Metallurgical companies' environmental liabilities: a study of disclosure in reporting

Bibigul Amanzholova*, Tatyana Zhukova, Natalia Ovchinnikova, and Natalia Fribus,
Viktoria Karakchieva
Novosibirsk State Technical University, 630073, Karl Marx Av., 20, Novosibirsk, Russia

Abstract. The article seeks to examine and diagnose the current practices of forming financial and non-financial reporting followed by Russian metallurgical companies with regards to their environmental liabilities. The authors applied quantitative and qualitative methods of information analysis, as well as a morphological approach to generalizing the research results. The research has shown varying degrees of openness of metallurgical companies, which allowed the authors to formulate prospects for further research in this area.

1 Introduction

The prospects of Russian metallurgical companies today are linked with their investment attractiveness, which, in turn, is conditioned by transparency in terms of disclosing the parameters of social responsibility, including corporate environmental obligations.

The purpose of this article is to diagnose the practices of financial and non-financial reporting by Russian metallurgical companies with the emphasis on the transparency of their performance in terms of environmental liabilities.

In the study, the authors proceed from the following assumptions:

- in the economic, social and environmental liabilities of metallurgical companies, environmental liabilities occupy a special place;
- disclosure of information on environmental liability may indicate the company’s participation in a dialogue with stakeholders (or readiness for such a dialogue).

In this article, the authors adhere to the definition of environmental liabilities proposed by N. V. Fribus, and consider them not only as existing, but also “a potential obligation to third parties arising from the operation of a law, contract, tort or business customs in the course of activities that have a negative impact on the environment and (or) associated with special environmental risks, the implementation of which will inevitably lead to a decrease in economic resources, to the adoption of a new obligation or transfer to a third party” [1]. This definition reflects the dynamism and a certain hierarchy in social responsibility, which significantly expands the potential explanatory value of the information disclosed in the reporting. Thus, companies have the opportunity not only to demonstrate the transparency of business operations, but also to present the forecast values of economic sustainability indicators, taking into account reserves and other estimated values or environmental risks.

*Corresponding author: amanzholova@corp.nstu.ru

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The latter can serve as a criterion for the strategic nature of business, which is in line with contemporary methods of managing and evaluating sustainability.

2 Sources of environmental liabilities in the metallurgical industry

For metallurgical enterprises, most important environmental liabilities are environmental protection costs, environmental charges and payments for adverse environmental impacts, land reclamation costs, etc. As for land reclamation liabilities, they are recognized when the company has a coal or ore mining segment. Besides the existing liabilities, there are also potential ones, such as legal disputes and conflicts with tax and environmental authorities on environmental issues.

The potential nature of the liabilities is determined by the global agenda, which is stated in the strategic documents: "the world community is concerned about climate change and is taking active measures to reduce CO\textsubscript{2} emissions, including in the ferrous metallurgy, which accounts for about 60% of CO\textsubscript{2} emissions in Russia" [2]. International organizations are stepping up their efforts "to provide methodological, informational, and financial support for efforts to reduce CO\textsubscript{2} emissions" [2].

Thus, the parameters of negative environmental impacts of Russian metallurgical enterprises, selected in accordance with the industry development strategy and analytical reviews on the ecological impacts of the industry, allowed to identify the indicators disclosed in public reports that best characterize the environmental liabilities of metallurgical enterprises (Table 1).

Table 1. Public reporting indicators – indicators of environmental liabilities of metallurgical enterprises (fragment).

| Financial indicators | Non-financial indicators |
|----------------------|-------------------------|
| **First unit**       | **first unit**          |
| **First unit**       | **first unit**          |
| 1 The cost of implementing environmental protection programs (costs for wastewater treatment and emissions). | 1 Annual fresh water consumption |
| 2 Costs of environmental compliance measures | 2 Reducing freshwater consumption |
| 3 Costs of projects to improve environmental performance | 3 Volume of water intake from surface sources |
| 4 Environmental charges and fines | 4 Volume of pumped and used water |
| 5 Environmental Protection Reserve | 5 Recycling of annual non-mining waste |
| 6 Preliminary estimates of additional environmental protection costs | 6 Wastewater discharge volume |

As for non-financial indicators, we should note that the table shows only one group that characterizes environmental liabilities in relation to water resources protection. In the study, we also addressed the indicators that characterize companies’ contribution to reducing greenhouse effect. These indicators include maintaining the intensity of greenhouse gas emissions, reducing air emissions, increasing total greenhouse gas emissions, increasing greenhouse gas emissions in steel production, and the percentage of cleaning up emissions through the installation of capture systems.

Thus, the analytical study of the reporting of metallurgical enterprises was carried out on the basis of an integrated system of indicators, and this, as the authors believe, takes into account the nature of industry specific environmental liabilities.
3 Specific approach to selecting companies for reporting research

To ensure the representativity and reliability of the research results, the authors developed a special approach to the selection of economic entities whose reports will be analyzed. Reporting for 2019 was chosen for the analysis. The sampled population included 689 companies in the metallurgical industry with 2019 revenue from 878,144,293,000 rubles to 100,872,000 rubles.

As the first step, we identified four clusters of companies, depending on the amount of revenue. Firstly, from the sampled population, we excluded those whose revenue was less than 200 million rubles. There were 180 such companies.

Then we divided the remaining organizations into clusters in the following order: first, we identified 15 largest companies whose revenue in 2019 amounted to more than 85 billion rubles, and determined how many times the revenues of the first and fifteenth enterprise differ from each other. The results of the calculations showed a gap of 9.8 times. Further, we divided the remaining part of the companies into clusters with approximately the same gap between the revenue of the first and last enterprises within the corresponding cluster. As a result of applying this algorithm, the following groups of companies were identified (Table 2).

Table 2. Indicators that characterize the general sampling population – the metallurgical industry of the Russian Federation.

| Cluster | Total revenue | Number of companies | Company number in the sampled population | Revenue |
|---------|---------------|---------------------|------------------------------------------|---------|
|         |               |                     |                                          | Maximum | Minimum   |
| Major   | more than 85 billion rubles | 15                   | 1-15                                     | 878 144 293 000 | 89 161 379 000 |
| Large   | from 8.5 to 85 billion rubles | 72                   | 16-87                                    | 83 356 172 000 | 8 701 796 000 |
| Medium  | from 900 million to 8.5 billion rubles | 165                  | 88-252                                   | 8 402 633 000 | 907 309 000 |
| Small   | from 200 to 900 million rubles | 257                  | 253-509                                  | 891 162 000 | 200 012 000 |

Then, companies in each cluster were ranked and those whose balance sheet currency differed from the average asset value of the corresponding cluster by 50% up and down were identified. We ranked the selected organizations by the level of autonomy and identified those whose coefficient of autonomy deviates from the average for this cluster level by 25%.

Thus, to further investigate the level of information disclosure on environmental performance, we shortlisted one company within the first cluster, seven companies within the second cluster, eleven and nine companies in the third and fourth clusters respectively. A total of 28 organizations were selected for further research.

4 Analysis of environmental disclosures in public reporting of metallurgical enterprises: methods and results

To substantiate the methods for assessing corporate environmental information disclosed in the reporting of metallurgical companies, a literature review was carried out. For the review we selected publications that present the results of exploring the goals and objectives of
information disclosure in public reporting.

Voluntary disclosure is commonly associated with meeting the needs of different stakeholder groups. Disclosure is a part of marketing strategy, as it helps to increase competitiveness and mitigate risks (Meng, Xiaohua; Zeng, Saixing; Xie, Xuemei; Zou, Hailiang, 2019) [3].

Basak Kalkanci, Erjie Ang, and Erica Plambeck (2016) showed that voluntary disclosure of social and environmental impacts can increase a company's market share [4]. On the other hand, mandatory disclosure reduces the expected increase in the firm's market share as a result of studying these impacts and releasing this information.

Goto, Shingo; Watanabe, Masahiro; Xu, Yan (2009) analyzed the impact of information disclosure on pricing and stock returns, by exploring two management strategies [5]. They proved that full disclosure reduces the expected returns of an enterprise and increases its market value.

Based on the content analysis, Abdo, H. Mangena, N. looked into the extent to which accounting disclosure requirements for decommissioning costs are met by oil and gas companies [6].

Dobre E., Stanila G.O., Brad L. found that for companies quoted in the stock exchange, disclosing the information on only financial indicators is not enough to ensure sustainable development. To be truly competitive, they also need to include the information on their environmental policies and the benefits that the company offers to its employees [7].

In some studies, specific aspects of social responsibility are identified and evaluated, such as: relations – with shareholders and employees, parameters – environmental and social responsibility, as well as the responsibility of suppliers, customers and consumers [8].

Currently, the phenomenon of "Greenwashing" is intensively studied. It comes up when following the vector of eco-friendly behavior harms the interests of not only consumers, but also society as a whole, despite the fact that it brings significant benefits to existing stakeholders [9].

As for the methods for analyzing disclosures, they are mainly based on qualitative rather than quantitative estimates. In our study, we used the methods of interpreting various formats of public reporting, as well as verifying information disclosed in different sources, but always related to the subject of disclosure – environmental liabilities.

To systematize the results, we used the method developed by a group of authors: B. A. Amanzholova, N. V. Fribus, E. V. Khomenko [6]. The method for analyzing the disclosure of environmental indicators was tested with regard to manufacturing companies that have a negative impact on the environment. The core of this approach is the morphological analysis method, identification of the structure and levels of social responsibility, as well as the focus on the variability of public reporting.

To fulfill our objectives, a special approach was required, which was as followed:

- a set of indicators were developed and used to assess environmental information disclosure in public reporting of Russian metallurgical companies (Table 1);
- the enterprises within one cluster were explored using the comparative analysis method.

We developed a scale that includes a proportion of financial and non-financial indicators: 4 financial indicators plus 6 non-financial indicators equals 100 points; 3 plus 4 equals 70; 2 plus 2 equals 40.

The results of the application of the adapted approach to assess environmental disclosure of enterprises in clusters 1 and 2 are summarized in Figure 1.
| Disclosure options | Accounting (financial) statements and annual report | Accounting (financial) statements, annual report and other public information |
|-------------------|-----------------------------------------------|-----------------------------------------------|
| Sources | Other public information (official website) | Accounting standards and IFRS |
| Standards applied | Federal Accounting standards and IFRS | Federal Accounting Standard IFRS and GRI |
| Disclosure of financial and non-financial information (points) | Less than 40 (up to 4 indicators) | From 40 to 70 points (up to 7 indicators) |
| Information disclosure assessment | Complies with legal requirements | Complies with the requirements of the legislation and the interests of the owners |
| | | Complies with the requirements of the legislation and the interests of the owners and major stakeholders |

1 – JSC "EVRAZ NTMK", 2 – JSC "Krastsvetmet", 3 – PJSC "Ashinsky Metzavod", 4 – JSC "Svyatogor", 5 – JSC "NLMK-Ural"

**Fig. 1.** Morphological matrix of environmental disclosure in the public statements of metallurgical enterprises for 2019.

According to the assessed level of environmental disclosure, the list of companies under consideration included one company from Cluster 1 – EVRAZ NTMK JSC and seven companies from Cluster 2: JSC "Krastsvetmet", PJSC "Ashinsky Metal Plant", JSC "Svyatogor", JSC "NLMK-Ural", JSC "Metallurgical Plant "Elektrostal", PJSC "Ruspolimer", JSC "Kuznetsk Ferroalloys".

Due to insufficient level of information disclosure (less than 10 points), two companies from Cluster 2 were rejected: JSC "Metallurgical Plant "Elektrostal", PJSC "Ruspolimer", JSC "Kuznetsk Ferroalloys", as well as the companies from Cluster 3 and Cluster 4.

Figure 3 shows that the level of information disclosure in the reporting of EVRAZ NTMK JSC and Svyatogor JSC generally meets the legislation requirements, the interests of the owners and the majority of stakeholders. However, it is worth noting that to provide information about corporate environmental liabilities the two companies use different channels: EVRAZ NTMK JSC predominantly uses non-financial statements while Svyatogor JSC relies on financial statements.

The reporting of JSC Krastsvetmet and PJSC Ashinsky Metal Plant complies with legislation requirements and the interests of the owners. Information is disclosed using financial and non-financial indicators in the accounting (financial) statements and annual reports.

NLMK-Ural JSC has a low level of information disclosure. Therefore, the level of disclosure meets the requirements of the legislation, namely, the reporting standards.

Thus, the results of applying qualitative methods for analyzing environmental disclosure can be considered reliable, since the units under study were selected by objective criteria and parameters. However, it is important to keep in mind that the results assessed on the authors’ scale may indicate a roughly equal level of environmental disclosure. But the methods of achieving a high or satisfactory level of disclosure may vary.

In further research, the authors plan to reveal the impact of industry affiliation on disclosure policies and practices, as well as to assess their consistency with the strategic priorities of the industry and a particular business.
5 Conclusions

Summarizing the results obtained, we should note the following. The study contributes to the issue of transparency of Russian companies in the metallurgy sector. The results of the study can only be extended to companies in this industry due to the fact that the observations were carried out exclusively for this segment. The authors did not seek to analyze the industry in the round, but took into account the provisions and state policies when developing the indicator system. The analytical study of the reporting of metallurgical enterprises was carried out based on an integrated indicator system that considered the sources and the nature of environmental obligations specific to the industry.

Applying qualitative and quantitative methods to assess the environmental disclosure allowed to obtain the results that can be recognized as reliable, since the selection of observation units was carried out according to objective criteria and parameters. The main conclusion is that, since Russian companies use different channels to disclose environmental information, the assessment results are obtained with regards to all levels of information disclosure – from compliance with legislation to meeting the expectations of stakeholders.

The research has revealed some problems and limitations that outline the prospects for further research. Apparently, steel and iron companies should benefit from promoting their social responsibility through the disclosure of their ecological commitment in corporate reporting. However one serious problem we encountered when conducting the research was lack of data. In the future, we plan to increase the number of observations by extending the period under consideration.

The second problem is that since there is no standardized way to present environmental indicators, the assessment of information disclosure can be ambiguous and largely dependent on the researcher’s judgement. To a greater extent, this observation concerns non-financial information, since it is presented in textual form, and its interpretation requires special knowledge and approaches to formalization. We believe that the application of content analysis is an adequate solution.

In addition, the authors are convinced that data acquisition and analysis carried out in "manual" way may bring about significant information gaps, which may, in turn, result in biased assessments. To eliminate this limitation, it is necessary to form a reasonable request for specialized software tools.

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