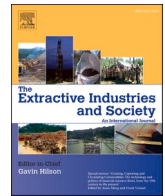




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Original article

## Environmental transparency of Russian mining and metal companies: Evidence from independent ranking system

Alexey Knizhnikov<sup>a</sup>, Evgeny Shvarts<sup>b,\*</sup>, Lioudmila Ametistova<sup>a</sup>, Alexander Pakhalov<sup>c</sup>, Natalia Rozhkova<sup>c</sup>, Daria Yudaeva<sup>d</sup>

<sup>a</sup> World Wide Fund for Nature (WWF) Russia, Moscow, Russia

<sup>b</sup> Institute of Geography, Russian Academy of Sciences, Moscow, Russia

<sup>c</sup> Faculty of Economics, Lomonosov Moscow State University, Moscow, Russia

<sup>d</sup> National Rating Agency, Moscow, Russia

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## ABSTRACT

This article examines the current state and drivers of environmental transparency in the Russian Mining and Metals sector. The study is based upon 2016–19 successive annual rankings calculated transparently, using publicly available information and a third-party-verified ranking system. Ranking results reveal a definite increase in the transparency level of one of the most closed industries in Russia. The findings from the study show that a company's presence in the stock markets has a positive impact on its openness in environmental matters. However, a company's listing on an international stock exchange does not guarantee high environmental transparency. Some evidence of a correlation between ranking positions and participation of diversified financial-industrial groups in the share capital was also found. Overall, our analyses suggest that ESG (environmental, social and governance) management in the Russian mining and metals sector is only in the process of development. To overcome this, the environmental transparency ranking of mining and metals companies in Russia creates a new mechanism for raising public awareness and dialogue between the public and one of the most closed industries. The ranking initiated calculation of industry-average quantitative impact indicators that, as the sample grows, will transform into an important benchmark for corporate self-assessment when comparing Russian practices with those of the largest international and foreign mining and metal companies across the globe.

### 1. Introduction

The concept of environmental transparency that involves the disclosure of information related to various aspects of corporate environmental impact and actions has become one of the most important research areas of the last decade (Gupta, 2010). Recent studies consider environmental transparency as a key concept in environmental management that is important for different stakeholders including governments (Sun et al., 2019), investors (Yu et al., 2018), and non-governmental organisations (Shvarts et al., 2016). Environmental transparency is especially important for industries with significant environmental impact such as the extraction of natural resources (Jenkins, Yakovleva, 2006; Shvarts et al., 2018). Transparency of environmental, social, and corporate governance (ESG) information also

strengthens corporate sustainability performance (Alsayegh et al., 2020) and has an impact on the market value of the company (Fatemi et al., 2018).

Continuous population growth, the speed of urbanisation, especially in Asia, and the more sophisticated requirements of the developed world, including further development of a new low-carbon economy (including electric and hybrid cars) have led to an increased demand to produce mining products and metals (Ranängen, Lindman, 2017; Auld et al., 2018). Although mining activities may be good for the local economy, mining can also have a serious negative impact both on the local environment and on society (Shen et al., 2015).

The mining industry has one of the most negative environmental impacts in Russia. According to the State Report of the Ministry of Natural Resources and Environment of the Russian Federation "The

\* Corresponding author at: Centre for responsible natural resources management, Institute of Geography, Russian Academy of Sciences; 119017, Staromonetnyi lane, 29, Moscow, Russia

E-mail addresses: [e.a.shvarts@igras.ru](mailto:e.a.shvarts@igras.ru) (E. Shvarts), [apahalov@econ.msu.ru](mailto:apahalov@econ.msu.ru) (A. Pakhalov).

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Status and Protection of the Environment in the Russian Federation in 2018" (Ministry of Natural Resources and Environment, 2019), manufacturing, electricity, gas, and heat supply account for about 84% of the emissions of pollutants countrywide. The proportion of pollutants that are particularly dangerous to human health, such as sulphur dioxide and particulates is even higher (97 and 90%, respectively).

Mining may cause conflict between corporations, the government, and the communities affected by its activities. This often involves the cumulative and/or indirect environmental effects, unfair compensation practices, inequitable resource distribution, environmental degradation, and conflicts over human rights. (Jenkins, Yakovleva, 2006; Hilson et al., 2016; Benefit, 2020, etc.). These negative impacts have generated significantly increased stakeholder pressure over the last twenty years from non-governmental organisations, social movements, and indigenous peoples (Natural Resource Extraction, 2014; Benefit, 2020).

Ratings and rankings by third-party evaluators are becoming an increasingly important tool for evaluation and improvement of corporate environmental performance and ESG as a whole (Searcy, Elkhawas, 2012; Shvarts et al., 2016, 2018; Doni, Johannsdottir, 2019; Clementino, Perkins, 2020). This approach was widely implemented in the financial industry regarding potential investment recipients, as it is in a unique position to move corporations towards ESG and corporate sustainability (Koellner et al., 2005; Delmas, Blass, 2010). An important finding is that ratings may generate diffuse or spillover effects even amongst unrated firms. For instance, an increase in the number of peer companies being rated is often associated with greenhouse gas (GHG) and pollutant emission reductions (Sharkey and Bromley, 2015). There have been some attempts to use various sustainability indices (Searcy and Elkhawas, 2012) and green ratings (Gupta and Goldar, 2005; Powers et al., 2011) to encourage "good corporate citizens" that act above formal state requirements, often to pursue a competitive advantage, and to push "bad corporate citizens" to meet mandatory environmental standards. These studies show that these programs have reduced the percentage of firms that are not complying with environmental regulations (Wang et al., 2004. García et al., 2007; Blackman, 2010).

Ratings and scorecards have proved to be an effective soft tool to (1) increase transparency and (2) improve production and operational standards and practices for a range of soft commodities, including timber, soy, and palm oil (see, for example, Walker et al., 2013). Because the scorecards dealt mostly with fast-moving consumer goods (FMCG) and retail sectors, widely exposed to consumer pressure, this tool showed rapid and tangible improvements. However, extractive industries have so far remained a *terra incognita* for such mechanisms, and their effectiveness here is yet to be investigated deeper and proven. It is especially interesting to check the potential correlation between the level of corporate ownership and international financing with the environmental transparency of mining and metal companies.

Voluntary mechanisms of environmental responsibility in the mining and metal sectors require further development and diversification (Guenther et al., 2006; Franken et al., 2012; Kickler, Franken, 2017; Young, 2018). This is especially important in major developing economies, such as Brazil, Russia, India, China the Republic of South Africa (BRICS) with a significant role and share of mining and metal sectors in their economies, (Auld et al., 2018; Macedo et al., 2018; Tröster, Hiete, 2019). Rating and ranking approaches have already been implemented for oil and gas companies in Russia (Shvarts et al., 2016, 2018), Kazakhstan (Environmental, 2017; Environmental, 2018), and in Azerbaijan (Eurasian Environmental Transparency Rating of Oil and Gas Companies, 2020).

This paper aims to assess the dynamics of environmental transparency of companies based on a unique four-year dataset (2016–2019) of environmental transparency rankings of mining and metal companies in Russia and to examine the limitations of independent environmental assessments in influencing corporate behaviour. This new dynamic approach will allow us not only to assess the current state of the environmental transparency of the mining industry but also to assess the

impact of the independent ranking (along with several other internal and external factors) on environmental disclosure and environmental behaviour of companies.

The remainder of this paper is organised as follows. Section 2 includes a literature review, which covers both international and Russian empirical evidence on environmental responsibility in the mining industry. Section 3 presents two research questions and the methodological approach to the ranking. Section 4 presents the major empirical results of this study, including a dynamical assessment of companies' environmental impact and transparency. Section 5 discusses major research findings and their policy implications. Finally, Section 6 concludes with answers to the research questions, and some directions for further research.

## 2. Is there a need for voluntary market-driven tools to improve the environmental responsibility of the mining industry?

### 2.1. Voluntary tools and environmental responsibility in the mining industry

The weak effectiveness of traditional global intergovernmental environmental regulations together with the globalisation of world markets became drivers of the development of voluntary market-based mechanisms of environmental regulation and responsibility, also known as "Non-state Market-Driven (NSMD) Governance Systems" (Cashore, 2002), "voluntary environmental programs (VEPs)" (Potoski, Prakash, 2004, 2011), "transnational private regulation" (Bartley, 2007) and "Market-based voluntary sustainability standards (VSS)" (Meeting Sustainability Goals, 2016), that are an important core part of "global environmental governance" (Auld et al., 2018). Many of the above-mentioned terms have been used to refer to a range of market-based, institutional instruments used to manage environmental and social impacts of production processes. Generally developed by non-government actors, they may nevertheless have government support and can become *de facto* regulations (Meeting Sustainability Goals, 2016).

Some industries choose to adopt voluntary environmental standards, which they believe will increase their competitive advantage in environmentally sensitive markets and afford access to longer-term and more affordable sources of finance (Prakash and Potoski, 2012; Delgado-Márquez, Pedauga, 2017; Trumpp, Guenther, 2017). This has led to increased environmental standards of companies whose exports are orientated towards environmentally sensitive and socially responsible markets, and sometimes even a decline in the role and importance of state national regulations, especially in cases where state national regulation standards are lower than international requirements.

The prevailing wisdom is that multi-stakeholder governance is generally seen as having greater legitimacy than other forms of voluntary ESG action (Fransen, Kolk, 2007, 2012; Derkx, Glasbergen, 2014). What appears to be driving some of these voluntary programs and mechanisms is that they represent and/or reflect the environmental demands of the middle class of developed and even some developing countries with relatively high levels of income and education (Gamsö, 2018). It is the authors' experience that large retailers, especially from the Do It Yourself (DIY) sector (IKEA, LeRoy Merlin, OBI, Castorama, etc.), have played a key role in the formation and success of these voluntary, non-state, reliable certifications, rankings, and ratings.

Alongside multi-stakeholder independent voluntary standards, certifications, and ratings, there are 'transitional' voluntary mechanisms of environmental and social responsibility with different forms of direct participation and involvement of states, such as the Extractive Industries Transparency Initiative (EITI), or of international intergovernmental organisations, such as the UN Global Compact. Although these programs or clubs are well known, they still need to prove their effectiveness due to the dependence of many oil and gas and mining companies on their host state's political position (in the case of EITI) and the opportunity

that these instruments provide in obtaining reputational advantages, non-market preference and facilities at less expense and with less control than in the case of certifications based on the demand of final consumers (e.g., ISEAL Alliance members).

The relatively well-known EITI was initially designed as a voluntary process of extractive sector revenue disclosure for payments between companies and governments. It has evolved into a broad instrument seeking to improve transparency and accountability along the whole natural resource management value chain, including corporate beneficiary ownership and it is now a global standard to promote open and accountable management and seeks to address the key governance issues of the oil, gas and mining sectors (Rich, Moberg, 2015; Van Alstine, 2017; Rustad et al., 2017; Auld et al., 2018). The EITI is much more devoted to the distribution of revenues and reduction of corruption issues than to the increase and promotion of advanced corporate environmental standards and corporate practices. The EITI tries to ensure that the revenues from extraction become more accountable, but it does not ensure that they become more socially and environmentally sustainable (Sovacool, Andrews, 2015; Sovacool et al., 2016). Relatively current evaluation of EITI membership patterns highlights a rather utilitarian use of the EITI by corrupt governments (Öge, 2016). One of the key problems of EITI expansion is that many developed countries with economically significant extractives sectors are not EITI members. This includes the US (withdrew in October 2017), Canada, Australia, Chile, many European countries (excluding Norway, UK, Germany, and the Netherlands). At least partly due to this reason, major economically emerging countries (all BRICS countries including Russia) view it as politically unacceptable to become EITI members in the way that less developed African, Asian, and Central and South American countries have (Shvarts et al., 2018). Post-Soviet countries with significant shares of extractive industries in their economies (Azerbaijan, Kazakhstan, Kirgizstan, Tajikistan, and Ukraine) have problems with EITI implementation (Wilson, Van Alstine, 2014; Furstenberg, 2015; Sovacool, Andrews, 2015; Öge, 2017): Azerbaijan decided to withdraw from EITI in March 2017 following the EITI Board's decision to suspend the country. There are also problems and difficulties in EITI implementation in Kazakhstan (Öge, 2017; Vakulchuk, Overland, 2018) and Kyrgyzstan (Furstenberg, 2015). The positive influence of EITI on environmental transparency is limited, especially in major emerging countries, like Russia and all other BRICS countries. Thus, EITI represents only one tool amongst many that can be used to improve resource governance and help countries benefit from their resource endowments, so mitigating the resource curse (Corrigan, 2017).

Progress has been observed in the development and implementation of voluntary environmental responsibility standards and ESG standards for mining and extractive industries (Lodhia, Hess, 2014; Lokuwaduge and Heenetigala, 2017; Sauer, Seuring, 2017; Hiete et al., 2019). In contrast to developed countries, firms in developing countries perceive relatively little pressure from the public with regards to corporate and social responsibility (CSR) disclosure (Henry et al., 2016; Ali et al., 2017). The mining sector has lacked certification schemes like those currently in use in 'soft commodities' sectors, such as the Forest Stewardship Council (FSC) system in forestry, the Marine Stewardship Council (MSC) certification for marine bioresources, the Aquaculture Stewardship Council (ASC) certification in aquaculture and some others. At the same time, there is a growing process of development of these kinds of voluntary standards and certification schemes in the mining and metal sectors: The Responsible Jewellery Council (RJC, ISEAL member); the Aluminium Stewardship Initiative (ASI, ISEAL member); Responsible Steel (RS, not an ISEAL member at this moment but planning to be).

The difference between the above-mentioned certification schemes and major sustainable development frameworks, such as the UN Global Compact (UNGC), the Organization for Economic Co-operation and Development (OECD) Principles for Corporate Governance, the International Council on Mining and Metals (ICMM) principles for sustainable development, the Global Reporting Initiative (GRI), Integrated

Reporting (Berliner and Prakash, 2012; Moran et al., 2014; Raufflet et al., 2014), is that the latter are much more general and provide less accountability - with the possible exception of GRI - and do not provide direct and simple communication with final consumers and supply chain business partners. For instance, in the case of UNGC it was demonstrated that UNGC members sometimes tend to enjoy the benefits of program membership without making costly changes to their human rights and environmental practices (Berliner and Prakash, 2015).

Independent environmental rankings and ratings are amongst the tools that have the potential to influence the behaviour of companies towards greater transparency and environmental responsibility. An early pilot study by Chatterji & Toffel (2010) found that companies that initially received poor environmental ratings subsequently improved their environmental performance after the release of these ratings. A recent study based on a cross-industrial sample in Italy (Clementino, Perkins, 2020) showed that companies respond to ESG ratings and assessments but they do it in different ways, ranging from passive resistance to active conformity and even benchmarking. However, the empirical evidence in the field of rating perception by companies is still rather limited.

## 2.2. Development of market-driven governance systems in Russia

The consumer demand in international ecologically sensitive markets [first for Forest Stewardship Council (FSC) certified timber products and then Marine Stewardship Council (MSC) certified marine biological resources] has been a leading driver of the development of "Non-state Market-Driven Governance Systems" in Russia (Malets, 2015; Shvarts et al., 2015; Tysiachniouk, McDermott, 2016). The relatively low adoption of ISO<sup>1</sup> 14,001 environmental management system certification by companies in Russia, in comparison to other large developing economies (Shvarts, Gerasimchuk, 2010; Shvarts et al., 2015; Tracy et al., 2017), can be at least partially explained by business-to-business dominance in export flows, long value chains in the export of raw natural resources and a traditional industry mind-set. It indicates the need for comprehensive organisational change in the Russian corporate sector, leading to sustainable development and value creation (Tuppura et al., 2016).

For a significant time, the top management of large mining corporations has been very resistant to, and suspicious of, the recommendations of experts in natural resource use regarding the necessity of significantly increasing transparency and environmental responsibility of the two main export-orientated sectors of Russian economic development - the oil and gas sector and the mining and metal sector. For this reason, at the beginning of the 2000s the World Wide Fund for Nature (WWF) Russia started a systematic strategic approach to increase transparency and environmental responsibility of these two sectors of the economy in extracting non-renewable natural resources. In both cases this approach has consisted of several stages:

- Formulation of "Common Non-Government Organizations (NGOs) environmental standards for companies of oil and gas or mining sectors in Russia", and discussion of drafts with governmental and legislative bodies and companies.
- Public adoption of sectoral NGOs' environmental standards.
- Lobbying for the incorporation of key standards into the environmental policies of relevant companies.

After the public adoption and announcement of "Common NGOs environmental standards for companies of oil and gas or mining sectors in Russia", leading companies (both private and state-owned) started to modify and enforce corporate environmental strategies and policies and other similar corporate documents. The level of environmental

<sup>1</sup> International Organization for Standardization

responsibility set out in those documents was enhanced and became relatively similar across companies. Nevertheless, it was problematic to assess the implementation level of corporate strategies and policies in the environmental field by the companies themselves. As a result, WWF Russia initiated independent rankings of environmental transparency of the oil and gas sector and mining and metal sector in Russia. In previous publications, the authors developed an environmental responsibility ranking method, implemented for oil and gas companies (started in 2014 - Shvarts et al., 2016; Shvarts et al., 2018), and mining and metals companies (started in 2016), operating in Russia.

The Development of Sustainability non-financial reporting by oil and gas and mining companies, produced following GRI international standards, to improve access to cheaper and long-term financial resources in international financial markets, produced a unique starting point and baseline for evaluation and comparison of different companies (Shvarts et al., 2015) without those companies giving their permission to be ranked. The ranking method development has corresponded well with thoughts and findings on the trade-offs in sustainability ratings (Delmas and Blass, 2010).

### 3. Research design and methods

#### 3.1. Research questions

This paper continues by answering the research questions suggested in a previous study (Shvarts et al., 2018) but its scope has been widened to better fit the purposes of the current study:

*Research question 1:* Can rankings and ratings based on international environmental responsibility standards have a significant impact on the mining and metal sector, compared with the influence of international voluntary standards applied to soft commodities (timber, marine biological resources, aquaculture, palm oil, soy, etc.)?

*Research questions 2:* Are there significant differences in levels of environmental responsibility between different types of mining companies depending on their ownership status (state-owned vs. privately owned) and/or the degree of their internationalisation (Russian ownership and capital vs. international/foreign ownership and investments)?

This paper attempts to answer these two questions using four years of ranking data and results (2016–2019), which should allow corresponding answers to be found.

#### 3.2. Ranking objectives, principles and methodology

The objectives of the ranking system are to help reduce the burden on the environment, to improve the efficiency of natural resource use, and to promote socially responsible business in Russia. The *Basic Principles of the Ranking* can be summarized as follows:

- The ranking is based on criteria formulated primarily in the “Basic principles for environmentally and socially responsible policy of mining companies” (Basic, 2009), and in several international documents, including the Initiative for Responsible Mining Assurance (IRMA) standard for responsible mining, GRI Sustainable Development Reporting Guide, European Banks for Reconstruction and Development (EBRD) Sector Strategy, etc.
- The method used is available for public scrutiny. To improve it, face-to-face and remote consultations are held annually with all stakeholders.
- The ranking is calculated for all segments (or aspects) of a company’s activities, from field development and production to mineral processing.
- The ranking is based on data from the companies’ activities available in the public domain in Russian.
- The ranking is calculated by a professional rating agency (The National Rating Agency was chosen after public tender).

- The ranking is calculated for the largest companies (by key types of minerals) operating in Russia. The companies have been selected for ranking based on the materials of the State Report "On the Current Condition and Utilization of Mineral Resources of the Russian Federation" Additionally, the ranking includes companies operating in the priority ecological regions in terms of biodiversity conservation, according to WWF Russia (Russian Arctic, Barents Sea, Russian Far East, Kamchatka).
- The ranking is calculated annually, which permits the dynamics for each company and for the industry as a whole to be seen.

The ranking consists of three sections: Environmental Management (EM), Environmental Impact (EI), and Information Disclosure (ID) (Table 1). While the information disclosure (ID) section focuses on the availability of certain documents (non-financial reporting, press releases. etc.), the other two sections of the methodology also assess the quality of certain aspects of the information disclosed. It should be noted that environmental performance can only be assessed for companies with medium and high levels of transparency of environmental data.

The ranking calculation includes three steps (Fig. 1), and can be summarized as follows:

- Initially, the companies were assigned coloured flags for each criterion: red (0 points), yellow (1 point), or green (2 points). If the criterion was not relevant for a company, the criterion was not evaluated. If the information on the relevant criterion was not publicly available, the company was assigned a red level. This 3-point scale assumed the use of a special criterion for each of the indicators. A score of zero meant that the company did not meet the criterion, 1 – partially met the criterion, 2 – fully met the criterion. The proposed scale design has been shown to be reliable in several

**Table 1**  
Ranking sections.

Section	Environmental management	Environmental impact	Information disclosure
What the section assesses	Quality of environmental management in terms of Russian legislation and global best practice	Damage level for the environment (air, water, and land) during each company’s manufacturing process	Extent of each company’s readiness to disclose information on the environmental impact of its activities
Number of criteria in a section (as of 2019)	7	12	8
Data sources for the section	Non-financial reporting, companies’ websites, etc.	Non-financial reporting, companies’ websites, state environmental reporting (air emissions, waste management, water discharges, land use, environmental costs, and payments)	Non-financial reporting, companies’ websites, etc.
Approach to evaluating section’s criteria	Special three-level scale for each criterion (qualitative indicators)	Three-level scale based on the ratio of company performance to industry averages (quantitative indicators)	Special three-level scale for each criterion (qualitative indicators)

Source: authors’ work.



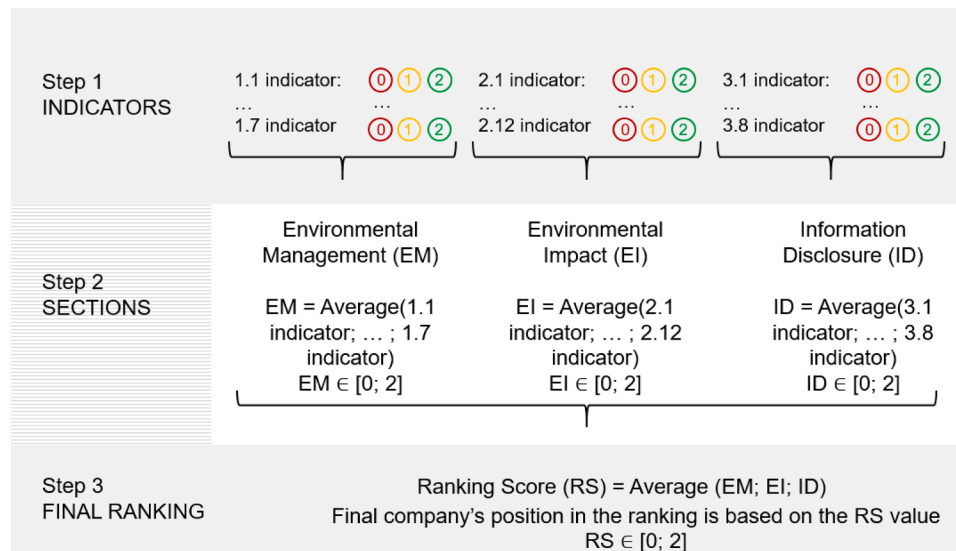


Fig. 1. Description of the ranking calculation.

previous studies in various fields from medicine (Hand et al., 2010) to management quality (Pakhalov et al., 2020).

- Secondly, for each company, an arithmetical mean of their points for the criteria in each of the three sections was calculated. In this calculation, only those criteria relevant to a particular company were taken into account. As a result, each company was assigned final points for the Environmental Management Section, for the Environmental Impact Section, and the Disclosure Section. Totals ranged from 0 to 2. We also determined the leaders in each of three following areas: Management (Environmental Management Section), Operations (Environmental Impact Section), and Information (Disclosure Section)
- The final index value (Ranking Score) was calculated for each company by averaging the three-section values assigned at the previous stages. Companies were ranked by the value of this final index.

The simple average approach is common in the calculation of non-financial rankings, as it avoids subjectivity that is a common problem when assigning unequal expert weights (Pakhalov et al., 2020). In particular, the World Bank uses an “equal weights approach” in its business climate and governance quality rankings (Jayasuriya, 2011).

When calculating the ranking, the preliminary results of data collection are available for each company to inspect on the WWF Russia website, together with the preliminary status, and are sent to companies so that they can clarify the reliability and completeness of the information assessed. Final company profiles become available to the public after the ranking publication.

## 4. Results

### 4.1. Assessment of the level of information transparency of mining and metal companies operating in Russia

Only publicly posted information has been taken into account when compiling the ranking for mining and metals companies. Therefore, the availability, completeness of disclosure, and reliability of environment-related information are the most significant factors that affect the companies' rankings.

Table 2 presents The Information Disclosure Level of Russian Mining and Metals Companies for four years (2016–2019). The ranking started with 33 companies in 2016 and 2017; in 2019, eight companies were added to the ranking, including four coal-mining companies (Kolmar, Kuzbassrazrezugol, VostSibUgol, Sibanthracite Group) and four gold-

Table 2

Information disclosure level of Russian mining and metals companies.

Year	2016	2017	2018	2019
Number of rated companies	33	33	34	41
Average Ranking Score (on a scale from 0 to 2)	0.59	0.70	0.82	0.84
Availability of Information for Environmental Management Section (1)	45%	50%	52%	41%
Availability of Information for Environmental Impact Section (2)	29%	46%	53%	51%
Availability of Information for Transparency Section (3)	47%	47%	48%	51%

\* - Percentage refers to several disclosed criteria for all companies divided by the total number of criteria in the section. All not disclosed criteria receive the lowest possible score, 0, thus affecting the final score of the company.

Source: authors' calculations, National Rating Agency (NRA) estimates.

mining companies (GV Gold, Zapadnaya Gold Mining Ltd, Seligdar, and UGC). The transparency level of these companies was expected to be low in the first year they were included. Nevertheless, the average ranking score has not changed much compared to the previous year, which shows the overall increase in the transparency level of the mining and metal companies that have been participating since 2016. In particular, it is possible to see a positive trend in terms of mining and metal companies' disclosing information under Section 3 (Transparency).

There is a positive trend, which is an increase in the number of companies that are actively interacting with the ranking team: for example, in 2019, 19 of the 41 companies surveyed responded to the request for disclosure of additional environmental responsibility-related information while the first slice of data collection and analysis was being processed.

### 4.2. Analysis of the results

Table 3 shows a full list of rated companies and the dynamics of their ranking places during 2016–2019. This table also includes information on the main characteristics of the companies included in the sample (subindustry, stock exchange listings and free float ratio, information on participation of foreign investors and Russian state in share capital). Most of these characteristics were used to analyse a sample of companies in our previous studies on the environmental transparency of companies in the Russian oil and gas industry (Shvarts et al., 2016; Shvarts et al., 2018). In this study, we added two new company ESG characteristics:

Table 3

List of companies included in the Environmental Transparency Ranking of Mining and Metals Companies of Russia (based on 2019 sample) and dynamics of companies' ranking places (2016–2019).

Company name	Sub-industry	Ranking places				Publicly traded at stock exchange	Free float <sup>a</sup>	Presence of direct foreign shareholders (10% or more) <sup>b</sup>	Presence of state shareholders (10% or more)	Part of private diversified holding/ FIG <sup>c</sup>
		2016	2017	2018	2019					
Polyus	Precious metals	5	12	2	1	Yes (MOEX, LSE)	20.44%	No	No	No
SDS-Ugol (SDS-Coal)	Coal	25	5	3	2	No	0.00%	No	No	Yes (SDS Holding)
Kinross gold	Precious metals	2	1	1	3	No	0.00%	Yes (Kinross Gold Co.)	No	No
Metalloinvest	Ferrous metals	13	14	6	4	No	0.00%	No	No	Yes (USM Holdings)
AGD DIAMONDS	Diamonds	1	4	5	5	No	0.00%	No	No	Yes (Otkritie Holding)
Severstal	Ferrous metals	11	16	7	6	Yes (MOEX, LSE)	21.50%	No	No	No
Polymetal	Precious metals	7	1	4	7	Yes (MOEX, LSE, AIX)	65.00%	Yes (PPF)	No	No
Alrosa	Diamonds	3	3	8	8	Yes (MOEX)	33.97%	No	Yes	No
NLMK	Ferrous metals	20	18	10	9	Yes (MOEX, LSE)	19.00%	No	No	Yes (NLMK Group)
MMK	Ferrous metals	15	8	13	10	Yes (MOEX, LSE)	16.00%	No	No	No
Kuzbassrazrezugol	Coal	NA	NA	NA	11	No	0.00%	No	No	Yes (UMMC Group)
Nornickel	Non-ferrous metals	4	7	9	12	Yes (MOEX, LSE IOB, OTC NY)	38.00%	No	No	Yes (Interros, En+ Group)
Highland Gold Mining (Rusdragmet)	Precious metals	23	28	25	13	Yes (LSE)	56.23%	Yes (VanEck)	No	No
Nordgold	Precious metals	10	15	14	14	No	0.00%	No	No	No
KMARuda	Ferrous metals	28	9	14	15	No	0.00%	No	No	Yes (IMH Holding)
PhosAgro	Mining chemicals	17	20	19	16	Yes (MOEX)	26.03%	No	No	No
RUSAL	Non-ferrous metals	6	11	11	17	Yes (MOEX, HKSE)	16.62%	No	No	Yes (En+ Group)
EVRAZ	Ferrous metals	9	16	23	18	No	0.00%	No	No	No
Uralkali	Mining chemicals	16	13	20	19	No <sup>d</sup>	0.00%	No	No	No
Ural Mining Metallurgical Company (UMMC)	Non-ferrous metals	22	25	26	20	No	0.00%	No	No	Yes (UMMC Group)
PIMCU, PJSC Priargunsky Industrial Mining and Chemical Union	Uranium	12	19	17	21	No	0.00%	No	Yes	No
EuroChem	Mining chemicals	18	21	20	22	No	0.00%	No	No	No
Kuzbasskaya Toplivnaya Company (Kuzbass Fuel Company)	Coal	NA	NA	17	23	Yes (MOEX)	34.40%	No	No	No
SUEK	Coal	8	9	12	23	No	0.00%	No	No	No
Petropavlovsk	Precious metals	21	24	22	25	Yes (LSE)	27.60%	No <sup>e</sup>	No	No
Mechel	Ferrous metals	32	28	32	26	Yes (MOEX, NYSE)	47.39%	No	No	No
Zapadnaya Gold Mining Ltd	Precious metals	NA	NA	NA	27	No	0.00%	No	No	No
Russian Platinum	Precious metals	26	28	26	27	No	0.00%	No	No	No
Gold of Kamchatka	Precious metals	23	23	28	29	No	0.00%	No	No	Yes (Renova)
Sigma	Precious metals	26	26	28	29	No	0.00%	No	No	No
Seligdar	Precious metals	NA	NA	NA	30	Yes (MOEX)	31.00%	No	No	No
Sibanthracite	Coal	NA	NA	NA	31	No	0.00%	No	No	No
UGC The Gold Mining Company	Precious metals	NA	NA	NA	32	No	0.00%	No	No	No
Russian coal	Coal	28	28	30	34	No	0.00%	No	No	Yes (SAFMAR)
		NA	NA	NA	35	No	0.00%	Yes (Blackrock)	No	No

(continued on next page)

Table 3 (continued)

Company name	Sub-industry	Ranking places				Publicly traded at stock exchange	Free float <sup>a</sup>	Presence of direct foreign shareholders (10% or more) <sup>b</sup>	Presence of state shareholders (10% or more)	Part of private diversified holding/ FIG <sup>c</sup>
		2016	2017	2018	2019					
GV Gold (Vysochaishy, PJSC)	Precious metals									
The Russian Copper Company (RCC)	Non-ferrous metals	14	6	16	36	No	0.00%	No	No	No
Acron	Mining chemicals	19	21	24	37	Yes (MOEX, LSE)	12.00%	No	No	No
Souzmetallresource (SMR)	Non-ferrous metals	28	32	31	38	No	0.00%	No	No	Yes (En+ Group)
CC Kolmar LLC	Coal	NA	NA	NA	39	No	0.00%	No	No	No
VostSibUgol	Coal	NA	NA	NA	40	No	0.00%	No	No	Yes (En+ Group)
Lovozerky GOK (Lovozerky Mining And Processing Plant)	Non-ferrous metals	28	26	33	41	No	0.00%	No	No	No

<sup>a</sup> Based on data from corporate financial presentations and (or) from the Moscow Exchange database.

<sup>b</sup> We do not consider offshore business units and Cyprus-based companies with Russian beneficiaries as direct foreign investors.

<sup>c</sup> By this term we mean an officially registered diversified holding company or FIG with a strong presence in various sectors of the economy (including those not related to the mining industry).

<sup>d</sup> Delisting of Uralkali company from the Moscow Exchange was completed in 2019.

<sup>e</sup> Although amongst the shareholders of Petropavlovsk company there are no foreign investors with a share of more than 10%, there are some large international companies in the structure of its shareholders with shares in capital from 1% to 5% (such as Norges Bank, Societe Generale, etc.).

Source: corporate data, authors' calculations, NRA estimates.

free float ratio and a company's entry into a private diversified holding (or financial-industrial groups). In line with previous research, we expect the free float ratio to have a positive impact on corporate transparency (Samaha and Dahawy, 2010) and environmental responsibility (Sahin et al., 2011). At the same time, we have no clear expectations about the impact of a company's entry into diversified holding on corporate transparency and responsibility. Russian financial-industrial groups (FIGs) were studied as an institutional phenomenon (Freinkman 1995), but we are not aware of any studies on the level of FIGs' transparency and responsibility in environmental matters. We have mixed expectations about the impact of FIGs on environmental transparency. On the one hand, such companies can be more transparent due to the availability of additional resources for the preparation of high-quality non-financial reporting and the need to create a positive image for the parent holding. On the other hand, such companies often do not need to inform a wide range of investors about their environmental activities, while their key shareholders can be informed through closed channels.

#### 4.3. Dialogue with mining and metals companies on the presence of accidents and/or environmental conflicts

Information needed for two of the Ranking criteria, 3.5 (accidents with environmental impact) and 3.6 (environmental conflicts), was not available from either nonfinancial reporting or from companies' websites. Overviews of accidents and environmental conflicts that took place at mining and metals companies are drawn from the publicly available information. Such information includes publications on the official websites of the Federal Environmental, Industrial and Nuclear Supervision Service of Russia, of the Federal Service for Supervision of Natural Resource Usage, of the Ministry of Energy of Russia, Russian Federal Service for Veterinary and Phytosanitary Surveillance, the General Prosecutor's Office, Russian courts, as well as media publications, and data available at Russia's largest environmental organisations and NGOs. Before the overview is published, companies are allowed to

provide additional information to correct any inaccuracies that might have been detected. All the cases that have been detected are mapped,<sup>2</sup> which makes it possible to identify the "hot spots" and visualise the most common sources of conflict.

The organisers of the ranking are convinced that such an approach will reinforce the transparency of business, public confidence and make people and businesses ready for dialogue. This forms an independent database, which applies to the assessment of public awareness of accidents and environmental conflicts. Data for 2017–2019 demonstrate that, in the third year of operation of the ranking, the number of companies that started to give feedback on accidents and environmental conflicts doubled (4 companies provided feedback in 2017 and 2018 followed by 8 companies in 2019). There were no proven environmental data falsifications, although such cases were revealed in the oil and gas rating analysis (Shvarts et al., 2018). The publicly available nature of the ranking increases companies' transparency in the sensitive issue of environmental incidents and conflicts.

#### 4.4. Average environmental impact indicators by sub-sector

In 2019 it became possible to estimate the average environmental impact indicators for various sub-sectors of the mining and metals segments. Table 4 shows the level of availability of information on environmental impact criteria broken down by sub-sectors of the mining and metals industries.

## 5. Discussion

Our work addresses recent calls to study why companies engage in CSR decoupling (Bromley, Powell, 2012; Tashman et al., 2019) and greenwashing (i.e. Yu et al., 2020) and whether market-based voluntary sustainability standards and programs (including rankings of environmental transparency of mining and metal companies) prevent CSR decoupling between formal CSR and corporate ESG policies and real corporate practices (Schiavi, Solomon, 2007; Tashman et al., 2019).

<sup>2</sup> <https://wwf.ru/what-we-do/green-economy/gdk-and-metallurgy> (available in Russian only).

**Table 4**  
The transparency level of mining and metal subindustries in 2019.

Subindustry	Companies	Transparency Level,%***
Diamond industry 2 companies	ALROSA, AGD DIAMONDS	92
Extraction of precious metals 13 companies	GV Gold, Zapadnaya Gold Mining Limited, Kamchatka Gold, Kinross Gold, Nordgold, Petropavlovsk Group, Polymetal, Polyus Gold, Highland Gold Mining, Russian Platinum, Seligdar, Siberian Mining and Metal Alliance (SIGMA), Yuzhuralzoloto Group	44
Mining and processing of non-ferrous metal ores 6 companies	Lovozersky GOK, Nornickel, RUSAL, Russian Copper Company, Soyuzmetallresurs (SMR), UMMC	42
Mining and processing of ferrous and alloying metal ores 7 companies	EVRAZ, Magnitogorsk Iron & Steel Works (MMK), Metalloinvest, KMA Ruda, Mechel, NLMK, Severstal	80
Mining Chemical Industry 4 companies	Akron, EuroChem, Uralkali, PhosAgro	48
Coal industry 8 companies	Siberian Anthracite, VostSibUgol, Kolmar, KTK, Kuzbassrazrezugol, Russian Coal, SDS-Coal, SUEK	34

\*\*\* Percentage refers to several disclosed criteria for all companies of a subindustry divided by the total number of criteria in the Environmental Impact Ranking Section (Section 2) for that subindustry. All not disclosed criteria receive the lowest possible score, 0, thus affecting the final score of the company. The most transparent subindustry, the diamond industry, includes companies in the top 10 of the ranking. The ferrous and alloying metal ores industry (next in the transparency level) includes 4 out of 8 companies rated in the top 10 of the ranking and none in the bottom 10 of the ranking. The least transparent subindustry, the coal industry, includes companies (except SDS-Ugol) in the second half of the ranking. Moreover, 4 out of 8 companies are in the bottom 10 of the ranking.

Source: authors' calculations, NRA estimates.

Positive changes in the information disclosure level of Russian mining and metals companies (Tables 2 and 5 represent two simultaneous processes – the ranking system impact on changes to the industry and simultaneously other factors (influence by the stock market, stock exchanges requirements, etc.). Obviously, during the study period (2016–2019) the leading role is that of the first factor – the ranking system impact since companies perceived the ranking process as having a stock market impact. A comparison of ranking indicators for mining and metals companies, on the one hand, and oil and gas companies, on the other, shows that the environmental transparency of the latter is significantly higher (Table 5). This confirms the observations made in the course of sustainability (non-financial) reporting of both those industries (Shvarts et al., 2015). The explanation of this difference is that final consumers deal much more with the main final products of the oil and gas industry (petrol and gas), often even under the same brand as producing oil and gas companies, than in the case of mining and metal companies. In many cases, brands of mining and metal companies are much less evident to final consumers. coincidentally, the difference in transparency between these two sectors of the economy is gradually

**Table 5**  
Average Ranking Scores (on a scale from 0 to 2) of Russian Mining and Metals Companies vs Oil and Gas companies.

Year	2014	2015	2016	2017	2018	2019
Mining and Metals Companies (33 – 41 companies)	–	–	0.59	0.70	0.82	0.84
Oil and Gas companies (20–21 companies)	0.81	0.93	1.06	0.96	0.95	1.08

Source: authors' calculations, NRA estimates.

declining.

Widespread representation of western companies such as BP and Shell as CSR “world leaders,” and Asian state-owned oil companies as “bottom feeders” (Pegg, 2012) may increase the significance of the best international voluntary environmental standards as a basic benchmark for fair global competition in the field of environmental responsibility. However, the BP Deepwater Horizon oil spill in the Gulf of Mexico case does not support the above statement (Matejek, Gössling, 2014). Our study demonstrates that some Russian mining and metals companies that do not have any foreign shareholders (Polyus, SDS-Ugol (SDS-Coal), Metalloinvest, AGD DIAMONDS, Severstal, Alrosa) can demonstrate a relatively high score in environmental transparency amongst all the companies operating in Russia. This example suggests that some of the national players in emerging economies may demonstrate high levels of transparency and environmental performance. Theoretically, international environmental responsibility standards should gradually lead to a closing of the gap in the level of environmental responsibility implementation between companies from different countries and regions facing varying levels of mandatory legal requirements (Copeland, Taylor, 2004; Shvarts et al., 2018).

At the same time, our ranking method demonstrates a good level of relevance to real events and even predictability, e.g. the level of Nornickel (Russia's leading metals and mining company and the world's largest high-grade nickel and palladium producer) environmental transparency has dropped from a 4th place ranking in 2016 to a 12th place ranking in 2019. On May 29th, 2020, 21kt of diesel fuel from the emergency fuel storage at the Heat and Power Plant (HPP-3) located in the Kayerkan neighbourhood of the city of Norilsk leaked into the environment (Hume, Seddon, 2020). The company claimed that it was ranked amongst the leading environmentally responsible mining companies in Russia (Digital Nornickel. Sustainability report, 2019, page 23) according to the top-5 ranking place in 2016, but did not pay relevant attention to its deteriorating ranking over the following 3 years. Following the methodology, Nornickel has been excluded from the 2020 ranking calculations because of the federal-level accident with significant environmental damage.

The wide presence of Nornickel in international Stock Exchanges (MOEX, LSE IOB, OTC NY) and 37.95% of free float shares do not sufficiently motivate the company to pay adequate attention to changes in their environmental transparency ranking score. At the same time, another company from the mining and metal sector, Metalloinvest, has moved from 13th place in 2016 to 4th place in 2019, although Metalloinvest is not represented in international stock exchanges and has no freely floating shares.

Probably the most evident difference between Nornickel and Metalloinvest is in local population density and correlated pressure on companies in the regions where each company is present. The major production facilities of Nornickel are situated in the Taimyr peninsula around Norilsk city (around 182,000 people), where a majority of the population is contracted by the company and the other industries (reindeer husbandry and fisheries) occupy a marginalised and subordinate position. Norilsk is not officially a closed administrative territory, nevertheless starting from 2001 foreigners have not been allowed to visit it without official permission from the authorities (the same situation had existed in the former USSR).<sup>3</sup>

At the same time, in the early years of the 21st century, the Belgorod region, where Metalloinvest operates, is a rare case of a region outside of the capitals of Moscow and St Petersburg, that has shown an increase in

<sup>3</sup> A different situation exists on the Kola peninsula, where a smelting shop in the town of Nikel in Russia's Murmansk region (near the Russia-Norway border) was closed by December 2020 [https://www.nornickel.com/news-and-media/press-releases-and-news/nornickel-shuts-down-smelter-in-nikel-town/?redirect\\_url=/news-and-media/press-releases-and-news/&dateStart=46800&dateEnd=1613077199&type=releases](https://www.nornickel.com/news-and-media/press-releases-and-news/nornickel-shuts-down-smelter-in-nikel-town/?redirect_url=/news-and-media/press-releases-and-news/&dateStart=46800&dateEnd=1613077199&type=releases).



total population. The economic and political influence of the wealthy population of the Belgorod region (18th place by population density in Russia) with one of the cleanest environments in Russia has resulted in a strong economic balance between the metal and mining industry and the highly profitable black-soil agricultural sectors of the economy (Nikulin et al., 2017). Agriculture, as one of the leading roles in the economy of the region (agriculture and forestry – 18.1% of the gross regional product (GRP) vs mining 14.8% and manufacturing industries 19.6%)<sup>4</sup> has had a significant influence on the regional government's position on environmental issues and has effectively stimulated Metallinvest to a more transparent, open and environmentally-responsible corporate behaviour.

A few companies (Normickel, RUSAL, EVRAZ, Alrosa) that had positions in the top 10 of the ranking in 2016 lost their positions due to the increased competition (in the case of Normickel). The companies that were trying to avoid further steps towards transparency ("stayed at the same place") lost their former advantages (Shvarts et al., 2018).

Coal companies demonstrate two opposite tendencies: the one, represented by SDC—Coal, decided to use the opportunity to become the most environmentally transparent company in this subsector and jump from 25th place to 2nd place in the ranking; the other, represented by SUEK and "Russian coal" companies, in all probability, decided that if coal is bad from an environmental viewpoint, it is not important to be transparent in environmental issues (SUEK fall from 8th to 23rd place, "Russian coal" – from 28th to 34th place over four years).

Private companies (e.g. The Russian Copper Company/RCC; Ural Mining Metallurgical Company/UMMC) often generate the keenest criticism from civil society organisations and sometimes have much lower positions in ranking, than public companies. At the same time, the reality is more complicated: amongst the private companies there are a few much more open companies (Kinross Gold, Metallinvest, AGD DIAMONDS), but this is probably caused by greater openness on the part of the owning financial-industrial groups (FIGs).

## 6. Conclusion

The answers to our research questions based on 4 years of data from mining and metal companies in Russia regarding environmental transparency ranking yields the following conclusions. On Research question 1, *Can rankings and ratings based on international environmental responsibility standards have a significant impact on the mining and metal sector, compared to the influence of international voluntary standards applied to soft commodities (timber, marine biological resources, aquaculture, palm oil, soy, etc.)*, ranking results analyses lead to the conclusion that the transparency of one of the most closed industries has increased. It can be assumed that in the 2016–2019 multiyear environmental transparency data of corporate environmental impacts and management practices probably at least partly prevented an increase in the gap between formal corporate policies and practices of its implementation (Bromley, Powel, 2012; Tashman et al., 2019). It is reasonable to propose that the situation is similar to that in the oil and gas similar ranking dynamics – during the first 3–5 years of the ranking, business environmental transparency gradually and steadily increased. Following that, a thorough improvement in environmental performance was needed; this, in turn, depended on a long-term investment cycle.

At the same time, there is not enough information and data to draw positive conclusions regarding the stability of improvements in environmental management and environmental impact rankings. In general, it can be noted that as the ranking develops, more companies will start disclosing more quantitative information on their environmental impacts. This results in an increase in the reliability of the industry average values for these criteria. On Research question 2, *Are there significant differences in the levels of environmental responsibility between different*

*types of mining companies depending on their ownership status (state-owned vs. privately owned) and/or the degree of their internationalisation (Russian ownership and capital vs. international/foreign ownership and investors)*, the analysis of the available data of the relationship between the level of transparency in the field of environmental responsibility and the main institutional characteristics of the companies is highlighted in Table 3. The key findings are as follows:

- *Transparency, stock exchange listings, and the free float ratio.* The results of our study imply that its presence in the stock markets has a positive impact on a company's openness in environmental matters. Ten of the 15 publicly traded companies included in the ranking sample were in the upper half of the ranking in 2019. A moderately weak positive correlation (0.27 based on 2019 data) exists between the free float ratio and corporate ranking scores. However, a company's listing on an international stock exchange does not guarantee high environmental transparency. In our sample, at least three public companies (Petropavlovsk, Mechel, and Acron) have demonstrated consistently low or even worsening positions over the years. This means that in today's situation independent directors are not able to exert effective impacts on increased environmental and social transparency of mining and metal companies in Russia, and probably not in other transitioning and developing countries.
- *Presence of direct foreign shareholders.* In our sample, we see at least one example of the positive impact of the participation of foreign investors on the environmental transparency of a company. This is Kinross Gold Russia, a subsidiary of the Canadian corporation Kinross. Since 2016, the company has been trying to comply with the high standards of information disclosure, which provides it with consistently high positions in the ranking. Unfortunately, due to the insufficient number of such cases, we cannot draw any statistically significant conclusions about the impact of large multinational shareholders' participation on the transparency of Russian mining and metal companies.
- *Presence of state shareholders.* The sample of the largest companies in this industry includes only two companies with state participation (Alrosa and Priargunsky Industrial Mining and Chemical Union). The level of transparency in environmental issues of Alrosa Company is high, however, this seems to be associated with listing a company on the stock exchange, and not with government participation. At the same time, the low level of transparency of Priargunsky Industrial Mining and Chemical Union is not a surprise, since the company is part of the state atomic corporation Rosatom, and nuclear energy in Russia is traditionally considered as a very closed industry (Pomper, 2009). At the same time, it is possible to mention that not one mining and metal company tried to put political pressure on the ranking organisers or project donors, as compared to the oil and gas sector.
- *Part of private diversified holding / financial-industrial groups (FIGs).* There is some evidence of a positive connection between ranking positions and the participation of diversified financial-industrial groups in the share capital. Nine of the 14 FIG-controlled companies included in the ranking sample were in the upper half of the ranking in 2019. Thus, the influence of industrial and financial groups on the environmental transparency of a company is similar to the impact of listing on a stock exchange. At the same time, in our opinion, the mechanism of influence in the case of FIGs is somewhat different. It is about increasing transparency not to increase investment attractiveness, but to create a favourable image of the main shareholder. A striking example here is SDS-Coal Company, part of the largest regional holding SDS (Kemerovo region). This company, having taken low positions in the first ranking in 2016, was able to increase information transparency to a level that allowed it to enter the top-5 in 2017, and later become one of the three winners of the ranking in 2018–2019.

It is possible to suggest that ESG management in Russian mining and

<sup>4</sup> <https://www.investinregions.ru/regions/31/statistics>

metals industries is only in the process of development. Regional peculiarities, especially in more wealthy old development regions with diversified and balanced economies (i.e., agriculture production, export income, and employment are similar in significance with mining and metal industries), may have a more positive influence on ESG management than listing on foreign stock exchanges and international investors in companies with production facilities in less populated and less wealthy regions. The environmental ranking of mining and metal companies in Russia created a new mechanism for raising public awareness and dialogue between one of the most closed industries and stakeholders implemented in terms of both developing the ranking methodology, discussing the results, and further collaboration on the disclosures. The ranking initiated calculation of industry-average quantitative impact indicators which, as the sample grows, will transform into an important benchmark for corporate self-assessment and comparing Russian practices with those of the largest international and foreign mining and metal companies across the globe.

### Author contributions

AK and ES initiated work on ranking of environmental transparency of mining and metal companies. AK and LA lead work on ranking criteria development and their evaluation. DY carried out the data analysis on companies. AP and NR prepared table 3 and relevant analytics. ES, AP and LA wrote a draft text and incorporate revision. ES and AP providing a scientific-based attitude towards the paper. All authors contributed to the manuscript and gave their final permission for publication.

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### Declaration of competing interest

None. After election as independent director of Nornickel (June 2019) Dr. Evgeny Shvarts stepped aside from criteria discussions for the 2019 rating.

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