

White Paper

Voluntary Responsible Mining Initiatives A Review

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Introduction

In 2008, McKinsey & Company¹ prepared an analysis for the World Economic Forum on the growing number of voluntary responsible mining initiatives. While highlighting the large number of initiatives focusing on sustainability in the mining sector, the McKinsey findings identified the potential to prioritize or consolidate these initiatives. Almost a decade later, in response to the further proliferation of initiatives, questions about relative value and interest from new actors (e.g. from downstream technology companies), the World Economic Forum's Global Agenda Council on the Future of Mining & Metals (the Council) and RESOLVE are giving this issue a second look.

This paper aims to help stakeholders better assess the voluntary initiatives space for mining and consider options to increase impact. It is based on a survey of informed stakeholders' views and experiences of voluntary responsible mining initiatives conducted in late 2015 and draws on the diverse experience of Council members from civil society, academia, the mining sector, midstream and downstream companies, and government.

We need to be able to link clear development [performance] indicators to mining. For example it is quite disturbing that well-governed mineral economies like Namibia and Botswana still have high levels of hunger by World Food Programme (WFP) hunger indices.

Survey Respondent

Summary of Findings

The survey focused on perceptions regarding current initiatives, and views on needed improvements and future developments.² Full survey findings are available in the appendix.

- Ninety-six per cent of survey respondents agree that there is **potential to create linkages or efficiencies** between voluntary initiatives. Respondents emphasized the value of prioritization and consolidation.

96% of survey respondents agree that there is potential to create linkages or efficiencies between voluntary initiatives. 67% of respondents are aware of new responsible mining initiatives that have been added to the responsible mining landscape since the 2008 McKinsey & Company study on voluntary responsible mining initiatives. Most of the initiatives were known to at least 20% of the respondents.

- While the awareness of new initiatives is high, **respondents place greater value on long-standing, established initiatives**, particularly those linked to credible institutions. Being “well-established, with credibility across sectors” is a critical characteristic. However, key differences were indicated with regard to stakeholder perceptions as to which institutions have the requisite credibility.
- **Transparency** was emphasized as a key ingredient. Stakeholders are seeking transparent reporting on sustainability performance, backed up with third-party verification, which is a growing trend.³ Transparency creates a “level playing field for legitimate players”. Civil society organizations are more likely to endorse initiatives that emphasize transparency as it decreases risks associated with their participation.
- Stakeholders, especially from industry, are looking for initiatives that are **practical** and can be implemented through management systems.
- **Regulation** is important but there are a significant number of non-regulatory drivers for responsible mining. Regulation was cited as the main driver with a response rate of 49%. Yet community accountability, downstream pressure,⁴ reputational issues associated with environmental performance and the cost of conflict were cited by 40% – corporate leadership and access to capital both topped 30%. Taken together, the community accountability and community conflict factors surpassed 50%.
- **Trade association codes are not seen as key drivers** despite the presence of the International Council on Mining & Metals (ICMM) principles, Towards Sustainable Mining (TSM) of the Mining Association of Canada (MAC), and the Conflict Free Sourcing Initiative (CFSI) on the list of valued initiatives. This may be due to

respondents making a distinction between an external driver and an industry-driven response framework.

- The danger of **initiative fatigue is real**. The proliferation of initiatives and lack of linkages make it challenging for mining companies to decide which ones to adopt and make a focus on sustainability more costly to implement. Despite the growing number of voluntary initiatives, respondents pointed to a continued lack of comprehensiveness or holistic considerations. This suggests that standards are overlapping on some issues, while others are not being addressed.

The proliferation of initiatives and lack of linkages make it challenging for mining companies to decide which ones to adopt and make a focus on sustainability more costly to implement.

- The **social impacts** of mining related to community health, the equitable distribution of cost and benefits, and gender were cited as being **poorly addressed** by existing voluntary initiatives. More emphasis is needed on free, prior and informed consent (FPIC), including early stakeholder involvement, community access to finance and technical expertise, and expectation management. For many, the lack of indicators linking development and mining, such as social performance measures that can be tied to a mine site, is seen as critical to improving accountability.
- The abundance of initiatives makes it **difficult to identify key messages** and send appropriate signals to important stakeholders and supply chain partners.
- The perception is that groups with similar interests often **compete** for limited resources, championing their initiative or agenda over others'. Ultimately, having so many initiatives without cross-communication or linkages makes it difficult for the sector as a whole to cooperate and identify common goals and strategies.
- A significant worry is that voluntary initiatives are **vulnerable to financial cycles**. Current financial conditions are a constraint and create an imperative for consolidation. Respondents cited accessing **resources** to implement voluntary initiatives as a significant challenge – whether as a company or a non-governmental organization (NGO).
- Nearly 40% of respondents identified a need for **dialogue and constructive engagement** among stakeholders. What is needed, as articulated by one respondent, is to *“convene diverse stakeholders to develop new, deeper, better answers to the toughest issues to define in responsibility (FPIC, mining in conflict areas, demonstrating broad community support, etc.)”*. While this could be perceived as contradictory to a call for consolidation, it is more likely a call for more effective and sustained collaboration, not just more one-off dialogue sessions.

Several parallels can be drawn between these findings and results from the 2008 McKinsey study. The McKinsey study describes a rapid expansion in the number of voluntary initiatives, creating a patchwork in terms of issues covered, geographies, industries and types of participating companies. At that point, the private sector was cited as driving the majority of the codes, with companies signing up for two to four codes each. Stakeholders had a positive perception with regard to the adoption of voluntary principles by companies.

A number of issues with voluntary initiatives identified in the McKinsey study are worth noting and are often still reflected today: they are applied inconsistently, the landscape is confusing, and there is a lack of accountability and measurement. They found that voluntary initiatives carry a large administrative burden, which can be prohibitive for smaller upstream companies that are already unsure which initiatives to pursue.

It should be recognized that the initiatives covered by this survey are quite different in type, objective, reach and other factors. For example, some are broad in scope and aspirational, others are targeted to specific issues, and others are strictly process-driven. This was intentional as the survey was seeking to gather general perceptions. No differentiation was made by type because the objective was to understand perceived value across a diverse set of responsible mining initiatives.

A more focused analysis of certification initiatives, which have also increased in number in recent years, was recently completed by the Centre for Social Responsibility in Mining (CSRSM) at the University of Queensland.³

The Context – How We Got Here

The proliferation of voluntary responsible mining initiatives has its roots in the needs of industry and key stakeholders. In the 1990s, “responsible mining” was largely viewed as a matter of legal compliance – with national mining laws, environmental laws and regulations, mining concession agreements, labour laws, collective bargaining agreements, and the like. Beginning in the late 1990s, however, a group of the largest companies in the industry recognized that a compliance-based approach was not enough. They saw that, increasingly, host governments and communities sensed that mining may be a valuable and profitable venture, but perhaps only for the producers. They also saw that, increasingly, communities and governments around the world were demanding more – they wanted to see that having a mine in a community would result in economic opportunities and poverty reduction for local residents, and that the ultimate benefits of an operation would outweigh the perceived costs at the community and societal levels.

In future, mining companies will be rated on “sustainability” – a global dimension determined by the understanding of a company’s environmental, social and political performance that measures community trust and will ultimately translate into a license to operate – the company’s ultimate global “sustainability”.

“The Global Mining Initiative: Changing Expectations – Meeting Human Needs and Aspirations”, by R J McNeilly, Executive Director and President, BHP Minerals, 2000 Minerals Industry Seminar, Minerals Council of Australia, 7 June 2000

This realization led to greater emphasis, industry-wide, on the concepts of sustainable development, environmental stewardship and social responsibility. As a result, in the late 1990s, leading mining companies launched the Global Mining Initiative (GMI),⁵ an independent multi-year, multi-stakeholder effort to survey the sector and identify a path towards more responsible behaviour and an improved reputation. The GMI led to the creation of the ICMM.

With the GMI, the industry moved to a more proactive, less defensive, footing. Before and after the GMI, mining companies participated in and helped initiate a number of issue-specific initiatives on issues like transparency, human rights, biodiversity, cyanide management for gold mining, and others. Public and private lenders began to develop standards and guidance on environmental and social issues related to mining – specifically the International Finance Corporation (IFC) and banks that subscribe to the Equator Principles (EP).

During this period, senior-level engagement between mining companies and civil society increased. Additionally, civil society took its case for responsible mining to others in the mineral supply chain, with a focus on gold and diamonds, in essence extending the definition of the sector outside of the mine fence.

In the late 1990s and early 2000s, downstream jewellery companies joined with civil society organizations to promote the idea of responsible sourcing and certification for diamonds and then gold. [The Kimberley Process \(KP\)](#) for diamonds was an early manifestation of a push for multi-sector solutions to supply chain challenges. As a gold miner, Placer Dome was an early leader, engaging in direct negotiations on best practice standards⁶ with leading civil society organizations. Jewellery retailers, such as Tiffany & Co. and Wal-Mart, established mine to retail, closed-pipe supply chains for some of their products.

In 2005, [the Responsible Jewellery Council \(RJC\)](#) was founded to focus on supply chain assurance for minerals in jewellery. In 2006, a dialogue process was initiated, sanctioned by chief executive officers from various mining companies, jewellery companies and associations, and leading NGOs, focused on developing a voluntary system of standards and site-based assurance. The original negotiating framework was based on 1) good practice standards to recognize new “best-in-class” operations; and 2) recognition of current operations that were committed to improvement and transparent reporting. This framework recognized that mine planning spanned decades and contemporary good practices could not always be retrofitted.

More recently, due to media coverage of conflict and human rights abuses related to artisanal and small-scale mining (ASM) in the Great Lakes region of central Africa, electronics companies and other manufacturers have taken steps to de-risk some mineral supply chains. Many downstream electronics companies are now asking questions that go beyond managing risk – they are beginning to ask suppliers how to link their supply chains to responsible operations.⁷

Many mining companies, including Members of the World Economic Forum, have initiated or participate in a number of issue-specific and more broad-based assurance systems. The list includes the International Cyanide Management Code (ICMC); the Partnering Against Corruption Initiative (PACI), a Forum initiative; the Voluntary Principles on Security and Human Rights (VPs on S & HR); Towards Sustainable Mining (TSM), a Mining Association of Canada programme; the Extractive Industries Transparency Initiative (EITI); and the ICMM Sustainable Development Framework. Some are seeking to develop new systems, such as the Initiative for Responsible Mining Assurance (IRMA).

“Assurance is the instrument used to assess the level of conformity of participants and identify situations of non-compliance.”⁸ It also includes external reporting of the evaluation results. For example, membership in ICMM requires adhering to the 10 ICMM principles, publicly reporting on performance against these principles in accordance with the Global Reporting Initiative (GRI) and providing third-party assurance of both its performance and

reporting. While implementation is under way, the ICMM assurance system verifies that members are implementing sustainable development principles in their business, and seeks to demonstrate transparency and legitimacy by communicating the results of the evaluation to the outside world.⁹ The use of assurance providers to assess schemes may also avoid conflicts of interest, greenwashing and bias, enhance independency and provide accurate results.

The CSRSM report (“Designing Sustainability Certification For Greater Impact: An analysis of the design characteristics of 15 sustainability certification schemes in the mining industry”) provides a useful typology (p. 7) of assurance with a focus on certification. As evidenced by those listed in the report, certification schemes are increasingly being used by minerals companies as a tool to demonstrate that they are operating responsibly. The ISEAL (formerly the International Social and Environmental Accreditation and Labelling Alliance) has provided guidance and best practice on how to establish certification schemes.

The Role of Innovation and Disruption

Innovation and disruption could change the mining and metals sector in ways that voluntary systems are not taking into account. The survey identified a number of potential trends worth watching as stakeholders consider next steps.

- Mining **technology** will change, as will the **use of minerals and metals**. Improvements in waste management, water use and energy consumption could significantly reduce environmental impacts, rendering certain standards or scoring less useful. The sharing economy, green tech and materials replacement could alter demand for, and the impacts associated with, some minerals.
- **Access to licences, finance, capital and insurance** could become more closely linked to better environmental and social performance. Consumer pressure, social performance bonds, financial regulatory enforcement and differentiated markets could enable some companies to secure higher prices, increased market share or decreased costs.
- Technology coupled with access to data could be a game changer. Access to real-time site information could lend itself to crowd-based monitoring of issues at specific sites, with stakeholders sharing and consolidating information in near real time across data and even social media platforms. Information sources could vary from more remote sensing data collected from satellites and drones consolidated on NGO platforms, to community sharing platforms that chronicle real and perceived performance. **Accessibility and the increased sharing of information** could empower consumers, NGOs and other advocacy groups to hold mining companies more accountable to voluntary commitments. These tools might also play a useful role in the joint monitoring of performance, such as systems utilized for water monitoring and community feedback.
- Commodity tracking technology will improve the **traceability and transparency of supply chains**. Remote sensing technology was specifically highlighted as a technology that will enhance anti-corruption, security and enforcement measures and may present new challenges and opportunities to the industry and stakeholders.
- The Sustainable Development Goals (SDG), the Dodd-Frank Wall Street Reform and Consumer Protection Act, the Organisation for Economic Co-operation and Development Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (the OECD Guidance), and the EU Directives on Accounting and Transparency are rallying points that will increase the development and uptake of voluntary systems. Likewise, voluntary standards will continue to inform the **development of regulations** and finance-related requirements. As voluntary initiatives continue to proliferate, **harmonizing** the different efforts and moving towards the adoption of universal or shared standards were also cited as potential game changers. The benefit from mainstreaming these tenets in relevant legal and regulatory instruments is clear, whether nationally or on a regional or international basis.

Recommendations

In the interest of helping stakeholders address the objectives of consolidation, increased efficiency and greater sustainability impact, the following recommendations are offered for consideration.

Focus on the evolution towards multi-issue, comprehensive assurance systems

With dozens of voluntary initiatives in existence, the landscape can be confusing. For example, many mining companies and downstream users are overwhelmed by the number of voluntary initiatives. They are uncertain about the value of particular upstream initiatives, even ones where mining companies are currently investing significant resources.

The landscape can be simplified by classifying initiatives by type, as in Table 1. For example, initiatives can be

categorized by objective: some are aspirational, some seek to promote dialogue or other process-driven improvements, some seek to tackle specific issues such as emergency response or cyanide management, others seek to create confidence or assurance that mines or companies are meeting social and environmental objectives.

Over the past 5 to 10 years, efforts to create more comprehensive, multi-issue assurance initiatives that promulgate standards and seek to verify performance have increased, including efforts initiated by mining groups. While this trend is likely to slow in the near future due to the downturn in mineral prices, it is likely here to stay and will continue to take hold over the next decade. Efforts over the next few years are likely to clarify, integrate and/or consolidate these multi-issue assurance initiatives. Indeed, this trend has already begun as initiatives reference other standards and guidelines within their own design.

Table 1: Voluntary Initiatives by Objective

Aspirational or Dialogue	Issue Focused	Large-Scale Mining Multi-Issue or Comprehensive		
		Commodity Focused	Company Focused	Site-Based
<ul style="list-style-type: none"> - Whitehorse Mining Initiative - Millennium Development Goals (MDGs)/ Sustainable Development Goals (SDGs) - OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas - Africa Mining Vision - Devonshire Initiative - AccountAbility AA1000 Assurance Standard - Responsible Mineral Development Initiative (RMDI) 	<ul style="list-style-type: none"> - Kimberley Process (KP) - Occupational Safety and Health Administration (OSHA) - Social Accountability 8000 - Global Business Coalition on HIV-AIDS, tuberculosis and malaria - Partnering Against Corruption Initiative (PACI) - Extractive Industries Transparency Initiative (EITI) - International Cyanide Management Code (ICMC) - Business and Biodiversity Offsets Programme (BBOP) - United Nations Voluntary Principles on Security and Human Rights (VP on S & HR) - Free, Prior and Informed Consent (FPIC) Dialogue - Conflict-Free Sourcing Initiative (CFSI)/Smelter Program (CFSP) - Conflict-Free Tin Initiative - Diamond Development Initiative (DDI) - Alliance for Responsible Mining (ARM) - Public-Private Alliance for Responsible Minerals Trade - Solutions for Hope - World Gold Council Conflict-Free Tool 	<ul style="list-style-type: none"> - Aluminium Stewardship Initiative - Better Gold Initiative - Green Lead - Responsible Jewellery Council (RJC) 	<ul style="list-style-type: none"> - International Council on Mining & Metals (ICMM) - Dow Jones Sustainability Index (DJSI) - FTSE4 Good Index - Responsible Mining Index (RMI) - United Nations Global Compact (UNGC) - Global Reporting Initiative (GRI) 	<ul style="list-style-type: none"> - International Finance Corporation (IFC) Performance Standards - Mining Association of Canada-Towards Sustainable Mining (TSM) - Initiative for Responsible Mining Assurance (IRMA) - Equitable Origin - Equator Principles (EP) - Prospectors & Developers Association of Canada (PDAC) e3 Plus

Understand and respond to the needs of downstream companies, investors and regulators

The demand for voluntary initiatives typically originates from civil society organizations, investors or downstream companies. Regulation and agency guidance or soft law can also create conditions that support the development of voluntary systems.

Pressure from downstream companies, investors and regulators is expected to increase. Generally, downstream consumers are calling for 1) certification mechanisms that allow companies to know they have “best-in-class” minerals in their products; and/or 2) de-risking supply chains in an effort to exclude “worst-in-class” actors, with a current focus on human rights compliance, avoiding conflict zones and blocking illicit sources.

Consumers and companies like Apple and Samsung were cited by some as being important downstream users that can influence the demand for responsibly sourced minerals. They are responding to the imperative: “Do not buy products from companies that do not follow the rules.”
Survey Respondent

The current demand to identify “best-in-class” mines (using a broad set of social and environmental standards) and to track certified minerals from these mines directly into consumer products is intense but limited. This demand is focused primarily in the jewellery sector. There is broad demand on the part of manufacturers, ranging from electronics, to aerospace, to auto, to de-risk mineral supply chains, for minerals that are illicitly mined or traded or linked to conflict or human rights abuses. This strategy is responsive to the fact that these industries typically produce products that contain a number of minerals, each with a complex supply chain.

Downstream companies tend to focus first on the specific high-risk, high-profile minerals in their supply chains. This led to early efforts on diamonds and gold, followed by work on tantalum, tin and other metals used in electronics.

A focus on specific minerals and issues creates challenges for diversified mining companies, who produce more than one mineral, and manufacturers that use more than one mineral.

This trend is changing, with a future push for unified systems or at least a core set of standards that cut across minerals, complemented with mineral-specific modules to address differences. This is already being seen with the systems being developed by ICMM, MAC, IRMA, the Responsible Mining Index (RMI) (currently in development) and others.

This has potential benefits for both upstream and downstream companies. De-risking as issues surface in supply chains is reactive; it can address specific risks but can lead to a non-stop, problem-solving dynamic for downstream companies. Multi-issue assurance systems, including certification or sector-wide assurance systems,

can be part of a comprehensive, proactive solution. While this type of systems development may have higher upfront costs, it has the potential to change the reactive dynamic and give mining industry leaders increased market share or other competitive advantages.

The research shows a two-track process emerging. On one level, the **emergence or strengthening of systems that allow downstream companies to differentiate and exclude minerals that are non-compliant with fundamental social standards** is likely. As a first step, these systems are likely to screen for minerals that are illicit, can be traced to conflict, or do not comply with basic human rights and social requirements (i.e. de-risking). For example, the electronics sector may add other minerals to its smelter-focused assurance system. While some downstream companies, for example a number of jewellers, have already tackled these issues for some minerals, companies with more diverse supply chains still have work to do in this area.

At the same time, **demand will grow for minerals sourced from “best-in-class” operations based upon a broad set of social and environmental standards**. Many companies, once they tackle baseline issues, will move to ensure that an increasing percentage of minerals in their products meet broad environmental and social standards. They will do this by building downstream alliances, partnering with civil society, pressuring refiners and looking for upstream partners.

This two-track approach is represented in Figure 1 as an assurance pyramid, which suggests the potential for improvement over time and the potential to link demand (for both “best-in-class” and assurance against baseline standards) and support efficient systems development. Conceptualizing assurance in this manner may help the examination of how to link these two demand streams.

Rather than seeing a competition between “best-in-class” certification and de-risking strategies and tools, the **potential formation of a downstream responsible sourcing coalition** is anticipated, driven by the benefits of information sharing, efficiencies and shared risks. As specific standards and assurance systems gain traction, alignment with investor and risk screening mechanisms is likely.

Voluntary systems are not competitive with regulation. Voluntary initiatives can act as a feeder into regulation and, in doing so, can help design and pilot “smart regulation”. They can be used to test ideas and build relationships among stakeholder groups in a pre-regulatory environment. For example, the ICMC has become a quasi-regulatory framework, which has been incorporated into the IFC framework; the next step is for it to be adopted into regulation. This process rewards companies who worked with stakeholders to help develop and implement the Code.

De-risking will require approaches for both large-scale mining (LSM) and ASM, as ASM can present a higher risk profile.

Figure 1: The Assurance Pyramid



Build from current assets

The survey pointed to the value of current, established initiatives. This is a clear signal that any new systems or consolidation should build from current, successful systems. For example:

- While the IFC standards focus on mine planning and development, they clearly have broad acceptance and are a likely foundation or baseline, at least with regard to the development phase of operations. The World Bank Group Environmental, Health and Safety Guidelines address operational performance and may also be seen as a baseline.
- It is likely that mining companies will seek to build on their investments in standards development, assurance systems and tools. This includes MAC's TSM, and the ICMM's Sustainable Development Framework.
- With regard to the issue of conflict, including for ASM, the World Gold Council's conflict-free toolkit is an asset.
- Downstream electronics companies have put significant resources into architecture for supply chain tracking that decreases risk for conflict minerals, promotes transparency and supports public claims that certain high-risk minerals are excluded from products. Some of these companies are investing new resources to extend their supply chain research to new issues and additional minerals. They are likely to seek to build on this system with new minerals and a broader set of social and environmental requirements.
- Civil society organizations are deeply involved in current initiatives like EITI and the development of broader, multi-issue systems, such as IRMA, the Alliance for Responsible Mining (ARM) and Equitable Origin. They will advocate for these systems, with a particular focus on their independence and integrity. It should be noted that IRMA also has the support of a number of companies, both upstream and downstream, and name-brand jewellers are sourcing minerals through ARM.

Work with those in the middle

Most of the voluntary initiatives focus on either site-based (upstream) issues or the needs of public-facing companies at the end of supply chains (downstream). In every mineral supply chain, mid-stream processors are critical choke points with the ability to support or hinder the development of systems. When electronics companies initiated a process to de-risk their supply chains starting with tantalum, they focused on smelters. This effort took time but eventually led to breakthrough agreements on transparency and information sharing that were endorsed by leading NGOs and led to the creation of the CFSI programme.

Develop an assurance on-ramp for current sites

Discussions of responsible mining standards have a tendency to focus on best or aspirational standards. It makes sense to incentivize leading practices. However, it is not always possible to retrofit a contemporary standard to a mine that was planned and built decades ago. In addition, a mine life is finite: once the economic ore is mined and processed, the mine ends, unlike forestry or agriculture where improvements can be made during the next growing season.

As the vast majority of minerals in the near to medium term will come from operating mines, any assurance system focused on recognizing responsible mining should include a provision for improvement at operating mines that may not meet emerging best practice. To focus only on future, best-in-class operations would limit impact. The case is strong for an "on-ramp" for improvement or a system that recognizes both "best-in-class" operations and improvements at other sites (see the assurance pyramid in Figure 1). Indeed, Barry, Cashore et al. (2012) emphasize determining the correct incentives to encourage participants to continue to improve their performance over time, over settling at a low, but more inclusive standard. They argue that initiatives must find a balance between encouraging participants to continually improve and setting achievable standards that take into account the different financial or technological constraints of participants. At the same time, the costs and efforts associated with improvement and compliance should not be so high that they deter current participants.

Distinguish between large-scale and small-scale mining

The overall reputation of the mining sector with the public and key stakeholders is defined by all actors in the sector, whether the best or worst performing major mining company, a responsible artisanal operator, or an unsanctioned small-scale mining site under militia control.

Different challenges require different response strategies. For example, addressing illicit mining and trading requires a security, development and peace-building response that may be supported by supply chain differentiation and assurance. Work is under way by the Council on the Future of Mining & Metals and the [World Economic Forum Meta-Council on the Illicit Economy](#) to design a coordinated strategy on illicit mining and trading that recognizes, supplements and seeks to increase current efforts to bring responsible sourced minerals from ASM into supply chains, such as those led by ARM and the Diamond Development Initiative (DDI). There is little doubt that there will be a continued push from downstream companies and regulators to further de-risk supply chains to address illicit trade minerals. LSM can play a supportive role, particularly in regions where both large-scale and illicit mining occur.

Take advantage of current LSM information and data

It is not clear that downstream companies are fully aware of the number of upstream initiatives. But downstream manufacturers have begun to survey their supply chains and evaluate upstream standards and systems. For LSM, especially for companies that participate in voluntary initiatives, a constructive step may be to communicate with downstream actors more effectively so they are aware of current commitments, standards and programmes, and have access to key information related to performance. To support this, it may be necessary to develop systems and protocols to share and understand existing information. This can be done before downstream companies begin to initiate new requests or systems. There is potential for the mining industry leadership to support work in this area and, as such, the World Economic Forum has initiated value chain and multi-stakeholder conversations to facilitate new dialogue.

Bolster upstream incentives

There is a difference between assessing mine performance, which many mining companies are doing, and assuring mineral supply chains.

For most mining companies, there is clear value in a programme that helps them meet existing commitments. ICMM's programme is designed for this purpose – it helps companies know that they are meeting legal, company and association requirements. The audience is primarily internal company leaders, site-based stakeholders and ICMM itself. MAC's TSM programme takes this a step further by publishing site-based scores for member companies.

Once a mining company is confident it has met legal, association, self-imposed and other voluntary commitments, what is its incentive to participate in a supply chain

assurance programme that is primarily driven by the needs of downstream companies and stakeholders? Survey respondents identified the following, which they said would make a difference to mining companies:

- Specific requests from customers – i.e. those who purchase minerals for processing or products
- Lower cost of, or increased access to, finance
- Lower cost related to risk and insurance
- Reputational value, including “credit” from civil society
- Greater awareness of the linkage between mining and high-value consumer products, green tech, infrastructure, etc.
- Recognition for contributions to development and community benefits

The survey responses show that mining leaders already seek high scores on investor-targeted sustainability rankings. Establishing a clearer relationship between participation in assurance programmes and the decreased cost of capital, finance or risk insurance would increase interest inside companies, as would higher cost for those who do not participate.

Address the issues of perceived credibility when defining “responsible”

The survey highlighted the consensus that stakeholders want to work with established initiatives housed in credible institutions. However, there does not seem to be agreement on which institutions are credible. Related to this is a tension over the definition of responsible mining. Downstream leaders commented that they “don't know what systems or information to use, who to trust and what is required to engender trust”. Part of the challenge may be that public information on some aspects of governance and accountability is lacking among many voluntary initiatives. Similarly, while stakeholder engagement can help improve the legitimacy of initiatives, many voluntary initiatives that engage stakeholders during the development phase do not disclose the identity of those who were engaged.

Barry, Cashore et al. (2012) caution that sometimes decision-making based on stakeholder-driven processes can put stakeholders' interests ahead of decisions related to the operation and objectives of the initiative. It will be difficult to prioritize or build agreements until these issues are explored and some degree of resolution on core issues and definitions can be reached.

At a minimum, the survey highlighted the need for cross-stakeholder coordination on goals, standards and metrics to increase interoperability among the different initiatives. Some of this is taking place already with CFSI, RJC, ARM and others. Interoperability has the potential to reduce the costs of assurance and avoid duplication, which can lead to inconsistencies and a loss of credibility. It can also amplify the outcomes achieved by different initiatives and further their reach. The potential for integration and coordination between initiatives and with government regulations/laws and industry and corporate standards should be considered in the design, implementation, operation and revision processes of voluntary initiatives.

Given the near consensus that emerged with regard to achieving efficiencies, the following questions could guide a discussion of how to improve efficiency and impact:

- Is there a unifying aspiration or vision? Are the SDGs a useful organizing framework? Would articulating how initiatives and systems help companies support the SDGs increase uptake? The World Economic Forum, with the United Nations Development Programme, the UN Sustainable Development Solutions Network and the Columbia Center on Sustainable Investment recently published a review of mining and the SDGs demonstrating this potential.
- Can an agreement be established, among key stakeholders, on the key issues and core standards that should be part of any credible system, whether it focuses on mining sites or companies, or downstream requirements? Some may add to this, but this would at least establish a credible baseline.
- Is it useful to coordinate systems development so that those seeking to address high-risk issues, such as conflict and human rights de-risking, and those looking to certify that they are using only “best-in-class” minerals, develop systems that link to each other and encourage improvements?
- Are information and data sharing protocols and systems a way to allow downstream companies to efficiently understand current upstream reporting that is already in place? What possibilities exist to form upstream/downstream corporate social responsibility (CSR) information-sharing arrangements to create efficiencies and avoid costly, redundant efforts?
- Is there consensus on the key building blocks, such as the IFC Performance Standards? Do downstream companies understand the differences and similarities between current and emerging systems (e.g. TSM, ICMM, IRMA, RMI)? Are there linkages? What differences matter to key stakeholders, such as downstream companies? A gap analysis across these sets of standards could prove useful.
- Could an analysis of downstream needs compared to existing systems for tracking minerals, and supply chain realities, be instructive? On the one hand, it is useful to build on such existing efforts as those of the CFSI and RJC. On the other, as stakeholders found with minerals like tantalum, there can be limits to literal supply chain tracking due to processing realities.
- Any system that aims to build confidence and credibility must have a mechanism for responding to problems or failures. Would an analysis of response, accountability and grievance mechanisms be instructive? For example, in the aftermath of the Mount Polley tailings incident in Canada, the Mining Association of Canada was highly responsive and proactive, ensuring that it reviewed and updated its tailings standard. This built stakeholder confidence and enhanced the credibility of TSM. ICMM is also currently reviewing its tailings policy.

Next Steps

All key actors want consolidation and prioritization across voluntary responsible mining initiatives although many are not yet satisfied that the current architecture meets their needs. Any prioritization will need to identify and respond to both consolidation and the need to address gaps and weaknesses. This is critical to the current focus on comprehensive, multi-issue assurance systems.

Clarifying needs across supply chains and stakeholder groups will help stakeholders make the choices that support prioritization. More needs to be done to unpack and understand what makes a system legitimate and credible, and add value to key stakeholder groups. The drivers are financial but also reputational and point to the key role of company and stakeholder leadership.

“All parties must be willing to take on reputational risk in the interest of negotiated solutions.”
Survey Respondent

The World Economic Forum and RESOLVE propose to continue work on these issues in the following ways:

- Form an upstream/downstream leadership group to discuss the issues identified above and to consider the response to developments over the last 15 years (including the recent adoptions of the UN SDGs)
- Hold a series of meetings on multi-issue, comprehensive assurance systems that include participants from key initiatives along with invited participants from upstream and downstream companies, investors, civil society and others
- Host a workshop to survey supply chain tracking and transparency systems and architecture with the participation of mid-stream processors; this would focus both on mineral supply chains and systems to enable the flow of CSR and other reporting information from upstream to downstream
- Organize a donor agency briefing and workshop on coordinated solutions to illicit minerals, including supply chain solutions
- Identify opportunities for further research and analysis on gaps across the sets of standards and response, accountability and grievance mechanisms
- Work on identifying the evolution of “best-in-class” standards and possible future development and advances so as to provide information and resources to companies, governments and civil society, including a focus on resource governance, in addition to environmental and social issues

The emerging assurance architecture presents significant value. A critical first step is to ensure that key leaders in companies, civil society and governments, particularly those charged with making decisions about participation in these initiatives, are fully briefed on the current landscape and work across sectors to strengthen key initiatives in the future, particularly during this period of low commodity prices. This paper supports that goal.

Appendix

Survey on Voluntary Responsible Mining Initiatives Results and Findings

The World Economic Forum Global Agenda Council on the Future of Mining & Metals and RESOLVE completed a survey of over 100 stakeholders to ascertain their views on the value of voluntary responsible initiatives in the mining and metals sector. The survey focused on perceptions regarding current initiatives and views regarding future developments.

Survey Design and Methods

The survey was distributed via email to over 400 individuals representing the following stakeholders: government, academia, civil society, mining, minerals processing, manufacturing, retail and consulting. A total of 106 people responded to the survey, which constitutes a response rate of approximately 25%. Responses to the open-ended questions were analysed using textual analysis. Responses were reviewed and annotated based on the key themes that emerged for each question. Themes were then tagged by code names. Once responses were coded, they were entered into Excel and analysed for frequency and distribution among respondents.

The open-ended survey questions were as follows:

1. Please share your views on why you value these [voluntary] initiatives or insert N/A if you do not wish to provide comments.
2. What challenges does the sector face today with regard to responsible mineral development that are not addressed by these initiatives?
3. What do you need from other sectors to advance responsible mineral development?
4. Thinking about the future of mining and metals, which game-changing innovation is most likely to have implications for current or future voluntary initiatives?

Survey respondents

Respondents represented a broad range of sectors (Figure 2).

Sixty-eight per cent of respondents were based in North America, evenly distributed between Canada and the United States (Figure 3).

Figure 2: Sectors Represented by Respondents to the Voluntary Responsible Mining Initiatives Survey (n=106)

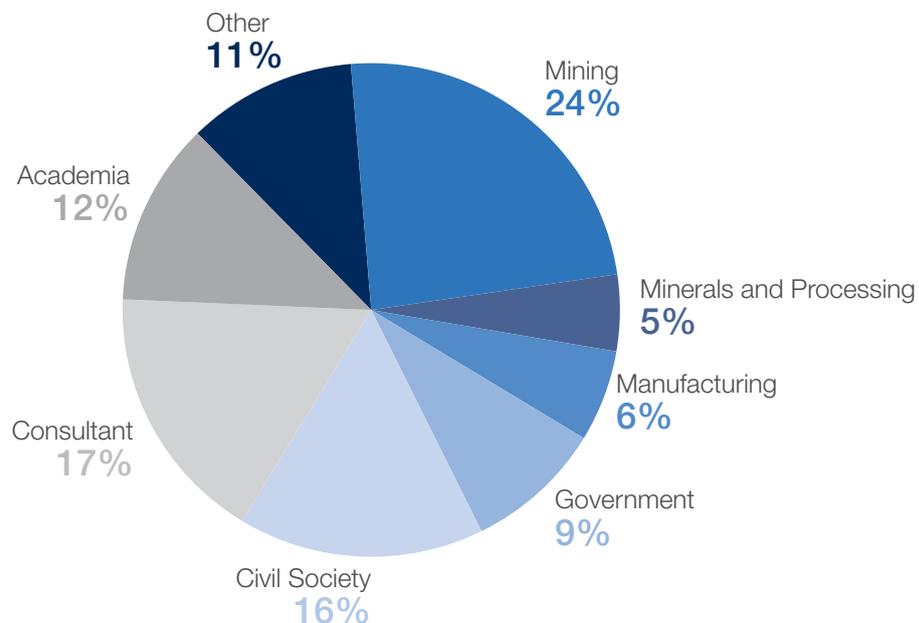
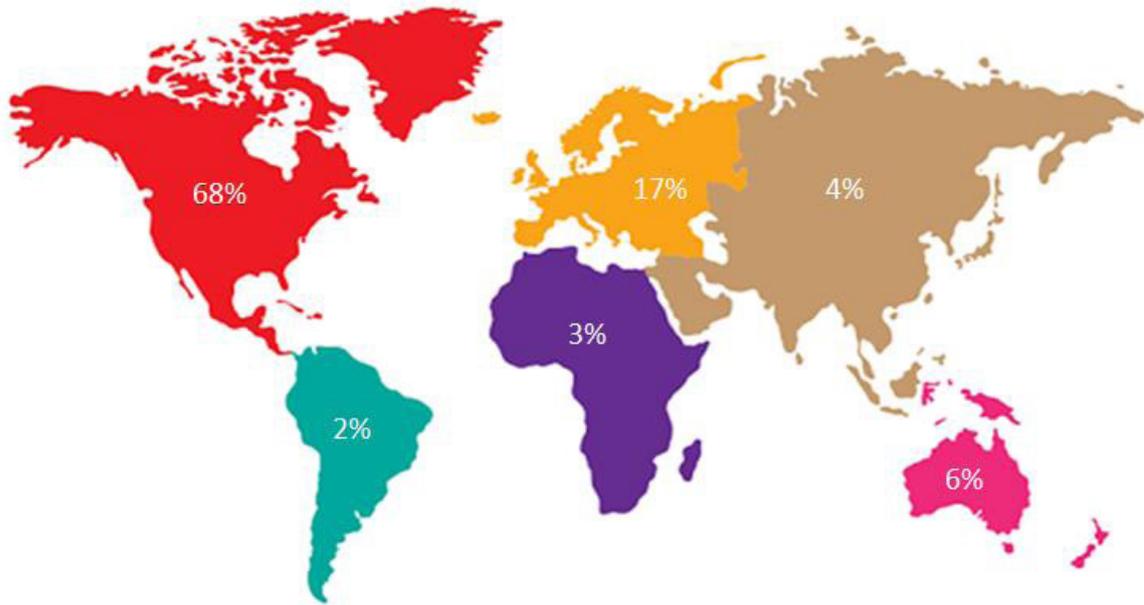


Figure 3: Geographic Distribution of Respondents to the Voluntary Responsible Mining Initiatives Survey (n=106)



Key Findings

The degree of awareness with regard to new initiatives is high. Respondents are tracking the development of both existing and new initiatives. The majority were willing to respond favourably to the characterization of at least some of these initiatives as “high-value.”

General awareness

Q1. Are you aware of high-value initiatives that have been added to the responsible mining landscape?

Sixty-seven per cent of respondents indicated being aware of new responsible mining initiatives that have been added to the responsible mining landscape since the 2008 McKinsey study on voluntary responsible mining initiatives.

Figure 4: Percentage of Survey Respondents Aware of New Responsible Mining Initiatives Added to the Responsible Mining Landscape

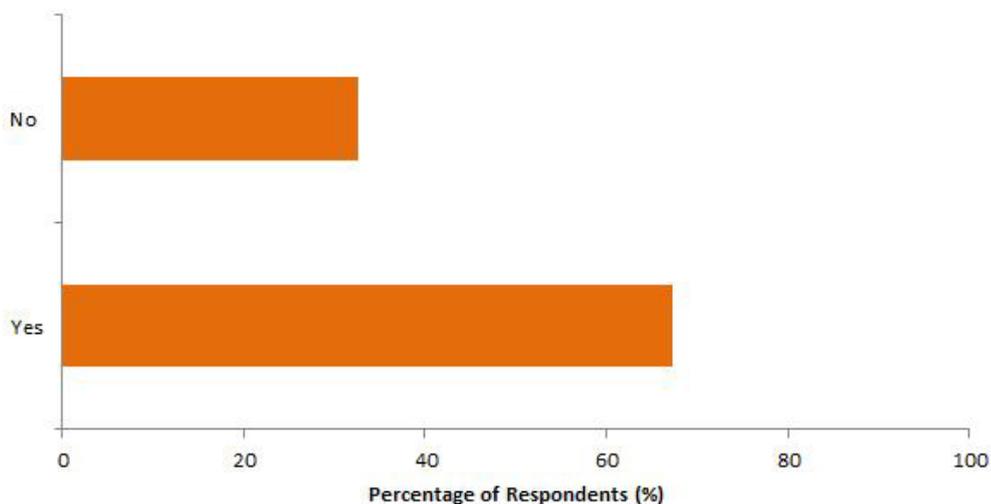
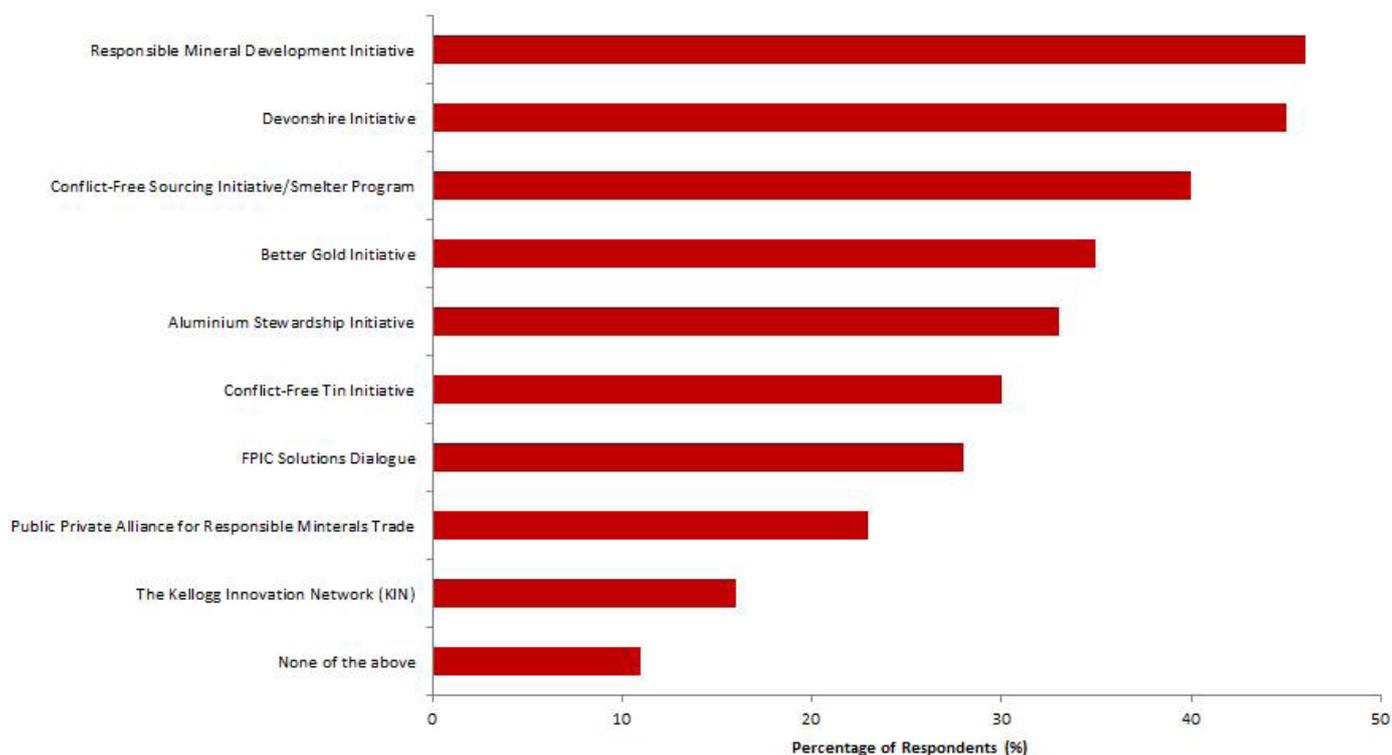


Figure 5: Percentage of Survey Respondents Aware of Each of Nine New Voluntary Mining Initiatives (n=106)



Q2. Of these new voluntary initiatives, which are you aware of? (select from a list)

The Responsible Mineral Development Initiative (RMDI), followed by the Devonshire Initiative and the Conflict-Free Sourcing Initiative/Smelter Program were the most widely recognized initiatives among survey respondents (Figure 5). Most of the initiatives, except the Kellogg Innovation Network (KIN), were known to at least 20% of the respondents. Many tracked at 30% or more, but none hit 50%.

High value initiatives

Q3(a). Assuming that the value of these initiatives is to incentivize responsible mineral development, which initiatives provide the most value for you or your company, organization or constituency?

On the key question of the perceived value of initiatives, the IFC Performance Standards, EITI and ICMM Sustainable Development Principles scored above 40% (Figure 6). The GRI and the UN Global Compact were in the top five (Figure 7) with the UN Voluntary Principles on Security and Human Rights just behind the Global Compact. The Millennium Development Goals, the EP and the OECD Sustainable Development strategies all scored above 20%. About one-third of the initiatives ranked between 10% and 20% and another third below 10%.

Of note, the newer initiatives did not score well on this question. This could be because they are still under development and gaining adherents or it could be due to other factors.

Many of the mining company respondents probably participate in one or more of these initiatives – thus perceived value could be a result of familiarity. However, they also tend to be the more established initiatives with industry or agency sanction.

While the responses to this question provide insight at a broad level, it is probably less useful as a precise indicator of the value of any specific initiative.

It should be recognized that the initiatives in this list are quite different in type, objective, reach and other factors. For example, some are broad in scope and aspirational, others are targeted to specific issues, and others are strictly process-oriented. No differentiation was made by type because the objective was to understand what was valued across these different initiatives. However, work is under way to assess the growing number of certification initiatives focused on mining. The recent CSRSM report entitled “Designing Sustainability Certification For Greater Impact: An analysis of the design characteristics of 15 sustainability certification schemes in the mining industry” is available and other work continues.

As already noted, there does appear to be a correlation between value and factors such as longevity, scope and nature of the institutional home. As one respondent stated, “*IFC’s Performance Standards are useful when operating in grey areas and they carry the weight of long years of consultation in their development.*” This is supported in the comments provided by a number of respondents, as shown in the next section.

Figure 6: Percentage of Survey Respondents Identifying Each Initiative from a List of Voluntary Mining Initiatives as “Providing the Most Value” (n=106)

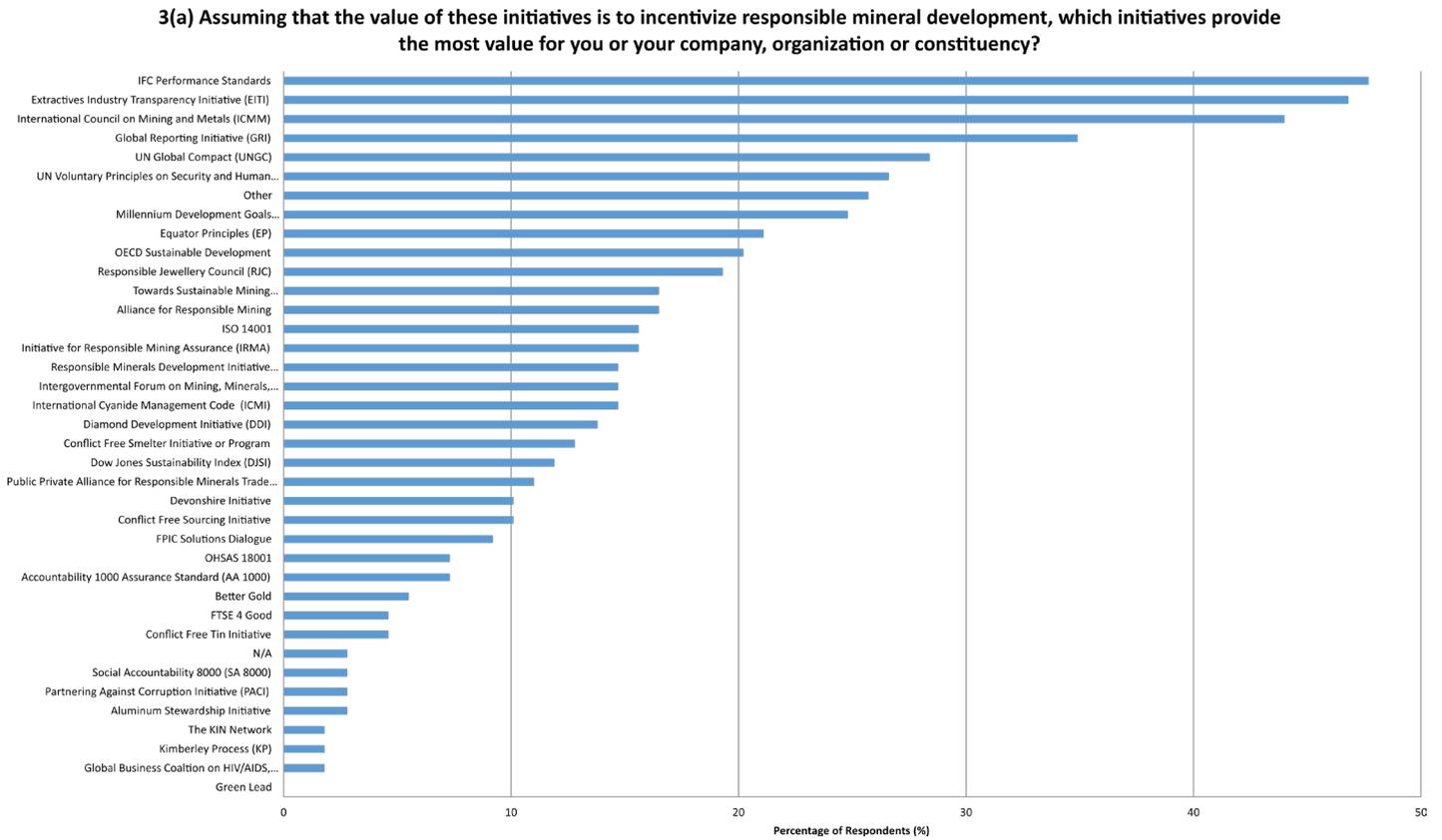
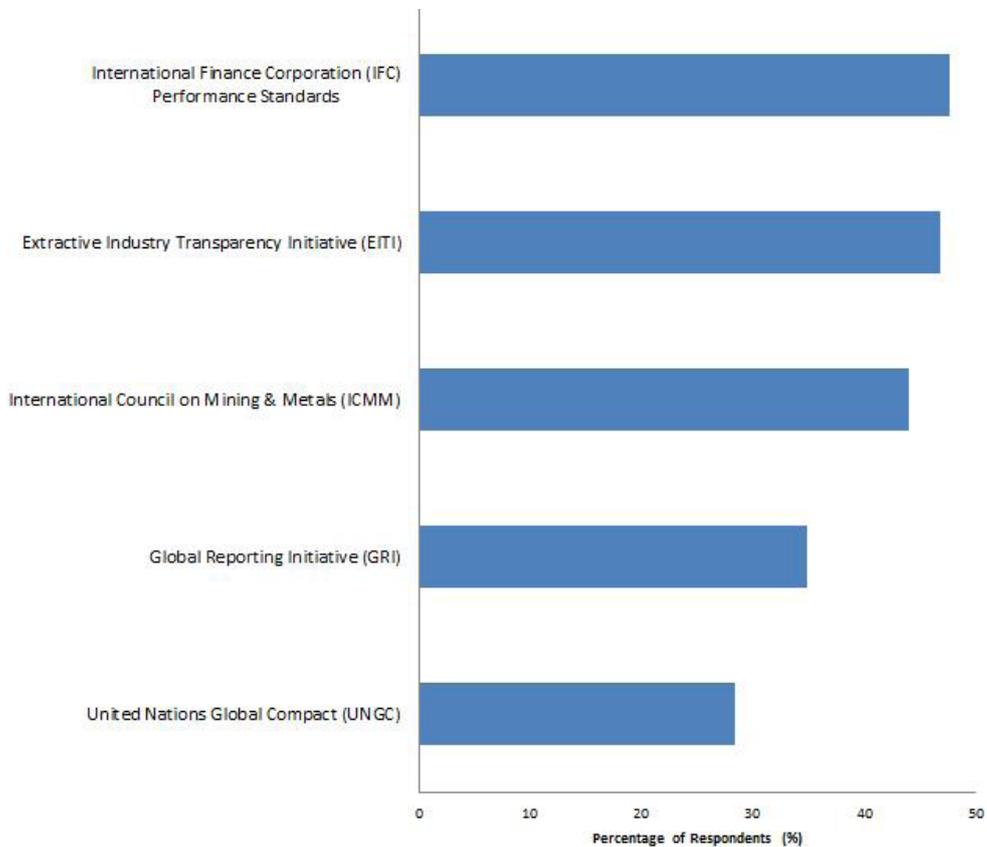


Figure 7: Percentage of Survey Respondents Identifying the Top Five Initiatives “Providing the Most Value” (n=106)



Valued Characteristics of Voluntary Initiatives

Following the question asking respondents to identify voluntary initiatives from a list, the respondents were asked to share comments on why they value these initiatives.

Q3(b). Please share comments on why you value these initiatives.

Initiatives that are practical to implement (31%) and widely recognized (27%) were cited as the most important qualities of responsible mining initiatives (Figure 8).

Practical

Most respondents described valuable voluntary initiatives as those that offer realistic standards and practical implementation guidance. Descriptors like “management tool”, “implementable” and “effective in the field” were also used to describe pragmatic initiatives. One respondent noted that initiatives that offer site-level applications are useful. Practicality was a particularly important attribute for industry respondents.

Widely recognized

Being well established, with credibility across stakeholders, was another defining characteristic of valuable initiatives. Respondents described valuable initiatives as being broadly accepted and having well recognized standards. One respondent noted that having a clear mandate is essential to building legitimacy and credibility.

While this view was held across stakeholders, the survey did not clearly establish if there is broad consensus on which initiatives meet this objective. It is likely that stakeholders agree on the value but have different views on the credibility of initiatives. Additional work on this question is recommended.

Transparency/Assurance

Survey respondents indicated that valuable initiatives are those that address transparency topically (e.g. EITI), but also encourage it in other initiatives through reporting requirements, as well as third-party verification. Respondents stated that transparency is important because it creates a level playing field for “legitimate players”. Initiatives that push for information disclosure, particularly from certain governments in countries with a legacy of corruption, were also identified as being valuable.

Drivers of Responsible Mining

Respondents were asked to identify the strongest drivers of responsible mining.

Q6. What are the strongest drivers towards more responsible mineral development?

Regulation is a key driver of responsible mining, topping the survey with a response rate of 49% (Figure 9). Significantly, downstream pressure, community accountability, reputational issues associated with environmental performance and the cost of conflict all topped 40%. Company leadership and access to capital topped 30%.

Figure 8: Percentage of Survey Respondents Identifying the Attributes of Valuable Responsible Mining Initiatives (n=66)

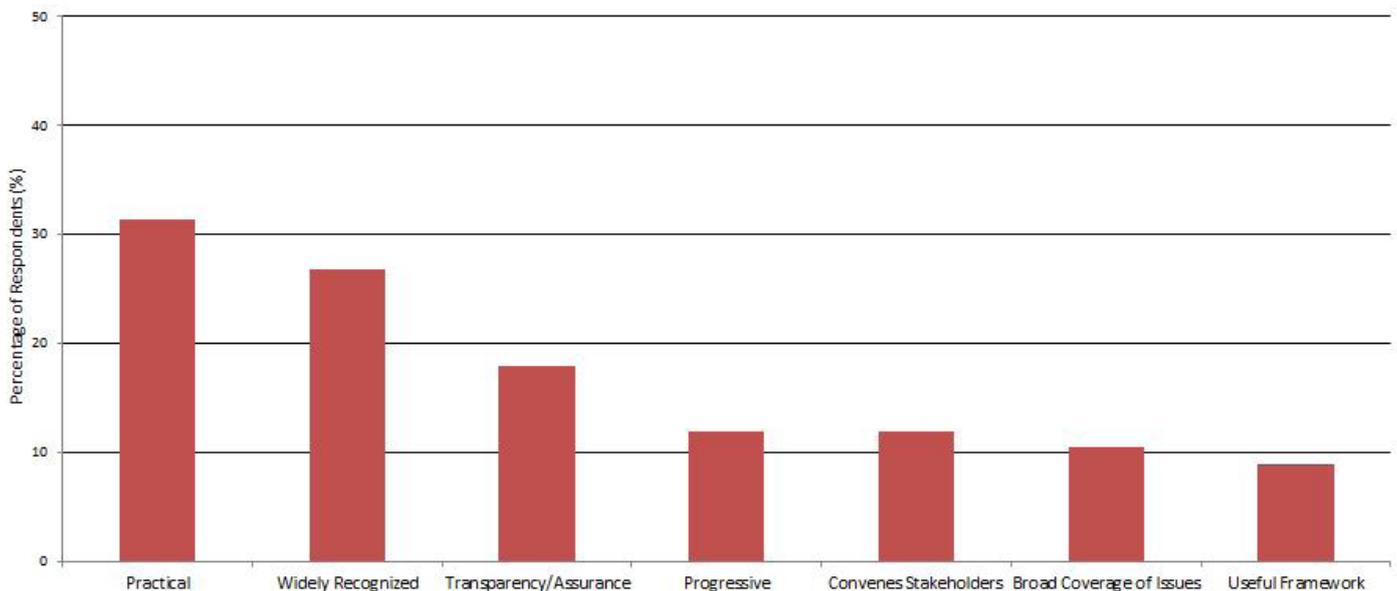
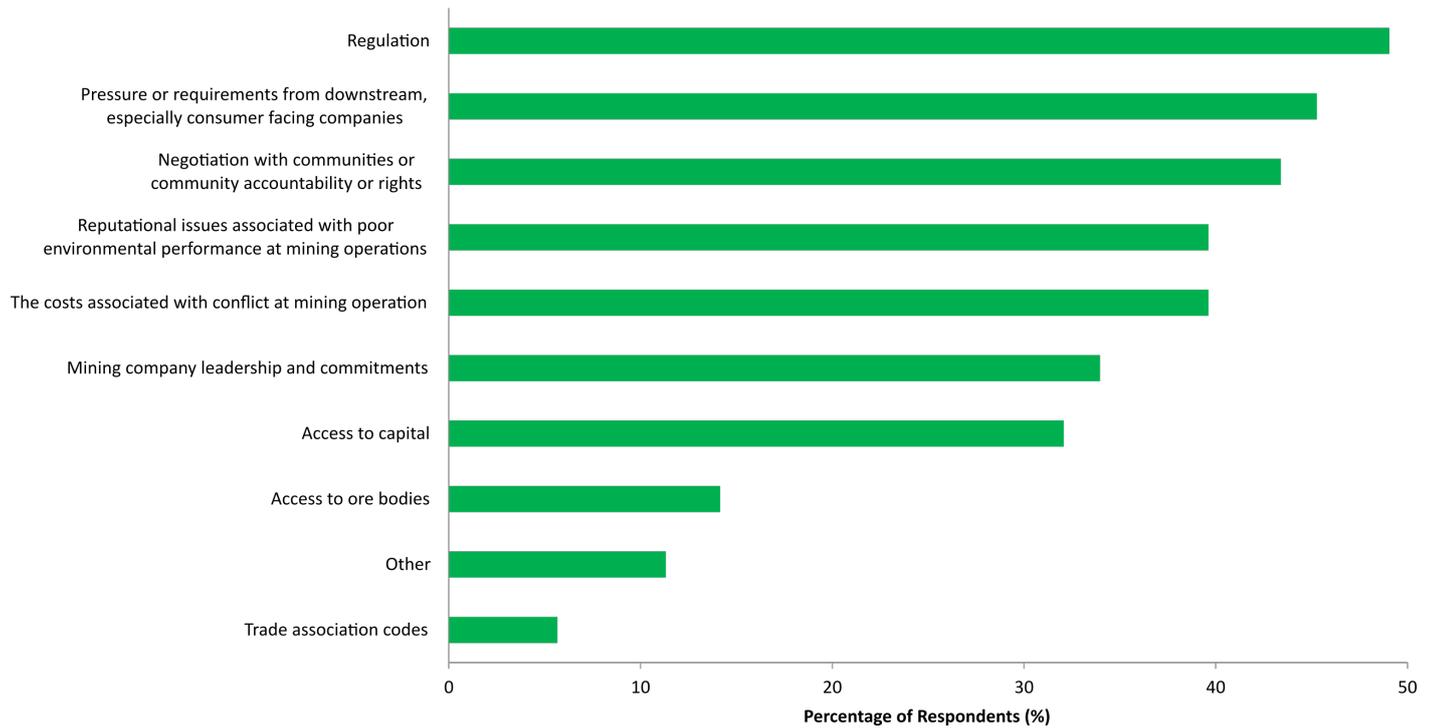


Figure 9: Percentage of Survey Respondents Identifying Each of Nine Factors as “Strongest Drivers towards More Responsible Mineral Development” (n=106)



Trade association codes were not seen as significant despite the presence of the ICMM principles, TSM and CFSI on the list of valued initiatives, with the ICMM Sustainable Development Principles scoring high, and TSM and CFSI scoring reasonably well. This may be due to respondents making a distinction between an external driver and an internal management mechanism.

Taken together, these responses indicate that while there is clearly a regulatory driver, a significant number of non-regulatory drivers are seen as important. These other drivers could possibly gain significance over time, so it might be useful to track changes in this response.

Responses to the cost of conflict and community accountability factors may have split the respondents. While slightly different factors, taken together the community/conflict factor may surpass 50% and, if asked differently, might be the top driver.

It is important to note that the factor related to downstream pressure does not presume action or even awareness on the part of consumers; the question was worded to ascertain whether or not downstream actors (including retailers and manufacturers) are exerting pressure in the supply chain.

Additional consideration of these drivers is recommended, both to further differentiate and understand the trends over time. For example, downstream pressure has presumably increased as a driver over time.

Challenges and Opportunities

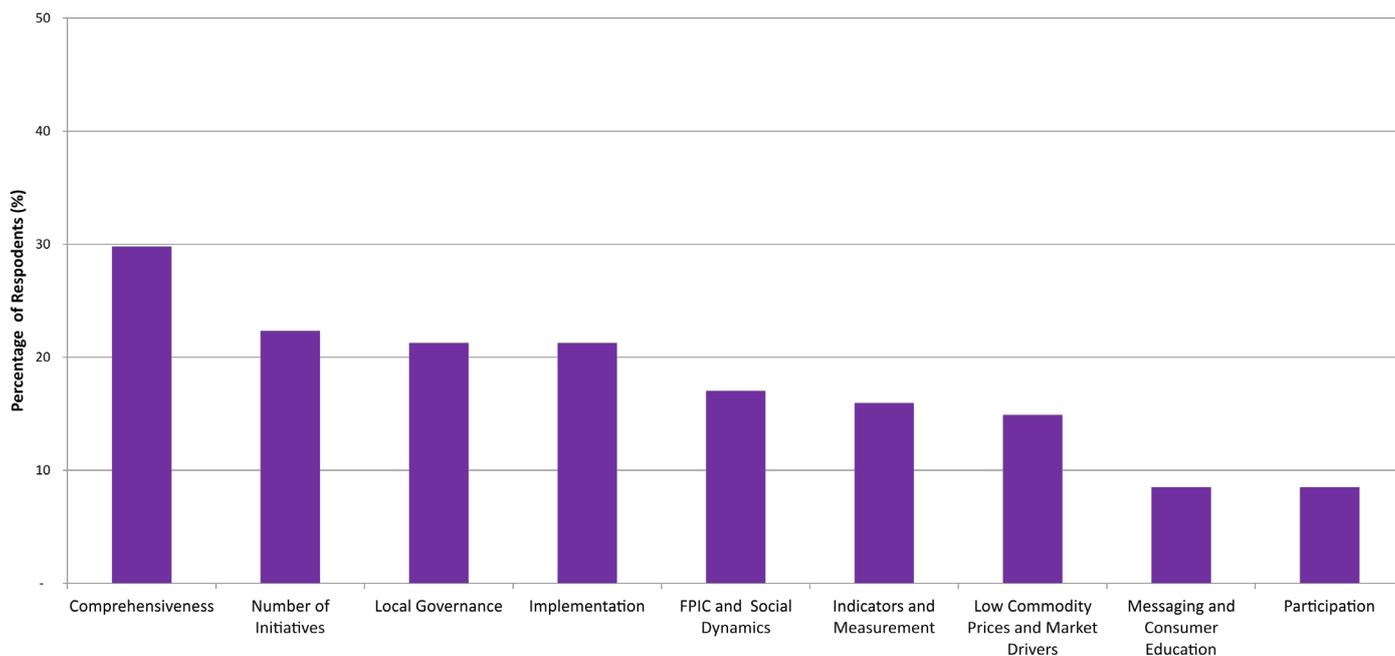
Members of the Global Agenda Council on the Future of Mining & Metals are aware that many stakeholders see unmet needs in the voluntary initiative space, despite the number of initiatives. Therefore, the respondents were asked for their views on challenges, gaps and opportunities.

Q4. What challenges does the sector face today with regard to responsible mineral development that is not addressed by these initiatives?

The number of initiatives was seen as a challenge by over 20% of respondents, but the primary concern was that initiatives are not comprehensive – almost 30% listed this response (Figure 10).

The real signal *may* be that initiatives are too numerous, but at the same time most cover only part of the responsible mining landscape. This may indicate a desire for fewer, more comprehensive initiatives.

Figure 10: Percentage of Survey Respondents Identifying Challenges with Regard to Responsible Mineral Development Not Addressed by Current Initiatives (n=94)



There seems to be a growing focus on pragmatism, and site-based and reputational benefit. Quite a few responses focused on pragmatism related to the ability to achieve results or impact – local governance and implementation scored above 20%; indicators and measurement, and the challenge of low commodity prices scored over 10%.

Respondents seem as concerned with implementation and practicality as they are with the number of initiatives.

Comprehensiveness

Despite the growing number of voluntary initiatives, the respondents pointed to a continued lack of comprehensiveness or holistic consideration of issues associated with mining. This suggests that standards are overlapping on some issues, while others are not being addressed.

Respondents specifically cited ASM, landscape-scale planning and cumulative environmental impact assessment, as well as comprehensive planning for the life cycle of the mine as neglected issues. The social impacts of mining related to community health, the equitable distribution of costs and benefits, and gender were also cited as being poorly addressed by existing voluntary initiatives.

Number of initiatives

The second biggest challenge identified by respondents was the sheer number of voluntary standards and initiatives. This is a problem for all stakeholders. They indicated that the proliferation of initiatives and lack of linkages make it

challenging for mining companies to decide which ones to adopt and make it more costly to implement initiatives. The danger of initiative fatigue is real, as stated by one respondent: *“We have created an industry out there – often self-serving. We need to rationalize and ensure greater ownership among key stakeholders themselves – we have initiative burnout.”*

The abundance of initiatives may also make it difficult to identify key messages and send appropriate signals to key stakeholders and supply chain partners. The perception is that groups with similar interests often compete for limited resources, championing their initiative or agenda over others’. One respondent highlighted mineral specific initiatives as being particularly problematic, noting: *“The need for special initiatives for individual minerals does not engender trust – it undermines it in most cases.”* Comments indicate that having so many initiatives without cross-communication or linkages makes it difficult for the sector as a whole to cooperate and identify common goals and strategies.

Implementation

Respondents cited accessing resources to implement voluntary initiatives as a significant challenge – whether as a company or an NGO. Some attributed this to the fact that similar initiatives are often competing for limited funding. Respondents also noted that their voluntary nature often means there is a lack of concerted effort to implement and enforce them.

Scaling up initiatives, as well as applying them in different cultures and contexts, was also cited as a major challenge in applying voluntary standards.

With regard to downstream interest in these issues, the gaps identified included defined ways of measuring traceability across the supply chain as well as data coordination and sharing.

Indicators and measurement

Another challenge identified by respondents is the lack of indicators that link development to mining, or mining to development. Social performance measures that can be tied to the mine site provide increased accountability for both government and industry. As one respondent noted, “We need to be able to link clear development [performance] indicators to mining. For example, it is quite disturbing that well-governed mineral economies like Namibia and Botswana still have high levels of hunger by World Food Programme hunger indices.” Similarly, another respondent cited the limitations of benefit measurement through the EITI, which only focuses on taxes or royalties paid to governments, ignoring the broader economic and social benefits at the community level. A number of comments pointed to the lack of credit for social benefit associated with most voluntary initiatives.

Local governance

Challenging political contexts in resource dependent countries can also pose significant obstacles to the advancement of responsible mining initiatives. Respondents cited corrupt governments, illegal trafficking and armed groups as defining issues in some host countries. Even in more stable regions, limited government capacity can be a barrier. As one respondent noted, “There’s an urgent need to work with local government to improve knowledge, awareness, understanding, practical know-how and action to provide a suitable environment for the sector.” Lack of transparency, particularly during the issuing of permits and negotiation of contracts, also emerged as a key local governance issue in some host countries.

FPIC and social dynamics

Inconsistency in how FPIC is interpreted and applied can contribute to conflict between companies and communities as well as missed opportunities. Respondents cited distrust, poor intercultural communication and discrepancies in power and capacity between companies and communities in resource contract negotiations as challenges for voluntary initiatives. They identified potential solutions to the challenges associated with FPIC, including early stakeholder involvement, community access to finance and technical expertise, and expectation management.

Low commodity prices and market drivers

A significant worry is that voluntary initiatives are vulnerable to financial cycles, including the challenge of maintaining investment in social and environmental mitigations in the face of cyclical prices and downturns. Some pointed to the perceived misalignment between the short-term demands of investors and the long-term needs of communities. A proposed solution is to recast the potential benefits of sustainability performance in terms that are more readily

accessible and attractive to investors and company finance executives.

Messaging and consumer education

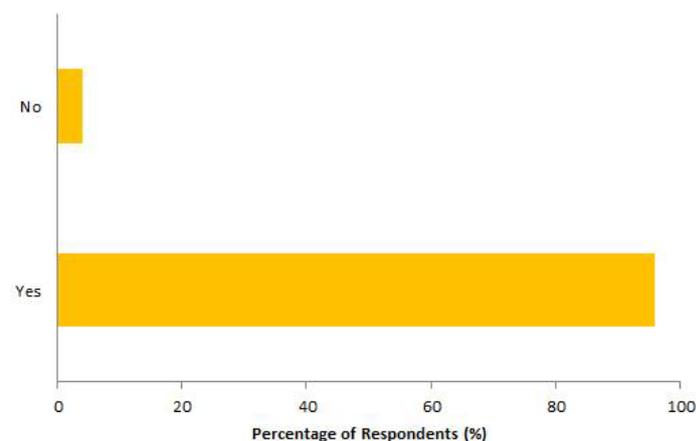
Respondents identified issues related to communications, across stakeholders (e.g. between industry and NGOs), across supply chains (e.g. business to business) and to key public constituencies, as a challenge. These challenges can lead to conditions that make it difficult to place value on initiatives and to work in partnership across sectors. Some respondents from the mining industry expressed exasperation with how mining issues are portrayed in the media, and felt a general lack of appreciation for how difficult their task is and regarding the progress that has been made.

With regard to **opportunity**, the consensus view was that a move to foster linkages or achieve efficiencies across the landscape of voluntary initiatives has the potential to bring value. This view was expressed strongly in comments from all sectors.

Q5(a). Do you see potential to create linkages or efficiencies between initiatives?

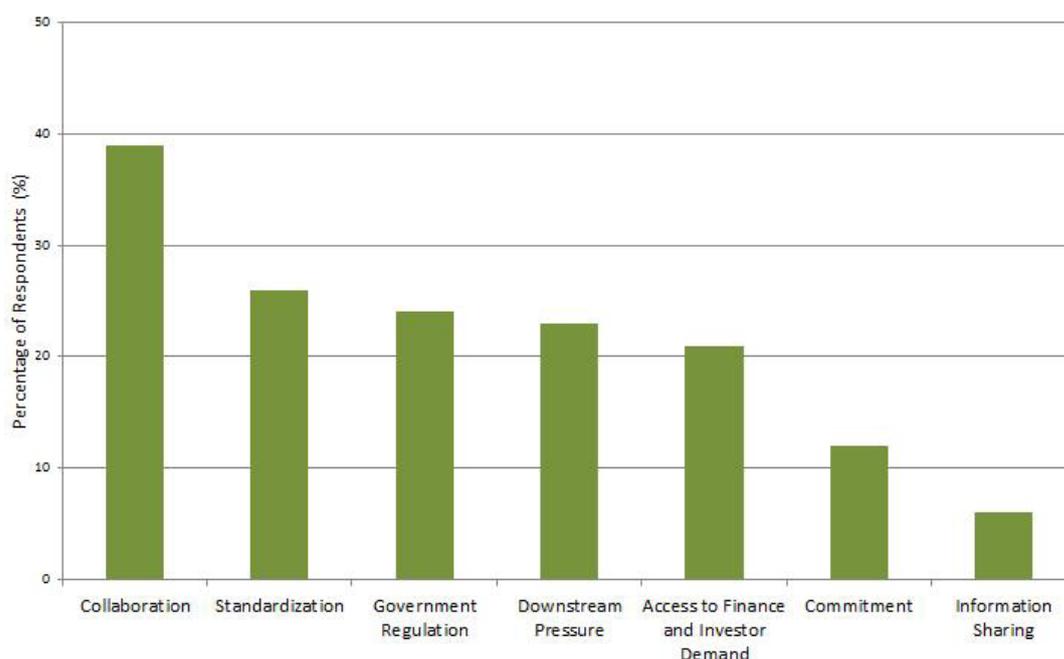
Ninety-six per cent of survey respondents indicated they agree that the potential to create linkages or efficiencies between voluntary initiatives exists (Figure 11).

Figure 11: Percentage of Survey Respondents Agreeing There Is Potential to Create Linkages or Efficiencies between Voluntary Initiatives (n=106)



With regard to what it would take, collaboration scored highest at almost 40% (Figure 12). While in some ways an obvious response, it is interesting to match this with commentary that pointed to the importance of intent and the benefit of willingness to understand other perspectives and negotiate. As stated by one respondent, “All parties must be willing to take on reputational risk in the interest of negotiated solutions.” More effective collaboration, not just more dialogue, is what many desire.

Figure 12: Percentage of Survey Respondents Identifying Needs to Advance Responsible Mineral Development (n=90)



Q7. What do you need from other sectors to help advance responsible mineral development?

Nearly 40% of respondents identified a need for dialogue and constructive engagement across sectors (Figure 12). What is needed, as articulated by one respondent, is to “convene diverse stakeholders to develop new, deeper, better answers to the toughest issues to define in responsibility (FPIC, mining in conflict areas, demonstrating broad community support, etc.)”.

A number of comments noted the importance of developing an understanding of the challenges that other stakeholder groups face, and what has and has not worked in the past. With so many initiatives already under way, the call for more collaboration may read like a contradictory message. However, with many expressing a desire to focus on the “toughest” issues, what may be emerging is an interest in results-focused partnerships on the right issues.

Respondents cited increased information sharing as a specific form of collaboration needed to advance responsible mineral development. For example, improved site-based information from companies and the creation of a responsible mining data bank were among the strategies suggested by respondents to improve information sharing.

Respondents also identified interest in industry-to-industry partnerships putting pressure on bad actors to collectively raise best practices in the sector, or in putting pressure to incorporate voluntary initiative requirements into regulatory schemes.

Standardization of initiatives

Respondents highlighted the need for coordination on goals and metrics among stakeholder groups to increase compliance and interoperability. Many noted that standardization is needed to advance credible systems for compliance monitoring.

Government regulation – implementation

Some pointed to regulatory consistency across operating regions and sectors as being a necessary step to normalize responsible mineral development, and increase the sector-wide uptake of practices.

Respondents called for host governments to create an “enabling environment” by implementing standards and regulations more effectively, and for home governments to provide clear policy expectations to companies working abroad. For both host and home governments, respondents used words like “effective” and “active” to describe the type of government leadership needed to keep companies accountable and build robust regulatory frameworks.

The respondents did not always link government and regulatory response as relevant to voluntary initiatives. More work could be done to understand views on this.

Downstream pressure

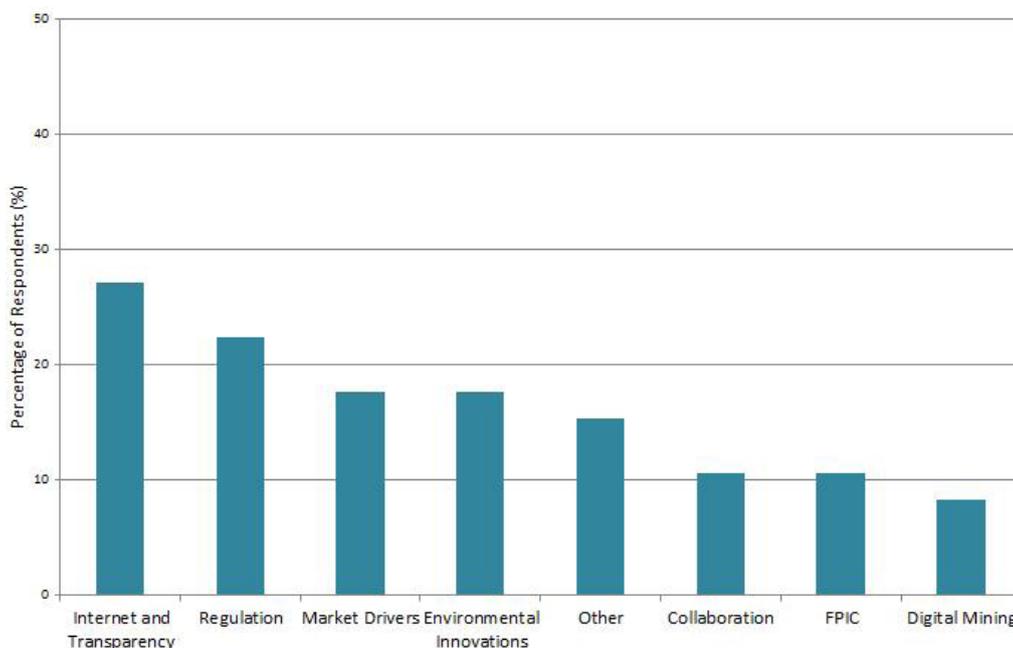
A number of respondents identified creating stronger demand for responsible minerals as a key lever to advance responsible mineral development, although there were differences as to whether this was seen as a financial or reputational driver. As one respondent simply stated, “Do not buy products from companies that do not follow the rules.” Consumers and companies like Apple and Samsung were cited as being important downstream users that can influence the demand for responsibly sourced minerals.

There may be a tendency in the responses to conflate consumer pressure with perceived consumer interests, reputational risks and other factors. Additional work in this area could be useful.

Access to finance and investor demand

Respondents cited more stringent financial lending requirements and investor engagement as equally important strategies within the financial sector. They indicated that investors need to or could be more active in

Figure 13: Percentage of Survey Respondents Anticipating a Wide Range of Game-Changing Innovations for Future Voluntary Initiatives (n=85)



demanding better environmental and social performance from companies. One respondent noted: “*The investor community is key and needs to take a more proactive role in addressing the tension between its own short-term constraints and the long-term realities of both companies and communities.*”

Q8. Thinking about the future of mining and metals, which game-changing innovation is most likely to have implications for current or future voluntary initiatives?

The sense was that technology coupled with access to data could be a game changer for the sector. Increased transparency driven by information sharing on the internet was the most widely cited (27%), with a particular focus on how this would support positive innovation (Figure 13).

Internet and transparency

Respondents predict that access to real-time site information will lend itself to crowd-based monitoring of issues at specific sites, with stakeholders sharing and consolidating information in near real time across data and even social media platforms. Information sources could vary from more remote sensing data available and consolidated on NGO platforms, to community sharing platforms that chronicle real and perceived performance.

Accessibility and increased sharing of information could strengthen efforts of advocacy groups and other civil society organizations, and even consumers, to hold mining companies accountable to their voluntary initiative commitments. One respondent predicted that information-sharing innovations will also empower the communities most affected by mining to not only amplify their voices on a global level but also connect with other communities that share similar mining-related challenges. The respondent noted that increased communication between mining-affected communities could lead to the development of community-based indices and policies. While these trends

are already in play, the response indicates that it could intensify.

Respondents also noted that technology to better track or identify commodity trafficking will improve the traceability and transparency of supply chains. Remote sensing technology (collecting data from sensors mounted on satellites and aircrafts) was specifically highlighted as a technology that will enhance anti-corruption, security and enforcement measures and may present new challenges and opportunities to the industry and stakeholders.

Regulation

The increasing participation of developing countries, either as authors of or as adherents to voluntary initiatives, was expected to have significant implications for the sector as a whole. China and India were highlighted as particularly important countries in this respect. Respondents also identified the SDGs, the Dodd-Frank Act, the OECD Guidance and the EU Directives as seminal rallying points that will increase the uptake of voluntary practices. Harmonizing the different efforts and moving towards the adoption of universal or shared standards were also cited as potential game changers.

Environmental innovations

Respondents predicted that improvements in waste management, water use and energy consumption could significantly reduce the environmental impacts of the mining sector. Dry stack tailings, ore sorting (which would reduce the amount of tailings produced) and technologies that would eliminate tailings entirely were identified as potential game changers. Energy innovations, particularly renewable energy and increased energy efficiency in the mining process, were identified as having significant implications for the industry. Respondents also cited increasingly precise drilling as an innovation that would reduce the overall footprint of a mine or exploration project.

In the future, it may be useful to better understand innovations and trends so that voluntary initiatives take account of these developments when defining standards or practices, using new technology in areas like monitoring, seeking to advance transparency or taking account of the implications of new techniques.

Market drivers

Many look to investors and the market to advance responsible mineral development, including with regard to improvements and innovations. They see consumer pressure, social performance bonds, financial regulatory enforcement and differentiated markets that enable progressive companies to secure higher prices or decrease costs as potential drivers. Some raised the need to address the sometimes inverse relationship between commodity prices and commitments to voluntary practices, perhaps through a combination of financial and policy tools.

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Acronyms

ARM	Alliance for Responsible Mining
ASM	Artisanal and small-scale mining
BBOP	Business and Biodiversity Offsets Programme
CFSI	Conflict Free Sourcing Initiative
CFSP	Conflict-Free Smelter Program
CSR	Corporate Social Responsibility
CSRMI	Centre for Social Responsibility in Mining
DDI	Diamond Development Initiative
DJSI	Dow Jones Sustainability Index
EITI	Extractive Industries Transparency Initiative
EP	Equator Principles
EU	European Union
FPIC	Free, Prior and Informed Consent
GMI	Global Mining Initiative
GRI	Global Reporting Initiative
ICMC	International Cyanide Management Code
ICMM	International Council on Mining & Metals
IFC	International Finance Corporation
IRMA	Initiative for Responsible Mining Assurance
KP	Kimberley Process
LSM	Large-scale mining
MAC	Mining Association of Canada
MDGs	Millennium Development Goals
NGO	Non-governmental organization
OECD	Organisation for Economic Co-operation and Development
PACI	Partnering Against Corruption Initiative
PDAC	Prospectors & Developers Association of Canada
RJC	Responsible Jewellery Council
RMDI	Responsible Mineral Development Initiative
RMI	Responsible Mining Index
SDGs	Sustainable Development Goals
TSM	Towards Sustainable Mining
UNGC	United Nations Global Compact
VP on S & HR	United Nations Voluntary Principles on Security and Human Rights

End notes

1. World Economic Forum and McKinsey & Company (2009). "The Global Nature of Mining & Metals – 'Deep Dive' on Voluntary Principles".
2. The survey was distributed via email to over 400 individuals representing the following stakeholders: government, academia, civil society, mining, minerals processing, manufacturing, retail and consulting. A total of 106 people responded to the survey, which constitutes a response rate of approximately 25%.
3. University of Queensland, Centre for Social Responsibility in Mining (CSRSM). "Designing Sustainability Certification For Greater Impact: An analysis of the design characteristics of 15 sustainability certification schemes in the mining industry". Available at <https://www.csrsm.uq.edu.au/publications/designing-sustainability-certification-for-greater-impact-an-analysis-of-the-design-characteristics-of-15-sustainability-standards-in-the-mining-industry>.
4. It is important to note that the factor related to downstream pressure does not presume action or even awareness on the part of consumers; instead, the question was worded to ascertain whether or not downstream actors (including retailers and manufacturers) are exerting pressure in the supply chain.
5. McNeilly, R J (2000). "The Global Mining Initiative: Changing Expectations – Meeting Human Needs and Aspirations", 2000 Minerals Industry Seminar, Minerals Council of Australia. Available at <http://oldwww.wbcsd.org/DocRoot/WLQZ2Q5s1jO3MAxmnZoV/MNGlobal.pdf>.
6. The term "standard" in this analysis of the initiatives covered in this survey refers to the definition used by Barry, Cashore et al., in a paper on standards and certification published by RESOLVE in 2012: "Standards are a defined set of social, environmental, and/or economic criteria." "Toward Sustainability: The Roles and Limitations of Certification – Final Report". Available at <http://www.resolv.org/site-assessment/files/2012/06/Report-Only.pdf>.
7. Discussions and email correspondence between authors and representatives from electronics companies.
8. University of Queensland, CSRSM, op. cit.
9. International Council on Mining & Metals (2006). "ICMM Sustainable Development Framework: Assurance Procedure". Available at http://info.worldbank.org/etools/docs/library/238438/1403ICMM_SDF_AssurancePilot.pdf.
10. Initiatives focused on ASM are classified as issues-based, although they could be listed as multi-issue.
11. University of Queensland, CSRSM, op. cit.
12. Responsible Mining Index. See <http://responsibleminingindex.org/>.
13. Barry, M., Cashore, B., et al. (2012). "Toward Sustainability: The Roles and Limitations of Certification – Final Report". Washington, DC: RESOLVE.
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15. "Mapping Mining to the Sustainable Development Goals: A Preliminary Atlas". Available at http://www3.weforum.org/docs/IP/2016/MM/Atlas_final_1301.pdf.



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