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**РАЗВИТИЕ ESG-ОТЧЕТНОСТИ В ОРГАНИЗАЦИЯХ
ГОРНОДОБЫВАЮЩЕЙ ПРОМЫШЛЕННОСТИ: НА МАТЕРИАЛАХ
КОМПАНИЙ ГОРНОДОБЫВАЮЩЕЙ ОТРАСЛИ АРМЕНИИ**

Современная глобальная деловая и финансовая среда характеризуется решительным сдвигом в сторону обязательного раскрытия информации об устойчивом развитии, катализатором которого стало появление Стандартов

МСФО по раскрытию информации об устойчивом развитии (серия IFRS-S). Этот переход требует, чтобы горнодобывающая промышленность -сектор, имеющий решающее значение для глобального снабжения ресурсами, но по своей природе подверженный значительному экологическому и социальному контролю, -интегрировала финансовую существенность (financial materiality) в свою отчетность по экологическим, социальным и управленческим вопросам ESG. В этих развивающихся рамках горнодобывающий сектор в Республике Армения РА имеет жизненно важное экономическое значение, внося существенный вклад в ВВП и экспорт, но сталкивается с растущими требованиями к прозрачному раскрытию информации, усложненными наличием специфических региональных геополитических рисков.

Данное исследование направлено на оценку существующего уровня и качества ESG отчетности в четырех ключевых горнодобывающих организациях РА в течение периода 2021–2024 годов. Используя исследовательский подход качественного тематического исследования в сочетании с тематическим контент-анализом, исследование систематически сопоставляет местную корпоративную практику как с критериями GRI, так и с критериями финансовой существенности серии IFRS-S. Результаты показывают, что, хотя организации предоставляют структурированные, преимущественно качественные раскрытия информации, вся выборка демонстрирует значительный разрыв в финансовой существенности. Отчеты, как правило, уделяют чрезмерное внимание соответствию нормативным требованиям и благотворительной деятельности (существенность воздействия / impact materiality), при этом последовательно не в состоянии адекватно количественно оценить финансовые последствия рисков E и S для корпоративной оценки и стратегии.

В заключение, для сохранения глобальной конкурентоспособности организации в горнодобывающем секторе должны перейти от их текущей качественной основы к системе отчетности, соответствующей серии IFRS-S. Основной теоретический вклад исследования заключается в явном выявлении

и аналитическом формулировании геополитического риска как критического, но нераскрытого, существенного ESG фактора, характерного для стран с развивающейся экономикой, расположенных в регионах, затронутых конфликтами.

Ключевые слова: ESG отчетность, текущие разработки, горнодобывающая промышленность, IFRS- S, учет устойчивого развития.

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Development of ESG Reporting in mining industry organizations: a case study of companies operating in the Republic of Armenia

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Abstract

The contemporary global business and financial landscape is marked by a decisive shift towards mandatory sustainability disclosure, catalyzed by the emergence of the IFRS Sustainability Disclosure Standards (IFRS S-series). This transition mandates that the mining industry—a sector crucial for global resource

supply but inherently subject to significant environmental and social scrutiny—integrate financial materiality into its Environmental, Social, and Governance (ESG) reporting. Within this evolving framework, the mining sector in the Republic of Armenia (RA) holds vital economic significance, contributing substantially to GDP and exports, yet faces escalating demands for transparent disclosures, complicated by the existence of distinct regional geopolitical risks.

This study endeavors to evaluate the existing level and quality of ESG reporting within four key RA mining organizations during the 2021–2024 period. Employing a qualitative case study research approach in conjunction with thematic content analysis, the research systematically benchmarks local corporate practices against both GRI and the financial materiality criteria of the IFRS S-series. The findings indicate that while entities provide structured, predominantly qualitative disclosures, the entire sample demonstrates a considerable financial materiality gap. Reports tend to place undue emphasis on regulatory compliance and philanthropic activities (impact materiality), consistently failing to adequately quantify the financial ramifications of E and S risks on corporate valuation and strategy.

In conclusion, organizations in the mining sector must transition from their current qualitative framework toward an IFRS S-series compliant reporting system to maintain global competitive standing. The study's primary theoretical contribution is the explicit identification and analytical framing of geopolitical risk as a crucial, yet non-disclosed, material ESG factor specific to emerging economies situated in conflict-affected regions.

Key words: ESG reporting, current developments, Mining Industry, IFRS -S, sustainability accounting.

Introduction

The fields of business and finance are currently undergoing fundamental transformations, driven by the increasing value and role of sustainable development principles. Within this context, Environmental, Social, and Governance (ESG) criteria have emerged as the central paradigm for evaluating corporate performance

and guiding investment decisions [Maybee et al., 2023]. ESG fundamentally expands the traditional concept of companies' financial performance, mandating the consideration of non-financial risks and opportunities, and addressing the escalating demands for corporate transparency and accountability from capital markets and society [UNEP, 2020]. International frameworks, such as those established by the Global Reporting Initiative (GRI), are widely accepted as essential tools for corporate accountability [GRI, 2024].

A pivotal recent development in the financial reporting domain is the issuance of the IFRS Sustainability Disclosure Standards (IFRS S1 and S2) by the International Sustainability Standards Board (ISSB). These new standards are designed to formally integrate sustainability-related information with general purpose financial reporting, thereby making ESG data as reliable and comparable for investor decision-making as traditional financial data [ISSB, 2023]. This trajectory decisively confirms that ESG reporting is transitioning from an era of voluntary disclosures toward a mandatory financial reporting system.

The mining industry is characterized by a significant dual role in the global economy. On the one hand, it functions as a critical source of raw materials indispensable for technological advancement (including the transition to “green” energy) and the foundational well-being of modern societies [Pavloudakis et al., 2024]. Conversely, the sector is inherently linked to substantial environmental impact and complex social challenges, generating an intrinsic contradiction between the necessity for raw materials and the imperative to mitigate negative effects on nature, communities, and workers.

In light of this duality, ESG reporting has become an absolute necessity for the mining sector, moving far beyond being merely an optional choice. It effectively serves as a crucial interface between the economic activities of mining companies and the expectations of both investors and society concerning sustainability. The effective implementation of ESG in this sector is intrinsically tied to improving access to capital, enhancing risk management processes, and, crucially, maintaining the Social License to Operate (SLO) [Maybee et al., 2023]. Furthermore, clear and

comprehensive ESG disclosures inherently support developmental trajectories aligned with global sustainable development principles [Afyan & Gasparyan, 2021].

For the economy of the Republic of Armenia (RA), the mining industry occupies a strategic position, providing a substantial contribution to national economic indicators. Specifically, the sector constituted approximately 2.7% of the GDP in 2023 and accounted for a notable 37% of the total export revenues (USD 2.8 billion) [German Economic Team, 2024]. This sector is a primary engine of economic development and a significant source of employment in the RA. Concurrently, the environmental and social impacts generated by the sector under study in the RA are a constant source of public contention (such examples include the Amulsar or Teghut cases), necessitating effective regulation and elevated transparency standards. Consequently, the advancement of ESG reporting by mining organizations operating in the RA is an indispensable requirement for ensuring an appropriate balance between economic growth and environmental stability. Moreover, the capacity to attract international investors and sustain competitiveness in global markets is increasingly conditional upon adherence to stringent ESG criteria.

While previous studies have addressed the sustainable development of mining in Armenia [Afyan & Gasparyan, 2021], a marked scarcity of comparative analyses exists that focus on the current level and dynamics of ESG reporting in the context of the new IFRS S-series standards among operating companies. There is also a pronounced need to identify the principal factors that either impede or facilitate the adoption of ESG reporting in this sector's organizations. Furthermore, a thorough analysis of the experience of RA companies is required to develop theoretically grounded and contextually applicable recommendations.

The main aim of the research is: to assess the current level of ESG reporting by mining industry organizations operating in the Republic of Armenia, and identify the theoretical and practical mechanisms that can contribute to its further development in compliance with international standards.

Methodology

The research primarily utilizes a qualitative research approach, based on a Case Study Research design [Yin, 2018] and complemented by thematic content analysis. Given that the investigation is specifically focused on evaluating the evolution and quality of ESG reporting within a limited, strategically important group of organizations operating within a single developing economy (the Republic of Armenia), the Case Study approach is optimal for an in-depth, contextual study of complex corporate reporting dynamics, including critically emerging factors such as geopolitical risk.

The methodological emphasis is primarily placed on the accounting and financial materiality perspective, through which the study assesses the degree to which mining companies operating in the RA address their non-financial ESG disclosures, considering internationally evolving standards, particularly the IFRS Sustainability Disclosure Standards (IFRS S-series). A critical element of this study is the recognition that the operational environment of RA mining companies has been profoundly affected by the consequences of the recent Armenian-Azerbaijani conflicts (the 2020 events and subsequent developments). Therefore, the analysis also includes an evaluation of how companies address geopolitical and *force majeure* events as manifestly material, non-operational risks that impact their assets, strategic forecasts, and overall capacity to meet ESG commitments.

The research sample consists of the largest and most publicly visible mining organizations actively operating in the Republic of Armenia, which contribute significantly to the RA's GDP and export structure. These companies have also undertaken a voluntary commitment to transparency by publishing public reports explicitly labeled as Sustainability, Corporate Social Responsibility (CSR), or dedicated ESG reports. These reports covered the continuous reporting period from 2021 to 2024, allowing for an analysis of post-pandemic and post-conflict (44-day war) reporting dynamics.

The core methodology involves thematic content analysis systematically applied to the collected corporate reports. This qualitative technique is utilized to identify recurring patterns, specific thematic narratives, and significant qualitative and structural deficiencies within the ESG data and narratives disseminated by the selected companies.

The analysis is guided by an interpretive framework that synthesizes two primary international disclosure benchmarks:

1. GRI Standards: Used to define and map the overall breadth, scope, and topics of the reported ESG information.

2. IFRS S1 and S2 Standards: Applied to assess the qualitative alignment of disclosures with financial materiality. Specifically, the analysis rigorously examines whether ESG risks, including climate-related risks (S2) and general sustainability-related risks (S1), are genuinely integrated into the discussion of corporate strategy, risk management protocols, and financial projections.

Results and Discussion

The study sample, comprising the largest mining organizations in the Republic of Armenia, identified "Zangezur Copper-Molybdenum Combine" CJSC (ZCMC) as the provider of the most comprehensive publicly available data. Consequently, ZCMC is designated as the benchmark organization for local disclosure practices.

The 2024 Sustainability Report of ZCMC CJSC reflects a clearly structured commitment to the sustainable development concept, referencing compliance with content indicators derived from GRI, SASB, and IFRS S2 (Climate-related Disclosures), and includes the following points:

- Governance (G): This section is notable for detailing the adoption of high-level policies (e.g., Code of Conduct, Anti-Corruption) sanctioned by the Board of Directors, signaling a top-tier commitment.
- Environmental (E): This section provides significant quantitative data, including a general report on Greenhouse Gas (GHG) emissions totaling

1,097,163 tonnes of CO2 equivalent. Key metrics also include water usage of 63,159 megalitres and generated waste totaling 36,943,886 tonnes.

- Social Impact (S): This section emphasizes large community investments (totaling 18.3 million USD), as well as the impact on local employment (4,130 of the organization's 4,654 employees are from surrounding rural settlements).

While the ZCMC 2024 report sets a high local standard for structured and quantitative disclosure, the analysis simultaneously reveals persistent limitations related to the full integration of Financial Materiality.

The thematic analysis, conducted across all organizations in the sample, reveals general patterns in reporting while concurrently registering the limited adoption or absence of the IFRS S-series standards.

Environmental (E) Disclosures

The analysis of environmental disclosures confirms a corporate emphasis on adherence to national regulatory frameworks. Despite clear qualitative commitments (such as ZCMC's land reclamation efforts), a significant lack of quantifiable performance data persists across the entire sample. Companies routinely fail to disclose the specific, comparable performance metrics required by advanced standards, such as financial provisions allocated for tailing dam safety or verified Scope 3 GHG emissions. As a direct consequence, the majority of environmental disclosures remain qualitative in nature, thereby hindering investor comparability and the financial modeling of environmental risks.

Social (S) Disclosures

Social reporting is predominantly characterized by narratives of corporate philanthropy and community support initiatives. In practice, organizations strategically allocate their Corporate Social Responsibility (CSR) resources to tangible community investments adjacent to their extraction sites. These efforts often include support for public health initiatives, a clear example being the coverage of medical examination costs for the local population (as documented in the case of the Alaverdi plant). This emphasis is highly important, as it implicitly acknowledges

the population's potential vulnerability to specific health conditions correlated with exposure to chemical substances resulting from long-term extractive activities, thereby also functioning to mitigate legacy health risks.

Although all organizations in the sample affirm their commitment to local communities, subsequent disclosures lack the long-term, auditable metrics necessary to assess the sustained impact on local employment and the effectiveness of established stakeholder grievance mechanisms, which are fundamental to maintaining the Social License to Operate. Concurrently, reporting on health-related costs is typically relegated to general CSR categories, rather than being appropriately conceptualized and framed as a material social risk management expenditure.

Governance (G) Disclosures

Governance disclosures generally address requirements such as ethics codes and anti-corruption policies. A notable gap is the absence of clear reporting on the role of the Board of Directors or high-level committees in the direct oversight and active integration of ESG risks into corporate strategy. This lack of defined responsibility at the executive level is a critical flaw, especially when compared to the IFRS S1 core requirement for robust governance structures and explicit risk oversight.

Geopolitical Risk Disclosure and Force Majeure

The analysis of reports covering the 2021–2024 period shows a pronounced lack of transparency regarding geopolitical and force majeure risks. All organizations in the sample have systematically avoided or significantly minimized the explicit disclosure of the direct and indirect impacts of the recent Armenian-Azerbaijani conflict on their operations, asset impairment assessment, and long-term strategic planning. These non-operational risks have been treated as purely internal management matters and are not transparently integrated into public risk disclosure, which can be considered a transparency deficiency in governance and risk management.

Thus, we can observe that the sustainability reports used by organizations in the mining sector (which are predominantly based on GRI or SASB standards) are structured and reflect the sector-specific impacts.

Table 1: The Typical Structure of ESG Reporting in the mining sector

The pillar	Core ESG Component	Typical Disclosure Topics (GRI / SASB Focus)
Governance (G)	Strategic Framework	<ul style="list-style-type: none"> -role of senior management (the role of the Board of Directors or committees in overseeing ESG risks). -codes of ethics, anti-corruption policies. - accessibility
Environmental (E)	Impact on the Planet	<ul style="list-style-type: none"> -water resource management. -greenhouse gas emissions, energy use. -waste management (Including the safety of tailings facilities). -land use, biodiversity conservation, land reclamation.
Social Impact (S)	People and Communities	<ul style="list-style-type: none"> -occupational health and safety: indicators for work-related injuries and accidents. -local community relations and social license to operate: volume of community investments, grievance mechanisms. -workforce management, diversity, and inclusion.

Economic Impact	Financial Stability	-economic contributions (GDP, taxes, wages). - financial indicators material to the sector.
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However, following the publication of the IFRS S1 and S2 standards, the architecture of sustainability reporting has undergone profound structural changes, signaling a necessary transformation from a framework of voluntary, impact-based reports to a mandatory requirement for disclosures driven by financial information.

Table 2: Shift in Materiality Focus

Traditional GRI Focus	IFRS S-series / SASB Focus
Impact Materiality: How does the company affect people and the planet?	Financial Materiality: How do ESG risks and opportunities affect the company's financial results and value?
Outcome	
Reports are largely descriptive, often centered on philanthropic or environmental work already executed.	Reports are required to be quantitative and fully integrated with financial reporting, illustrating, for example, the potential financial costs associated with climate risk.

Consequently, the published IFRS-S standards mandate the presentation of sustainability reports that parallel financial reporting and adhere to its qualitative characteristics (reliability, comparability). Therefore, this expands the boundaries beyond a simple sustainability report, underscoring the necessity of transitioning from mere qualitative descriptions to clear accountability integrated with financial information.

The standards for ESG reporting in the RA mining sector are currently in an evolutionary phase. While localized efforts are evident (e.g., ZCMC's structured reporting), insufficient regulatory impetus and limited demand from the domestic

capital market generally permit organizations to maintain a comparatively simple, compliance-based level of disclosure. This status quo contrasts sharply with the mandatory and investor-driven disclosures prevalent in global jurisdictions, which are often founded on robust, quantified metrics [Pavloudakis et al., 2024].

The most fundamental deficiency identified in the sector is the slow pace of transition from impact materiality (focusing on the company's effect on people/planet) to financial materiality (focusing on how sustainability factors affect the company's value, which is the requirement of the IFRS S-series standards). Current reports predominantly describe actions taken; they consistently fail to quantify the financial impacts of key ESG risks (e.g., potential costs arising from water scarcity, regulatory non-compliance, or community conflicts) on the company's financial performance and long-term valuation. This deficiency can impede effective capital allocation decisions and seriously compromise the company's preparedness for global reporting obligations.

The empirical findings confirm the initial hypothesis: the consequences of military conflicts for RA mining companies must be categorically classified as a Material ESG Risk. The systematic absence of reporting on these force majeure events and their subsequent impact on operational continuity, asset values, and community stability represents a profound shortcoming in terms of Corporate Governance (G) and Social (S) transparency. Such an omission can undermine the overall credibility of accountability and increase investor uncertainty regarding the sector's long-term stability and reliability. It also directly contradicts the IFRS S1 requirements concerning the transparent disclosure of material risks affecting the company's strategic outlook.

Conclusion

In alignment with the defined objective, the results of the qualitative Case Study conducted on the current state of ESG reporting by mining organizations spanning the 2021–2024 period confirm that the overall reporting landscape is evolving, characterized by a noticeable heterogeneity among sectoral players.

Although leading companies publish structured reports with dedicated ESG sections, the disclosures are currently insufficient on the basis of financial materiality to meet contemporary international disclosure standards as prescribed by the IFRS S-series.

The research established three critical findings:

1. Disclosures concentrate on descriptive, qualitative statements, failing to quantify the financial consequences of Environmental (E) and Social (S) risks on business value and strategy.
2. Shortcomings are evident in governance as the direct oversight by the Board of Directors and the active integration of ESG risks into high-level strategic decision-making are often not clearly disclosed, contrary to the core requirements of IFRS S1.
3. Companies systematically fail to disclose the direct and indirect impacts of recent geopolitical conflicts (*force majeure* events) on their assets, business continuity, and risk profiles.

Thus, the contribution of this research lies in contextualizing local practices against the backdrop of the fundamental global shift in sustainability reporting. The theoretical contribution is reflected in the framing of the findings within the IFRS S-series framework. It highlights the intrinsic and significant inconsistencies between the current qualitative reporting paradigm and the global movement toward new-quality financial reporting, thereby proposing a novel and practical framework for future research.

The contextual contribution—related to the finding of a lack of transparency regarding geopolitical and *force majeure* events and their classification as a material ESG factor—is crucial and specific to the region studied. This observation confirms that, for strategically vital sectors, transparent disclosure of conflict-related events is an essential component of risk management and responsible corporate governance.

The conclusions of this study are limited by the constrained size of the research sample, which limits the generalizability of the results, and by the fact that the

analysis was conducted solely on publicly available documents published by the organizations. Future scholarly work could expand the scope of study to include comparative analysis with the mining sectors of neighboring or similar developing economies, fostering a comparative analysis of regional disparities in ESG adoption, employ mixed methodologies, incorporating direct interviews with company executives and state regulators to uncover internal challenges that impede the comprehensive adoption of the IFRS S-series standards and other advanced reporting frameworks and systematically investigate the direct correlation between the quality of ESG disclosure and the cost of capital for mining organizations.

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