STUDY

Governance of Mineral Supply Chains of Electronic Devices

Discussion of Mandatory and Voluntary Approaches in Regard to Coverage, Transparency and Credibility

Johanna Sydow and Antonia Reichwein

GERMANWATCH

Brief Summary

This paper analyses the current governance framework concerning mineral supply chains of electronic devices. This is about ten years after leading IT companies began in 2007 to fund research to investigate the impact of mineral sourcing for IT devices, which established a connection between their products and human rights abuses. The paper provides an overview of mandatory frameworks and voluntary approaches that address social, human rights, and environmental risks. Moreover, it analyses a selection of voluntary approaches in terms of credibility and transparency of implementation. We conclude by drawing upon our findings to make recommendations regarding the implementation of EU regulation on responsible mineral sourcing.

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Index of Abbreviations

3TG	Tin, Tantalum, Tungsten, Gold
ASM	Artisanal and Small-Scale Mining
CAP	Corrective Action Plan
CCCMC	China Chamber of Commerce of Metals Minerals & Chemicals Importers & Exporters
CoC	Chain of Custody
CoP	Code of Practices
CorA	Corporate Accountability Network
CS	Certification-Based Standards
CTC	Certified Trading Chains
EITI	Extractive Industry Transparency Initiative
EU	European Union
FAQ	Frequently Asked Questions
FPIC	Free, Prior, and Informed Consent
GRI	Global Reporting Initiative
HR	Human Rights
ICMM	International Council on Mining and Metals
ILO	International Labour Organisation
IRMA	Initiative for Responsible Mining Association
IT	Information Technology
iTSCi	International Tin Supply Chain Initiative
LBMA	London Bullion Market Association
MNE	Multinational Enterprises
OECD	Organisation for Economic Co-operation and Development
PS	Principles-Based Standards
RS	Reporting Standards
SA 8000	Social Accountability Standard 8000
UK	United Kingdom
UN	United Nations
US	United States of America

1 The IT Sector and Its Mineral Supply Chain

IT has become a crucial element of our everyday life and of nearly all working processes. The amount of minerals and metals used by IT is huge and continually increasing. Electronic devices like smartphones contain more than thirty different minerals, including tin, tantal, gold, platinum, copper, cobalt, and rare earth metals. The role of tin, tantal, tungsten, and gold (3TGs) in the financing of conflicts has been the object of significant political debate. Legislation has been drafted to curb the financing of conflicts by these minerals. The effectiveness of such legislation is still limited and there are more minerals implicated in conflicts than those mentioned. Moreover, there are far more ethical risks within the mineral supply chain that have not been addressed. Such ethical risks include the loss of livelihood of communities located near mines, general violence by military and security forces, the deprivation of access to clean water, and severe impacts on workers' health and safety.

For a long time, IT companies rejected their responsibility for the impact of their sourcing of minerals. But after many years of campaigning by NGOs, this situation has changed; in 2007, leading IT companies began to fund research to investigate the impact of the sourcing of minerals for IT products.[1] Some ten years later, this paper will examine the current governance framework concerning the environmental, human rights, and social risks of mineral extraction within the IT supply chain. It asks what regulatory frameworks exist to hold IT companies accountable for their mineral supply chain, which risks these frameworks address, and how far they reach.

There are a few new mandatory frameworks in this context that we consider relevant for our analysis to better understand strengths and weaknesses of the current governance system concerning the ethical risks of the IT sector's mineral supply chain. Given the existing human rights, social, and environmental problems of the IT sector, we conclude that the existing mandatory frameworks are not sufficient to target all risks.[2] Therefore, we have also analysed voluntary approaches, as different actors perceive them as supplementing mandatory approaches. Moreover, a new partly mandatory framework of the EU regulation on responsible mineral sourcing specifically focusing on the mineral supply chain makes it necessary to assess voluntary approaches. This directive counts on industry-led initiatives as an important means to implement due diligence. Various European NGOs fear that these initiatives will replace a thorough human rights due-diligence assessment of individual companies.[3] The assessment of these approaches seems moreover especially relevant at the moment, as many voluntary approaches have emerged in recent years. This mushrooming of initiatives makes it difficult to know what individual approaches intend and how they are different from one another. Often there is little assurance that the stated intentions of voluntary approaches are actually implemented. This makes it difficult, not only for informed consumers, but also for manufacturers of IT products to know what environmental, human rights, or social risks they face when they source specific minerals.

[1] EICC (now Responsible Business Alliance, 2008): "Social and Environmental Responsibility in Metals Supply to the Electronic Industry". http://www.responsiblebusiness.org/media/docs/publications/SERMetalsSupplyreport.pdf

[2] For instance, see: Amnesty international (2016) "This is what we die for.": https://www.amnesty.org/download/Documents/AFR6231832016ENGLISH.PDF; and Friends of the Earth Europe (2012): "Mining for smartphones: the true cost of tin".

[3] Global Witness et al. (2018) "Civil Society Note on Implementation on EU- Responsibly Minerals Sourcing Regulation" https://www.globalwitness.org/en-gb/campaigns/conflict-minerals/conflict-minerals-shaping-eu-policy/

With this research, we aim to give an overview of the coverage of existing mandatory frameworks and the coverage and credibility of voluntary approaches. In Chapter Two, we will outline how we developed our comparison and how we assessed the mandatory frameworks as well as the voluntary initiatives concerning their coverage of ethical risks. In Chapter Three, mandatory frameworks focusing on issues specifically related to mining are compared in a table and assessed in regard to their coverage. Moreover, more general legislation is assessed in terms of regulatory contribution to the IT sector regarding the scope and coverage of risks. Consequently, in Chapter Four we assess the voluntary approaches more thoroughly. First, we lay out our criteria for the selection of voluntary initiatives and the way we grouped them into different categories. Then we assess them according to their thematic coverage outside the mandatory frameworks and develop criteria that we subsequently use to assess the overall credibility of the voluntary initiatives. In conclusion, we summarise our results and formulate recommendations for the successful implementation of the EU regulation on responsible mineral sourcing.

2 Methodology to Assess the Coverage of Risks

In order to assess the scope of binding regulatory frameworks and voluntary approaches, we started by identifying ethical risks concerning resource extraction in the IT supply chain. For this, we looked at various case studies[4] related to mining in different countries, as well as additional literature,[5] and grouped the different human rights, social, or environmental impacts to identify which risks occur.

To enable a certain comparability of the content and scope of voluntary approaches and regulations, we created a table with the different approaches in the columns as well as the different ethical risks and other content of the initiatives deemed relevant in the rows. To analyse the content of the different initiatives, we apply a simple grading scheme to each ethical risk as well as the individual contents of the audit procedure: ‘yes’, ‘(yes)’, ‘(no)’, and ‘no’. These are the answers to the question, ‘Does the approach cover this?’ ‘Yes’ means that the approach covers the point explicitly, while ‘(yes)’ and ‘(no)’ indicates that the point is covered only to a certain degree.

Given that ambiguous expectations in approaches can result in weak implementation, we chose a qualitative approach for grading and considered the specific content of each approach for each criterion.

[4] For example, cf. "Gold mining in Honduras" in DPLf (2014): "The impact of Canadian Mining in Latin America and Canada's Responsibility".: http://www.dplf.org/en/news/press-release-report-impact-canadian-mining-latin-america-and-responsibility-canada; for the impact of the Grasberg mine in Indonesia cf. Umweltbundesamt (2015): "Fallstudie zu den Umwelt- und Sozialauswirkungen der Kupfergewinnung in Grasberg, Indonesien": https://www.umweltbundesamt.de/dokument/fallstudie-zu-den-umwelt-sozialauswirkungen-der; for copper and gold mining in Eritrea cf. The Guardian (2015): "Canadian mining company accused of exploiting Eritrea's forced labour".: https://www.theguardian.com/global-development/2015/aug/19/eritrea-mining-nevsun-forced-labour. These are a few selected examples.

[5] For example cf. BGR (2016): "Human Rights Risks in Mining. A Baseline Study".: https://www.bgr.bund.de/DE/Themen/Zusammenarbeit/TechnZusammenarbeit/Downloads/human_rights_risks_in_mining.html

Table 1

Risk Covered by Explicit Expectations In Table marked as yes	We gave a point a 'yes' if it is explicitly mentioned. Clear, precise language is important to the effectiveness of an approach.[6] Ideally the approach also includes a detailed description. One example would be the ethical risk to the environment. While this already covers many risks like water pollution, deforestation, and so on, the precise mention of water pollution, for example, is necessary for a 'yes' grade. There are numerous other details not covered by these ethical risks, many of which are not covered in detail in the tables. Water pollution could be further broken down to the breaking of tailing dams or the contamination of drinking water. As far as the table is concerned, the grades always refer to the stated risk. This also includes, to some degree, key phrases like facilitating 'collective bargaining' for workers or demanding that the mining company work with 'FPIC'. When key phrases were used, the approach received a 'yes' in the table, indicating that it aims to cover the risk associated with this phrase. When an approach refers to another approach (mostly guidelines), its content is included if it is mentioned as a mandatory aspect and not only as a mere reference. Often there are multiple sources to consider for the content of an approach, for example the text of an approach, information on the website of the approach and/or the FAQs, as well as in auditor guidelines and audit example protocols. Important for our classification is the condition that the sources used for the content of an approach needs to be accessible.
Risk Covered by Rather Unclear/ Unspecific Expectations or Regionally Limited Expectation In table marked as (yes) / (no)	For these categories the word environment, for example, is accepted as a sufficient key word, as opposed to terms like 'human rights' or 'social rights'. Environment could implicitly be understood to include the damaging and pollution of water, air, and soil. Thus water pollution gets a '(yes)' or '(no)' if the key word environment is mentioned. Likewise, 'hazardous substances', is treated in this category, which implicitly refers to mercury and cyanide. Both key words would, if used in an approach, lead to a '(yes)'/'(no)' for the more specific risks. On the contrary, the terms 'human rights' or even 'social rights' are perceived as being too vague even for this grading. A general mention of the approach covering 'human rights' does not immediately imply the more detailed human right risks such as 'forced labour' or 'rape and forced prostitution' thus this risk does not earn a '(yes)' or '(no)'. At the same time, especially for assigning the grades '(yes)' and '(no)', it matters how the risk is included in the text of the approach and where. A general listing in the introduction of an approach as it covers the 'workers' rights' is a '(no)', while a sub-category head-lined as 'workers' rights' with a few brief words, is a '(yes)'. We made this differentiation because it is crucial that an approach makes clear to its users which risk it should address.

[6] Behnam, M./MacLean, T. (2011): "Where Is the Accountability in International Accountability Standards? A Decoupling Perspective" in: Business Ethics Quarterly 21:1

	In summary, '(yes)' refers to the general mention of a risk or to a restriction, for example, if the approaches only covers the risks in a conflict region even if it is an approach without a regional focus while '(no)' is assigned to a more implicit mention. The line between the grades '(yes)' and '(no)' is fluid, party subjective, and depends on the category and how precise the point is referred to in the table.
Risk Not Addressed In Table marked as no	'No' as a grade is given to risks/categories that are not mentioned in an approach, as well as to points where no information could be found, either because it does not exist or because it has not yet been published.

Concerning the process of considering the approaches' data: first, we assessed the documents generated by the approaches; second, if possible and when necessary—for example, when the approach was very vague—we examined auditor guidelines; finally we looked at information on the website or from other sources. We contacted the initiative to allow them to review our analysis (see Annex detailing which initiatives responded to us and which did not). The categories 'action against water scarcity' (see Tables 3, 4, and 5) and 'permanent grievance mechanism' were added afterwards. Consequently, this information is based on our research and has not been reviewed by the initiatives.

Some initiatives, like the Responsible Aluminium Standard or the approach by IRMA, are still in the drafting process and changes are being made to the initiative and audit drafts. This limits the informative value of the data found and the resulting categorisation.

With a thematic overview, we would first like to show which ethical risks are addressed and which part of the supply chain is covered. We also included the initiatives' work with suppliers and whether these approaches are suitable to being integrated in the artisanal mining sector. This information is based on the approaches' own claims.

3 Mandatory Frameworks

In our analysis, we focus on legislation and conventions that follow a supply chain approach or are international in character, which are often cited by literature focusing specifically on ethical risks in mineral extraction. Table 2 gives a comparative overview of the coverage of risks of those mandatory regulatory frameworks that specifically focus on mining issues. Moreover, we look at more general regulatory frameworks that could contribute to disclosing or addressing certain ethical risks in the mineral supply chain but do not specifically focus on mineral extraction. We consider them relevant but cannot claim to provide a comprehensive overview. More general frameworks we consider are the EU Non-Financial Reporting Directive, the French Loi de Vigilance, the UK Modern Slavery Act, and the California Transparency in Supply Chains Act. As they are oriented toward processes like due diligence or reporting, we chose not to compare them in a table but instead describe them in the paragraphs following Table 2

Mandatory Frameworks Focusing Specifically on Mineral Supply Chain and Extraction

Especially relevant for the mineral supply chains of electronic devices are the US-Dodd Frank Wall Street Reform and Consumer Protection Act (paragraph 1502) (US Dodd-Frank Act) and the EU regulation on responsible mineral sourcing. Both include a binding element about the financing of conflicts and are specifically related to the mineral supply chain.

Thanks to the US-Dodd Frank Act, as of 2014 companies listed on the New York Stock Exchange must report on the sourcing for conflict minerals. The EU regulation on responsible mineral sourcing requires that smelters and union importers of 3TGs above a certain threshold assess the supply chain according to risks of financing conflicts, child labour, forced labour, violence inflicted by state and private security personnel, rape and forced prostitution, and to take measures to prevent these risks. While the US Dodd-Frank Act addresses only 3TGs from the Great Lakes Region, the EU regulation on responsible mineral sourcing is international in scope. However, the EU regulation does not require the same commitment from the general downstream sector.

This means that almost all IT companies that are not listed on the New York Stock Exchange are encouraged, but not obliged, to make sure that the minerals they import do not finance conflicts or contribute to the risks mentioned above. Only a few manufacturers of components that directly import minerals into the EU fall under the scope of the EU regulation. Moreover, IT companies listed on the New York Stock Exchange only need to check the supply chains of minerals sourced from the Great Lakes region. Unlike the EU Regulation, the US-Dodd Frank Act focuses on the outcome of the due diligence process rather than the process itself.[7] In summary, many of the environmental, social, and human rights risks prevalent in resource extraction for the IT sector are not addressed by these two pieces of legislation; furthermore, the potential to finance conflicts by other minerals and metals are also not addressed.

[7] Flohr, Annegret (2014) „Vertane Chance.Warum die EU-Regulierung nicht freiwillig bleiben darf“ HSK-Standpunkt Nr.2. Frankfurt.:https://www.hsfk.de/fileadmin/HSFK/hsfk_downloads/standpunkt0214.pdf

As Table 2 shows, the three mandatory frameworks related to mineral extraction that we looked at address only a few very specific issues, and the International Conference on the Great Lakes Region Regional Certification Mechanism is limited to a regional focus. Moreover, the ILO Indigenous and Tribal People Convention 169 includes important and specific aspects but focuses on indigenous and tribal people only, which neglects the infringement of the rights of non-indigenous people by mining.

Table 2

Mandatory Frameworks Focusing on Mining or Indigenous Peoples						
	EU regulation on responsible mineral sourcing[8]	**Dodd Frank 1502[9]**	**International Conference on the Great Lakes Region Regional Certification**	**Health in Mines Convention ILO C176/R183**	**Minamata Convention on Mercury**	**ILO Indigenous and Tribal People Convention 169**
Year	2017	2010	2010	1995	2013	1989
Type of Framework	law	law	governmental initiative that demands certification scheme	convention	convention	convention
Regional Focus	no	yes	yes	no	no	no
Which Minerals?	3TGs	3TGs	3TGs	no focus on specific minerals	mercury	no focus on specific minerals
Environment						
Water Pollution	(no)	(no)	(no)	yes	yes	(no)
Air Pollution	(no)	(no)	(no)	yes	yes	(no)
Soil Pollution	(no)	(no)	(no)	yes	yes	(no)
Mercury	(no)	(no)	(no)	(no)	yes	(no)
Cyanide	(no)	(no)	(no)	(no)	yes	(no)
Abandoned/Closed Mines	no	no	no	no	yes	no
Human Rights						
Forced Labour	yes	yes	yes	no	no	yes
Human Trafficking	no	no	no	no	no	no

[8] The framework itself does not mention any criteria but obliges the respective companies to adhere to the criteria covered by the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas. Therefore, the information provided here corresponds to these guidelines.

[9] The framework itself does not mention any criteria but obliges the respective companies to adhere to the criteria covered by the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas. Therefore, the information provided here corresponds to these guidelines.

Child Labour	yes	yes	yes	no	no	no
Violence by State or Private Security Forces	yes	yes	yes	no	no	no
Rape and Forced Prostitution	yes	yes	yes	no	no	(no)
Financing of Armed Groups	yes	yes	yes	no	no	no

Additional Workers' Rights						
Health and Safety	no	no	no	yes	yes	yes
Fair Payment	no	no	(no)	no	no	yes
Health Insurance After Accidents	no	no	no	yes	no	(no)
Social Impact on Local Population						
Livelihood of Local Population	(no)	(no)	(no)	no	no	yes
Mining by Locals / Contracting of Local	(no)	(no)	(no)	no	no	yes
Cultural Rights	(no)	(no)	(no)	no	no	yes
Forced Resettlement	(no)	(no)	(no)	no	no	yes
Compensation for Resettlement	no	no	no	no	no	yes
Participation and Remedy						
FPIC	no	no	no	no	no	yes
Access to Remedy	no	no	no	no	yes	(yes)
Grievance Mechanism	yes	yes	yes	no	no	no
Corruption	yes	yes	yes	no	no	no
Supplier						
Training	yes	yes	no	no	no	no
System of Incentives	no	no	no	no	no	no
Long-Term Relations	yes	yes	no	no	no	no
Supply Chain						
Monitoring Focus	Mine/Smelt	Manufactures	Export	Mine	Mine	Mine
Upstream	yes	yes	yes	yes	no	no
Downstream	no	yes	no	no	no	no
Applicable to ASM	yes	yes	yes	yes	yes	(yes)

General Frameworks

Apart from the frameworks directly related to mining, there are more process-oriented mandatory frameworks that are also important to consider, as they are also meant to require companies to

meet human rights, social, and environmental standards. There is the EU Non- Financial Reporting Directive, the French Loi de Vigilance, the UK Modern Slavery Act, and the California Transparency in Supply Chains Act.

Under the EU Non-Financial Reporting Directive (2014), 8,000 EU companies and financial corporations with more than 500 employees are required to publish annual reports on their main impacts and risks as well as the policies and due diligence processes they implement regarding environmental protection, social responsibility, treatment of employees, human rights, anti-corruption and anti-bribery, and corporate board diversity. IT-producing EU companies like Nokia and Phillips or net providers like Telekom and Vodafone must consequently adhere to these requirements. However, the requirements are very vague, and companies can choose what to report at their own discretion. When companies choose to not implement certain policies, they must explain why. However, the directive does not require them to actually implement any specific policies or measures, and allows significant flexibility regarding the form and elaborateness of reporting.

The French Loi de Vigilance (2017) requires the largest French companies to exert due diligence. The companies must establish, publish, and implement a vigilance plan that includes appropriate measures to identify and prevent risks of serious infringements of human rights and fundamental freedoms, serious bodily injury, health risks, or environmental damage resulting directly or indirectly from a company's activities and those of its business relations (as defined by the French commercial code). The vigilance plans, as well as the reports on their implementation, have to be made public and included in the company's annual report. Under certain circumstances, companies can be held liable for severe human rights violations and environmental damages inflicted by supply chain business partners. It could be a framework that could considerably contribute to closing governance gaps as it is a more holistic approach, but at the moment it has only been implemented in France and only addresses an estimated 150 large companies.

Section 54 of the UK Modern Slavery Act (2015) requires companies domiciled or doing business in the UK with an annual turnover of more than £36 million to report annually on which steps they have taken to prevent human trafficking and modern slavery in their supply chain. But it is important to note that the act does not prescribe any forms of due diligence, so that companies abide by the law even if they merely report that they have not taken any actions against modern slavery and trafficking.

Under the California Transparency in Supply Chains Act (2010), large retail sellers and manufacturers doing business in California must disclose their efforts to eradicate slavery and human trafficking from their direct supply chain in relation to specific categories. The law applies to those companies that produce tangible goods for sale. Most important electronics companies, such as Apple, Samsung, Intel, Motorola, and Panasonic, have already provided statements.[10] However, companies are only required to disclose their efforts without necessarily realizing any. Furthermore, the names of the companies that fall under the scope of the law have not been officially published, making it difficult for civil society actors to examine whether all those affected abide by the law.

All of these pieces of legislation pursue different approaches to corporate accountability and deal with some aspects relevant for the sourcing of minerals. However, except for the UK Modern Slavery Act and the California Transparency in Supply Chains Act, they are more general in wording and concerning the coverage of risks. This allows companies great discretion in terms of which risks to report or monitor.

[10] cf. Business and Human Rights Resource Centre (2014): "Know the Chain".: https://business-humanrights.org/en/know-the-chain-%E2%80%93-see-which-companies-do-and-do-not-have-statements-under-the-california-transparency-in-supply-chains-act

General Coverage of Risks

In general this overview shows that many risks are not covered by mandatory measures. For example, the social impact on local populations and local environmental issues are barely addressed. Moreover, even when covered by any of these mandatory approaches, it is unclear whether or not the risk is addressed, as contracts like ILO 169 are not always enforced. This is particularly problematic in countries where national law is not enforced. However, our focus on mandatory frameworks provides only a thematic overview; it was not possible to assess the mechanisms for enforcement during our study. In addition, in cases like the EU regulation on responsible mineral sourcing, the surveillance mechanisms have yet to be developed.

The Necessity of Looking at Voluntary Approaches

Without looking at the enforcement of the laws, this thematic overview shows that, along with continued reports of human rights abuses, environmental impacts, and severe impacts on health and security, there are still huge governance gaps when it comes to ensuring corporate accountability of ethical risks.[11] This is why we have looked at voluntary initiatives that may fill these gaps or be tested as models for future binding regulations.

A more detailed analysis of these voluntary approaches is especially important, as many new initiatives have emerged in recent years. This is not only a result of the continuous critique of the human rights abuses and environmental destruction committed by the extractive sector, but a consequence of the new voluntary—often industry-led—initiatives that have emerged in the wake of the Dodd-Frank Act. The huge variety of initiatives makes it very difficult to know what each individual initiative stands for and may foster greenwashing instead of better transparency. A thorough assessment is even more important because the EU regulation on responsible mineral sourcing considers the 'supply chain due diligence scheme' or 'due diligence scheme' as a useful means for companies to comply with regulations. They are defined as 'a combination of voluntary supply chain due diligence procedures, tools and mechanisms, including independent third-party audits, developed and overseen by governments, industry associations, or groupings of interested organisations'.[12] In the following section, we will continue to speak of 'voluntary approaches' when referring to these schemes and guidelines and 'voluntary initiatives' when speaking generally about these schemes. We will use the word schemes when directly referring to the EU regulation on responsible mineral sourcing.

It is not our intention to discuss any of the approaches in detail; rather, we aim to provide a better picture of the issues covered by the schemes and, more importantly, we are interested in screening existing voluntary initiatives in terms of their transparency about implementation and credibility. Only when it is clear that certain issues are being implemented and not just addressed on paper, can we assess their contributions to the closure of governance gaps. We can then analyse to what extent individuals and companies that are not involved in the implementation of the initiative can actually trust the outcome. Thus, we have set up certain criteria concerning monitoring and enforcement.

[11] For example, cf. Spohr, M. (2016): "Human Rights in Mining. A Baseline Study".: https://www.bgr.bund.de/DE/Themen/Zusammenarbeit/TechnZusammenarbeit/Downloads/human_rights_risks_in_mining.html

[12] REGULATION (EU) 2017/821 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 17 May 2017 laying down supply chain due diligence obligations for Union importers of tin, tantalum and tungsten, their ores, and gold originating from conflict-affected and high-risk areas.: http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=OJ:L:2017:130:FULL&from=EN

4 Voluntary Approaches

In this section, we will take a closer look at voluntary initiatives and guidelines addressing mines as well as supply-chain approaches. We first outline our criteria for the selection of these approaches. Then, we provide an overview of the thematic coverage of the different initiatives. Finally, we develop criteria in order to analyse the initiatives' credibility.

4.1 Selection of Voluntary Approaches

In order to create a basis for a useful overview and comparison of voluntary approaches, we first attempted to map out the most relevant approaches that aim to prevent human rights, social, and/or environmental risks in the supply chain. There is a wide range of research that affirms that standards are often only adopted superficially while the actual practice of the company remains the same.[13] In this context, the standards can be categorized into different groups: 'principles-based standards' (PS), certification-based standards (CS), and reporting standards (RS)'. 'Principles-based standards' are normative frames, like the UN Global Compact, whose implementation is not monitored. There are some sectorspecific norms that can also be added to these categories. 'Reporting standards' provide more comprehensive reporting via a standardised scheme. 'Certification-based standards' are approaches that are based on verification, either by an external auditor or the participants themselves.[14]

Different scientific studies have shown that approaches with ambiguous expectations, low adoption costs and high substantive compliance costs, a lack of assurance structures, and weak enforcement mechanisms all predict that the initiative is likely to be adopted but not implemented.[15] This would specifically relate to principles-based standards like the UN Global Compact. This is why we do not consider most of these initiatives in our comparison. One exception is the International Council on Minerals and Metals, which is a principles-based initiative as well. We included it due to its specific focus on the extractive sector.

In our analysis, we considered initiatives and guidelines targeting the mining site or the supply chain, which led to a categorization of the approaches into the following groups: 1) Guidelines: Often they serve as a reference for initiatives or even legislation like the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (OECD Due Diligence serves for the EU regulation on responsible mineral sourcing) 2) Initiatives for mines (approaches mainly targeting the mine site that do not include the supply chain) 3) Initiatives that focus on 3TGs and primarily consider the supply chain 4) Initiatives that deal with more or different minerals and metals than 3TGs pursuing a supply chain approach.

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[13] DiMaggio, P J./Powell, W. W. (1991): "The iron cage revisited: Institutional isomorphism and collective rationality" in W. W. Powell & P J. DiMaggio (Eds.): "The New Institutionalism in Organizational Analysis", pp 63-82. Chicago: University of Chicago Press
Behnam, M./MacLean, T. (2011): "Where Is the Accountability in International Accountability Standards? A Decoupling Perspective" in: Business Ethics Quarterly 21:1, pp. 45-72

[14] The categories overlap and a different categorisation could be used, based on content or a focus on audits.

[15] Edelman, L. B. (1992): Legal Ambiguity and Symbolic Structures: Organizational Mediation of Civil Rights Law" in: American Journal of Sociology 97, pp. 1531–76.
Elbannan, M./McKinley, W. (2006): " A Theory Of The Corporate Decision to Resist FASB Standards: An Organization Theory Perspective" in: Accounting, Organizations and Society, 31: pp. 601–22.
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Guidelines
OECD Guidelines for Multinational Enterprises (OECD Guidelines for MNE)
OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (OECD Due Diligence)
CCCMC (Guidelines for Social Responsibility in Outbound Mining Investments)
Chinese Due Diligence Guidelines for Responsible Mineral Supply Chains
Initiatives for Mines
Voluntary Principles on Security and Human Rights (Voluntary Principles Security and HR)
International Council on Mining and Metals (ICMM)
Global Reporting Initiative (GRI)
International Cyanide Management Code
SA 8000
Initiative for Responsible Mining Assurance (IRMA)
Approaches Focusing on 3TG Minerals
Better Sourcing Program
Certified Trading Chains Standards Certification
Conflict-Free Gold Mining
Responsible Minerals Initiative (formerly Conflict Free Smelter Program)[16]
International Tin Supply Chain Initiative (iTSCi)[17]
Approaches Focusing on More or Other Than 3TG
Fairtrade Gold
Responsible Aluminium Standard (Aluminium Stewardship Initiative)
Responsible Business Alliance (formerly Electronic Industry Citizenship Coalition)
Fairmined Gold Standard
London Bullion Market Association Responsible Gold Guidance (LBMA)[18]
Responsible Jewellery Council
DMCC Rules for Risk Based Due Diligence in the Gold and Precious Metals Supply Chain[19]

[16] Update of information because of OECD alignment process 16th of april. Based on documents as listed in Annex.
[17] Update of information because of OECD alignment process 16th of april. Based on documents as listed in Annex.
[18] Update of information because of OECD alignment process 16th of april. Based on documents as listed in Annex.
[19] Added to analysis in April 2018 because of OECD alignment process

4.2 Overview of Thematic Coverage of Initiatives

Table 3

	Guidelines				Approaches at The Mine					
	OECD MNE	OECD Due Dili-gence	Chinese Guide-lines for Social Responsibility	Chinese Due Diligence Guidance	Voluntary Principles on Security and HR	International Council on Mining and Metals	Global Reporting Initiative	International Cyanide Management Code	SA 8000	IRMA
Regional Focus	no	yes	no	no	no	no	no	no	no	no
Which Minerals?	any	3TG	any	any	any	any	any	Gold	any	any
Environment		[20]								
Water Pollution	(no)	(no)	yes	yes	no	(yes)	yes	yes	no	yes
Actions Against Water Scarcity[21]	(yes)	(no)	no	no	no	yes	yes	no	no	yes
Air Pollution	(no)	(no)	yes	yes	no	(no)	yes	yes	no	yes
Soil Pollution	(no)	(no)	yes	yes	no	(yes)	yes	yes	no	yes
Mercury	(no)	(no)	yes	yes	no	yes	yes	no	no	yes
Cyanide	(no)	(no)	yes	yes	no	yes	yes	yes	no	yes
Abandoned/Closed Mines	no	no	yes	yes	no	yes	yes	(yes)	no	yes
Human Rights										
'Human Rights' mentioned	yes	yes	yes	yes	yes	yes	yes	no	yes	yes
Forced Labour	yes	yes	yes	yes	no	yes	yes	no	yes	yes
Human Trafficking	no	no	no	no	yes	no	yes	no	yes	yes
Child Labour	yes	yes	yes	yes	no	yes	yes	no	yes	yes
Violence by Security Forces	no	yes	(yes)	(yes)	yes	(yes)	yes	no	yes	yes
Rape and Forced Prostitution	no	yes	no	no	no	no	(yes)	no	yes	(yes)
Financing of Armed Groups	no	yes	yes	yes	no	no	no	no	yes	yes

[20] Assessment of environment harm is mentioned but not requirements to address these kinds of risks.
[21] This category was added after the review of our analysis by the initiatives; thus, it is the result of our assessment without a review by the initiatives.

Additional Workers' Rights										
Health and Safety	yes	no	yes	no	no	yes	yes	yes	yes	yes
Fair Payment	yes	no	yes	no	no	yes	yes	no	yes	yes
Collective Bargaining	yes	no	yes	no	(no)	yes	yes	no	yes	yes
Health Insurance After Accidents	no	no	(no)	no	no	(yes)	yes	no	yes	yes
Social Impact on Local Population										
Livelihood of Local Population	no	(no)	(no)	no	no	yes	yes	no	yes	yes
Mining by Locals / Contracting of Local	no	(no)	yes	no	no	no	yes	no	yes	(yes)
Cultural Rights	no	(no)	yes	yes	no	yes	yes	no	yes	yes
Forced Resettlement	no	(no)	yes	yes	no	yes	yes	no	yes	yes
Compensation for Resettlement	no	no	yes	yes	no	yes	(yes)	no	yes	yes
Participation and Remedy										
FPIC	no	no	yes	yes	no	yes	yes	no	yes	yes
Access to Remedy	no	no	no	no	(no)	yes	yes	no	yes	(yes)
Grievance Mechanism	no	yes	yes	(yes)	no	yes	yes	yes	yes	yes
Corruption	yes	yes	yes	yes	no	yes	yes	no	yes	yes
Supplier										
Training	no	yes	(no)	(yes)	(no)	yes	yes	yes	no	no
System of Incentives	(no)	no	no	no	no	(yes)	no	(yes)	no	no
Long-Term Contracts	no	yes	no	no	no	no	no	yes	no	no
Supply Chain										
Monitoring Focus	none	mine/ smel- ter	mine	supply chain	mine	mine	none	mine	enter- prise/ supply chain	mine
Upstream	(yes)	yes	yes	yes	no	yes	yes	no[22]	(no)	no
Downstream	(yes)	yes	yes	yes	no	no	yes	no	(no[23])	no
Applicable to ASM	(yes)	yes	yes	yes	(yes)	no	yes	(yes)	(no)	yes

[22] According to the initiative, for a mine to be certified in compliance with the Cyanide Code, the mine must purchase its cyanide from a producer certified to be in compliance with the program, and all transportation elements (i.e. trucking companies, ports, ocean carriers, rail, and interim storage facilities) used to move the cyanide from the producer to the mine must also be certified or part of a certified transportation supply chain. The requirements of the Cyanide Code are detailed in our Mining Verification Protocol. While the initiative does include the upstream supply chain of cyanide, it focuses on the mine. Consequently, we do not rate the upstream part as 'yes' because our study considers the upstream portion of the IT supply chain.

[23] SA 8000 focuses on producing companies and poses specific requirements for their supply chain but the focus is it does not imply the downstream part of minerals supply chains (Mine to the company placing the product on the market).

Table 4

Approaches concerning 3TG minerals					
	Better Sourcing Program	**CTC Standards Certification**	**Conflict-free gold mining**	**Responsible Minerals Initiative[24]**	**iTSCi[25]**
Regional Focus	yes	yes	no	no	yes
Which Minerals?	3T (no G)	3TG	Gold	3TG	3T
Environment					
Water Pollution	yes	yes	(no)	(no)	(no)
Water Scarcity at the Place of Extraction[26]	(yes)	no	no	(no)	(no)
Air Pollution	(no)	yes	(no)	(no)	(no)
Soil Pollution	(no)	yes	(no)	(no)	(no)
Mercury	(no)	yes	(no)	(no)	(no)
Cyanide	(no)	yes	(no)	(no)	(no)
Abandoned/Closed Mines	yes	yes	no	(no)	(no)
Human Rights					
"Human Rights" mentioned	yes	yes	yes	yes	yes
Forced Labour	yes	yes	yes	yes	yes
Human Trafficking	(yes)	no	yes	(no)	(no)
Child Labour	yes	yes	yes	yes	yes
Violence by Security Forces	yes	(yes)	yes	yes	yes
Rape and Forced Prostitution	yes	no	yes	yes	yes
Financing of Armed Groups	yes	yes	yes	yes	yes
Additional Workers´ Rights					
Health and Safety	yes	yes	(no)	(no)	(yes)
Fair Payment	yes	yes	no	no	no
Collective Bargaining	yes	yes	no	no	no
Health Insurance After Accidents	no	(no)	no	no	no

[24] Formerly, Conflict-Free Smelter Program.

[25] According to information on the website of ITSCI, iTSCI has a detailed audit checklist with more than 300 criteria. Unfortunately iTSCI does publish the checklist, hence this criteria are not reflected in this evaluation. As the criteria are not published it is not possible for the public to assess whether the 300 criteria are implemented as they are not even published.

[26] This category was added after the review of our analysis by the initiatives; thus, it is the result of our assessment without a review by the initiatives.

Social Impact on Local Population					
Livelihood of Local Population	(yes)	yes	(no)	no	no
Mining by Locals/Contracting of Local Population	(no)	(no)	(no)	no	no
Cultural Rights	no	(no)	(no)	no	no
Forced Resettlement	no	(yes)	(no)	no	no
Compensation for Resettlement	no	(no)	no	no	no
Participation and Remedy					
FPIC	yes	yes	no	no	no
Access to Remedy	yes	no	no	(yes) [27]	no
Grievance Mechanism	yes	(yes)	yes	yes	yes
Corruption	yes	yes	yes	yes	yes
Supplier					
Trainings	no	no	(no)	yes	yes
System of Incentives	no	no	(no)	(yes)	no
Long-term Contracts	no	no	no	(yes)	yes
Supply Chain					
Monitoring Focus	mine to smelter	mine	mine	smelter	mine to smelter
Upstream	yes	yes	yes	yes	yes
Downstream	no	no	no	(no)	no
Applicable to ASM	yes	(yes)	(yes)	yes	yes

[27] At the moment of our update we could not find any more information on this issue.

Table 5

Approaches concerning more than 3TG or other minerals							
	Fairtrade Gold Standard	**Respon-sible Aluminium Steward-ship**	**Respon-sible Business Alliance[28]**	**Fairmined Gold Standard**	**Respon-sible Gold Guidance (LBMA)**	**Respon-sible Jewellery Council**	**DMCC**
Regional Focus	no	no	no	no	no	no	no
Which Minerals?	gold, platinum group metals	aluminium	no specific focus	gold, platinum group metals	gold, (silver)	gold, platinum, palladium, rhodium	Gold and precious metals
Environment							
Water Pollution	yes	yes	yes	yes	(no)	yes	(no)
Water Scarcity at Place of Extraction[29]	no	yes	no	yes	(no)	yes	(no)
Air Pollution	(yes)	yes	yes	(yes)	(no)	yes	(no)
Soil Pollution	yes	yes	(yes)	yes	(no)	yes	(no)
Mercury	yes	no	(yes)	yes	(no)	yes	(no)
Cyanide	yes	no	(yes)	yes	(no)[30]	yes	(no)
Abandoned / Closed Mines	yes	yes	no	yes	(no)	yes	(no)
Human Rights							
'Human Rights' Mentioned	yes	yes	yes	yes	yes	yes	yes
Forced Labour	yes	yes	yes	yes	yes	yes	no
Human Trafficking	yes	yes	yes	yes	no	yes	no
Child Labour	yes	yes	yes	yes	yes	yes	(yes)
Violence by Security Forces	no	(yes)	no	no	yes	yes	(yes)
Rape and Forced Prostitution	yes	yes	no	yes	yes	no	no
Financing of Armed Groups	yes	yes	(yes)	yes	yes	yes	yes

[28] Formerly, Electronic Industry Citizenship Coalition.
[29] This category was added after the review of our analysis by the initiatives; thus, it is the result of our assessment without a review by the initiatives.
[30] The companies are asked if they are using mercury or cyanide but we cannot see that the approach demands not to use it.

Additional Workers´ Rights							
Health and Safety	yes	yes	yes	yes	no	yes	(yes)
Fair Payment	yes	yes	yes	yes	no	yes	no
Collective Bargaining	yes	yes	yes	yes	no	yes	no
Health Insurance After Accidents	yes	no	(yes)	yes	no	no	no
Social Impact on Local Population							
Livelihood of Local Population	yes	yes	no	yes	(no)	yes	no
Mining by Locals/Contracting of Local	yes	(yes)	no	yes	(no)	yes	no
Cultural Rights	yes	yes	no	yes	(no)	yes	no
Forced Resettlement	(yes)	yes	no	(yes)	(yes)	yes	no
Compensation for Resettlement	(yes)	yes	no	(yes)	no	yes	no
Participation and Remedy							
FPIC	(yes)	yes	no	(yes)	no	yes	no
Access to Remedy	no	yes	no	yes	no	yes	no
Grievance Mechanism	yes	yes	yes	yes	yes	yes	yes
Corruption	yes	yes	yes	no	yes	yes	(yes)
Supplier							
Trainings	yes	yes	(yes)	yes	yes	yes	yes
System of Incentives	yes	no	no	yes	(no)	no	(yes)
Long-term Contracts	yes	no	no	yes	no	(no)[31]	(yes)
Supply chain							
Monitoring Focus	ASM mining	supply chain	enterprise	ASM mining	mine	supply chain	supply chain
Upstream	yes	yes	yes	yes	yes	yes	yes
Downstream	no	yes	yes	yes	no	yes	no
Applicable to ASM	yes	no	yes	yes	yes	yes	yes

Comparative Result of Coverage

The comparison of the different approaches shows that the voluntary approaches indeed cover more ethical risks than the legally binding approaches. While the approaches are difficult to compare because of their different scope and focus, the analysis can provide a general overview. Some ethical risks are covered more extensively than others across the initiatives. Child labour and

[31] Only mentioned as desired in the voluntary Chain of Custody Standard

forced labour are two risks that almost every approach includes, while environmental issues are rarely covered by approaches focusing specifically on 3TG minerals.

There are also very few initiatives that cover all ethical risks. Often, there is a specific focus on one issue or one area. The SA 8000, for example, covers all ethical risks in the area of human and social and workers' rights; however, because it is an approach meant for social certification, it does not include any of the environmental risks. A few initiatives chose a specific focus to target an area or specific risk more efficiently. The limited scope of the initiatives can be explained this way.

Other approaches, such as the Global Reporting Initiative, the Responsible Jewellery Council, and the Initiative for Responsible Mining Assurance (IRMA) cover almost all ethical risks with their broader scope and general focus.

Even when the voluntary approaches individually and collectively cover more ethical risks than the legally binding approaches, there remains the question of implementation.[32] A critical precondition for reliable implementation is an explicit and unambiguous expectation by the initiatives to address a certain risk. As mentioned before, weak monitoring mechanisms can also hint at weak enforcement. Little transparency over implementation inhibits a verification of implementation. This is why we will take a closer look at these aspects. The tables above give an overview of the risks addressed by the initiatives. The following tables and analysis will focus on the transparency of implementation.

[32] Global Initiative Against Transnational Organised Crime (2016): "'Organized Crime and Illegally Mined Gold in Latin America".: http://globalinitiative.net/documents/organized-crime-and-illegally-mined-gold-in-latin-america/
Bloomberg (2017): "'Gold Company Manager Charged in Vast Peruvian Smuggling Plot": https://www.bloomberg.com/news/articles/2017-03-16/gold-company-manager-charged-in-vast-peruvian-smuggling-scheme; Bullion Directory (2017): "LBMA (Quietly) Removes Elemetal's Good Delivery Status.: https://bullion.directory/lbma-quietly-removes-elemetal-good-delivery-status; List of LBMA refiners on the former Good Delivery list: http://www.lbma.org.uk/refiners-gold-former

4.3 Credibility of Voluntary Approaches

Transparency of implementation is crucial in order to distinguish between an initiative that actually makes sure that membership means that each member implement the initiative's stated ambitions and those initiatives that are ambitious but fail at implementation. As stated above, scientific studies have shown that approaches with ambiguous expectations, low adoption costs and high substantive compliance costs, a lack of assurance structures, and weak enforcement mechanisms are only adopted on paper and not implemented in practice.[33] Thus, in the area of mineral extraction where supply chains are complex and considerable effort is needed to ensure that ethical risks are addressed and a thorough monitoring of implementation is important. Consequently, we may argue that the better the implementation of an approach is monitored, the higher the transparency of the results of this monitoring, and the stronger the enforcement mechanisms, the higher is its credibility. It is important to note that audits alone, even independent and high-quality ones, are not sufficient to ensure that an approach is credible. Other criteria are also important, for example a grievance mechanism through which local inhabitants and workers can contact the approach organisation in case any rights violations occur between audits. Additionally, follow-up of a corrective action plan (CAP) and sanctions are necessary to ensure implementation of the criteria. Additional and independent information about a company or mine can be obtained via grievance mechanism and the consideration of local population at the place of extraction. These factors we consider in our assessment. Moreover important but not considered in our assessment is that the initiative proactively considers additional information on the company such as media reports, NGO reports and scientific studies and executes spot checks.

To assess the credibility of the selected voluntary approaches in this chapter, we developed a set of criteria. These criteria were based on recommendations about labels and standards established by the German Corporate Accountability Network (CorA);[34] four interviews with experts involved in auditing processes, and multi-stakeholder dialogues within different sectors (including mining, textile, and cocoa);[35] feedback from a working session of the civil society network Arbeitskreis Rohstoffe (November 2016) working on raw material issues; and discussions at the conference "Electronics Goes Green" in 2016.

[33] Edelman, L. B. (1992): "Legal ambiguity and symbolic structures: Organizational mediation of civil rights law". American Journal of Sociology, 97, pp. 1531-76. and Elbannan, M./McKinley, W. (2006): "A theory of the corporate decision to resist FASB standards: An organization theory perspective". Accounting, Organizations and Society, 31, pp. 601-22. and Kalev, A./ Dobbin, F./ Kelly, E. (2006): "Best practices or best guesses? Assessing the efficacy of corporate America's affirmative action and diversity policies". American Sociological Review, 71, pp. 589-627., quoted after Behnam, M./MacLean, T. (2011): "Where Is the Accountability in International Accountability Standards? A Decoupling Perspective". Business Ethics Quarterly 21:1, p. 50.

[34] CorA (2015): "Siegel, Standard–Systeme und gesetzliche Regelungen zur Durchsetzung von Arbeits- und Menschenrechten": https://www.cora-netz.de/cora/wp-content/uploads/2015/10/CorA_Positionspapier_Labels_2015-09.pdf

[35] Heidi Feldt (mining), Gisela Burckhardt (textile sector), Berndt Hinzmann (textile sector), and Friedel Hütz-Adams (cacao).

4.3.1 Explanation of Criteria Used

In the following section, we will elaborate why we chose specific criteria for evaluating an approach's credibility, illustrate what an initiative required in order to receive a 'yes' for each criterion, and evaluate and compare all initiatives in terms of credibility (Table 6).

Independence of Results:

Role of initiative

We consider it a minimum requirement that either the initiative checks the (audit) report of the company (criterion 1) or organises the audit itself (criterion 2) to ensure quality management of the audit.

Independence of audit (criterion 3)

Moreover, the independence of an audit is crucial, yet not very easy to define and operationalize. Many initiatives have third-party audits (criterion 3.1), but they are not necessarily independent. Examples from the textile industry show that audits paid for by the company audited are often equivalent to simply buying a good image, with more expensive audits yielding better assessment results than inexpensive ones.[36] Thus, as the financing structure already reveals to a certain degree how prone an audit is to falsification, we included the independence of finance into our criteria (criterion 3.3). Furthermore, it is essential to not always have the same auditor analysing a mine or supply chain, as this can lead to personal dependency. Thus, we added the requirement of a rotation system of auditors (criterion 3.2) into our criteria.[37]

Independence of finance means that, ideally, a multi-stakeholder group—including state-actors, companies, organisations, and civil society—is created to organise and pay for the audit.[38] This inhibits a direct financial relationship between auditor and auditee or other interested parties. Cases in which a multi-stakeholder group only organises or finances the audit are considered less independent, similar to those cases in which the initiative organises or pays for the audit. The initiative is seen to be least independent in cases where independently financed audits only exist as a voluntary option.

Transparency of the implementation process and identified challenges

Moreover, it is important to publish a complete audit report—not only in summary (criterion 4). A summarized or abbreviated audit report can potentially allow auditees to leave out crucial details. Moreover, if audit reports are not published, it is difficult for downstream companies to manage risks in their supply chain as the audit reports might not inform them about risks within the supply chain. For the sake of transparency, a complete audit report should be published, so that the public, as well as other stakeholders, can understand the auditing process and the result.

[36] Burckhardt, G. (2014): "Todschick: Edle Labels, billige Mode – unmenschlich produziert". München. pp. 107ff.

[37] An auditor rotation system can prove problematic for smaller certification agencies and can lead to different auditors interpreting criteria differently if the criteria are not precise enough or if the auditors are unfamiliar with the initiative they are auditing.

[38] By 'organizing' an audit we mean that the initiative offers a list of qualified auditors (for the sake of transparency) and arranges their visits.

Unannounced audits versus involvement of affected communities (criterion 5)

In some situations, unannounced audits are important for preventing a company from preparing for an audit. This is especially relevant for audits in factories, in the textile sector, but they are also relevant for audits in the mines themselves. In cases of announced audits, companies may temporarily hide certain practices, such as child labour, or advise workers to wear protective clothing that is generally not used. However, in a mining context, not only the perspective of workers but the perspective and concerns of local communities need to be prominently taken into account. Thus, it is important that audits be announced to ensure that local communities have sufficient time to organise their involvement. An additional factor is that mining sites are often difficult to access. It is then important that the auditor agrees on one or several dates with the company or mine to ensure that travel to the mine will successfully result in an audit.

As these special conditions of the mining sector make unannounced audits hard to execute, a crucial issue is the competence of the auditors. A competent auditor is an auditor who might also notice if a measure shown in the audit is not being implemented and integrated in the actual procedure. For example, a good auditor would notice that the helmets worn by workers do not look used and were only provided for the audit. However, as it is difficult for us to measure the competence of the auditor, we did not include this criterion in our evaluation. But it remains an important factor in the verification of results.

Grievance mechanisms (criteria 6 and 7)

As already noted, audits alone cannot guarantee that the practices presented to an auditor conform to reality—for instance, it might be hard for an auditor to judge whether child labour usually exists in a mine or not.

Consequently, two separate grievance mechanisms are required to ensure that the affected community can voice their concerns. The first is a permanent grievance mechanism directed to the initiative (criterion 6), separate from any such mechanism established by the company itself. This mechanism assures that affected communities or other observers, like civil society organisations, may contact the approach organisation between audits to address any rights violations or other problems.

The second is a grievance mechanism directed at the audit itself (criterion 7): workers or affected communities or other observers may voice their concerns if audits are not being conducted thoroughly, or auditors have been influenced by the company or mine being audited.

Moreover important but not considered in our assessment is that the approach proactively considers additional information on the company such as media reports, NGO reports and scientific studies and executes spot checks.

Follow-up processes and exclusion in case of non-compliance (criteria 8 and 9)

To safeguard that ecological, human rights, and social risks, as well as specific problems identified within the supply chains, are actually addressed, a corrective action plan is necessary, along with a follow-up process (criterion 8).

Sanction mechanisms (criterion 9) are necessary to ensure that the corrective measures identified are actually being implemented, and that companies are not just participating in initiatives with-

out making any improvements.[39] The last possible sanction should be the exclusion of a company from the initiative. The establishment of a timeline is important to specify the date by which corrective action must be implemented in order to prevent exclusion from the initiative. As different ethical risks require different amounts of time to be addressed, we have not rated the sanction mechanism according to specific timeframes but in relation to the existence of a timeline more generally.

We have decided to focus on the existence of a follow-up of corrective action plans and sanction mechanisms as a long-term means of addressing the shortcomings identified by audits. We have not included the frequency of audits in our credibility rating, but have used it as an informative criterion. The frequency of audits can be indicative of the actuality of a result, but the follow-up of the corrective action plan along with a timeline seem more relevant, as they guarantee improvements and imply continued monitoring.

Overall Credibility of the Initiative

After analysing all the criteria described above, we have summarized them and generated a final result. We call this the 'overall credibility of the approach', which describes to what extent the public can trust the published outcome of a mine's activities. Specific factors are especially important when it comes to reviewing the overall credibility of the approaches. First, reports should be reviewed by the initiative, or the initiative should conduct the audit itself, and they should be fully published. Even just a summary of the full audit report must be made available to assure at least partial credibility and transparency. Especially important is a follow-up corrective action plan; this is needed even to achieve partial credibility. Additionally, sanctions for non-compliance with a timeline are important to ensure that corporations adhere to the approach and that companies or smelters cannot retain membership of an initiative or certification without demonstrating that problems discovered during an audit have not been addressed. This is one minimum requirement for earning a 'largely credible and transparent' rating. Moreover, we have determined that the inclusion of complaints and opinions from communities or other observers are crucial even for a 'partially credible' rating.

Guidelines like the OECD Guidelines for Multinational Enterprises (see Table 10) cannot be assessed in the same way as schemes, initiatives, and voluntary approaches. We can only evaluate how they expect companies to implement their guidelines. Many of the initiatives or certification schemes already mentioned refer to one of the guidelines or even mandatory frameworks described in Chapter 3. In some cases, they even function to specify the implemention requirements of mandatory frameworks. Given their different characters, we have listed guidelines in a separate table.

4.3.2 Guidance to the Tables Concerning the Overall Credibility of Voluntary Approaches

The following table sums up the criteria we used to assign 'yes', '(yes)', '(no)', and 'no' to the different credibility requirements.

[39] As companies sometimes already include the fines into their annual budget, monetary sanctions should be reasonably sized. See for example the case of a tailings dam in Hungary: WWF (2011): "Little action apparent on toxic tailings six months after Hungary red mud disaster".: http://wwf.panda.org/?199897/Six-months-after-the-red-mud-tragedy-in-Hungary-tailings-dams-in-region-still-major-threat

Table 6

Credibilty Criteria	**Explanation**
1) Report Reviewed by Approach Organisation	yes: the initiative reviews the report made by the company and/or audit report (yes): the initiative may review the report made by the company and/or audit report (no): the initiative reviews the process of the report made by the company and/or audit report but not the content. Alternatively, only a limited audit report, for example, a summary, is reviewed, or the company report is reviewed by an external assurance provider
2) Initiative Sets Up Audit at Mine, Smelter, or Company	the initiative contracts the auditor (no information on who is hired or how they are paid)
3) Independence of Audit	an independent audit is defined here as a third-party audit, with an auditor-rotation system, and independent financing yes: if all three of these are yes (yes): if two of the criteria are reached with at least (yes) (no): if one of the criteria is at least (yes)
3.1) Third-Party Audit	yes: mandatory third-party audit for everyone (yes): the use of a third-party auditor is restricted
3.2) Auditor Rotation System	yes: some kind of auditor-rotation system exists
3.3) Independent Financing	yes: a multi-stakeholder group is in place to organize and finance the audit (yes): a multi-stakeholder group exists, but only organizes or finances the audit, or the initiative invoices the auditor instead of the company (no): a possibility for more independent financing exists, for example, through the supply chain
4) Transparency of Report (audit report published)	yes: the full audit report is published (yes): a summary or a shortened version of the report must be published

5) Consideration of External and Independent Opinions (local populations—not just representative of the surrounding communities and NGOs)	yes: consideration is mandatory for all companies (yes): there is some restriction of what must be considered or certain phrasing is vague
6) Permanent Grievance Mechanism[40]	yes: there is a permanent grievance mechanism and companies can be excluded if communities or other observers issue verified complaints of severe violations (yes): there is a permanent grievance mechanism, but no possibility of exclusion no: there is no permanent grievance mechanism
7) Grievance Mechanism Concerning the Audit	yes: a grievance mechanism is in place (yes): grievance mechanism included in permanent grievance mechanism (no): grievance mechanism is mentioned but not applied
8) Follow-Up of Corrective Action Plan/Control of Implementation of Proposed Improvements	following confirmation of a company's non-conformance, it is offered a Follow-Up Corrective Action Plan (CAP) that details steps for mitigating risks and achieving compliance yes: a CAP is issued in every case of non-conformance
9) Sanctions for Non-Improvement	yes: there is a possibility of excluding a company for non-improvement within an established timeline
10) Overall Credibility	**fully credible and transparent**: there are considerable monitoring mechanisms in place to ensure transparency and credibility of implementation at least (yes) for 1 (report reviewed by approach organisation) or for 2 (approach organisation initiates audit); at least (yes) for 3 (independent audit); yes for 4 (audit report published); yes for 5 (consideration of external and independent opinions); yes for 6 (permanent grievance mechanism); yes for 7 (grievance mechanism concerning audit); yes for 8 (follow-up of CAP/control of implementation);

[40] This category was added after the review of our analysis by the initiatives; thus, it is the result of our assessment without a review by the initiatives.

	yes for 9 (sanctions) **largely credible and transparent**: there is a monitoring mechanism in place that provides a certain transparency and limited credibility of implementation at least (yes) for 1 (report reviewed by approach organisation) or 2 (approach organisation initiates audit); at least (yes) for 3 (independent audit); at least (yes) for 4 (audit report published); at least (yes) for 5 (consideration of external and independent opinions); at least (yes) for 6 (permanent grievance mechanism); at least (yes) for 7 (grievance mechanism concerning audit); at least yes for 8 (follow-up of CAP/control of implementation); yes for 9 (sanctions) **partly credible and transparent:** there is a rudimental monitoring mechanism in place that lacks considerable credibility and transparency of implementation at least (no) for 3 (independent audit); at least (yes) for 4 (audit report published); at least (yes) for 5 (consideration of external and independent opinions); or for 7 (grievance mechanism concerning the audit); at least (yes) for 8 (follow-up of CAP) **not credible or transparent: there is either highly insufficient monitoring in place or none at all: any ratings below 'partly credible'**

4.3.3 Evaluation of Voluntary Approaches Regarding Credibility

Table 7

Approaches at the Mine/Addressing Mining Companies						
	Voluntary Principles on Security and Human rights	**Internatio-nal Council on Mining and Metals**	**Global Reporting Initiative**	**Inter-national Cyanide Manage-ment Code**	**SA 8000**	**IRMA**
Year	2000	ICMM: 2001	1997	2005	1997	2016+
Type of Initiative	code of conduct	code of conduct	approach for reporting	code of conduct	certification	certification
What is Expected?	report	report	report	report	compliance	report
Type of User	countries/ enterprises	mining companies	enterprises	mining enterprises	enterprise	mining enterprises
Audit in Place/Focus of Audit	no audit required	company	no audit required	company	company required/ supply chain (optional)	company
Frequency of Audits[41]	none	annually	none	3 years	no information	3–5 years, possibility of mid-cycle audits
Report Reviewed by Standard Organisation	no	(yes)	no	yes	(no)	(yes)
Audit Initiated by Standard Organisation/Approach	no	(yes)	no	no	no	yes
Independent Audit	no	(no)	(no)	(yes)	(no)	(no)
Third-Party Auditor	no	yes	yes	yes	yes	yes
Auditor-Rotation System	no	no	no	yes	no	no
Independent Financing	no	no	no	no	no	no
Audit Report Published	no	yes	no	(yes)	no	(yes)
Consideration of External and Independent Opinions	no	no	no	yes	yes	yes
Permanent Grievance Mechanism[42]	no	no	no	yes	no	no
Grievance Mechanism Concerning the Audit	no	no	no	yes	yes	yes

[41] This category was added after the review of our analysis by the initiatives; thus, it is the result of our assessment without a review by the initiatives.

[42] This category was added after the review of our analysis by the initiatives; thus, it is the result of our assessment without a review by the initiatives.

Follow-Up of Corrective Action Plan	no	yes	no	yes	yes	yes
Sanctions for Non-Improvement	no	no	no	yes	yes	no
Overall Credibility Concerning Implementation	**not credible or trans-parent**	**not credible or trans-parent**	**not credible or trans-parent**	**largely credible and transparent**	**not credible or trans-parent**	**partly credible**

Table 8

Approaches concerning 3TG only					
	Better Sourcing Program	**CTC Standards Certification**	**Conflict-free gold mining**	**iTSCi**	**Responsible Minerals Initiative[43]**
Year	2014/2015	2009/2011	2012	2008	2011
Type of Initiative	certification	standard	standard	programme	standard
What is Expected?	no information	report	report	report	compliance
Type of User	enterprise	mining enterprise	mining enterprises	enterprises	smelter and refiners
Audit in Place/Focus of Audit	mine	company	company	mine	mine
Frequency of Audits[44]	1-3 years	3 years	1-3 years	no information	1-3 years
Report Reviewed by Approach	no	yes	no	(yes)	yes
Audit initiated by Initiative	yes	yes	no	yes	yes
Independent Audit	(no)	(no)	(no)	(no)	(yes)
Third-party Auditor	yes	yes	yes	(yes)	yes
Auditor Rotation System	no	no	no	no	yes
Independent Financing	no	no	no	no	(no)[45]
Audit report published	(yes)	(yes)	no	(yes)	(yes)
Consideration of External and Independent Opinions	yes	no	no	(yes)	no
Permanent Grievance Mechanism[46]	no info	no	no	(yes)	(yes)
Grievance Mechanism Concerning the Audit	no	no	(no)	(yes)	yes
Follow-Up of Corrective Action Plan	yes	yes	yes	yes	yes
Sanctions for Non-Improvement	no	no	yes	no	yes
Overall credibility concerning implementation	**partly credible and transparent**	**not credible and transparent**	**not credible and transparent**	**partly credible[47]**	**partly credible and transparent**

[43] Formerly, Conflict Free Smelter Program.
[44] This category was added after the review of our analysis by the initiatives; thus, it is the result of our assessment without a review by the initiatives.
[45] Funded by the auditee except for the first audit
[46] This category was added after the review of our analysis by the initiatives; thus, it is the result of our assessment without a review by the initiatives.
[47] Within our grading scheme we did not include the frequency of audits. Consequently, following our grading scheme iTSCI obtains a partly credible. But an OECD study states that in 2016 only 5 audits for 159 members have been conducted. This does point to a rather weak management concerning the implementation.

Table 9

Approaches concerning more and/or other than 3TG minerals							
	Responsible Aluminium Standard	**Responsible Business Alliance**[48]	**Fairmined Gold Standard**	**Responsible Gold Guidance (LBMA)**	**Responsible Jewellery Council**	**Fairtrade Gold Standard**	**DMCC**
Year	2012+	2004	2014	2012	Code of Practice: 2009/2010; Chain of Custody Certification: 2012	2010-2013; 2013	2012
Type of Initiative	certification	code of conduct	certification	standard	certification	certification	Mandatory rules for all DMCC members
What is Expected?	report	compliance	report	report	report	report	compliance
Type of User	enterprises	enterprises	ASMOs	refinery enterprises	miners, refiners, retailers, traders, manufactures	ASMOs	Refinery enterprises
Audit Place/Focus of Audit	company	supply chain, company	supply chain, company	company	supply chain	supply chain	supply chain
Frequency of Audits[49]	no information	2 years or more	annually, every three years if fully compliant	3 years	1-3 years	annually	One audit to become member, review of audit after 3 years, no public info about further audits
Audit Report Reviewed by Approach	yes	yes	yes	yes	yes	no	no
Audit Initiated by Approach	no	yes	yes	no	no	yes	no
Independent Audit	(no)	(no)	(no)	(no)	(no)	(no)	(no)
Third-party Auditor	yes	yes	yes	yes	yes	yes	yes
Auditor Rotation System	no	no	no	no	no	no	no
Independent Financing	no	(no)	(no)	no	no	(no)	no
Audit Report Published	(yes)	(yes)	no	(yes)	no	no	(yes)

[48] Formerly, Electronic Industry Citizenship Coalition.
[49] This category was added after the review of our analysis by the initiatives; thus, it is the result of our assessment without a review by the initiatives.

Consideration of External and Independent Opinions	yes	(yes)	(yes)	(no)[50]	(yes)	(yes)	no
Permanent Grievance Mechanism[51]	(yes)	no	no[52]	(yes)	(yes)	no	(yes)
Grievance Mechanism Concerning the Audit	yes	no	yes	(yes)[53]	(yes)	no	no
Follow-Up of Corrective Action Plan	yes	yes	yes	yes	yes	yes	yes
Sanctions for Non-Improvement	yes	yes	no	yes	yes	no	(yes)
Overall credibility concerning implementation	**partly credible and transparent**	**partly credible and transparent**	**not credible and transparent**	**partly credible and transparent**	**not credible and transparent**	**not credible and transparent**	**not credible and transparent**

[50] Recommended but not required.
[51] This category was added after the review of our analysis by the initiatives; thus, it is the result of our assessment without a review by the initiatives.
[52] The standard establishes measures to deal with third-party allegations but does not set a procedure for making such allegations.
[53] E-mail adress on the website.

Table 10

Guidelines				
	OECD Guidelines for MNE	**OECD Due Diligence Guidance**	**Chinese Guidelines for Social Responsibility**	**Chinese Due Diligence Guidance**
Year	1976, update 2011	2010	2014	2015
Type of Approach	guideline	guideline	guideline	guideline
What is Expected?	compliance	compliance	compliance	report
Type of User	countries/enterprises	enterprises	enterprises	enterprises
Focus of Audit	supply chain, company	supply chain	none	supply chain, company
Frequency of Audits	annually	none	none	no information
Independent Audit	(no)	(no)	no	(no)
Third-Party Auditor	(yes)	yes	no	yes
Auditor-Rotation System	no	no	no	no
Independent Financing	no	no	no	no
Audit Report Shall Be Published	(yes)	yes	no	yes
Consideration of External and Independent Opinions	no	yes	no	no
Grievance Mechanism Concerning the Audit	no	yes	no	yes

These guidelines have to be treated differently than the initiatives above. This table only illustrates what the guidelines ask from companies specifically. It also shows that the guidelines are not always very specific about implementation and leave individual companies room for their own interpretations.

Generally there is an absence of transparency when it comes to implementation, verification, and enforcement mechanisms. We see considerable need for improvement in several categories, for example: consideration of external and independent opinion, independence of audits, publication of full audit reports, grievance mechanisms between audits, and sanctions for non-improvement. In fact, none of the approaches or guidelines fully meets our criteria because they fail to demand sufficient monitoring and enforcement.

Consequently, an interested public cannot judge whether risks are addressed by specific initiatives, and it can be difficult for IT or other downstream companies to ensure that the minerals they buy do not contribute to human rights abuses or avoidable environmental damage.

5 Overall Conclusion

The first investigative report of the IT sector in 2008 marked the moment the IT sector began accepting responsibility for ethical risks generated by its mineral supply chain. Ten years later, new legislation has been passed, and the number of voluntary approaches addressing the mineral supply chain has largely increased. Yet there continue to be reports about serious human rights violations and environmental destruction caused by the mining sector, and we can identify huge governance gaps. Another general finding is that new mandatory frameworks draw from voluntary approaches for the definition of risk or for the execution of due diligence, giving voluntary approaches a new standard-setting power.

Mandatory frameworks

We can distinguish between frameworks that focus on mining-related issues and those that pursue more general approaches. The US Dodd-Frank Act (1502) and the EU regulation on responsible mineral sourcing are relatively new frameworks that focus on mineral supply chains and are the most far reaching in this regard, but both have considerable shortcomings. Only IT companies listed on the New York Stock Exchange are required to ensure that minerals sourced only from the Great Lakes region do not finance conflicts. Companies that bring in IT-products on the European market are not required to do DD, or are subject to any checks. Moreover, these frameworks fail to address numerous environmental, human rights, and social risks.

We identified several more general pieces of legislation that could contribute to filling existing governance gaps. These include the EU Non-Financial Reporting Directive, the French Loi de Vigilance, the UK Modern Slavery Act, and the California Transparency in Supply Chains Act. All of these pursue different approaches to corporate accountability and deal with certain aspects relevant for the sourcing of minerals. However, except for the UK Modern Slavery Act and the California Transparency in Supply Chains Act, they are more general in wording and concerning the coverage of risks. This allows companies great discretion in terms of which risks to report or monitor. Without even looking at the monitoring of implementation, we may conclude that there are considerable governance gaps concerning the ethical risks posed by mineral supply chains present in the IT sector.

At the same time, the EU regulation on responsible mineral sourcing addresses European smelters and importers of primary materials. Thus, it may be easier for European downstream companies to source responsibly, in line with the international OECD standard, once the EU regulation on responsible mineral sourcing is properly implemented. One precondition is that due diligence is pursued by smelters and union importers. Currently, industry schemes are seen to play an important role in this sense. However this study supports the view that this is insufficient and a due diligence practice cannot be based on industry schemes alone.

Voluntary Approaches

The recent boom in voluntary approaches is not merely product of the establishment of Dodd Frank Act and the EU regulation on responsible mineral sourcing. For some years now, a large number of voluntary approaches that address far more risks than do mandatory frameworks have emerged. While many approaches focus on specific issues, there are some that cover nearly all identified risks. However, there are considerable insufficiencies regarding the initiatives' transparency of implementation as well as their overall credibility. Consequently, neither an interested public nor downstream companies can be sure that environmental, human rights, and social risks addressed by the initiatives are actually being addressed by the certified company or member.

None of the assessed initiatives or guidelines sufficiently met the criteria we developed concerning credibility. There is considerable room for improvement in several categories, for example: consideration of external and independent opinion, independence of audits, sanctions for non-improvement, publication of full audit reports, and grievance mechanisms between audits. When looking at the weaknesses of different voluntary initiatives' monitoring mechanisms, it is evident that affiliation (membership or certification) with these initiatives does not alone serve as proof that minerals were sourced in a way that addressed ethical risks. As a result, legislation that draws upon voluntary approaches, like the EU regulation on responsible mineral sourcing must ensure that the EU Commission closely monitors these schemes and sets specify and high requirements before accrediting them. Moreover Member states and the Commission can never transfer their responsibility to regulate corporation and to ensure that they execute a proper due diligence to industry schemes. All in all, we must conclude that many ethical risks in the supply chain are not sufficiently addressed by current mandatory frameworks and voluntary approaches.

Further Aspects That Need to Be Addressed

Clearly, monitoring and enforcement are not the only critical issues involved in effective implementation. Further categories that should be assessed are cost and burden-sharing along the supply chain. Current reports state that the certification costs are mainly absorbed by the miner. This may severely impact who can afford the certification and who cannot, which, in turn, may have a harmful effect on the livelihoods of artisanal miners. Additionally, our interviews have revealed that the risk of exclusion of important local experts from civil society at the extraction site is another important issue to consider in relation to implementation.[54] Local experts can provide important knowledge about local dynamics and act as agents for peace. Their knowledge can be crucial for a successful due diligence practice. But often local dynamics resulting from conflict and corruption in the mining sector result in their exclusion from the important implementation process. Not accessible via desk research, understanding power relations is crucial for the success of implementation. More impact research at the extraction site is needed to better understand the relationship between transparency of results and the actual impact on the ground. An additional factor that can provide insides about the implementation practice and potential gaps between claims of the initiatives and the actual implementation is whether the initiatives proactively conducts additional spot checks of the mine side or supply chain as well as proactively considers independent sources of information like media reports, scientific studies and NGO reports.

Conclusions Towards the Implementation of the EU Regulation on Responsible Mineral Sourcing

As the EU regulation on responsible mineral sourcing, whose implementation is currently being concretised, is currently the most important mandatory framework regulating the mineral supply chain, we suggest a number of recommendations based on our assessment. Because there are many stakeholders in this implementation, we address our recommendations to the respective actors.

EU Commission:

- The lack of transparency and credibility of voluntary initiatives' implementation of measures demonstrated in the present analysis, and considering reports of human rights abuses of

[54] Gesine Ames, Ökomenischen Netzwerk Zentralafrika

member companies in industry schemes underline what is stated in the OECD Guidelines Section 5, that it is crucial that the EU Commission does not consider the membership of smelters or any other company covered by the Regulation in current industry schemes alone as a means to comply with human rights due diligence. Whitelists of smelters and union importers foreseen within the EU regulation on responsible mineral sourcing that build on memberships within industry schemes alone will not enable for downstream industry to comply with human rights due diligence. Moreover they do not guarantee that the smelter/refineries in question is in fact responsible.

- The EU Commission needs to execute proper and frequent checks of whitelisted individual smelters and union importers of primary minerals regarding their human rights due-diligence practices in order to ensure that they actually comply with the Regulation. This should be in addition to a standards review. The checks need to include spot checks and consider information provided by media, civil society organisations, and industry bodies.
- The membership within an industry scheme may not be a requirement to be ranked as compliant with the regulation as due diligence is also possible to be executed without an industry scheme.
- There is a need for a grievance mechanism based at the EU Commission for complaints regarding the implementation, monitoring, and enforcement of industry schemes and whitelisted companies.
- The EU Commission should establish high criteria for the monitoring and enforcement mechanisms of industry schemes. These need to be at minimum aligned to the OECD Guidance OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas.
- Considering the huge governance gap within the mineral supply chain of IT products and the exclusion of the companies placing IT products on the European market from the obligation to source responsibly, the downstream sector should be included in the mandatory frame of the EU regulation on responsible mineral sourcing. This would considerably broaden the leverage of the EU regulation and make IT companies accountable for financing specific conflicts. Likewise, companies outside of the EU, such as Asian manufacturers, could be held accountable. This would increase the level playing field for EU companies. This should be taken up for review by the regulation scheduled for 2023. Until then, the EU Commission must implement the proposed measures to encourage the downstream sector to take responsibility for the sourcing of minerals. These include public procurement, transparency database and reporting tools.
- Human rights due diligence is not the only solution in conflict areas. Accompanying measures as foreseen in the Joint Communication of the EU regulation on responsible mineral sourcing should empower civil society and implement mechanisms to ensure that local experts are included in the implementation process. Accompanying measures are needed for a longterm development strategy and to strengthen marginalised stakeholders on the ground.

Industry-Schemes:

- In order to increase the credibility of industry schemes, it is important that the initiatives' requirements, at a minimum, align with the standards in the OECD Due Diligence Guidance; and that initiatives improve monitoring and enforcement mechanisms. Schemes should rely on audits only but proactively carry checks eg. spot checks of member companies' due diligence practice and consider additional information provided by local NGO, media, scientific reports etc.

IT-Industry:

- The IT sector has become aware of the problems in its supply chain earlier than other sectors like, for example, the automobile sector, so it is slightly ahead of other sectors in its awareness of supply chain responsibility. Yet our assessment shows that existing voluntary initiatives that the IT sector currently depends on are only partly useful in addressing environmental, human rights, and social risks in the mineral supply chain. Consequently, IT companies should push for better monitoring and enforcement mechanism of these initiatives and moreover reduce the dependency on these schemes and conduct their own and additional due diligence of its supply chain. They should proactively engage with their supply chain.

6 Annex

Organisation/Approach	Date of review	Information reviewed by approach
Guidelines		
OECD Guidelines for Multinational Enterprises (OECD Guidelines for MNE)		No
OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (OECD Due Diligence)	2016, no updates seen before publishing	No
CCCMC (Guidelines for Social Responsibility in Outbound Mining Investments)	2016, no updates seen on the website before publishing	No
Chinese Due Diligence Guidelines for Responsible Mineral Supply Chains	2016, no updates seen on the website before publishing	No
Approaches for mines		
Voluntary Principles on Security and Human Rights (Voluntary Principles Security and HR)	June 2017	Yes
International Council on Mining and Metals (ICMM)	June 2017	Yes
Global Reporting Initiative (GRI)	June 2017	Yes
International Cyanide Management Code	June 2017	Yes
SA 8000	June 2017	Yes
Initiative for Responsible Mining Assurance (IRMA)	2016 (version 2.0)/new version of standard expected by end of 2018	No

Approaches focusing on 3TG minerals		
Better Sourcing Programm	2016	No
CTC Standards Certification	June 2017	Yes
Conflict-free gold mining	June 2017, no changes observed since October 2012	No
Responsible Minerals Initiative (former: Conflict Free Smelter Program)	April 2018	No
iTSCi	April 2018	Information reviewed in June 2017, Update not reviewed
Approaches focusing on more or other than 3TG		
Fairtrade Gold	June 2017	Yes
Responsible Aluminium Standard (Aluminium Stewardship Initiative)	June 2017	Yes
Responsible Business Alliance (former Electronic Industry Citizenship Coalition)	June 2017	Yes
Fairmined	June 2017	Yes
LBMA Responsible Gold Guidance (LBMA)	April 2018	No
Responsible Jewellery Council	April 2018	Review of information in June 2017, Update of information not reviewed by approach
DCCM	April 2018	No

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