positive "correlation between gross domestic product, investments in environmental protection, tax revenues to the budget, the incidence of common diseases, as well as environmental protection expenditures" (Behrer, Heft-Neal, 2024). It should be noted that this correlation persists when analyzing the relationship between investments in environmental protection, tax revenues, morbidity and environmental protection costs.

Dotted diagrams with polynomial regression lines for the pairwise dependence of the studied indicators are shown in Figure 1.

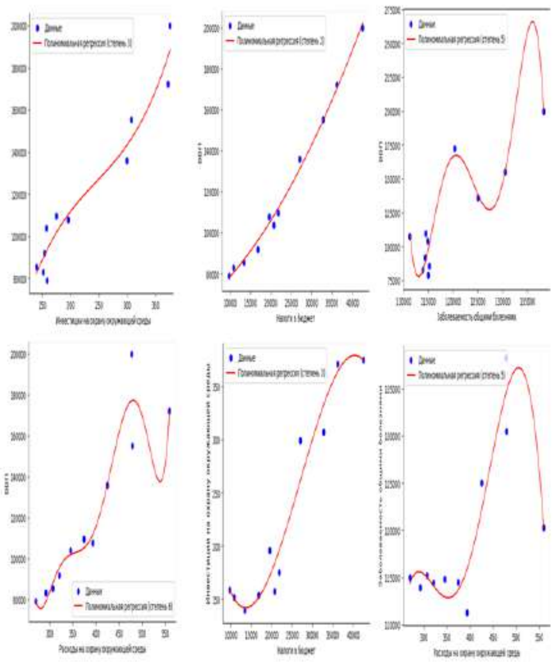

Figure 1: Dotted diagrams with polynomial regression lines for the pairwise dependence of the studied indicators.

As a result of the study of nonlinear relationships between the analyzed indicators, the following significant results were obtained. The relationship between the factors "x_1 – investments in environmental protection" and GDP shows an increasing trend, which indicates "the positive impact of environmental protection activities on the economic development of the country" (Busch, Ferretti-Gallon, 2023). This conclusion is confirmed by the positive correlation between these indicators, which indicates a synergistic effect of investments in environmental initiatives.

Similarly, the relationship between the factors "x_4 – taxes to the budget" and GDP is also characterized by an increasing trend, which confirms the positive impact of increased tax deductions on economic growth.

The indirect relationship between the factors "x_4 – taxes to the budget" and "x_1 – investments in environmental protection" also demonstrates an increasing trend, which confirms the hypothesis of "a positive impact of increased tax revenues on financing environmental protection measures" (Dugoua, Dumas, Noailly, 2022). This conclusion is important for the development of fiscal policy aimed at sustainable development and environmental protection.

The relationship between the factors "x_6 – the incidence of common diseases" and GDP is less clear. Analysis of the regression graph makes it possible to identify a change in the direction of monotony in approximately each quantile of the factor variable of morbidity. However, despite some variability, in 2014-2024 there was a predominantly positive impact of the increase in morbidity on economic dynamics, which may be due to compensatory mechanisms in the economy, such as social spending and investments in healthcare. It is noteworthy that, contrary to expectations, "the increase in environmental protection costs does not contribute to reducing the incidence of common diseases" (Grant, Langpap, 2024).

An analysis of the relationship between the factors "x_7 – environmental protection costs" and GDP was also carried out. The regression graph shows a change in the direction of monotony in about 75%-the quantile of the factor variable of environmental protection costs. Nevertheless, in general, environmental spending has a predominantly positive impact on economic performance in 2014-2024.

The linear model of the dependence of the indicator "GDP" (y) on the indicators "Investments in environmental protection" (x_1), "Taxes to the budget" (x_4), "Incidence of common diseases" (x_6) and "Environmental protection expenditures" (x_7) has the form:

$$y = 55930 + 175.95x_1 + 3.04x_4 - 0.09x_6 - 87.50x_7$$

The model is statistically significant (p-value≈7.51e-07) with a coefficient of determination of 0.994. Regression coefficients for variables (p-value≈0.033), (p-value≈0.002) are statistically significant at the significance level of 0.05. Regression coefficients for variables (p-value≈0.860) and (p-value≈0.295) are not statistically significant at The significance level is 0.05, i.e. these variables can be excluded from the linear model. The simulation results are shown in Fig.2.

```
                            OLS Regression Results
==============================================================================
Dep. Variable:                      y   R-squared:                       0.994
Model:                            OLS   Adj. R-squared:                  0.990
Method:                 Least Squares   F-statistic:                     260.1
Date:                Thu, 15 May 2025   Prob (F-statistic):           7.51e-07
Time:                        11:10:20   Log-Likelihood:                -103.31
No. Observations:                  11   AIC:                             216.6
Df Residuals:                       6   BIC:                             218.6
Df Model:                           4
Covariance Type:            nonrobust
==============================================================================
                 coef    std err          t      P>|t|      [0.025      0.975]
------------------------------------------------------------------------------
const       5.593e+04   6.46e+04      0.866      0.420   -1.02e+05    2.14e+05
x1           175.9476     63.653      2.764      0.033      20.193     331.702
x4             3.0439      0.599      5.085      0.002       1.579       4.509
x6            -0.0930      0.506     -0.184      0.860      -1.338       1.144
x7           -87.4975     76.344     -1.146      0.295    -274.304      99.309
==============================================================================
Omnibus:                        1.788   Durbin-Watson:                   1.959
Prob(Omnibus):                  0.409   Jarque-Bera (JB):                0.929
Skew:                          -0.696   Prob(JB):                        0.628
Kurtosis:                       2.697   Cond. No.                     6.64e+06
==============================================================================
```

Figure 2: Simulation results.

Variable VIF :x_1 = 74.885682; x_4 = 56.167471; x_6 = 43.806667; x_7 = 125.598725

The variance inflation factors (VIF) for all variables of the model exceed the values of 40, which characterizes the presence of multicollinearity of factors. The coefficient of linear regression with a variable characterizes the positive impact of investments in environmental protection on GDP. The coefficient for a variable again demonstrates the existence of a positive relationship between the indicators of deductible taxes and the gross domestic product. The coefficient for a variable attracts special attention. Its value reflects the negative impact of environmental spending on GDP growth, which contradicts the positive relationship with the factor. Perhaps this negative correlation is due to the multicollinearity of the factors. Moreover, the mathematical model demonstrates the presence of a negative correlation between GDP indicators and the incidence of common diseases, which "fully corresponds to theoretical expectations and practical observations in the field of economic and social statistics" (Grant, Langpap, 2024).

The results of the second and third stages on the replacement of independent variables are presented in Table 4.

Table 4: Results of the second and third stages on the replacement of independent variables.

Independent variables/stage	Linear model of indicator dependence	Variable VIF
Stage 1. Independent variable gross domestic product	$y = 55930 + 175.95x_1 + 3.04x_4 - 0.09x_6 - 87.50x_7$	x_1 =74.885682 x_4 = 56.167471 x_=643.806667 x_7 =125.598725
Stage 2. The independent variable of atmospheric air pollution	y=-6519.6305+12.03x1-2.09x4+0.495x5-14.41x7+25.05x8+765.29x9.	x_1 = 153.392612 x_4 = 237.403307 x_5 = 680.291117 x_7 = 203.921175 x_8 = 68.318112 x_9 =17.098848
Stage 3. The independent variable of environmental investment	y=-511.76+0.003x1-0.01x4+0.003x6 +0.69x7.	x_1 =671.968647 x_4 =335.932865 x_6 = 105.579802 x_7 = 109.857427

Conclusions from stage 2. The analysis of the correlation between investments in environmental protection and GDP revealed a positive trend, which indicates a potentially synergistic effect between economic growth and environmental sustainability. An increase in GDP can boost investments in environmental protection, confirming the hypothesis that economic stability and environmental responsibility are complementary aspects of sustainable development.

Similarly, there is a positive correlation between taxes to the budget and GDP, which indicates an increase in the tax base in the context of economic expansion. This, in turn, can help increase the financing of environmental programs and projects, which is an important element of state policy in the field of environmental protection.

An interesting discovery was the identification of a positive relationship between tax deductions and investments in environmental protection. This indicates that an increase in tax revenues can serve as one of the mechanisms to stimulate investment in environmental protection measures. This fact underlines the importance of fiscal policy as an instrument of environmental modernization.

However, the correlation between the incidence of common diseases and investments in environmental protection has proven to be complex and ambiguous. The regression analysis graph shows a change in the direction of monotony between the 25th and 50th percentiles. In 2014-2024, the increase in the incidence of common diseases had a predominantly positive impact on investments in environmental protection, which may indicate their compensatory role in conditions of increasing burden on the healthcare system.

The analysis of "the relationship between the number of unauthorized landfills and waste with atmospheric air pollution also revealed a complex dynamic" (Fenichel, 2024). The regression graph shows a frequent change in the direction of monotony, which indicates the presence of nonlinear and probabilistic dependencies. Despite this, it can be stated that the reduction of unauthorized landfills and waste has a predominantly positive effect on the level of atmospheric air pollution in 2014-2024. The variance inflation factor (VIF) for all variables of the model exceeds the values of 17, which characterizes the presence of multicollinearity of factors. The linear regression coefficient for the variable x_1 characterizes the positive impact of investments in environmental protection on atmospheric air pollution. Similarly, GDP and the total number of cities with air pollution monitoring have a positive effect on air pollution. The coefficient for the variable x_4 demonstrates the presence of a negative relationship between the indicators of taxes deducted and atmospheric air pollution. The same dependence (negative) is observed with the variable x_7, i.e. environmental protection costs reduce atmospheric air pollution. The coefficient for the variable x_9 attracts special attention. Its value may reflect the significant impact of the number of unauthorized landfills on atmospheric air pollution.

Conclusions on stage 3. The relationship between the factors "investments in environmental protection" and GDP demonstrates a steady upward trend, which may indicate a positive impact of economic indicators on the engagement of environmental projects. The analysis also reveals a correlation between the factors "taxes to the budget" and "investments in environmental protection", characterized by positive dynamics. This may indicate that an increase in tax revenues contributes to increased investment in environmental projects. The relationship between the factors "incidence of common diseases" and "investment in environmental protection" requires more detailed consideration. The regression analysis graph shows a periodic change in the direction of monotony, which indicates the complex and nonlinear nature of this relationship. However, in 2014-2024, there has been a predominantly positive impact of an increase in morbidity on investments in environmental protection, which may be due to increased public attention to environmental problems in the context of deteriorating public health. The positive correlation between environmental spending and investment in this area confirms the growing awareness of the importance of environmental initiatives at both the public and private levels. Also, "there is an expected positive relationship between budget taxes and GDP, which indicates stable economic growth" (Cain, Hernandez-Cortes, Timmins, Weber, 2024) and an increase in financial resources available for environmental programs. Additionally, there is a positive correlation between GDP and environmental spending, which supports the hypothesis that economic growth contributes to increased investment in environmental initiatives. The variance inflation factor (VIF) for all variables of the model exceeds the values of 100, which characterizes the presence of multicollinearity of factors. The linear regression coefficient for the variable x_1 characterizes the positive impact of GDP on investments in environmental protection. Similarly, the incidence of common diseases and environmental protection costs have a positive impact on investments in environmental protection. The coefficient for the variable x_4 demonstrates the presence of a negative relationship between the indicators of taxes deducted and investments in environmental protection. This may be due to the internal policy of the state, which makes it possible to reduce tax deductions provided investments are made in socially significant projects.

Thus, the calculations carried out confirm the complexity of the relationship between economic and environmental indicators and the need for an integrated approach to the analysis and management of these processes. A set of patterns and interdependencies has been identified, the knowledge of which can be a vector for developing management solutions to strengthen environmental safety at all levels of the system: from the macro to the micro level. First, investments in environmental protection have a positive impact on GDP, which indicates a potential synergistic effect between economic growth and environmental sustainability. At the same time, an increase in GDP can contribute to increased investment in environmental protection, confirming the hypothesis that economic stability and environmental responsibility are complementary aspects of sustainable development. Secondly, a positive relationship has been identified between tax deductions and investments in environmental protection, which indicates that an increase in tax revenues can serve as one of the mechanisms to stimulate investment in environmental protection measures. At the same time, the positive correlation between budget taxes and GDP indicates an increase in the tax base in the context of economic expansion. In summary, an increase in tax deductions and economic stability can contribute to increased investment in environmental protection and financing of environmental programs.

5 CONCLUSION

1. The analysis of the factors and the strength of their impact on environmental safety made it possible to

note the interdependence of economic, social and environmental determinants.

2. Mathematical modeling is an informative tool for assessing the impact of environmental safety factors. The obtained results of the analytical review can be an informative resource for the development of comprehensive and objective management solutions to strengthen environmental safety at all levels of economic systems, as well as a scientific foundation for further research in this area.

REFERENCES

Levkina, E.V., Gusev, E.G., Shishkareva, N.V., 2024. Environmental safety management: theoretical and methodological aspects. *Financial management.* № 10. Pp. 113-122

Kurbatova, A.I., Tarko, A.M., 2006. Modeling the effects of atmospheric pollution of metallurgical enterprises on forest biogeocenoses. *Bulletin of the Peoples' Friendship University of Russia. Series: Ecology and life safety.* Vol. 13. No. 1. pp. 150-156.

Petrov, Yu.S., Sokolov, A.A., 2014. Modeling and analysis of the spread of anthropogenic emissions of the mining and metallurgical complex. *Modern problems of science and education.* № 1.

Levkina, E.V., Lyalina, Zh.I., Loksha, A.V., Savostina, S.E., 2022. Financial aspects of ensuring economic security: a multilevel approach: a textbook. Vladivostok : Publishing House of the Far Eastern Federal University, 1 CD-ROM; [169 p.]. Title page.

Emtseva, E.D., Kiku, P.F., Mazelis, A.L., 2019. The use of multidimensional statistical analysis methods to assess the dynamics of cancer incidence. *Human ecology.* Vol. 26. No. 2. C. 45-51.

Behrer, A.P., Heft-Neal, S., 2024. Higher air pollution in wealthy districts of most low- and middle-income countries. Nat Sustain, 7. 203–212.

Busch, J., Ferretti-Gallon, K., 2023. What Drives and Stops Deforesta-tion, Reforestation, and Forest Degradation? An Updated Meta-analysis. Re-view of Environmental Economics and Policy, University of Chicago Press, 17(2). 217-250.

Dugoua, E., Dumas, M., Noailly, J., 2022. Text as Data in Environmen-tal Economics and Policy, Review of Environmental Economics and Policy, University of Chicago. 16(2). 346-356.

Grant, L., Langpap, C., 2024. The Roles of Envi-ronmental Groups in Economics," Review of Environmental Economics and Policy, University of Chicago Press, vol. 18(2), pages 234-256.

Grant, L., Langpap, C., 2024. he Roles of Environmental Groups in Economics, Review of Environmental Economics and Policy, 12(2) 234 – 256.

Fenichel, E. P., 2024. A New Era of Economic Measurement for the Environment and Natural Capital, Review of Environmental Econom-ics and Policy, 18 (2), 321 – 330.

Cain, L., Hernandez-Cortes, D., Timmins, Ch., Weber, P., 2024. Recent Findings and Methodologies in Economics Research in Environmental Justice, Review of Environmental Economics and Policy, 18 (1), 116 – 142.