



# Comparing ESG frameworks to ascertain the inclusion of spatial, temporal, and cumulative aspects and their implementation in mining disclosures

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**Background:** Environmental, Social, and Governance (ESG) frameworks perform a vital role to guide companies on structured sustainability disclosures. It enables investors to make investment decisions based on the impact on business. However, questions on the inclusiveness of frameworks and their application in the mining sector have been raised by scholars. From a critic's perspective, this study aims to examine the status of inclusion of spatial, temporal, and cumulative aspects in the frameworks and their implementation in company disclosures. Substantial reliance on rare earth elements for renewable energy to meet net-zero 2050 targets with an expected sevenfold increase in extraction in the next decade put the entire focus on mining and makes it an ideal sector for analysis.

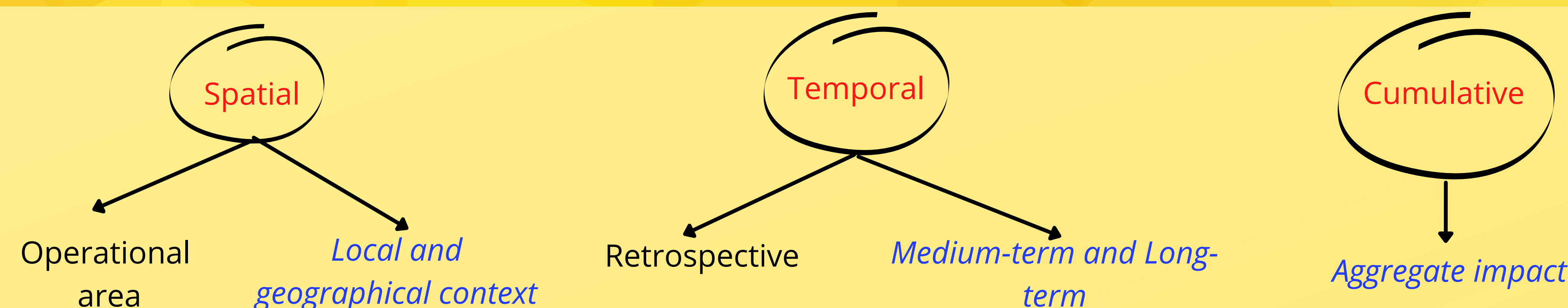
**ESG Frameworks:** This study focused on frameworks of Global Reporting Initiative (GRI), Sustainability Accounting Standards Board (SASB), and Task Force on Climate-Related Financial Disclosures (TCFD)

- Provide a structured method to categorize and regulate non-financial information
- Help investors make capital investment decisions based on information that is consistent, easily accessible, and interpretable
- Criticisms of sustainability reports based on GRI resulted in a belief that it may mislead the decision-makers or even camouflage unsustainable practices at mine sites
- Deliberations on the inclusion of the right ESG factors in business activities are still ongoing

**Mining sector disclosures:** Sustainability reports of BHP Limited, Newmont, Corporation, Glencore Plc, and Barrick Gold were reviewed

- Mining sector is a major source of raw material for other industries to make infrastructure, instruments, energy, and fertilizers; and it is also associated with many social and environmental impacts
- Symbolic nature of sustainability reporting in mining suggests that conformity to global ESG frameworks is not an end, but it may lead to below-compliance effects, as common interests in this sector uphold vagueness over responsibility to circumvent explanation of impacts
- Isomorphism is one such reason, as companies imitate others to comply with sustainability reporting requirements
- Cumulative effects assessment (CEA) remains the Achilles' heel for mining projects - Lack of clarity on methods and limited analysis of consequences, social and cultural impacts and interactions with other (past, present or future) projects.

**Research Objective:** To conduct a comparative analysis of selected ESG frameworks and their application in disclosures of the mining sector with a focus on spatial, temporal, and cumulative aspects. The spatial aspect aims to review whether the ESG frameworks and mining companies' disclosures are centred towards the operational area of organizations only or whether it considers mining sites' impacts in the context of associated geographies, locations, and natural features as well. The temporal aspects aim to analyze whether the approach for frameworks and disclosure is retrospective, considering past year data only or whether it reports for sustainability parameters considering the entire life cycle of a mine including exploration, operation, and post-closure phases as well. The cumulative aspects imply that the frameworks and industry disclosures consider project-specific impacts as well as aggregate long-term consequences due to the interaction of the project with present and future land use



### Methodology:

- Explicit review of frameworks and mining disclosures
- Implicit review of frameworks and mining disclosures
- Mapping content on Nvivo software for repeatability
- Summarizing and coding: Assign codes based on information, 0 - Nil, 1 - Vague, and 2 - Included

### Results

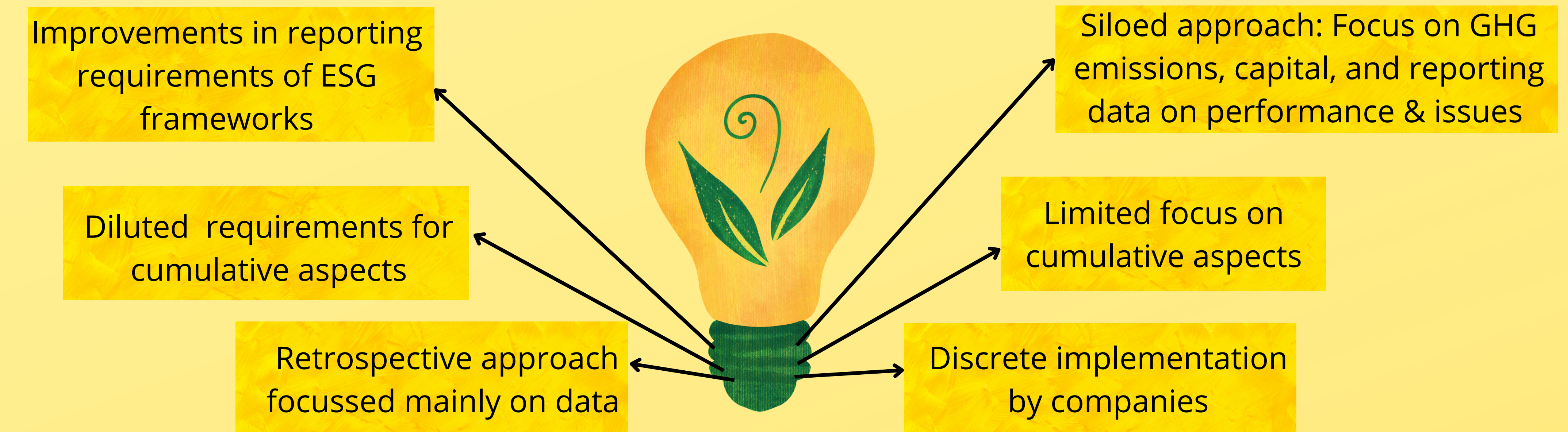
Table 1: ESG Frameworks score

Frameworks	Spatial	Temporal	Cumulative
GRI Consolidated Standard 2021	2	2	2
SASB Mining & Metals Standard 2018	2	1	0
TCFD Standard 2017	2	2	0
TCFD Guidelines 2021	2	2	2

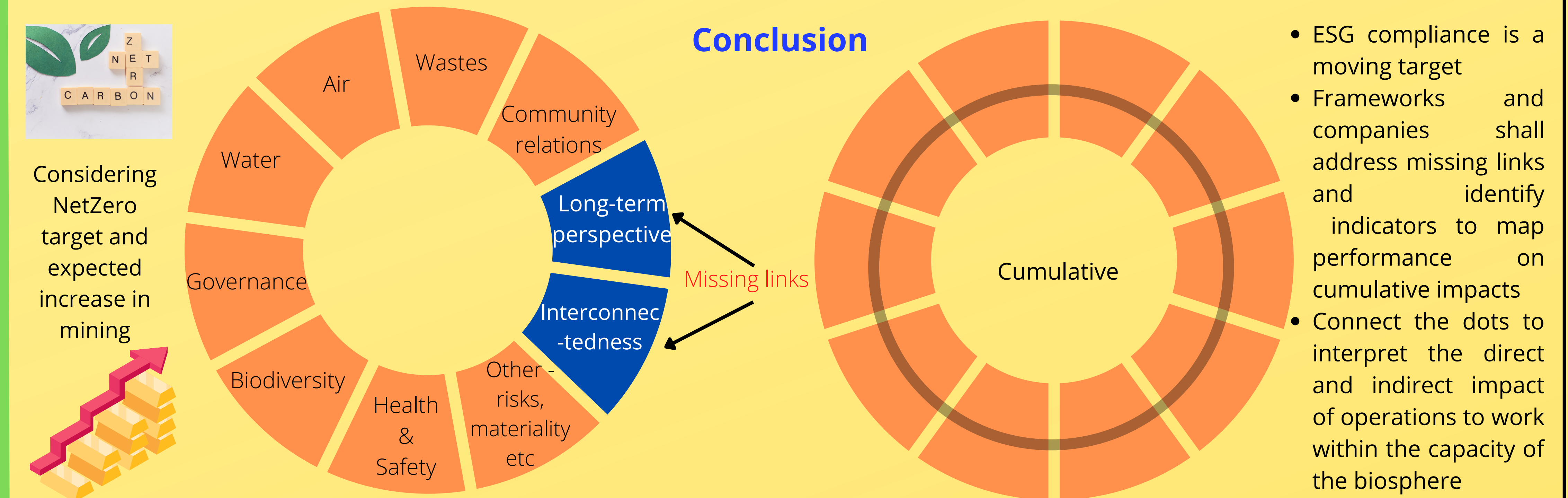
Table 2: Mining disclosures score

Companies	Spatial	Temporal	Cumulative
BHP Group Limited	2	2	1
Newmont Corporation	2	2	0
Glencore Plc	2	2	0
Barrick Gold Corporation	2	1	0

### Key findings



### Conclusion



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