



Remote audits and assessments

Experiences from the forestry and mining sectors

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General Context

The Swiss Better Gold Association (SBGA) with support of the Better Gold Initiative for Artisanal and Small-Scale Mining (BGI) has developed its own sourcing policy and applies an escalator model in its cooperation with artisanal, small-scale and medium-scale producers. SBGA's sourcing policy is based on progressive improvements regarding responsible production. In order to assure the adherence to the sourcing policy, on-site verifications are carried out. These are similar to social compliance audits in other certification systems. The verifications are conducted by reviewing relevant documents, obtaining information from members of the producing operation (interviews) and observing the situation, processes and implementation of policies, guidelines and measures on the ground.

Due to COVID-19 related travel restrictions, the verifications have not happened as scheduled since the start of the pandemic. SBGA/BGI is exploring potential alternatives for producer verification without on-site visits, i.e. possibilities of remote verification and assurance processes that will allow it to have continuity in its operations during future crises and travel restrictions. As of December of 2020, SBGA/BGI have begun doing in person verification visits where public health regulations allow for them.

The goal of this study is to summarize requirements, application areas, and limits for remote social compliance audits in general, and provide an overview of potential technological applications for remote social compliance audits as well as specific aspects that apply to Artisanal Small-Scale Gold Mining (ASGM) production (e.g. traceability). Furthermore, the study describes success factors as well as risks and limitations of remote audits, verifications and assurance processes. To this end, the study analyses existing experiences with remote audits. As these are still limited in the mining sector, the study includes experiences from the forestry sector, where remote auditing approaches are already more widely applied.

Finally, the study provides some ideas for concrete technical pilot projects on remote verification/assurance processes as well as implications for remote TA to ASM and for supply chain management in general. This report is based on extensive desk-based research and literature review, on the authors own experience, as well as over ten stakeholder interviews conducted in November and December of 2020. All data is current as of March 2021.

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Acronym Summary

ARM	Alliance for Responsible Mining
ASI	Aluminium Stewardship Initiative
ASC	Aquaculture Stewardship Council
ASGM	Artisanal small-scale gold mining
ASM	Artisanal small-scale mining
APSCA	Association of Professional Social Compliance Auditors
BGI	Better Gold Initiative for ASM
BSP	Better Sourcing Program
BGR	Bundesanstalt für Geowissenschaften und Rohstoffe
CB	Certification Body
CH	Certificate Holder
CTC	Certified Trading Chains
CoC	Chain of Custody
CAAT	Computer assisted auditing techniques
FM	Forest Management
FSC	Forest Stewardship Council
GIS	Geographic information systems
GPS	Geographic positioning systems
IRMA	Initiative for Responsible Mining Assurance
IAF	International Accreditation Forum
ICGLR	International Conference on the Great Lakes Region
ICT	Information and Communication Technology
ILO	International Labor Organisation
LSM	Large scale mining
OHS	Occupational health and safety
OECD	Organisation for Economic Co-operation and Development
PEFC	Programme for the Endorsement of Forest Certification
PPE	Personal Protective Equipment
RCM	Regional Certification Mechanism
RJC	Responsible Jewelry Council
RMAP	Responsible Minerals Assurance Process
RMI	Responsible Minerals Initiative
SMETA	Sedex Members Ethical Trade Audit
SEA	Social and environmental audits
SBGA	Swiss Better Gold Association
TA	Technical assistance
TEA	Technology-enhanced audits
VSS	Voluntary Sustainability Standard
3TG	Tungsten, Tantalum, Tin, Gold

1. Requirements, Application Areas and Limits of Remote Social Compliance Audits

COVID-19 and the ensuing social distancing protocols, lockdowns, and travel restrictions that have been put in place have limited the possibility of conducting in person social compliance audits¹. Given that risks in social and environmental performance continue to exist and have arguably increased, the need to monitor and mitigate these risks remains (Human Rights Watch 2020). In a September 2020 survey of 41 organizations, more than half had initially suspended audit activities or extended the validity of current certificates by 6-12 months (Staniaszek, Fischer, and Anderton-Tyers 2020).

As pandemic restrictions continue to be in place, remote audits are one way to ensure that factory sites, manufacturing facilities or mine sites, among others, remain compliant with applicable standards and certification requirements. This section will provide an overview of what a remote social compliance audit entails, how it is being regulated, the sectors it has been piloted in, and its limitations.

1.1. General

A remote audit is one form of technology-enhanced audits (TEA) (Castka, Searcy, and Mohr 2020). Overall, a remote audit follows analogous steps and stages to an in-person audit. The key difference is that the verifier/auditor is not physically present at the site. Remote audits can differ in terms of their execution. A remote audit can be fully remote, partly remote, or be solely a follow-up to an in-person visit. Remote audits usually rely on computer assisted auditing techniques (CAAT) that currently include georeferencing and video streaming.

Future CAAT may include virtual reality and immersive digital environments or the use of artificial intelligence to analyze data (Castka, Searcy, and Fischer 2020; Dekra 2020).

	On-site Auditing	Assisted Remote Auditing ¹	Remote Auditing	Technology-Enhanced Auditing
Approach	Auditor determines compliance based on the evidence that is primarily collected on-site	Same as on-site; on-site auditor is assisted by technical experts or others that operate remotely	Technology is used to replicate on-site auditing	Technology is used to assist in auditor's decision-making
Data collection	Data exchanged between clients and auditors on-site (e.g., review of hard copies, review of electronic files/databases, in-person interviews)	Data exchanged between clients and auditors on-site (e.g., review of hard copies, review of electronic files/databases, in-person interviews)	Data exchanged between clients and auditors remotely (e.g., review of scanned documents, review of cloud-based platforms, review of satellite imaging, interviews through videoconferencing)	Data exchange amongst multiple parties exchanged remotely (e.g., review of cloud-based platforms, review of social media platforms, review of data collected by technology in real-time, interview through videoconferencing)
Type of technology	Technology is secondary to the audit process (though it may be used to facilitate the process)	ICT used to communicate between on-site and remotely-based auditors	ICT, such as audit/video conferencing, screen sharing is used to replicate on-site audit	Various technologies (e.g., machine learning to identify patterns, make predictions, guide decision-making; sensors collecting real-time information) are used to assist an auditor with an audit
Reliance on technology	Low Audit can be essentially performed without technology	Low/Medium Remotely based auditors need to be able to connect with on-site auditors	Medium Relies predominantly on ICT; off-line (e.g., desktop review), or real-time (e.g., e-interviews) or a combination of thereof	High Audit relies on multiple technologies
Auditor competence	Auditing competence (as specified in IAF Guidelines)	Auditing competence and ICT competence	Auditing competence and ICT competence	Auditing competence, ICT competence, and competence in Big Data Analytics

Table 1: Characteristics of On-site, Assisted Remote, Remote, and Technology-Enhanced Auditing (Castka, Searcy, and Fischer 2020)

¹ This report refers primarily to social and environmental compliance audits (SEA) and will not expand on financial audits, quality control audits, etc. The terms audit and verification are used interchangeably.

The process for a remote audit should include at least the following steps: 1) planning and verifying eligibility/feasibility of a remote audit, 2) preparation to test connectivity, collect documents, and determine virtual interviewees, 3) execution of documentation review including satellite imagery, videos, and photographs as appropriate; live interactions and worker interviews, and 4) reporting of findings and corrective action plan as needed (Staniaszek, Fischer, and Anderton-Tyers 2020).

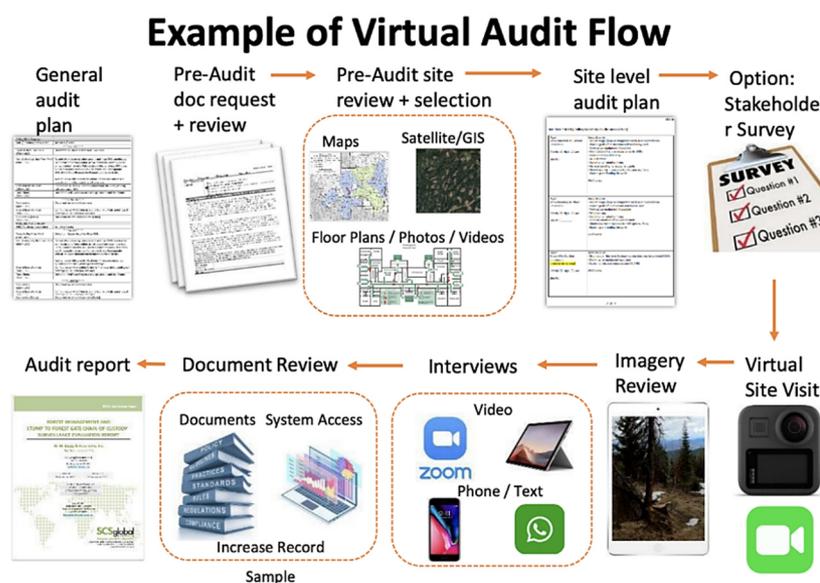


Figure 1: Remote Audit Flow - SCS Global Services (Holman and Judd 2020)

Prior to the pandemic, several certification bodies were already using risk matrices to determine the viability of an onsite audit depending on specific conditions in that region or industry. For example, the Aquaculture Stewardship Council has a country social risk matrix that includes World Governance Indicators, the US Department of State Trafficking in Persons (CTIP report), Transparency International, and the Global Slavery Index data overlaid with internal data on previous non-conformities found. Remote audits are then conducted in low and medium risk countries (Aquaculture Stewardship Council 2019).

In the context of the pandemic, the decision to conduct an onsite audit depends on a detailed risk analysis that should include specific public health considerations such as the transmission risk of COVID-19 within the country, travel infrastructure, local guidelines and regulations, health insurance, if the auditee is operational, availability of personal hygiene infrastructure and personal protective equipment (PPE), among others (Staniaszek, Fischer, and Anderton-Tyers 2020). When an evaluation of these factors determines that an onsite audit is not feasible, a remote audit can be considered.

To decide if they are willing to perform a remote assessment, Sedex evaluates the technological readiness of the auditee (stable Wi-Fi, smartphone with working camera and microphone); a commitment to provide documentation and a site map beforehand; site history of non-conformities, coaching of employees, or bribery; operational concerns of a remote audit in terms of the feasibility of having access to all areas of the site, and feasibility of direct worker engagement via a remote tool (Sedex 2020b). This remote assessment does not include an evaluation of land rights, undeclared subcontracting, nor community benefits.

Thus, it does not meet the standards to be considered a Sedex Members Ethical Trade Audit (SMETA) audit. Other standard-setters have adapted by creating an “unable to audit” rating for certain metrics that they consider cannot be verified remotely, including freedom of association and collective bargaining, forced labor, child labor, non-discrimination, community engagement, and employee engagement in health and safety practices (Aluminium Stewardship Initiative 2020a).

The option of creating a “partial scope” audit category or “limited” audit category to distinguish them from full, in-person verifications was also suggested in some of the interviews with stakeholders (Gardner 2020).

Although remote auditing has been used in the past, the COVID-19 pandemic has increased their appeal and they have served as a tool to maintain supply chain continuity and assurances in a variety of settings (Barnhill 2020; The FDA Group 2020). Certifying Bodies or Voluntary Sustainability Standard (VSS) bodies had three options in the face of the pandemic: suspend all auditing and establish exceptions to their certification requirements without allowing for remote audits (path taken initially by nine out of 21 VSS analyzed), introduce remote auditing possibilities (path taken by 11 out of 21 VSS analyzed), or a combination of extensions and remote audits (Castka, Searcy, and Fischer 2020).

Certification bodies have differed on how to regulate the actual execution of a remote audit. The confidentiality and impartiality of worker interviews poses additional challenges in a remote setting. The latest process requirements for the SA8000 program allow for standalone remote audits, desk audits, or hybrid audits and there is detailed guidance on how to conduct these (Social Accountability Accreditation Services 2020). For example, in remote audits there are not real time worker interviews. Instead, the auditor sends a letter to the workers before the audit to gather feedback. Conversely, with a hybrid audit, an onsite auditor does conduct detailed interviews that are not recorded nor streamed via software. In their virtual assessments, Sedex relies on their proprietary app for worker interviews, which are done in a group, and on a third party mobile survey tool (&Wider 2020). SAI, who owns the SA8000 standard, published guidance for certified organizations on how to respond to the additional risks that the pandemic raised regarding working conditions, wage payments, health and safety, among others (Social Accountability International 2020). The organization also granted exceptions to some of its standards regarding payment of wages and overtime.

Remote audits are offered by several firms. BSI states that remote audits “cover document and record review, tours of (...) premises, interviews with workers and presentation of findings by using a range of technology platforms”. A remote audit does not necessarily have to take place from the home or office of the auditor. For example, BSI offers a service in which the auditor is present at a designated client location that is safe to visit and performs a remote audit of a different client location. Given the context in which ASM usually takes place, this option does not seem viable. SGS also offers remote auditing by combining a proprietary app for collecting information and the use of web conferencing software (SGS 2020). Elevate, another global provider of social compliance audits for various sectors includes in its portfolio of services remote worker wellness training, worker engagement surveys, and desktop verification (Elevate 2020a, 2020b). SCS Global Services offers remote audits that use GoPro cameras that do not require connectivity to record footage and then have it reviewed by a trained auditor (Holman and Judd 2020). The use of recorded footage for ASM sites was not deemed a trustworthy way of verifying compliance with environmental and social conditions by several of the stakeholders interviewed for this study (Starr 2020; Villegas 2020).

Whether or not the rise of remote auditing stabilizes in the post-pandemic world remains to be seen. It is possible that once the pandemic is under control, remote audits will continue to be used even if an in person audit does not present a public health risk. As was previously stated, this depends in great measure on the contextual elements that allow for a viable remote audit to take place. Several of the interviewees mentioned the viability of continuing to do documentation review remotely as a way to reduce the amount of time an auditor spends on site and therefore diminish costs (Social Auditor in ASM field 2020; Starr 2020). Other stakeholders mentioned the possibility of performing remote pre-audits that prepare mine management for the actual audit and ensure expectations are accurately set beforehand (Echavarria 2020).

The long-term adoption of remote audits depends on their ability to meet the expectations of relevant stakeholders, namely retailers and certification bodies, and the specific context in which the audit will take place (Jarvis 2020). In other words, the future of remote auditing is sector-specific and highly contextual by country and technological access (Lefebure 2020).

Additionally, the perception of the credibility of remote audits can play a huge role in their long-term adoption (Castka, Searcy, and Fischer 2020).

That being said, traditional in-person audits were already under increased scrutiny. At the end of the day, they only provide a snapshot of the actual operations of the auditee (Fischer 2020). In the best-case scenario, TEA audits can provide a more continuous auditing process in which information is rapidly processed, flagged, and addressed.

1.2. Relevant standards

1.2.1. ISO 19011:2018

The ISO 19011:2018 (Guidelines for auditing management systems) defines remote audits as an audit method, but not as a separate audit type. The authors of ISO 19011 thus do not promote remote audits as an alternative to on-site audits. Rather, they offer to integrate remote assessments into the audit planning as one of several methods in a suitably balanced manner, considering associated risks and opportunities. The norm states in its Annex (Additional guidance for auditors planning and conducting audits) that « the feasibility of remote audit activities can depend on several factors (e.g. the level of risk to achieving the audit objectives, the level of confidence between auditor and auditee's personnel [...]) »

1.2.2. IAF MD 4:2018

The International Accreditation Forum has released IAF MD 4:2018 as the binding document for the “Use of Information and Communication Technology (ICT) for Auditing/Assessment Purposes” to cover all forms of Information and Communication Technology (ICT) applications in the auditing process, including teleconferencing, remote access to documents, recordings, and visual access to locations. This document includes technical security requirements and process guidelines for conducting the audit (International Accreditation Forum 2018).

1.2.3. ISEAL

ISEAL is a global membership organisation for sustainability systems (ISEAL 2020b). In the wake of the pandemic, ISEAL, with support from the Sustainable Trade Initiative (IDH), started a project to develop remote auditing solutions, which enable standards and companies to ensure the integrity, continuity, and effectiveness of sustainability assurance under crisis conditions. To start this project, in July 2020, ISEAL commissioned a study on 41 sustainability organizations and how they were responding to COVID-19. Of those surveyed, only 33% allowed for remote initial audits with the remaining 67% putting applications on hold if in-person audits were not viable (Staniaszek, Fischer, and Anderton-Tyers 2020). Building on these initial results, ISEAL established a learning community of sustainability standards, certification bodies and other stakeholders, which regularly exchanges information and insights about the challenges and opportunities of remote auditing.

The project is expected to run until June 2021. All project outputs are publically available² and include a recently published practical guide on how and when technology and data can be used to support remote auditing practices. In an interview with an ISEAL spokesperson, some of the more recurring challenges across sectors have been highlighted. These include accounting for people's access to (limited internet connectivity) and preferences in using virtual engagement tools; and the question how the confidentiality and anonymity of worker interviews can be safeguarded in a virtual setting without physical presence on-site. (Lefebure 2020). By June 2021, ISEAL plans to publish a more comprehensive Good Practice Guide for

² <https://www.isealalliance.org/about-iseal/our-work/remote-auditing>

remote auditing, which can hopefully serve as a start and a reference point for organizations wishing to incorporate remote auditing techniques into their assurance systems.

1.2.4. Other relevant international bodies

The Association of Professional Social Compliance Auditors (APSCA) does “not consider virtual/remote assessments/audits a social compliance audit” (Association of Professional Social Compliance Auditors (APSCA) 2020) and does not allow its members to use its APSCA number when signing for a remote audit. That being said, during our interview with the APSCA CEO, she highlighted the potential for using a remote audit as a way to prepare an auditee for an upcoming site visit and starting a social compliance journey; this was also suggested by BetterCoal (Howard 2020; Starr 2020). Overall, the role of remote audits will vary greatly depending on context and sector. Given the additional challenges of performing a remote audit, Starr considers that a remote auditor needs to have even more training than an onsite auditor (Starr 2020).

Analogously, Sedex does not allow SMETA audits to be performed remotely; in the context of the pandemic the organization has developed a virtual assessment tool that does not replace a SMETA audit (Sedex 2020a, 2020b).

1.3. Technology in SEA

TEA has been used for nearly a decade. In a 2010 research paper, the authors reviewed 14 sustainability standards for incipient use of geographic information systems (GIS), GPS, chemical testing, and cellphone technologies and found that their use may enhance tracking of products and assure stakeholders of the way the goods were produced (Auld et al. 2010). By 2015, the conclusions of a similar study were not very encouraging: “While the corporate world has learned to integrate data flows across global supply chains, most [sustainability] standards systems are lagging behind” (Herding and Fischer 2015).

As will be reviewed in the following section, the ways technology can be leveraged for social compliance audits have vastly expanded. The COVID-19 global pandemic has catalyzed the adoption of some of these tools and we may be at the advent of a radical transformation of social compliance audits towards a model of continuous, real-time data analysis (Gale, Ascui, and Lovell 2017). Technology is the backbone of a remote audit. Besides the video conferencing tools that can be used for live interactions, technology can also be leveraged in the following stages.

1. Risk management: data analysis can be helpful for prioritizing countries and areas. Given that BGI currently operates in only three countries, it would be important to analyze data that has been disaggregated at a district level or within country regions to be able to effectively prioritize mine sites. In Colombia, some of the municipalities where ASM activities take place are the size of Switzerland so it is even more important to disaggregate data at a level that allows for informed decision-making (Eslava 2020).
2. Facility walk throughs: virtual reality or interactive displays have been adopted by some certification bodies. For example, Control Union uses Google Glass in some of their remote audits (Staniaszek, Fischer, and Anderton-Tyers 2020). An alternative would be Microsoft HoloLens. Drone technology has also been piloted by PwC to accurately survey land, determine emergency response needs, and provide environmental monitoring (PricewaterhouseCoopers 2020). Remote, aerial, and terrestrial sensors have been used since at least 2016 by Global Forest Watch, SkyTruth, Oceana, and Fishing Watch (Gale, Ascui, and Lovell 2017). The United Nations Food and Agriculture Organization (FAO) operates an open source platform that allows communities around the world to demarcate their land and clarify tenure (FAO 2020).

3. Employee interviews: several firms have developed worker voice technology tools that allow firms to gather information in real time about the workforce. These are confidential and often do not require the use of a smartphone. Two alternatives have been developed by Ulula and &Wider (Ulula 2020; &Wider 2020). Another option is to stream with full 360 degree cameras that allow the auditor to know if the interviewee is being supervised by management or if they are truly on their own (ISEAL 2020a).
4. Data analysis: artificial intelligence and advanced data analytics can support certification bodies in identifying and predicting high-risk areas. That being said, it is important to note the potential biases of these tools and the lack of computational power in some contexts (Nakai 2020; Ojokoh et al. 2020; Vinuesa et al. 2020)

TEA has the potential to radically transform the social audit sector and vastly improve its veracity and timeliness for data collection, recording, analysis, and interpretation (Castka, Searcy, and Mohr 2020; Ebinger and Omondi 2020). Furthermore, TEA can allow certification bodies and standard-setting organizations to prioritize site visits for locations that have higher risks of non-compliance (Gale, Ascui, and Lovell 2017).

1.4. Important considerations for the ASM sector

The use of technology in the ASM sector can serve to improve processes and transparency. Nonetheless, the context in which ASM operates presents significant challenges for deploying some of these tools and opportunities for implementation in novel ways.

1.4.1. Traceability tools

Blockchain or ledger technologies allow for validated data to be stored in a distributed database that is secure and ostensibly inalterable. Blockchain technologies have been used for traceability and chain of custody purposes in a variety of industries including apparel, coffee, and cocoa (Deloitte 2017; Hackling 2019; Ojokoh et al. 2020; Westerkamp, Victor, and Küpper 2018).

In the context of mining, blockchain technology allows for upstream producers to communicate the provenance of the minerals, its grade, and the production method, among others. Additionally, the technology allows data to be accessed in real time by authorized stakeholders. Blockchain can serve to build trust in mining operations and may reduce the risk of fraud or data tampering (van der Merwe 2020). There is growing demand in international markets for traceable minerals, particularly gold (Echavarria 2020).

Nonetheless, there are technical and design challenges associated: there is no consensus on the interoperability of the systems, the blockchain is only as good as the data that was input, and there is a high need of computing power (RCS Global 2017). Beyond these issues, there is a key challenge for implementing blockchain in the mining sector: the ledger depends on effectively linking an object in the physical world (gold in this case) with the digital database. That link is usually done by either adding a tag to the actual product or by identifying it by its unique composition. Neither of these options present highly viable use cases in gold.

Geochemical provenance analysis has two main drawbacks: it is only effective before the refining stage, when impurities are removed and it will not accurately trace gold ore that was smelted from different sources. Nonetheless, it can be helpful for identifying mercury traces or confirming the general area from which an ore was extracted.

An Australian based company is developing a solution that uses a chemical-based process to tag the object regardless of its composition and is scheduled to launch in 2021 as part of the trueGold Initiative (Barich 2020).

Tagging the physical object very quickly contravenes the core principle of blockchain technology, namely, a decentralized approach because it requires a designated authority to tag the item. In a pilot program done with tin and gold in the Democratic Republic of the Congo (DRC) the tags may help reduce the cost of tracing the minerals if the point of tagging is trusted and the potential for fraud, untagging, and bribes is mitigated with robust systems in place (van der Merwe 2020).

Despite these difficulties, there are several initiatives that rely on blockchain for mineral traceability. RCS Global operates the Better Sourcing Program (BSP), an upstream validation platform for 3TG that is aligned with the Responsible Minerals Initiative (RMI) and OECD guidance. It currently operates in 30 mine sites in the DRC and Rwanda and includes onsite monitoring via a smartphone; digital traceability powered by GeoTraceability, a third party; data verification; and reporting. The blockchain component was developed in partnership with IBM (IBM 2019; RCS Global 2020).

In 2017, IBM unveiled a pilot collaboration in the jewelry industry called TrustChain (IBM 2018). Although no longer in use, it served a proof of concept for gold and diamond transparency. In 2019, the World Economic Forum launched the Mining and Metals Blockchain Initiative with seven mining companies (Abdul 2019). Everledger and Provenance also rely on blockchain to provide traceability solutions for minerals.

1.4.2. Beyond traceability

Technology can support ASM in ways that go well beyond traceability. For example, record keeping can improve with the use of simple data collection tools on phones and land formalization can benefit from GIS and GPS coordinate collection at a grassroots level. Additionally, it can be used to deploy training platforms and implement capacity building programs on the ground. Finally, technology can allow miners in ASM communities to access information quickly and access financial services through peer-to-peer banking or phone-based banking (Solidaridad 2020b).

These three elements are interlinked and can play a role in strengthening remote audits as well. For example, digital records ease the process of documentation review and GPS coordinates can provide assurances that the images do correspond to the audited mine site. As will be described further in the report, training to be able to use TEA is an enormous opportunity for deploying technical assistance. In other words, to be able to conduct social and environmental audits with technology, people on the ground need to be trained in these technologies. Once they are comfortable with the videoconferencing or file sharing, among others, these same tools can be used beyond the scope of the audit.

For example, once workers are comfortable with video conferencing, the same software can be used to share best practices and create stronger community networks of ASM stakeholders. Using financial technology for payments would also facilitate audits of payment records, and better expense tracking for local ASM cooperatives and smallholders. This, at its turn can increase their access to formal credit lines and decrease their reliance on payday loans or other informal mechanisms that have interests that are much higher than what a banking institution handles. Finally, having digitized expense records may allow for more accurate financial planning and identifying opportunities for increased operational efficiency or income trends.

2. Remote Audits in the Forestry Sector³

2.1. Description of forest certification schemes FSC and PEFC

The Forest Stewardship Council (FSC) and the Programme for the Endorsement of Forest Certification (PEFC) are the two major certification systems providing standards for forest certification and related supply chains. Both certification systems require annual on-site audits, when accredited certification bodies are assessing the compliance against the applicable requirements. The conduction of on-site audits follow the ISO 19011 requirements and normally include inspections of forest or production sites, interviews with employees, verification of production and purchase/sales documents and inspections of raw materials and finished (labelled) products. Both certification systems have individual standards for forest management (FM) certification and for the supply chains until the finished products (Chain of Custody – COC certification). The FM audits are usually carried out at the premises of forest companies and the forest sites, and COC audits are conducted at the production or trading facilities of companies in the supply chains (e.g. sawmills > planing mills > furniture producers or pulp mills > paper carton producers > printing houses). The main target of the supply chain certification is to supervise the correct use of certified materials throughout the supply chain, and to allow a traceability from the final product back to the certified forests.

Forest management standards of both certification systems include environmental, social and economic principles and indicators focusing on sustainable management of the forests. The COC standards currently include requirements relating to quality management, traceability of material and products, labelling requirements for certified products and some workers safety and health requirements. Just recently, the ILO core labor requirements were integrated into the COC standards and shall become part of the COC audits in future.

2.2. Reaction to COVID-19 pandemic

With the spread of the COVID-19 pandemic and related travel restrictions, on-site auditing became impossible, first in China, later also in many other parts of the world. As China is currently the biggest FSC COC market in the world, many audits were immediately affected. FSC reacted quickly by issuing the first derogation to replace on-site audits with demonstrated security risks in China by remote audits, until the restrictions by the Chinese Government would be lifted. Only main audits were not allowed to be conducted as remote audits. As it became evident that the COVID-19 pandemic spread to other regions in the world, FSC revised the derogation and made it valid for all regions in the world, which were affected by the COVID-19 pandemic, but required a risk analysis regarding audit credibility prior to the decision to conduct a remote audit. Main audits were still excluded from this option, and certificates needed to be suspended in case the annual audits could not be conducted.

Throughout the further development of the pandemic, FSC added several derogations, specifying the information and communication technology (ICT) to be used for remote audits, data protection requirements, audit postponement options as well as conditions for eligibility of remote audits according to their risk scope and detailed procedures for risk assessment. Remote audits were only allowed for low- to medium-risk COC audits.

FSC's latest derogation for remote auditing, issued in November 2020, introduced the hybrid audit approach, mainly for FM audits. This means that a qualified lead auditor leads the audit remotely, and a qualified local expert is on-site to support the remote lead auditor by inspection of sites or interviews of employees, to reach a maximum credibility level of the audit process.

³ This section is based on experiences of GFA Certification GmbH, a sister company of Projekt-Consult GmbH, and one of the leading certification bodies with more than 20 years of experience in the field of certification of natural resources and connected supply chains and over 2,500 issued certificates.

This partly enabled the conduction of audits at complex certification scopes and also allowed the conduction of FM main audits. PEFC always followed by approving similar procedures after FSC published the derogation versions.

Certification bodies had to adapt their procedures accordingly with each revision of the derogations, and had to learn how to use and apply modern ICT to always be up to date to the latest requirements of the derogations. Currently, the COVID-19 pandemic is still going on and the remote auditing procedures are applied in many countries of the world.

2.3. Risk assessment remote audit vs. on-site audit

As a pre-condition to conduct remote or hybrid audits, FSC and PEFC requested a risk analysis to identify threats to the credibility and integrity of the audits compared to on-site assessments. Table 2 below shows the major risks identified that can be addressed by organizational measures. However, each audit setting is different and additional risks may have to be addressed by the auditor(s) while planning and conducting the audit.

Risk	Mitigation measure
Complex high-risk certification scope cannot be credibly audited remotely.	Exclusion of auditees with complex high-risk certification scope and other risk issues from remote audits, or applying mitigation measures as auditing some parts on-site and others remotely, or a hybrid audit approach, or other risk mitigating measures identified.
General lower credibility of remote (and hybrid) audits versus on-site audits.	Conduction of remote audits only under very specific circumstances and extraordinary situations (e.g. like COVID-19 pandemic). In complex cases, a subsequent on-site inspection or hybrid audit may follow as soon as on-site visits are possible in the respective region. The remote audits and hybrid audits have to follow specific procedures aiming at reducing these risks.
Process of sampling of documents and records may allow manipulation by auditee.	Auditors are obliged to sample documents during a remote call/video conference and request timely submission/real time assessment by shared screens (e.g. Microsoft Teams) of these documents after the selection. In case of hybrid audits, the audit assistants can verify this process on-site.
Visual inspections of important aspects (e.g. the condition of forest plots or labeling of products or method used for demarcation of certified materials/products) are not conducted.	Auditors shall request a virtual company tour, pictures, satellite images or other visual data to be provided by the auditee, if necessary. If no visual data can be received, extended interviews with employees can be used for verification of certain aspects. In certain cases, audits can be conducted as hybrid audits in form of a remote Lead Auditor and a technically qualified audit assistant on-site. The audit assistant can either describe the observations on the ground or take pictures / videos by himself.
Auditors may not be able to select sufficient personnel for staff interviews as the auditor is not present on-site.	The auditors are obliged to request the auditee during the audit planning process to provide access for the auditor to all staff concerned by the certification system via the agreed remote communication technologies. In case of hybrid audits, the audit assistants can coordinate this process on-site.

The remote Lead Auditor / Audit Team and the local audit assistant go different audit routes.	<p>A check-in/briefing/exchange between the remote audit team member(s) and the on-site team member(s) shall be conducted before, during and at end of the audit.</p>
Data protection more difficult since more documents may need to be exchanged between auditee and auditor instead of being inspected on-site.	<p>Certain additional data protection procedures are in place. The auditor shall inform the auditee about the data protection procedures prior to submitting documents. The auditor shall explain in particular that</p> <ul style="list-style-type: none"> • any sensitive information or personal data which is not needed for the audit process shall be defaced by the auditee prior submitting the documents, records, pictures, etc. • all data submitted to the auditor, which does not have to be attached to the audit report, shall be deleted by the auditor immediately after the closing meeting • all other data will be submitted with the audit report to the Certification Body and will be stored and protected according to the Certification Bodies' data protection procedures.
Overall conclusion	<p>A remote or a hybrid audit can generally cover most of the requirements of a low risk or medium risk audit scope under the condition that all audit participants have access to and competence in using ICTs. This risk analysis and the defined mitigation measures allow to evaluate with adequate assurance the conformity to the normative requirements, given the extraordinary situation of the COVID-19 pandemic. However, on-site audits are generally of higher quality than remote or hybrid audits, and shall always be considered if no health risk or travel restrictions to auditors, CH staff and other relevant stakeholders exist. Certain aspects, such as conducting interviews in confidence without presence of superiors or the complete and unbiased visual impressions cannot be guaranteed in full.</p>

Table 2: Identified risks and mitigation measures

2.4. Conducting a remote audit or the remote part of a hybrid audit

Generally, a remote audit or a hybrid audit is planned following the requirements for the planning of an on-site audit, including contacting the auditee, determination of audit date(s), determination of scope of the audit, elaboration of an audit plan, etc. However, as the Lead Auditor is not physically present at the operational site, adequate ICTs have to be defined and agreed upon with the auditee prior to the audit. Both sides, auditors and auditee, shall have the competence and ability to use the selected ICT and shall agree to use only ICTs providing for secure and confidential data submission.

The recording of remote audit sessions shall only be permitted after prior approval by the Certification Body, the auditor and the auditee. The auditor shall clarify this aspect during the audit planning process (e.g. by prior testing of the ICT tools with the CH if necessary) and in the opening meeting.

Remote assessment technologies may vary according to the individual audit situation and technical opportunities, and should include but are not limited to:

- Exchange of documents, records, pictures, satellite images or others by email or other means;
- Remote assessment of documents, records, pictures, satellite images by shared screens (e.g. via skype/skype for business/Microsoft Teams);
- Meetings by means of teleconference facilities, including audio, video and data sharing;
- Individual phone/skype calls and staff interviews (preferably by video conference calls);
- Virtual company tours through usage of cameras by local staff;
- Recording of information and evidence by means of video or audio recordings.

The auditor shall finally select and use the adequate remote assessment technologies, which will maintain the audit integrity and are agreed upon with the auditee.

The security and confidentiality of electronic or electronically transmitted information is particularly important when using ICT for audit/assessment purposes. ICT with identified security gaps (e.g. Whats App) shall not be used. The Certification Body will assess the public domain regarding known security gaps for ICT and will inform auditors in case new security gaps are reported and after these may be closed.

One important key issue is that the used technologies should allow a real time sampling of documents (e.g. supplier invoices, sales invoices) to prevent options for the auditee to manipulate the sampled documents prior to submitting them to the auditor. Furthermore, the availability of personnel to be interviewed by using the agreed ICT has to be clarified during the audit planning process and has to be included into the audit plan.

The audit plan of a remote audit or a hybrid audit shall reflect the planned time slots of the audit and the planned and agreed ICT as far as possible. The audit report shall include a clear description which and why the applied assessment technologies where used.

The remote or hybrid audit shall be conducted in a structured way consisting of prior assessment of documents and records, remote meetings with relevant management staff, sufficient staff/stakeholder/service provider interviews using remote technology, and other techniques adequate to allow an appropriate conduction of the audit. The remotely audited sites shall include all operational sites selected for the audit (e.g. multi-site sampling, group members, high-risk outsourcing, etc.). All applicable ISO 19011 requirements shall be applied like in an on-site audit, including an official opening and closing meeting.

2.4.1. Additional requirements for a hybrid audit

Hybrid audits shall be conducted on the basis of:

- A qualified audit team leader leading the audit remotely;
- Technical expert(s) and/or qualified auditor(s) on-site to obtain audit evidence;
- Virtual video meetings between the remote audit team leader and the CH/on-site team member(s);
- Interviews with relevant managers, employees, contractors and other stakeholders (remotely and/or on-site);
- A review of relevant documents and records (remotely and/or on-site);
- Conducting the opening and closing meeting of the hybrid audit with physical/virtual presence of the full audit team (auditors and local experts) together with relevant staff of the CH; and
- Other best available information.

Minimum qualifications for on-site audit assistants in hybrid audits are the following⁴:

Technical expert(s) on the ground (= audit assistants) shall⁵

- Have demonstrated experience and qualifications covering all social, environmental and economic aspects that are required in the respective audit;
- Have participated in at least three on-site FM audits before, OR have participated in at least one on-site FM audit and have completed and passed an FSC FM auditor training course;
- Be able to work independently;
- Have access and sufficient technical skills to utilize required technology, incl. video capabilities to share field observations.

2.5. Lessons learned

The lessons presented here are based on the experiences from almost one full year of remote auditing related to the COVID-19 pandemic. Due to the regional and temporal shifts of the virus activity and infection rates throughout the year, approx. 30% of all audits were conducted remotely, whereas approx. 70% of all audits were still conducted on-site. Since the overall integrity and credibility of the audit results of an on-site audit is currently commonly rated as higher than the integrity and credibility of a remote audit, GFA Certification GmbH uses the principle “full on-site audit before remote / hybrid audit before shifting the audit to a later stage”. This shall allow an appropriate use of auditor resources, whilst maintaining the maximum possible audit integrity and credibility during the COVID-19 pandemic. This approach was already confirmed several times by the relevant accreditation bodies during head office assessments and witness assessment of remotely conducted audits.

2.5.1. Lessons learned from COC audits

GFA Certification GmbH conducted approx. 2.400 COC audits in 2020, whereof approx. 700 have been conducted remotely. The COC audits at current stage do not contain significant parts of social auditing, and mainly focus on the verification of production/trade flows of certified materials and the use of certification labels and logos. Therefore, the remote auditing approach could be used for the majority of cases where an on-site audit was not feasible due to health security risks and/or travel restrictions due to the COVID-19 pandemic. Only a few audits had to be conducted as a combination of on-site and remote auditing or using a hybrid auditing approach, mainly when the scope of the certificate was too complex to be audited remotely, or when ongoing integrity issues or complaints were filed.

The remote audits start with an agreement between auditor and auditee on the appropriate ICTs to be used, and the availability of key staff during the audit planning phase. It turned out that the selection of the adequate ICT was depending on many different factors, such as the access to, and competence in, using certain ICTs, or data protection concerns, sometimes resulting in companies requesting to use their own individual ICT program. The most popular and common ICTs are Microsoft Teams or Zoom, and smart phones to conduct virtual company tours or produce pictures as audit evidence.

A particular challenge for the audit planning was the fact that on many occasions not only the auditor could not visit the companies’ premises, but also the company staff was working from home or had to supervise their children partly during working hours.

⁴ According to FSC-DER-2020-12.

⁵ Applies in audits where no qualified auditor is joining the on-site component of the hybrid audit.

This led to situations that audits, which were usually conducted within 1 day on-site, had to be stretched to 2 or 3 days with reduced time slots per day to be able to cover all activities and interviews with the different responsible staff. The general feedback from auditors was that remote auditing finally is more complex and time consuming than on-site auditing (not considering travel time). It is also worth to mention that on many occasions companies preferred the conduction of an on-site audit to the remote audit option. There seems to be no clear preference from auditors and auditees for or against remote audits at current stage.

The remote audits are usually conducted as a mix of a prior desk assessment of company procedures (e.g. the certification handbook) and some quality management records (e.g. list of certified suppliers, training evidence, etc...). After this, the opening meeting and the assessment of further documents/records needing a real time assessment (e.g. purchase invoices, production records, sales invoices, etc.) and interviews with the responsible staff are conducted. This happens when connected with the responsible company staff by video conferences, screen sharing or conducting a virtual company tour by using ICTs. Confidential interviews with relevant staff are held either by individual video conferences or phone calls. It turned out that the confidentiality of the discussions could not be verified, as the auditor cannot oversee the complete environment the interviewee is in.

However, the interviews start with questions aiming to verify if the interviewee feels to be in a confidential environment. Since the major reason for conducting interviews with employees during a COC audit is mainly to verify if the FSC procedures of the company are known to the responsible staff and are implemented adequately, the reduced assurance level related to the confidentiality of the interviews appears to be acceptable for a certain time period. Another critical factor is the absence of visual impressions, which are usually collected during an on-site visit and which are not guided by the auditee. Such impressions are normally used by auditors to drill deeper into certain processes relevant to verify compliance with certification requirements. This option is limited by using virtual company tours, which may lead to a more superficial audit result.

2.5.2. Lessons learned from FM Audits

52 FM audits were carried out as remotely in 2020 (out of 174 audits in total), distributed over a range of countries. Especially, in countries where GFA Certification GmbH does not have qualified local lead auditors, remote audits or hybrid audits were the only alternative, mostly due to travel restrictions. Where possible and local experts could access the organization/forest, hybrid audits were conducted (e.g. in Paraguay, Thailand, Laos).

The general procedures to plan a remote audit regarding choice of ICTs, selection and contacts of relevant staff, and planning of audit time slots are similar to those described for COC audits above. A particular challenge for FM audits is the identification of the connection with other external stakeholders, as this is an obligatory activity in many FM audits. As the FM auditor is not on-site, a coincidental meeting of stakeholders in the forest does not take place. Furthermore, the remote assessment of documents proved to be more challenging for FM audits than for COC audits, since the size of the files to be assessed is generally larger in FM audits (e.g. complete management plans, maps of forest plots, etc...).

Consequently, an exchange by email between auditee and auditor is not always possible, and the documents have to be downsized, or other means as shared online clouds with secured data protection have to be used.

One important lesson learned is to recommend to the auditors to split audits into two or more sessions. Document review should commence some days or even weeks prior to the actual remote audit with video conferences and a clear deadline for submission of such documents should be communicated to the auditee well in advance.

In FM audits, a considerable number of aspects can usually only be evaluated with field observations in physical presence of the auditor. This includes both performance related and social indicators (Examples: Damage on soil and remaining stand during harvesting operations; social aspects such as use of PPE, relation with workers and indigenous communities). Due to limited possibility of field checks in remote audits, other means of verification of actual performance must be applied. These can be for example intensified stakeholder consultation, extended document revision or additional analysis/evaluation of remote sensing data. These activities need further time in the preparation phase, as additional stakeholders have to be identified and contacted, or satellite images have to be purchased before the audit.

Furthermore, the use of satellite images and remote sensing data is limited to only some audit activities. For example, boundaries of large-scale clear cuttings in Russia can be perfectly verified by satellite images, whereas the assessment of the quality of motor manual fellings of single trees requires other auditing techniques, such as on-site inspections or interviews of chainsaw operators asking to explain the techniques used. In case of the use of drones, georeferenced pictures with indication of date and time (taken by the audited organization) can be used. In this case, the instruction of the auditor must be clear, e.g. by prescribing the exact location where the picture shall be taken and the direction/angle from which the picture shall be recorded.

In general, the triangulation of audit information by verifying information with different sources (e.g. check of procedures, interview of management to check knowledge and interview of responsible staff to check the application) is a key aspect of each audit. This technique is used even more widely in remote FM audits to compensate for the lack of visual inspections.

As the pure remote FM audit clearly shows deficits compared to on-site audits, hybrid audits are a suitable alternative and should be preferred over pure remote audits. The following points are obvious:

- Local experts on-site can conduct stakeholder interviews (aspects such as language or cultural background become even more important in remote auditing);
- Field inspections become possible. Independent expert's eyes are the better source of information and can only partially be replaced by real time videos taken by the audited organization.
- Coordination amongst audit team members and thorough preparation and distribution of tasks are very important factors in hybrid audits. The more experienced the local team members are, the better.

The hybrid audits are led and coordinated by the remote Lead Auditor, who instructs the local expert on-site in virtual meetings about the activities to be carried out on-site. The local experts need the minimum qualifications as described in section 2.4.1 above to be able to conduct the activities on their own and report back to the Lead Auditor in the next virtual meeting. Depending on the extent of the audit, these virtual meetings can be held every few hours, or every day once. An important pre-condition is that the local expert joins the opening meeting where the general course of the audit is discussed and agreed upon with the auditee. The local expert shall furthermore also be present in the closing meeting of the audit, to be able to provide information for the final discussions, if necessary.

However, hybrid audits are only an option during the COVID-19 pandemic, if international Lead Auditors cannot travel to the forest sites due to travel restrictions, but the general health risk situation in the country of the audit is low and local people can travel on-site. Furthermore, it entails more coordination challenges than an on-site audit and may show higher costs as an additional expert has to be included in the audit activities.

2.6. Outlook

As a general conclusion, remote auditing as it is conducted at current stage for **COC certification** serves as solution for pandemic or other temporarily restricted situations, as it can maintain an acceptably high degree of credibility for many certification scopes. However, on-site auditing will still lead to higher levels of credibility and integrity of the audits. Consequently, remote auditing could be used also after the COVID-19 pandemic as a supplementary tool for on-site auditing. For example, low risk certification scopes could be audited alternately as on-site and remote audits in future. However, the current introduction of the ILO core labor conventions into the COC auditing may limit this option, as currently there are no remote audit techniques known, which would allow the highest degree of credibility and integrity of auditing these requirements.

Remote auditing as it is currently conducted for **FM certification** does also serve as an interim solution for low-risk certificate scopes during the COVID-19 pandemic, but will not serve as a solution for times without such a pandemic or other restricting factors, which may come up in future. It is no solution at all for medium- and high-risk certificate scopes, as on-site assessments of various parameters are not replaceable. Therefore, the hybrid audit approach was introduced mainly for such FM audits at a later stage of the pandemic. FM audits already include more social audit parameters, such as workers safety and worker's rights than COC audits. Consequently, they rely on on-site activities on many occasions, such as confidential interviews with workers, communities and other stakeholders.

Furthermore, on-site inspections of forest plots are essential in most FM audits, as auditors can assess ecological and silvicultural parameters, which are difficult to be addressed by a remote assessment of pictures and documents. Consequently, the hybrid audit model could have a future in FM auditing after the pandemic restrictions have been lifted. More experiences have to be made regarding the balancing of positive aspects, such as limiting travel time and related carbon emissions for international travels, with the negative aspects like higher costs and more coordination needs for local experts to be involved.

3. Remote Audits in Large-Scale Mining

Recognizing the vast adaptations that COVID-19 has catalyzed, this section will highlight some of the ways in which industrial, large-scale mining (LSM) has modified their verification processes and the acceptance or lack thereof of remote audits.

3.1. Initiative for Responsible Mining Assurance (IRMA)

The Initiative for Responsible Mining Assurance (IRMA) developed an interim policy that will be in place for the foreseeable future and can apply for other “similar exceptional circumstances”. The primary goal of this policy is to protect the health of the auditors, mine management, mine workers, and mine stakeholders and ensure that they are not put at risk. Additionally, the interim policy seeks to ensure the credibility of the assurance processes and disclose how they will take place.

The policy applies specifically to stage two audits, vis a vis, the in-person visit. Stage one audits (document review) are not affected by the interim policy (Initiative for Responsible Mining Assurance (IRMA) 2020).

The policy describes detailed steps that must be taken to ensure risks are minimized and that the decision to conduct an in-person audit has been done after following a due diligence process that includes both stakeholders at the mine and auditors.

Broadly speaking, IRMA offers two alternatives: delaying the stage two audit for up to six months beyond the initial 12-month period allowed under normal circumstances or carrying out a partial stage two audit that relies fully or in part on technology. With a partial stage two audit, IRMA reserves the final determination of the achievement level of a mine site.

If a partial stage two audit is determined to be viable after following the risk assessment that was previously mentioned, the parties must explicitly agree on the technologies that will be used, and it is the responsibility of the certification body to “ensure that appropriate technology is available for carrying out remote auditing techniques, including internet connection with suitable bandwidth at the mine site and other relevant locations, and that mine site and audit staff are competent and at ease with the use of the technology” (Initiative for Responsible Mining Assurance (IRMA) 2020).

In terms of worker interviews, the policy requires that social distancing be in effect and that the certification body consult with worker organizations or assess if the interviewees have been coerced in any way. Interviews are not recorded and the technology must allow for 360 degree views of the room. Notably, remote interviews may not exceed 50% of the interviews that need to take place during the audit. This means that the remaining 50% must take place in person once conditions allow for it.

STAGE 2 AUDIT DECISION CHART

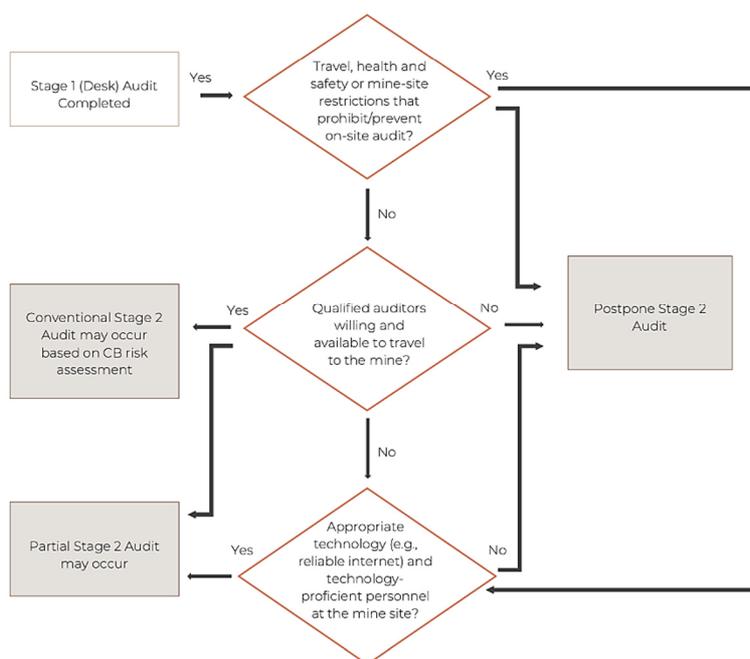


Figure 2: Decision Tree for Stage 2 IRMA audits (Initiative for Responsible Mining Assurance (IRMA) 2020)

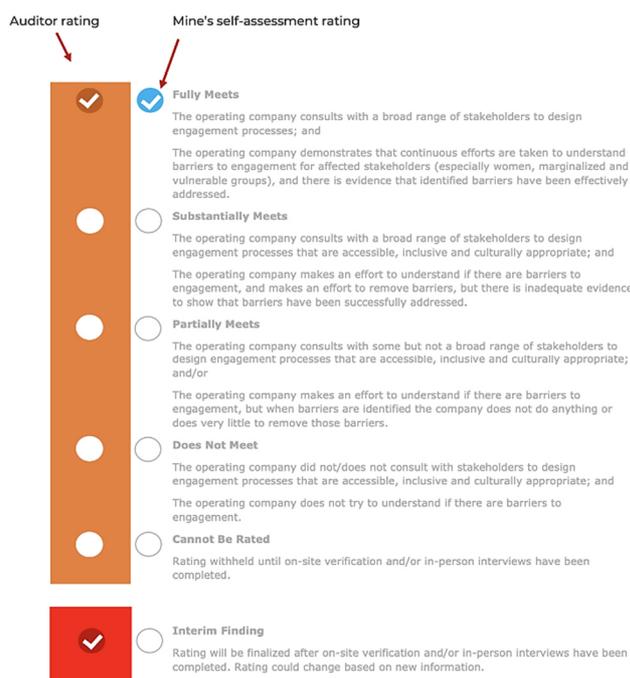


Figure 3: Example of the use of an “Interim Finding” flag on the IRMA process (Initiative for Responsible Mining Assurance (IRMA) 2020)

Given the extraordinary circumstances brought on by the pandemic, IRMA has also developed two additional rating options that allow for greater flexibility: an “interim finding” can flag that additional “on-site observation and/or in-person interviews is necessary in order to have a high degree of confidence about the rating” or “cannot be rated” if there is no evidence or low confidence on the evidence provided (Initiative for Responsible Mining Assurance (IRMA) 2020).

Finally, IRMA has developed a non-normative reference that may aid stakeholders to determine which elements of the assurance process may require mine site observation, worker input, or stakeholder input. None of the 30 critical requirements are deemed to have no potential to be audited remotely. However, the

majority of the requirements do note that stakeholder interviews are necessary to confirm findings, and some of the requirements offer the caveat that they *could maybe* take place remotely depending on specific conditions and that on-site inspection “will need to occur” (Initiative for Responsible Mining Assurance (IRMA) 2020).

3.2. Responsible Jewelry Council (RJC)

The Responsible Jewelry Council (RJC) has responded to the COVID-19 pandemic by allowing members that had audits scheduled between March and June of 2020 a six month extension to the audit deadline and a separate three month extension for members that had audits scheduled to occur between September and December of 2020 (Responsible Jewellery Council 2020a, 2020c). There is no mention of a distinction between ASM and LSM policies and guidance.

In May of this year, they also published specific member guidance for maintaining conformity with both the Code of Practices (COP) and the Chain of Custody (CoC) standards during the pandemic. The guidance outlines questions that members need to be asking themselves as they prepare for an audit, for example, if they have policies and procedures in place to ensure that they are complying with local COVID-19 regulations (Responsible Jewellery Council 2020d).

In terms of remote audits, it is important to note that the RJC already allowed remote audits to occur pre-pandemic for mid-term reviews. Under the current circumstances, the RJC has extended this possibility to both mid-term reviews and recertifications when specific conditions are met (less than 15 employees, no open non-conformances, a test video conference confirms technological capacity, etc.) and under three modalities: 1) desk-based remote audits that only require screen sharing and are static, 2) virtual audits that include both a desk-based audit and a virtual walk through of the site, and 3) partially remote audits that combine offsite and onsite steps that must be completed within six months.

Neither CoC audits nor any form of first certification audits are eligible for any of the remote modalities described (Responsible Jewellery Council 2020b). Regardless of the characteristics of the mine site, the RJC does not allow for remote worker interviews for non-managers and any remote audit must be previously authorized by the RJC.

3.3. Aluminium Stewardship Initiative (ASI)

The Aluminium Stewardship Initiative (ASI) adopted an Interim Policy in March of 2020 and as of November, had reviewed it three times. The policy states that COVID-19 may be deemed an exceptional circumstance that warrants a six month extension to the original two year certification cycle. The extension does not remove the requirement to provide a statement of progress and needs to be specifically requested to the Secretariat.

All Chain of Custody audits can be remote during the pandemic. Conversely, surveillance audits and scope change audits against the performance or material stewardship standards can be done via a desktop audit under specific circumstances. ASI allows for remote worker interviews to take place if they are found to be “possible and appropriate.”

Nonetheless, “verification of on-site implementation, process control and risk control where relevant in applicable ASI Standards cannot be audited using remote audit techniques” (Aluminium Stewardship Initiative 2020b). Similarly to IRMA, ASI has created a new rating category “Unable to Rate” that allows auditors to record interim findings; an “Unable to Rate” finding does not close prior non-conformities.

If a desktop audit is agreed upon, the auditor can recommend a Provisional Certification status that needs to be reviewed by the ASI Oversight Committee that would evaluate the material criteria that has been assessed and the evidence obtained, among others. Transitioning to a full certification status would require scheduling an on-site surveillance audit within three to six months.

All remote audits must use an “Audit Limitations” data entry field to describe the limitations of their process.

AUDIT TYPE	LOCATION		
	ON-SITE ONLY	MIX OF DESKTOP & ON-SITE	REMOTE/DESKTOP ONLY
<i>Performance Standard</i>			
First Certification Audit for Member	✓	✓	Not sufficient for Full Certification but Provisional Certification may be possible (see 3(b)iv above)
Initial Certification Audit for additional Member Certifications	✓	✓	Not sufficient for Full Certification but Provisional Certification may be possible (see 3(b)iv above)
Initial Certification Audit for additional Member Certifications – Material Stewardship (section 4) only	✓	✓	✓ During COVID-19
Surveillance Audit or Re-Certification Audit	✓	✓	Existing Full Certification can continue (unless new major non-conformances identified through desktop review). Provisional Certification status to continue unless non-conformances from previous audit can be assessed through documentation and testimonial evidence and closed out.
Scope Change Audit	✓	✓	Usually not sufficient for Full Certification unless only covering the Material Stewardship (section 4) of the Standard. Other cases to be discussed with ASI on case by case basis.
<i>Chain of Custody Standard</i>			
Initial Certification Audit	✓	✓	✓ During COVID-19
Surveillance Audit or Re-Certification Audit	✓	✓	✓ During COVID-19
Scope Change Audit	✓	✓	✓ During COVID-19

Figure 4: Summary of ASI audit options under COVID-19 (Aluminium Stewardship Initiative 2020a)

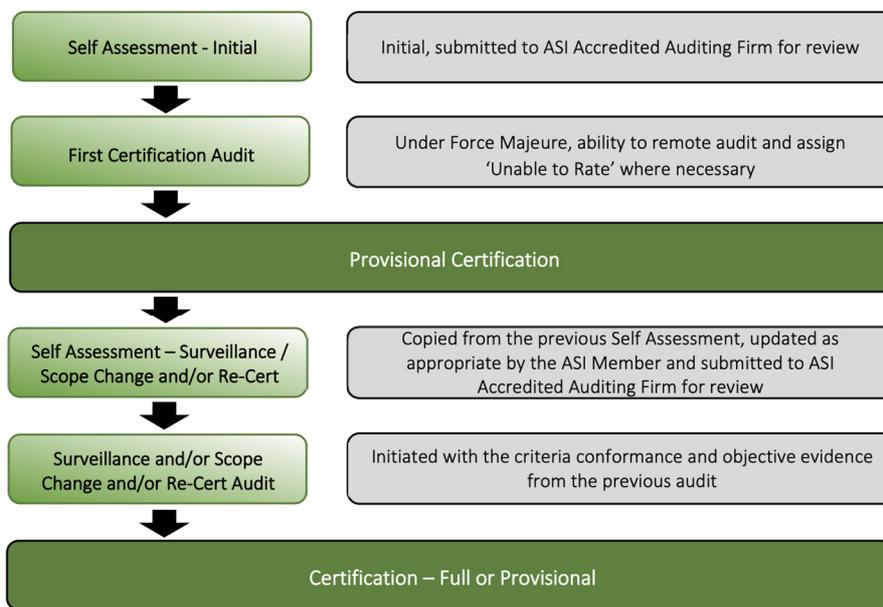


Figure 5: Flowchart of ASI Provisional Certification Process (Aluminium Stewardship Initiative 2020b)

ASI has provided a detailed chart that indicates which performance standards can be audited against with a desk-based audit. Generally speaking, for either a surveillance, scope change, or re-certification audit, a desk-based audit is sufficient to confirm all business integrity and greenhouse gases standards. Unfortunately, the majority of other performance standards including emissions and all of the social standards (human rights, labor rights, and OHS) are deemed to not be rateable using solely a desktop assessment. ASI further breaks down the guidance to include the cases in which a desktop assessment can confirm an existing rating but cannot improve on one.

In an industry wide call from August of this year, ASI confirmed the position included in the aforementioned performance standards chart and stated that the pandemic “has shown Members, Auditors and ASI that components of audits can be undertaken successfully in a remote capacity (...) [Nonetheless], many of the environmental criteria and social, labour and OHS criteria do require on-site verification before a rating can be developed” (Aluminium Stewardship Initiative 2020c).

3.4. Bettercoal

The Bettercoal Code includes ten principles that cover general implementation expectations, business ethics, human rights and social performance and the environment (Bettercoal 2020b). Compliance with these four categories is assessed with a desktop review and an on-site visit (Bettercoal 2020a). This is not a certification model as it is not based on a pass-fail system.

The only press release on the topic of COVID-19 stresses the importance of keeping workers safe and the need to adapt to changing circumstances (Veber 2020). The Executive Director for Bettercoal clarified that the organization postponed all three assessments planned for 2020 and all monitoring activities were done remotely. In the future, remote audits could also be considered as part of a preparatory phase for the site visit if they are planned for appropriately (point person identified, documents shared, effective systems). Nevertheless, the organization recognizes that some aspects of the audit can only be done in-situ, particularly staff interviews and verifying community engagement (Howard 2020).

3.5. Responsible Minerals Assurance Process (RMAP)

The Responsible Minerals Assurance Process (RMAP) is operated by the Responsible Minerals Initiative (RMI) and uses a risk-based approach to validate the conformance of smelters, refiners, and upstream actors with the RMAP Standards via a documentation review and a site visit that includes interviews and a walkthrough (Responsible Minerals Initiative 2020b, 2020c). RMAP standards cover tin and tantalum, gold, cobalt, and tungsten (Responsible Minerals Initiative 2020f). Currently, the RMAP does not audit sites at the ASM level. Rather, it requires midstream and downstream actors to conduct due diligence, especially in high-risk areas (Smirnova 2020).

As a response to COVID-19, the RMI has conducted surveys on the impact of the pandemic on smelters, refiners, and upstream members, and has created a case by case option of granting extensions to RMAP assessments (Responsible Minerals Initiative 2020a, 2020e). RMAP Assessments Documents remain unchanged (Responsible Minerals Initiative 2020d). Generally speaking, in cases where there are barriers related to COVID-19 to fully in-person audits, downstream assessments may be conducted fully virtually for Cobalt and partially virtually for 3TG as they are considered to carry lower levels of risk, although that still depends on individual company operations. Refiner and smelter audits, in cases where there are COVID-19 related barriers, may be conducted partially remotely for 3TG or fully remotely for Cobalt depending on the risk level of their suppliers and the complexity of the supply chain. The RMI recently published a Covid Virtual Assessments Policy⁶ (Smirnova 2020).

3.6. Summary table

LSM Stakeholder	Remote Audits	Options offered	Remote worker interviews
IRMA	Yes - specific circumstances	Extension or Partial audit relying on technology	OK for under 50% of total workers that need to be interviewed
RJC	Yes - specific circumstances	Extension or 3 modalities of remote	No remote non-manager worker interviews
ASI	Yes - specific circumstances	Extension or remote with high likelihood of onsite visit required to confirm	Yes if access to technology allows it
Bettercoal	Yes - partial		No worker interviews nor verification of community engagement
RMI/RMAP	Yes for the majority of downstream audits; partially for smelters and refiners	Extensions, fully remote, partial remote depending on risk profile	OK to have virtual interviews in some cases

6

http://www.responsiblemineralsinitiative.org/media/docs/RMI%20COVID%20VIRTUAL%20ASSESSMENTS%20POLICY_Jan%202021.pdf

4. Remote Audits in Artisanal and Small-Scale Mining

4.1. FLOCERT - Fairtrade

FLOCERT is the global certifier for the Fairtrade Standard. Since at least June of 2019, Fairtrade International had agreed to deploy pilot remote audits to areas that had a high-risk for travel (Fairtrade International 2020c; Oversight Committee Minutes 2019). As of March of 2020, FLOCERT adapted its operations depending on the type of certification: certified trader audits were converted to remote audits, certified producer audits were postponed, and initial applications for producer certifications were also postponed.

In April the organization started to allow remote audits for certified producers under certain circumstances. By September, FLOCERT began to allow onsite audits on a case by case basis (FLOCERT 2020b). Management has expressed FLOCERT's intention of combining in person and remote audits in the future (Gross 2020).

A Fairtrade remote audit includes four phases: preparation and scoping in which the auditor requests that the auditee send specific documents, document collection (at least one week before the desktop review), desktop review, and live interaction. Similarly to ASI, FLOCERT has deemed that "requirements that can only be audited physically - e.g. through field visits or members/ worker interviews - are not included in the remote audit" (FLOCERT 2020a). Therefore, it has a reduced set of criteria against which a remote audit is performed.

Additionally, FLOCERT recognizes that local regulations may impede management from going to the office to collect documents that are needed. If this is the case, there no remote audit will be scheduled. Previous non-conformities can be cleared via a remote audit if sufficient documentary evidence is provided by the auditee.

Overall, the Fairtrade standard for gold and precious metals has not been updated since 2015 and does not include any mentions of remote auditing possibilities (Fairtrade International 2015). None of the updates from Fairtrade regarding the impact of the pandemic on certified producers include miners (Fairtrade International 2020b, 2020a).

4.2. Fairmined

Fairmined is an initiative of the Alliance for Responsible Mining (ARM) and certifies gold against the Fairmined Standard for Gold and Associated Precious Metals (Fairmined 2020). The assurance process currently includes "documentary examination of both the mining organization and the legal companies that work under its umbrella; visits to the mining facilities and interviews with workers, members and members of the mining community. All facilities must be open to the auditors" (Fairmined n.d., n.d.).

Since 2016, ARM allowed for remote documentation review for partners that had already had one onsite assessment and met criteria to be considered a low risk supplier (Uribe and Botero 2020). This year, ARM has had several consultation rounds with stakeholders to assess the viability of fully remote assessments. As of December 2020, there had been no fully remote verifications against the Fairmined standard. Instead, the organization opted for extending assessment deadlines until internal travel was allowed (Uribe and Botero 2020).

Their press releases and coverage during the pandemic has referred to ways to support artisanal miners and the importance of including them in economic reactivation policies (Castro 2020; Escobar 2020; Pujol 2020).

4.3. Certified Trading Chains

Certified Trading Chains (CTC) is a system certifying the responsible production of 3TG, cobalt, copper, lead and coloured gemstones in Rwanda and the Democratic Republic of the Congo (BGR n.d.). The standard is operated by Bundesanstalt für Geowissenschaften und Rohstoffe (BGR). Neither the standard criteria for Rwanda nor for the Congo allow for remote verifications (BGR 2010, 2015).

In 2020 BGR has started to train local CTC auditors in DRC. Besides increasing Congolese ownership of the standard and reducing audit costs, this might also make the certification more robust to disruptions in the face of difficulties, such as COVID-19. However, due to the recurring security issues in Eastern Congo, CTC might nevertheless benefit from integrating some possibilities for remote audits. In early 2021, BGR considered partly remote/hybrid follow-up validations, in which the implementation of corrective measures following a certification audit would be assessed.

This could be done in a tandem constellation with the international auditor participating remotely and a local assistant auditor (e.g. BGR staff or a local auditor trainee) collecting information on site according to the instructions of the auditor, preferably in real time. The approach has not yet been tested by CTC and its feasibility and exact arrangements will depend on the connectivity (Schütte 2021).

4.4. Summary Table

ASM Stakeholder Reviewed	Remote Audits
FLOCERT	Yes
Fairmined	No - OK remote documentation review
Certified Trading Chains	No – partly remote/hybrid OK for follow-up validations

5. Key Findings

The following section summarizes the key findings from interviews with key stakeholders and the literature review conducted in November and December of 2020.

Overall, stakeholders are aligned in that it is not possible to conduct a fully remote SEA in an ASM setting, particularly to verify environmental practices and social issues, including worker health and safety (Gardner 2020; Howard 2020; Lefebure 2020; Social Auditor in ASM field 2020; Uribe and Botero 2020; Villegas 2020). If anything, remote audits can provide a second best solution that allows for continuity of the certification during a period of crisis such as COVID-19, or serve as a baseline to prepare auditees for a site visit. An emerging best practice is the use of hybrid models that allow for a virtual documentation review that is followed up with a detailed site visit (Social Auditor in ASM field 2020; Uribe and Botero 2020).

An advantage of this approach is that it would reduce the frequency of onsite visits and focus resources to where they are most needed. Several interviewees mentioned the importance of working and training local talent that elevates capacities on the ground and does not necessarily face as stringent restrictions as auditors that are coming in internationally; as such, BGI should continue to work with locals to perform their onsite assessments (Gardner 2020; Uribe and Botero 2020; Villegas 2020).

5.1. Advantages and Limitations

Remote audits offer several advantages over in-person verification. First, there is no travel time nor associated travel costs (TuvRheinland 2020). Therefore, there is a lower carbon footprint associated with the audit. Second, scheduling can be done with more flexibility so certification bodies can rely on a broader range of experts (Barnhill 2020; British Standards Institution 2020). Third, they allow for continuity of compliance requirements and maintaining certifications (TuvRheinland 2020).

Taking this into account, remote audits can also serve a purpose in contexts that go beyond the global pandemic. For example, in the countries in which BGI operates, there are seasonal fluctuations that periodically flood roads or otherwise make travel into an ASGM clusters impossible. Security concerns related to the travel to mine sites – which are safe themselves – can also inhibit an onsite visit or continued due diligence processes. In these situations, remote assessments are an opportunity that offers partial verifications until an onsite visit is viable.

For some authors, an irreplaceable element of a social compliance audit is the “direct, individual, confidential engagement with workers to understand conditions and experiences” (...) and attempting to do this remotely - presumably through some device provided to the worker from a representative of the factory - is not conducive to getting the type of engaged dialogue that is the objective of these critical audit elements” (Rankin 2020). From the literature reviewed, the lack of possibility of observing first hand the body language, tone, and actual working conditions was the most recurring limitation (Barnhill 2020; TuvRheinland 2020).

In a September 2020 survey of 24 certification bodies, 58% responded that they think that social requirements cannot be fully verified by using a remote audit (Rainforest Alliance 2020). This was aligned with the findings of the stakeholder interviews conducted in November and December of 2020 as well as the experiences in the forestry sector. Beyond the social requirements, there are some other aspects, such as environmental performance, work place safety, etc., that are usually verified by on-site observations and cannot be easily assessed remotely. The majority of the interviewees considered that video conferencing interviews of miners (in the slim cases in which this was technically possible) was not a credible way of verifying information or identifying non-compliances (Echavarria 2020; Social Auditor in ASM field 2020; Starr 2020).

As was reported in the experiences from the forestry sector, verifying the confidentiality of discussions turned out to be a particular challenge, as the auditor cannot oversee the interviewee's complete environment. To overcome this, the interviews start with questions aiming to verify if the interviewee feels to be in a confidential environment. This may be feasible for some types of audits (e.g. COC audits, where the main goal is to assess how familiar workers are with applied procedures), but it is not a satisfying solution to assess more sensitive issues.

The experience with audits in the forestry sector revealed that some of the above mentioned challenges can be partly addressed by intensifying data triangulation, i.e. increasing stakeholder consultations, extending document review, carrying out additional analysis/evaluation of remote sensing data, etc. These activities need further time in the preparation phase, as additional stakeholders have to be identified and contacted, or satellite images have to be purchased before the audit.

Even if imperfect, a remote audit is better than nothing if the certification body very clearly understands the limitations and the difficulties an auditor would have to spontaneously discover a non-conformity (Flynn 2020; Starr 2020).

At a purely technical level, ensuring adequate connectivity for real-time communication with workers and video streaming to observe a work site is essential (British Standards Institution 2020; Uribe and Botero 2020). Likewise, the transmission of large files may pose problems as could be seen in remote forestry management audits. As will be described in further detail below, this limitation is especially relevant in the context of ASM and the locations in which BGI currently operates. Additionally, the people on site must have the technical expertise to use the digital tools that would be deployed (Dekra 2020).

Data security and protections are also a challenge when considering the possibility of a remote audit. ASC developed specific data security rules for audits during the pandemic that include: consent for recording data, encrypting transmission of data, control access to data, only store what is needed for the audit, among others (Aquaculture Stewardship Council 2019).

As the experience from the forestry sector shows, remote audits often are more complex and time consuming than on-site audits (not considering travel time). It is also worth to mention that on many occasions companies preferred the conduction of an on-site audit to the remote audit option. Overall, there seems to be no clear preference of auditors and auditees for or against remote audits at the current stage.

5.2. Success factors

a) General success factors

Auditors need to be trained and comfortable with the tools that will be used. This also applies to auditees. Furthermore, connectivity alternatives need to be addressed in the design process of the remote audit guidance: what will the process be if there is no phone signal? what will the process be if there is no internet connection? Remote audits require more planning so an initial day solely for documentation review is recommended (Gardner 2020).

The remote audit guidance should prioritize the key issues that are an essential part of the standard that is being audited against and consider the viability of confirming compliance via the remote tool chosen (Phil 2020). As could be seen in the previous sections, standard-setting bodies do not have a consensus on what can and cannot be audited remotely. Expectations on what the remote audit can and cannot provide need to be clearly set before the remote audit is planned (Flynn 2020; Peterson 2020; Starr 2020; Uribe and Botero 2020).

Overall, this is a new process for the majority of the stakeholders, so it is important to gather feedback and allow for iterative cycles of improvement. This feedback can be formally gathered in a post-audit review call (McGuire 2020).

It can also be important to develop new solutions with flexibility in mind, so that global policies can be adapted and applied to local contexts (Lefebure 2020).

b) Planning Phase

During the planning phase, it is essential to prioritize critical suppliers and to ensure that there is the infrastructure and connectivity capability to perform the audit (Barnhill 2020). This is often an obstacle that will not be possible to overcome in ASM sites where BGI operates. Processes for sharing and organizing information and a detailed list of required documentation should be made available to the auditee as early as possible (Howard 2020). The list of documentation should include a map to identify where the walkthrough will take place (Rainforest Alliance 2020).

Planning a remote audit includes having a clear system for document file formats, names, etc. (Peterson 2020). Cloud computing can facilitate the transmission of information (Edmonson 2020). Although this may seem straightforward in other contexts, for ASM operations it is a high bar to overcome. Afai Consulting mentioned during our interview that these documentation requests can stall with ASM operators, in particular the least digitised ones, and it may take them months to send a simple image of a key document (Eslava 2020).

For scheduling, stakeholders should allow for remote audits to take 25% more time than an onsite audit (The FDA Group 2020; TuvRheinland 2020). Regular communication between parties can smooth out difficulties; this includes scheduling regular check in calls with the auditee to make sure that there are no questions regarding the documentation required, how the process will be carried out, etc. (Fallone 2020).

One important lesson learned in forest management audits is to recommend to the auditors to split audits into two or more sessions. Document review should commence some days or even weeks prior to the actual remote audit with video conferences and a clear deadline for submission of such documents should be communicated to the auditee well in advance.

As is the case with on-site verifications, if interviews will require an interpreter, this person needs to be previously contacted and identified to ensure that they will be available at the time of the interview.

5.3. Risk factors

The general risk factors for conducting a remote audit on an ASM site in the contexts where BGI operates are mainly related to the deployment of technology on the ground, the comfort level of the auditees in handling it, and the security conditions in the area. There are also specific risk factors for the execution stage of a remote audit, particularly walk throughs and worker interviews.

a) Technology

To begin with, the choice of which technology to deploy must take into consideration not only access to phone signal and connectivity, but also access to electricity. The place where the interview will be conducted and where the camera will be connected/charged if it runs out of battery needs to be previously identified. The use of an offline GoPro camera can mitigate these technical issues. Nonetheless, the use of a pre-recorded video that is later shared with an auditor has very low credibility and is not an adequate way to verify environmental and social conditions (Starr 2020).

Once the technology has been chosen, BGI would need to develop a process for getting the technology on site. The person responsible for transporting, safeguarding, and using the technology on the ground and during the audit needs to be identified and trained. Finally, there are data privacy and protection considerations to comply with GDPR and local regulations (Uribe and Botero 2020). How will the data be transmitted and stored?

b) Training

The people on the ground that are ensuring that the audit runs smoothly, conducting the audit, carrying the camera during the site walk through, setting up the tools for the interview, etc. need to be comfortable with the technology and able to troubleshoot when circumstances do not go as planned. As was previously stated, the people handling the technology for the audit cannot be affiliated with the audited entity. There is also the risk that miners will not be comfortable giving a video interview given the context of conflict that may surround them. Several interviewees mentioned the importance of trust to successfully identify issues during a worker interview (Echavarria 2020; Lefebure 2020; Uribe and Botero 2020). Training may help increase trust in the tools.

c) Security and personal integrity of people on the ground

A remote audit that relies on points of contact on the ground may place these people at risk, especially in high conflict settings where ASGM is the focal point of extortion and tension between local armed groups (Casa Editorial El Tiempo 2015). For example, the person responsible for maneuvering a drone or facilitating the employee interviews may face threats and be put in a dangerous position due to their involvement with the project.

For this reason, the authors do not recommend relying on drones to replace walk throughs performed during a site visit. If an audit cannot be performed onsite due to concerns around the safety of the auditor, it is highly likely that the site would not meet OECD requirements due to the presence of armed actors in the region and their potential involvement with local extractive operations (Eslava 2020).

These risks also exist with remote worker interviews which may put interviewees in a position that threatens their lives or ability to continue to work, especially in the countries where BGI operates. Community based monitoring can be considered after a careful analysis of risks for participants at each mine site cluster.

d) Specific implementation concerns during the execution of the audit

Walk throughs: Several interviewees were hesitant to accept video (streaming or recorded) or pictures as a way to replace walk throughs (Starr 2020; Villegas 2020). In the case of a video, there are significant questions raised by having management holding the camera or controlling the technology (Lefebure 2020). These concerns are mirrored by the experiences from remote audits in the forestry sector. Drones were also not a preferred option given the aforementioned security concerns. Pact mentioned the possibility of replicating or adapting community monitoring committees used by the organization in the Great Lakes Region to maintain permanent oversight (Villegas 2020). If this option is deployed by BGI in Latin America, it is essential that a careful risk analysis is performed to ensure that the members of those committees will not be targeted or threatened due to their participation in this oversight body.

Interviews: For the actual interviews, video allows the auditor to read non-verbal cues and 360 degree cameras could confirm that workers are on their own (ISEAL 2020a; The FDA Group 2020). Having a secure location with sufficient connectivity for a remote, live interview is a significant obstacle for BGI to implement this option (Social Auditor in ASM field 2020). Interviewees often highlighted the absence of trust as being a key obstacle to overcome for remote interviews (Echavarria 2020; Social Auditor in ASM field 2020; Uribe and Botero 2020). Sometimes simple technology can meet the needs of the context and relying on tools that workers are already familiar with can ease the lack of trust.

For example, Whatsapp blasts can be used to engage with workers and collect information (Villegas 2020). The data security and GDPR requirements of this option would need to be evaluated. Alternatively, worker voice technology can be used to survey workers in real time.

In terms of timing, most interviewees and models reviewed concur that remote processes should not be used to audit first time suppliers, especially in high-risk settings (Echavarría 2020; Uribe and Botero 2020; Villegas 2020).

5.4. Hybrid audits

Hybrid audits refer to audits conducted employing various combinations of remote and onsite verification methods. Those parts of the audit that can be done remotely without major difficulties, such as document review and interviews with management and third parties (government offices, CSOs), may be carried out remotely. Those parts that are difficult to carry out remotely, such as worker interviews and field inspections, are done on-site – either at a later point in time, or by local auditors or assistants closely guided (remotely) by accredited lead auditors. The latter option is a good alternative if international travel restrictions are in place, as was the case during the COVID-19 pandemic, but travel within the concerned country is possible and safe.

The experience with hybrid audits in the forestry sector reveals that key success factors in such approaches are credible, competent local auditors/assistants, good coordination among the team members, thorough preparation, clear distribution of tasks and regular communication among the audit team during the implementation of the audit. The local expert should also join the opening and closing meeting. Due to the involvement of (an) additional local expert(s) to carry out the on-site visit and additional coordination efforts, hybrid audits may entail higher costs compared to classical on-site audits.

According to ISEAL (2020a), several of their members experimented with various hybrid approaches during the pandemic, for instance using local auditors working for other standards to conduct the onsite parts of audits or working with local auditor assistants with some degree of sector and auditing experience overseen by virtual lead auditors. This approach could be a promising one for the ASM sector, where barriers for purely remote audits generally remain high. This is underlined by CTC’s considerations to employ such an approach for the post-audit validations of corrective actions (Schütte 2021) as well as FLOCERT’s intention to use such approaches in the future (Gross 2020).

It is especially valid for standards that do not (yet) normally work with local auditors. However, when working with a tandem solution of an accredited virtual lead auditor and a local assistant auditor, ensuring the live supervision of the audit activities by the virtual lead auditor and giving live instructions to the local assistant auditor may be essential to ensure a successful and credible audit. And this again depends on technology and connectivity.

5.5. Summary of Viability of Remote Audits in ASM context

Element of verification	Works remotely with TA	Will not work remotely
Self-assessment questionnaire (SAQ)	TA to develop a digital SAQ tool	If no connectivity near or on site
Desk-top check of sample ASM reports, eligibility, SAQ,	Will require TA if auditee does not have the technology to send documentation	If no safe way to transfer data

Document review	<p>Highest credibility and feasibility</p> <p>Will require TA if auditee does not have the technology to send documentation</p>	Some auditees may choose not to share the documents
Interviews	<p>Medium feasibility and credibility</p> <p>Preferred option: Worker voice technology</p> <p>Alternative: 360 degree cameras in a secure location if local conditions allow for it. Both options demand trained personnel on site</p>	Some standard-setting organizations have chosen not to allow for remote worker interviews
Site inspection: Observation of processes and implementation of policies, guidelines, and measures	<p>Low feasibility and credibility. Offline GoPro cameras can be used for walkthroughs in sites with low connectivity but the video footage still needs to be sent via cloud computing or analogous option.</p> <p>Live walk through requires a stable internet connection.</p> <p>Either case demands for trained personnel on the ground.</p>	<p>Very low credibility if pre-recorded.</p> <p>Live video streaming also has credibility challenges if the person on site is choosing what to show.</p>

6. Technical Assistance Needs

Recent research on TEA has found that “the application of technologies (i.e., technology-enhanced auditing) provides an opportunity to address limitations associated with the data collection, analysis, and interpretation in traditional SEA practices” (Castka, Searcy, and Mohr 2020). ASM operations can begin to move in this direction with specific technical assistance (TA). Although the potential for TEA in SEA is enormous, this section will focus on specific opportunities for TA in the context in which BGI operates.

Traditional Audit Process:



Technology-Enhanced Audit Process:

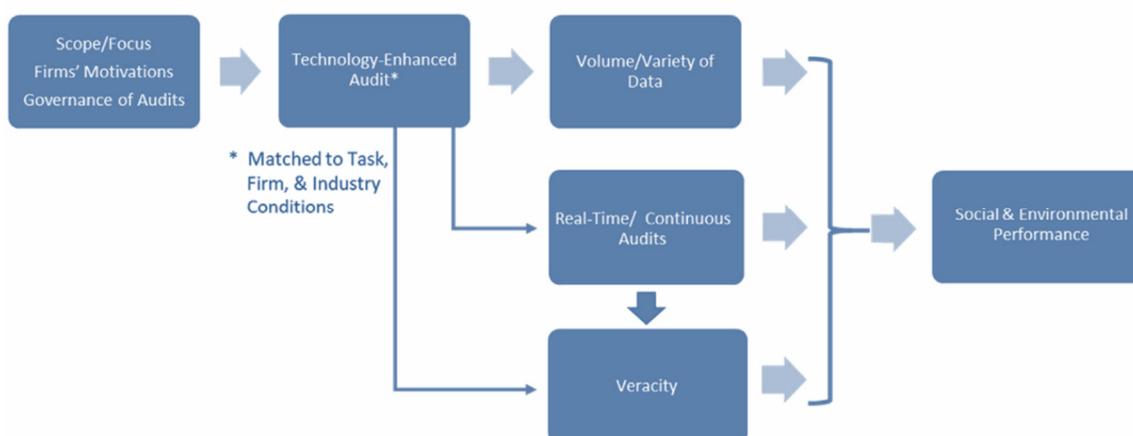


Figure 6: Potential advantages of TEA (Castka, Searcy, and Mohr 2020)

6.1. Remote Verifications

Remote verifications are one of the areas in which technical assistance from SBGA/BGI can catalyze transformations of the ASM sector. There are two main categories for technical assistance: technological tools and training of stakeholders on the ground.

a) Technological tools

TA that invests in technological tools for remote verifications is a necessary step to deploy this option for the BGI assurance process. It can have the largest impact in a) facilitating self-assessments, 2) enabling documentation reviews, and 3) gathering worker feedback.

The self-assessment process has not been widely adopted among BGI participants on the ground. This is an opportunity to deploy TA and develop easy to use tools for a self-assessment that can be conducted via a simple phone (Echavarria 2020). The results could be shared with BGI and used as a benchmark of where the miner is in their escalator journey.

Document digitization and record keeping are the second priority for TA assistance. Some miners may have a smartphone with a camera or have access to one in their community. This is a first step in having digital records that can be later shared with BGI and other organizations working in this space. Additionally, this may serve as supporting evidence for a future formalization process.

Worker interviews are a big part of most assurance processes, including in BGI. One option is to use real time video transmission of the interviews. In mine sites where there is sufficient connectivity for real time video transmission, this can be considered. Partnerships with local NGOs can help identify secure interview locations (Howard 2020). This depends on the connectivity of the mine site, the possibility of workers travelling to an area with no signal, and safety considerations. The logistical constraints and potential income loss of workers that would need to travel for an interview render this option unviable.

One recommendation would be for SBGA/BGI to develop partnerships with providers of worker voice technology in contexts where there is no potential for real time video transmission or there are serious risks to performing remote interviews. Providers of these technologies have options that allow for workers that do not have “smart phones” to participate. If this option is pursued, it is essential that BGI also develop the internal capacity to analyze and act on the data (Lefebure 2020).

Beyond these three priority areas, BGI could use TA for strengthening the pillars of their assessment process. As was previously mentioned, walkthroughs and observation are part of the BGI verification process. There are three main ways in which technology can assist this: satellite imagery to verify location and size of the mine site, drones to provide real time transmission of information, and a GoPro camera for transmission of imagery in places with no connectivity. Asynchronous or pre-recorded videos are not recommended due to their low credibility. As mentioned above, drones are not recommended due to security concerns.

Of the three ways presented, it is therefore suggested to prioritize satellite imagery due to its untamperable nature and neutrality (Flynn 2020). Nonetheless, field experience in Colombia has demonstrated that some Colombian regions can often be too cloudy to provide good enough data (Eslava 2020). Conditions across Peru and Bolivia would need to be verified.

b) Training of local community stakeholders

In order for remote verifications to work, there needs to be people on the ground that are comfortable using the tools, be they videoconferencing, offline cameras, drones, etc. Technical assistance needs to prioritize training of community stakeholders. The people trained should be representative of the population at the mine site and the choice of participants should be done with a gender-based approach and with a balanced perspective that includes ethnic minorities and other underrepresented demographics.

Training should cover the steps of the audit process and include details on planning (document sharing, filing system, etc.), camera use for walk throughs as applicable, interview tool that will be used and specific guidance on expectations for the interview (acceptable locations, protection of confidentiality, interviewee alone, etc.).

These trainings are also valuable for conducting regular in-person audits and will build capacity on the ground to have a filing system and information management processes on site. The challenge lies in the fact that conducting training for the use of new technological tools is best done in person. In other words, teaching someone how to use a video conferencing tool by videoconference is not viable. This cycle will be difficult to break in the context of the pandemic and the public health restrictions that remain in place for the foreseeable future.

6.2. Traceability

Traceability is a growing area of interest for downstream companies, investors, and consumers. It allows for building stronger networks of trust and assurance among parties that the product they are selling effectively comes from the place they think it does and meets the social and environmental expectations of the stakeholders. For the reasons described in chapter 2, traceability for gold presents specific challenges at a geochemical level.

Technical assistance programs for traceability in ASGM already exist around the world. For example, as part of the Just Gold project, IMPACT and the EU announced in September of 2020 that they had successfully traced gold from an ASGM site in Cote D'Ivoire to the international market (Guthrie 2020; Impact 2020). The project has not yet been evaluated and may offer lessons for future TA projects in the ASGM context.

BGR completed a pilot project in the DRC for traceability in ASGM that was able to trace 5.2 kg of gold across 135 transactions from April to December of 2017. The project relied on smartphones, computers, solar chargers, personalized ID cards, and electronically readable transport bags to set up transactional data registration. A key finding of the evaluation of the pilot is that a registration database that accurately identifies authorized actors (miners, traders, transporters, cooperatives) is a key starting point for a traceability system (Neumann et al. 2019). The creation of this directory is an opportunity for TA. Another opportunity for TA in traceability relates to increasing the volume of responsibly mined gold from specific areas in order to spread the costs associated to tracing (Finlay 2020).

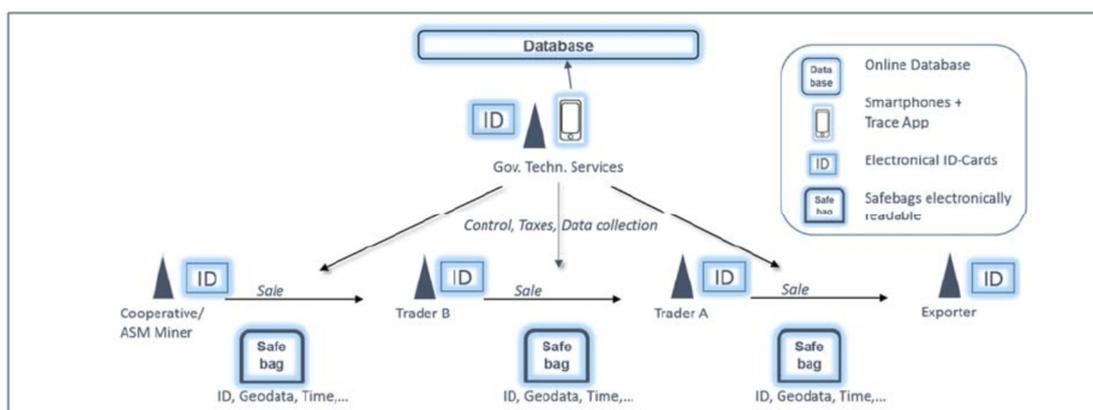


Figure 7: Transactional data registration architecture - BGR pilot project (Neumann et al. 2019)

Moyo Gems is an example of a collaborative assurance project for mine to market gemstones from Tanzania. It involves the use of blockchain technology for traceability (Moyo Gemstones 2020). Sourcemap offers a blockchain compatible tool for meeting due diligence requirements for conflict minerals (Sourcemap 2020b). It has also implemented a traceability program for mica jewelers (Sourcemap 2020a, 2020c).

Although the primary focus of BGI is gold, these sorts of initiatives may serve as case studies for how to approach traceability at ASGM sites. It is important to note that traceability projects would also require training of staff on the ground. The aforementioned BGR project found that implementation was initially difficult because local traders “were opposed to using the system” (Neumann et al. 2019). This reflects the broader challenge of raising awareness and generating acceptance of the tools. A potential partner that already has experience in this field, Solidaridad has trained staff at eight ASM sites in Ghana on traceability protocols and templates (Solidaridad 2020a). This is part of a broader project on scaling responsible business practices for ASGM (Solidaridad 2018).

Beyond traceability, technical assistance can also be provided to increase visibility of ASGM operations. For example, in 2018, the Responsible Artisanal Gold Solutions Forum (RAGS) produced “Journey of Gold” an immersive video that showcased the lives of ASGM communities in the Great Lakes Region (Resolve 2020; Responsible Artisanal Gold Solutions Forum 2018).

6.3. Ideas for concrete TA pilot projects for remote verification processes for BGI

This section will provide a description of potential TA pilots for remote verification processes that BGI could deploy in the near future.

- **Connectivity inventory:** In order to understand the viability of remote assessments in the contexts in which BGI operates, a connectivity inventory is necessary. This would ideally include GPS coordinates of the clusters that are currently being evaluated, and a ranked system for mobile phone signal, power availability, and data transmission signal (LTE, etc.)
- **Self-assessment tool** that can gather information via a simple mobile device and share it with BGI. It is crucial that this tool be designed and developed in a way that is easy to understand by local communities and provides sufficient examples that aid respondents in its completion.
- **Digitization of records and documentation:** The ability to accurately share documents for an assessment would be greatly enhanced by having digital copies of key documents already in a digital format. BGI could pilot a program that scans and uploads documents to a cloud based system as part of a broader transition towards remote auditing.
- **Exploratory partnerships with worker voice technology for ASM sites.** The SBGA could pilot the use of worker voice technology to gather miner feedback in real time.

6.4. Other Applications of Remote TA

Once these systems have been put in place and stakeholders are comfortable with the technology, it can be deployed for purposes beyond remote assessments and support BGI in meeting other goals, namely supporting sustainable development of mining operations, and ensuring access of ASGM to the markets. For example, video conferencing software can be used to strengthen networks of local ASGM communities, share best practices, and learn from each other. By using video calls between experts and mine site operators, best practices could be shared and training on financial literacy, land use, environmental protection, among others, could take place.

Additionally, having digital records and formal payroll documentation may help miners secure loans, or have access to other responsible sourcing schemes that require a higher level of formalization. COVID-19 is an opportunity to invest in local capacity development and grow grassroots expertise.

If BGI were to consider training that extends beyond remote assessments, some curricular options include: best practices to improve efficiency in their mining practices, occupational health and safety, harassment and discrimination, accounting, financial literacy, and the formalization process (Echavarria 2020; Starr 2020). Communities can also be surveyed on their needs and what they would like to prioritize in terms of training (Uribe and Botero 2020).

This is aligned with BGI's escalator model of progressive improvements and serves to elevate capacity of ASM communities. These community trainings could also help to educate people not involved with ASM operations on the mining cycle, who to report concerns to, the role of different public entities, and their rights (Eslava 2020).

The training can include local NGO partners and cooperatives on sites and rely on ample evidence collected during adult education programs for curriculum development and ensuring that the learning goals are met. Finally, BGI could consider training government officials and field staff from public agencies on responsible mining practices and standards.

Remote audits have significant implications for supply chains. In contexts where video streaming and worker voice technology is feasible and credible, this may catalyze a transition towards continuous due diligence and away from a snapshot audit approach to social compliance that is in line with growing mandatory human rights due diligence legislation and growing consumer pressure. In the minerals sector, and particularly with ASGM operators, remote audits for recertification or maintaining a certification may enable a larger scale of partners to participate in the program. In other words, not having to require an in person visit from an auditor can reduce the potential for backlog - if the delays are caused by a travel-dependent factor- and allows more mine sites to maintain their certification.

7. Conclusions and Outlook

Remote audits can serve as a complement to in-person visits and may provide valuable information on operational risks and flag issues. The majority of the interviews conducted did highlight that remote audits, as they currently stand, are incomplete and do not present a full understanding of potential non-compliance or findings. As such, they are not a replacement for an in person visit, especially in the highly informal and remote contexts in which ASGM is found and BGI operates.

COVID-19 has catalyzed changes in the way social and environmental standards are verified. As standard setters and certification bodies adapt to the changing circumstances on the ground and public health guidelines, some have opted for postponing visits and extending deadlines. This is not a long-term solution and does not improve the overall resiliency of supply chains. The pandemic is but one form of crisis and there will be others. The ideal scenario is a hybrid alternative in which remote documentation review and preparatory calls with the auditor are held beforehand to set expectations, answer questions, and use the auditor's time in the most efficient manner.

Remote assessments offer one complementary alternative to on-site visits and provide preliminary information, prepare the auditee for an on-site visit, or verify performance of a low-risk supplier. A remote audit is better than no audit at all. Nonetheless, remote audits are not a catchall solution. Available technology and connectivity are key factors to consider when determining if a remote audit is the right path forward in the context of ASM. That being said, if there is no other option available due to prolonged COVID-19 restrictions, remote audits can serve as a second best alternative and a stopgap until verifiers are able to return on site.

Remote assessments are only one part of what makes up TEA. Document digitization and training on collaborative tools are all part of the pillars that allow remote auditing to work. This is an opportunity for leveraging already existing technology and moving towards a system that has enhanced credibility and transparency.

In the long run, the interoperability of the systems and integration with other certification bodies is key and allows the SBGA to learn from peers and share best practices. Overall, standard-setting bodies need to adapt and incorporate TEA into their procedures.

For the settings in which BGI operates, a context-specific and highly adaptable approach will be needed. No single program or option will work for all mine sites participating in BGI. Rather, what is recommended is to set broad categories of steps that make up the assessment and establish alternatives for how to perform them depending on the connectivity availability, capacity of the local community, security concerns, and staff on the ground. This could be set up as a decision tree similar to the one referenced from IRMA⁷ or as a simple table of options that the auditor discusses with the auditee.

⁷ Note that the IRMA decision tree is for deciding whether or not to conduct a remote audit, whereas what is suggested here is a decision tree to choose how the remote audit will be configured

Alternative 1: Decision tree (non-exhaustive)

Are there public health restrictions/security concerns/road issues that inhibit access to the cluster?

- No → Proceed with onsite visit as planned
- Yes →
 - Does the mine site have stable phone signal coverage and electricity?
 - No → Postpone onsite visit and do not consider remote options
 - Yes →
 - Has this minesite been assessed before?
 - No → do not consider remote assessment
 - Yes →
 - Do they have open findings or non-conformities?
 - Yes → do not consider remote assessment
 - No →

Alternative 2: Table of options (non-exhaustive)

Activity	Alternatives
Documentation Review	<ul style="list-style-type: none"> ● Take picture and send via secure messaging app ● Scan pictures and send via secure messaging app ● Digital records uploaded to cloud
Worker interview	<ul style="list-style-type: none"> ● Phone call at worker’s home with personal cell ● Phone call during working hours ● Worker voice technology / partnership ● Video call at secure location
Site walk through	<ul style="list-style-type: none"> ● Video call using personal phone of person on site ● Community-based monitoring

The relevant stakeholders would then proceed to discuss which of these options is feasible and draft an audit plan that reflects the conditions of that mine site at that point in time. This last caveat is essential: the audit plan or combination of options for a remote assessment are not static in time. Public health regulations, conflict, etc. are constantly changing and require adaptability and flexibility.

All in all, the key goals are to maintain credible processes that are feasible in specific contexts. This will require flexible approaches and constant contact with teams on the ground that are familiar with changing circumstances.

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