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Assessment Environmental Responsibility of Business as an Ethical Challenge: Rating of Oil and Gas Companies Operating in the Arctic (2014–2022)

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ABSTRACT

The article aims to analyze the concept of “environmental responsibility of business” (ERB), focusing on its ethical dimension, and examines the environmental rating of Arctic oil and gas companies in 2014–2022 as a method for assessing ERB. The following methods were used in the research: 1. literature review and synthesis of existing ERB researches; 2. environmental rating as a comparative analysis method for assessing the ERB of Russian oil and gas companies operating in the Arctic. As a result, 11 theoretical approaches to the concept of “environmental responsibility of business” have analyzed and systematized by direction. An author’s definition of ERB is proposed as a conscious, continuously improving business practice, operating within the framework of corporate social responsibility (CSR), complying with mandatory and voluntary environmental regulatory and legal requirements, ensuring the sustainable development of human society and nature. Authors have maintained the ethical task is to combine clearly structured conscious activity with a moral imperative that all humanity must follow unconditionally, without reasoning or questioning. A research of the environmental rating of oil and gas companies operating in the Arctic in 2014–2022 identified companies with high, medium, and low levels of ERB overall and by sections reflecting different perspectives on the ERB concept. The rating system uniquely contributes to understanding ERB in challenging environments like the Arctic.

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Keywords: Environmental Responsibility of Business; Ethics; Environmental Rating; Oil And Gas Industry; The Arctic

1. Introduction

In recent years, a number of academic studies have emerged that take into account the concept of ecology in business through a resource-based approach, such as assessing the impact of environmental security on the sustainable development of a region^[1], in production and consumption waste management^[2], enterprise of water-industrial complex^[3]. At present, environmental constraints for business are the most important innovative resource for its development through the realization of the concept of “environmental responsibility of business” as an ethical challenge of modernity, especially taking into account the growing geo-environmental, geopolitical and socio-economic risks. The moral imperative is a general law, the highest requirement, the most important principle that must be followed unconditionally, without reasoning, without doubt. It is the moral maxim that applies to all mankind without exception^[4].

The authors highlight the novel aspects of the study about rating system uniquely to understanding ERB in challenging environments like the Arctic. It is known^[5], the larger companies tend to rank higher than smaller companies, state - controlled companies rank higher than privately controlled companies, and oil and gas companies higher than mining companies. The authors have previously researched environmental ratings of oil and gas companies operating in the Arctic. However, these researches lacked a connection to the ERB assessment and its ethical dimension. This article aims to analyze the ERB concept with an emphasis on its ethical aspect and to investigate environmental ratings of oil and gas companies operating in the Arctic in 2014–2022 as a method for ERB assessing.

2. Research Methods

Analysis and systematization by directions of 11 theoretical approaches to the concept of “environmental responsibility of business” was carried out with the help of analytical reviews of research publications on this topic.

The environmental rating can be used to assess the ERB in industries. The authors have introduced example of the

environmental responsibility rating of oil and gas companies, operating in the Arctic. Only companies operating in the Arctic were selected due to activities in this region with its harsh climate, fragile ecosystem, and various geo-ecological, geopolitical, and socio-economic risks, require a high ERB level. The analysis of the rated Russian oil and gas companies was based on the materials^[6–14] for 2014–2022. The rating includes only those companies that meet the following selection criteria: 1) implementation of hydrocarbon projects in the Arctic; 2) the lower limit of production volume (for the 2014 rating corresponds to the level of 1.5 million tons of oil equivalent (oil and gas condensate), and for the 2022 rating - 2 million tons), 3) oil transportation volume - 30 million tons per year, 4) oil and gas refining volume (for the 2014 rating - 8 million tons per year, for the 2022 rating - 20 million tons). The rating is calculated for all segments of the industry: production, refining and transportation of hydrocarbons. Irrelevant criteria are disregarded.

There are potential limitations affecting inaccuracy in the ranking approach and data sources. In particular, the number of companies varied during the study period. For example, the gas company Arktikgaz was included in the rating only in 2015, and the oil company Bashneft has been a member of PJSC NK Rosneft since 2016. In addition, a number of companies are owners of some other companies, for example, Gazprom, Sakhalin Energy, Gazprom Neft. At the same time, all companies are considered independent, as each retains its own internal policy, as well as a loosely formulated corporate social responsibility policy.

The rating is based on three sections: 1) the management section “Environmental Management” reveals compliance with global standards and practices of environmental management quality in companies (ERB is considered as a management system); 2) operational section “Environmental impact” of the company is defined in terms of the consequences of its activities and includes the criteria of the components of official statistics on environmental protection (ERB is considered as compliance with mandatory and voluntary regulatory requirements, as a “legal consequence”); 3) the information section “information disclosure/transparency”

reveals the degree of readiness of companies to demonstrate information regarding the environmental impact of production activities (ERB is assessed as a relationship with social responsibility, as part of CSR). The list of criteria and more details are described in the researches^[6–16].

The rating results are calculated in three stages: 1) each criterion of each company is designated by colour: green, yellow or red; 2) the colour is translated into a score: red—0 points, yellow—1 point, green—2 points; 3) for each section for each company the arithmetic mean is calculated. Irrelevant criteria are not considered. The final rating score is calculated for each company as an arithmetic mean, it varies

from 0 to 2 points.

3. Results

The structure schemes of the enterprises' concept of sustainable development are proposed due to the fact that responsibility is formed in the realization of human activity in those areas that are basic for this concept: environmental (natural component), social and economic. The theoretical approaches which are being applied or discussed to the concept of “environmental responsibility of business” are analyzed and systematized. It is presented in the **Table 1**.

Table 1. The main approaches to the concept of “environmental responsibility of business”.

No.	An Approach to the Concept
1	As compliance with mandatory regulatory requirements within the framework of environmental law
2	As compliance with voluntarily adopted regulatory requirements beyond the scope of environmental law
3	As compliance with mandatory and voluntary regulatory and legal requirements
4	As a “legal consequence”
5	As part of CSR
6	As a non-traditional type of legal responsibility in the field of environmental protection
7	As a highly moral legal category
8	As a philosophical category
9	As the main goal of environmental education
10	As a relationship with social responsibility
11	As a management system

The author's definition of ERB is proposed. The factors of ERB formation in the context of interaction between ecology and business are highlighted.

The paper presents a study of the environmental rating of Russian oil and gas companies operating in the Arctic for 2014–2022 as a neutral tool for assessing ERB. It identifies companies with high, medium and low level of ERB in general and by sections reflecting individual points of view on the concept of “environmental responsibility of business”.

3.1. Approaches to the Concept of “Environmental Responsibility of Business” and Factors of ERB Formation

3.1.1. Approaches to the Concept of “Environmental Responsibility of Business”

Responsibility is formed when performing certain functions and realizing human activity in such spheres as economic, social and environmental. These spheres are directly related to the concept of sustainable development, which

implies harmonious coexistence of economic, social and natural systems. There is research substantiates ERB concept as an ESG and sustainable development criterion^[17]. ESG, as a trend, align with sustainable development goals. ESG and sustainable development principles are implemented in Russia considering local specifics. ESG criteria include data reflecting ERB measure. ERB demonstrates a proactive approach to environmental protection based on incentives, not just fear of liability. This makes it a value-based criterion, encouraging green technologies and innovative business models, and aligns with ESG and sustainable development.

The choice of any company is related to what ratio of environmental components best reflects the essence of sustainable development, within which it will realize its activities and express environmental responsibility (**Figure 1**). The authors have selected from research literature only those who connecting ERB and they have analyzed ones by the main points of view. As a result, they have ordered into the directions, which are numbered above from 1 to 11.

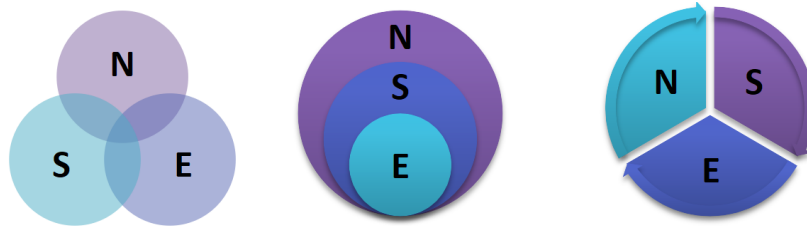


Figure 1. Schemes of the structure of the enterprise sustainable development concept (N—natural; S—social; E—economic).

The authors, taking into account the above-mentioned positions, understand the definition of ERB as a conscious constantly improved business conduct in the system of CSR in compliance with mandatory and voluntary environmental regulatory and legal requirements, ensuring sustainable development of human society and nature.

One of the first challenges in adopting environmental responsibility practices is convincing the stakeholders that it makes sound business sense. Companies that embrace sustainable practices can benefit from new market opportunities and gain a competitive edge over their peers. By addressing the growing market demand for eco-friendly products and services, businesses can tap into a customer base that prioritizes sustainability. Moreover, taking a leadership role in environmental responsibility can enhance a company's brand image, attracting socially conscious consumers and fostering brand loyalty. When it comes to making the business case for environmental responsibility, it is essential to highlight the long-term benefits that can be derived from such practices. While some may argue that investing in sustainability measures can be costly, the truth is that these investments can lead to significant cost savings in the long run. For example, implementing energy-efficient technologies and practices can reduce energy consumption and lower utility bills. Similarly, adopting waste management strategies can minimize waste disposal costs and even generate revenue through recycling or repurposing materials^[18].

3.1.2. Factors of ERB Formation

The authors highlight the following factors of ERB formation, with emphasis on the need for their integrated use and interrelation with the above-mentioned ERB directions: 1. psychological (ERB is presented as a philosophical category); 2. social (ERB is presented as a highly moral legal category, part of CSR, interconnection with social responsibility, as a goal of environmental education); 3. economic (ERB is presented as a management system); 4. normative-legal (ERB is presented as compliance with mandatory and voluntary

normative-legal requirements, as a “legal consequence”).

Formation of ERB is based on the complex use of the following factors: 1. psychological, based on the understanding of the importance of preserving the natural environment and its unconditional priority in making managerial decisions (ERB is presented as a philosophical category); 2. social, based on the understanding of the social significance of environmental resources (ERB is presented as a highly moral legal category, part of CSR, interconnection with social responsibility, as a goal of environmental education); 3. economic, based on the choice of the best available technologies from the point of view of environmental conservation as a basis for ensuring strategic competitiveness in world markets (ERB is presented as a management system); 4. normative-legal, based on the legislative establishment of environmental responsibility (ERB is presented as compliance with mandatory and voluntary normative-legal requirements, as a “legal consequence”).

3.2. Environmental Rating as A Way of Assessing the ERB

3.2.1. Results of the 2022 Rating by Sections

Analysing the results of the 2022 rating by three sections showed that the leaders in each section are different (Table 2).

Figure 2 shows the distribution of rating scores by sections for the leading companies. In general, there is an approximately equal ratio of shares of rating indicators realization by sections. The exception is Rosneft, which has a high share of indicators of the management sector and a reduced share of information transparency.

3.2.2. Comparison of the Results of the 2014 and 2022 Ratings

The results of the first and last year ratings for companies operating in the Arctic differentiated by sections are presented in Table 3.

Table 2. Results of the 2022 rating differentiated by sections (green—high level of ERB, yellow—medium level of ERB, red—low level of ERB).

No.	Company	Environmental Management	Environmental Impact	Transparency	Final Score
1	Zarubezhneft	2.000	1.750	1.556	1.769
2	LUKOIL	1.909	1.361	1.889	1.720
3	Sakhalin Energy	1.818	1.639	1.778	1.745
4	Rosneft	1.818	1.000	0.556	1.125
5	NOVATEK	1.636	1.500	1.333	1.490
6	Gazprom	1.636	1.056	1.667	1.453
7	Gazprom Neft	0.182	0.000	0.111	0.098
8	Russneft	0.091	0.000	0.444	0.178
9	Arctic Gas	0.000	0.000	0.222	0.074
	Average score	1.232	0.923	1.062	1.072

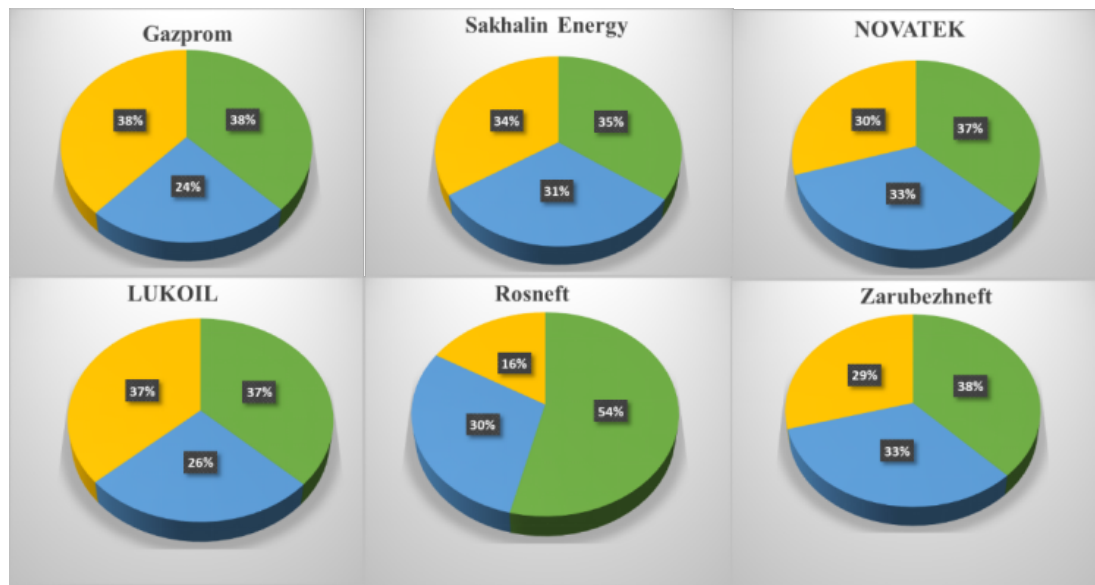


Figure 2. Distribution of the shares of final points by sections in the general rating system, (green—section 1; blue—section 2; yellow—section 3).

Table 3. Comparison results of the 2014 and 2022 rating differentiated by sections, score.

Company	Section 1. Environmental Management, Score		Section 2. Environmental Impact, Score		Section 3. Transparency, Score	
	2014	2022	2014	2022	2014	2022
Zarubezhneft	1.0000	2.0000	1.1667	1.7500	1.0000	1.5560
LUKOIL	1.2857	1.9090	0.9167	1.3610	0.7778	1.8890
Sakhalin Energy	2.0000	1.8180	0.9091	1.6390	1.6667	1.7780
Rosneft	1.1429	1.8180	0.7500	1.0000	1.2222	0.5560
NOVATEK	1.0000	1.6360	0.2727	1.5000	0.8889	1.3333
Gazprom	1.2857	1.6360	1.3333	1.0560	1.4444	1.6670
Gazprom Neft	1.1429	1.1820	0.5833	0.0000	0.8889	0.1110
Russneft	0.2857	0.0910	0.0000	0.0000	0.5556	0.4440
Arctic Gas	-	0.0000	-	0.0000	-	0.2220

The results of the first and last year ratings for companies operating in the Arctic are presented in **Table 4**.

In general, the most noticeable trend in the rating is the positive dynamics of the final rating score for almost all analyzed companies. The top three rating leaders in 2022 among

other companies operating in the Arctic were Zarubezhneft, Lukoil, and equally Sakhalin Energy and Rosneft, while the best in 2014 were Sakhalin Energy, Gazprom, and Rosneft. The biggest difference between the final rating index of 2022 and 2014 was revealed for Zarubezhneft.

Table 4. Results of the 2014 and 2022 rating implementation for companies operating in the Arctic (green color—high level of ERB, yellow—Medium level of ERB, red—low level of ERB).

Company	Final 2022 position/Final 2022 Rating Point	Point Change 2022 as Compared to 2014 Result	Final 2014 Position/Final 2014 Rating Point
Zarubezhneft	1.769	▲ 0.7134	1.0556
LUKOIL	1.720	▲ 0.7257	0.9943
Sakhalin Energy	1.745	▲ 0.2197	1.5253
Rosneft	1.125	▲ 0.0390	1.0860
NOVATEK	1.490	▲ 0.7695	0.7205
Gazprom	1.453	▲ 0.0985	1.3545
Gazprom Neft	0.098	▼ 0.7737	0.8717
Russneft	0.178	▼ 0.1024	0.2804
Arctic Gas*	0.074	▼ 0.0741	0.1481*

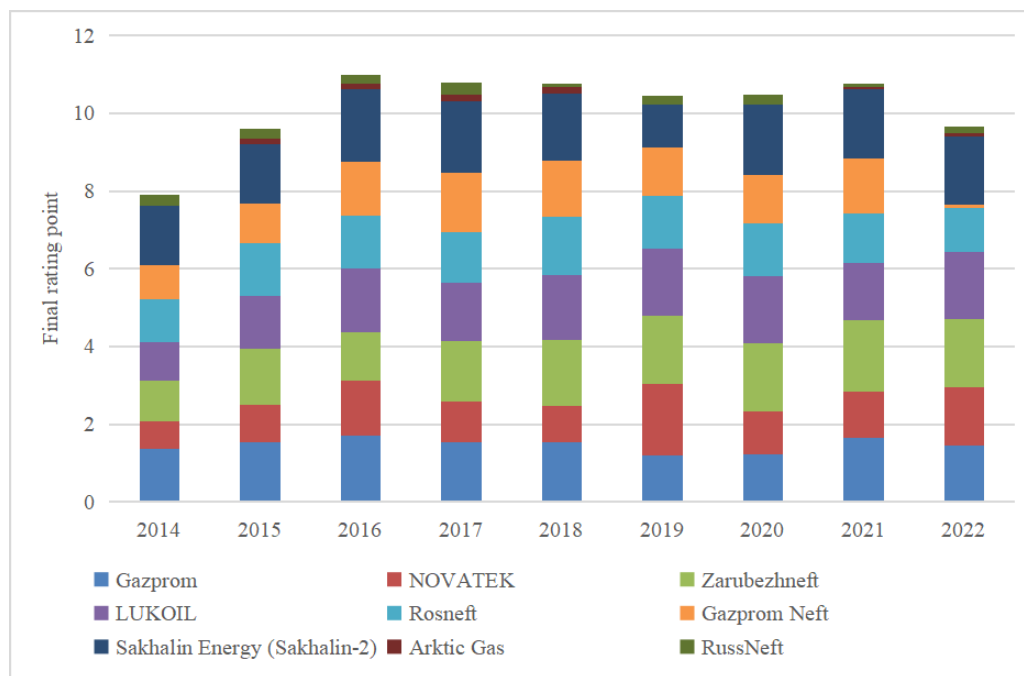
* gas company Arctic Gas entered the rating only in 2015 (proposed data for 2015 instead of 2014).

3.2.3. Dynamics of the Final Rating Scores by Years for 2014–2022

Analyzing the final rating scores for 2014–2022 (Figure 3), it should be noted that up to 2016 there is a pronounced positive dynamics of rating indicators. Further, after a downturn in 2017, the final rating results are stable until 2021 mainly due to seven companies: Gazprom, NOVATEK, Zarubezhneft, LUKOIL, Rosneft, Gazprom Neft, and Sakhalin Energy. In 2022, the situation has not changed in general, except for Gazprom Neft, which saw a sharp decrease in the final rating score, which puts it on a par with the outsiders in comparison with the results of the 2014 rat-

ing. However, in terms of the sum of final scores for the entire period of the research, it falls into the middle ranks (Figure 4).

All rated companies can be divided into three major groups according to the sum of total final scores for 2014–2022 (Figure 4): 1. Rating leaders with a high level of ERB (12–14 total final scores): Sakhalin Energy (Sakhalin-2), Zarubezhneft, Lukoil. 2. Mid-ranking companies with average ERB level (8–11.9 aggregate final scores): Gazprom, Rosneft, NOVATEK, Gazprom Neft. 3. Rating outsiders with a low level of ERB (0.7–2.5 cumulative total points): Arctic Gas, Russneft.

**Figure 3.** Distribution of final rating points in dynamics for 2014–2022.

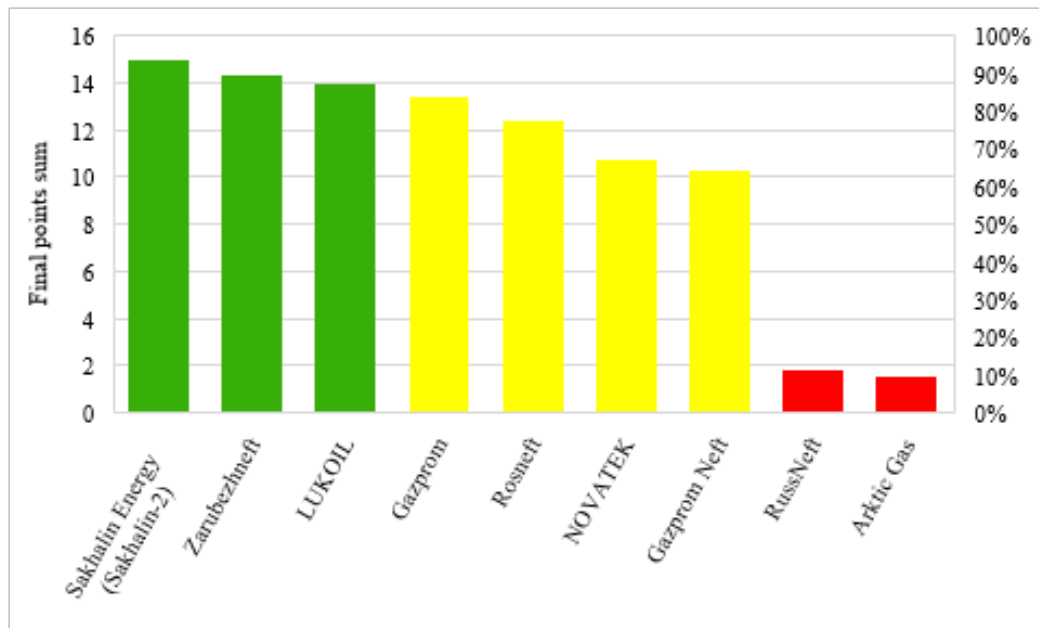


Figure 4. Distribution of the sum of the final rating points for the period 2014–2022 (green color—high level of ERB, yellow—medium level of ERB, red—low level of ERB).

4. Discussion

4.1. Approaches to the Concept of “Environmental Responsibility of Business” and Factors of ERB Formation

4.1.1. Approaches to the Concept of “Environmental Responsibility of Business”

Today, the orientation of business activities is aimed at the implementation of the concept of strategic profitability with the realization of the need for rational use of resources in conditions of their limitation, consolidation of risks. The approach differs from the originally aimed at maximizing profit from the resources used. Business as a type of human activity is characterized by such a behavioural characteristic inherent in individuals and social groups as responsibility. It is responsibility that reflects the dependence of a person or a group of people on something significant and perceived as an obligation or duty. It may have an internal character of choosing the way of behaviour in making managerial decisions or an external character caused by the negative consequences of violation of specified requirements leading to certain internal and external sanctions.

Responsibility is formed when performing certain functions and realizing human activity in such spheres as economic, social and environmental. These spheres are directly related to the concept of sustainable development, which implies harmonious coexistence of economic, social and natural systems. The choice of any company is related to what ratio of environmental components best reflects the essence of sustainable development, within which it will realize its activities and express environmental responsibility. The concept of environmental responsibility is currently undergoing significant changes, which is mainly due to the increase in global changes, including geo-environmental, geopolitical and socio-economic character^[16]. The development of the ERB idea actualizes the problem of theoretical understanding of the concept, for which there is currently no unified interpretation neither in international nor in Russian practice^[19]. However, it is commonly believed that environmental responsibility is the obligation of a business to conduct its operations in a way that keeps the environment safe^[20].

If we analyse different points of view on the interpretation of the concept of “Environmental Responsibility”, we can distinguish the main approaches to the concept presented in **Table 5**.

Table 5. The main approaches to the concept of environmental responsibility.

No.	An Approach to the Concept	Definition of the Concept
1	As compliance with mandatory regulatory requirements within the framework of environmental law	“The company’s environmental responsibility takes into account economic, social and internal reasons for preserving and strengthening the environment, relates to long-term goals and must comply with expected regulatory requirements” ^[21] .
2	As compliance with voluntarily adopted regulatory requirements beyond the scope of environmental law	“Environmental responsibility of business is seen as voluntary development of programs and activities beyond the scope of environmental law and their actual implementation” ^[22] . “Enterprise environmental responsibility is the conscious and voluntary commitment of an industrial enterprise to environmental protection, taking into account the expectations of stakeholders, with the aim of improving safety and sustainable development” ^[23] .
3	As compliance with mandatory and voluntary regulatory and legal requirements	“Environmental responsibility is a conscious attitude of an economic entity to regulatory and legal requirements of environmental protection based on its understanding of the consequences of its economic activities for the environment and voluntarily assumed responsibility and readiness to take preventive measures to prevent damage to the environment, as well as to voluntarily eliminate the damage caused to it” ^[24] .
4	As a “legal consequence”	Violation of natural resource legislation, associated with the application to violators by state bodies of coercive measures established in the legislation for violation of the right of state ownership of natural objects, rules of their rational use and rules of nature protection ^[25] .
5	As part of CSR	The environmental component of CSR is considered as a conscious and voluntary participation of business in programs for the rational use of raw materials and natural resources, for the preservation of environmental stability by reducing the impact of the enterprise’s activities on the environment, as well as a set of other measures aimed at preventing and eliminating their negative impact ^[26] . Corporate environmental responsibility as an important part of social responsibility affects stakeholder relations and business results ^[27] .
6	As a non-traditional type of legal responsibility in the field of environmental protection	Environmental liability is a new, non-traditional type of legal responsibility in the field of environmental protection. There are two approaches in views on it: unified and differentiated. It’s believed ^[28] that the subdivision of legal responsibility into positive and negative has its certain advantages in comparison with the idea of it as a single and indivisible phenomenon and its corresponding concept. This differentiated approach allows for a more in-depth and versatile study of legal responsibility. However, the very possibility and, most importantly, the legitimacy and validity of the division of legal responsibility into positive and negative are saved doubt. In particular, according to the traditional view of legal responsibility it is always given a certain negative connotation associated with the violation of certain laws, by-laws, legal customs, legal contracts and other legal acts. When trying to give legal responsibility a positive connotation and define it as a “duty” or obligation to follow various prescriptions, it is possible to improperly mix legal responsibility with official or civil duty, moral obligation to comply with other customs, traditions and other social norms established in society. In addition, this approach inevitably loses the specificity of the legal understanding of responsibility and there is a need to introduce a new, additional term denoting legal responsibility proper, i.e., responsibility in the legal, but not in the moral or any other sense ^[28] . In general, there is a need for an appropriate concept of environmental-legal liability, which a number of researchers have been working on for a long time. In particular, they note the legal-restorative nature of environmental-legal responsibility, through which it could be applied to compensate for environmental damage, which would contribute to the restoration of affected areas of the natural environment ^[29] . Environmental-legal responsibility is characterized by features that are inherent in other types of legal responsibility for environmental offenses: a) environmental-legal responsibility, as well as other forms of legal responsibility, is one of the varieties of social responsibility, and therefore is inextricably linked with all its special forms; b) environmental-legal responsibility is applied in two senses: active and positive. Their comparison is presented in Table 6 compiled by the authors on the basis of materials from ^[30] .

Table 5. *Cont.*

No.	An Approach to the Concept	Definition of the Concept
7	As a highly moral legal category	Positive environmental responsibility is a highly moral legal category, a model of behaviour in the field of environmental protection, which requires its continuous improvement, an integral element of the legal system ^[30] . The attributes of this definition: - can be established by the norms of the state as an encouragement, i.e. it is one of the means of persuasion. - its application is possible only by specially authorized subjects, including state bodies and heads of organizations, including public ones. - its application relates to the fact that a person is granted certain additional rights and opportunities. - it finds its expression in positive consequences of different nature: property, organizational and personal, and is a form of implementation of environmental sanctions. However, it is not identified with the above-mentioned concept. - as a rule, it is applied in a special procedural form. Only certain merits serve as grounds. Positive responsibility arises from the legal obligation to perform positive, useful for society functions and roles. It is realized in regulatory legal relations, in which the obliged party is in a state of control and accountability. Its subjects are in this area, for example, citizens in legal relations with the state, the state itself, its bodies, officials, legal entities. Thus, the foundation of positive responsibility is not only the social and moral foundations of society, its attitude to the natural environment, but also the relevant legal norms. It follows that positive responsibility in its basis is also based on legal sources. The constituent parts of positive responsibility can be considered such elements of it as behaviour within the framework of legal norms, subjective law, legal duties, measures of moral and material encouragement, social interest. Based on this, it is possible to identify such features of positive environmental responsibility as normativity, legal obligation to comply and fulfil the requirements stipulated by the rule of law; secured by state persuasion, encouragement or coercion; lawful behaviour; application of incentive measures ^[31] .
8	As a philosophical category	Ecological responsibility as a moral imperative of human existence determines the behavior and life activity of modern man, thereby ensuring sustainable development of human society and nature, their further co-evolution. There are millions of animal species on earth, but only the human race bears moral responsibility for the sustainable future of the Earth ^[32] .
9	As the main goal of environmental education	Environmental responsibility is associated with such qualities of personality as self-control, ability to foresee the immediate and distant consequences of their actions in the natural environment, critical attitude to themselves, etc. ^[33]
10	As a relationship with social responsibility	Positive environmental responsibility is closely related to social responsibility. Positive environmental responsibility strengthens environmental legal consciousness and can be classified on various grounds. Thus, one should distinguish between positive responsibility for violations of water legislation, for violations of land law norms, for violations of atmospheric air, for violations of forest legislation, as well as responsibility to the state, society, municipal entity, collective, individual citizen, present and future generations, etc. ^[30]
11	As a management system	“Environmental responsibility involves conducting a management system that does not cause irreparable damage to the natural environment and preserves the natural heritage for future generations” ^[34] .

Table 6. Comparison of positive and negative environmental responsibility.

Positive Environmental Responsibility	Negative Environmental Liability
1. is expressed in the subject's consciousness of his/her social significance for the preservation of the environment in the future, his/her conscious behavior and control over it in relation to nature.	1. is the responsibility between the state and the offending subject, and for past behavior
2. there is not an environmental offense	2. there is an environmental offense
3. the person is well aware of the consequences of his actions and willfully performs them.	3. intent can be either direct or indirect
4. the objective side, as a rule, is expressed in actions, however, inaction is not excluded	4. the objective side is expressed in both actions and inactions

The authors, taking into account the above-mentioned positions, understand the definition of ERB as a conscious constantly improved business conduct in the system of CSR in compliance with mandatory and voluntary environmental regulatory and legal requirements, ensuring sustainable development of human society and nature. The authors highlight the novel aspects of the study about rating system uniquely to understanding ERB in challenging environments like the Arctic.

Thus, authors critically synthesise and cleaner position of the 11 conceptual approaches to ERB.

The strengthening of different approaches to the ERB concept leads to different business consequences.

For example, the development of a second approach related to going beyond environmental law. Mastering leadership beyond regulatory compliance is crucial for organizations that aspire to be true environmental stewards. By going beyond minimum requirements and adopting proactive strategies, companies can capture market demand, gain a competitive edge, and contribute to a more sustainable future. From making the business case to embracing clean energy and educating consumers, each aspect of environmental responsibility plays a vital role in shaping the leaders of tomorrow. By embracing this paradigm shift and making it an integral part of their organizations can truly master leadership beyond regulatory compliance^[18].

At the same time developing highly moral category, business focus on ethical norms as an integral part of environmental responsibility. Companies must ensure that their entire supply chain adheres to ethical standards and practices. This includes screening vendors and suppliers for their environmental and social impacts, ensuring fair labor practices, and promoting human rights. By adopting ethical business practices, organizations contribute to the overall sustainability of their industry and avoid reputational damage caused by association with unethical practices. Screening vendors for sustainability and ethical practices is crucial in maintaining a responsible supply chain. Companies should establish criteria for evaluating vendors and suppliers based on their environmental performance, labor practices, and compliance with regulations. This ensures that all partners involved in the supply chain are aligned with the company's values and commitments towards environmental responsibility^[18].

It suggests that responsible business practices create

economic and societal value by re-aligning their corporate objectives with stakeholder management and environmental responsibility. Today, responsible behaviours are increasingly being embedded into new sustainable business models that are designed to meet environmental, societal and governance deficits^[35].

However, there are also barriers to the development of ERB. It is considered^[36], due to market processes continually eliminate less competitive firms and tend to concentrate business activities geographically, political pressure brought to bear by adversely affected vested interests often results in the creation of policies that cause greater environmental harm than would otherwise be evident.

4.1.2. Factors of ERB Formation

The interrelationship between environment and business determines the factors of ERB formation. Environment and business mutually influence each other. Thus, the impact of the environment on business is assessed through the cost of environmental investments and current environmental payments, including for damage caused, as well as through the taxation system or direct bans on economic activity in certain areas.

Environmental resources in aggregate affect business in all sectors of the economy of a given region, determining the territorial average industry costs and competitiveness of products on the markets. However, for a number of sectors (tourism, agriculture, forestry, fishing and hunting) and industries (e.g., oil and gas), environmental resources are the basis for the possibility of organizing business in the territory. Business impact on the environment is calculated on the basis of environmental impact assessment to determine harmful emissions, discharges, waste generation, etc. from business activities. Obviously, approaches to such assessment differ between business, the state and organizations involved in environmental protection, and there is always a reason for contradictions. At the same time, only consolidation of responsibility of business, the state and public environmental organizations can lead to a balance of interests of all stakeholders.

Summarizing the theories that are applied and discussed for ERB, the authors formulate the following factors of ERB formation: 1. psychological, based on the understanding of the importance of preserving the natural environment and its unconditional priority in making managerial decisions (ERB

is presented as a philosophical category); 2. social, based on the understanding of the social significance of environmental resources (ERB is presented as a highly moral legal category, part of CSR, interconnection with social responsibility, as a goal of environmental education); 3. economic, based on the choice of the best available technologies from the point of view of environmental conservation as a basis for ensuring strategic competitiveness in world markets (ERB is presented as a management system); 4. normative-legal, based on the legislative establishment of environmental responsibility (ERB is presented as compliance with mandatory and voluntary normative-legal requirements, as a “legal consequence”).

ERB not only encompasses environmentally-oriented measures for the examination of products and production services, reduction of environmental impact, but also forms a new mindset of a businessman, based on the awareness of the importance of preserving environmental resources and natural environment for future generations. Minimizing and preventing environmental damage can also solve social problems, such as reducing morbidity and improving the quality of life of the population. Environmental responsibility is becoming a necessary characteristic of actively developing industrial enterprises, including those that are aimed at successful operations in the international market^[37].

4.2. Environmental Rating as a Way of Assessing the ERB

4.2.1. Results of the 2022 Rating by Sections

Analysis of the results of the 2022 rating in three sections showed that the surveyed oil and gas companies operating in the Arctic correspond to different levels of ERB. In general, a high level is demonstrated by such companies as Zarubezhneft, LUKOIL and Sakhalin Energy, the average ERB level - Rosneft, NOVATEK, Gazprom, the low ERB level - Gazprom Neft, Russneft, Arcticgas (it is noteworthy that these companies show low indicators in all sections of the rating). Among the companies with high and medium ERB level the indicators by sections are different. For example, Zarubezhneft is the leader in the management and operational sections, while in the information section it occupies the middle position. This indicates that in order to increase the ERB level it is necessary to strengthen activities

in terms of information disclosure. The indicators of the other companies under study should be interpreted similarly.

4.2.2. Comparison of the Results of the 2014 and 2022 Ratings

A comparison of the 2014 and 2022 results shows that only Sakhalin Energy has an equal and stable leadership position, while the rest of the companies show a fluctuating position, except for Russneft and Arctic Gas with low ERB scores. The largest gap between the final rating index of 2022 and 2014 was revealed for Zarubezhneft. It is noteworthy that the improvements were mainly due to the fact that companies disclosed additional information on environmental management and environmental impact.

This suggests that companies need continuous improvement in order to meet the ERB level, and if they succeed in one year, they should improve it in the next year.

4.2.3. Dynamics of the Final Rating Scores by Years for 2014–2022

The dynamics of the final rating scores for 2014–2022 is characterized by instability. Thus, the pronounced positive dynamics in 2014–2016 is replaced by a decline in 2017, followed by relative stabilization until 2021 with a subsequent decline in 2022. This shows that ERB is volatile and closely related not only to the improvement of the internal environment of companies, but also to external factors. For example, the decrease in production in 2017 was due to the fulfillment of the treaty with OPEC countries, under which Russia committed to limit production at the level of October 2016. The fulfillment of this agreement was due to the decrease in production by the companies: Rosneft (–0.6% year-on-year), LUKOIL (–1.5%), NOVATEK (–5.8%) and others^[38].

Analysis of the average rating score of 2022 showed its stability compared to the previous year. At the same time, there is a tendency for the score to decrease after a smooth rise in 2017–2019. It is noteworthy that in 2022 a number of companies decided to fully or partially close environmentally relevant information even for 2021. In addition, a new criterion appeared in the management section - “Control by the Board of Directors (supervisory management body) over the implementation of the environmental protection policy”. This criterion, like most of the new criteria, has a low disclosure rate in the first year. However, the overall score

for the entire sample remained at the level of the 2021 rating, indicating increased transparency for many of the rated companies. In particular, companies were able to improve their positions by increasing their average score across all three sections. NOVATEK's level of disclosure improved most notably (average score increased by 0.312 compared to 2021). Despite the objective difficulties in publishing annual reports and sustainability reports, as well as separate information related, for example, to oil production volumes, a number of companies decided to prepare the data required for calculation in the form of a separate document. This demonstrates the desire of many companies to maintain the achievements of recent years in the direction of increasing environmental responsibility. It is important to note that in 2022, of the rated companies, two (PJSC Gazprom and PJSC NOVATEK) published information about accidents with significant environmental damage and environmental disputes either in their sustainability reports or in news feeds on the companies' websites. This approach contributes to enhancing business transparency, building public trust and developing a constructive dialog to reduce emergency risks in the Arctic region.

5. Conclusions

ERB is currently an ethical challenge of our time, consisting in the combination of a clearly structured conscious activity with a moral imperative to be followed unconditionally, without reasoning, without question by all mankind without exception.

There are no direct studies in the scientific literature on the relationship between ERB and environmental rating as a tool for its assessment. However, there are publications indicating an indirect connection. In particular, it is noted that the environmental activity of an organization can be measured and evaluated using the Environmental Rating tool. It is argued that this information-collecting instrument facilitates the decision-making of institutional investors when making environmentally oriented investments and thus contributes to a sensible diversion of worldwide capital flows toward more ecologically responsible companies^[39].

The authors believe that the environmental rating is a way of assessing ERB both within companies and in the external environment of all stakeholders, including potential

investors. The example of implementation of the environmental responsibility rating of Russian oil and gas companies operating in the Arctic region indicates their positive development in the field of environmental management, environmental protection, public disclosure, which is reflected in the development of such ERB positions as compliance with mandatory and voluntary regulatory requirements, "legal consequence", management of the business system, relationship with social responsibility, part of CSR. The rating system uniquely contributes to understanding ERB in challenging environments like the Arctic by: 1. assessing environmental responsibility of companies operating in challenging conditions; 2. incentivizing companies to improve and outperform competitors; 3. aligning corporate economic activity with societal demands through environmental management, impact, and disclosure analysis; 4. informing foreign investors, as improved ratings enhance investment appeal and demonstrate environmental accountability; 5. improving environmental governance by providing a cost-effective way to evaluate management effectiveness across sectors and jurisdictions.

In general, the surveyed companies strive for an environmentally responsible approach to Arctic development. They voluntarily report as part of their environmental awareness and business responsibility, indicating their inclusion in advanced or higher levels of CSR. However, more in-depth comprehensive research is required to determine their exact tier affiliation. There are limitations, or potential conflicts between ethical ideals and practical business realities.

For the reductions risks best strategy is to take an active role, identifying and correcting unethical behaviour early. This can be achieved by businesses participating regularly in environmental ratings among companies in the same industry. This will help policymakers and researchers to use the ranking criteria and results to identify problems and find solutions to them.

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Conflicts of Interest

The authors declare no conflict of interest.

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