

# **Voluntary ESG reporting for Australian battery minerals: evolving context and future directions**

Rusty Langdon  
Institute for Sustainable Futures  
University of Technology Sydney, Sydney, Australia  
e-mail: Rusty.Langdon@uts.edu.au

Fiona Berry, Helen Barreto Lara, Damien Giurco\*, Bernardo Mendonça, Stephen Northey  
Institute for Sustainable Futures  
University of Technology Sydney, Sydney, Australia  
e-mail: Fiona.Berry@uts.edu.au; Helen.BarretoLara@uts.edu.au;  
Damien.Giurco@uts.edu.au; Bernardo.MendoncaSeveriano@student.uts.edu.au;  
Stephen.Northey@uts.edu.au

Shahjadi Hisan Farjana, Wen Li  
Department of Mechanical Engineering  
University of Melbourne, Melbourne, Australia  
e-mail: Wen.Li3@unimelb.edu.au

## **ABSTRACT**

The goal of this research is to assess the current level of standardisation of data, methodology, scope, and transparency requirements for environmental, social and governance (ESG) reporting and management mechanisms. The approach focuses on both regulatory and voluntary mechanisms (such as the Initiative for Responsible Mining Assurance, IRMA) relevant for Australian mining and processing companies or mine-sites that produce battery materials including lithium, nickel, cobalt, vanadium, and graphite. Our analysis indicates a partial degree of overlap among these mechanisms in terms of the specific ESG categories they address. In conclusion, divergent futures are postulated to inspire fresh thinking and critical evaluation of the best path forward for ESG reporting in the Australian and international battery minerals sectors.

## **KEYWORDS**

Environmental, Social, Governance (ESG); Corporate Social Responsibility (CSR); Battery; Mining; Sustainability

## **INTRODUCTION**

The global transition towards renewable energy supply and storage technologies is coinciding with increased scrutiny on systems of production and raw material sourcing. Through discussions with Australian based mining and processing companies that produce battery grade materials, it is reported that companies are experiencing complexity and overwhelm with the proliferation of schemes emerging that enable demonstration of responsible behaviour and disclosure of credible environmental, social, and governance (ESG) performance.

Australia has had mandatory corporate environmental reporting since 1998 [1], with approaches and apparent motivations underpinning reporting practices varying across companies [2]. However, meeting stakeholder expectations requires disclosure of information that goes well

beyond these minimum requirements. In the absence of a universally accepted ESG reporting framework, battery material producers are required to grapple with reporting to both Australian regulatory mechanisms and several voluntary ESG reporting mechanisms, to fulfil ESG reporting and management expectations of end markets.

Requirements of different voluntary schemes differ, and the extent to which ESG reports can be relied on as credible representations of industry practice continues to be debated [3]. In recent years, instances of greenwashing have been highlighted and the quality and credibility of reported ESG information is under increasing scrutiny. International governing bodies, investors, and academics alike have emphasised the critical importance of ensuring accurate, transparent, and comparable data in ESG reporting [4, 5, 6, 7]. There is also analysis suggesting that disclosure behaviours change depending upon whether companies are perceived to be under-performing or over-performing on topical aspects, such as greenhouse gas emissions [8]. However, low quality, inconsistent, and incomparable ESG reporting remains a challenge [9, 10, 11, 12, 13]. The combination of these factors and concerns, has resulted in an ESG reporting landscape that is becoming increasingly complex and, anecdotally, there is a lack of clarity on a preferred common industry practice or approach moving forward.

This paper contributes to this evolving discussion by providing a summary of recent research conducted as part of the Future Battery Industries Cooperative Research Centre (FBI CRC). Some key ESG reporting and management mechanisms deemed relevant for consideration by Australian battery material producers were compared and ESG topics of focus identified. The rigorousness of reporting and management requirements across a range of ESG categories was assessed with consideration of best practice principles for ensuring data quality and integrity. There are a proliferation of different schemes, with apparent distinctions in motivation, stakeholder groups and complexity. In the absence of considered scholarly underpinnings and theoretical coherence between voluntary ESG frameworks, data transparency and comparability are important for building trust. To help inform the discussion going forward, several possible divergent futures for the evolving landscape of voluntary and mandatory ESG reporting within the context of Australian battery mineral producers are outlined.

## **METHODOLOGY**

The results of a recent report prepared for the Future Battery Industry CRC on the Requirements and Data Commonalities for sustainability certifications and reporting in the battery mineral sector are summarised and presented [14]. This has also been informed by an initial review and stakeholder survey reported by Rutovitz et al. [15]. To provide an understanding of the methodology, a four-stage approach to compare ESG reporting mechanisms was utilised. Firstly, four selection criteria were used to narrow the scope for this study. Secondly, based on content analysis of mechanisms of focus, a list of ESG indicators in common amongst them was identified. Thirdly, a data collection framework was developed to guide data collection. Lastly, data was collected on the requirements of each mechanism and coded to the the list of ESG indicators. Once coding was established for each mechanism, a count of total reporting requirements under each ESG indicator category for each mechanism was performed. This approach has conceptual similarities to research previously been conducted to evaluate the scope and degree of compliance with corporate sustainability reporting mechanisms, notably the Global Reporting Initiative (e.g., [16, 17]). This is also similar to research that has sought to understand commonalities and divergences in the scope of mandatory and voluntary corporate reporting of mine sites within Australia (e.g. with respect to water [18]).

Key considerations when selecting the ESG reporting, management and assurance mechanisms for evaluation and comparison were: the relevance for the Australian context, the relevance for a diverse set of battery minerals, a preference for voluntary mechanisms that required some form of public disclosure or third-party verification, and a preference for mechanisms with detailed guidance to facilitate the comparison of reporting requirements.

Following a desktop review of available mechanisms, a total of eight voluntary sustainability certification standards, assured standards, non-assured standards were selected for evaluation and comparison. Two sustainability certification mechanisms were selected:

- The Initiative for Responsible Mining and Assurance (IRMA)
- Certification of Raw Minerals (CERA)

In addition, six sustainability reporting and assurances were selected:

- Towards Sustainable Mining (TSM)
- Global Reporting Initiative (GRI)
- Carbon Disclosure Project (CDP)
- Dow Jones Sustainability Index (DJSI)
- Responsible Mining Index (RMI)
- OECD Due Diligence Guidance on Stakeholder Engagement for the Extractives Sector

Also, the reporting requirements of three Australian Federal Government legislative instruments with policy objectives that align with the principles of ecologically sustainable development were considered, including:

- National Greenhouse and Energy Reporting Act 2007 (NGER Act)
- National Environment Protection (National Pollutant Inventory) Measure (NPI)
- Environmental Protection & Biodiversity Conservation Act 1999 (EPBC Act)

Public disclosure and third-party verification are widely viewed as important for establishing reporting credibility. A previous FBI CRC report on the common drivers and options for Certification and Life Cycle Assessment (LCA) [15] identified governance principles that were commonly agreed by stakeholders as important for the extractives sector: multi-stakeholder governance, third-party verification, transparency and ISEAL good practice. Another report by Ernst and Young and the Centre for Corporate Citizenship Boston College identified industry's perception that sustainability reporting provides value and further analysed the motivations for sustainability reporting [19]. In particular it was highlighted that transparency is important for stakeholder perceptions of trustworthiness. Therefore, the focus is on reporting mechanisms that feature either some form of public disclosure, third-party scoring or third-party verification.

In addition to collecting data on ESG indicators and scope of requirements, data was also collated for a range of parameters to inform analysis of quality and credibility. Principles applied to data quality and credibility are informed by both the ISEAL best practice guidelines and definitions found in the literature (Table 1). Darnall et al's [20] analysis of sustainability reporting by Japanese firms informed assumptions of the close correlation between independent third-party verification and the credibility of ESG reported information.

**Table 1: Key principles for data quality and credibility**

Data quality principles	Trust / credibility principles
<p><b>Timeliness</b> Defined periodic reporting of performance data and monitoring/disclosure of progress against performance targets.</p> <p><b>Detailed guidance documentation</b> Clearly stipulated data requirements to meet specific indicators. Reducing the potential for differing interpretations and methods to meet indicators.</p> <p><b>Methodology and data source transparency</b> Requirements to disclose methodology for modelling, calculations, data sources, and reasoning for any omissions.</p> <p><b>Third-party verification</b> Verification of reported data by an independent third-party entity</p>	<p><b>Transparency</b> Reported information is publicly available</p> <p><b>Accountability</b> Clearly identifiable grievance mechanisms for impacted stakeholders. Truth in reporting – reporting all information, not selective reporting positive information. Public disclosure of incidents of non-compliance.</p> <p><b>Multi-stakeholder governance</b> Governance by a range of stakeholder groups</p> <p><b>Third-party verification</b> Verification of reported data by an independent third-party entity</p>

**RESULTS AND CURRENT CONTEXT**

**Summary of ESG reporting topics and indicator requirements**

The list of ESG indicators and the results of total indicator requirements for each standard and mechanism can be found in Figure 1. Further in-depth results and discussion are available in our public report [14]. A highlight level evaluation of the adherence of these standards and disclosure mechanisms to ISEALS Good Practice Guidelines on data quality is presented in Table 2.

As is evident in Figure 1, there is a large degree of variance in focus for ESG indicators between voluntary and regulatory reporting and management mechanisms. This is illustrated through instances of higher reporting requirements for some mechanisms in certain ESG indicators and a lower number or lack of reporting requirements in others. Variation is evident across most ESG indicators. Particularly strong examples are found in water, air quality, climate change, energy, waste, and habitats and mine closure. Even when multiple mechanisms address similar ESG categories, there can be significant differences in the degree of evidence required to evaluate performance or compliance with that category. With some schemes such as IRMA generally having stricter requirements, whereas others such as GRI having lower requirements for documentation and assurance. Some schemes emphasise transparency and reporting practices, whereas others are focused on ensuring adherence to best practice or minimum management standards for each ESG category. In addition, degrees of compliance can vary within the same mechanism (e.g. TSM assessment criteria levels range from C to AAA).

	Reporting boundary							
	Product		Site		Site or Company		Company	
<b>Mechanism classification</b>								
Non-Assured standard			RMI			GRI	OECD	CDP
Assured standard					TSM			DJSI
Certification	CERA	IRMA						
Regulatory mechanism				NPI				NGER
<b>Environmental Reporting and Management Requirements Count</b>								
AIR QUALITY	4	17	3	4		7		
CLIMATE CHANGE			2		2	2	8	8
GREENHOUSE GAS EMISSIONS MANAGEMENT	1	2	1		2	2	6	
GREENHOUSE GAS EMISSIONS	2	2	3		2	3	3	3
OZONE-DEPLETING SUBSTANCES & POLLUTANTS				3		6		
BIODIVERSITY, ECOSYSTEMS, PROTECTED AREAS	1	5	4		4	3	10	
ENERGY			1	1		17	10	7
HABITATS AND MINE CLOSURE		4	3			4	1	
TAILINGS MANAGEMENT		3	4	2	4		3	
ENVIRONMENTAL MANAGEMENT	3		2					
CONSUMPTION AND EFFICIENCY	2		1			5		
NOISE AND VIBRATION	1	2	2					
SUPPLY CHAINS		1				4	1	
WASTE	4	12	1	1		10		
WATER	2	17	8	3	4	24	15	7
<b>Social Reporting and Management Requirements Count</b>								
CULTURAL HERITAGES	1	4						
EMPLOYEE PROTECTION, FAIR LABOUR AND TERMS OF WORK	6	12	12		2	13		15
STAKEHOLDER ENGAGEMENT	3	13	9		5	3	24	2
COMMUNITY HEALTH, SAFETY AND WELLBEING	4	5	1			2		
OCCUPATIONAL HEALTH AND SAFETY	3	8	6		4	9		
HUMAN AND COMMUNITY RIGHTS	8	6	6			2		4
RISK MANAGEMENT		3			4			2
SUPPLY CHAIN DUE DILIGENCE		1	1			2		2
<b>Governance Reporting and Management Requirements Count</b>								
CUSTOMERS						1		1
BUSINESS INTEGRITY	3	1	5			3	2	2
COMPLIANCE	1	3				4		
RESSETTLEMENT		5	3					
TRANSPARENCY		5	8			1	2	15
CORRUPTION & COMPETITION	2	1	1			4		4
RISK MANAGEMENT		1	2					4

**Figure 1:** Comparing the number of reporting requirements for regulatory and voluntary ESG mechanisms. Scheme acronyms: **IRMA** – The Initiative for Responsible Mining and Assurance; **CERA** – Certification of Raw Minerals; **TSM** – Towards Sustainable Mining; **GRI** – Global Reporting Initiative; **CDP** – Carbon Disclosure Project (incl. CDP Water); **DJSI** – Dow Jones Sustainability Index; **RMI** – Responsible Mining Index; **NPI** – National Pollutant Inventory; **NGER** – National Greenhouse and Energy Reporting scheme.

The degree to which mechanisms adhere to ISEALS Good Practice Guidelines on data integrity is presented in Table 3. Information regarding the governance structure of regulatory mechanisms has been limited to whether the regulation is managed at the federal or state and territory level. Voluntary mechanisms evolve through a different governance process and structure and instances of multi-stakeholder governance throughout the development period of the mechanism have been highlighted and the degree to which engagement periods have been utilised to elicit feedback from a wider group of stakeholders noted. IRMA, TSM, GRI and RMI have all been developed under multi-stakeholder governance principles, which include the involvement of indigenous groups, worker organisations, industry representatives, financial organisations, and research institutions.

CERA was developed with a limited group of stakeholders consisting of consultants and universities. It was not clear whether DJSI and CDP was developed through multi-stakeholder governance, however, there has been considerable evolution of these schemes overtime and the DJSI has indicated that any methodological iterations are performed in consultation with relevant stakeholders.

**Table 2:** Mechanism adherence to data quality principles: Note: Evaluated against ISEAL Good Practice Guidelines, Green = meets, Yellow = somewhat meets, blank = does not meet.

Mechanism	Type of initiative	Data requirements	Timeliness of reporting	Verification
NPI	Regulation	Detailed	Annual reporting	Not required.
NGER	Regulation	Detailed	Annual reporting	External auditor required for verification.
IRMA	Standard and Certification	Detailed	Annual reporting	Third-party verification required by IRMA approved auditors.
CERA	Standard and Certification	Company specified performance indicators.	Not specified	Third-party verification by CERA approved auditors.
TSM	Standard	Stipulated to some degree by the standard with flexibility for company determined indicators.	Annual TSM reports	Third-party verification required on some reporting categories (e.g., GHG emissions) every 3 years.
GRI	Standard	Detailed	No frequency specified.	Not required.
CDP	Disclosure standard and comparison index	Variable. Questionnaire based disclosure. No obligation to meet requirements.	Not specified. Company defined.	Not required.
DJSI	Disclosure standard and comparison index	Variable. Questionnaire based disclosure. Performance and ranking indexed according to the ESG indicators addressed.	Annual indexing with monthly reviews to integrate breaches.	Independent third-party verification required every 4 years for most disclosed information. DJSI also reviews data internally.
RMI	Standard and comparison index	Variable. Performance and ranking indexed according to the ESG indicators addressed.	Every two years.	No third-party verification required.

The analysis uncovered significant differences between sustainability reporting and management mechanisms in relation to verification methods and requirements. Only one regulation, the NGER, required third-party auditing of reported GHG accounting information. Under voluntary mechanisms auditing requirements were more prevalent, however, verification via auditing was not always a strict requirement. For example, certification is performed via approved third-party auditing services on behalf of IRMA. The same is true of CERA, however, this certification is currently still in development. IRMA’s audit cycle consists of surveillance audits 12 to 18 months after initial audit reports and re-audits every three years to keep the certification or even increase the achievement level. DJSI also required third-party verification of reported information every four years, however, this is not required for all reported information. For TSM, third-party verification is required for some reported information. RMI required public disclosure of some reported information, however, third-party verification of this information was not required. Other sustainability management and reporting mechanisms not previously mentioned (e.g. GRI, CDP) have varied requirements to verify reported information or display it publicly.

**Table 3:** Mechanism adherence to data integrity principles. *Note: Evaluated against ISEAL Good Practice Guidelines, Green = meets, Yellow = somewhat meets, blank = does not meet.*

Mechanism	Type of initiative	Governance	Grievance mechanisms	Disclosure
NPI	Regulation	Federally regulated.	Not currently, but a review in 2021 recommended better stakeholder inclusion to raise awareness	Required
NGER	Regulation	Federally regulated	None identified	Not required by individual organisations. Aggregated data published at sector, state and national scale
IRMA	Standard and Certification	Multi-stakeholder governance with two stakeholder engagement periods during development. (mining companies, purchasers, NGOs, affected communities, labour organisations and the finance sector)	Grievance mechanisms	Public disclosure.
CERA	Standard and Certification	Developed by consultants and universities.	Grievance mechanisms	Disclosure of performance against self identified performance indicators
TSM	Standard	Features an independent Community of Interest Advisory Panel (indigenous and community stakeholders, non-government organisations, workforce stakeholders, and financial organisations).	Grievance mechanisms for workers	Disclosure for some indicators only
GRI	Standard	Multinational oversight, multi stakeholder governance including representatives from business, civil society organizations, investment institutions, labour organisations and mediating institutions	Not specified.	Disclosure on self-identified material issues.
CDP	Disclosure standard and comparison index	Not for profit charity	Not specified	Not required.
DJSI	Disclosure standard and comparison index	Governance by an internal index committee. Periodic engagement with external stakeholders - only for material changes to methodology	Not specified	Public disclosure required for some but not all reporting categories.
RMI	Standard and comparison index	Developed by the Responsible Mining Foundation not-for-profit. Governing body consisting of academics, scientists, consultants, lawyers. An advisory council consisting of members from industry, human rights specialists, indigenous rights specialists, union representatives, NGO representatives, finance & investment specialists.	Expectation of grievance mechanisms	Public disclosure required on some reporting categories.

**Academic perceptions on the current context**

The institutionalisation of sustainability reporting has evolved considerably since the establishment of the Global Reporting Initiative in 1997, and material issues of importance have been guided by a desire to increase company or brand legitimacy [21, 22, 23], manage negative stakeholder perceptions, and gain social license [24]. Examples of sustainability reporting in the mining sector predate the GRI. Notably Western Mining Corporation (WMC; later acquired by

BHP Billiton) distributed to their shareholders their 1994/95 Environmental Progress Report that was partially developed based on guidelines established by the North American Public Environmental Reporting Initiative in 1993. The site-based data disclosures made in their initial and subsequent reports are not dissimilar to the level of data disclosure in modern day reporting.

Over time, the culturally contextual and geographically specific nature of sustainability issues has resulted in an increase in the number of material ESG indicators that companies are required to report to, an increase in the complexity of data required to meet compliance, and a proliferation of voluntary standards available to guide ESG reporting and management practices. Despite the institutionalisation of ESG reporting at the corporate level, ESG reporting frameworks are yet to reach a level of standardisation or homogenisation that is helpful for both sustainability performance comparison and for informing material procurement and investment decisions [11, 25]. Considerable examples of sustainability reporting data being used to compile datasets to benchmark eco-efficiency in the Australian and international minerals industry [26, 27, 28, 29]. However, several considerations must be applied when comparing data produced from the plethora of internationally available voluntary ESG reporting mechanisms: differences in the data requirements to meet both voluntary and regulatory reporting mechanisms [14]; diversity of sustainability metrics and indicators to track progress [30, 31]; lack of consistency in requirements for transparency which enables selective reporting [32]; and methodology inconsistencies [33]. Many of the issues outlined here relate to a tendency for some reporting and management mechanisms to lean towards guidance principles rather than detailed step-by-step methodology and data frameworks [14], which, as discussed throughout this paper, has resulted in greater potential for differing interpretations of requirements, and therefore variation in reporting and management outcomes and potential for greenwashing. In addition to specific issues within ESG reporting mechanisms, the voluntary nature of compliance has come under criticism [34, 35] and in response ESG reporting and management is trending towards a mandatory requirement.

Several studies consider the regulation of ESG reporting as a positive step towards ensuring credibility and accountability [30, 36]. Mandatory ESG disclosure has not been established in Australia, however indications of a future Australian framework are found in a recent position statement by the Australian Government with the announcement of an 'Extended External Reporting regime' [37]. International expectations regarding full supply chain visibility are increasing in line with recent guidance from the International Sustainability Standards Board [38, 39]. Elements of mandatory ESG disclosure requirements have recently been introduced, both in Europe and in the USA in the form of the European Union's proposed Carbon Border Adjustment Mechanism (CBAM) and the US Securities and Exchange Commission's regulatory reporting requirements for Climate Related Financial Disclosure, and the Dodd-Frank Act. In the European Union the EU Battery Regulation, targeted at battery material supply chains, will directly impact Australian battery materials producers. Downstream battery material purchasers, such as car manufacturers (Original Equipment Manufacturers, or, OEMs), are also influencing sustainability disclosure throughout the battery supply chain via procurement influence, and in some cases innovative transparency solutions such as blockchain are being developed to suit this purpose [40]. It is therefore pertinent for Australian battery materials producers to stay abreast of international best practice and assess their ability to meet these requirements, given the governance impact end markets are likely to have on the value of battery materials sold.



## **COMPETING FUTURE TRAJECTORIES FOR BATTERY MINERAL ESG REPORTING AND ASSURANCE STANDARDS AND MECHANISMS**

Given the current context, there is uncertainty regarding how the future landscape of ESG, sustainability and responsible supply disclosure and assurance mechanisms for the battery material extraction and supply sector will evolve. The research being undertaken as part of the Future Battery Industry CRC is revealing the complexity and varied nature of the barriers and drivers to the adoption of voluntary sustainability initiatives [41]. Based upon research observations and ongoing developments in the sector, there are a range of plausible futures that could emerge. Here two alternative trajectories are explored – one towards consolidation of ESG standards and mechanisms, and the other towards further proliferation of new standards and growing complexity.

### **A trajectory towards consolidation**

One potential trajectory is that the proliferation of ESG and responsibility assurance standards that has been observed over the past 30 years undergoes a reversal and consolidation, whether through digitally-enabled approaches such as the Battery Passport, or arising from other standards.

There is evidence of developments along this trajectory for corporate sustainability standards. With examples such as emergence of the International Sustainability Standards Board (ISSB), following the prior merger of the Sustainability Accounting Standards Board (SASB) and the International Integrated Reporting Council (IIRC) into the Value Reporting Foundation. The ISSB is working to consolidate the SASB Standards, Task Force for Climate-related Financial Disclosures (TCFD) recommendations, the Integrated Reporting Framework and the Climate Disclosure Standards Board (CDSB) Framework [42]. In addition, there is also the emergence of the Battery Passport.

There is also evidence of an industry-led push towards this trajectory within the minerals sector. For instance, the gradual spread and adoption of Towards Sustainable Mining (TSM) by industry associations internationally. This standard, originally developed by the Mining Association of Canada, has now been adopted by industry associations in several countries including by the Minerals Council of Australia. There are also examples of commodity specific assurance standards that have emerged and are now being adapted to new commodity groups. Most prominently, the Copper Mark has been adapted and translated to new commodity groups by the International Molybdenum Association (IMO), the Nickel Institute and the International Zinc Association – with them having launched the Molybdenum Mark, Nickel Mark and Zinc Mark respectively in 2022 [43]. Following this, there have been announcements of collaboration between Copper Mark, the Mining Association of Canada, ICMM and the World Gold Council to develop a new common standard for responsible mining [44]. However, this has seen some pushback from civil society, with an open letter being signed by more than 35 community groups, unions, NGOs and other organisations that advocates for adoption of alternative standards such as IRMA – which they perceived as being “developed through an equal governance model” [45]. This demonstrates tension between industry and broader stakeholders with respect to governance models and requirements for ensuring responsible mineral supply. It is unclear how far this push for consolidation of assurance standards will continue, but what does seem to be emerging is a recognition of the need for assessing the degree of equivalency of reporting requirements and assurance mechanisms between schemes.

## **Evidence for a trajectory towards proliferation**

An alternative potential trajectory is one where there is further proliferation of new ESG, responsibility and sustainability assurance standards. This could take the form of new ESG management and assurance standards focused on specific topics of concern (e.g. modern slavery), commodity supply chains (e.g. cobalt), or to present information in formats suitable for specific stakeholder groups (e.g. local communities, investors, procurers, etc.). Moreover, as earlier there is potential for overlaps across mechanisms, which might lead to a potential interoperability, especially if coupled with robust data collection and management systems supported by a decentralised ledger or blockchain technology to enable secure and auditable communication of information along supply chains [40].

## **CONCLUSION**

Battery material supply chains and extractive industries are rapidly scaling to meeting current and future expected demand for ESG reporting and disclosure. Due to this, improvements in the effectiveness of ESG management and performance disclosure may have large benefits over time in ensuring that any harmful ESG impacts of battery material production are minimised and opportunities for benefits are maximised. In this article, the current context of some of the voluntary and mandatory ESG standards and disclosure mechanisms of potential relevance to Australian battery material producers are explored. There is broad overlap between these mechanisms in terms of the ESG topics and indicators that they address. However, these mechanisms also differ significantly in their design, governance, adoption, and acceptance – with potentially significant long-term implications for the ability to promote positive industry transformation and transparency. Two alternative possibilities for the future have been proposed: a future of consolidation or a future of proliferation of ESG mechanisms and standards. It is recommended that all stakeholders to battery material supply chains consider the different possibilities for the future and attempt to articulate the vision they would like to see when advocating for change in the sector.

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