CREATING VALUE TOGETHER

Interoperability: Opportunities, Challenges and Ways Forward for Metals, Mineral and Mining Sustainability Standards

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Address:
Postcode and town, country
T +49 61 96 79-0
F +49 61 96 79-11 15

E info@giz.de
I www.giz.de

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Dr. Leopold von Carlowitz

Authors/Responsible:
Aimee Russillo, LiSeed Consulting LLC
Christine Carey, CAREY Research & Consulting (CRC)

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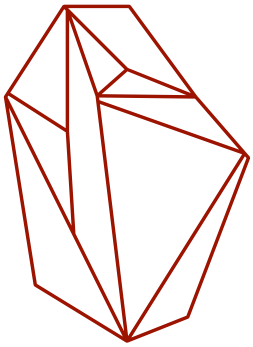

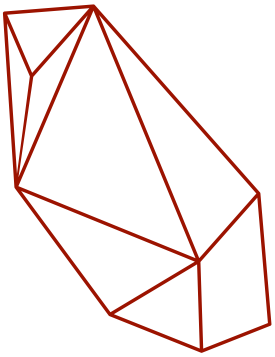

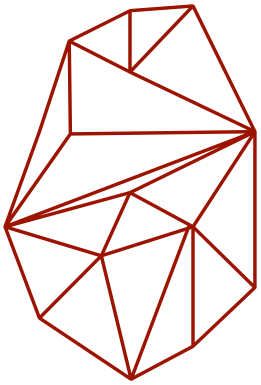

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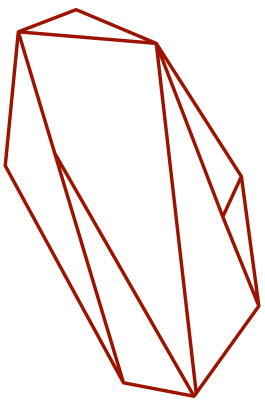

Detail of a translucent slice of natural stone agate
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LIST OF ACRONYMS

ABRPA	Responsible Brazilian Cotton Program
ARM	Alliance for Responsible Mining
ASI	Aluminium Stewardship Initiative
ASM	Artisanal and Small-Scale Mining
ASC	Aquaculture Stewardship Council
AWS	Alliance for Water Stewardship
BC	Bettercoal
BCI	Better Cotton Initiative
BGR	Bundesanstalt für Geowissenschaften und Rohstoffe [Federal Institute for Geosciences and Natural Resources]
BMZ	Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung [German Federal Government Agency]
BREEAM	Building Research Establishment Environmental Assessment Methodology
CCCMC	China Chamber of Commerce of Metals, Minerals and Chemical Importers and Exporters
CFSI	Conflict-Free Sourcing Initiative
CmiA	Cotton made in Africa
CRAFT	Code of Risk-Mitigation for Artisanal and Small-Scale Mining Engaging in Formal Trade
CoC	Chain of Custody
CSC	Concrete Sustainability Council
CSO	Civil Society Organization
CSRM	Centre for Social Responsibility in Mining [University of Queensland, Australia]
DFA	Dodd-Frank Wall Street Reform and Consumer Protection Act [of the USA]
DIPI	Demonstrating and Improving Poverty Impacts – ISEAL project
DMCC	Dubai Multi Commodities Centre
EHS	Environment Health and Safety
EICC	Electronic Industry Citizenship Coalition, now renamed RBA
EITI	Extractive Industries Transparency Initiative
EUSC	European Regulation for importers of tin, tantalum and tungsten, their ores, and gold originating in conflict-affected and high-risk areas. [Effective date: 1 January 2021]
FI	Fairtrade International
FPIC	Free, Prior and Informed Consent
FSC	Forest Stewardship Council
GHG	Greenhouse Gases
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit [German Development Agency]
GlobalG.A.P.	Global Good Agricultural Practices
GRI-M	Global Reporting Initiative Mining and Metals Sector Supplement (G4)
ICMC	International Cyanide Management Code
ICMM	International Council on Mining and Metals
IFC PS	International Finance Corporation Performance Standards
IGF	Intergovernmental Forum on Mining, Minerals and Metals and Sustainable Development
IISD	International Institute for Sustainable Development
ILO	International Labour Organization [of the United Nations]
IRMA	Initiative for Responsible Mining Assurance
ISEAL	International Social and Environmental Accreditation and Labelling Alliance

ISO	International Organization for Standardization
ITRI	International Tin Research Institute
iTSCi	ITRI Tin Supply Chain Initiative
IUCN	International Union for the Conservation of Nature
LBMA	London Bullion Market Association
LEED	Leadership in Energy and Environmental Design
LPPM	London Platinum and Palladium Market
M&E	Monitoring and Evaluation
MAC TSM	Mining Association of Canada: Towards Sustainable Mining
MMM	Metal, Mineral and Mining
MoU	Memorandum of Understanding
MSC	Marine Stewardship Council
myBMP	Cotton Australia's Best Management Practices
NamiRo	Sustainably Produced Mineral Resources Project published as Kickler and Franken 2017
NGO	Non-Governmental Organization
OECD	Organization for Economic Cooperation and Development
OECD-D	OECD – Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas
OHSAS	Occupational Health and Safety Series
PEFC	Program for the Endorsement of Forest Certification
RA	Rainforest Alliance
RBA	Responsible Business Alliance
RJC	Responsible Jewellery Council
RMI RBA	Responsible Minerals Initiative of the Responsible Business Alliance
RS	Responsible Steel
RSPO	Round Table on Sustainable Palm Oil (RSPO)
SA	Social Accountability
SAI	Social Accountability International
SBGA	Swiss Better Gold Association
SDGs	Sustainable Development Goals [of United Nations]
SSI	State of Sustainability Initiative [of IISD]
ToC	Theory of Change
UEBT	Union for Ethical Biotrade
UmSoRess	Approaches to reducing negative environmental and social impacts in the production of raw material [Research Project commissioned by the German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety.]
UN	United Nations
UQ	University of Queensland
UTZ	UTZ Certified is a program and a label for sustainable farming. Now RA UTZ
UTZ RA	Provisional/new name after merger between UTZ and Rainforest Alliance
WBCSD CSC	World Business Council for Sustainable Development – Concrete Sustainability Council
WEF	World Economic Forum
WWF	World Wide Fund for Nature

Iron ore
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CONTENTS

EXECUTIVE SUMMARY 10

1 INTRODUCTION 13
1.1 BACKGROUND 13
1.2 PURPOSE 13

2 APPROACH 15
2.1 RESEARCH INTEROPERABILITY 16

3 MMM STANDARDS SECTOR ANALYSIS 19
3.1 SUSTAINABLE DEVELOPMENT AND STANDARDS 19
3.2 SDGS AND STANDARDS 21
3.3 INTEROPERABILITY AND STANDARDS 23

4 STATE OF PLAY – INTEROPERABILITY AND MMM STANDARDS 25
4.1 CROSS-SECTORAL LEARNING 25
4.2 CONCEPTUAL FRAMEWORK FOR UNDERSTANDING INTEROPERABILITY AND MMM STANDARDS 28
4.3 OVERARCHING CHALLENGES AND LESSONS LEARNED 38
4.4 OTHER CONSIDERATIONS FOR INTEROPERABILITY 40

5 FINDING COMMON GROUND – USING A THEORY OF CHANGE APPROACH 43
5.1 THE THEORY OF CHANGE FOR SELF-REFLECTION ON INTEROPERABILITY 44
5.2 THEORY OF CHANGE – A DATING APP? 46
5.3 MAP YOUR TOC USING A GENERALIZED FRAMEWORK FOR THE MMM SECTOR 46

6 CONCLUSIONS AND RECOMMENDATIONS 51

7 REFERENCES 55

7 APPENDICES 57

EXECUTIVE SUMMARY

The *metals, mineral and mining* (MMM) sectors are a highly diverse collection of industries with different supply and demand dynamics operating in a world of finite resources and increasing complexity – from earning its social license to operate; to the impacts on communities and the environment. As a response to this, a diverse range of MMM sustainability standards have emerged. This has led to concerns over proliferation potentially diluting their effectiveness.

The number of MMM standards can in part be explained by the sheer diversity of the MMM sectors and their impacts. *The Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ) on behalf of the *Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung* (BMZ) is working with the ISEAL Alliance to examine the MMM sustainability standards' potential for collaboration, referred to as interoperability. **Interoperability is defined as the degree to which diverse systems, organizations and individuals are able to work together to achieve a common goal.**

A literature review, interviews and surveys were conducted with a range of MMM initiatives. These findings were added to the outputs from four face-to-face *Theory of Change* (ToC) workshops to form the findings and recommendations. This research integrates cross-sectoral learnings from more established agricultural and forestry standards. A draft report provided input for a full day workshop in Sao Paulo, Brasil on interoperability with representatives from a cross-section of standards. Feedback and findings were integrated into this final report.

Note, this report does not look at the performance of the various MMM standards, but at the potential opportunities to enhance impact through interoperability. The report considers the overall approach to achieve the intended sustainability impacts by using a ToC approach to identify opportunities for interoperability:

1. Developing a ToC is a way for individual organizations to examine their own strategy and determine where interoperability would help achieve their end goals.
2. Individual organizational ToCs (or strategic plans) can be shared as a basis for 'getting to know one another'.
3. ToCs can be mapped within a generalized MMM sector framework to help show areas of overlap and complementarity or gaps.

Drivers to increase interoperability include responding to market demand and seeking efficiencies for end users and cost savings for the scheme. Interoperability presents opportunities to engage with both upstream and downstream actors as well as governments and other interested stakeholders. Interoperability can be seen in terms of productivity factors with the potential to reduce costs, minimise overlaps (reducing costs and bureaucracy) and cut unproductive information flows. This in turn can improve stakeholders' understanding of the credibility of such initiatives in the market place and their influence. It can also be seen to facilitate exchange of knowledge and practices, broaden the range and type of entities covered, increase performance and amplify outcomes. Interoperability has the potential to increase synergies and efficiencies and increase legitimacy and reach. In the end, these efforts contribute to driving impact.

One of the underlying assumptions at the start of this project was that the MMM sector had been slower to adopt interoperability practices than in the agricultural and forestry sectors. However, almost the opposite became evident. The research identified a broad range of cross-sectoral learnings and opportunities with the agricultural and forestry sectors for further collaboration.

This report discusses six general types of interoperability: Joint Working Groups (e.g. issues-based), Joint Projects; Plug and Play; Recognition; Shared Processes; and Harmonization. Note that they should not be considered discrete, but rather on a continuum and as a way to understand the different organizational opportunities, challenges and demands of each.

Selected Lessons Learned

- Start with areas that are broadly relevant, but not too contentious across stakeholders.
- Having clear formalized objectives and expectations is important. Clarity in the agreement on what can be adapted and changed, acknowledgement and communication is critical.
- Timing can be everything. The most significant steps and most effective time to embed interoperability is in the initial stages of a standard development.
- Joint activities or information sharing can be a first step in a recognition process to build trust and understanding of each other's systems.
- Understanding what is happening at the field level is key.
- Finding complementary positions in the supply chain offers good opportunities to come together, rather than compete.
- It takes time and resources.

Recommendations

The first step of interoperability is to have a clear idea of the objectives and strategies of the different standards. The next step is to get senior-level, organizational and stakeholder buy-in. With a clear value proposition, this will be easier (not easy). The overwhelming advice was to start small, build trust and be creative.

It is also important to find common ground in a non-competitive space to add value. There is strong interest in having a space for sharing and learning across initiatives. The highest priorities and focus points for interoperability identified by the initiatives are: Joint Assurance Tools and Shared Key Performance Indicators. There is interest to collaborate with other sectors, such as agriculture and forestry, on topics which are relevant (e.g. *Free, Prior and Informed Consent* (FPIC)). Working groups should have clear objectives and decision-making processes.

What will future MMM standards look like? We are certain interoperability will play a key role.

Cross section of green malachite stone
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1 INTRODUCTION

The world looks at the metals, mineral and mining sectors as one industry, but it is really a highly diverse collection of industries with different supply and demand dynamics.[1] In the twenty-first century, these diverse industries operate in an environment of finite resources and increasing complexity. Complexity in terms of earning its social license to operate in areas of labour practices and the impact on the communities and environment. As a response to this complexity, an equally diverse range of sustainability standards has emerged. This has led to stakeholders' concern and confusion of proliferation and fragmentation, potentially diluting their effectiveness and hindering broader uptake. In addition, the administrative burden for companies in carrying out the required due diligence measures associated with mining can be problematic within MMM sector (where many commodities go into making one product) than in other sectors e.g. agriculture. This has created a push for interoperability of downstream actors who have to work with multiple, even dozens of different MMM standards. One strategy to address this is through increased interoperability.

1.1 BACKGROUND

GIZ on behalf of BMZ is working with the *ISEAL Alliance*[2] on a research project to explore MMM sustainability standards' opportunities and potential for collaboration – referred to as interoperability. Interoperability is the degree to which diverse systems, organizations and individuals can work together to achieve a common goal. The project integrates the cross-sectoral learnings and experience of more established and pioneering sustainability standards operating in the agricultural and forestry sectors. This report intends to deepen the discussion around specific areas of assurance and traceability while also taking a step back to consider the overall approach to achieve the intended sustainability impacts using a ToC approach.

Interoperability:
The degree to which diverse systems, organizations and individuals can work together to achieve a common goal.

1.2 PURPOSE

This report aims to assist standards and standard users to identify, understand and support efforts of interoperability to drive sustainability performance of the sector. This report provides an overview of the different models of interoperability captured through interviews and workshops, to identify opportunities for dialogue, as well as to start to draw lessons learned and critical success factors that may be of interest to those involved in exploring how to begin their interoperability journey.

1 Based on comments from Philip Hopwood Global Leader – Mining, Deloitte Touche Tohmatsu Limited (2017)
2 *https://www.isealalliance.org*

Agate crystal cross section
© shutterstock/Sebastian Janick

2 APPROACH

This report builds on information from existing research publications[3], and is supplemented with 15 key interviews and surveys from initiatives in the MMM sectors and five interviews from the agricultural and forestry sectors. The initial findings were presented and discussed in a workshop held in London in early March 2018 with ten organizations representing a wide diversity of standards. Details on the project methodology can be found in the → *Appendix 4 : Methodology*

The research findings are integrated throughout this report with a summary table of the interviews and surveys key findings found in the → *Appendix 1: Interview and Survey Key Findings*

What became evident from the existing literature and the interviews is that there is a high degree of variation of the types of MMM standards. These reflect the diversity of conditions and issues in the sector and the different sustainability challenges depending on the product or commodity, geography or thematic area of concern, as well as stakeholder priorities. Note that this report does not attempt to provide a comparative analysis or mapping of this diversity, which has been done thoroughly in other reports [4]. Instead this report aims to create clarity on the diverse phenomena of interoperability, considering the high degree of diversity of standards. In other words, it is not just about standards working together, but about leveraging the diversity of stakeholders, expertise, coverage, and approaches of the individual standards to create a more responsible sector.

This report does not attempt to provide a comparative analysis or mapping of this diversity, but instead aims to create clarity on the diverse phenomena of interoperability, considering the high degree of diversity of standards examined.

In line with the other research reports, this report considers a broad range of initiatives, including international normative frameworks and global standards, legally binding standards (regulations), codes of practice, implementation guidelines and principles (e.g. guidelines of the *Organization for Economic Co-Operation and Development* (OECD), the *International Council on Mining and Metals* (ICMM)) and voluntary private standard initiatives. While they all use some sort of definition of good social, environmental and economic practices or performance (the standard), this also includes "organized efforts in existence to promote sustainable and responsible business conduct" [5]. These may have quite different models of operation, implementation and rigor. The focus of this report is on voluntary sustainability standard **systems**. It is also important to note that this report (and previous research) includes standards that are operational, as well as those that are only in pilot phase or yet to be launched.

It is important to note that this and previous research includes standards that are operational, some only in pilot phase and some yet to be launched.

For purposes of this report, the term **'standard'** is used as shorthand to represent the broad range of initiatives, recognizing there are important distinctions between them and not all initiatives would necessarily consider themselves a standard. In order to be more inclusive, the term **'MMM'** is used in this report in order to include a broad range of technical activities and commodities across these diverse and complex sectors.

3 See list of References
4 See Kickler and Franken (2017) and SSI (*in press*)
5 Sturman (2018)

2.1 RESEARCH INTEROPERABILITY

There is an increasing interest in the interoperability of sustainability standards in the MMM sector as evidenced by Rüttinger and Scholl, 2016; Kickler and Franken, 2017; Mori Junior, Sturman and Imbrogiano, 2017; IISD (*in press*). Some of this research was undertaken in direct response to a perceived proliferation of MMM sustainability standards. The *Federal Government of Germany* has financially supported three complementary research projects over the past three years, which investigated and compared MMM standards and mapped their characteristics see → *Table 1*). Further details on each can be found in → *Appendix 5: German Research Overview*

Table 1: Key German Government Funded Research Reports

Publication Title	Authors	Abbreviation
Responsible Mining? Challenges, Perspectives and Approaches. Summary of the Findings of the Research Project: Approaches to Reducing Negative Environmental and Social Impacts in the Production of Raw Materials	Rüttinger, L. and Scholl, C. (2016)	UmSoRess
Sustainability Schemes for Mineral Resources: A Comparative Overview	Kickler, K. and Franken, G. (2017)	NamiRo
Leveraging Greater Impact of Mineral Sustainability Initiatives: An Assessment of Interoperability	Mori Junior, R., Sturman, K. and Imbrogiano, J. (2017)	CSRM

Standards System:
The collection of elements responsible for the activities involved in the implementation of a standard, including standard-setting, capacity building, assurance, labelling and monitoring (ISEAL Alliance).

Notably, the *International Institute for Sustainable Development* (IISD) publishes on a regular basis, the *State of Sustainability Initiative* (SSI) Review across different themes to stimulate regular reporting on the state-of-play across voluntary sustainability standards sector. It offers a coherent framework for understanding the characteristics, issues and market trends for select sustainability initiatives and standards operating in global markets (IISD, *in press*). The most recent SSI Review on Mining and Minerals is due for publication in April 2018. The SSI Review was used as a key resource for this report.

Given the increasing research interest in the MMM standards sector and the high degree of overlap of standards organizations involved, there is the risk of interviewee fatigue. To respond to this criticism, efforts are being made to collaborate at the research level, including exchange of information and findings during the draft phases, in a process coined in this report as **research interoperability**.

The recent research and reports have greatly contributed to the transparency of the standards, but more research is needed to further drive rationalization and coordination. It is important to note that these comparative studies are desk-based. As noted in the reports themselves, they do not cover the performance of the standard, nor can they get at the details of the underlying systems. Standard systems are complex and understanding the vast and even nuanced differences in standards and the quality of their implementation of systems is highly technical. For this reason, this research was participatory, including four ToC workshops with over 15 standards systems represented.

This report does not attempt to conduct a comparative assessment, or repeat work already done, but purposely **builds** upon existing research in the MMM sector. In addition, this report draws upon lessons learned and best practice studies from the agricultural and forestry sectors. The authors use the lens of interoperability to review drivers, challenges, and critical success factors to identify lessons learned and opportunities for standards to drive impact. Mindful that several key recommendations from the literature relate specifically to the need for more collaboration among the standards and increased interoperability with a general conclusion: **Existing organizations and sustainability schemes would continue to exist, but interoperability would foster comparability and credibility which can result in greater uptake.**[6]

Table 2: Synthesized Key Interoperability Recommendations from Rüttinger and Scholl, 2016; Kickler and Franken, 2017; Mori Junior, Sturman, and Imbrogiano 2017.

Key Recommendations
Joint framework for sustainability issues in mining to harmonize standard requirements including mutual recognition and cross-referencing of standards, indicators and certification as a guiding principle
Internationally agreed guidance documents or issue-specific standards for sustainability issues where gaps exist, e.g. establish working groups
Incremental standards which allow companies to improve and participate independent of company scale – use a step wise approach
Generic modular reference standard for the mineral supply chain
Agree upon models for assurance and impact measurement systems
Develop shared processes and mechanisms for assurance using lessons learned and leading examples from agricultural and forestry initiatives

Rüttinger and Scholl, 2016; Kickler and Franken, 2017; Mori Junior, Sturman and Imbrogiano, 2017; IISD (*in press*) to work use different approaches to classifying and grouping standards in order to attempt to compare 'like' standards.
Generally, this includes grouping them according to:

- supply chain scope applicability
  (mining only, downstream and mining, downstream only)
- product scope (commodity specific or generic)
- issue scope (single or multi issue), or
- size (large scale, artisanal and small-scale mining).

In addition, each of these research reports, including the IISD SSI Review on Mining and Minerals, developed a different methodology and comparative framework for assessing the standards. This poses some challenges in pulling together findings and is beyond the scope of this report. But it does point to the opportunity for continued research interoperability in aligning frameworks and assessment methodologies.

This report does **not** look at the **performance** of the various MMM standards, but at the potential opportunities to improve their performance and drive impact through interoperability.

Another ongoing research project, commissioned by GIZ, (publication due end of 2018), is currently being conducted by the *Centre of Social Responsibility in Mining* with the *University of Queensland Australia* with the research question: How can the impact monitoring and evaluation procedures of mineral sustainability initiatives be better designed and aligned to allow for comparable measures of their effectiveness?

6 Sturman, K. 2018

Cross section of blue agate mineral
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3 MMM STANDARDS SECTOR ANALYSIS

3.1 SUSTAINABLE DEVELOPMENT AND STANDARDS

The first private voluntary sustainability standards were organic standards for agriculture, and date from the late 1940s. The fair-trade certification movement followed, starting with one national standard 1988 in the Netherlands which was soon replicated across different countries. These national fair-trade standards then came together under one umbrella organization to lead the next generation of sustainability standards and create a global movement.

By contrast, the second generation of standards emerged as the result of a conscious effort by a small group of non-profit organizations to convene and engage a cross-section of stakeholders within a given sector, focused on bringing retailers and manufacturers to the negotiating table. In 1993, the first standard to emerge from this multi-stakeholder approach was the *Forest Stewardship Council* (FSC). FSC arose from a time when international advocacy for a global forestry treaty had failed, and there was little hope for national regulations favouring timber-harvesting practices with less environmental damage.[7] This called for a new form of governance consisting of standard setting by multi-stakeholder representatives with social, environmental, and economic interests, along with independent third party verification.

Since the 1992 *Rio Earth Summit* the international community has recognized the central role of sustainable consumption and production in the implementation of sustainable development. Several initiatives rapidly emerged across the agriculture and forestry sectors, taking a global approach from the beginning of the standard-setting process. This was in response to several shifting dynamics: a combination of growing consumer awareness around sustainability issues, changing global trade patterns through globalization, and a growing recognition of the limitations of government regulation and legislation to address sustainability challenges. (IISD, 2014).

By the year 2000, a third generation of standard systems started to emerge with even broader multi-stakeholder participation in other sectors such as palm oil, soy, sugar, cotton, biofuels and beef. These commodity-based **'round tables'** brought together stakeholders from industry, *non-governmental organizations* (NGOs), and governments to develop standards for commodities with known and significant negative impacts on the environment. The round table standards were an initiative of the *World Wide Fund for Nature* (WWF) which focused on 15 commodities in the agriculture and forestry sector, using markets to drive sector transformation. Since then, there has been rapid growth in the development and adoption of **multi-stakeholder, market-based** supply chain initiatives aimed at promoting sustainable production practices at the global level. These global market-based standards have seen increased adoption in other sectors, ranging from tourism and golf, to biofuels and the MMM sector.

7 Building a roadmap to sustainability in agro-commodity production. IFC 2013.

Over the last decade, the private sector – either on a pre-competitive basis or unilaterally –has also developed standards to mitigate sustainability risks in its own operations and supply base. Examples of pre-competitive industry driven standards are *Global Good Agricultural Practices* (Global G.A.P.), the *Business Social Compliance Initiative* and *Sustainable Agriculture Initiative Platform*. Examples of company standards are *Unilever's Sustainable Agricultural Code* and the *Starbuck's* C.A.F.E. *(Coffee and Farmer Equity) Practices.*

Many national **governments** and multilateral institutions have also initiated or played a key role in developing and driving the use of standards. Examples include: public standards in the forestry sector in Malaysia (*Malaysian Timber Certification Council*) and palm oil in Indonesia (*Indonesian Sustainable Palm Oil*). Standards also became an increasingly used tool for multi-lateral finance institutions, for example the *Equator Principles*, and the *International Finance Corporation Performance Standards* (IFC PS) on *Social & Environmental Sustainability*, which were originally launched in 2006.

However, there are fundamental differences between the agriculture and forestry commodities and the MMM sector. The agriculture and forestry sectors adopted consumer-based labelling strategies to drive demand for sustainably produced products. Coupled with certification, these standards operated with products that while commodities, had the potential for high quality differentiation and visibility in the marketplace. These could be more easily identified and labelled to differentiate from 'unsustainable' production – coffee, paper, chocolate – and were more often directly consumed. In comparison, the MMM supply chain is more complex with regard to material flow for all MMM from large-scale operations. It is challenging to track or maintain provenance as the materials mix in processing, trading and/or manufacturing. While these sources are therefore relatively easy to identify, MMM generally lose traceability as they move through processing and into the economy. This 'loss of identity' can occur in the refining process, in the marketplace (e.g. as metals are traded or exchanged), and/or in the manufacturing process as MMM are combined or become parts of components or subcomponents of products utilized in consumer products, industrial processes or construction.

As a result, there is a more business to business approach with MMM standards as opposed to a business to consumer strategy originally assumed for market-based certification standards. Historically, the power of the consumer in the MMM sector has been less compelling but this is starting to change in some high value niche sectors such as with the rise of the *Responsible Jewellery Council* (RJC) and *Fairmined* certified retail jewellery products. A similar challenge has been observed in the palm oil sector, one of WWF's 15 target agricultural commodities. Much of the palm oil use is 'hidden' and goes into literally thousands of different products. In some ways this poses some opportunities to complement one another as there is no direct competition for the same consumer markets. It does require the need to look beyond the original market-based strategy for new uses and users of the standard such as government and financial institutions for policy incentives and portfolio risk assessments.

3.2 SDGS AND STANDARDS

In 2015, the *Sustainable Development Goals* (SDGs) also known as the Global Goals were adopted by the *United Nations* (UN). They are a universal call to action to end poverty, protect the planet and ensure peace and prosperity. The SDGs provide a coherent framework of 17 goals that are both inter-connected and inter-dependent and often success in one will involve tackling issues commonly associated with another.[8]

The 2017 WWF and ISEAL report entitled: 'SDGs means Business' identifies the role of credible multi-stakeholder standards and round tables as one important tool that provides concrete guidelines and metrics to address the environmental and social issues captured in the SDGs. In doing so, these initiatives provide platforms for collective action within sectors and supply chains.[9] In effect, credible sustainability standards can function as SDG indicators.

Sustainable Development, Standards and MMM

The MMM sector is indispensable for meeting today's societal and economic needs. The process of exploring, producing, using, and recycling minerals and metals could also help society reach many other goals – providing jobs directly and indirectly, aiding in the development of national economies, and helping to reach energy and resource efficiency targets, among many others. It must, however, satisfy social and environmental requirements and the exploitation of finite resources cannot be considered at the expense of future generations. Therefore, the mining industry has a critical role to play in ensuring sustainable development.

The MMM sector has an unprecedented opportunity to contribute to delivering on the SDGs in a variety of ways. For example, through their direct operations, mining and downstream companies can generate profits, employment, and economic growth in low-income countries. High metal and mineral consumption industries can extend responsible sourcing. Moreover, through partnerships with government and civil society, they can ensure mining, refining, and the use and disposal of minerals can have a positive impact on the natural environment, climate change, and social capital. The MMM sector can also engage with retailers and consumers about mining to make the connection with the raw materials.[10] The *2016 White Paper by the World Economic Forum, United Nations Development Program* and *Columbia Center on Sustainable Investment* provides a clear plan of action for the MMM sector and lays out how to integrate each SDG into their core business. For example, a key UN SDG 12 (Responsible Production and Consumption) target relevant for mining is "By 2030, achieve the sustainable management and efficient use of natural resources. By minimizing use of water, energy, land and chemicals. Minimize production of waste, effluent and emissions. Repurpose waste rock."

As much as sustainability standards are important tools to deliver on sustainable development and the SDGs, the rapid growth in the number of sustainability standards in the MMM sector is a cause for concern. The IISD SSI Review described this development as "the most recent trajectory would appear to be defined by extreme proliferation and competition" (IISD, *in press*). The SSI Review also covers in detail the distribution of priority impacts by commodity and covers the history of mining and standards. The final report is due out in April 2018.

As noted earlier, this proliferation can in part be explained by the sheer diversity of the MMM sectors (from precious stones to sand and gravel) and their impacts. This in turn relates to the tremendous diversity of MMM companies ranging from the quality of leadership in relation to environmental and social responsibility; to the

SSI Review on Minerals and Mining (*in press*) has conducted the most comprehensive assessment of the sector to date. It initially identified over 158 standards and initiatives, eventually assessing 91 standards and initiatives in the final report. Of these, it is important to note that some are emerging standards and therefore not yet operational. As well, the private sector and NGOs reported in interviews for this project that "keeping track of the sheer volume and diversity of initiatives is more than a full-time job and is expensive".

8 UNDP *http://www.undp.org/content/undp/en/home/blog/2015/10/5/How-can-mining-contribute-to-the-Sustainable-Development-Goals-.html*
9 WWF and ISEAL (2017)
10 WEF, UNDP and CCSI (2016)

complexities of the political and geological contexts; to the value of the mined material and how that influences profit margins[11]. The SSI Review identified 158 mining standard and initiatives which is a lot, and many would say far too many. However, upon further examination several of these 158 have stopped at the standard development stage and have not been implemented. Some are frameworks or conventions such as *OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas* (OECD-D) or *International Labour Organization* (ILO) *Conventions*, while still others have yet to be launched.

There has also been different market demand for MMM standards. The *SSI Review on Mining and Minerals* (IISD *in press*) provides a thorough analysis of these different drivers, which are summarized in *Table 3*.

Table 3: SSI Report : Drivers for Sustainability Standards

Motivations/Drivers for MMM standard uptake from SSI Report	Brief Description
Strategic Considerations	Will vary on company and context. Example to signal sector sustainability leadership
Reputational Risk/ Corporate Brand Values	May be strategic, but specifically related to reputational issues
Direct Social/Environmental Costs and Risks (e.g. waste, water, energy, social costs)	Reduce direct costs or financial risks or improve productivity
Social/ Environmental Risks in the Supply Chain	Identify and help manage key social/ environmental risk associated with their supply chains
Regulatory Benefits	Tool to help achieve or demonstrate legal compliance or avoid statutory regulation
Social License to Operate	Build or strengthen acceptance of a company or industry's standard business practices and operating procedures
Market Demand	Meet the requirements of customers
Product Branding	Building or protecting the brand value of particular products
Product Pricing	Potential to raise prices or to use compliance to maintain access to higher-value markets or to position brands as 'premium' brands
Investor/ Lender Requirements	Meet the requirements of investors and lenders
Employee Satisfaction	Benefit ability to recruit, motivate and retain staff
Corporate Values	Reflection of their underlying ethos

Identifying the drivers for uptake of specific standards is an important consideration for standards working together. These can be competing, conflicting or complementary and understanding and discussing these is a key part of the process for interoperability. For example, if one standard has uptake for reputational risk or corporate brand value then another standard may be very interested in collaborating and leverage this reputation. However, for the standard with a good reputation, they will need to ensure any collaboration does not negatively affect this – for example by being associated with a perceived 'weak' standard. Even if the partnership is intended to strengthen/raise the bar of the second standard.

This situation poses both opportunities and challenges for interoperability, so it is important to have a clear understanding of these differences when working together. This topic is further covered in Section 5 on the ToC.

One key recommendation from the SSI Review on Mining and Minerals (*in press*) report is: *"If there is one recommendation (…) it is for industry players, policy makers and the public to support such efforts to coordinate and to collectively work towards the interoperability of schemes, and not the continuous development of new ones. If the goal is genuinely to make market-based tools for sustainable development effective, there is a pressing need for VSI [voluntary sustainability initiatives] management to consider 'we' over 'me'"* (IISD, *in press*).

11 Based on comments from Aimee Boulanger in *https://www.mining-technology.com/features/featuresetting-a-standard-for-responsible-mining-4934197/*

The main purpose of this report is to help navigate this diversity and understand the opportunities and challenges that these pose towards more interoperability, drawing from what is already taking place across the MMM standards and learning from the agriculture and forestry sectors, particularly in terms of Monitoring & Evaluation (M&E), assurance, traceability and ToC.

3.3 INTEROPERABILITY AND STANDARDS

A narrow definition of the interoperability concept was applied by Mori Junior *et al.* (2015), in their assessment of MMM standards as recognizing or referencing other standards in their own processes. Yet this highlights that interoperability is not only the capacity of schemes to recognize or reference other schemes, but it is also their capacity to interact with governments, industry sectors and civil society organizations to further their reach and outcomes. In a second report, Mori Junior *et al.*, (2017) applied a broader definition that is used in this report "Interoperability is the degree to which diverse systems, organizations and individuals are able to work together to achieve a common goal (Ide and Pustejovsky, 2010)". Note, the Mori 2017 report limited its scope to the interoperability **between initiatives only**. This report will go one step further and build upon this to consider how interoperability **between** standards can be leveraged when interacting with other stakeholder groups.

There are many reasons and drivers for increased interoperability. These include responding to market demand, seeking efficiencies for end users as well as cost savings for the scheme. Externally, users and supporters of standards see multiple standards as confusing, frustrating and often are unable to differentiate between credible standards. One interviewee noted "that they were tearing their hair out over how confusing it was having so many different standards." Others may simply see multiple standards as duplicative and inefficient. Downstream companies do not want to deal with multiple standards for each mined commodity or geography in their supply chain. Purchasers and retailers procure a range of raw materials originating from different mines, geographies and sectors. Consistency in the definition of 'responsible' or 'sustainable' and how it is assured is critical to meet their market requirements. Financial institutions that create policies and incentives for responsible sourcing or investments need agreement on definitions and principles of responsible or sustainable.

Interoperability presents opportunities to engage with both upstream and downstream actors as well as governments and other interested stakeholders (e.g. NGOs). Interoperability can be seen in terms of productivity factors with the potential to reduce costs, minimise overlaps; reduce bureaucracy and unproductive information flows. This in turn can improve stakeholders' understanding of the credibility of such initiatives in the market place and their influence. It can also be seen as means to facilitate exchange of knowledge and practices, broaden the range and type of entities covered, increase performance and amplify outcomes. Interoperability maximises synergies and efficiencies, increases legitimacy and reach. In the end, these efforts contribute to driving impact.

As MMM standards find themselves overlapping in their operations with regard to geographical areas, sectors and supply chains, the calls from their stakeholders to consider working together, recognizing one another, or even harmonizing their standards and schemes have increased. Similarly, the standards themselves have seen opportunities to create synergies, to increase efficiencies or to unite in the face of external threats. This is discussed further in the next section.

Cross section of labrador
© shutterstock/Nyura

4 STATE OF PLAY – INTEROPERABILITY AND MMM STANDARDS

The following section highlights key findings from the research and interviews. Examples ofspecific standards are provided to highlight key points and models to readers. Further examples are found in the individual Standard Snapshots in the *→ Appendix 2: Snapshots.*

4.1 CROSS-SECTORAL LEARNING

One of the underlying assumptions at the start of this research project was that the MMM sector had been slower to adopt interoperability practices than in the agriculture and forestry sectors. However, what became evident during the course of this research, was almost the opposite, as several positive examples of interoperability between the MMM standards were identified.

The efforts of interoperability in the agriculture and forestry sector (mainly identified from within the ISEAL community) are more project- based and not as varied, embedded, or numerous as identified among the MMM standards.

While sustainability standards have had more uptake in the agriculture and forestry sectors than in the MMM sector, this is largely due to the evolution of the standards (*→ discussed in Section 3.1*) including decades of existence, public and civil society support (notably WWF), consumer-facing visibility and large brand 2020 public sustainability commitments. The efforts of interoperability in the agriculture and forestry sectors are more project- based and not as varied as what was identified among the MMM standards (which includes governance and embedding interoperability in the design). ISEAL recognizing the challenges of operationalizing the learnings from projects, established several cross-sectoral *Peer Learning Groups* including standard setting, assurance and monitoring and evaluation groups. These groups provide a platform for sharing learning, identifying opportunities for collaboration and projects and setting priorities for research and innovation. The following *→ Table 4* highlights the breadth of examples. More details are found in the *→ Appendix 3: Interoperability Examples in Agriculture, Forestry, Marine Fisheries Standards Systems.*

Table 4: Examples of Interoperability in Other Sectors
Agricultural, Forestry and Marine Examples of Interoperability (details in Appendix)

Examples	Interoperability Elements and Characteristics	Sector(s)
Better Cotton Initiative (BCI)	Recognition: full and one way	Agriculture
Cotton 2040	Building trust and shared learning Joint working group	Cotton/retail/brands
ASC-MSC Seaweed Standard Chain of Custody	Shared process Joint tools, templates development, use of existing systems (Chain of Custody (CoC)), created shared vision	Marine fisheries and seaweed/(algae)
FSC and Fairtrade	Shared process, Joint certification	Forestry and community agriculture
UTZ & Rainforest	Merger Shared tools and projects before merger	Agriculture
UTZ Traceability System Services & Round Table on Sustainable Palm Oil (RSPO)	Plug and play. Use systems/tools of others	Palm oil/agriculture
Union for Ethical Biotrade (UEBT) and RA UTZ	Joint certification program	Herbs/tea/agriculture
Accreditation Services International	Shared process, shared online (salesforce) platform for assurance and accreditation related processes Supports data collection and storage for M&E system	Forestry, fisheries, agriculture, conservation, tourism, energy and other sectors
Bonsucro and Fairtrade	Shared process, Joint certification	Agriculture
Leadership in Energy and Environmental Design (LEED) and FSC	Partial recognition	Forest products, architecture
Program for the Endorsement of Forest Certification (PEFC)	Recognition of national forest certification systems, mutual recognition	Forestry
ISEAL and members efforts Demonstrating and Improving Poverty Impacts (DIPI) project M&E Peer Learning Group Assurance Peer Learning Group	Joint projects Shared processed HarmonizationEfficiency/Convergence around common methodologies	Cross-sectoral

There are likely several reasons that MMM standards appear to be early adopters of interoperability – mainly learning from the agriculture and forestry sector.

There are many opportunities for MMM standards to learn from the agriculture and forestry sector in terms of working together, and equally for agriculture and forestry standards to learn from the MMM standards' efforts. This was highlighted by several of the agricultural standard interviewees.

One key recommendation from previous MMM research is to develop models for M&E and impact systems for alignment and efficiencies. Currently, the MMM standards have less developed M&E systems than in agriculture and forestry standards. There is limited research and information on effects and impacts of their efforts.

There are good opportunities for MMM standards to learn from the agriculture standards on many of the challenges of developing a robust M&E system. The ISEAL DIPI multi-year project provides key cross-sectoral learning on M&E that are applicable for the MMM sector. The DIPI project has been running since 2011 with a focus on collectively demonstrating impacts of voluntary sustainability standards through robust M&E systems. While focused on agriculture and forestry standards, learnings and tools are shared within the broader ISEAL community in the form of Guidance documents, peer learning meetings and cross-sectoral information exchange. Outputs include the development of a common conceptual framework (in essence a high-level Theory of Change), common core indicators, a series of guidance documents, a shared research agenda and database on resources, M&E training for auditors, joint impact assessments and numerous field testing and pilots.

Cross Sectoral Learning from MMM Sector as Forerunners of Interoperability

Interoperability is widely discussed across MMM standards and their stakeholders as an essential part of driving impact. Many MMM standard organizations are leaders in interoperability, with others moving from opportunistic interoperability to integrating it into their strategic plans and operations. *The Alliance for Responsible Mining* (ARM), *Responsible Jewellery Council* (RJC), *Responsible Business Alliance's Responsible Minerals Initiative* (RMI) and *Responsible Steel* (RS) have all made references to interoperability in their ToC narrative or integrated it into their organizational strategic plans. The *Mining Association of Canada* (MAC) has received strategic direction from its board to pursue collaboration with other standards including with respect to opportunities for interoperability. *Aluminium Stewardship Initiative* (ASI) set up a formal body: a Working Group on Benchmarking and Harmonization which has an open participation structure, and RJC has a 'Harmonization' tab on its homepage signalling its commitment and activities to work with others. Four interviewees reported interoperability was in their organizational structure.

There are likely several reasons that MMM standards appear to be early adopters of interoperability. First, they are enabled by more experienced sustainability leadership in the sector than in the early days when standards first emerged. When another standard came along specifically in the agriculture and forestry sector this was often seen as competition (for market share, support, funding) and they competed head on. Early standards typically did not cooperate or collaborate (with other standards) and harmonization was perceived negatively, even as a race to the bottom.

Today, there are more examples to learn from – whereas in the past standards developed on their own, experimenting and learning by doing. The sector is now becoming more professional. The largely NGO mind-set of standard organizations is now evolving and they are being run more as businesses with business models. Also, out in the wider world, networks and collaborations are now more prevalent than in the past.

Furthermore, MMM standards have learned from the agriculture sector that standards as a tool for market transformation can only get so far alone in driving sustainability. MMM standard leaders recognize that interoperability is critical and that standards must be willing to see it as an opportunity rather than competition. Some have worked in the agriculture and forestry sector previously and have noted the opportunities to collaborate. There is a growing recognition from the agriculture and forestry standards that if they do not adapt and work together, supporters will turn to other mechanisms. This includes private company standards that are not multi-stakeholder or seen nearly as credible.

In addition, the administrative burden for companies in carrying out the required due diligence measures associated with mining is more problematic within the MMM sector (where many commodities go into making one product) than in agriculture. Many of the more mature agriculture standards are in commodities which have less mixing (e.g. coffee, sugar) until final products. This has created a push for interoperability of downstream actors who are having to work with multiple, even dozens of different MMM standards.

Finally, many of the MMM standards are in development or just emerging, which is more effective and efficient time to build in interoperability, rather than 'retro-fitting' compatible systems. The most significant steps and most effective time to embed interoperability is in the initial stages of a standard's development and the development of its ToC. At this stage, it is still possible to include relatively simple measures to drive more interoperability. Some organizations have taken this

approach and refer to themselves has having interoperability built into their organizational DNA and standard system. Measures and steps taken at a later stage take more time and resources, which is supported by the findings of this report.

4.2 CONCEPTUAL FRAMEWORK FOR UNDERSTANDING INTEROPERABILITY AND MMM STANDARDS

Reflecting on the different drivers and benefits of interoperability, there is a wide breadth and depth of types of interoperability. It appears that there is no single path or tool, but depends on the strategies, stakeholders and objectives of interoperability of each organization.

What is the added value for each organization and its stakeholders?
It is also becoming evident that different types of interoperability can happen in parallel and across different organizations. Much of what is currently taking place with MMM standards is bilateral, with some good examples emerging of collaboration across several initiatives e.g. *London Bullion Market Association* (LBMA), RJC and RMI.

A **Framework of Interoperability** is proposed to help the reader navigate the types and intensity of interoperability in the MMM standards (see → *Figure 1*). At the top, the term 'collaboration' is unpacked. The need to collaborate has been stated widely in the literature and interviews. While broadly understood as 'working together', there is a continuum of inter-organizational models, each of which has identifiable attributes and requires specific capacities and inter-institutional supports. Moving from left to right across the continuum, the potential to accomplish together that which cannot be achieved alone increases. Each level requires an increase in time, trust, and 'turf-sharing'. This is the top level in → *Figure 1*.

Figure 1: Framework of Interoperability

Continuum of Collaboration	Compete	Co-exist	Communicate	Cooperate	Coordinate/ Harmonization	Collaborate(s)	Integrate Merge
	Competition for resources: clients, funding, support, etc	No systematic connection among organizations. Independent	Dialogue and information exchange Build under-standing and trust Identify opportunities	Ad-hoc, informal interaction and/or discrete activities or projects	Organizations systematically adjust and align work for greater outcomes	Longer term interaction based on shared missions, goals, shared decision making and resources	Fully integrated programs

Interoperability

Aspects of Interoperability	Type	Issues Based Working Groups	Joint Projects	"Plug and Play"	Recognition	Shared Processes	Harmonization
	Description	Address common challenges including defined terms, methodologies and assurance	Pooling resources Investing together e.g. for capacity building	Use of only specific tools and processes often for efficiencies but may also lead to harmoniza-tion	Refer to or accept another's systems provisions including Full, partial, unilateral, stepwise	Mechanisms which sustainability standards are able to operate jointly, for example, by joint auditing and other assurance processes	Alignment of texts to adopt similar language eliminating major differences and creating common minimum requirements
	Examples	FPIC working group, Living Wage Coalition ASI Harmonization Working group	RMI, RJC, LBMA support CRAFT Code of Conduct (ARM)	Reference to other standards or guidelines IRMA MoU with FSC for use of policies and procedures	RJC/LBMA/RMI	RJC and Fairmined joint audits	ISEAL Common Core OECD-D

@ LiSeed Consulting. Collaboration continuum adapted Collective Impact Group, Tamarack 2013. Aspects of Interoperability ada pted CSRM.

It is important to clarify that different organizations often use different terms for the same thing and that this is a **model** to highlight the concept of a **Continuum of Collaboration.**

Communication, dialogue and information exchange is a pre-cursor to interoperability and serves as a basis for building trust and understanding of how other standards work. An example of this was the coming together of several MMM standards at the 2017 Global Sustainability Standards Conference, organized by the standards themselves. Meeting at conferences was frequently noted in interviews as a critical first step to identify opportunities for interoperability, build understanding and begin to create a relationship. A critical success factor for interoperability identified in interviews for this report was personal relationships and trust. A key recommendation in Fionini *et al.* (2017)[12] that examined fragmentation in the agriculture standards landscape was to support "Information exchange through conferences, round tables to facilitate discussions between standard setters."

12 Fiorini, M., Schleifer P., Taimasova R. (2017). Social and environmental standards: From fragmentation to coordination. International Trade Centre, Geneva.

The next level down in → *Figure 1* is **'Aspects of Interoperability'**. These break down into a range of types of interoperability. This typology builds and expands on the interoperability conceptual framework from Mori Junior *et al.* (2017)[13] which uses the terms, 'collaboration', 'harmonization', 'cross-referencing' and 'shared process'.

A few examples of each type are provided in the → *Figure 1*. See the → *Appendices* for more examples in the MMM standards and across agriculture and forestry standards.

4.2.1 Typology of Interoperability

There are several 'types' of interoperability identified in the literature and interviews, with some nuances of each. Therefore, they should not be considered as discrete, rather as a way to understand the different organizational demands for each. All of these contribute in some way to the benefits of interoperability, ultimately multiplying the individual contributions to make an impact far greater than by going it alone. Interestingly merging of standards organizations can be a product of interoperability, as demonstrated by the recent merger of the *Rainforest Alliance* (RA) and UTZ and the merger of *RA-Cert* and *NEPCon*. These examples go beyond interoperability as they result in one overall organization. The typology in → *Figure 1* and described below is generally in line with the framework proposed in Mori Junior *et al.* (2017).

1. **Joint Working Groups (e.g. issues-based)**
2. **Joint Projects**
3. **Plug and Play**
4. **Recognition**
5. **Shared Processes**
6. **Harmonization**

1. Joint Working Groups

One of the recommendations from previous research, and noted by several interviewees, is the opportunity to address challenges together. Sustainability standards define responsible practice and operationalize complex concepts such as FPIC, *Fair Wages* or *High Conservation Value*. Collectively working together to address these common challenges enables the pooling of resources, perspectives, and shared learning. The result is aligned outputs, whether it is agreed upon terms and definitions, methodologies, approaches or tools. One goal is to harmonize different approaches and to increase coordination in implementation efforts. This in turn creates consistency and adds value to users of standards (e.g. companies, governments, or financial institutions) through a common approach, which can in turn drive uptake. The long-term goal is to drive sustainability in the sector by addressing the challenges together. Participant feedback from one of the ToC workshops noted **„it would be great to find topics we could collaborate on in smaller groups"**.

In agriculture, the challenges of M&E are particularly problematic for smallholders which constitute 70-80% of the land used to produce food globally. To address this challenge, ISEAL worked with other sustainability initiatives and measurement frameworks (e.g. *Sustainable Food Lab, Committee on Sustainability Assessment*) to align definitions and methodologies. The group created a measurement framework and produced the public resource: "Towards a Shared Approach for Smallholder Performance Measurement: Common Indicators and Metrics."[14]

Challenges

These processes take time and resources to participate in the dialogue. Reaching consensus on complex topics may require further consultation with each organizations' stakeholders, adding another layer and requiring yet more time!

13 For the purposes of this report, some categories were redefined to align them with terms more commonly understood within the sustainability standards community such as 'cross referencing' was changed to 'recognition'.

14 *https://sustainablefoodlab.org/performance-measurement/tools-resources/deep-dive/*

Lessons Learned

A key lesson learned is **to start** with areas or an issue that are broadly relevant, but not too contentious across stakeholders. If it is an area or issue that a broad range of standards are interested in and see value in a common approach, then it will be easier to get started and have less internal resistance. One interviewee proposed the issue of waste, specifically mine tailings. This topic is relevant across a broad range of MMM standards and the industry bar is already quite high in terms of standard requirements. The process of the working together is valuable in getting to know one another and build trust so the advice from several interviewees was to start with something 'easy'.

In the agricultural sector, the issue-based working groups on 'living wage', 'geospatial data' and 'integrated pest management' recognized the need to have some sort of 'backbone organization' or convenor to move the discussion along but play a neutral role. Having a shared explicit outcome was also important for these working groups to communicate internally and gain support for the time and resources required participating. ISEAL also coordinates several peer learning groups with dedicated listservs, webinars and some in-person meetings. This cross-sectoral learning also sets priorities for research and collaboration.

2. Joint Projects

A second type of interoperability is joint projects. This may be similar to a joint working group – to address a specific challenge – or may be where common interests or pooling resources is the driver. For example, several of the MMM standards are working together specifically to address some of the challenges of the *Artisanal Small Mining* (ASM) sector. Others are pooling resources to pilot specific tools together such as auditor training. This shares costs and learnings. In the end there may or may not be a joint product. Examples of joint projects:

- RMI RBA is collaborating with LBMA and RJC to develop joint training and to support development of schemes like the *Code of Risk-Mitigation for ASM Engaging in Formal Trade* (CRAFT).

- *Bonsucro* and *Fairtrade* are working together to establish joint audit protocol that maximises both their sugarcane production sustainability standards.

Challenges

When there are vast differences in the organizations, whether in maturity, size or mission, joint projects can be harder to implement. One interviewee noted that the imbalance in size can create tensions in perceived power.

Lessons Learned

Having clear formalized objectives and expectations is important, which can be captured in a *Memorandum of Understanding* (MoU). While it is not necessarily a legally binding document, it can document what each organization brings to the table and what each expects to achieve from the joint project. Others have found MoUs may take a long time to negotiate and develop depending on the governance system and because of their non-binding nature, are not useful. In this case, a confidentiality agreement may be a better first step, to be able to share information as a first step.

Learning from the agriculture standards, joint projects around M&E systems and a shared research agenda created opportunities to share costs and risks and learning from each other's skills and expertise. Within the agricultural sector, standards used a shared general ToC as a basis for shared work on measurement and indicators. As one interviewee noted, M&E offers a non-competitive area to collaborate.

3. Plug and Play

Interoperability can occur by using discrete pieces of a system, such as the adoption of another standard's policy or procedure. Many of the MMM standards reference other schemes, standards, initiatives or guidelines which this report describes as 'plug and play'. This does not require any action or acknowledgement by the referenced standard so may not be inter-organizational. Examples of this are widespread: *UN Guidance on Responsible Business in Conflict-Affected and High-Risk Areas, International Standard (ISO) 9001, ISO 14001, OHSA 18001, IFC's Performance Standards, UN Convention Against Corruption, Extractive Industries Transparency Initiative* (EITI), *UN Global Compact, Global Reporting Initiative* (GRI), *and Equator Principles*, as well as specific legislation *(Dodd Frank Act)* as well as other MMM standards such as RJC and ICMM.

ARM is developing their new CRAFT Code with support of many of the other MMM standards, as a completely open sourced document with the idea that this will drive 'Plug and Play' uptake.

'Plug and Play' interoperability can even be with a standard from another sector, as exemplified by the agreement between the well-established FSC standard and the emerging standard *Initiative for Responsible Mining Assurance* (IRMA) which is tapping into the tried and tested systems of FSC through a MoU which enables IRMA to use and adapt FSC policies and procedures. FSC can add value to market actors that purchase from the forestry and mining sector by signalling a consistent and reliable system.

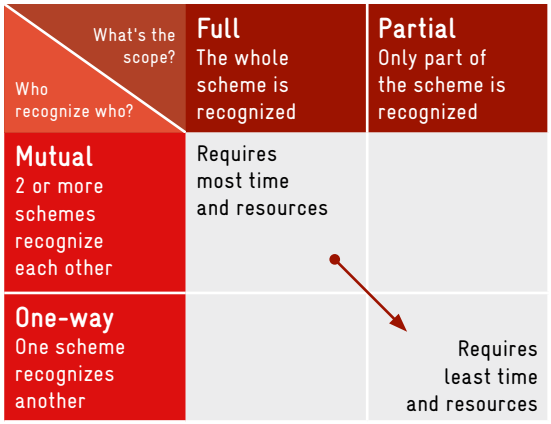
Challenges

As with other types of interoperability, there needs to be clear value for all players. While the organization that takes existing processes or tools has a clear benefit of not having to invest in the process or tool, it may not be as obvious to the other standard's internal or external stakeholders why they should 'give away' tools and processes they have invested in. This can be particularly challenging when the standards compete for funders or market share.

Lessons Learned

Formalizing the agreement and the objectives for all involved is important, even if only in a simple format. Clarity in the agreement on what can be adapted and changed, acknowledgement and communication is critical.

Figure 2: Recognition Types



ISEAL and Proforest (2012).CSRM.

4. Recognition[15]

While many standards reference other standards, there are few that recognize the certificates, claims or labels issued by other standards. Recognition refers to the acceptance of part or all of one scheme as having equivalence to another. Each system retains its own systems but recognizes the other as partially or fully equivalent for compliance. There may be different drivers including responding to market demands, as well as saving on transaction costs by allowing products to flow into a supply chain partially covered by one standard which has been already been deemed as meeting the other standard requirements. There can be unilateral (or one way), partial or full recognition. An agreement may build in a stepwise approach to allow incremental recognition and this is called stepwise recognition. The different types of recognition are summarized in → *Figure 2*.

15 This is referred to as Cross Referencing in the Mori Junior *et al.* (2017) Interoperability Framework

Challenges to Recognition

Accepting another standard's systems and processes requires a trust in the credibility and rigor of that standard. If issues arise in one system, it will reflect on the other, which is a risk that some stakeholders are not willing to accept. Though benchmarking systems (see → *Box 1*) may seem the same on the surface (and as several interviewees noted) there is the need to get to the field or site level and understand the differences in implementation. This can be as "mundane as auditor approval, audit frequency and reporting requirements". Other challenges may relate to different assurance mechanisms, approved certification bodies and exchange of data related to recognized entities. The research comparative assessments in Mori Junior *et al.* (2015); Mori Junior *et al.* (2017) and the IISD SSI Review (*in press*) all use a benchmarking framework. There will be different risk profiles and priorities for different commodities.

Box 1: What is Benchmarking?

Benchmarking refers to a process of comparison of one's own practices (e.g. standards or requirements) with those of similar organizations in the same field or work. In the business world it is most commonly associated with identifying best practices, with a view to emulating them. Within the standards sector it has tended to be used to compare standards or certification systems with a view to identifying gaps between them, in particular to see what additional requirements an operator already certified by 'Scheme A' might have to meet to obtain 'Scheme B' certification. This may be carried out by a single scheme or co-operatively by several schemes. Benchmarking is also commonly carried out by external organizations – stakeholders and potential users of the standards for highlighting minimal thresholds and differences across standards. In this instance, a collective determines how standards schemes requirements and implementation systems meet some agreed upon criteria (the benchmark) for recognition or to highlight the differences between standards.
Adapted from: ISEAL and Proforest (2012)

A cautionary tale from the agricultural and forestry sectors is that proliferation of standards and lack of evidence on impacts (both trends in the MMM sector as well) has created a number of benchmarking tools – each with different stakeholders and agendas with some overlap of criteria. This has added another layer of administrative burden on standards who must participate in multiple benchmarking exercises. This can lead to more competition as standards are ranked based on 'checking boxes', rather than fostering collaboration. Users and supporters of standards also feel confused about which benchmark is 'better'. As a result, the *UN International Trade Centre* initiated a *'Technical Working Group'* three years ago for better coordination across the benchmarking initiatives. The *'Technical Working Group'* includes: GIZ *Sustainability Standards Comparison Tool, WWF Certification Assessment Tool, Sustainable Agriculture Initiative's Sustainability Performance Assessment and Global Social Compliance Program assessment tools.*

The PEFC is an umbrella organization that endorses national forest certification systems. It works with local organizations to advance responsible forestry and endorse national forest certification systems that have demonstrated compliance with the PEFC globally recognized sustainability benchmarks. To be eligible national forest management standards must be tailored to country-specific priorities and conditions and developed through multi-stakeholder, consensus-driven processes. Improvements in forest management practices have been pioneered by national systems using this model of recognition [16].

Lessons Learned

Joint activities or information sharing can be a first step in a recognition process to build trust and understanding of each other's systems. There are many lessons

16 *https://www.pefc.org/resources/brochures/projects-and-development/1569-promoting-sustainable-forest-management-introducing-pefc-s-unique-approach-to-forest-certification*

learned captured in the *ISEAL ProForest Recognition Methodology Guidance*[17] which can serve as a checklist. This includes pilot testing with joint audits and clear decision-making processes (particularly around the question: when is something close enough?). Recognition can make some stakeholders uneasy particularly in cases where schemes are competing for either customers or funding. It is therefore important that standards take the time to understand what the implications might be before engaging externally.

A number of the MMM standards that have mutual recognition meet once per month for coordination purposes. These regular meetings have created several additional outputs beyond quality control. The meetings keep the process 'live' and foster increased trust. Through the meetings, they have identified other opportunities for alignment across programs including the alignment of outputs of audits so that reports and data generated are useful for companies further downstream for due diligence purposes.

5. Shared Processes

The areas of assurance and traceability have been identified as having some of the greatest potential for efficiencies and cost savings, as well as adding value to upstream and downstream actors through interoperability.

Shared processes include mechanisms in which standards are able to operate jointly, for example, by joint auditing and other assurance processes. This requires more intensive inter-organizational alignment and resources. A main driver is to reduce duplication and overlap, thus reducing costs for both the standard in maintaining separate, distinct systems, as well as the standard user by eliminating the administrative and time burden of duplicative processes. Within the agriculture sector, there have been multiple efforts to create joint audit processes, with one project with FSC and *Fairtrade* dating back 15 years and another one from 2001 that involved four ISEAL agriculture members. However, few of these efforts have moved beyond the project phase because of the challenges of merging different system components, even when addressing the same commodities or geographies. The devil is in the detail!

The area of assurance and traceability has been identified in previous MMM research as having some of the greatest potential for efficiencies and cost savings, as well as adding value to upstream and downstream actors through interoperability. As noted in one interview, the only entity that loses out is the auditing company. At present, RJC and ARM are conducting joint audits. In 2017, MAC TSM (*Mining Assosiation of Canada: Towards Sustainable Mining*) pilot tested joint audit verifications with two members who are also ICMM members. The pilots used a common verifier/auditor to conduct a single verification/audit that served as assurance for both MAC TSM and ICMM.

Challenges: Shared Processes

The comparative assessments by Kickler and Franken 2017 and Mori Junior *et al.* 2017 highlight both the overlap and similarities of several MMM standards. However, even on paper when the standards' systems seem to have the same third-party accreditation and certification – the implementation and systems are often quite distinct with different audit cycles, training, or approaches to risk. So while the overall audit system is more or less the same, the implementation of it can be quite distinct. For example, there will be different audit protocols for different minerals. Some standards have not been designed with a system of indicators. There is only a compliance checklist of yes or no (e.g. Fairmined) which has implications for alignment with other systems. It also has implications for any data coming out of the assurance process. Many agriculture standards use the assurance process for M&E purposes,

17 Available to ISEAL Community members only

so data on compliance is not sufficient. Timing is an important consideration for adapting systems to align in order to share processes. This can be in terms of initial development for emerging systems, revision processes or organizational changes.

In 2017, ISEAL conducted a *Traceability and CoC study* across twelve ISEAL member organizations to identify opportunities for interoperability. Although all participants were full ISEAL members and on paper would tick the same boxes in terms of 'overlapping' types of systems, the general conclusion was that the underlying systems and processes were highly diverse and could not be considered as Plug and Play.

"Surprisingly the overall picture of traceability in the ISEAL membership is one of divergent approaches based on distinct contexts in which each member is operating." [18]

Differences included different approaches to risk (affecting sampling and reporting requirements), as well as frequency and timing of revision cycles for standards. It was noted that despite these differences, many of these standard organizations face the same critical challenges or opportunities – and it is here that there is the most potential for shared learning and improvement. Thus, while shared processes would not be possible at this stage, potentially a thematic working group on traceability could be established for sharing and learning.

Lessons Learned

Understanding what is happening at the field level is key to identifying opportunities to work together. Finding complementary positions in the supply chain offers good opportunities to come together, rather than compete.

Other lessons learned include that there are different maturity levels of standards with well-developed systems and legacy systems that need to be considered. It is easier to design shared processes with or for emerging standards than retro-fitting, changing or even eliminating system parts of operational standards – as this could meet with resistance if there is not a clear value proposition or a clear understanding of what the standard has to change or give up.

6. Harmonization

While the term harmonization may be used broadly in the standard sector – in the context of the proposed Interoperability Framework, it is defined as a much deeper inter-organizational harmonization process. Harmonization is the alignment of requirements to adopt similar language eliminating major differences and creating common minimum requirements, whether standard content or implementation requirements. Aligning examples include: the *OECD-D Framework and Assessment Methodology* or the *ISEAL Common Core indicators.*[19] Standards should ensure that their requirements are aligned with key regulations such as the *Dodd Frank Act* and upcoming *EU Conflict Minerals Regulation*, rather than replacing them.

It is not enough to simply reference something in a standard requirement, the implementation of it is equally important.

OECD-D provides a good model of harmonization by setting a common set of baseline practices. It is being used as the basis and benchmark for many MMM standards. OECD-D connects stakeholders across various minerals, geographies, and positions in the supply chain and provides for a clear, common set of expectations for downstream buyers. As industry audit programs begin to cross recognize each other and compliance expectations are narrowed down to one clear set of standards, it will reduce the audit burden and ultimately the cost of due diligence.

18 Patrick Mallet, ISEAL Innovations Director
19 ISEAL Common Core Indicators available to ISEAL Community members only

To gauge the alignment, coherence and credibility of these initiatives, the OECD is carrying out an assessment of the alignment of industry programs' standards and implementation efforts. The initiatives being assessed during the 2016–2018 pilot phase are: *Conflict Free Sourcing Initiative– now called* RMI RBA. ITRI *Tin Supply Chain Initiative* (iTSCi), LBMA, RJC, and *Dubai Multi-Commodities Centre* (DMCC). The pilot assessment has been completed and the lessons-learned integrated into the documents which were launched in April 2018.[20] This highlights that it is not enough to simply reference something in a standard requirement, but the implementation of it is equally important.

Another example of harmonization efforts relates to harmonization of M&E frameworks to address the effectiveness of standards. In these days of UN SDGs and big data, uniting behind a common set of definitions and tools for sustainability reporting is an ambitious goal, but is happening within ISEAL. Recognizing the burden of multiple assessment in different systems with an assortment of metrics, ISEAL has been working with other sustainability initiatives and measurement frameworks as well as several agriculture standards to align definitions and methodologies. Tools and learnings are available to the wider community and include *The Global Impacts Platform*[21],the ISEAL *Common Core Indicators* and the DIPI *project's impact evaluation and regional demonstration projects*. The ISEAL Common Core indicators are designed to enhance sharing and comparing data. The impact evaluation work is generating usable data and findings about the contribution of agricultural standard systems to poverty reduction and of testing methodologies and promoting consistency and coordination in the approaches that ISEAL members use in assessing the poverty and livelihood outcomes and impacts of their systems.

Recently, GRI and the RMI announced a project to help improve companies' minerals sourcing due diligence and impact reporting by providing reporting resources and tools based on internationally recognized frameworks. "Meaningful and comparable data help companies identify their gaps and promote accountability and transparency in the minerals supply chain. However, despite international guidance and regulations, public reporting by companies remains limited, and the quality and comparability of existing reports presents opportunities for improvement. The project aims to provide the reporting community with a consolidated reporting resource based on existing internationally-recognized tools and frameworks, such as the OECDD." [22]

Some of the standard organizations are themselves examples of this aligning standards from different geographies or sectors – such as forestry's PEFC or in the MMM sector– ICMM, RMI RBA, MAC TSM and eventually RS.

Challenges to Harmonization

One of the frequently cited challenges to harmonization are the expectations of stakeholders who often have vested interests in specific language or requirements. While there is some overlap of stakeholders, each standard has a unique set of stakeholders that they need to respond to and who often need to be consulted on and approve of any changes. Another major challenge experienced by several of the MMM standards is how a sustainability requirement seems relatively the same on the surface – but may be very distinct in the detail. In terms of alignment of indicators and metrics, the different organizations had existing definitions, different tools, protocols for gathering data, data platforms, legal constraints and a host of other elements that also need to be considered in aligning language. There are processes and systems behind these!

20 Results are available: *http://mneguidelines.oecd.org/industry-initiatives-alignment-assessment.htm*

21 *https://sustainablefoodlab.org/performance-measurement/share-engage/sustainability-impacts-learning-platform/*

22 *https://www.globalreporting.org/information/news-and-press-center/Pages/GRI-and-RMI-partnership-2018.aspx*

There has been a lot of pressure for MMM standards to align on the content requirements with the assumption that because the standard requirement covers a certain topic, then there is overlap and alignment is relatively straightforward. However, it is not just about semantics and terms and definitions. Mori Junior *et al.* (2017) notes that "schemes with similar intentions and target groups use varying approaches" to the same theme (e.g. water, health and safety). Some standards may list prescriptive detailed requirements, while others make general statements. 'The devil is in the detail' in terms of the implementation requirements on a specific requirement as well as the assurance of the requirement being met. For this reason, most comparative assessments take into consideration both the obligation (content requirement), the level of performance required and the flexibility in meeting the performance (*e.g. SSI Review's CARE framework*) [23]. These must also then be considered in terms of assuring the performance, regardless of the level of performance being required.

Lessons Learned

Harmonization takes time and resources. Within the DIPI multi-year project, six standards worked together to develop a set of common indicators and methodologies for reporting on poverty alleviation. While on the surface this seemed very straightforward, challenges included data interoperability (e.g., legal considerations, data architecture, data governance, internal policies), different audit cycles, reporting cycles, among many others. It took more than three years for four of the standards to align on definitions and protocols and be able to report on a small subset of the basic common indicators.

Case Study: Leaving Stones Unturned

Since the early 2000s, there has been an increase in demand for natural stone (greenand natural) in many major industrialized markets and a shift to sourcing lower priced stone, in developing countries with major social issues including health and safety, forced and child labour. Various initiatives responded, many with government support, to fill this gap. Stakeholders began to complain of proliferation with pressures to collaborate. Between 2009 and 2012, a series of meetings and workshops were held with several of the natural stone initiatives and a detailed comparative analysis was conducted using a benchmark tool developed by ISEAL and GIZ. The significant overlap in almost all dimensions of the natural stone initiatives, plus the similarities in gaps, indicated fertile ground for collaboration across the initiatives. There was strong consensus of the interest in interoperability of the standards, assurance, capacity building and outreach. The initiatives considered the establishment of a 'round table' to harmonize standards. While some of the standards continued talks, bilaterally or with a smaller subset of initiatives– the project did not progress further. Looking back, a key reason cited was that while each looked for the added value to their own organization, there was not a shared vision and agreed to objectives of interoperability. The time and resource commitments also proved a barrier for the long-term commitment of a broader dialogue. Some initiatives noted that they felt overshadowed by the more resourced initiatives and had less say in the direction and outcomes of the efforts.

It may be easier to start with one or two content requirements and try to align rather than attempt to agree on a whole set of sustainability requirements as this will vary by geographies, products and clients. A working group could be a first step with one or two 'issue' areas. This builds the relationship, trust and as one interviewee noted is like 'eating an elephant' i.e. when a task is daunting, take it one bite at a time.

23 IISD (*in press*)

4.3 OVERARCHING CHALLENGES AND LESSONS LEARNED

There will always be an element of tension between standards and stakeholders in both MMM and agriculture and forestry standards all of who have their own particular agendas and, in some cases, actively work to differentiate themselves. There can be competition for funding, markets or even companies. As MMM standards often address different commodities, there is potentially less 'market competition' and more collaboration interest to address downstream markets. However, there can also be intense competition in international markets between some of the commodities, e.g. steel and aluminium. From the interviews and learnings from the agriculture and forestry sectors it was clear that the challenges and barriers are not necessarily technical or related to resourcing.

Some challenges related to governance models were identified. This included understanding who and how decisions are made. Several standards noted that it is critical to have clarity on decision-making (who and how) from the outset. As in one example – one standard could take a decision about changes in a process in two days, while the other organization took two years. There may also be internal resistance to interoperability (or simply change) that is due to a lack of understanding of the other standards or the potential benefits.

The challenges and barriers to interoperability are more often organizational and political rather than technical.

Another related area is understanding the basic business model of the different standards. While this was not looked at in any of the existing literature, nor directly covered in this report, it did come up in interviews and in two of the ToC workshops. Who is funding the standard? How are audits, assessments or verifications paid for? While sometimes it is uncomfortable to talk about, this area can cause fundamental challenges so should be transparent and discussed upfront when working towards intensifying collaboration. It may be reflected in the ToC, but not necessarily. Thus, it is important to be explicit on different funding models as they are a potential area for perceived competition or could create friction if assumptions are not clearly understood.

Some standards are working to get internal buy-in and improve the understanding of other standards by participating in the governance committees and/or joining as members of other standards. There are numerous examples of standards becoming members of other standards, signalling their support and commitment: BCI, MAC TSM, ICMM, RMI RBA, IRMA, and RS to name a few. Other types of cross-fertilization include RMI RBA, LBMA, RJC and IRMA serving on ARM Advisory and Technical Committees. RMI serves on other standards' advisory committees and includes ICMM as an Advisory Member. OECD participates in several of the standards' committees, generally as an observer.

Another challenge noted by several standards is the lack of flexibility in approaching interoperability. The starting point will generally be different systems, so there needs to be some willingness to give up or adapt some elements. Collaboration may imply changes in systems or tools and there may be resistance within an organization, particularly if one standard feels 'unequally burdened'.

"We proposed a common tool with another standard and while all agreed it was a positive goal – there was internal and external resistance to change. It may seem simple, like changing a template, but this needs to be rolled out to auditors, changes in databases to capture data, etc. so, in the end we kept separate tools." – *MMM Interviewee*

There were several challenges identified by interviewees related to stakeholders. There may be overlap, with stakeholder fatigue of serving on multiple standard committees. It was commonly cited, that while at a high level there is the call to collaborate, there is a vested interest in the standard to maintain the status quo. This reluctance or resistance to change – whether to align with another standard on definitions, requirements, share a process, particularly when it meant changing procedures and processes is a barrier to overcome.

An important lesson learned from the interviews was to have a clear value proposition: What is in it for us? As noted by one of the standards surveyed, this could create a consistent interaction with actors across the supply chain and improve relations and marketing with the downstream sector.

"Important to invest in this effort [interoperability] as it connects stakeholders across various minerals, geographies, and positions in the supply chain and provides for a clear, common set of expectations for downstream buyers." – MMM Survey participant

Another important consideration concerns the 'due diligence' of the partnership. This is related to several of the other points raised (governance, business models) and the key success factor of trust. This is particularly important in the MMM sector where there is distrust by some stakeholders and scepticism around the terms sustainable or responsible mining. Some MMM standards have had criticisms and questions about a partner reflected on them. Who you partner with is an important decision and hence some of the reluctance within organizations to deal with the risk particularly if the benefits of partnership are not clear.

While there is strong appetite for interoperability expressed in the interviews, there is the need to acknowledge the differences, challenges and tensions between standards. Some level of trust must be in place in order to get to this stage. Regular open dialogue is very important, especially on sensitive subjects. The ISEAL DIPI project saw a major shift in collaboration once there was a comfort level to talk frankly about the 'elephants in the room'.

"It isn't surprising that at a headline level we were all in agreement, but more emphasis is needed on areas of tension" – Workshop participant

4.4 OTHER CONSIDERATIONS FOR INTEROPERABILITY

It is important to note when thinking about interoperability that several of the MMM standards reviewed here and in previous research reports are either recently operational or still under development. This pose both challenges and opportunities in terms of interoperability. On one hand, it is a hypothetical exercise to determine how one standard could work with another that is not yet operational and does not have systems and governance structures in place. On the other hand, it is much better to design in interoperability or align with others, before the standard is developed, consulted on and agreed to by stakeholders. At later stages of development, there is often less flexibility for alignment and harmonization whether for joint working groups, recognition, shared processes or harmonization. Several of the emerging standards have the principle of interoperability in their Standard's Terms of Reference (e.g. IRMA, RS) and are working deliberately with a range of other standards to build in alignment and harmonization.

"For developing or emerging standards, building interoperability into the design is critical."

Comparative mapping of the standard content and systems requirements, as provided in Kickler and Franken (2017) and in the upcoming SSI Review provide detailed summaries of each standard and can be used as an excellent starting point for understanding other standards. It can be used to highlight common ground and areas of differences as a starting point, noting that these comparisons are high level.

However, it is important to note that these comparative studies are desk-based. As noted in the reports, they do not cover the performance of the standard, nor can they get at the details of the underlying systems. Another challenge is that they also become quickly out of date as systems evolve. Standard systems are complex and understanding the vast and nuanced differences in standards and the quality of their implementation of systems is very technical. A more in-depth analysis could be then conducted along specific sustainability priorities. Many interviewees noted that it is necessary to get to site/field level to truly understand how other systems operate and get into the nitty gritty details.

How can we make sense of all the ways in which a standard could potentially interoperate? A key challenge for the MMM standards interviewed and lesson learned from the agriculture sector is that **interoperability takes time, resources and commitment**. Leadership commitment and buy-in are essential.

Interoperability takes time, resources and commitment.

Timing can be everything. As previously noted, building in interoperability while in the design phase of a standard is ideal. For existing and operating standards, looking at standard revision cycles for language and requirement alignment may be one path forward. If undergoing system changes, consider the potential to approach partners to collaborate. A change in leadership can also open up new ideas, energy, priorities and even philosophies towards interoperability. One key driver of the RA and UTZ merger was considered the urgency of the global sustainability agenda, but the leadership change also created a critical moment.

Now what? How does an organization know where to invest its limited resources? How does an organization justify to internal and external stakeholders that investing time and resources to work with other organizations is a good idea? Especially when some may be considered 'competitors' for funding, stakeholders, in sustainability services and/or in markets (e.g. steel and aluminium). In the next section, a ToC approach is proposed to help standards identify common ground and opportunities for interoperability.

Aluminum ore
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5 FINDING COMMON GROUND – USING A THEORY OF CHANGE APPROACH

There is a high level of diversity among MMM standards and as discussed in the previous chapter, there are a multitude of ways standards can interoperate. MMM standards understand that there are synergies and efficiencies in working together – they 'get it'. They are already doing a lot in the area of interoperability but recognize the potential (and pressure) of doing more. The challenge is to identify when and how working together makes most sense. Where are the areas of tension? What can be learned from work already underway?

A ToC approach is proposed as a way to understand shared objectives (as identified by each organization's vision and goals) and the different approaches MMM standards use to achieve this shared vision. MMM standards each have different ToC, that is, different understandings of the drivers for their uptake and impact, and this in turn explains differences in the design of the standards, their activities, and their strategies. The project activities that contributed to the creation of this report included four workshops that adopted a ToC approach. Specifically, the workshops used the development and sharing of ToCs as a way to help MMM standards better understand their own goals and strategies and where interoperability or collaboration with other standards could help contribute to their own goals.

While ToC may sound theoretical and academic to some – it is a powerful strategic planning management tool (see → *Box 2*). ToC requires being explicit on:

- what you are trying to achieve – the end goals
- how will you achieve this – the strategies
- the results you expect to see – outputs, short and longer-term outcomes
- assumptions about how the strategy is supposed to work – the theory.

A Theory of Change (ToC) articulates what impact or change an organization is hoping to achieve and how its work brings about that change.

There are a number of excellent free public resources on ToC, and ISEAL provides community members with a wide range of tools and resources. A distinct advantage of a ToC approach for thinking about interoperability is that it specifically starts with end goals and works backwards (asking what would be needed to achieve that end goal), rather than starting with activities or strategies. This focus on outcomes can help to identify areas of shared objectives and goals quickly – even where strategies may be different. **This is important because a critical success factor for collaboration and interoperability identified from the agriculture sector and reinforced by interviews, is having shared goals and objectives.** When two organizations compare their ToCs, this quickly becomes obvious.

If a standard does not have a ToC, other organizational documents such as a strategic plan or log frame, can be used as the basis for thinking about the potential for and value of interoperability. The disadvantage of strategic plans or log frames is that they are often quite focused on activities and do not clearly articulate the logic behind activities and strategies.

Box 2: Theory of Change as a Strategic Tool

The term 'Theory of Change' may sound academic, but it is a powerful strategic management tool. ISEAL members are not required to have a ToC per se, but the elements such as clarity on goals, strategies and how to measure progress towards those goals is a required component of ISEAL's Impacts Code, with which all ISEAL members commit to come into compliance. Most companies have something quite similar in their strategic plan – the overall goals, objectives, performance measures to understand progress towards those goals. The key difference is that ToC is more explicit in defining assumptions as these can be hindering or enabling factors in achieving results. A good strategic plan will also identify the threats and opportunities, as well as include an external environmental assessment – so similar elements are in place to enable a discussion between standards whether using ToC or their strategic plan.

In the workshops conducted as part of this project, ToCs became a structured way for organizations to think about how interoperability fits within their own strategy and to look across organizations and discuss. Examining the distinct activities, actors and intended outcomes through this comparison of ToC, helps to understand where standards overlap or are complementary and where there are gaps in their approaches. These are the potential opportunities and benefits of interoperability between standards or for MMM standards to collectively interact with governments, industry sectors and civil society organizations to further their reach and outcomes.

"For me using the ToC to identify collaborations was useful – in the same way as using ToC should be used for every analysis of the organizations goals and means to achieve them! For me, the conceptualization of the ToC has had a great value in getting a grip on the complexities of the organization, and continues to be the framework – a skeleton – for thinking of what ARM is (or should be) about." Marcin Piersiak, Deputy Director of ARM

The ToC workshops explored and tested several different ways in which a ToC approach could help shed light on opportunities for interoperability.

1. Developing a ToC is a way for individual organizations to examine their own strategy and determine where interoperability would help achieve their end goals.
2. Individual organizational ToCs (or strategic plans) can be shared as a basis for 'getting to know one 'another'.
3. ToCs can be mapped within a generalized MMM sector framework to help show areas of overlap and complementarity or gaps.

The rest of this chapter describes each approach, how it was used in one or more of the ToC workshops, and what was learned about how useful this ToC approach was in promoting or identifying opportunities for interoperability.

5.1 THE THEORY OF CHANGE FOR SELF-REFLECTION ON INTEROPERABILITY

A defining feature of the Theory of Change approach is that it calls on organizations to ask what would be needed to help achieve their desired results. In doing so it reveals assumptions and weaknesses in logic and strategies for achieving impact. This reflective process can help generate insights about where interoperability is needed or could be useful to achieve end goals – particularly if this question is asked explicitly during the design of a ToC or in reflecting on a completed ToC.

Two of the ToC workshops, *China Chamber of Commerce of Metals, Minerals and Chemical Importers and Exporters* (CCCMC) and ARM involved supporting a specific standard organization to develop or refine its own ToC. The other two workshops involved multiple standards (December 18th, 2017 and March 5th, 2017) using ToC for sharing and learning more about each other's organizations.

- The first workshop held in London in December 2017 brought together four local standard initiatives to use ToC to facilitate interoperability. In this first workshop (ICMM, RS, RJC and BC), the different organizations began to understand each other's' systems and build trust between each other by pointing out common elements of a generic framework (e.g. capacity building, auditing, standard setting, lobbying) and asking them to describe their system accordingly. As participants were introducing their systems, they reflected on similarities and differences. These were often related to the actors in the supply chain that they work with and/or try to influence. Since this is central to opportunities for collaboration and interoperability, this was captured in a generic supply chain for MMM. In the workshop RS presented their ToC first. Starting this session of the workshop with an organization that has interoperability at the core of their strategy proved to be a useful step.

"The term 'Theory of Change' can be off putting, it sounds like international development. But understanding and focusing on the components is a useful tool. It can help to focus on impacts."
Workshop participant.

- At the March 5, 2018 London workshop participants found reviewing and discussing the individual standard's ToC useful because it highlighted common objectives and areas for collaboration. Participants particularly found the documenting and discussion of assumptions helpful to understand underlying assumptions about what has to happen in order to achieve the desired outcomes. The simple exercise also quickly highlighted some common challenges (e.g. how to define transparency) and gaps (e.g. "We work on both ends, but don't cover the middle part of the supply chain.").

"Very interesting seeing how they elaborated a very practical ToC; and integrated not only a logical change sequence but also assumptions to their ToC."
Workshop participant

- In the March 30th, 2018 workshop in China, CCCMC started with its log frame which articulated activities, outcomes, and impacts, but not the logic of how one would lead to the other or the time lag between activities and the desired results. By turning the log frame into the results pathways of a ToC, it was much easier to see these dependencies and where priorities needed to be in the short-run. In thinking about interoperability, this realization is critical because it indicates where CCCMC's attention needs to be in the short-run and hence on what activities are currently ripe for collaboration. In CCCMC's case, the ToC framing also helped better articulate how the different pieces of a standard system (from the standard to assurance to capacity building) all contribute to driving change in the behaviour of upstream and/or downstream actors. CCCMC is strong on the standard itself and has strong links to Chinese companies overseas; it does not yet have the infrastructure or systems in place for assurance. The ToC thus revealed the potential of partnership development with other MMM standards to help fast track the setup of an operational standard system – that is, to identify gaps.

- In the case of the ARM workshop in Colombia, the organization already had a ToC that served as the starting point. During the workshop, ISEAL facilitated the staff to reflect on how recent changes in organizational strategy might be reflected in modifications of the ToC. The group began to develop detailed causal pathways building from the existing ToC. This is required to get into the level of detail needed to identify the risks, gaps and assumptions. The ToC was then used as background to reflect upon places where existing and potential collaboration and interoperability are and could help deliver desired results. In the workshop, fruitful discussions identified several areas for further investigation – from joint communication to sector actors, to collaboration on data collection and evaluation studies for M&E, to capacity building for actors touched by multiple systems, to using interoperability to bring down the cost of assurance and increase the accessibility of the system.

ToC proved a useful framework for discussing interoperability, although neither CCCMC or ARM had, by the end of the workshop, formally decided to include interoperability as an element of their ToC. Although it might be a step the organizations take after further refining their ToCs after the workshop.

5.2 THEORY OF CHANGE – A DATING APP?

Engaging and information exchange about each organization and systems is a precursor and critical success factor to interoperability. Recognizing that they are seeking common outcomes, standards can then focus on those differences in the 'how to achieve those outcomes' – or their strategies. Are these similar? Is their potential overlap or duplication? Are they addressing different issues and potentially complementary? ToCs also frequently identify the actors that MMM standards are trying to influence or whose behaviour they are trying to change through their work. What part of the supply chain are they trying to influence? Which organizations do they have the most leverage over? In short, comparing ToCs has the potential to be a strategy for quickly getting to know each other in some degree of detail.

For this to be effective, it is important that this should not be a 'paper exercise' of looking at nice communications visuals,but using the discussion of and around the ToC – or a strategic plan – as a tool to unpack how the standard contributes to longer term outcomes and what has to be in place (assumptions). The idea of using a ToC as a 'dating app' was tested in two of the workshops, at the March workshop in London *(→ page 45)* and the CCCMC workshop.

The March workshop in Beijing brought together CCCMC, RJC, and RMI. The three organizations had ToCs in various stages of development and all had elements they would like to improve or further develop. Although the ToCs were not fully developed, they nonetheless serve as a useful way of quickly presenting the organizations to each other. The organizations quickly saw similarities in the outcome frameworks that inform their long-term sustainability goals. In addition, they identified similarities and differences in the audiences they are trying to reach and how they see partnerships contributing to their end goals. The conclusion was that the ToCs served as a useful introductory tool for then diving into deeper conversations about learnings and potential around collaboration.

Challenges are areas that could be potentially addressed together in a joint working group or project, e.g. a working group to define transparency. Gaps might be best addressed by partnering with another standard that addresses those areas (such as plug and play, recognition, shared processes). There is no prescription or specific tool but having a focused discussion around shared outcomes (results) can identify potential opportunities to collaborate. These ToC discussions can help identify potential complementary (rather than competitive) strategies.

5.3 MAP YOUR ToC USING A GENERALIZED FRAMEWORK FOR THE MMM SECTOR

Another potential way to use ToC in terms of MMM and interoperability is looking at a generalized ToC framework for the MMM sector. As each standard will have a different ToC, any generalized ToC would need to be at a high level and cannot pretend to capture the complexity of the sector. However, it can be a good starting point for an individual standard to understand where that standard fits into the bigger picture. A generalized framework could also be used as a basis for two or more standards to discuss how they think they fit into driving sustainability in the sector, and where they may overlap or complement one another.

Again, it is not a blueprint for exactly how to work together, but a basis for a structured discussion around shared outcomes or strategies.

At the first ToC workshop held in December 2017, ISEAL tested a simplified version of this approach. ISEAL proposed a structured framework against which to compare standards – looking at outcomes, minerals, and the parts of the supply chain and geographies touched by each standard and its strategies.

Mapping individual standards ToC along these common dimensions can be used to pinpoint the similarities or differences that show potential for interoperability. This could include vertical interoperability (standards along the supply chain build upon and recognize each other) and horizontal interoperability (different standards that cover the same part of the supply chain recognize and complement one another) [24]. This form of collaboration enables each standard to broaden their reach and/or respond to market requirements.

While this simple framework was useful, a more detailed generalized framework could provide further insights. An example of this is provided in → *Figure 3*.

From the interviews and the ToC workshops, looking across the visions and missions of several of the MMM standards, it is clear there are elements of a common shared vision such as: **resilient, competitive, reputable sector that contributes positively to sustainable development**.

At this level, there is broad alignment. Sustainable development is complex and there is the recognized need to work with partners. SDG 17 explicitly acknowledges that partnerships are fundamental to achieve the other goals. Partnerships must be built upon shared "principles and values, a shared vision, and shared goals". There is also some alignment in the specific sustainability goals that many standards have prioritized, as they draw on similar frameworks (e.g. UN Guiding Principles).

Starting with a generalized framework, the individual standard can identify their organization's ToC based on their role (mission) in achieving this vision and stakeholder priorities. Basically, understanding their **contribution** to the higher vision and where their organization fits in. On the following page is a proposed framework that could be used for this purpose. The framework tracks the link between activities, outputs, outcomes and impacts. On the right-hand side of the → *Figure 3* are the kinds of activities, outputs, outcomes that many MMMs expect to bring about in the **enabling environment**. On the left-hand side are examples of the changes expected in **supply chain** actors and those touched by them. In the middle are the types and forms of interoperability between standards that can contribute to the collaborative achievement of these types of activities, outputs, or outcomes.

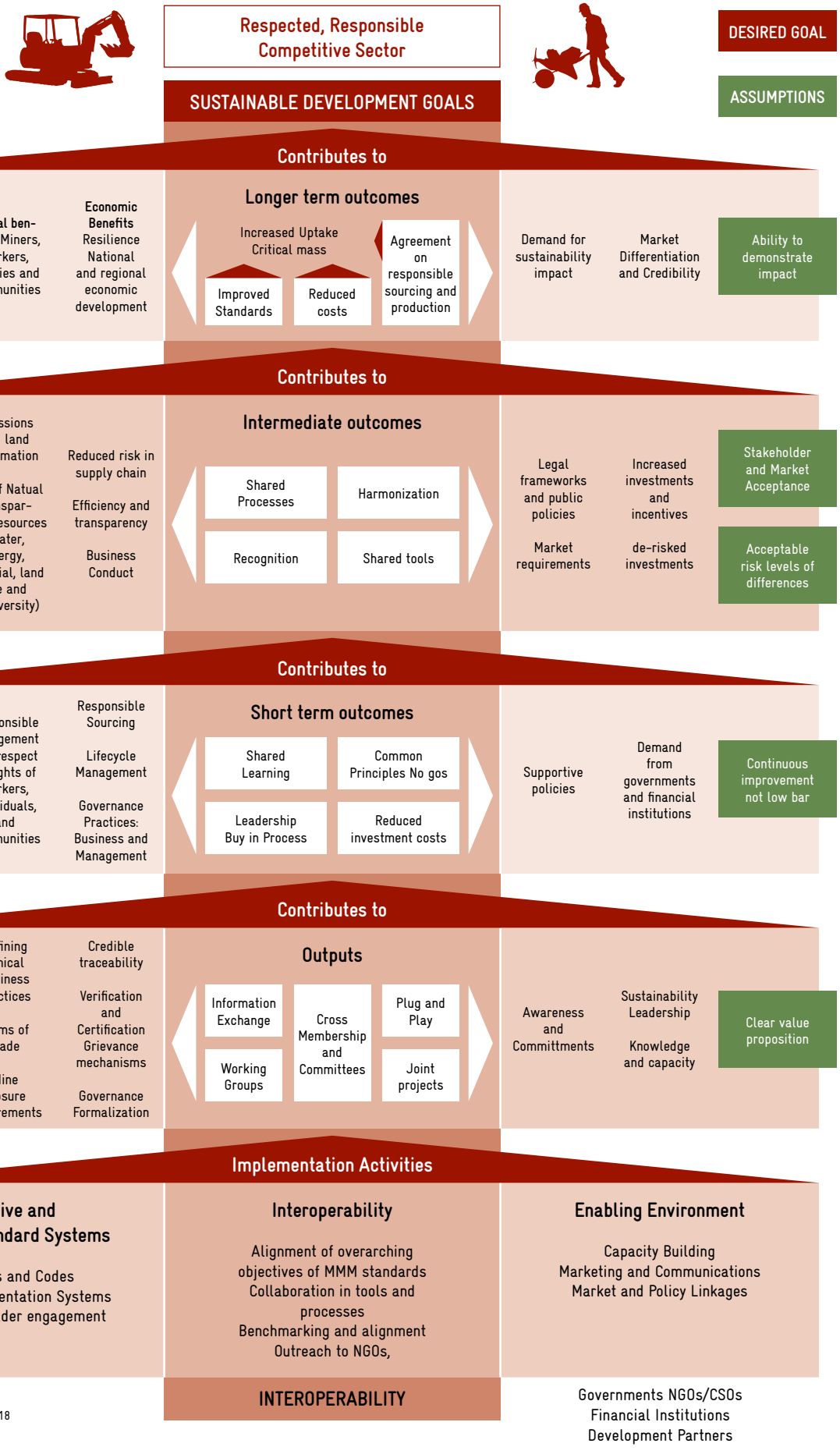
Interoperability itself can be a key strategy for a standard to achieve more (increased reach) better and faster (efficiencies) – thus amplifying its impact. The fundamental hypothesis (ToC) is that the standards can go further together.

"If you want to go fast, go alone, if you want to go far, go together." – African proverb

The specifics can be tailored to each standard, depending on how and why they want to work with other standards – the objectives, the benefits and the added value to interoperability. There is no one size fits all. It will depend on many factors, including stakeholders, maturity, size and mission.

24 Rüttinger and Scholl (2016)

Figure 3: Generalized ToC Framework for Interoperability MMM Sector



RJC is an example of a standard that has explicitly included interoperability as a key element of its ToC. RJC works towards collaboration and harmonization across sourcing initiatives in order to support uptake and demand of sustainable practices along the supply chain.

If multiple standards used this or a similar framework, to map their own strategies, each standard could understand better where there are overlaps in strategies, stakeholders or outcomes (which could indicate potential areas for alignment, harmonization or shared processes) and gaps (potential areas for collaborating with joint working groups, use of other tools and processes with plug and play, joint projects, recognition or investing in shared processes).

The generalized ToC (→ *Figure 3*), also identifies the roles played by the different actors – including governments, civil society organizations, companies, and financial institutions. It can help identify opportunities to influence these actors **together** with a unified voice – such as advocacy, or with a common agenda on a specific topic. In the March 5th, 2018 workshop in London, participants discussed the possibility of working together to leverage civil society organizations (CSO) to advocate for support of a more responsible MMM sector. For example, rather than standards focusing on working with individual NGOs on issues, it was suggested to work together to get the NGOs to advocate with governments. NGO/CSO advocacy interoperability could create efficiencies and saves resources, while creating a consistent message regarding sustainability in the MMM sector.

Reflections on Using a ToC Approach

The ToC workshops proved to be a useful approach for eliciting reflection and discussion about interoperability. ToCs are a good starting point for a conversation across multiple standards – a useful way to quickly generate understanding of similarities, differences, complementarities and gaps across the systems. Also, as ISEAL has seen with other standards in the past, the process of discussing and developing a ToC leads to very useful introspection and more clarity on goals and strategies. For any individual standard, this will naturally lead to more clarity about how and where collaboration with other standards would make sense. Specifically adding questions about the potential for or need for interoperability into the ToC development process is a way to encourage reflections on the power and value of collaboration with other standards.

A common observation to come out of the ToC workshops was the potential for vertical interoperability (standards along the supply chain build upon and recognize each other) and horizontal interoperability (different standards that cover the same part of the supply chain recognize and complement one another) [25]. To be able to visualize this, it is important that the ToCs or the workshop format specifically address the position of activities and influence along the supply chain.

Similarly, if ToC is to be used to think about collaboration on M&E, then it is important that the ToCs or workshops focus explicitly on the intended specific sustainability outcomes of the different standards and on their specific changes in behaviour, practice, or outcomes. The ToC workshops referred to above did not get into that level of detail, in large part because there was already so much to discuss at a much higher level. For standards that see potential in collaborating on M&E, it would be important to re-examine the ToCs from that perspective.

25 Rüttinger and Scholl (2016)

Cross section of red agate mineral
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6 CONCLUSIONS AND RECOMMENDATIONS

There is growing pressure for MMM standards to collaborate to maximize their effectiveness. Many MMM standards are leaders in interoperability and some even see it as an 'entrepreneurial opportunity'. **The time is now.** The previous sections outlined a number of lessons learned and critical success factors for interoperability of MMM standards. Using a Theory of Change approach helps to understand opportunities for interoperability and identify the benefits and added value.

The first step of interoperability is to have a clear idea of the objectives and strategies of the different standards. Understanding the differences, identifying where they are competitive and complementary is critical. Getting explicit about governance, stakeholders and assumptions in how each standard achieves its goals is important. A ToC approach which focuses on (shared) outcomes is an excellent tool to find common ground – it could be as simple as agreeing on common principles, operating in common geographies, advocacy with governments or supply chain requirements.

It is critical that each standard be clear about their motivations and objectives for interoperability. What does each standard bring to the table – in terms of assets? And what does each standard expect to get out of it that is, what is the added value? Each standard needs to understand: 'What is in it for me?' Is it cost savings? Increased market opportunities? Stream-lining? Or something else? As reinforced in the workshops **it clearly has to add value**.

The next step is to get senior-level, organizational and stakeholder buy-in. With a clear value proposition, this will be easier (not easy).

The overwhelming advice from initiatives was to start small, build trust and be creative and above all find common ground in a non-competitive space that adds value. There is a strong interest to have a space for sharing and learning across MMM initiatives. Although there is recognition of the opportunities and of the value of collaborating with other sectors, in particular, agriculture and forestry, there is a strong sentiment to highlight the MMM sector as leaders in interoperability the sustainability standards sector.

A unique space for MMM initiatives would help to drive impact collectively. Cross-sectoral sharing and learning should be targeted where the experience of other sectors can be brought in and/or where there are common challenges that would be better served working together such as: technical tools, methodological challenges (e.g. FPIC and landscape approaches), or institutional challenges such as data governance policies and procedures. MMM standards are ahead of other sectors in landscape approaches and can contribute, as well as learn from other sectors.

The highest priorities for interoperability identified by the MMM initiatives are joint assurance tools and shared Key Performance Indicators. In addition, to the establishment of working groups which will help move from them from theory to action. It was noted that working groups should have clear objectives and decision-making processes to ensure success.

Other suggestions for MMM collaboration include:

- adopt a common framework with key performance indicators, using the SDGs
- adopt common principles (high level) including critical or baseline issues
- establish cross sectoral learning working groups on specific challenges such as FPIC or others to be determined
- create How-to-Guides on specific topics such as data sharing and data governance guidance (learning from the agriculture and forestry sector).

There is a lot of interest in developing a best practice guide, on responsible MMM standards **including what does not work**. Thus, a key recommendation is to build upon the lessons learned to create a 'How-to-Guide to Interoperability' with case studies and best practices. This report highlights a wealth of experience and knowledge within the MMM sector and the ISEAL community in terms of interoperability. The examples provided in this report only begin to scratch the surface of the work and lessons learned out there. The Guide could take these lessons learned a step further and create specific guidance including templates with guiding questions for a quality discussion with potential partners. It could cover critical topics such as governance (who and how are decisions made) as well as business models.

Best practices and lessons learned would be compiled in the Guide including the issues and challenges discussed in this report, such as shared processes and joint audits. A methodology for a ToC could also be developed to assist a guided discussion among potential partners.

Another key recommendation is to encourage information sharing and exchange among MMM standards, as well as with other sectors. This could be by convening an interoperability discussion platform, conference or conference session within an existing industry conference to provide a space for these discussions and also to raise awareness of just how much interoperability is going on in the MMM sector. This should also include cross-sectoral opportunities for exchange.

Key recommendation: to encourage emerging standards and operational standards undergoing revision processes to explore how to integrate interoperability at a strategic level and systems level.

Finally, as with the research interoperability, it **is strongly recommended to coordinate efforts on interoperability** and to share learning and avoid duplicating efforts. The SSI Review report identified two key initiatives:

"While much of the future may simply be born out of market pragmatism and consolidation, two initiatives currently underway could be said to be taking a lead in promoting consolidation more proactively. On the 'private' side of the spectrum, *RESOLVE*, a US-based NGO with historical roots in the development of certification in the mining sector, has taken on the facilitation of discussions initially brokered under the *World Economic Forum* seeking opportunities for streamlining and coordinating the diversity of voluntary initiatives in the mining sector. On the 'public' side of the spectrum, the OECD-D set a common set of baseline practices that potentially offer a springboard for consolidating what can be expected to be considered credible voluntary approaches for the mining sector."

Finally, there are many ways standard supporters (e.g. development cooperation, donor agencies, foundations, ISEAL Alliance) can promote and foster interoperability. They can create a neutral convening space and focused opportunities to enable potential partners to identify opportunities and build trust. They can support cross-sectoral learning and promote how to get started with 'How-to-Guidelines on Interoperability'. They can provide the necessary resources to address one of the biggest challenges to further interoperability that is, time and resources. The agenda should be driven by the MMM sector itself in terms of what is most important that is, what adds value and is most relevant.

What will future MMM standards look like? We are certain interoperability will play a key role.

Cross section of quartz
© shutterstock/Aerodim

7 REFERENCES

Fiorini, M., Schleifer P., and Taimasova R. (2017). Social and environmental standards: From fragmentation to coordination. International Trade Centre, Geneva. 44 pages
http://www.intracen.org/uploadedFiles/intracenorg/Content/Publications/ITC-EUI%20Report%202017_final_Low-res.pdf.pdf

IISD (2014). State of Sustainability Review: Standards and the Green Economy. International Institute of Sustainable Development. Authors: Jason Potts, Matthew Lynch, Ann Wilkings, Gabriel Huppé, Maxine Cunningham, Vivek Voora. Winnipeg, Canada.

IISD (*in press*)**.** State of Sustainability Initiative Review: Mining and Minerals. International Institute of Sustainable Development. Authors: Jason Potts, Matthew Wenban-Smith, Matthew Lynch, and Laura Turley. Winnipeg, Canada.

Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (2017). Global Trends in Artisanal and Small-Scale Mining (ASM): A review of key numbers and issues. Winnipeg: IISD. 91pp
https://www.iisd.org/sites/default/files/publications/igf-asm-global-trends.pdf

International Finance Corporation (2013). Building a roadmap to sustainability in agro-commodity production.
https://www.ifc.org/wps/wcm/connect/2fc71b0042cf55d987c5ef384c61d9f7/2013+IFC+Standards+Study.pdf?MOD=AJPERES

ISEAL and Proforest (2012). Methodology for Recognition and Harmonization Processes among Sustainability Initiatives Working Paper: Sustainability Standards Transparency Initiative. (Internal Report) Proforest, Oxford, UK. 40 pages

Kickler, K. and Franken, G. (2017). Sustainability Schemes for Mineral Resources: A Comparative Overview. Bundesanstalt für Geowissenschaften und Rohstoffe (BGR) [Federal Institute for Geosciences and Natural Resources] Hannover, Germany. 170 pages

Mori Junior, R., Franks, D. and Ali, S. (2015). Designing Sustainability Certification for Impact: Analysis of the design characteristics of 15 sustainability standards in the mining industry. Centre for Social Responsibility in Mining, University of Queensland. Brisbane. 54 pages

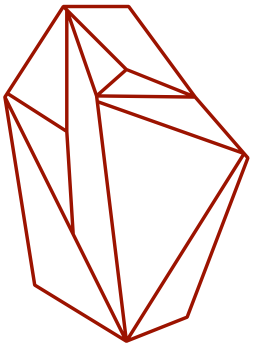
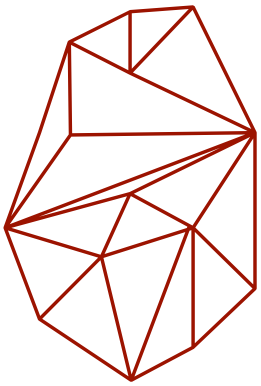
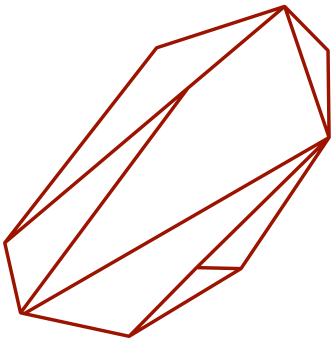
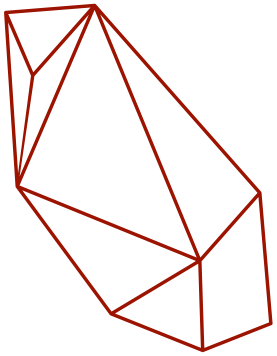
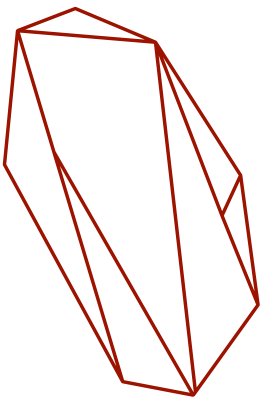
Mori Junior, R., Sturman, K. and Imbrogiano, J. (2017). Leveraging greater impact of mineral sustainability initiatives: An assessment of interoperability. Centre for Social Responsibility in Mining, Sustainable Mining Institute, University of Queensland. Brisbane. 79 pages

Responsible Mining Foundation (2017). Methodology Report 2017 for 2018 Responsible Mining Index. Responsible Mining Foundation. 136pp *https://responsibleminingindex.org/methodology-report-2017*

Rüttinger, L. and Scholl, C. (2016). Responsible Mining? Challenges, Perspectives and Approaches. Adelphi on behalf of the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety. Berlin, Germany. 37 pages
http://www.umweltbundesamt.de/publikationen

Sturman, K. (2018). Synthesis report on current German studies of mining and metals sustainability standards. Centre for Social Responsibility in Mining. University of Queensland, Brisbane, Australia. Internal report.

World Economic Forum (2016). Mapping Mining to the Sustainable Development Goals: An Atlas. White Paper. World Economic Forum, Geneva, Switzerland. 77 pages.
http://www.undp.org/content/undp/en/home/librarypage/poverty-reduction/mapping-mining-to-the-sdgs--an-atlas.html

8 APPENDICES

Appendix 1:
Interview and Survey Key Findings 58

The key findings of the interviews and findings are integrated into the report but presented together in one table.

Appendix 2:
Interoperability Snapshots 61
Snapshots of the standards and initiatives which participated in this research report, with a focus on interoperability. These snapshots are modelled and borrowed from Kickler and Franken 2017, an excellent resource for a more in-depth overview of the MMM standards. While, the snapshots below are not as detailed on the scope and documentation of the systems in order not to repeat them, they are designed to focus on key system elements, in relation to interoperability.

Appendix 3:
Interoperability Examples in Agriculture, Forestry, Marine Fisheries Standards Systems 80
Further detailed examples of cross-sectoral learnings in terms of interoperability of standards.

Appendix 4:
Methodology 86

An overview of the methodology including interviews, surveys and workshop participants.

Appendix 5:
German Research Overview 88

Overview table of key research documents

APPENDIX 1: INTERVIEW AND SURVEY KEY FINDINGS

Research Question:	Key Findings:
1. Has your organization internally discussed interoperability?	**The majority said yes and it is becoming more strategic and less opportunistic** • Some organizations made explicit reference to interoperability in their strategic plans (ARM, RJC, RMI RBA, RS), ToC (ARM, RJC, RMI RBA, RS), or have a separate budget line • Many reflected it in their values, principles and communications (e.g. RJC, ASI, RS websites) • For some it is a fundamental, essential part of their organization's DNA (IRMA, RS, RJC, and PEFC). • One example of good practice is ASI's 'Benchmarking and Harmonization Working Group' • Some organizations' approach remains opportunistic • For one organization once but with no success
2. Does your standard make explicit references to encourage or require interoperability?	**Yes reference to guidance and international conventions is widespread** • Majority of standards make reference to ILO, OECD-D, EITI • Many make reference to – ISO, UN Guiding Principles, ICMM, IFC PS, ICMC, and OECD Convention against Bribery, Stockholm Convention, and Rotterdam Convention. • While others do reference but it is specific to their issues and scope • Some key sources are not regularly cited e.g. IUCN Red List, Key Biodiversity Areas
3. Does your standard recognize compliance with other standards for partial or full compliance with your standard's requirements?	**Yes and growing with different models: vertical and horizontal** • Approx. 50% for those standards that are operational • This is a growing trend for most standards and is the intention for a number of emerging initiatives • Partially covered under existing research but many nuances in types of recognition that affect outputs of interoperability • Types of recognition include: one way, bilateral, partial, full and stepwise • Examples: ASI, BCI, Fairtrade, LBMA, MAC TSM, RJC, RMI RBA • One example of good practice is ASI's 'Summary Table of Recognised External Certification Schemes in its Assurance Manual'
4. What do standards organizations see as the key opportunities to interoperability?	**Standards organization identified extensive and diverse opportunities of interoperability** • Reduced audit burden and fatigue: avoids duplication, increases efficiency • Pool resources: sharing knowledge and best practices • Members and stakeholders deliver value, address their priorities and attract further support • Opportunity to engage with both upstream and downstream parties • Expand reach both in terms of new national markets and actors • Creates a louder voice for advocacy • Creates more value • Better to work in partnership than in isolation or silos • Scale-up more rapidly

Research Question:	Key Findings:
5. What did standards organizations see as the key challenges to interoperability?	**Wide agreement interoperability is resource intensive and challenges are context specific** • Need to make financial, time and human resource investments • Different governance models • Data sharing and confidentiality • Specific challenges: different degrees of maturity, risk and hot spot issues of specific commodities, competition, priorities • Suggested good practice: need good working examples of interoperability for others to follow to overcome challenges
6. Which system elements and characteristics are most likely to facilitate interoperability? What are the critical success factors?	**It is less technical, more institutional and political** • Interest and willingness are prerequisites, appetite is high • Leadership • Personal relationships or personalities • Senior level buy-in • Trust • Identifying common goals, objectives and values • Formalization of objectives and expectations e.g. MoUs • Convening common stakeholders • Membership support
7. What are the system elements and characteristics most likely to hinder interoperability?	**The devil is in the detail!** • Different assurance mechanisms, governance systems and non-aligned risk profiles; and different geographies (and therefore different national level requirements), • Different ToCs • The nitty gritty details: from different auditor approval mechanisms and audit frequencies, reporting requirements to agreeing on common terms • Remember you are adding another layer of complexity!
8. Are there examples of interoperability in your assurance and traceability? Opportunities and challenges?	**More than 50% of standards are making some efforts in interoperability in relation to their assurance and traceability systems** • Too early to tell for some initiatives, but high interest • Efforts have been mostly around recognition • Some joint capacity building and auditor training • Interest in doing more recognition and CoC plus auditor registry • Opportunities fill gaps and drive uptake (key to address efficiencies and audit fatigue) • Challenges: different risk profiles, timing of revisions, sharing data • Examples: RJC and ARM; RJC and MAC TSM, LBMA and LPPM
9. In terms of Monitoring & Evaluation (M&E) do you see opportunities for interoperability? What are the key challenges?	**Common framework and KPIs** [26] • Many standards agreed a common framework (principles) and KPIs would be very useful for alignment and reporting on impact • Opportunities: data sharing platforms, sharing ToCs • Best practice sharing would be very valuable • Challenges: sharing data as data is power. Need clear data governance and data sharing guidance

26 Note there is currently a research project at the Centre for Social Responsibility in Mining (CSRM), University of Queensland, Australia contact: Kathryn Sturman. "Research on impact assessment of mineral sustainability standards".

Research Question:	Key Findings:
10. What do you see as the direct and indirect benefits of interoperability?	**Wide range of benefits but in relation to effort** • Expand reach as this benefits members –also expanded reach in terms of new geographies, sectors, commodities • Adding value to members, companies, clients: – aligning when they operate across different geographies, sectors, clients – simplifying for them how to be 'sustainable' by recognizing specific standards and gaining market efficiencies • Efficiencies: stream line the audit process, reduce duplication • Align with best practice (raise the bar) • Leverage assets: get there faster with others
11. Key hot issues of interoperability?	**No surprises but use the process to get to know one another** • Opportunity to align on definitions and methodologies is critical • Previous research recommendation (working groups) • Start with a few key issues that are important across initiatives • Several organizations noted human rights (including FPIC and Modern Slavery) • A few noted waste (including mine tailings) as key issues that all could come together on • Also energy, climate change & GHG
12. Are there any lessons learned in relation to interoperability that you can share?	**Lots of experience out there including from other sectors** • Start with a clear idea of what you are willing to give– it has to be a win-win situation • Clarity on assets everyone brings, expectations and objectives • It takes time but do not shy away from being creative • Need to agree on a clear decision-making process from the outset • Get internal buy-in and really question your assumptions • It is hard work and may take longer than you expected • Unpack terms together with stakeholder groups
13. Do you think interoperability can address standards proliferation?	**Might not be the right question?** • About half said yes but many noted that different schemes are not the issue, but overlaps and lack of transparency on the differences • Proliferation is not naming the issue, many efficiencies to be gained (e.g. using same certification body, accreditation body), but different business entities (will still be needed) for branding and differentiation.

APPENDIX 2: INTEROPERABILITY SNAPSHOTS

Standard Snapshot: Alliance for Responsible Mining (ARM)
Website: www.responsiblemines.org/en

Mission	ARM works to transform the ASM sector into a socially and environmentally responsible activity, while improving the quality of life of artisanal miners, their families and communities
Type of initiative	**Voluntary sustainability standard and certification**
ISEAL member	Subscriber
Established/ operational?	Established in 2004. ARM developed the first standard for the ASM sector in 2007. Then ARM had a partnership with Fairtrade International to develop the Fairmined-Fairtrade Standard; their standards decoupled in 2013. Operational
Scope	**Geographical scope:** Global, low-income production countries in Latin America, the Caribbean, Africa, Asia and Oceania, global buyers in consuming countries (US, Peru, Colombia, Europe, Asia and Oceania) **Target commodity:** Gold and associated precious metals, e. g. silver and platinum from ASM **Supply chain coverage:** Entire supply chain with different application of the standard from the upstream (mining organizations) to the downstream companies **Assessment Unit:** Mining and processing
Scheme elements	• Fairmined Standard 2.0 (2014) • Piloting open sourced market entry 'standard' called 'CRAFT' as for code of risk-mitigation for ASM engaging in formal trade. It is developed under a Creative Common License. • Assurance system operational – 3rd party certification • M&E system in development • ToC 2017
Interoperability Various types	• LBMA: Fairmined certification recognized as supporting evidence to demonstrate compliance with LBMA requirements • Fairtrade because their standards are both based on the common 'Fairmined-Fairtrade Standard' • OECD-D in particular Appendix 1 of its 'Supplement for Gold' • Better Gold Initiative (working group with others – including pre-certification) • Assurance and traceability with RJC: the RJC CoC Standard accepts Fairmined Gold as qualified material ('eligible material') that is authorized to mix with RJC Gold in terms of fulfilling OECD-D • MoU signed between RJC and ARM for different collaborative actions • ARM reserves the right to recognize comparable audits by third party auditors • Governance – CRAFT Advisory Group and Standard Committee includes LBMA, RJC, RMI, IRMA, Swiss Better Gold Association. OECD is an observer.
Date	May 3rd, 2018
Based on	Kickler and Franken 2017, interview, ARM website, review by standard

Standard Snapshot: Aluminium Stewardship Council (ASC)
Website: www.aluminium-stewardship.org

Mission	ASI's mission is to recognize and collaboratively foster responsible production, sourcing and stewardship of aluminium
Type of initiative	Voluntary sustainability standard and certification
ISEAL member	Subscriber, applied for associate membership in 2018
Established/ operational?	Established as a standards-setting project in 2012 and incorporated as a legal entity in 2015. In December 2017, ASI launched its new certification program, including the ASI Performance Standard and ASI Chain of Custody Standard.
Scope	**Geographical scope:** Global **Target commodity:** Aluminium **Supply chain coverage:** Entire supply chain from bauxite mining, alumina refining, aluminium smelting, aluminium, re-melting ore refining, cast houses, semi-fabrication, material conversion, other manufacturing or sale of products containing aluminium. **Assessment Unit:** All facilities
Scheme elements	• ASI Performance Standard V2 (2017) plus Guidance (2017) • ASI Chain of Custody Standard, V1 (2017) plus Guidance (2017) • ASI Assurance Manual V1 (2017) • ASI Claims Guide V1 (2017) • ASI Complaints Mechanism V1 (2015) • ASI Auditor Accreditation procedures • M&E system (in development for finalizing 2018) • ToC
Interoperability	Collaboration with other standards and initiatives in mining and metals sectors Potential future expansion to other commodities MoUs with other organizations e.g. International Aluminium Institute Referral to other standards for information or guidance, includes: • GRI-M Mining and Metals Sector Supplement • ICMM: Good Practice Guidance on Mining and Biodiversity; Good Practice Guidance on Indigenous Peoples and Mining; Overview of Leading Indicators for Occupational Health and Safety in Mining; • IFC PS 1 (Environmental and Social Impact Assessment), 5 (Resettlement), 6 (Biodiversity), 7 (Indigenous People), 8 (Cultural Heritage) • EITI standard • ILO Labour Conventions and Convention 169 on Indigenous Peoples • OECD-D • UN Declaration on the Rights of Indigenous Peoples • UN Framework Convention on Climate Change • UN Guiding Principles on Business and Human Rights • UN World Heritage Convention • UN Convention on the Elimination of all Forms of Discrimination Against Women Recognition of other standards for the proof of compliance of certain issues Benchmarking and Harmonization Working Group was created and the harmonization requirements are included in the Assurance Manual and in ASI's online assurance platform 'elementAl' CoC designed to be able to recognize responsible mining standards (e.g. potentially IRMA, when launched) Uses proxy accreditation model that recognizes other relevant accreditation schemes
Date	April 10th, 2018
Based on	Kickler and Franken 2017, interviews, ASI website, review and input ASI Secretariat

Standard Snapshot: Bettercoal Code (BC)
Website: https://bettercoal.org

Purpose	Their purpose is to promote the continuous improvement in the mining and sourcing of coal for the benefit of all people impacted by the industry, workers and coal mining communities
Type of initiative	Voluntary sustainability standard development and verification
ISEAL member	Subscriber
Established/ operational?	Initiative established in 2011. Operational since June 2013.
Scope	**Geographical scope:** Global **Target commodity:** Coal **Supply chain coverage:** Coal extraction, cleaning, warehousing, trading and transportation. Single commodity, multiple sectors. Large-scale operations **Assessment Unit:** Mine site
Scheme elements	• Standard: The BC Code (Version 1) was launched in June 2013. In 2017 changes have been made to Provision 5.4 (Conflict-Affected and High-Risk Areas). BC Code Version 1.1 supersedes all previous versions. • Assurance: The BC Assurance System has two components: Supplier Assessment Process and the Members Implementation and Reporting Obligations. BC independently assesses the performance of coal mining operations against the ten principles of the BC Code through the Supplier Assessment Process. Members use this information in their due diligence processes and purchasing decisions. BC monitors Members' performance against a set of obligations (Members Mining and Reporting Obligations) to which they adhere when they join the initiative. These two components aim to demonstrate evidence whether BC suppliers are meeting the requirements of the BC Code and that members are using the information from the assessments in their due diligence processes. • M&E system: under development • ToC: Draft not public yet
Interoperability	The RJC's 'Code of Practices' was used as a basis for the BC Code. Associate member of RS Discussing with Earth Observation around a common database (internal) Discussions with IRMA for cross-recognition Discussions with other standards around issues including, FPIC Referral to other standards for information or guidance • GRI Sustainability Reporting Framework • IFC PSISO 14001 and Occupational Health and Safety Assessment Series (OHSAS) 18001 • Social Accountability (SA) 8000 • ICMM • EITI • UN Guiding Principles on Business and Human Rights • OECD-D Recognition of other standards for the proof of compliance of certain issues Under development. BC recognizes that coal-mining companies may have undergone internal and/or third party audits covering areas similar or equivalent to those covered by the BC Code. BC is currently developing guidance on the equivalence of existing certifications for assessors on which commonly used standards and certifications shall be considered equivalent to the BC Code during a BC assessment.
Date	April 11th, 2018
Based on	Kickler and Franken 2017, project interview, website, tandard review and input

Standard Snapshot: Chinese Overseas Mining Sector Guidelines (Corporate Social Responsibility Guidelines and Supply Chain Due Diligence Guidelines) from CCCMC
Website: http://cccmc.org.cn http://en.cccmc.org.cn

Mission	The major functions of CCCMC are to abide by the laws and administrative regulations, to coordinate and instruct the import and export activities of members according to the constitution; to ensure the normal import and export operation and interests of members; to make coordination efforts in responding to the anti-dumping lawsuits from abroad and to make investigations and research
Type of initiative	Subordinate unit of Ministry of Commerce of China and registered in the Ministry of Civil Affairs of China. Established Guidelines.
ISEAL member	No
Established/ operational?	CCCMC was established in 1988 with Guidelines for Responsible Mineral Supply Chains put in place in 2014
Scope	**Geographical scope:** Global, where Chinese companies are operating **Target commodity:** All mineral resources and their related products (i.e. ores, mineral concentrates, metals, derivatives and by-products). Prioritizing gold, tin, tungsten and tantalum. **Supply chain Coverage:** Entire supply chain – all Chinese companies which are extracting, trading, processing, transporting, and/or otherwise using mineral resources and their related products and are engaged at any point in the supply chain of mineral resources and their related products **Assessment Unit:** Company
Scheme elements	• Corporate Social Responsibility Guidelines: 2014 • Supply Chain Due Diligence Guidelines: 2015 • Assurance: Companies have an individual responsibility to carry out their supply chain due diligence, conduct any necessary third-party audit thereof and publish their due diligence policies and practices, according to the guidelines. Self-assessment and third party assessment tools are being developed. • M&E: No • **ToC:** In development
Interoperability	Referral to other standards for information or guidance • OECD–D, UN Guiding Principles on Business and Human Rights • ILO Core 8 • Good Practice Guide on Indigenous Peoples and Mining published by the ICMM, ILO Convention 169, concerning Indigenous and Tribal Peoples, UN Declaration on the Rights of Indigenous Peoples: FPIC • The Conflict-Free Smelter Program of the CFSI developed by EICC – now RBA, Global e-Sustainability Initiative; the Conflict Free Gold Standard of the World Gold Council (2012); the Responsible Gold Guidance of the LBMA (2012); the CoC Certification of the RJC (2012); the iTSCi and the Fairtrade and Fairmined Standard for Gold from ASM of the ARM/Fairtrade Labelling Organizations • International (2010). Further, complying with these guidelines reinforces conformance with the recommendations of the Financial Action Task Force for anti-money laundering and combatting terrorist financing, as well as with the standard set forth under the EITI. Reporting payments made to governments for mineral extraction is required in 48 EITI implementing countries. Standards Considered for development of Guidelines • BC, EITI – now RMI, Global Compact, UN Guidelines, ILO, ICMM, IFC, OECD, RJC, UNEP Guidance for the Mining Industry in Raising Awareness and Preparedness for Emergencies at Local Level

Interoperability	Cooperation and collaborations • Working with RBA RMI on capacity building • MoU with ICMM for capacity building and services to company members • Business network 'Corporate Social Responsibility' Europe for an entire supply chain governance approach • Exchange and cross learning with various other initiatives including MAC TSM, IFC, OECD, LBMA, RJC on joint projects, alignment and shared processes • Working with others on pilots of audit protocols and supply chain tools
Date	April 1st, 2018
Based on	CCCMC website, in person workshop and interview, guidelines

Standard Snapshot: FairMagnet
Website: www.fairmagnet.org

Mission	FairMagnet aims to comply and improve environmental, economic and social standards along the entire supply chain of raw magnets. FairMagnet is a Sino-German Cooperation to increase environment, health and safety (EHS) in industrial magnet production.
Type of initiative	Not for profit, voluntary industrial alliance based on a publicly co-funded project of the German Investment Corporation
ISEAL member	Not yet
Established/ operational?	In founding stage in form of an interdisciplinary working group
Scope	**Geographical scope:** Focus is the introduction of sustainable production- and working conditions in the processing of rare earth in China **Target commodity:** Rare earth elements and raw magnets **Supply chain coverage:** Entire supply chain of raw magnets
Scheme elements	FairMagnet is guided by the ten principles of the UN Global Compact and offers a four step certification process for raw magnet manufacturers: • independent factory assessment of EHS standards of process, requirements and guidelines. • FairMagnet analyzes the EHS-assessments and creates individual EHS training for each raw magnet manufacturer • Plans for implementation and recommended course of action are given. The audited factories will receive professional support on implementing the recommendations • The last step is an evaluation of implementation and progress checks – or re-audits M&E system under construction.
Interoperability	No mutual recognition has been institutionalized as of yet but open for partnerships Interested in exchanging information, best practices and lessons learned Harmonization with other standards and auditing procedures to find synergies
Date	April 5th, 2018
Based on	Website, paper survey, reviewed

Snapshot: Fairtrade Standard for Gold for ASM
Website: https://www.fairtrade.net/products/gold.html

Mission	To connect disadvantaged producers and consumers, promote fairer trading conditions and empower producers to combat poverty, strengthen their position and take more control over their lives.
Type of initiative	Voluntary sustainability standard and certification
ISEAL member	Full Member
Established/ operational?	Established in 1997
Scope	**Geographical scope:** Peru and pilot mines in East Africa (the Fairtrade Labelling Organization focuses on the southern hemisphere and excludes members from the EU and G8-countries) **Target commodity:** Gold and associated precious metals, e. g. silver and platinum from ASM **Supply chain Coverage:** Mine site to retail (for traders additional requirements are set by the generic Fairtrade Trader Standard) **Assessment unit:** Gold mining organization
Scheme elements	• Standard version 1.0 from 2013 (before the decoupling of standards between the Fairtrade Labelling Organization and ARM the joint Fairmined standard from 2009 was valid) • Standard version 1.2 from 2015, next revision: 2018 • Assurance system developed with 3rd party accredited certification • M&E and learning system operational for more than 10 years • ToC public
Interoperability	• ARM Fairmined Standard for Gold from ASM, including associated precious metals
Date	March 30th, 2018
Based on	Kickler 2017, IISD SSI (in press), Fairtrade website

Standard Snapshot: International Council on Mining and Metals (ICMM)
Website: www.icmm.com

Mission	In collaboration with others, we the ICMM wants to strengthen the social and environmental performance of the mining and metals industry and build recognition of its contribution to local communities and society at large
Type of initiative	Multi-stakeholder initiative of companies, national and regional mining associations and global commodity associations established for development of standard and implementation
ISEAL member	No
Established/ operational?	Organization established in 2001. Ten ICMM Principles (2003).
Scope	**Geographical scope:** Global **Target commodity:** All mineral commodities **Supply chain Coverage:** Mine site and first level of processing **Assessment Unit:** All facilities, all mine sites
Scheme elements	Standard • ICMM ten Principles (2015) that address the key challenges of mining. Eight Position Statements to accompany and strengthen the ten ICMM • Principles, were developed over the years 2003 to 2015 Assurance • ICMM members have to submit a sustainable development report annually. The sustainable development report is a self-assessment of performance in relation to five subject matters which need to be reported upon and assured independently by a verification • M&E: Not known
Interoperability	Referral to other standards for information or guidance • EITI • Global Reporting Initiative • Global Compact • OECD Guidelines on Multinational Enterprises • World Bank Operational Guidelines • OECD Convention on Combating Bribery • ILO Conventions 98, 169, 176, and the Voluntary Principles on Security and Human Rights Jointly developed with GRI the GRI 4 Sector Disclosures 'Mining and Metals Supplement' MoU with CCCMC Chinese mining body aligns with ICMM to promote mining with principles
Date	April 2nd, 2018
Based on	Kickler and Franken (2017), Interview, ICMM website, UN ITC Standards Map

Standard Snapshot: International Finance Corporation27 Performance Standards (IFC PS)
Website: www.ifc.org

Mission	To promote sustainable private sector investment in developing countries, helping to reduce poverty and improve people's lives
Type of initiative	Framework standard for international finance
ISEAL member	No
Established/ operational?	First IFC PS published in 2006.
Scope	**Geographical scope:** Global but restricted to World Bank client countries **Target commodity:** Generic, for international finance **Supply chain Coverage:** Generic, based on project finance. Focus is on exploration and mines. Large scale operations and their primary supply chains. **Assessment Unit:** Scope of investment
Scheme elements	IFC's Environmental and Social Performance Standards define IFC clients' responsibilities for managing their environmental and social risks • IFC PS 2012 • Assurance: No conformity assessment. IFC clients have to meet the eight Performance Standards throughout the life of an investment by IFC. IFC receives an Annual Monitoring Report on the progress in meeting the environmental and social terms of the investment agreement by each client for monitoring compliance. It is used by IFC staff for monitoring and reporting purposes. IFC staff conducts site visits in a variable frequency. • M&E system:not known • ToC: not known
Interoperability	Referral to other standards for information or guidance • IFC EHS Guidelines for Base Metals • IFC EHS Guidelines for Mining • IFC EHS Guidelines for Construction Materials Extraction • ILO Conventions • International Cyanide Management Code • World Health Organization • Convention on Biological Diversity • Ramsar Convention • World Heritage Convention • Man and Biosphere Program • UNESCO • Basel Convention Used as reference point for multiple MMM standards as a baseline IFC PS were built on global conventions
Date	April 5th, 2018
Based on	Kickler and Franken (2017); Interview; IFC website, standard review and input

26 The IFC is part of the World Bank Group. The World Bank Group although part of the United Nations System, is an independent body.

Standard Snapshot: Initiative for Responsible Mining Assurance (IRMA)Standard for Responsible Mining
Website: http://www.responsiblemining.net

Mission	To establish a multi-stakeholder and independently verified responsible mining assurance system that improves social and environmental performance and creates value for the mine sites which lead
Type of initiative	Voluntary sustainability standard and certification
ISEAL member	Subscriber
Established/ operational?	Established in 2006, not yet operational
Scope	**Geographical scope:** Global **Target commodity:** All mineral commodities, except for energy fuels **Supply chain** Coverage: Mine site **Assessment Unit:** Selected facilities, selected mine sites
Scheme elements	• Draft version 2.0 from 2016, launch phase 2018-2019 • Assurance system in development • M&E system not yet developed
Interoperability	Existing standards and terminologies that are integrated: • IFC PS 1, 2, 4, 5 – 10 • ICMM Good Practice Guidance for Mining and Biodiversity • International Cyanide Management Code • EITI • 'High Conservation Value' of FSC • Greenhouse Gas Protocol Corporate Standard Recognition of other standards for the proof of compliance of certain issues: • International Cyanide Management Code • Greenhouse Gas Protocol Corporate Standard Collaboration with MAC TSM for standards development specifically in waste component, Use of AWS standard for water issues MoUs: • FSC for collaboration on systems and policies RS for alignment and collaboration IRMA fundamental value: IRMA collaborates with other sustainability standards initiatives for the extractives sector to provide complete solutions for certification, traceability and labeling. In standard Version 2, page 17. "IRMA's intent to coordinate wherever possible with existing schemes in order to avoid duplication, maximize social and environmental impact across full product life cycles, and maximize the economic and other benefits for mines that meet the IRMA Standard."
Date	March 30th, 2018
Based on	Kickler 2017, IISD SSI (in press), interview, IRMA website

Standard Snapshot: London Bullion Market Association (LBMA)
Website: www.lbma.org.uk

Mission	To add value to the global precious metals industry by setting standards, developing market services and thereby ensuring the highest levels of integrity, transparency and quality
Type of initiative	Standard setting body with verification and certification
ISEAL member	No
Established/ operational?	Established in 1987, Gold Standard operational since 2012, Silver from 2017
Scope	**Geographical scope:** Global **Target commodity:** Any mined, recycled or grandfathered gold or silver-bearing material received by the refiner **Supply chain coverage:** Supply chain traceability **Assessment unit:** Gold refineries (no mining sites) – upstream activities are audited by refiners as part of their due diligence
Scheme elements	• LBMA Responsible Gold Guidance Version 7 (2017) • LBMA Responsible Silver Guidance Version 1 (2017)
Interoperability	Integration or referral of other standards • International Standard on Assurance Engagements 3000 Non-Financial Audit Approach • ISO 19011: 2011 Management Systems Audit Approach (one of both audit options has to be selected) Recognition of other standards for the proof of compliance of certain issues The LBMA recognizes that refiners may already have internal or external assurance processes that can be used to support compliance with LBMA requirements • Regulatory anti-money laundering audits • Related gold supply chain due diligence initiatives, including: – RMI (formerly CFSI) Gold Supply Chain – not automatically cross-recognized – Transparency – Refinery Audit Protocol: Refiner is validated as a conflict-free smelter and the LBMA audit period covers at least ¾ of the validation or certification period of CFSI – as above – RJC's CoC Standard: 'CoC Transfer Document'– not automatically cross recognized – World Gold Council's Conflict-Free Gold Standard: 'Management Statement of Conformance Document'which accompanies the gold shipments that gold-mining companies provide to refiners – Fairtrade and Fairmined Standard for Gold from ASM, including Associated Precious Metals: Fairtrade or Fairmined Certificate LBMA audits are recognized by RMI and RJC LBMA has worked with other bodies to produce a standard for platinum and palladium. This has the principle of multi-metal audits at its core so refiners producing gold, silver, platinum and palladium would only undertake one combined audit covering all four metals. LBMA also works with RMI & RJC to develop auditor training and support to the schemes like the ARM CRAFT CoC
Date	April 5th, 2018
Based on	Kickler and Franken 2017, survey, LBMA website, standard review and input

Standard Snapshot: Mining Association of Canada: Towards Sustainable Mining (MAC TSM)
Website: www.mining.ca

Mission	To contribute to building a strong, sustainable and internationally competitive Canadian mining, minerals and metals industry with broad national support and to promote sound corporate and public policy.
Type of initiative	Industry association, standard with verification
ISEAL member	No
Established/ operational?	MAC- 1935. TSM-2004
Scope	**Geographical scope:** Canada (mandatory for MAC members) **Global:** Some companies voluntarily report against the TSM indicators for their international mining sites and some are also publishing those results. The national chambers of mines of Finland, Argentina, Botswana, the Philippines and Spain have formally adopted TSM with the expectation that they will establish a condition of membership as well. MAC is also currently talking with several other counties who are in the process of considering adopting TSM **Target commodity:** All mineral commodities **Supply chain coverage:** TSM is applied at the facility level and includes mine sites, smelters and refineries **Assessment unit:** Individual facilities
Scheme elements	• The TSM Guiding Principles (basic values and targets), TSM Frameworks (issue specific commitments) and TSM Protocols (performance indicators) are developed and revised as needed. A schedule for protocol review was adopted in 2017 that will see MAC conduct a major review of one protocol and a minor review of a second protocol each year. In 2018, the Aboriginal and Community Outreach Protocol will receive a major review and the Crisis Management and Communications Protocol will receive a minor review • Third party verification system in place • M&E system unknown • No ToC
Interoperability	Unilateral recognition • TSM has developed a checklist for ISO 50001 and OHSAS 18001 to be used during external verification. If a company has ISO 50001 certification or OHSAS 18001 certification, they can use a separate checklist for the energy, greenhouse gas protocol or the safety and health protocol respectively. The checklists include elements additional to these standards References and other collaborations • Climate change and water policies are aligned with the ICMM • Working with emerging standards for alignment and harmonization such as RS, RJC & IRMA • Member of ICMM, associate member of RS • Piloting with others on cross recognition of audits of members
Date	April 5th, 2018
Based on	Kickler and Franken 2017, interview, MAC website, standard review and input

Standard Snapshot: OECD Due Diligence Guidance (OECD-D)
Website: http://mneguidelines.oecd.org/mining.htm

Mission	The mission of the OECD is to promote policies that will improve the economic and social well-being of people around the world
Type of initiative	Collaborative government-backed multi-stakeholder initiative to establish guidance
ISEAL member	No
Established/ operational?	OECD established in 1961. Diligence Guidance adopted 2011
Scope	**Geographical scope:** Global **Target commodity:** Minerals and metals from conflict affected and high-risk areas **Supply chain coverage:** any company potentially sourcing minerals or metals from conflict-affected and high-risk areas.
Scheme elements	• OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas: Third Edition in 2016 • Five step framework for risk-based due diligence
Interoperability	OECD-D and its parent instrument, the OECD Guidelines for Multinational Enterprises, is consistent with existing international standards. Examples referenced include, but are not limited to, the ILO Tripartite Declaration of Principles Concerning Multinational Enterprises and Social Policy (2006), the UN Guiding Principles on Business and Human Rights (2011), the Financial Action Task Force 40 Recommendations (2003) and Financial Action Task Force RBA Guidance for Dealers in Precious Metal and Stones, ISO International Standard 19011, the International Conference on the Great Lakes Region Regional Certification Mechanism, the Voluntary Principles on Security and Human Rights, etc. • OECD-D is now referenced and used in binding regulations in the United States and serves as the basis for a draft EU regulation on responsible mineral supply chains. It is also part of the legal framework in several African countries, notably the Democratic Republic of the Congo, Burundi and Rwanda • OECD supported the development of the Chinese Due Diligence Guidelines for Responsible Mineral Supply Chains to implement responsible mineral sourcing and due diligence in conformity with the OECD Guidance • Since 2010, seven UN Security Council Resolutions adopted in the context of Democratic Republic of the Congo and Côte d'Ivoire called for due diligence in mineral supply chains based on OECD-D to avoid financing illegal armed groups. OECD-D has thus been accepted globally as a key tool to help implement natural resource related sanctions and combat financing of conflict • OECD-D is referred to extensively in a number of industry association audit programs, and the OECD is currently carrying out an assessment of industry programs' standards to gauge their alignment, coherence and credibility with respect to OECD-D • OECD-D explicitly encourages implementation of other relevant OECD standards, including the OECD Convention on Combatting Bribery of Foreign Public Officials in International Business Transactions and the OECD Guidelines for Multinational Enterprises
Date	April 2nd, 2018
Based on	Website, survey

Standard Snapshot: Responsible Steel (RS)
Website: www.responsiblesteel.org

Mission	The mission of RS is to maximise the contribution of steel to a sustainable society. It aims to provide businesses and consumers worldwide with confidence that the steel they use has been sourced and produced responsibly at all levels of the steel supply chain, from suppliers of raw materials through to end users. In the longer term, it will also consider the efficient use of steel and increasing the use of recycling. RS is the forum for this discussion to the mutual benefit of all participants.
Type of initiative	Voluntary sustainability standard
ISEAL member	Subscriber
Established/ operational?	Originally established in 2008. Redesigned and relaunched in 2016. Not yet operational. First certifications aim to take place in 2019.
Scope	**Geographical scope:** Global **Target commodity:** Steel, the RS Standard shall be applicable to all types of steel production, including basic oxygen furnace steelmaking and electric arc furnace steelmaking **Supply chain coverage:** Steel making, and all raw materials for the production of steel, including iron ore, metallurgical coal, limestone, scrap metal and metals for alloys and coatings (e.g. chromium, nickel, niobium, tin, zinc, etc.) **Assessment unit:** Steel production sites
Scheme elements	• Draft RS Standard Version 1 (August 2017). New draft May 2018 for public consultation • Assurance system not yet developed • M&E system not yet developed • ToC 2018
Interoperability	The RS Standard takes as its starting point the principles and criteria of the ASI Performance Standard, Version 1, December 2014. In addition, it draws upon existing mining initiatives (Bettercoal, ICMM, IRMA, RJC, RMI, TSM), supply chain initiatives (Building Research Establishment, CARES, RBA, SustSteel), social initiatives (Social Accountability International, Sedex Members Ethical Trade Audit), downstream initiatives (Apple, European Automotive Working Group, Jaguar Land Rover, Volkswagen) and others (GRI, IFC PS, OECD-D). A significant feature of the RS scheme is that it intends to recognize existing standards for mined materials, rather than develop its own, and is in discussion with both IRMA and MAC to this end References integrated into standard • ILO Core Conventions • ISO 9001 • UN Guiding Principles on Business and Human Rights MoU with IRMA for collaboration and alignment
Date	April 5th, 2018
Based on	IISD (in press), interview, RS website, standard review and input

Standard Snapshot: Responsible Jewellery Council (RJC)
Website: www.responsiblejewellery.com

Mission	RJC strives to be the recognized standards and certification organization for supply chain integrity and sustainability in the global fine jewellery and watch industry
Type of initiative	Voluntary sustainability standard
ISEAL member	Full Member
Established/ operational?	Established 2005. Operational since 2009.
Scope	**Geographical scope:** Global **Target commodities:** Diamonds, gold, platinum group metals (platinum, palladium, rhodium) expanding into coloured stones and silver **Supply chain coverage:** Whole supply chain coverage **Assessment Unit:** Member (single site or corporate group)
Scheme elements	• 2013 Code of Practices • 2017 CoC • M&E system established 2015 • ToC public
Interoperability	• References and guidance in standard: • RMI Responsible Minerals Assurance Process • EITI • ARM Fairmined Gold Standard • Fairtrade Standard for Gold • GRI Guidelines and GRI Mining and Metals Sector Supplement • LBMA Responsible Gold Guidance • World Gold Council Conflict-Free Gold Standard • ICMM Sustainable Development Principles, Position Statements and Guidance Documents • IFC PS • International Cyanide Management Code • International Diamond Council Rules for Grading Polished Diamonds • FATF Standards Against Money Laundering and the Finance of Terrorism • Ethical Trading Initiative Base Code • Kimberley Process Certification Scheme and World Diamond Council System of Warranties for Diamond Shipments • SA 8000e • ISO 14001 • OHSAS 18001

Interoperability	Partial recognition: RJC CoC Standard 2017 • Implementation and auditing of OECD-D is accepted as RJC CoC Standards compliance. Certified refineries of the following programs are recognized as compliant with RJC CoC Provision 1 on conflict sensitive sourcing – RMI Responsible Minerals Assurance Process – LBMA Gold Guidance – DMCC Rules for Risk Based Due Diligence in the Gold and Precious Metals Supply Chain • RJC CoC certification is cross-recognized by the above schemes as evidence of refiner's compliance of implementing OECD-D • Gold from large scale mines that are subject to the following RJC-accepted responsible mining assurance scheme and validated to conform with the RJC Code of Practice requirements is considered as eligible CoC material: – MAC TSM – ICMM Sustainable Development Framework • Gold from artisanal mines certified against the following recognized responsible mining standards is considered eligible CoC material: – Fairmined Standard for Gold – Fairtrade Standard for Gold Partial recognition: RJC Code of Practice-Standard • The member or facility will not need to be audited against the following Code of Practice provisions, if SA8000 certified – General Employment Terms (13) – Working Hours (14) – Remuneration (15) – Discipline and Grievance Procedures (16) – Child Labour (17) – Forced Labour (18) – Freedom of Association and Collective Bargaining (19 – Discrimination (20) – Health and Safety Provisions (21.1, 21.2a, 21.2b, 21.2c, 21.3, 21.5, 21.6, and 21.9) • The member or facility will not need to be audited against the following Code of Practice provisions, if ISO 14001 certified Environmental Management (22). The following additional provisions will not be audited, if the RJC accredited auditor can verify that the member's or facility's current ISO 14001 certification report addresses these areas: – Hazardous Substances Provisions (23.1 and 23.3) – Waste and Emissions Provisions (24.1, 24.2a, 24.2b and 24.2d) – Use of Natural Resources (25) – Biodiversity Provisions (36.2a and 36.2b) – Mercury (39) The member or facility will not need to be audited against the following Code of Practice provisions, if OHSAS 18001 certified Health and Safety Provisions (21.1, 21.3, 21.4, 21.5, 21.8 and 21.9). The following additional provisions will not be audited if the RJC accredited auditor can verify that the member's or facility's current ISO 18001 certification report addresses these areas: Health and Safety Provisions (21.2, 21.6 and 21.7)
Date	April 12th, 2018
Based on	Kickler and Franken (2017), interviews, RJC website, standard review and input

Standard Snapshot: Responsible Mineral Initiative (formerly Conflict Free Sourcing Initiative) from the Responsible Business Alliance (formerly called the Electronic Industry Citizenship Coalition) (RMI RBA)

Website: www.responsiblemineralsinitiative.org

Mission	Provide companies with tools and resources to make sourcing decisions that improve regulatory compliance and support responsible sourcing from conflict-affected and high-risk areas
Type of initiative	Industry initiative establish sustainability standard and verification
ISEAL member	No
Established/ operational?	Established in 2008, standard operational in 2010
Scope	**Geographical scope:** Global focus on conflict affected and high-risk areas, not only the Democratic Republic of the Congo and 'covered countries' **Target commodity:** Conflict minerals like cassiterite, columbite, tantalite, gold (and recycled or stocked gold), wolframite, or their derivatives, cobalt and expanding **Supply chain coverage:** Tin, tantalum, tungsten smelters, gold refiners, cobalt refiners **Assessment Unit:** Smelting or refining facilities, no mining
Scheme elements	• The Responsible Minerals Assurance Process, Tin and Tantalum Standard was released on June 12th, 2017 and went into effect June 1st, 2018 • The Responsible Minerals Assurance Process, Tungsten Standard was released on December 1st, 2017 and went into effect June 1st, 2018 • The Responsible Minerals Assurance Process, Gold Standard was released on December 18th, 2017 and went into effect June 1st, 2018 • Draft Cobalt Refiner Standard was under public consultation until May 9th, 2018, is planned to go into effect in 2018. • M&E system under development • ToC under development
Interoperability	• Standard industry audit procedures compliant with ISO 19011 • OECD-D • Cross-recognition agreement with RJC and LBMA for independent third-party gold refiner audits to reduce duplication and support their efforts in implementing OECD-D – LBMA: LBMA Responsible GoldGuidance – RJC: CoC (Provision one only) • The three programs are continuing to collaborate and are committed to • Contributing to the continual progress of responsible gold supply chains • Continual improvement of independent third party audit programs, pursuant to OECD-D • Maintaining international credibility and market acceptance of the programs • RMI leading joint training development with RJC and LBMA on Due Diligence of Gold Refiners in 2017 and Know Your Country as well as Anti Money Laundering in 2018 • RMI–GRI joint Minerals Due Diligence Public Reporting Initiative • RMI-DRIVE Sustainability joint research on material risk profiles (to be published in 2018) • RMI leading development of Cross-Industry Grievance Platform, scope includes RMI, RJC and LBMA refiners and smelters

Interoperability	• RMI Risk Readiness Assessment – Standards Comparison: compares over 50 standards commonly used in the materials value chain across 31 issue areas, distilling them into a set of benchmarked norms representative of best risk management practice in each area – Risk Readiness Assessment: –a self-assessment tool for minerals and metals producers and processors to assess and communicate their risk management practices and performance using the benchmarked norms established in the Standards Comparison • RMI collaborated with CCCMC and RCI to develop the Cobalt Refiner Standard • RMI recognizes upstream mineral sourcing mechanisms iTSCi and Better Sourcing Program as part of its assessment process • Serves on advisory boards and committees of Better Sourcing Program, iTSCi, ARM CRAFT, Public Private Alliance, European Partnership for Responsible Minerals
Date	May 7th, 2018
Based on	Kickler 2017, interview, website, standard system input and review

Standard Snapshot: Concrete Sustainability Council (CSC)
Website: www.concretesustainabilitycouncil.org

Mission	By creating a certification system for responsibly sourced concrete, the WBCSD CSC aims to improve transparency of the concrete sector, highlight the essential role of concrete in creating a sustainable construction sector by getting recognition in green procurement government policies and building rating systems
Type of initiative	Certification system initiated by the WBCSD
ISEAL member	No
Established/ operational?	Founded in 2016, launched in 2017 (60 certifications and 175 licensees in year one)
Scope	**Geographical scope:** Europe and North America. Future plan to include Latin America **Target commodity:** Concrete **Supply chain Coverage:** Applicable to all sizes of concrete companies, aggregate and cement suppliers can achieve a WBCSD CSC supplier certificate to support their concrete clients with their WBSCD CSC assessments
Scheme elements	Standard and assurance • The WBSCD CSC certification system consists of an operational manual and assessment criteria with guidance on their application. A typical certification process is applicable to all sizes of concrete companies, and currently comprises of three levels: Bronze, silver and gold • Initiated Cement Sustainability Initiative • Operational manual and assessment criteria • Three levels: Bronze, silver and gold
Interoperability	• The CSC technical framework has been developed taking inspiration from existing responsible sourcing and other management systems that apply to the construction sector and building materials, with a focus to concrete and its value chain (Ex. BES 600, ISO14001, ISO 26000, FSC). • The WBSCD CSC framework makes reference and rewards compliance with other standards or international conventions, such as the ILO standards on labour and human rights, SA8000 for social topics, ISO 9001, IS) ISO 14001, OSHAS 18001, OECD best practices, Cement Sustainability Initiative guidelines, etc. in a number of cases. • In addition, the WBSCD CSC aims to get mutual recognition and alignment on similar initiative in other countries (France, India) and to be recognized into Green Building Labels. WBSCD CSC is recognized in the Building Research Establishment Environmental Assessment Methodology (BREEAM) Material 5 and they are in dialogue with others to ultimately achieve recognition in the respective labels. With BES 6001 (United Kingdom, BREEAM related) to align topics. It is based on British standard BS1802 that prescribes the type of content of a responsible sourcing certification system. • Compliance to the core ILO Conventions and the Universal Declaration on Human Rights is a prerequisite. Compliance with standards such as ISO 9001, ISO 14001 and OSHAS 18001 is rewarded and may lead to a higher certification level.
Date	April 2nd, 2018
Based on	Survey, website

Standard Snapshot: XertifiX
Website: www.xertifix.de

Mission	XertifiX aims to improve the working conditions and environmental protection in quarries and processing factories in India, China and Vietnam: In addition to a ban on child labour, this includes compliance with all ILO core labour standards, fair wages and working hours, a safe and healthy workplace and basic environmental protection
Type of initiative	Not for profit. Voluntary sustainability standard and certification
ISEAL member	Subscriber
Established/ operational?	XertifiX e. V.: 2005 XertifiX Sozialprojekte e. V.: 2013
Scope	**Geographical scope: National, India (main focus), China and Vietnam** **Target commodity: Natural stone (especially sandstone, limestone and granite)** **Supply chain coverage: Quarry up to the European stone importer or salesman: The stone importer signs a contract with XertifiX to buy certified natural stones from China, India or Vietnam and requests the producers in his supply chain to comply with the XertifiX standard, who then become subject to assurance audits. The producers and exporters commit to fulfill the standard at all production sites and allow the XertifiX auditors to audit and inspect unannounced at any time.**
Scheme elements	A combination of 'standard models' is applied by XertifiX • Obligatory standard catalogue (including incremental requirements) • Compulsory voting standard catalogue There is a given set of basic obligatory criteria (ILO core norms) which is extended by a yearly step-by-step improvement procedure in consultation with the licensee (stone importer) Traceability and labelling system with controls • XertifiX Label: Basic ILO norms as requirements and continuous improvement • XertifiX PLUS Label: Extended obligatory criteria and compliance to two thirds of all criteria • XertifiX PLUS Label: Factory only • M&E system under development • ToC in development
Interoperability	• The planed cooperation with Fair Stone e. V. and others for creation of a Natural Stone Roundtable was given up in 2011 • Meeting bilaterally with other standards for learning, sharing and to identify opportunities to collaborate
Date	April 2nd, 2018

APPENDIX 3: INTEROPERABILITY EXAMPLES IN AGRICULTURE, FORESTRY, MARINE FISHERIES STANDARDS SYSTEMS

Examples	Interoperability Elements and Characteristics	Sector(s)	Description
Better Cotton Initiative	Recognition – Full and One way	Agriculture	BCI recognizes three standards for compliance with its own standard. Cotton made in Africa (CmiA) is an initiative launched by the Aid by Trade Foundation. The Aid by Trade Foundation and BCI have signed a long-term cooperation agreement that aims to improve the living conditions of smallholder farmers in developing regions through sustainable cotton production. After a thorough benchmarking process between CmiA and the Better Cotton Standards, CmiA cotton will continue to be sold as Better Cotton to BCI members; and is an extension of the interim partnership already in existence since July 2012 on a permanent basis. Also, the same benchmarking model was used to recognize two other cotton standards Cotton Australia's Best Management Practices (myBMP) and the Responsible Brazilian Cotton Program (ABRPA). BCI is also currently working to develop national BCI like initiatives in several countries, most recently in Mozambique. Both organizations share the goal of increased market access and access to capacity building
Cotton 2040	Building trust and shared learning Joint Working Group	Cotton/ retail/ brands	In 2017, a global coalition supported by the C&A Foundation and convened by Forum for the Future (includes: BCI, CmiA, Cotton Connect, Marks & Spencer, Cotton Australia, Proudly made in Africa, Centre for Sustainable Fashion, Organic Cotton Accelerator, Fairtrade) is driving change by taking collaborative action to scale-up and overcome barriers to sustainable cotton uptake across multiple standards to make sustainable cotton a mainstream commodity. Working groups will be developing best practice in work streams to share with the wider industry over the next two to three years.
ASC-MSC Seaweed Certification and Ecolabelling	Shared process joint tools, templates development Use of existing systems (CoC) Created shared vision	Marine fisheries and seaweed (algae)	Both standards organizations recognized a gap, which was being demanded on the one hand by fast-growing commercial markets[28] and on the other hand by stakeholders because of the potential negative environmental impacts of seaweed production. The two organizations Aquaculture Stewardship Council (ASC) and Marine Stewardship Council (MSC) came together to develop a shared vision in relation to the seaweed standard, that is, to contribute to the health of the world's aquatic ecosystems by promoting, recognising and rewarding environmentally sustainable and socially responsible use of seaweed resources through certification. The ASC-MSC standard and assurance systems were developed jointly to ensure alignment, meet market requirements, and avoid duplication while at the same time-sharing resources and expertise.

26 *https://thefuturescentre.org/articles/217926/why-seaweed-needs-sustainability-standard* accessed 26 March 2018

Examples	Interoperability Elements and Characteristics	Sector(s)	Description
FSC and Fairtrade	Shared process Joint certification	Forestry and community agriculture	In 2007, a dual certification initiative between FSC and Fairtrade was piloted. Although a feasibility study analysed the 'fit' between FSC-certified forest products and the Fairtrade portfolio, it did not sufficiently consider market demand. The joint initiative ceased in 2012. One of the lessons learned was a lack of market research before joint certification pilot was undertaken to understand and quantify dual certified product demand. Several lessons learned were around communication needs: "Communication at many different levels is pivotal to the success of pilot projects.","Partners and stakeholders must be given up-to-date relevant material in order to be able to participate effectively" and "All communication must be transparent and administered effectively." Another lesson learned was that unanticipated tensions could arise between partners when the partnering certification schemes gain experience and terrain in new markets – those markets of the partners. Several challenges to getting uptake related to the general challenges of connecting small producers to the market in general including reliance on one buyer, lack of organization and systems to deliver to markets rapidly and in volumes demanded by larger companies. In light of all this, one unanticipated benefit emerged – that was the building of a relationship between the two organizations that has fostered other shared learning.
UTZ & Rainforest	Merger Shared tools and projects before merger	Agriculture	Over the years, UTZ and RA had worked together on various shared projects and had come to recognize that there were overlaps between their two organizations. This included such elements as joint audits, shared training platforms, as well as a number of ISEAL projects. Each of these elements required time and resources, as well as the need to get stakeholder buy-in. With a leadership change at RA, the two organizations recognized that there were more similar than different and decided that it would be strategic and cost effective to merge in 2017.

Examples	Interoperability Elements and Characteristics	Sector(s)	Description
UTZ Traceability System Services & RSPO	Plug and play Shared systems/tools	Palm oil, agriculture	Developing a traceability system from scratch requires time and resources. In this example, the agricultural standard UTZ shared expertise and provided a platform for RSPO's traceability system called PalmTrace. UTZ's vision is about making sustainable farming the norm, easier and faster through collaborations. As a result, UTZ has developed many partnerships with like-minded organizations. The RSPO is a leading standard working towards sustainable oil palm production that brings together more than 3,000 stakeholders from producers and refiners to retailers and NGOs. PalmTrace forms an integral part of the RSPO's certification program and offers traceability for all supply chain models of the RSPO. In response to stakeholders' demands and developments in the palm oil sector, UTZ continuously develops and improves RSPO PalmTrace system. UTZ also provides trainings and support to the RSPO's members on the use of the platform.
UEBT and UTZ	Joint certification program	Herbs, tea andagriculture	The UEBT/UTZ joint certification program for herbal and fruit tea program was launched in 2015 and has grown rapidly. At the end of 2017, more than 250 herbal tea products carried the UTZ label. The UEBT certification approach fits the large number of different herbs at low volumes used in the herbal tea sector. UTZ brings its traceability system, the UTZ label, and the link with the existing tea and rooibos programs. The collaboration provides a good solution to address sustainability issues in the global herbal tea sector while building upon established and tested systems of UTZ.
Accreditation Services International	Shared process Shared IT platform for assurance and accreditation related processes Supports data collection and storage for M&E system	Multiple sectors: forestry, fisheries, agriculture, conservation, tourism, energy and other sectors	Accreditation Services International serves as a shared platform for new and established voluntary standards with which it collaborates together to design, build and implement assurance systems drawing on their experience from working with the ISEAL standards community. This has created audit and auditor training efficiencies for the sector. Accreditation Services International provides data integration, analysis and knowledge sharing services for a growing number of standards organizations including: MSC, FSC, ASC, Global Sustainable Tourism Council, IRMA (in progress), Global Infrastructure Basel, IUCN Green List, RSPO, Sustainable Biomass Program and Roundtable on Sustainable Biomaterials.

Examples	Interoperability Elements and Characteristics	Sector(s)	Description
Bonsucro and Fairtrade	Shared Process Joint certification	Agriculture	This example concerns an ISEAL Innovations Fund project. Bonsucro and Fairtrade are collaborating to develop a single market offering for certification in the sugarcane sector. The goal of the project is to leverage the joint value of two standards systems in a single market offering to improve sustainability and productivity in the supply chain in a manner that is more inclusive and provides better support to smallholders.
LEED and FSC	Partial recognition	Forest products, architecture	The LEED certification system took a formal decision to recognize the FSC sustainable forest management standard for partial compliance with its green building rating system. LEED wanted to align with credible global forestry requirements. FSC benefitted through the support this created to increase the uptake of FSC wood building products in new sectors and markets. The U.S. Green Building Council is a membership-based, non-profit organization that promotes sustainability in building design, construction, and operation. It developed the LEED standard used as a green building rating system around the world. It is available for virtually all building, community and home project types.
Program for the Endorsement of Forest Certification	Recognition of national forest certification systems Mutual recognition	Forestry	The PEFC is an umbrella standards organization that works by endorsing national forest certification systems that are developed through multi-stakeholder processes and tailored to local priorities and conditions. PEFC provides a collaborative network for national forest certification systems to be recognized internationally. For example, This type of recognition model works well, if the secretariat has sufficient resources to conduct and monitor the bench marking exercises, and equally, if national organizations wishing to develop a national forest certification system have sufficient time, resources and expertise.
GLOBAL Good Agricultural Praxis (G.A.P.) and Alliance for Water Stewardship (AWS)	Shared process harmonization	Agriculture	GLOBALG.A.P. and AWS – integrating water stewardship into good agricultural practices worldwide. Both organizations share members who increasingly require water stewardship standards for agricultural producers in locations with high water risks. In the light of these considerations, the two organizations recently entered into a discussion on potential pathways for a mutually beneficial cooperation. GLOBALG.A.P. acknowledged that their Integrated Farm Assurance standard's focus lies within producers' fence-lines and that the standard could potentially be improved in regard to catchment-based water stewardship by drawing from AWS' expertise. On the other hand, AWS identified the great potential to broaden the uptake of its standard with agricultural producers by cooperating with GLOBALG.A.P.

Examples	Interoperability Elements and Characteristics	Sector(s)	Description
ISEAL and members	ISEAL and members Joint projects Shared processed harmonization Efficiency, convergence around common methodologies used within voluntary sustainability standards	Cross-sectoral	Voluntary sustainability standards are increasingly converging around common methodologies and common metrics. This reduces duplication, creates efficiencies, and delivers better alignment to serve clients consistently across sectors, products, and geographies. The growing list of agreements on common approaches and methodologies includes: High Conservation Values, greenhouse gas accounting, life cycle assessment methodologies, IUCN Red List of Threatened Species, ILO Eight Core Conventions, and Living Wage Calculator. A second example of a joint project is the Integrated Pest Management Coalition. Its members include UTZ, BCI, Bonsucro, Fairtrade International, the Global Coffee Platform, the Golf Environment Organization, and the Roundtable on Sustainable Biomaterials who are planning to develop a public online platform and mobile app. Their collaboration aims to improve knowledge and sustainable use of pesticides, in particular in relation to reducing or eliminating Highly Hazardous Pesticides and sharing resources. A third example, is the ISEAL community's shared vision for the development of a conservation atlas. At a 2016 ISEAL convened data and technology event called 'Spark', this initiative received strong support from standards organizations who agreed, in the medium term, for a global atlas of certified production, unique enterprise identifiers, and overlaid by conservation areas and sustainability hotspot maps. Another example that emerged from the Spark event was members defining a joint project to develop a shared data registry to better understand what data already is gathered, and a peer learning e-platform on data management effectively to develop a data strategy for the ISEAL community. Finally, there is an ISEAL working group on geospatial data that is using unique data identifiers in relation to support traceability and CoC improvements. The overall goal of which is to drive a coordinated approach across the sector while sharing resources.

Examples	Interoper-ability Elements and Characteristics	Sector(s)	Description
ISEAL DIPI project M&E Peer Learning Group Assurance	Joint projects Shared processed Harmonization Efficiency, conver-gence around common methodologies	Cross-sectoral	The DIPI project has been running since 2011 with a focus on collectively demonstrating impacts through robust M&E systems. While focused on agriculture and forestry standards, learnings and tools are shared within the broader ISEAL community. Outputs from phase 1 include a common conceptual framework (a high-level ToC), common core indicators and a series of guidance docu-ments on a range of M&E issues based on the project work including: 1. Creating a ToC 2. Indica-tor Selection 3. Stakeholder Engagement and Consultation, 4. Assurance and M&E, 5. Sampling and Statistics, 6. Strategic Use of Case Studies, 7. Planning for a high-quality evaluation and 8. Legal and Ethical Considerations in M&E. These guidance documents are available only to ISEAL members, integrate lessons learned and are applicable to other sectors. Phase 2 included further learning and tools made available including a shared research agenda, M&E training for auditors, joint impact assessments and numerous field-testing and pilots. The project also initiated the peer learning groups, with representatives from all ISEAL members and other sectors to promote further cross-sectoral learning and cross-departmental learning (e.g. assurance and M&E). Gener-ally, this created an overall greater trust and partnership among ISEAL members. ISEAL Alliance has created an online contextual information database and guidance complete with useful sources and descriptions (e.g. fews.net for livelihood information and FAO on food and agriculture information). This database will save organizational resources of individual standards and help to reduce the burden of collecting contextual information when conducting evaluations. The working concept is to crowdsource to populate the database.

APPENDIX 4: METHODOLOGY

The approach taken for this report was to conduct a collaborative and systematic comparison of key aspects of *metal, mineral and mining* (MMM) standards in order to compare these with efforts and lessons learned from more established standard systems operating in the agricultural and forestry sectors. The project took place between January 15th, 2018 and May 4th, 2018.

The methodology consisted of four parts

1. **Desktop background research:** This report builds on previous research supported by GIZ: Mori Junior *et al.*, (2015) Designing Sustainability Certification for Impact: Analysis of the design characteristics of 15 sustainability standards in the mining industry; and Mori Junior *et al.*, (2017) Leveraging greater impact of mineral sustainability initiatives: An assessment of interoperability. Other key research publications can be found in the list of References.
2. **Phone interviews:** Key informant interviews were conducted during February and March 2018. While the project initially envisioned conducting five to seven interviews of MMM standards and two to three agricultural and forestry standards, the high level of interest resulted in conducting a total of 16 interviews (eleven MMM plus five from agriculture and forestry).
3. **Surveys:** The interview questions were also sent out to an additional ten initiatives to provide written input on the same topics covered through the interviews. While the written format did not allow for back and forth discussion, a further five surveys provided more detail and breadth to the report content.
4. **Hands on ToC workshops:** Lead by ISEAL, three 'mini-workshops' with MMM sustainability standards on ToC were conducted with the learnings integrated into this report.

A first Draft was prepared based on the background research, interviews and surveys (n= 21). Initial findings were presented and discussed in a workshop held in London in early March 2018 with ten organizations representing a wide diversity of standards. Feedback was integrated as Draft 1, which was circulated to ISEAL and GIZ mid-March 2018 for input. ISEAL shared the results of the ToC mini workshops held December 2017, March and April 2018 with the findings on lessons learned and the discussions from the mini-workshops integrated into this research study.

Interviews, Surveys and Workshops						
Organization	Interview or Survey	Workshop London 18 Dec 2017	Workshop London 5 March 2018	Workshop Beijing 30 March 2018	Workshop Medellin 8 April 2018	Workshop São Paulo 21 May 2018
Accreditation Services International						X
Alliance for Responsible Mining	X		X		X	X
Aluminium Stewardship Initiative	X		X			
Better Cotton Initiative	X					
Bettercoal	X	X	X			X
Better Gold						X
China Chamber of Commerce of Metals, Minerals, and Chemical Importers and Exporters	X			X	X	
CODELCO (National Copper Cooperation of Chile)						X
Concrete Sustainability Council (WBCSD)	X		X			
Equitable Origin						X
Fair Magnet	X		X			X
Fair Trade Gold & Silver	X					X
FairTrade						X
International Finance Cooperation Performance Standards (IFC PS)	X					
Initiative for Responsible Mining Assurance (IRMA)	X		X			
International Council on Mining and Metals (ICMM)	X	X	X			
International Union for the Conservation of Nature (IUCN) Global Business and Biodiversity Program	X					
London Bullion Market Association (LBMA)	X		X			
Mining Association of Canada: Towards Sustainable Mining	X					X
Nature, Economy and People Connected						X
OECD Due Diligence Guidance	X					
Program for the Endorsement of Forest Certification	X					
Responsible Jewellery Council	X	X	X		X	X
Responsible Minerals Initiative (former Conflict-Free Smelter Program) from Responsible Business Alliance (formerly The Electronic Industry Citizenship Coalition (EICC))	X				X	
Responsible Steel	X	X	X			X
UTZ RA	X					
Xertifix	X					

APPENDIX 5: GERMAN RESEARCH OVERVIEW

Basic information of key German funded research projects on responsible mining and mineral supply chains

	NamiRo	UmSoRess	Interoperability Study
	Basic information:		
Project name	NamiRo stands for sustainably produced mineral resources (German: Nachhaltig gewonnene mineralische Rohstoffe)	UmSoRess stands for approaches to reducing negative environmental and social impacts in the production of metal raw materials (German: Ansätze zur Reduzierung von Umweltbelastung und negativen sozialen Auswirkungen bei der Gewinnung von Metallrohstoffen) 'Ress' stands for 'Natural Resources' and is a suffix for all projects in the environment department (BMUB/UBA) which are relevant for the German Resource Efficiency Program (ProgRess)	**Leveraging greater impact of mineral sustainability initiatives: An assessment of interoperability**
Objective	Developing recommendations for a widely accepted standard or certification system for responsibly produced minerals based on the experiences with existing sustainability schemes	Developing policy recommendations for the German government to improve environmental and social standards in mining countries from which German industry directly or indirectly sources materials	Developing a conceptual framework for assessing potential interoperability between mineral sustainability initiatives and recommendations on how to enhance collaboration, harmonization, cross-referencing and joint processes
Project timeline	2015–2017	2013–2016	2015–2017
Funding provider/ Commissioner	German Federal Ministry of Education and Research	German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety Contracting authority, supervisor and editor: German Environment Agency, Jan Kosmol	BMZ, GIZ Extractives and Development Program

	NamiRo	UmSoRess	Interoperability Study
	Research Agenda/Structure in more Detail:		
Issue 1	Schemes' scope and structure of sustainability requirements in mineral production and processing (Federal Institute for Geosciences and Natural Resources (BGR) and contribution of the University of Ulm)	Analysing and documenting the impacts of raw material production on the environment, society and the economy, using 13 case studies on the metals gold, copper, aluminum, rare earth elements and tin in 13 countries on five continents. The goal of the case studies was to gain a better understanding of the connections between the environmental and social impacts of producing different metals in various countries and governance contexts.	Defining 'interoperability' in the context of sustainability initiatives, four aspects are identified as 'collaboration', 'harmonization', 'cross-referencing' and 'joint processes'.
Issue 2	Scheme characteristics concerning organizational governance (University of Ulm)	Analysing 42 standards and approaches – either existing or under development – which aim to improve the environmental and social conditions in the mining sector. The goal of this analysis was to assess the impact of standards, to pinpoint specific strengths and weaknesses and to identify lessons learned and best practices	Mapping 18 sustainability initiatives according to (1) type of initiative, (2) thematic scope relating to environmental, socio-economic and governance criteria, (3) assurance process and (4) sanctions for non-compliance

	NamiRo	UmSoRess	Interoperability Study
	Research Agenda/Structure in more Detail:		
Follow-up project(s) (issue, time frame, partners, etc.)	BGR/NamiRo collaborates with IISD on a 'State of Sustainable Mining' report on sustainability standards in the mineral sector, which will complement the SSI report series on standards (see existing green and blue economy report). The report is commissioned on behalf of IGF and due by October 2017. A new focus will lie on the investigation of market trends of sustainability initiatives (e.g. conventional market volumes and marketed certified products).	ÖkoRess II: Further development of policy options for an ecological raw materials policy. Aims to contribute to the debate on sustainable resource management with scientific findings on environmental impacts and potentials for environmental hazards on mining-site and raw-material-level. In the precursor project ÖkoRess I, two methods to evaluate mining-site and raw-material-specific potentials for environmental hazards were developed with the aim to further develop the raw material criticality concept. As part of the follow-up project ÖkoRess II, ten additional case studies will be conducted combining the analytical approaches of UmSoRess and ÖkoRess I in order to evaluate and further develop the method to assess the site-specific potential for environmental hazards posed by mining operations which was developed in the ÖkoRess I project. Time frame: 2016 – 2019 Contractor: Öko-Institut e.V., Institute for Applied Ecology, Günter Dehoust Funding: German Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety Contracting authority, supervisor and editor: German Environment Agency, Jan Kosmol	Phase 2 of Interoperability Study: in development with GIZ to commence in October 2017. Proposed topic: "Aligning monitoring and evaluation of the effectiveness of mineral sustainability initiatives" Further case studies are planned: 1) Analysis of the pilot implementation of the ASI 2) Lessons from the new EITI validation process for other mineral sustainability initiatives

Sources German Research Overview:

Kickler, K. and Franken, G. (2017). Sustainability Schemes for Mineral Resources: A Comparative Overview, Bundesanstalt für Geowissenschaften und Rohstoffe (BGR): *https://www.namiro-projekt.org/english/publications/*

Mori Junior, R., Sturman, K. and Imbrogiano, J. (2017). Leveraging greater impact of mineral sustainability initiatives: An assessment of interoperability. Centre for Social Responsibility in Mining, Sustainable Mining Institute, University of Queensland, Brisbane.

Rüttinger, L. and Scholl, C. (2016). Summary of the findings of the research project: Approaches to reducing negative environmental and social impacts in the production of metal raw materials. UmSoRess Final Report Part 4. On behalf of the German Environment Agency (UBA). *https://www.umweltbundesamt.de/umweltfragen-umsoress*

Agate crystal cross section
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Deutsche Gesellschaft für
Internationale Zusammenarbeit (GIZ) GmbH

Sitz der Gesellschaft
Bonn und Eschborn

Friedrich-Ebert-Allee 36 + 40
53113 Bonn
T +49 228 4460-0
F +49 228 4460-1766

Dag-Hammarskjöld-Weg 1 - 5
65760 Eschborn
T +49 6196 79-0
F +49 6196 79-1115

E info@giz.de
I www.giz.de

Im Auftrag des

Bundesministerium für
wirtschaftliche Zusammenarbeit
und Entwicklung