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MINERAL RESOURCES AND NATIONAL ECONOMIC SECURITY: CURRENT FEATURES

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ABSTRACT

Purpose is to estimate current mineral and raw material complex and its effect on national economic security basing upon determination and analysis of the integrated index.

Methods. Eleven countries of the world with the developed iron-mining industry have been selected as the object of the research. Information database has been formed to calculate integrated index of mineral and raw material security (MRMS). Seven indicators characterizing economic and technical state of iron-ore industry have been specified as performance measures. The indicators have been classified according to their effect on final integrated estimation of MRMS state in a country. The study involves proprietary methodology to calculate integrated index of MRMS.

Findings. MRMS has been distinguished in the system of national security. Following indicators have been proposed to be included into the system of national MRMS performance measures: production of mineral resources per capita; resource intensity of the economy; resource-efficiency of the economy; provision with the required mineral resources; export quota; intensity of mineral raw material consumption; and ratio of the volumes of raw material extraction and export of the products of primary processing and recycling (utilization efficiency). Positions and roles of mining industry in terms of provision with resources for the world economy have been evaluated on the basis of system approach (with the emphasis on mining industry). Basic current tendencies in the development of world mining industry have been highlighted including the following ones: increase in the consumption of mineral ore resources; growing intensity of the consumption of mined crude ore deposits and, consequently, depletion of the most commercial deposits; prevailing of mineral carbohydrate raw materials in the world mining industry; and increase in ore reserves consumption by the developing countries. Scientific and methodological approach to estimate the effect of mining industry upon the level of economic security has been approbated; the results have made it possible to evaluate MRMS of 11 leading producers of iron-ore raw material.

Originality. It is in the use of innovative complex (integrated) estimation of MRMS level in certain countries which has allowed performing their grouping in term of corresponding security levels and determining the factors effecting economic performance of mineral and raw material component.

Practical implications. The proposed integrated approach to the estimation of MRMS level of the countries favours the substantiation of the strategy to strengthen economic security in terms of the mining industry influence.

Keywords: *economic security, mineral resources, mineral and raw material complex, mineral and raw material security, index of national mineral and raw material security*

1. INTRODUCTION

Economic security (ES) is an essential component of the national security system that is stipulated by the importance of the economy in any social and economic system of production, consumption, distribution, and redistribution of benefits. Global shifts form new challenges in ES system at various levels requiring corresponding reaction and implementation of specific actions at any of those levels. The challenges are characterized by a long-terms character of the cause-and-effect relations. Consequently, it is possible to determine the fact that the risks possible in the sphere of security are of interdisciplinary nature which requires a complex of integrated actions at any level of managerial decision-making. Moreover, we should agree with the opinion of researchers (Kovaleva, Rusetskiy, Shadrina, Kochyan, & Zarovnaya, 2018) on the idea that the development of modern processes is of accelerated nature; thus, a forecasting period is shortened resulting in certain problems with long-term and medium-term forecasts as well as with the best practices concerning proper measures in the sphere of security.

Conceptual studies of the research vocabulary (De Soto, 1995; Keyns, 2007), i.e. categories of "economic security", are based on following scientific works: studies by mercantilists (they substantiated problems of the protection of national markets in terms of the protectionism concept), classic political economy (stability of economic systems was connected with the nonavailability of the conflicts of market entity interests, their consistency, rationality etc.), historical school (being aware of modern economic interest, each nation may have corresponding level and degree of economic culture which makes it possible to provide useful exchange with other civilized nations). Along with the development of Keynesian school, economic science was substantiating a participation of state which is able to effect employment stability and control inflation by applying corresponding measures for economic regulation (state order, administrative control etc.). However, according to the representatives of institutionalizm, these are "failures" and incapacity of a state in national economy control that intensify its shadowing being a threat for national ES. In practice, institutions (as a totality of standards, mechanisms, and rules) determine the boundaries of security status. As a consequence, going beyond the boundaries causes destabilization and develops corresponding threats which may be barriers on the course of development.

Among the current tendencies to study ES problems, following ones may be singled out (Romadina, 2008):

– theory of social and economic disasters (studying social and economic crises);

– theory of risks (studying the nature of economic risks);

– theory of conflicts (studying social reasons of economic conflicts);

– theory of self-organization of complex systems (studying regularities of sustainable functioning of complex systems) and others.

Table 1 represents systematized evolution of ES concept.

Table 1. Evolution of the concept of economic security

Main features of the concept	Concepts			
	Mercantilistic	Cameralistic	Keynesian	Institutional
Historical period of development	16th – 17th centuries	Middle of the 19th century	1930s	1980s
Representatives	T. Mun, A. Montchrestien, J.- B. Colbert	F. Liszt	J.M. Keynes	H. de Soto
Methodological basis	Protectionism	Rational state-owned property administration	State regulation of inflation, employment, and production	Protection of the economy against bureaucracy and administrative barriers
Methods to provide economic security	Protective import rates, stimulation of final products export	Political consonance over national interests	Fiscal and monetary policy	De-shadowing of the economy
Risks for economic system	Competitiveness on the part of foreign countries (entities)	Competitiveness on the part of foreign countries (entities), lack of political consonance	Inflation, unemployment, economic depression	Bureaucratization, inefficient government control

While studying climate of the national economy characterized as security, researchers (Ancev & Merrett, 2018) pay special attention to the capability of national economy for self-reproduction, its competitiveness in the world economy. Thus, ES climate should meet the nation's needs as well as ensure implementation of state interests. Such scientists as M.Ya. Kornilov (Kornilov, 2010) and Ye.I. Kuznetsova (Kuznetsova, 2012) draw attention to the protection of national interests. Researchers consider following factors to be basic ES characteristics: self-sustainability of the system, resistance of the economy to negative external and internal actions, and its capability for progressive development (Dudin, Prokof'ev, Fedorova, & Frygin, 2014).

Scientific studies emphasize following conceptual models of ES (Il'yashenko, 2013):

– liberal (American) model characterized by high competitiveness levels of economic entities, minimum level of interference on the part of state institutions into the activities of economic entities which is based on the combination of internal and external ES; that is possible owing to high level of financing while the required level is achieved thanks to high level of the development and competitiveness of economic entities in particular and the state in general;

– neoliberal (German) – a model characterized by high level of competitiveness of critical amount of economic entities, high level of small business stimulation by the state, governmental support of a social component of national security;

– social-democratic (Swedish) model prioritizes social component of ES at the expense of considerable influence of state institutions on that sphere by implementing corresponding income policy, income distribution, social benefits and guarantees etc.;

– European-Keynesian model is characterized by the intensification of the role of state institutions in regulation of economic relations, control of spontaneous action of market forces;

– Japanese model is characterized by the priority in supporting social component of SC in terms of simultaneous efficient use of national mentality;

– a model characterized by stiffness of economic system, its controllability, high level of protection against external risks (e.g. PR China).

One of the main economic security factors for the countries worldwide is the resources' provision, so development and implementation of the substantiated model of sustainable mineral and resource support as well as control of the mining industry effect upon economic security are important strategic tasks of the states.

Mineral and raw material resources are the basis of modern existence and development of the humanity. In particular, the idea is proven by the way how different raw material types are used in economic complex of any country.

The analysis of current institutional frames of mineral and raw material policy of the world countries performed by the author (Kazaryan, 2018; Komarova, Lonska, Lavrinenko, & Menshikov, 2018; Nechifor & Winning, 2018) makes it possible to claim that the overwhelming majority of scientists concentrate their minds on three basic policy models: export, import, and self-dependence (isolation). It should be noted that only separate countries use the indicated models in the pure form while others combine components of the available ones.

Taking into consideration the abovementioned, it is logical and expedient to evaluate MRMS of the countries being the largest producers of mineral crude ore and various rates of development from the viewpoint of efficient use of their resource potential. It should be noted that mineral output is determined according to the current consumption. As a rule, considerable stock reserves of mineral raw material (except strategic ones) are not formed. Economic factor of mining industry weight is expressed by cash inflow in that field. For instance, in the USA, extracted mineral raw material cost 1.4% of gross domestic product (GDP) in the 19^{th} century while its recycling products cost 4.2%. Such a situation conforms fully to modern post-industrial stage of national economic development.

2. RESEARCH METHODOLOGY

Certain countries with the developed iron-mining industry have been selected as the research object. These are iron and ferroalloys that cover 65% of the world production of mineral non-fuel resources; in addition, metallurgical industry being a main consumer of iron-ore raw materials is characterized by fast growth (within the period of 2000 – 2007, about 7% per year – period of intensive growth, within the period of 2007 – 2016, about 2.5% – period of recovery). Such countries as Australia, Brazil, China, India, Russia, the RSA, Canada, Iran, Sweden, and Kazakhstan are the main iron-ore producers in the world. Iron-ore industry development in those 11 countries has been evaluated according to following methodology.

First, basing upon information reports of international organizations (British Geological Survey, 2018), a database was formed to calculate MRMS integrated index. Following indicators were selected as performance measures:

– production of mineral resources per capita;
– resource intensity of the economy;
– resource-efficiency of the economy;
– provision with the required mineral resources;
– export quota;
– intensity of mineral raw material consumption; and
– ratio of the volumes of raw materials extraction and export of the products of primary processing and recycling (utilization efficiency).

Table 2 shows formulas to calculate the proposed indicators.

Table 2. Certain indicators to estimate national MRMS

Parameter	Calculation formula	Characteristic of the formula components
Production of mineral resources per capita	$P_n = \frac{\sum \mathrm{Pr}}{n}$	*GPS* – gross domestic product; *n* – population size; *Cr* – mineral resources consumption per year; *Er* – export of mineral resources; *Rr* – total reserves of mineral raw material; *Pr* – extraction (production) of mineral raw material per year; *Epr* – export of processed products
Resource intensity of the economy	$R_i = \frac{\sum Cr}{GPS}$	
Resource-efficiency of the economy	$R_{ef} = \frac{GPS}{\sum Cr}$	
Provision with the required mineral resources	$R_s = \frac{\sum Rr}{\sum \mathrm{Pr}}$	
Intensity of mineral raw material consumption	$Irc = \frac{\sum \mathrm{Pr}}{\sum Rr}$	
Export quota	$Ek = \frac{\sum Er}{GPS} \cdot 100\%$	
Efficiency of mineral resources use	$Erc = \frac{\sum Epr}{\sum \mathrm{Pr}} \cdot 100\%$	

Standardized values of the parameters, which may be united in the integrated estimation despite their different content and measuring units, were calculated according to formulas:

$$P_{ij} = \frac{x_{ij} - x_{\min}}{x_{\max} - x_{\min}}; \quad (1)$$

$$P_{ij} = \frac{x_{\max} - x_{ij}}{x_{\max} - x_{\min}}. \quad (2)$$

It should be stresses that various approaches to the estimation of standardized values are stipulated by different directions of the effect of the parameter item upon final integrated security evaluation. If increase in the value of the considered parameter item results in the integrated index itself, then it is the index of stimulation; to reduce it to comparative form, formula (1) is applied. On the contrary, if in terms of growing value of parameter item final integrated estimation decreases, then the index is a disincentive being standardized correspondingly according to formula (2). Consequently, it is expedient to classify factors according to their effect upon final integrated estimation of national MRMS (Table 3).

Integrated estimation is calculated as follows:

$$SI_{MR} = \frac{\sum SI_1 + SI_2 + SI_3 + SI_4 + SI_5 + SI_6 + SI_7}{7}, \quad (3)$$

where:

SI_{MR} – index of national MRMS;

SI_1 – subindex being an indicator of production of mineral resources per capita;

SI_2 – subindex being an indicator of the level of the economy's resource intensity;

SI_3 – subindex being an indicator of the level of the economy's resource efficiency;

SI_4 – subindex determining the level of provision with the required mineral resources;

SI_5 – subindex being an estimation of the intensity of mineral resources consumption;

SI_6 – subindex being an estimation of the export quota level;

SI_7 – is subindex being a criterion of the efficiency of mineral resources consumption.

Table 3. Classification of indicators according to their effect upon final integrated estimation of national MRMS

Factor	Incentive/disincentive
Production of mineral resources per capita	incentive
Resource intensity of the economy	disincentive
Resource-efficiency of the economy	incentive
Provision with the required mineral resources	incentive
Intensity of mineral raw material consumption	disincentive
Export quota	disincentive/incentive
Efficiency of mineral resources use	incentive

All the subindices were introduced into the integrated index with equal statistic weights.

3. RESULTS OF THE RESEARCH

Basing upon information reports by international organizations, a database has been formed to calculate MRMS integrated index (Table 4).

Table 4. Absolute indices to calculate MRMS integrated index

Countries	Productive iron ore reserves, mln t	Iron ore production (extraction), mln t	Iron ore consumption (steel production), mln. t	Gross domestic product (GDP), USD mln	Population, mln people	Export of semi-finished products and steel products, mln t	Iron ore export, mln t
Australia	24000	858.03	5.215	1304436.10	24.126	0.776	854.443
Brazil	12000	424.20	30.200	1795925.68	207.653	13.399	373.963
China	7200	1280.90	808.366	11218281.00	1403.500	108.066	0.000
India	5200	192.10	97.443	2259642.38	1324.171	10.325	21.697
Russia	14000	101.00	69.600	1246015.06	143.965	31.155	18.543
RSA	770	66.50	6.141	295440.01	56.015	2.194	64.707
Canada	2300	48.90	12.672	1529760.49	36.290	5.848	40.596
USA	760	40.80	78.475	18729509.50	325.952	9.247	8.761
Iran	1500	48.00	17.000	425402.62	80.277	5.654	17.869
Sweden	2200	31.80	4.616	514475.86	10.188	3.650	22.723
Kazakhstan	900	35.40	4.260	135005.20	17.988	2.500	1.563
The world	83000	3305.00	1623.000	75648868.00	7466.900	473.684	1582.826

Table 5 demonstrates a system of unit indicators taken into consideration while developing integrated index of the countries' MRMS level with the differentiation of maximum and minimum values of the factors required for their further standardization over a period of 2016.

Table 6 shows calculated standardized values and MRMS integrated index.

4. DISCUSSION OF THE RESULTS

The obtained results show that integrated index is characterized by a significant variation in terms of the studied countries. It should be also mentioned that, contrary to the majority of similar integrated indices, the index under consideration is not possible to be interpreted from "the higher the index is, the better the situation is".

Table 5. System of unit indicators (relative indices) – components of MRMS integrated index

Countries	Production of mineral resources per capita, t/person	Resource intensity of the economy, t per USD 1 mln	Resource efficiency of the economy, USD per 1 thous t	Provision with the required mineral resources (reserves – extraction ratio)	Intensity of mineral raw material consumption (% of extraction in reserves)	Export quota	Efficiency of mineral resources consumption, % of export of processed products in resource production
	incentive	disincentive	incentive	incentive	disincentive	incentive/ disincentive	incentive
Australia	35.565	3.998	250.132	27.97	3.58	4.08	0.09
Brazil	2.043	16.816	59.468	28.29	3.54	1.06	3.16
China	0.913	72.058	13.878	5.62	17.79	0.03	8.44
India	0.145	43.123	23.189	27.07	3.69	0.16	5.37
Russia	0.702	55.858	17.903	138.61	0.72	0.35	30.85
RSA	1.186	20.786	48.109	11.59	8.63	2.84	3.30
Canada	1.347	8.284	120.720	47.03	2.13	0.70	11.96
USA	0.125	4.190	238.668	18.63	5.37	0.10	22.66
Iran	0.598	39.962	25.024	31.25	3.20	0.56	11.78
Sweden	3.121	8.972	111.455	69.18	1.45	0.58	11.48
Kazakhstan	1.968	31.554	31.691	25.42	3.93	1.48	7.06
Min	0.125	3.998	4.026	5.621	0.721	0.025	0.090
Max	35.565	248.380	250.132	138.614	17.790	4.084	30.847

Table 6. Standardized estimations of unit indices and calculation of MRMS integrated index

Countries	Production of mineral resources per capita, t/person	Resource intensity of the economy, t per USD 1 mln	Resource efficiency of the economy, USD per 1 thous t	Provision with the required mineral resources (reserves – extraction ratio)	Intensity of mineral raw material consumption (% of extraction in reserves)	Export quota	Efficiency of mineral resources consumption, % of export of processed products in resource production	Index of mineral and raw material security, %
Australia	1.0000	1.0000	1.0000	0.8328	0.1681	1.0000	0.0000	71.44
Brazil	0.0541	0.9475	0.2253	0.8352	0.1704	0.2555	0.0998	36.97
China	0.0222	0.7215	0.0400	0.0000	0.0000	0.0000	0.2714	15.07
India	0.0006	0.8399	0.0779	0.8258	0.1613	0.0344	0.1718	30.17
Russia	0.0163	0.7878	0.0564	1.0000	1.0000	0.0810	1.0000	56.31
RSA	0.0299	0.9313	0.1791	0.5366	0.0449	0.6935	0.1044	36.00
Canada	0.0345	0.9825	0.4742	0.9177	0.3114	0.1673	0.3859	46.76
USA	0.0000	0.9992	0.9534	0.7278	0.0978	0.0183	0.7340	50.43
Iran	0.0133	0.8528	0.0853	0.8548	0.1927	0.1326	0.3800	35.88
Sweden	0.0845	0.9796	0.4365	0.9576	0.4779	0.1369	0.3703	49.19
Kazakhstan	0.0520	0.8872	0.1124	0.8118	0.1489	0.3572	0.2267	37.09

In certain cases, excessive level may show critical dependence of the economy upon the industry products and characterize resource economy as inefficient, backward, and pre-industrial. Thus, we propose to divide the countries into four groups (with relatively high security level, with the above average level, with the below average level, and with relatively low level) and determine lower and upper critical and optimal values for the obtained totalities.

Group one (with relative high security level) includes Australia, Russia, and the USA. Australia has the highest index (well ahead from other countries) that is quite logical since this country belongs to the category of the resource-efficient developed economies. High integrated index of that country is supported by the best characteristics in terms of almost all the indicators except a subindex showing that Australian metallurgical production is aimed at the requirements of national machine-building complex and meets its needs being rather justified from the viewpoint of post-industrial sustainable development. Almost similar situation can be observed in the USA. The highest resource efficiency and the lowest resource intensity as well as substantial export volumes of the processed products provide the country with rather high MRMS index.

As for Russia, the research shows that 3 of 7 indicators are with high values (subindices 4, 5, and 7); moreover, rather low index of the economy's resource intensity demonstrates a shift to improvement and diversification of GDP structure.

Groups two (the index is above the average level) includes Sweden and Canada characterized by high resource intensity and resource efficiency.

Groups three (the index is below the average level) formed by Kazakhstan, Brazil, and the RSA turns to be the most consistent one as for the obtained results.

Group four with relatively low security level covers Iran, India, and China. China has very low resource efficiency indices and high resource intensity of the economy; moreover, its own needs are higher than potential possibilities of its mining industry demonstrating the lowest values of subindices 4, 5, and 6 characterized by provision, intensity of consumption, and export quota.

Thus, the analysis of MRMS level of the countries – largest producers of iron ore raw material performed according to the proposed system of indicators has demonstrated considerable differences in the set of impact factors; that requires the elaboration of more detailed mineral and raw material models of their development taking into consideration innovative, technological, environmental and other factors.

According to the data by World Steel Association (Steel Statistical Yearbook, 2017), in 2017, despite global production growth, 27 of 50 leading countries-producers of iron ore raw material reduces their production. In this context, leading mining companies of the world increased their production of iron ore while small manufacturers did not support that tendency. Western African countries effected by Ebola virus, i.e. Sierra Leone, continued to face difficulties during iron ore production due to price decline and labor shortage.

Taking into account the necessity to implement key aspects of sustainable development into all spheres of human activities (especially in mining one, as a main contaminator of the environment), there arises the need to form new concept of the policy of mineral and raw material provision which would be based on the principles of sustainable development of the humanity and take into consideration interests of future generations and the environment conditions.

In general, sustainable development means unanimity in solving environmental, social, and economic problems. In terms of the resource problem, one of the practical approaches to provide sustainable progress is the maximization of net profit from the development and extraction of natural resources (renewable and non-renewable) being the source of supporting the required living standards of the current and future generations of the certain territory. It means that renewable resources, especially when they are in limited supply should be used at the rate being slower and equal to the rates of their renewal. As for nonrenewable resources, efficiency of their consumption should be the result of optimization of their interchangeability with the renewable ones owing to the achievements of scientific and technical progress (Kuleshov, 2017).

Thus, a model of sustainable mineral and raw material provision should be based on:

– sustainable development of proper mineral and raw material base (i.e. stimulation of the inflow of foreign and national investments into mining industry, implementation of innovative mining and geological surveying techniques) to meet the needs of national economy in terms of the most required types of mineral raw materials (Mamaikin, Kicki, Salli, & Horbatova, 2017):

– transparent mining process and production cycle. It is quite often when public revenue and payments of mining companies are not transparent. Local communities do not get the appropriate profit, human wellbeing is not improved, and land owners have no right to participate in mining processes;

– expansion of export supplies of both surplus of mineral raw materials and finished mineral and raw material products;

– participation in the development of mineral and raw material bases of other countries to supply strategic and deficient raw materials to its territory as well as trading their surplus on international markets.

5. CONCLUSIONS

In general, analysis of world tendencies of mining industry development demonstrates that there should be following important tendencies of its progress:

– developing innovative technologies to predict and evaluate mineral and raw material potential that will help reduce time and cut costs for geological surveying processes;

– developing high-efficient technologies of complex processing of medium-grade and low-grade iron ores as well as technogenic raw materials;

– developing complex zero waste closed systems of mineral processing and obtaining final product;

– developing innovative technologies to process mineral raw materials;

– developing new deep-water mineral deposits.

Thus, use of innovative technologies may not only change completely the idea of quantitative and qualitative characteristics of mineral and raw material potential but also improve considerably the environmental condition that is necessary for the humanity no less than the provision of its resource needs.

Long-term concepts (models) of national MRMS requires certain system approach meaning the following: statement of the purpose and formulation of basic tasks; detailed estimation of national mineral and raw material potential; development of the system of evaluation and complex maps, forecasting estimations of the indices of mining companies' operations, evaluation of potential investment possibilities of the mining industry, substantiation of the proposals and recommendations required for balanced solution of environmental social-economic problems of national development, substantiation and making optimization decision aimed at improving environmental conditions within the areas of mining operations, monitoring of environment-protective measures and outcomes of their implementation, and environmental and prognostic studies.

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КОРИСНІ КОПАЛИНИ ТА ЕКОНОМІЧНА БЕЗПЕКА КРАЇНИ: СУЧАСНІ ОСОБЛИВОСТІ

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Мета. Оцінка сучасного стану мінерально-сировинного комплексу та його впливу на економічну безпеку країни на основі визначення й аналізу інтегрального показника.

Методика. Як об'єкт дослідження обрані 11 країн світу з розвиненою гірничодобувною залізорудною пропромисловістю. Сформована інформаційна база даних для розрахунку інтегрального показника мінерально-сировинної безпеки (МСБ). Як показники оцінки були обрані 7 індикаторів, що характеризують економічний і технічний стан підприємств залізорудної галузі. Індикатори були прокласифіковані відповідно до їх впливу на підсумкову інтегральну оцінку стану МСБ країни. У дослідженні використана авторська методика розрахунку інтегрального показника МСБ.

Результати. Виділена МСБ в системі національної безпеки країни й запропоновано включити в систему показників оцінки МСБ країни такі індикатори, як: виробництво мінеральних ресурсів на душу населення; ресурсоємність економіки; ресурсоефективність економіки; забезпеченість необхідними мінеральними ресурсами; експортна квота; інтенсивність використання мінеральної сировини; співвідношення обсягів видобутку сировини і обсягів експорту продукції первинної та вторинної переробки (ефективність використання). Оцінені місця і ролі добувної промисловості в ресурсному забезпеченні світового господарства на основі системного підходу (з акцентом на гірничодобувну промисловість). Виділені основні сучасні тенденції розвитку світової гірничодобувної промисловості, серед яких: зростання обсягів споживання мінеральних рудних ресурсів; підвищення інтенсивності використання покладів викопної рудної сировини і, відповідно, вичерпання найбільш продуктивних родовищ; перевага у світовій добувній промисловості мінеральної вуглеводневої сировини; збільшення обсягів споживання рудних ресурсів країнами, що розвиваються. Здійснено апробацію запропонованого науково-методичного підходу до оцінки впливу добувної галузі на рівень економічної безпеки, за результатами якого оцінена МСБ 11 провідних виробників залізорудної сировини.

Наукова новизна. Полягає у використанні нової комплексної (інтегральної) оцінки рівня МСБ країн, що дозволило провести їх групування за відповідними рівнями безпеки й визначити фактори впливу на стан економіки мінерально-сировинної компоненти.

Практична значимість. Запропонований інтегральний підхід до оцінки рівня МСБ країн сприяє науковому обґрунтуванню стратегії посилення економічної безпеки в контексті впливу добувної галузі.

Ключові слова: *економічна безпека, корисні копалини, мінерально-сировинний комплекс, мінерально-сировинна безпека, індекс мінерально-сировинної безпеки країни*

ПОЛЕЗНЫЕ ИСКОПАЕМЫЕ И ЭКОНОМИЧЕСКАЯ БЕЗОПАСНОСТЬ СТРАНЫ: СОВРЕМЕННЫЕ ОСОБЕННОСТИ

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Цель. Оценка современного состояния минерально-сырьевого комплекса и его влияния на экономическую безопасность страны на основе определения и анализа интегрального показателя.

Методика. В качестве объекта исследования выбраны 11 стран мира с развитой горнодобывающей железорудной промышленностью. Сформирована информационная база данных для расчета интегрального показателя минерально-сырьевой безопасности (МСБ). В качестве показателей оценки были выбраны 7 индикаторов, характеризующих экономическое и техническое состояние предприятий железорудной отрасли. Индикаторы были проклассифицированы соответственно их влияния на итоговую интегральную оценку состояния МСБ страны. В исследовании использована авторская методика расчета интегрального показателя МСБ.

Результаты. Выделена МСБ в системе национальной безопасности страны и предложено включить в систему показателей оценки МСБ страны такие индикаторы, как: производство минеральных ресурсов на душу населения; ресурсоемкость экономики; ресурсоэффективность экономики; обеспеченность необходимыми минеральными ресурсами; экспортная квота; интенсивность использования минерального сырья; соотношение объемов добычи сырья и объемов экспорта продукции первичной и вторичной переработки (эффективность использования). Оценены места и роли добывающей промышленности в ресурсном обеспечении мирового хозяйства на основе системного подхода (с акцентом на горнодобывающую промышленность). Выделены основные современные тенденции развития мировой горнодобывающей промышленности, среди которых: рост объемов потребления минеральных рудных ресурсов; повышение интенсивности использования залежей ископаемой рудного сырья и, соответственно, исчерпания наиболее продуктивных месторождений; преобладание в мировой добывающей промышленности минерального углеводного сырья; увеличение объемов потребления рудных ресурсов развивающимися странами. Осуществлена апробация предложенного научно-методического подхода к оценке влияния добывающей отрасли на уровень экономической безопасности, по результатам которого оценена МСБ 11 ведущих производителей железорудного сырья.

Научная новизна. Заключается в использовании новой комплексной (интегральной) оценки уровня МСБ стран, что позволило провести их группировку по соответствующим уровням безопасности и определить факторы влияния на состояние экономики минерально-сырьевой компоненты.

Практическая значимость. Предложенный интегральный подход к оценке уровня МСБ стран способствует научному обоснованию стратегии усиления экономической безопасности в контексте влияния добывающей отрасли.

Ключевые слова: *экономическая безопасность, полезные ископаемые, минерально-сырьевой комплекс, минерально-сырьевая безопасность, индекс минерально-сырьевой безопасности страны*

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