Developing Forest-Smart Artisanal and Small-Scale Mining (ASM) Standards

Annex 1:

FOREST-SMART ASM STANDARD
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Prepared for the World Bank by Levin Sources, the Alliance for Responsible Mining, and Fauna & Flora International
ABOUT THIS REPORT

This final report of the project Developing Forest-Smart Artisanal and Small-Scale Mining Standards/Guidance provides an overview of the project’s purpose, scope, methodology, and process; a condensed compilation of the project’s work products; general recommendations for adoption in global and national processes, and a complete compilation of the bolt-on FS-ASM Standard as annex 1. Four additional annexes set out feasibility studies for piloting the bolt-on FS-ASM Standard in Colombia, Peru, Ghana, and Liberia.

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Alliance For Responsible Mining is a not-for-profit organization, established in Colombia in 2004. It is a leading global expert on artisanal and small-scale mining (ASM) that aims at facilitating the empowerment of artisanal and small-scale miners, their organization, and the adoption of good practices, promoting favorable environments for the inclusion of ASM in the formal economy.

Fauna & Flora International is the world's longest established international conservation body and a registered charity, which works to conserve threatened species and ecosystems across 40 countries worldwide. FFI saves species from extinction and habitats from destruction while improving the livelihoods of local people. Our vision is a sustainable future for the planet, where biodiversity is effectively conserved by the people who live closest to it, supported by the global community.

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<th>Description</th>
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<tbody>
<tr>
<td>ACA</td>
<td>additional conservation action</td>
</tr>
<tr>
<td>ASM</td>
<td>artisanal and small-scale mining</td>
</tr>
<tr>
<td>CSO</td>
<td>civil society organization</td>
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<tr>
<td>EMP</td>
<td>environmental management plan</td>
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<tr>
<td>ERP</td>
<td>emission reductions program</td>
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<tr>
<td>ESG</td>
<td>environmental, social, and governance</td>
</tr>
<tr>
<td>ESIA</td>
<td>environmental and social impact assessment</td>
</tr>
<tr>
<td>FCPF</td>
<td>Forest Carbon Partnership Facility</td>
</tr>
<tr>
<td>FPIC</td>
<td>free, prior, and informed consent</td>
</tr>
<tr>
<td>FREL</td>
<td>forest reference emission level</td>
</tr>
<tr>
<td>FRM</td>
<td>Frugal Rehabilitation Methodology</td>
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<tr>
<td>FSM</td>
<td>forest-smart mining</td>
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<tr>
<td>GHG</td>
<td>greenhouse gas</td>
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<tr>
<td>HCS</td>
<td>High Carbon Stock</td>
</tr>
<tr>
<td>HCV</td>
<td>High Conservation Value</td>
</tr>
<tr>
<td>HRBA</td>
<td>human rights–based approach</td>
</tr>
<tr>
<td>IPCC</td>
<td>Intergovernmental Panel on Climate Change</td>
</tr>
<tr>
<td>IWT</td>
<td>illegal wildlife trafficking</td>
</tr>
<tr>
<td>JNR</td>
<td>Jurisdictional and Nested REDD+</td>
</tr>
<tr>
<td>KBA</td>
<td>Key Biodiversity Area</td>
</tr>
<tr>
<td>LBMA</td>
<td>London Bullion Market Association</td>
</tr>
<tr>
<td>NGO</td>
<td>nongovernmental organization</td>
</tr>
<tr>
<td>OECM</td>
<td>Other Effective area-based Conservation Measure</td>
</tr>
<tr>
<td>PCI</td>
<td>principles, criteria, and indicators</td>
</tr>
<tr>
<td>REDD</td>
<td>Reducing Emissions from Deforestation and forest Degradation</td>
</tr>
<tr>
<td>REDD+</td>
<td>Reducing Emissions from Deforestation and forest Degradation and sustainable management of forests and enhancement of forest carbon stocks</td>
</tr>
<tr>
<td>SDC</td>
<td>Swiss Agency for Cooperation and Development</td>
</tr>
<tr>
<td>TREES</td>
<td>The REDD+ Environmental Excellence Standard</td>
</tr>
<tr>
<td>UNCAC</td>
<td>United Nations Convention Against Corruption</td>
</tr>
<tr>
<td>UNDP</td>
<td>United Nations Development Programme</td>
</tr>
<tr>
<td>UNFCCC</td>
<td>United Nations Framework Convention on Climate Change</td>
</tr>
<tr>
<td>USAID</td>
<td>US Agency for International Development</td>
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_All dollars are U.S. dollars unless otherwise indicated._
SECTION A: Introduction and General Principles

A.1 Introduction

A.1.1 Background

The World Bank Group has been working for several years on the concepts of (a) climate-smart mining with the process to develop a Climate-Smart Mining Facility and (b) forest-smart mining (FSM) with the production of a series of reports that look at the impact of both artisanal and large-scale mining on deforestation worldwide. Based on these first studies that identified the main impacts of the mining sector on forests, the Forest Carbon Partnership Facility (FCPF) private sector initiative aims to increase the readiness of public and private entities within the mining sector to use climate tools, policies, and finance mechanisms toward supporting REDD+ processes and voluntary carbon schemes to limit greenhouse gas (GHG) emissions from the mining sector. To this purpose two pillars have been identified: (i) forest-smart artisanal and small-scale mining (ASM) standards and (ii) strengthening the consideration of forests and forest carbon in the industrial mining cycle.

In 2020, the World Bank commissioned a study “to assess and develop Forest Carbon guidance and tools for the ASM sector by including Forest-Smart Mining Principles, Criteria & Indicators (FSM PCI) into existing ASM standards and certification systems, and to support their implementation by identifying REDD+ and environmental/Climate funding opportunities and develop roadmaps for pilot sites.” Objective 1 of this assignment was to develop “a set of detailed technical guidelines and PCI for FSM ASM” (World Bank 2020).

According to the aspiration of potential future uptake of the guidelines, principles, criteria, and indicators by ASM standard setters, the FSM PCI for ASM themselves need to have the characteristics of a standard. Objective 1 of the assignment is met by drafting this Forest-Smart ASM Standard (FS-ASM Standard).

A.1.2 Type of Standard

The FS-ASM Standard is a voluntary environmental sustainability standard that has an exclusive focus on forest-related and climate-relevant environmental sustainability. The FS-ASM Standard has a global scope and can be applied in forest, woodland, and savanna landscapes across boreal, temperate, subtropical, and tropical zones wherever ASM is being practiced. The standard covers all minerals applicable to ASM.

To be fit for being adopted by existing ASM standards as an adaptable “bolt-on standard,” duplication of social, environmental, or economic sustainability requirements already provided by mainstream ASM standards or frameworks is avoided to the extent possible.

The standard has also been developed as an open source bolt-on standard to avoid contributing to the proliferation of standards—rather, it enhances the forest and climate requirements of existing standards, guidelines, regulations, requirements, and certification schemes.

A.1.2.1 A Progressive, Risk-Based Approach

Artisanal and small-scale mining is a very diverse activity with a variety of production systems taking place in diverse communities and environments. Not all risks posed by mining to forest values will be of equal importance to a community, and not all risks will have equivalent importance across communities. However, where forest values are high in biodiversity and carbon
storage and sequestration functions, it is recognized that some risks will be significant to both impacted ecosystems and to the global community.

It is appreciated that it is infeasible for ASM entities and their stakeholders to correct behaviors and implement improvements all at once, especially owing to the capacity constraints faced by artisanal and small-scale miners as well as the challenges they encounter in the political economy and cultures of their operating environments.

One goal of this standard is to support the inclusion of artisanal and small-scale miners operating in forest landscapes in responsible supply chains so that they are not further marginalized and forced to trade with unscrupulous business partners who disregard their responsibility to respect human rights and so weaken their ability to be forest smart. This standard is therefore designed to be implemented in accordance with the principles of good risk management as captured by the Organisation for Economic Co-operation and Development Due Diligence Guidance (OECD 2016):

- Implement a risk-based approach: Identify, assess, and prioritize the risks the ASM activity poses to forest values and design an action plan that addresses the most salient and manageable risks first.
- Adopt a progressive approach: Be realistic as to what can be done in a given time frame, set targets, and monitor progress. Change what is in one’s power to change.
- Make good faith efforts: Take reasonable steps and make good faith efforts to manage the risks identified. It is important to recognize that it will take time to comply with all the requirements in the standard. One the other hand, it is also important to recognize that the practicability and effectiveness of many requirements are only realized when they are implemented in a cohesive, step-by-step manner. Be ambitious but realistic.
- When engaging with ASM entities, take an approach to mitigate risks, but do not embargo high-risk situations.

In practice, this means that the requirements in section B of this standard are intended to be implemented gradually, in whatever order makes sense for the miners; however, keep in mind that a step-by-step systematic approach has the best probability of achieving a cohesive and sustainable outcome. Sequencing and prioritization needs (if applicable) depend on the local conditions of each ASM entity. The ASM standard setters that adopt the FS-ASM Standard may choose either to leave it entirely up to each ASM entity to choose how it approaches compliance with the standard or to prescribe which requirements the ASM entities must achieve first, and later, or the standard setters may take any approach in between that is aligned with their own standard.

### A.1.2.2 A Collective Approach

In some cases, the FS-ASM Standard requirements might exceed the decision-making power or reasonable responsibility of ASM entities. In these cases, ASM entities shall have the responsibility to engage and cooperate with stakeholders who are in control of contextual conditions (such as government, civil society, private sector, development organizations, or similar) and their activities need to be informed by guidance arising from such engagement. ASM entities shall not be held responsible for conditions beyond their control.

### A.1.3 Structure of the Standard

The typical organizational scope of existing ASM standards are groups of ASM miners, either de facto organized or as formally established ASM organizations. As a bolt-on standard, the FS-ASM Standard uses the all-encompassing term “ASM entity” (for the definition of the organizational scope, see A.5.1). Existing ASM standards vary by the degree to which forest-relevant requirements are covered or not. To expand on these ASM standards (as a bolt-on standard), the FS-ASM Standard specifies which forest-specific requirements the ASM entities need to comply with to avoid, minimize, mitigate, or rehabilitate the degradation and destruction of forest landscapes. For ASM entities to be able to conform to the requirements and to adapt and change their mining practices accordingly, all requirements must (1) be affordable at the socioeconomic level of artisanal and small-sale miners, (2) be socially acceptable for both miners and communities who are impacted by mining, (3) address issues that are under the direct control of the ASM entity so that the ASM entity can take responsibility, and (4) deliver the site degraded by mining onto a path of ecological recovery (that is, be ecologically viable).

The forest-smart mining principles developed during earlier PROFOR work (World Bank 2019) recommended a holistic approach, covering contextual topics such as ASM formalization, access to mineral rights, land ownership, livelihoods of ASM communities, and so on. These principles incorporated actions to be taken by other stakeholders, such as government, civil society, downstream industries, and development organizations, which are beyond the direct control of ASM entities but are a necessary precondition for mining to be truly forest smart.
To address both governance levels, the FS-ASM Standard takes a two-pronged approach:

- **Section B** establishes principles, criteria, and indicators for ASM entities that guide them to conduct their mining activity in a forest-smart manner.
- **Section C** provides guidelines for government, civil society, private sector, and development organizations to support the achievement of forest-smart ASM.

A.2 Three Principles for Forest-Smart ASM

A shortened synopsis follows of the three key principles that guided the development of the Forest-Smart ASM Standard and can guide its implementation. A more detailed description of these principles is presented in appendix 3.

**Principle 1: Forest ecosystem safeguarding and resilience: Biodiversity, carbon, and ecosystem services**

Mining can negatively impact forests both directly and indirectly. To avoid or mitigate these impacts, the standard needs to be informed by the range of forest values that combine in complexity in the provision of habitat for species and of ecosystem services for people and planet. The identification and acknowledgment of these values provide a key term of reference in the development of forest-smart actions. If mining activities fail to recognize their impacts on forests and forest values, then they will not become forest smart.

The range of forest values encompasses wildlife habitats and associated globally threatened or endemic species and the very ecosystem services that forests provide by way of carbon storage and sequestration, climate regulation, water supply and purification, soils development, and the wide array of timber and non-timber products that local and global human communities depend upon. For forests everywhere, but particularly in ecologically intact forests, the carbon storage and sequestration functions provide an increasingly valued global ecosystem service.

**Principle 2: Human rights approaches: Communities and livelihoods, both local and global**

The acknowledgment of the crucial importance of forest values needs to be balanced and assessed alongside human rights-based values that recognize that artisanal and small-scale mining communities have a right to life and livelihood. Furthermore, there will be wider stakeholder communities that also depend on forests for their livelihoods and whose rights require recognition and thus must be taken into account.

The role and significance of Indigenous communities dependent on intact forests is of key concern. The need for positive and inclusive approaches to engagement and participatory decision-making as to how natural resources are extracted, managed with benefits shared, plays an importance role in ensuring sustainable outcomes for both forests and people.

Moreover, women are disproportionately affected by mining and climate change, while they are also key enablers for the success of shifting to a forest-smart ASM sector. To address existing gender inequalities and avoid perpetuating these gaps, women must be meaningfully included in the design and implementation of forest-smart ASM practices.

At both national and international levels policies need to be developed and implemented with meaningful participation by key stakeholders. The design and implementation of forest-smart practices need to take into account human rights-based approaches (HRBAs) to ensure that all rights holders are acknowledged and considered. Forest-smart practices need to be informed by this principle as a key term of reference.

**Principle 3: Commitment to the mitigation hierarchy: Practical approaches to forest-impact avoidance, minimization, and rehabilitation**

With reference to the two key principles above, the third principle—committing to the mitigation hierarchy—provides the means for the systematic design of actions (requirements) that forest-smart ASM can adopt to practically and effectively reduce mining’s impacts on forested ecosystems.

The adaptation of the mitigation hierarchy approach to ASM recognizes capacity and resource constraints within the sector. Nevertheless, the emphasis of weighting mitigating actions needs to focus first on avoidance (both locationally and on site), then on minimization through operational design and practice, and then finally through effective rehabilitation efforts. This approach will help reduce the net negative residual impacts of ASM on forest.

The development of practical forest-smart PCI—while focusing on what ASM entities/communities can reali-
tically achieve within their levels of capacity and resources—will also need to recognize that forest-smart mining is not solely the responsibility of the ASM sector; the actions of other economic actors and stakeholders with influence over ASM activities also need to be determined. The mitigation hierarchy can inform how a systematic array of practices can be developed that enable ASM impacts on forests to be avoided (in part), reduced, and rehabilitated.

However, ASM capacity constraints will limit the extent to which all forest impacts might be avoided and/or mitigated. Such limitations need to be identified, with suggested measures proposed that indicate how government and the wider community of stakeholders might take on roles and responsibilities that enable a fuller realization of forest-smart ASM.

A.3 Application in Protected Areas, Key Biodiversity Areas, and High Conservation Value Areas

It is important to recognize that the inventory of priority forests as protected areas is systematic, well developed, and well informed, but it is an ongoing and incomplete process, with new designations still to occur in many countries. New designations are increasingly likely to be informed by the comprehensive identification of Key Biodiversity Areas (KBAs), which support critical natural habitats (critical ecosystems). This is taking place around the world, including in forested landscapes, applying global criteria for biodiversity value with respect to threat, geographic restriction, ecological integrity, biological processes, and irreplaceability. This process is being led by the KBA Partnership, pooling their strategic approaches to the identification of priority areas and sites.

Many KBAs are already formally protected (currently 48 percent), but many are not, and yet their importance for hosting biodiversity trigger elements in priority forest ecosystems should not go unrecognized. It is not expected that all KBAs will become protected, but many will likely be in conserved areas (OECMs), if not protected areas. KBA identification has a major role to play in safeguarding forest biodiversity.

A complementary approach developed within the context of forest and agricultural product certification is the High Conservation Value (HCV) approach, which is based on six values covering species diversity, landscape-level ecosystems, rare ecosystems/habitats, critical ecosystem services, community livelihood needs, and cultural values. Generally smaller in size, HCV areas are not necessarily assessed to the same global criteria as KBAs and are identified through a different process. However, many HCV areas occur within KBAs or may well qualify as such, and their assessment against the KBA criteria would be important. HCV area identification, conservation, and management are largely led by the companies involved in such forest and agricultural economic activities, with support from technical and advisory expertise, either external to the company or in-house. The companies hold the ultimate role of identifying and ensuring the safeguard and management of such sites. However, the task for HCV area identification may be shared or led by third-party-licensed HCV assessors, contracted by the company. Such expertise and technical help in the identification and management of HCVAs may be accessed through the High Conservation Value Resource Network (HCV Resource Network), a member organization including representatives from producer companies, nongovernmental organizations, and other practitioners.

Could such a facility be developed for forest-smart ASM, or could it be adapted and extended to apply to the ASM forest environment? Currently, these models of HCV area identification and assessment are clearly supported by institutional and economic resources largely unavailable to the ASM sector now. Nevertheless, they may potentially provide adaptive models for assisting the development of FS-ASM, given their application to smallholders providing companies with sustainable certified goods. The primary value of HCV areas, and the emerging identification of High Carbon Stock (HCS) areas, largely advise on the safeguard and avoidance of such areas (Proforest 2014). Integration of this into forest-smart use of the mitigation hierarchy for ASM would, at this point, advocate that such areas be identified and deforestation avoided. For mining activities to take place within such areas as KBAs and HCV areas, they should be designed to the highest standards of assessment, operation, and mitigation, such as, for example, the IFC Performance Standard 6 (IFC 2012a). This is a performance capacity that large-scale mining companies can be expected to

2 https://hcvnetwork.org/.
While such advocacy might be appropriate for the future, the extant reality is that ASM already operates both formally and informally within some KBAs, HCV areas, and protected areas. In such situations—where ASM is having a critical impact or enabling indirect impacts by other parties, and particularly where ASM is an integral part of traditional livelihoods of resident communities—initiatives need to be developed to provide incentives for ASM to take up and implement forest-smart mining practices (such as commitments to minimize degradation or effective rehabilitation of mine-degraded habitat). This aligns with principle 2 (to take a human rights-based approach) and recognizes that eviction efforts are frequently ineffective in the medium to long term and that opportunities for transforming ASM to protected area/KBA stewardship-based livelihoods is an outcome worth pursuing in some cases.

However, the intent of the FS-ASM Standard is not to serve as justification or even to promote ASM by migrant populations encroaching on protected areas, KBAs, or HCV areas. Such invasive ASM shall not be considered forest smart under this standard, even if technically conforming to section B. For such cases, section C proposes a range of possible policy actions to be taken, such as, for example—if applicable—a participatory multistakeholder engagement that would encourage invasive ASM entities to agree to an HRBA-based containment and exit strategy (CES) from KBAs. Such efforts will need the collaborative participation of government, civil society, impacted stakeholders, and various funding options to realize such outcomes.

A.4 Linkage to REDD+ and Carbon Standards

Forest-smart ASM, as conceived, is framed with the overarching principle aimed at safeguarding forest ecosystem values, including carbon storage and sequestration. This in itself contributes to the storage and sequestration of carbon, as do the FSM PCI generally. The PCI in section B therefore incorporate practical forest carbon guidance and a forest carbon tool.

To obtain carbon financing for producing emission reductions/removals for use as offsets or to attract results-based payments under the United Nations Framework Convention on Climate Change (UNFCCC), a forest-smart ASM initiative would need to refer to a carbon standard/government program requirements at a point. The following are key characteristics of such a program:

- Forest-smart ASM involves the implementation of the mitigation hierarchy, while carbon-financed conservation/restoration involves the implementation of the mitigation hierarchy in that it seeks to create a counterfactual future in the landscape against a baseline.

- Conservation/restoration projects must be “additional” to the implementation of business as usual against the baseline to create a benefit that is linked to finance. This implies that

  - Activities should be managed to ensure an additional carbon benefit against the baseline;
  - The additional carbon benefit created should be measured;
  - The carbon benefit created should be linked to finance through certification/government programs; and
  - The carbon benefit should be created in a framework that ensures multiple Sustainable Development Goal (SDG) benefits including for communities, ecosystem services generally, and biodiversity.3

Such a forest-smart ASM initiative would need to manage activities, measure benefit, and link this to finance within parameters such as the following: project and jurisdictional rules; legal requirements and limits; temporal, geographic, and GHG scope boundaries; additionally; accounting rules; safeguards and rules promoting complementary SDG benefits; and rules on

3 For example, in terms of biodiversity, UNFCCC REDD+ safeguards note that “when undertaking [REDD+] activities, the following safeguards should be promoted and supported: … e) actions are consistent with the conservation of natural forests and biological diversity, ensuring that REDD+ activities are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits” (UNFCCC 2010). Further, voluntary standards include elements that aim toward the conservation of biodiversity, for example, “activities that convert native ecosystems to generate GHG credits are not eligible under the VCS Program” (Verra 2017c) and dual Verified Carbon Standard (VCS)/Climate, Community, and Biodiversity Standards (CCBS) certification can be obtained with the CCBS containing requirements to create a net positive benefit for biodiversity and to maintain and enhance High Conservation Values (Verra 2017b).
eligible activities. To this end, the PCI can be informed by criteria taken/adapted from the various existing carbon frameworks/standards (see B.5.5).

Where applicable, the PCI in section B therefore contain requirements that explicitly aim toward conformance with carbon standards/government programs.

However, the FS-ASM Standard also considers the possibility that certain forest-smart ASM initiatives do not want to pursue carbon finance and/or there is a subset of circumstances where a forest-smart ASM initiative does not create a carbon benefit against the baseline. Conformance with carbon finance–related requirements is therefore optional.

Further, GHG impacts can be mitigated through addressing emissions within an organization that are directly or indirectly related to its operations. Associated projects would not need to be additional against a baseline case but simply progressive in terms of the organization’s GHG impact—see insetting as an example of a scheme that facilitates such activities (see C.5.3.2). Other innovative schemes to connect finance to ecosystem values, including carbon storage/sequestration, can also be considered as providing carbon finance. Another example is Verra’s Sustainable Development Verified Impact Standard (SD VISta), which links sustainable developments impacts to finance (Verra 2021).

Guidelines for institutional stakeholders (for example, government) to ensure that a suitable enabling environment is created for forest-smart ASM can be found in section C.

A.5 Scope

A.5.1 Organizational Scope

The FS-ASM Standard is applicable to ASM as defined by the OECD Due Diligence Guidance: “Artisanal and Small-scale Mining (ASM): Formal or informal mining operations with predominantly simplified forms of exploration, extraction, processing, and transportation. ASM is normally low capital intensive and uses high labour intensive technology. ‘ASM’ can include men and women working on an individual basis as well as those working in family groups, in partnership, or as members of cooperatives or other types of legal associations and enterprises involving hundreds or even thousands of miners. For example, it is common for work groups of 4-10 individuals, sometimes in family units, to share tasks at one single point of mineral extraction (e.g. excavating one tunnel). At the organizational level, groups of 30-300 miners are common, extracting jointly one mineral deposit (e.g. working in different tunnels), and sometimes sharing processing facilities” (OECD 2016).

Sections B and C of the FS-ASM Standard have different organizational scopes.

- **Section B**: The organizational scope is the “ASM entity.” According to the characteristics of the FS-ASM Standard as a bolt-on standard, it inherits the organizational scope definition of the adopting standard. This may be a legally established ASM organization (ASMO) or a legitimate ASM mineral producer (AMP) with any de facto or formally established organizational structure.

- **Section C**: The organizational scope is the national or nationally operating institutional framework (government, civil society, private sector, and development organizations) relevant to ASM, REDD+ and carbon/climate finance, biodiversity conservation, environmental governance, and to sustainable development more generally.

The standard is applicable to ASM entities extracting any minerals, including but not limited to precious and platinum minerals/metals, precious stones, industrial minerals, industrial metals (ferrous and nonferrous), minor metals, and energy raw materials.

A.5.2 Geographic Scope

Section B of the FS-ASM Standard has a global scope, and it can be applied in all forest, woodland, and savanna landscapes across boreal, temperate, subtropical, and tropical forests as well as wet and dry savanna woodlands, montane and tropical cloud forests, and forest scrub communities, wherever ASM is being practiced. However, its adoption and practice should not be taken as affording ASM entities a license to operate within areas declared as IUCN Category I–IV Protected Areas. Such areas should not accommodate ASM activities, with the following exceptions:

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4 For example, if the criteria related to creating a carbon benefit are already implemented at a particular site.

• ASM entities owned and operated by Indigenous Peoples, whose livelihoods already included mineral extraction before the area was declared an IUCN Category I–IV Protected Area, subject to the condition that the scale of mining has not increased since the protection of the area was formalized.
• ASM entities that have been granted mining rights in IUCN Category I–IV Protected Areas and that can demonstrate a track record of having been compliant at all times with all environmental requirements prescribed by law.

It is acknowledged that ASM entities that are legally entitled to operate within such protected areas under the exceptions indicated above should be encouraged and where possible enabled to adopt and practice the FS-ASM Standard wherever possible, to avoid and minimize their mining impacts on the variety of values for which the protected area has been designated.

Only ASM entities located in or within a 5-kilometer buffer zone of forest landscapes may—if found conformant to the requirements of section B—claim to be forest smart. If the mining area of the ASM entity is in a KBA, an HCV area, or an HCS area, A.3 applies.

At an institutional level (section C), the FS-ASM Standard has a global scope without geographic exclusions.

• Stakeholders should guide new ASM entities to avoid KBAs, and where existing artisanal and small-scale miners are within or near a KBA, they should require ASM entities to not negatively impact the biodiversity elements that trigger KBA status.

It is recognized that the issue of ASM presence within protected areas may be controversial in terms of environmental policy, human rights, and where significant, the rights of Indigenous Peoples. It is recognized that different countries will establish their own approaches to determining their way forward on such matters. Such determinations are beyond the scope of this FS-ASM Standard and its associated guidelines.

A.5.3 Legal Scope

Requirements of national laws and regulations always prevail and supersede the requirements for ASM entities set out in section B. Requirements of section B always apply if they are higher than national law.

In both cases, requirements are therefore always higher than or equal to enforced law. This enables access to carbon finance for producing emission reductions/removals for use as offsets or results-based payments under the UNFCCC, with these generally being conditioned to "additionality." All carbon projects with these aims are the implementation of the mitigation hierarchy in some form in order to create a counterfactual future in the landscape against baseline. Carbon-financed projects must be "additional" to the implementation of business as usual, which can broadly be expected to be the enforced law.

This is different for the guiding principles for government, civil society, private sector, and development organizations (section C). The guiding principles intentionally aim to go beyond most national legal and regulatory frameworks. They are intended to inspire and equip the institutions in its organizational scope to proactively and innovatively create an enabling context for forest-smart ASM.

A.6 Application

As a bolt-on standard, the FS-ASM Standard is not intended to be applied as a stand-alone standard. It is designed so that responsible mining and sourcing standards will use the FS-ASM Standard as a resource to incorporate forest-smart provisions into their standards, preferably using an ISEAL-compliant process. In addition, downstream businesses may wish to integrate the FS-ASM Standard into their supply chain due diligence and responsible sourcing practices to ensure that their supply chains are forest smart, or investors may wish to integrate this standard into their due diligence and environmental, social, and governance (ESG) accountability frameworks for investments in small-scale mining enterprises, or development programs may choose to use the standard to maximize the positive impacts of their interventions.

Section C may be used as stand-alone guideline for government, private sector, and civil society stakeholders.

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B.1 Introduction

The FS-ASM Standard is a voluntary environmental sustainability standard. Inherent to this, the standard sets out principles and criteria for forest-smart artisanal and small-scale mining (ASM) and proposes indicators to facilitate conformity assessments by ASM standards or frameworks that adopt the FS-ASM Standard. In section B, the principles, criteria, and indicators (PCI) are represented by best-practice requirements applicable for ASM entities.

The requirements in this section indicate what ASM entities shall avoid or shall do—within the framework of the mitigation hierarchy—to be considered forest smart.

Notwithstanding, the feasibility of ASM entities’ conformance with requirements often depends on an enabling legal, regulatory, or institutional environment for ASM. The FS-ASM Standard recognizes that in many cases ASM entities may not be able to conform on their own with all requirements without external support. Furthermore, the FS-ASM Standard recognizes that full conformance with all requirements stands at the end of a process of progressive improvement of ASM operations.

- The requirements in section B are intended to be understood as sequential and progressive. The FS-ASM Standard is not prescriptive with regards to sequencing of the improvements (achieving conformance with requirements). Sequencing and prioritization needs (if applicable) depend on the local conditions of each ASM entity and are to be determined by the ASM standards that adopt the FS-ASM Standard.

- The indicators proposed under each requirement should be tailored to the national context of the ASM operations to ensure appropriateness to national institutions, structures, and processes. They should also be tailored to the scale of the ASM entity to reflect where the ASM and impacted or impacting stakeholders should be responsible, accountable, consulted, or informed.

- Where requirements of section B exceed the decision-making power of ASM entities and are subject to enabling conditions, section C applies. ASM entities shall have the responsibility to engage and cooperate with stakeholders who are in control of context conditions (such as governments, civil society, private sector, and development organizations, or similar) and their activities need to be informed by guidance arising from such engagement. ASM entities shall not be held responsible for conditions that are beyond their control.

B.2 Scope

See A.5.

The organizational scope is the “ASM entity.” This may be a legally established ASM organization or a legitimate ASM mineral producer with any de facto or formally established organizational structure, depending on the ASM standard that adopts the FS-ASM Standard.

The geographic scope of the FS-ASM Standard is global, with the exclusions and exceptions defined in A.5.2. Excluded areas only express that the FS-ASM Standard does not endorse mining in such areas. Adherence to the standard is still recommended for ASM entities operating in such areas.

Requirements of national laws and regulations always
prevail and supersede the below requirements. The best-practice requirements of section B always apply if they are higher than national law.

B.3 General Principles and Subsidiarity

The FS-ASM Standard is designed as an adaptable “bolt-on standard” to existing or future ASM standards (see A.1.2). To avoid duplication of social, environmental, or economic sustainability requirements already provided by mainstream ASM standards or frameworks, the FS-ASM Standard limits itself to setting requirements that are specifically relevant to ASM in forest landscapes, where forest carbon is a critical factor for climate goals. Beyond these requirements, the FS-ASM Standard acknowledges the following international normative frameworks, conventions, and standards as general principles:

- **(UNFCCC 2015)**: Paris Agreement, UNFCCC, 2015
- **(UN 1948)**: Universal Declaration of Human Rights, United Nations General Assembly
- **(UN 1992)**: Convention on Biological Diversity
- **(UN 2008)**: UN Declarations on the Rights of Indigenous Peoples
- **(UN 2014)**: New York Declaration on Forests
- **(UN 2015)**: UN Sustainable Development Goals (SDG) in the 2030 Agenda for Sustainable Development
- **(UNHRC 2019)**: Gender Dimensions of the Guiding Principles on Business and Human Rights
- **(OHCHR 1984)**: Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, Office of the United Nations High Commissioner for Human Rights
- **(OHCHR 2011)**: Guiding Principles on Business and Human Rights
- **(OHCHR 1966a)**: International Covenant on Civil and Political Rights
- **(OHCHR 1966b)**: OHCHR International Covenant on Economic, Social and Cultural Rights
- **(OHCHR 1979)**: Convention on the Elimination of All Forms of Discrimination against Women
- **(UNDG 2009)**: Guidelines for Indigenous Peoples’ Issues
- **(UNEP 2013)**: Minamata Convention on Mercury
- **(UNODC 2018)**: Doha Declaration Global Programme
- **(ILO 1930)**: ILO Convention 29 – Forced Labour Convention
- **(ILO 1973)**: ILO Convention 138 on Minimum Age
- **(ILO 1999a)**: ILO Convention 182 on Worst Forms of Child Labour
- **(ILO 1999b)**: ILO Recommendation 190 – Worst Forms of Child Labour Recommendation
- **(ILO 1989)**: ILO Convention 169 on Indigenous and Tribal Peoples
- **ILO Convention 87, 98, 105 (Abolition of Forced Labour), 100 (Equal Remuneration), 111 (Discrimination)**
- **ILO Convention 156** (Workers with Family Responsibilities), **183** (Maternity Protection), **190** (Violence and Harassment)
- **(OECD 2016)**: OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas
- **(OECD 2018)**: OECD Due Diligence Guidance for Responsible Business Conduct
- **(OECD 2011a)**: Convention on Combating Bribery of Foreign Public Officials in International Business Transactions
- **(IFC 2012b)**: IFC Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources
- **(IFC 2012a)**: IFC Performance Standard 7: Indigenous Peoples
- **(IFP 2020)**: Equator Principles
- **(FATF 2020)**: The FATF Recommendations 2012, updated 2020
B.4 Implementing the Requirements (Background and Significance of Methodological Approach)

The requirements in B.5 follow an approach essentially based on what is known as the Frugal Rehabilitation Methodology (FRM) for ASM. The FRM was developed as a practical approach to ASM site rehabilitation that espouses a commitment to **economic affordability, social acceptability, and ecological viability**. It proposes techniques that seek to address acceptable and sustainable rehabilitation results at reasonable costs that are accessible and affordable to ASM and to other communities or entities undertaking them (Stacey 2016a, 2016b; Stacey et al. 2018).

The FRM tool can be applied to land that has been degraded and abandoned by ASM or more effectively it can be integrated into active ASM operations and incorporated into a whole mine cycle approach for forest-smart ASM. The FRM is essentially a nature-based solution (NbS) and is based on recognizing and working with contextual on-site ecological values and processes. At any given ASM site there will exist opportunities—features, attributes, and dynamics—that can be brought into play to deliver an effective outcome, whether that involves water management, soils conservation, securing and distributing available organic matter, successional development of vegetation (habitat restoration), targeted tree-planting and maintenance, and so on.

For low-level mechanized artisanal miners, the FRM refutes a dependence on costly mechanized approaches but recognizes that machines may be used to assist in the heavy lifting of materials during technical rehabilitation. This should not impede small-scale miners from using their mechanized equipment, but it recognizes that an overdependence on machines during topsoil and biological rehabilitation can compromise an effective rehabilitation outcome because of soil compaction. In both cases, it essentially seeks to reestablish in situ ecological functioning rather than impose industrial rehabilitation technologies.

The FRM was developed as a concept and demonstrated as viable best practice during an intensive process of government and multistakeholder collaboration in Mongolia during 2013–2016, in association with the Swiss Agency for Cooperation and Development (SDC) SAM Project and The Asia Foundation’s ESEC II Project. The methodology was developed over three years and was informed through a process of training and action-research at 30 ASM demonstration sites across 11 ecological zones, with focused discussion and negotiation across all relevant national and local multistakeholder communities. A key output was the development of a methodology for ASM rehabilitation that met the challenges of the three pillars of economic affordability, social acceptability, and ecological viability (Stacey 2016a, 2016b; Stacey et al. 2018). Each and every application of the FRM demonstrated the requirement of meeting those three critical criteria. A key outcome was a methodology that the Mongolian ministries of mining and environment could agree on as a regulatory standard attached to ASM formalization. An additional outcome was an FRM underpinned by experience and demonstration that had the potential to be applied to a wide spectrum of ecosystems where ASM operated internationally, from desert to forest. It represents the stripped-down basics of the key requirements to realize effective mitigation of ASM impacts to the environment.

Looking to the FRM’s application to forest-smart ASM, it is important to appreciate that the FRM concept informs a systematic approach to analyzing the ASM process and meeting that with the actions required to reduce their impacts, as an adapted application of the mitigation hierarchy (appropriate to the sector).

The requirements detailed in B.5 are structured around six main components:

1. Situation assessment and planning
2. Clearance of forest and vegetation in order to mine
3. Technical rehabilitation
4. Topsoil management
5. Biological rehabilitation
6. Site closure and handover to responsible agencies

While the focus of the FRM relates to key actions undertaken at the mining location, its efficacy can be best realized through a process of assessment, planning, and preparation. It has the potential to achieve the most favorable results through such preparation.

In acknowledgment of the potentially demanding aspects of taking on these requirements as indicated in A.1.2.1 regarding a gradual progressive uptake and engagement with such standards, it is suggested that the activities presented in points 2–5 above are not rushed into; rather, a process of familiarization, discussion, assessment, stakeholder engagement, and planning should initially be undertaken.

**Planning and adaptation.** Such planning will need
to look carefully at the site that is being mined and rehabilitated. It should consider the various factors that will influence the degree of effort that needs to be made with respect to points 2–5 above. For example, hard rock mining will require a rehabilitation approach very different from that for alluvial mining. Topsoil management (point 4) will need to be adapted and applied accordingly. Alluvial mining situations will vary considerably, too, and efforts for topsoil management and biological rehabilitation (point 5) will be significantly determined by, and tailored to, the hydrological regime that dominates in that environment. Regular or seasonal reworkings of surface alluvium through high water flows/flooding may not allow for the significant development of topsoil, but such waterflows can renew seedbanks that can facilitate rapid revegetation.

Every mine site will pose a particular set of problems to be addressed, but the site will often provide opportunities and resources that can be used to achieve a satisfactory rehabilitation outcome. Every site is unique. It is worth investing time and thoughtful consideration into planning how to adapt the rehabilitation effort to the site’s conditions, as this will help ensure the affordability and practicality of the effort. It is important to consider how the requirements can be best adjusted to suit the challenges and opportunities at each site.

For new ASM operations or the expansion of existing ASM operations into new areas to be mined, once the physical on-site activities are to be undertaken, it is best if they are followed with a reasonably high degree of fidelity, as a successful outcome is dependent on a systematic and cohesive approach to implementation where the success of each step is dependent on its predecessor.

### B.5 Requirements (Criteria and Indicators)

#### B.5.1 Situation Assessment and Planning

##### B.5.1.1 Stakeholder Identification and Engagement

<table>
<thead>
<tr>
<th>Proactive identification and engagement with local government representatives and stakeholders</th>
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</thead>
<tbody>
<tr>
<td>Principles</td>
</tr>
<tr>
<td>1. Awareness of local forest values. 2. Consultation with local stakeholders</td>
</tr>
</tbody>
</table>

**Requirements**

**B.5.1.1.1**

The ASM entity shall proactively identify and engage with forest, local, and conservation authorities, experts, and nongovernmental organizations (NGOs) as well as local communities, requesting information about the status of the forest landscape, including land and natural resource rights (statutory and customary); the existence and level of threat to protected areas, Key Biodiversity Areas (KBAs), and protected species; the existence of local, national, and global High Conservation Value (HCV) areas; and existing forest management plans and legal implications for its mining operation—and use the information to inform their efforts.

**Indicators:**

- Evidence of historic and ongoing engagement by the ASM entity with forest, local, and/or conservation authorities exists.
- The ASM entity has obtained recent information from forest, local, and/or conservation authorities.
- The ASM knows the legal implications of forest management for its mining operation.
- Operators and workers of the ASM entity use knowledge gathered through their engagement to inform more effective impact avoidance efforts.
**Enabling Responsibilities:**

The ASM entity has a leading responsibility in (1) identifying and meaningfully engaging with relevant stakeholders to gather data on the forest status where the ASM entity operates as detailed above, and (2) gathering the knowledge provided by stakeholders to avoid potential impacts to forests and ecosystem services. Since women are typically the primary users and providers of non-timber forest products, the ASM entity puts special emphasis on making an effort to meaningfully engage women in the consultation process.

Enabling stakeholders are responsible for providing recent and relevant data on the forest status to the ASM entity.

**B.5.1.1.2**

The ASM entity shall proactively engage with the landowner and/or natural resources owners (for example, forest concession holder if applicable) as well as with women living and/or using the natural resources (who often lack legal ownership) to gain permissions and clarify mutual responsibilities relating to forest management and impacted stakeholders.

**Indicators:**

- Evidence of engagement with the landowner and/or forest concession holder exists.
- Mutual responsibilities have been listed and clarified.
- Mutual responsibilities beyond legal requirements are agreed and documented.

**Enabling Responsibilities:**

Landowners and/or natural resources owners or users are also responsible for meeting with the ASM entity when approached by such and agreeing on mutual responsibilities beyond legal requirements.

**B.5.1.1.3**

The ASM entity shall proactively engage with local communities whose livelihoods depend on forest ecosystem services, to understand their customary rights and to agree on mutual responsibilities relating to forest management and impacted stakeholders.

**Indicators:**

- Forest ecosystem services on which livelihoods depend have been identified with community participation.
- Potential impacts of the ASM activities on forest ecosystem services have been identified and documented in consultation with key stakeholders.
- Evidence of engagement with local communities exists.
- Mutual responsibilities have been agreed, clarified, and documented.

**Enabling Responsibilities:**

Leadership and civil society organizations in local communities work with the ASM to (1) ascertain the forest services on which community livelihoods depend, (2) identify potential impacts of the ASM activities on forest services, and (3) clarify, agree, and document mutual responsibilities.

Local communities organize to engage with the ASM entity, provide timely and reasonable access to data, and participate in a process to agree mutual responsibilities relating to forest management.

**B.5.1.1.4**

The ASM entity shall explore (with all stakeholders above) if any governmental or private forest carbon or biodiversity protection program is implemented or planned that covers the area of its mining rights.

**Indicators:**

- The ASM entity has obtained information from forest and/or conservation authorities.
- The ASM entity’s leadership is aware of the forest carbon and biodiversity protection programs.
- The ASM entity attempts to collaborate with and support the activities of the forest carbon and biodiversity protection programs.

**Enabling Responsibilities:**

Stakeholders should engage with the ASM entity and provide information on forest carbon or biodiversity protection programs to inform ASM activity.

**B.5.1.1.5**

The ASM entity shall engage with forest authorities, landowners, and forest users (that is, local community) to agree on the future use of the rehabilitated land. In case of an agreement to restore the mined-out areas to indigenous forest vegetation, requirements B.5.2.5.1–B.5.2.5.3 apply.
B.5.2 Direct Impacts – Mining

The requirements that ASM entities could be expected to implement as their primary response to the mitigation hierarchy draw from the Frugal Rehabilitation Methodology, outlined in B.4.

### B.5.2.1 Planning and Preparation of Mining Activities

<table>
<thead>
<tr>
<th>Preparation and Planning – Where to mine, with mapping of key features to be impacted, such as hydrology (watercourses, rivers), other features, or sites of value identified by local stakeholders</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Principles</strong></td>
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<tr>
<td><strong>Mitigation hierarchy phase</strong></td>
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<tr>
<td><strong>Lead responsibility</strong></td>
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<tr>
<td><strong>Enabling responsibilities</strong></td>
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</tbody>
</table>

#### Requirements

**B.5.2.1.1**

The ASM entity shall elaborate a site map of its mining area, including a 5-kilometer buffer zone, that indicates and locates all key features of the area, such as residential areas, roads, watercourses, waterbodies, natural forest areas, forest plantations, agricultural areas, and other features of value identified by stakeholders during stakeholder engagement (for example, protected areas, KBAs, HCV areas) (B.5.1.1).

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1 As the ASM entity is usually not the landowner, the decision about future land use (reforestation to how it was, plantation of a production forest, agricultural land, other uses) is usually beyond control of the ASM entity.

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**Indicators:**

- Agreement is documented.

**Enabling Responsibilities:**

Forest authorities, landowners, and forest users support and participate in a process to agree and document an agreement to restore mined-out areas.

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**Indicators:**

- A site map indicating all environmentally relevant key features exists.
- The owner of each key feature is identified.

**Enabling Responsibilities:**

The government makes information on ownership of land, natural resources, and mineral rights available to the ASM. A local support organization may facilitate the basic mapping of key features indicated above in a format that is of practical use to the miners, impacted stakeholders, and local communities.

### B.5.2.1.2

The ASM entity shall identify features or sub-sites in its mining area or buffer zone that require an elevated degree of protection against impacts and indicate such areas in its site map.

#### Indicators:

- List of features or sites
- Highlighted features or sites in the map that require an elevated degree of protection against impacts

**Enabling Responsibilities:**

Local government and environmental and supporting stakeholders are responsible for supporting the provision of information on the highlighted features requiring an elevated degree of protection.

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**Preparation and Planning – How to mine, with specification of minerals to be mined and methods of extraction. Outline an indication of impacts on forest, soils, hydrology.**

<table>
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<td><strong>Enabling responsibilities</strong></td>
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Requirements

B.5.2.1.3

The ASM entity must avoid unplanned mining. Effective and efficient mineral extraction and mineral processing shall be planned so that all economically feasible measures to maximize the extraction of the mineral while avoiding or minimizing negative environmental impacts are considered before mining begins.

The ASM entity should carefully consider how to adapt and apply the following rehabilitation requirements outlined in B.5.2.1.4–B.5.2.1.5 to the specific conditions within their operational area.

Indicators:

- The proposed mining products and methods of extraction are described and explained.
- A minerals flowchart with description of the process the minerals undergo from extraction, processing, and sale of products, including key roles and responsibilities.
- A quantitative/qualitative assessment of the impacts, including description and areas of habitat types to be cleared.
- A qualitative assessment of how the rehabilitation requirements will be adapted to meet the conditions of the specific area being mined.

Enabling Responsibilities:

The local support organization may support the ASM entity with its planning.

Relevant governmental stakeholders are responsible for engaging with the ASM entity in a review of the plan, flowchart, and assessments.

B.5.2.1.4

The ASM entity shall map the areas to be mined (including indicating planned depth), boundaries of operational area, areas used temporarily for soil and mineral storage, and areas to be rehabilitated after extraction, and delimit conservation areas (areas not to be mined for some reason).

Indicators:

- A map with all the areas to be mined or used (it could be the same one as in the previous theme) but including details of the boundaries of operational areas, facilities, distances, and so on

Enabling Responsibilities:

Relevant local and national government stakeholders are responsible for reviewing the map and making sure the areas defined do not conflict with other land uses.

B.5.2.1.5

The ASM entity shall consult with local community-based stakeholders to help inform what the mining area is planned to look like after mine closure.

Indicators:

- Map of hydrological features to be restored
- Map showing how rehabilitation is to be phased over time
- Map indicating proposed rehabilitation outcomes at closure

Enabling Responsibilities:

Relevant government and local community stakeholders are responsible for engaging and reviewing the rehabilitation plan and the rehabilitation outcome envisaged at the end of the mining life that is to be implemented by the ASM entity. Stakeholders should be given the document in advance of a community meeting and submit comments before and after to facilitate good process.

Minimize Deforestation Footprint – Identify and access mineral reserve with minimum deforestation possible; identify and incorporate forest set-asides within the mine-track

<table>
<thead>
<tr>
<th>Principles</th>
<th>Mitigation hierarchy phase</th>
<th>Lead responsibility</th>
<th>Enabling roles</th>
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<tbody>
<tr>
<td>1. Forest values: biodiversity, carbon storage, forest products, enhance rehabilitation potential within mine-track. 2. Downstream stakeholders</td>
<td>Avoidance, minimization, rehabilitation</td>
<td>ASM</td>
<td>Local government, local stakeholders, civil society and nongovernmental organizations</td>
</tr>
</tbody>
</table>
Requirements

**B.5.2.1.6**

The ASM entity shall conduct minimal-invasive exploration before extraction, to avoid unnecessary biodiversity impacts and deforestation of areas that later prove to be uneconomic to mine. Slash-and-burn tactics to clear exploration areas must be avoided.

**Indicators:**

- Exploration is done by sampling, using hand augers, drillholes, or small shafts/tunnels, not by pilot-mining.
- Unsuccessful exploration results are documented and areas of avoided deforestation are mapped.
- Area of deforestation avoided (ha) in relation to mapped plan of operations as indicated and agreed in B.5.2.1.1.

**Enabling Responsibilities:**

Local government, local stakeholders, civil society, and NGOs are responsible for overseeing that the ASM entity’s activities are conducted as stated above.

**B.5.2.1.7**

The ASM entity shall reduce to the fullest extent possible the linear extent and area to be used for roads and infrastructure for accessing the mineral deposit, to minimize deforestation and reduce access to undisturbed forest.

**Indicators:**

- Baseline measures of areas used to access to the mineral
- Area of deforestation avoided (ha)
- Extent of linear road network reduced, expressed as ratio of road length/area mined (km/ha)

**Enabling Responsibilities:**

This responsibility falls primarily to the ASM entity concerned, but the entity will need local community support to ensure that the resulting temporary infrastructure (for example, exploration camps and access roads, if applicable) are not used for additional deforestation/degradation activities by other parties (see indirect impacts in B.5.4).

**B.5.2.1.8**

The ASM entity shall avoid unnecessary extension of the mining activities into forest habitats.

**Indicators:**

- Equipment or materials is stored within the mining area, not within undisturbed forest or natural habitats.
- Avoid using heavy equipment where possible.
- Where heavy equipment is used, ensure that it is well maintained to ensure functional efficiency, thereby reducing risk of air, water, and soil pollution.

**Enabling Responsibilities:**

Local government, local stakeholders, civil society, and NGOs are responsible for monitoring the ASM entity activities to ensure they do not extend into forest activities unnecessarily, and where this should arise, for meeting with the ASM entity to address this in a timely fashion.

**B.5.2.1.9**

The ASM entity shall plan concurrent extraction and closure (stages of closure simultaneous with exploitation, particularly for open-pit mining).

**Indicators:**

- Map of mining area indicating planned timeline of extraction followed by rehabilitation to closure

**Enabling Responsibilities:**

Relevant government and local community stakeholders are responsible for engaging and reviewing the rehabilitation plan that is to be implemented by the ASM entity at the end of the mining life.

**B.5.2.1.10**

The ASM entity shall seek to identify and safeguard key forest habitat set-aside areas within/along the mining area that will reduce the extent of deforestation and enhance capacity for effective rehabilitation outcomes.

**Indicators:**

- Area of forest set-asides within or alongside the mining area (ratio of set-aside areas [ha] / effectively mined area [ha]).
**Enabling Responsibilities:**

Relevant government and local community stakeholders are responsible for engaging with, contributing to, and reviewing the rehabilitation plan that identifies key set-aside areas that are of known value and importance to local stakeholders.

**Maintenance of Water Quality and Flow – Develop and implement hydrological design plan: Integrate stream flow through mine-track while separating water through wet-washing and settlement ponds**

<table>
<thead>
<tr>
<th>Principle</th>
<th>1. Forest values and ecosystem services: carbon storage, water quality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitigation hierarchy phase</td>
<td>Avoidance, minimization, rehabilitation</td>
</tr>
<tr>
<td>Lead responsibility</td>
<td>ASM</td>
</tr>
<tr>
<td>Enabling roles</td>
<td>Local government, stakeholders</td>
</tr>
</tbody>
</table>

**Requirements**

**B.5.2.1.11**

In case of water used for extraction and ore processing (beneficiation), the extracted volume must not exceed the watercourse’s or water body’s capacity.

**Indicators:**

- The ASM entity has engaged with government authorities responsible for water and riparian management to understand water body dynamics, such as inflow and outflow volumes and how their mining activities could impact upon these.
- The ASM entity monitors water consumption for extraction and ore processing to avoid negative impacts.

**Enabling Responsibilities:**

Local government and stakeholders engage in reviewing and agreeing a hydrological design plan with the ASM entity.

**B.5.2.1.12**

Where the ASM entity applies hydraulic mining processes (water monitors or gravel pumps), water shall be stored and recycled and not discharged into watercourses or water bodies.

**Indicators:**

- Turbidity and water quality monitoring downstream of mining area
- Evidence of water recycling systems developed and implemented

**Enabling Responsibilities:**

Sector authorities provide, disseminate, and monitor clear technical instructions on permitted mining practices, and academic institutions (universities, schools, institutes) in the field of mining engineering provide outreach services and training to the ASM sector on appropriate mining technology.

Local government and stakeholders engage in reviewing, agreeing, and monitoring a hydrological design plan.

**B.5.2.1.13**

The ASM entity must avoid river dredging within watercourses. Dredging areas must be separated by dams from the free-flowing watercourse/river.

**Indicators:**

- Basic water management plan (hydrological design plan)
- Turbidity and water quality monitoring downstream of mining area

**Enabling Responsibilities:**

Sector authorities provide, disseminate, and monitor clear technical instructions on permitted mining practices, and academic institutions (universities, schools, institutes) in the field of mining engineering provide outreach services and training to the ASM sector on appropriate mining technology.

Local government and stakeholders engage in reviewing, agreeing, and monitoring a hydrological design plan.

**B.5.2.1.14**

The ASM entity must not discharge wastewater into
soil, watercourses, or water bodies without it being treated, ensuring that the water quality of the receiving watercourse or body (resulting from discharge) does not pose any risk to other water users' rights or livelihoods or to aquatic biodiversity.

**Indicators:**

- Turbidity and water quality monitoring
- Hydrological design plan that demonstrates efforts to avoid, reduce, or mitigate wastewater discharges

**Enabling Responsibilities:**

Sector authorities provide, disseminate, and monitor clear technical instructions on permitted mining practices, and academic institutions (universities, schools, institutes) in the field of mining engineering provide outreach services and training to the ASM sector on appropriate mining technology.

Local government and stakeholders engage in reviewing, agreeing, and monitoring a hydrological design plan.

### B.5.2.1.15

The ASM entity shall manage and monitor its impacts on water quality.

**Indicators:**

- Water and flow analysis reports
- Turbidity assessment reports
- Baseline of the water quality indicators
- Targets for water quality established
- Plan for achieving water quality targets established
- Progress measures of the water quality parameters: implementation and water quality targets met

**Enabling Responsibilities:**

Sector authorities, academic institutions, or local environmental civil society organizations (CSOs) provide capacity building on water monitoring and support where necessary/possible—that is, funding for training the miners to learn to do this or advisers who can carry this out on behalf of/with the miners.

Local government and stakeholders engage in reviewing, agreeing, and monitoring a hydrological design plan.

#### B.5.2.2 Forest and Vegetation

**Clearance Prior to Mining**

<table>
<thead>
<tr>
<th>Principle</th>
<th>1. Forest values: biodiversity, carbon storage (aboveground), ecological recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mitigation hierarchy phase</td>
<td>Whole mine cycle approach to biological rehabilitation (maximizing outcomes, minimizing effort)</td>
</tr>
<tr>
<td>Lead responsibility</td>
<td>ASM</td>
</tr>
<tr>
<td>Enabling roles</td>
<td>Local government, civil society organizations</td>
</tr>
</tbody>
</table>

**Requirements**

**B.5.2.2.1**

When clearing forest or other natural habitats to access areas to be mined or used for mining infrastructure, the ASM entity shall ensure that all trees with potential to be used are harvested with care. All vegetation aboveground, such as branches, undergrowth, and ground flora, shall be collected and stored appropriately for eventual incorporation of such organic matter into the site’s rehabilitation process (see B.5.2.4 [Topsoil Management] and B.5.2.5 (Biological Rehabilitation). Slash-and-burn tactics must be avoided.

**Indicators:**

- Records of timber harvested during area clearing
- Appropriate sites identified and safeguarded for storage of organic materials to be returned onto mined-out mining area following topsoil redistribution
- Evidence of storage of organic materials in these sites

**Enabling Responsibilities:**

Relevant government and local community stakeholders are responsible for engaging and reviewing the appropriate usage of vegetation aboveground to ensure the agreed rehabilitation outcome at the end of the mining life.

Local government, stakeholders, and CSOs support ASM with monitoring and implementation program to ensure
harvested materials are conserved for rehabilitation purposes.

### B.5.2.3 Technical Rehabilitation

<table>
<thead>
<tr>
<th>Placement of Waste Sediments and Tailings – Mined materials to be placed and stored to allow for ready regrading and reprofiling; infilling, regrading, and reprofiling of mined materials (boulders, sediments, tailings)</th>
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<tr>
<td>Principle</td>
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<tr>
<td>Mitigation hierarchy phase</td>
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<td>Lead responsibility</td>
</tr>
<tr>
<td>Enabling roles</td>
</tr>
</tbody>
</table>

#### Requirements

**B.5.2.3.1**

The ASM entity shall identify and allocate specific places to keep and store waste rock, waste gravel, and mined subsoils (overburden), boulders, sterile materials, and tailings, including stockpiled material. The disposal protocol must consider to the extent possible:

- Topsoil should not be buried by such materials.
- Runoff pollution should not enter watercourses or water bodies.
- Forest or natural habitats should not be buried by such materials.
- Waste rock, tailings, and stockpiles should not pose any risk to natural resources or local populations.
- Tailings that may contain residual product should be processed as thoroughly and as soon as is practical using the best appropriate technologies available. Short-term storage of tailings for reworking is possible but should not become an obstacle to achieving the rehabilitation outcome.

**Indicators:**

- Waste materials and tailings storage plan.
- Evaluation of the feasibility of recirculation of treated wastewater.
- Slope stability appropriate to geologic context; that is, slopes of the given inclination and bench height should not show failures (cracks, rockslide, landslide, and so on) in the pits of the ASM entity or adjacent pits.
- Water quality indicators (as in B.5.2.1.14 above).

**Enabling Responsibilities (B.5.2.3.1–B.5.2.3.4):**

Local government, stakeholder platforms, and CSOs contribute to the development of an agreed rehabilitation plan with the ASM entity.

Authorities and academic institutions (universities, schools, institutes) provide outreach services and training to the ASM sector on appropriate mining technology.

**B.5.2.3.2**

Where technically feasible, the ASM entity shall use waste rock, waste gravel, or tailings to immediately backfill mined-out areas, without temporary storage.

**Indicators:**

- Reprofiling reflects pre-mining topography (slope angles, drainage patterns).

**B.5.2.3.3**

The ASM entity shall deposit waste rock dumps, gravel dumps, or tailings that cannot be backfilled immediately in such a way as to allow for ready regrading and reprofiling post-mining with minimum effort.

**Indicators:**

- Reprofiling reflects pre-mining topography (slope angles, drainage patterns).

**B.5.2.3.4**

The ASM entity shall backfill, regrade, and reprofile all mined-out areas in a way that no ponds with stagnant water remain.
Indicators:

• Reprofiling reflects pre-mining topography (slope angles, drainage patterns).
• Absence of stagnant water in mined out areas.

<table>
<thead>
<tr>
<th>Waste Management Planning – Removal of industrial and domestic equipment, materials, plastics; avoidance of pollution by sewage, fuels, and toxic chemicals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principles</td>
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<tr>
<td>Mitigation hierarchy phase</td>
</tr>
<tr>
<td>Lead responsibility</td>
</tr>
<tr>
<td>Enabling roles</td>
</tr>
</tbody>
</table>

Requirements

**B.5.2.3.5**

The ASM entity shall identify the types of waste and quantities that are generated in the operation. After the identification of the different waste streams, the ASM entity shall create and implement a waste management plan.

**Indicators:**

• Waste management plan established, aligned, and compliant with national regulations, covering abandoned equipment, litter, sewage, fuels, emissions, and toxic chemicals
• Absence of waste materials, defunct mining equipment, and human litter at rehabilitated mine site and adjacent forest areas

**Enabling Responsibilities (B.5.2.3.5–B.5.2.3.7):**

Local government, stakeholder platforms, and CSOs contribute to the development of an agreed rehabilitation plan with the ASM entity.

**B.5.2.3.6**

The ASM entity must have strategies and a plan to safely contain combustible substances, such as fuels, fats, and oils, preventing them from leaching into water bodies or having contact with soil, flora, and water. This applies to the use, fueling, and maintenance of equipment (preferably carried out outside the forest area) and away from watercourses and water bodies.

**Indicators:**

• Combustible materials (fuels, oils, and so on) storage and management plan established, compliant with national regulations

**B.5.2.3.7**

In accordance with international best practice, the ASM entity shall use, reduce the use of, and aim to ultimately eliminate the use of all chemicals that are potentially harmful to the forest and aquatic ecosystem (see principle 1).²

**Indicators:**

• The use of toxic chemicals is done in compliance with national regulations and in accordance with eventual plans to reduce and eliminate their use.

**B.5.2.4 Topsoil Management**

Implementing the Topsoil Protocol I – Identification, ongoing removal, storage, and conservation of topsoil from throughout the mining area prior to accessing reserves. Maximizing rehabilitation potential while minimizing effort.

| Principle | 1. Forest values: biodiversity of soils, carbon storage |
| Mitigation hierarchy phase | Whole mine cycle approach to rehabilitation (maximizing outcomes, minimizing effort) |
| Lead responsibility | ASM |
| Enabling roles | Local government, civil society organizations |

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² This FS-ASM Standard does not aim to duplicate detailed requirements on mining chemicals such as mercury, cyanide, acids, and so on that can reasonably be expected to be covered in ASM standards to which the FS-ASM Standard may be bolted on. The wording of this requirement is therefore as generic as possible.
Requirements

B.5.2.4.1

The ASM entity shall develop a topsoil protocol that identifies the characteristics of topsoil to be removed prior to mineral extraction and establishes the actions to be taken for careful removal, storage, conservation, and redistribution and use of topsoil in rehabilitation, with the goal of maximizing the rehabilitation potential while minimizing effort. Once removed, it is critical that topsoil is stored safely and appropriately so it does not get lost during the active process of mining.

Indicators:

• Awareness of the characteristics and value of topsoil is demonstrated, such as through training to identify and manage local topsoil in ways that minimize and avoid its degradation and loss.

• Topsoil protocol: The chronological handling and treatment of topsoil are integrated throughout the rehabilitation effort.

Enabling Responsibilities (B.5.2.4.1–B.5.2.4.5):

Local government, stakeholder platforms, and CSOs contribute to the development of an agreed rehabilitation plan with the ASM entity.

B.5.2.4.2

Before starting to remove overburden or initiating the construction of mining infrastructure, the ASM entity shall remove and collect all topsoil containing belowground carbon and forest seedbanks.

Indicators:

• Records of topsoil are removed, collected, and stored safely away from active mining operations.

B.5.2.4.3

The ASM entity shall store all topsoil in a way that avoids its loss, deterioration, or erosion until usage for site rehabilitation purposes. To minimize rehabilitation efforts, suitable topsoil storage locations shall be identified that facilitate the future use of topsoil for site rehabilitation. Organic matter recovered from forest clearance (aboveground carbon) (B.5.2.2) shall be treated similarly.

Indicators:

• Topsoil and organic materials inventory identify storage locations and the reasons for their selection with emphasis on conserving such topsoil while not impeding the mining process.

| Topsoil Protocol II – Topsoil redistribution over mined-out mining area (integrated with B.5.2.5) |
|---|---|
| Principle | 1. Forest values: biodiversity of soils, carbon storage, maximizing future carbon sequestration (above- and belowground) and rehabilitation outcome |
| Mitigation hierarchy phase | Rehabilitation |
| Lead responsibility | ASM |
| Enabling roles | Local government, civil society organizations |

Requirements

B.5.2.4.4

After concluding technical rehabilitation (B.5.2.2) of mined-out areas, the ASM entity shall redistribute the collected topsoil over the mine-track. It will be important not to cause compaction of the final rehabilitation surface as this can compromise regeneration capacity.

Indicators:

• Use of Topsoil Protocol I and II: Conservation actions for stored topsoil to be effectively redistributed over the site, post-mining

• Area rehabilitated to ecological recovery (ha/total mine-track ha)

---

3 In some instances where storage space is limited, there may be a case for removing and storing topsoil on adjacent or nearby land that has previously been deforested and degraded by mining but could be effectively rehabilitated as an agreed contribution to the forest-smart commitment (subject to like-for-like habitat and soil type). In such situations, cleared vegetation (see B.5.2.2 [Forest and Vegetation Clearance Prior to Mining]) and B.5.2.5 [Biological Rehabilitation]), could also be stored for redistribution within the same commitment. Distances involved need to be factored in as an operational constraint (the nearer the better).
B.5.2.4.5

The ASM entity shall evaluate the risk of topsoil erosion and take appropriate measures to keep erosion to a minimum until topsoil is stabilized by biological rehabilitation.

Indicators:

- Topsoil protocol incorporates measures to mitigate the risk of topsoil erosion.
- Total area of soil lost to erosion is minimized.
- Organic materials are brought back onto surface (cross-link to clearance values).

B.5.2.5 Biological Rehabilitation

Indicators:

- Hectares of redistributed organic materials/hectares total mine-track area

B.5.2.5.1

Organic materials accumulated and stored from forest and vegetation clearance activities prior to mining, to be redistributed across the mine-track and integrated into topsoil. Such materials will help stabilize and protect redistributed topsoil from the elements and will help retain soil moisture.

Enabling Responsibilities (B.5.2.5.1–B.5.2.5.2):

Local government, stakeholder platforms, and CSOs contribute to the development of an agreed rehabilitation plan with the ASM entity that will address issues such as topsoil "mining" from adjacent forest or deployment of mine-site topsoil at nearby degraded areas.

B.5.2.5.2

If considered necessary (in case of insufficient availability of collected topsoil), the ASM entity shall identify possibilities for supplementary input to topsoil such as leaf litter/ground detritus from adjacent forests. Collection of such complementary topsoil inputs must not lead to forest degradation in the areas where this material is collected.

Indicators:

- Hectares of redistributed organic materials/hectares total mine-track area

B.5.2.5.3

The ASM entity shall identify typical vegetation communities and collect seeds of dominant/co-dominant species and successional colonizers. Seed collection shall include all relevant indigenous species with the potential to regenerate multilayered, diverse forest, and avoid invasive alien and introduced species.

Indicators:

- Inventory of relevant forest community species used in specific context, including indigenous successional colonizers typical to location
• Seed collection and storage system established

**Enabling Responsibilities (B.5.2.5.3–B.5.2.5.4):**

Local government, stakeholder platforms, and CSOs contribute to the development of an agreed rehabilitation plan with the ASM entity, drawing on national and local botanical and/or academic expertise to inform biological rehabilitation approaches.

**B.5.2.5.4**

The ASM entity shall sow and plant the seeds and ensure maintenance of the topsoil and seedlings until the selected target species together with successional colonizer species (trees, shrubs, and herbaceous species) has become established. In some instances, successional indigenous colonizers such as creeping and climbing species may need to be managed to prevent suppression of forest successional development.

**Indicators:**

• Diversity of indigenous species occupying random samples across rehabilitation area (#/10 m²)

<table>
<thead>
<tr>
<th>Management of risks and threats of invasive alien species</th>
<th>Principle</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle</td>
<td>1. Forest values: biodiversity</td>
</tr>
<tr>
<td>Mitigation hierarchy phase</td>
<td>Rehabilitation</td>
</tr>
<tr>
<td>Lead responsibility</td>
<td>ASM</td>
</tr>
<tr>
<td>Enabling roles</td>
<td>Local government, civil society and nongovernmental organizations</td>
</tr>
</tbody>
</table>

**Requirements**

**B.5.2.5.5**

The ASM entity shall seek support from local and national stakeholders to identify the threat and nature of invasive alien species. If such species pose a threat to rehabilitation effort, the ASM shall take the appropriate measures to control the threat that such species may have on the desired rehabilitation outcome.

**Indicators:**

• Presence/absence sampling of infested areas
• Documentation of efforts made to eradicate infestations or threat

<table>
<thead>
<tr>
<th>Biological Rehabilitation – Nursery establishment for target seedling production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Principle</td>
</tr>
<tr>
<td>1. Forest values: biodiversity, future carbon sequestration aboveground, local employment</td>
</tr>
</tbody>
</table>

**Enabling Responsibilities:**

ASM entity to be supported by local or national programs for invasive alien species management.

**B.5.2.5.6**

The ASM entity shall establish a nursery for target seedling production, either independently or in partnership with local stakeholders, targeting indigenous species diversity. This requirement should help the culture of rehabilitation develop within the ASM community and effectively connect with wider stakeholder values for forest restoration.

**Indicators:**

• Workers who can establish and run a nursery are identified.
• Nursery exists (partnership developed, land secured, seedlings established).
• Nursery cultivates and nurtures indigenous species with a focus on diversity of dominants, co-dominants, and noninvasive successional colonizers sourced from the immediate forest landscape, where possible.

**Enabling Responsibilities:**

The local support organization may need to work with the nursery managers to develop a financial plan in order to develop a resource that can serve both ASM entity and local stakeholders.
B.5.2.7 Site Closure and Handover

Handing over the rehabilitated area under management agreement with appropriate authorities/parties

| Principles | 1. Forest values: biodiversity, range of ecosystem services. 2. Local stakeholder community benefits |
| Mitigation hierarchy phase | Rehabilitation and closure |
| Lead responsibility | ASM |
| Enabling roles | Local government on behalf of local stakeholder community |

Requirements

B.5.2.6.1

The ASM entity shall take all necessary and feasible measures to ensure that rehabilitation efforts are sustainable (during tenure of its mining rights until mine closure).

Indicators:

- Change in hectares rehabilitated/hectares mine-track over time

Enabling Responsibilities (B.5.2.6.1–B.5.2.6.3):

Local government, stakeholder platforms, and CSOs contribute to assessing final rehabilitation effort to closure and handover in accordance to agreed rehabilitation plan.

B.5.2.6.2

During tenure of its mining rights and until mine closure, the ASM entity shall take all necessary and feasible measures to ensure that no post-mining impacts on forests (such as acid mine drainage, ground subsidence, further mining of rehabilitated land or other) occur.

Indicators:

- Change in hectares rehabilitated/hectares mine-track over time
- Other indicators covering acid mine drainage and ground subsidence as may already exist in target standards

B.5.2.6.3

At mine closure, the ASM entity shall prepare for and execute a handover to the landowner (government, community, private owner, or as applicable) as per the agreed terms or as established by law.

Indicators:

- Multi-party sign-off

B.5.3 Direct Impacts – Nonmining

ASM entities are responsible for a wider range of impacts on forests and ecosystem services as they sustain themselves on-site while mining. These impacts are difficult to quantify and manage over time, and while the ASM community is directly responsible for such resource use, the approach to greater sustainability is not something that ASM entities can undertake in isolation. Therefore, engagement with and support from wider stakeholders and government is encouraged to help identify risks and enable the development of sustainable outcomes. The development of a local multistakeholder group that is ASM-inclusive would provide a platform for the production of participatory environmental management plans (EMPs), a system of local environmental planning that is based on stakeholder equity and a full appreciation of forest values and ecosystem services. This will be explored further in section C.

ASM entities use forest ecosystem services to undertake mining. ASM should engage with local government and stakeholder communities to participate in the development of local environmental management plans that identify risks to forest values due to unsustainable use of forest ecosystem services (e.g., timber products for construction; non-timber products such as bushmeat, food, and medicinal plants).

| Principles | 1. Forest values. 2. Wider stakeholder community interests |
| Mitigation hierarchy phase | Avoidance, minimization |
| Lead role and responsibility | ASM; local government; local multistakeholder platforms |
| Enabling roles | Stakeholders, civil society organizations, forest departments of national ministries |
Requirements

B.5.3.1.1

The ASM entity shall engage with local government and stakeholder communities to participate in the development of a local EMP that identifies risks to forest values due to unsustainable use of forest ecosystem services (for example, timber products for construction, non-timber products such as bushmeat, food, and medicinal plants), as well as opportunities for collaboration for sustainable land-use outcomes.

Indicators:

- Evidence of the ASM entity having participated in the establishment of an ASM-inclusive local multistakeholder platform

Enabling Responsibilities (B.5.3.1.1–B.5.3.1.5):

National and local government, local stakeholders, and CSOs engage constructively with the ASM entity to develop a local EMP that profiles awareness of key risks to forest values and ecosystem services as indicated in the requirements B.5.3. Such an EMP can address the rehabilitation plan as well as other agreements between the ASM entity, local government, and local stakeholders, but it will also create a forum for other local land users and stakeholders to contribute to integrated sustainable use of natural resources pertinent to the area.

B.5.3.1.2

In its EMP, the ASM entity shall commit to avoid hunting, consuming, or trading globally threatened species for wild meat or bushmeat around mining sites, and, if operating within or close to KBAs, then no hunting or consumption of species that trigger KBA status. Such commitments would not be dependent on the existence of a local EMP but stand as a requirement for forest-smart status.

Indicators:

- ASM entity participated in an inventory of local wildlife that are listed as globally threatened species.
- ASM entity has raised awareness of its members of this requirement to avoid hunting or consuming wildlife listed on the inventory through local training or awareness-raising activities.
- Wild meat and bushmeat hunting and consumption by the miners are monitored either by the ASM entity and documented or by a third party.

B.5.3.1.3

Miners engage with a local and/or national illegal wildlife trafficking (IWT) organization or initiative to support their monitoring and enforcement activities, where these exist.

Indicators:

- Agreement between ASM entity and IWT organization /initiative outlining mutual roles and responsibilities
- Record of activities to support IWT organizations and initiatives

B.5.3.1.4

If the ASM mine site is remote (5 kilometers or more) from an existing settlement, the ASM entity shall commit to not clearing forest habitat for the establishment of long-term settlement beyond the life cycle of the mine. An EMP could be useful in framing such a commitment with local stakeholders but would not be dependent upon such an EMP being in place.

Indicators:

- There is no evidence of deforestation for establishment of long-term settlements at remote mine sites.

B.5.3.1.5

If the ASM mine site is remote (5 kilometers or more) from an existing settlement, the ASM entity shall commit to minimizing agricultural production at the mine site and to facilitating miner's access to food resources from external suppliers (for example, suppliers bringing in food from nearby settlements rather than hunting/cultivating locally). Such arrangements could be framed within a local EMP but need not be dependent on such a plan.

Indicators:

- Area under agricultural production at mine site is minimized and monitored throughout the mine site's life cycle.
- Working arrangements for supply of supplementary food resources are documented and verifiable.

B.5.4 Indirect Impacts

ASM access into and presence within forests can facilitate other land uses and impacts that would not occur but for their presence. Such facilitation may not be intentional
but nevertheless can occur initially at the local level. The risks need to be identified early on as miners move into a forested site or landscape. Resolving them cannot be solely the responsibility of ASM entities to address and will need wider engagement with local government and stakeholder platforms.

**ASM entities should engage with local government and stakeholders to identify and resolve such risks. The EMP should be a vehicle for addressing such indirect impacts.**

<table>
<thead>
<tr>
<th>Principle</th>
<th>Mitigation hierarchy phase</th>
<th>Lead responsibilities</th>
<th>Enabling roles</th>
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</thead>
<tbody>
<tr>
<td>1. Forest values: biodiversity and ecosystem services, impacts on stakeholders/Indigenous forest groups</td>
<td>Avoidance</td>
<td>ASM and local government, local multistakeholder platforms, forest departments of national ministries</td>
<td>Local stakeholder community, civil society and nongovernmental organizations</td>
</tr>
</tbody>
</table>

**Requirements**

**B.5.4.1.1**

The ASM entity shall make efforts to coordinate and engage with local government and stakeholders to identify the indirect impacts of their presence (component, type, probability of occurrence, responsible activity) and define common actions to tackle the risks.

**Indicators:**

- Establishment of ASM-inclusive local multistakeholder platform
- Local multistakeholder risk assessment of forest impacts agreed

**Enabling Responsibilities:**

National and local government, local stakeholders, and CSOs engage constructively with ASM entity to develop a local EMP that profiles awareness of key risks to forest values and ecosystem services due to direct and indirect impacts of ASM entity’s presence in area. This can be addressed within a local EMP, as indicated above, that inclusively engages both ASM and wider local stakeholder land use interests and that can preempt the development of indirect impacts associated with ASM activities.

**B.5.5 Carbon Finance Requirements (Criteria)**

This section is optional and applies to ASM entities that seek to conform to the FS-ASM Standard with the purpose of qualifying for carbon finance through producing emission reductions/removals for use as offsets or to attract results-based payments under the United Nations Framework Convention on Climate Change (UNFCCC).

This chapter assumes that ASM entities do not have the technical expertise to implement an emission reductions program on their own. In this chapter, the term “ASM entity” therefore includes support organizations acting in support of or on behalf of the ASM entity, if applicable.

This chapter assumes that ASM entities participate in, affiliate to, or join an existing government operated or voluntary emission reductions program (ERP). Requirements of that ERP supersede the requirements of the FS-ASM Standard and always prevail. As all ERPs have their own methodologies and operate to their standards, this chapter abstains from proposing indicators.⁵

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⁵ See footnote 3 in section A for further details on UNFCCC and voluntary standard requirements in relation to biodiversity conservation. This section was written with the purpose of assisting ASM entities and their support organizations to attract carbon finance for the pursuit and maintenance of forest-smart ASM. Concretely, it will assist them to produce emission reductions/removals for use as offsets or to attract results-based payments under the UNFCCC. Other types of carbon finance have other sets of rules. This section is therefore not intended to be used for other types of carbon finance, such as insetting (mentioned in A.4 and C.5.3.2), for which the FS-ASM plan or more broadly the forest-smart environmental management plan could be the activity. Notwithstanding, to go into more details on potential carbon finance that could provide incentives for forest-smart ASM exceeds the scope of PCI for ASM entities of this FS-ASM Standard.
**B.5.5.1 Stakeholder Engagement**

**Requirements**

**B.5.5.1.1**

The ASM entity shall proactively engage with authorities requesting information about existing ERPs operating in the area of the mine site, such as governmental REDD+ programs or private sector voluntary carbon initiatives.

**B.5.5.1.2**

If B.5.5.1.1 provides a positive result, the ASM entity shall proactively engage with the ERP, to assess the possibilities of participation in the program and obtain the guidance and methodologies for participating and generating emission reductions or for being included in a program benefit-sharing mechanism.

If B.5.5.1.1 provides a negative result (no ERP), the ASM entity may decide to proceed with the below requirements:

- To independently develop a voluntary emissions reduction project, with a view to participating in possible future ERPs

Or it may discard the possibility of accessing carbon finance. In the latter case, the following requirements do not apply.

**B.5.5.2 Setting Out the Baseline Case, Additionality, and the Forest Emission Reference Level**

Carbon-financed conservation/restoration aimed toward the production of emission reductions/removals for use as offsets or attracting results-based payments under the UNFCCC involves the implementation of the mitigation hierarchy in that it seeks to create a *counterfactual future* in the landscape against *baseline*. All activities undertaken to conform with the requirements under B.5.2.1 should therefore be complemented by a baseline assessment.

**Baseline Requirements**

**B.5.5.2.1**

The ASM entity shall document *when, where, and how* mining activities were carried out before starting to work toward conformance with the FS-ASM Standard.

**B.5.5.2.2**

The ASM entity shall document how mining activities in the same region are carried by other ASM operations that have not decided to work toward conformance with the FS-ASM Standard.

**B.5.5.2.3**

The ASM entity shall document the extent to which environmental regulations are actively enforced by the authorities.

**B.5.5.2.4**

The ASM entity shall document the most likely land use scenario within the project area in the absence of the implementation of the forest-smart mining plan or forest-smart EMP for climate, community, and biodiversity.

**Requirements for Assessing the Project Case (Counterfactual Future) and Additionality**

**B.5.5.2.5**

The ASM entity shall identify *when and where* its forest-smart mining plan or forest-smart EMP, which will constitute its activities to generate emission reductions/removals, will be implemented.

**B.5.5.2.6**

The ASM entity shall compare its forest-smart mining plan or forest-smart EMP with the most likely land use scenario within the project area as assessed in B.5.5.2.4 in the absence of the implementation of the forest-smart mining plan or forest-smart EMP and document the assessment. This assessment should document the benefits of the forest-smart mining plan or forest-smart EMP, including *climate, community, and biodiversity benefits* and indicate whether these would have occurred without the initiative. It should explain how existing laws, regulations, and governance arrangements, or lack of laws and regulations and their enforcement, would likely affect land use. It should justify

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6 Preliminary unpublished research from 2012 (ARM: Concept paper for Standard Zero B), comparing emission values for CO2-e/oz Au of industrial mines (published on www.cdproject.net) with own data collected from semi-mechanized ASM mines in Peru, showed that the carbon footprint of ASM can—depending on local conditions—be as low as 1/10 of industrial mining.
that the benefits being documented by the initiative are truly "additional" and would not have occurred without it (Verra 2017a).

Requirements for Setting the Reference Level

B.5.5.2.7

The ASM entity shall define the technical REDD+ activities that are being implemented—that is, RED (Reducing Emissions from Deforestation), REDD (Reducing Emissions from Deforestation and Forest Degradation), or REDD+ (Sustainable management of forests and enhancement of forest carbon stocks)—including in categories appropriate to the guidance and methodology of the relevant voluntary ERP as appropriate.

B.5.5.2.8

If a relevant jurisdictional forest reference emission level (FREL) exists, the ASM entity shall engage with authorities to quantify a suitable initiative reference level, including with reference to the guidance and methodology of a relevant voluntary ERP as appropriate.

B.5.5.2.9

If a relevant jurisdictional FREL does not exist, the ASM entity shall determine the initiative’s reference level according to any relevant guidance and methodology of the government or relevant voluntary ERP as appropriate or if the reference level is being developed with a view of participating in a possible future ERP, it may use a suitable internationally recognized carbon accounting methodology or Intergovernmental Panel on Climate Change (IPCC) guidelines.

B.5.5.3 Accounting For and Monitoring the Project Case—Minimizing Deforestation and Degradation and Forest Restoration—and Certifying the Project

Requirements

B.5.5.3.1

The ASM entity shall estimate ex ante the emission reductions/removals of the forest-smart mining plan or forest-smart EMP according to any relevant guidance and methodology of the government or relevant voluntary ERP suitable for monitoring avoided deforestation/degradation and forest restoration where ASM is the driver, as appropriate. If the carbon accounting is being developed with a view of participating in a possible future ERP, it may use a suitable internationally recognized carbon accounting methodology or IPCC guidelines.

B.5.5.3.2

The ASM entity shall implement and document a robust forest monitoring system according to any relevant guidance and methodology of the government or relevant voluntary ERP suitable for monitoring avoided deforestation/degradation and forest restoration where ASM is the driver, as appropriate. If the carbon accounting is being developed with a view of participating in a possible future ERP, it may use a suitable internationally recognized carbon accounting methodology or IPCC guidelines.

B.5.5.3.3

If the ASM entity is independently developing a voluntary emissions reduction project, it shall ensure that the initiative's design is validated and implementation verified as per the requirements of the voluntary ERP as appropriate, including developing the required design and monitoring documentation for validation and verification.

B.5.5.4 Capacity Building, Handover, and Site Closure

Requirements

B.5.5.4.1

The ASM entity shall ensure that the miners receive comprehensive training in validation, monitoring, and verification of emission reduction/removal projects and where the ASM entity is independently developing a voluntary emissions reduction project with progressive handover from the support organization to the miners as far as possible, with participation of the community.

B.5.5.4.2

The ASM entity shall continue to implement and verify the project through the project lifetime as prescribed in the guidance and methodology of the voluntary ERP, monitoring the forest growth and establishment.⁷

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⁷ Usually in the range of 30 to 40 years.
SECTION C: Guidelines to Support the Achievement of Forest-Smart ASM

C.1 Introduction

These guidelines are oriented at stakeholders whose actions can improve the likelihood of adoption of the principles, criteria, and indicators (PCI) by artisanal and small-scale mining (ASM) entities and enhance the positive impacts on forests that may arise from the miners' improved practices. There are two primary justifications:

1. Miners are not solely responsible for how their mining impacts on forests should be managed. Miners are one category of economic actors whose actions impact on forests. They do not determine forest outcomes in isolation, but as part of a larger community of people whose actions have impacts individually, collectively, and cumulatively. Miners' impacts on forests are determined not just by where and how mining happens but by a host of contextual factors, including but not limited to the quality of natural resources governance, social vulnerabilities and equality, the scale and types of other economic activities, and the eco-geo-physical nature of the landscape. While actions by ASM can have significant impacts on forest values, it is unrealistic and unfair to put the onus of forest health entirely on the miners because miners’ ability to be forest smart and the extent of their impacts are influenced or determined by these contextual factors (World Bank 2019).

2. Artisanal and small-scale miners are often under-capacitated and underresourced. Miners are likely to need support to achieve some of the PCI. These guidelines intend to bridge the gap between what is possible and what is necessary for the miners to do to become forest smart by setting out key actions or outputs that supportive stakeholders can do to make the PCI more achievable.

C.2 Scope

C.2.1 Who Should Use the Guidelines

This “bolt-on” standard is aimed at ASM entities that are integrated into local communities, are an organized unit, work in cooperation with a wider stakeholder community, and have adopted some level of formalization. Apart from the intentionally broad organizational scope for ASM entities (as per A.5.1 and B.2, avoiding exclusion of artisanal and small-scale miners due to their organizational setup), the FS-ASM Standard is not targeted at the following:

- Migrant ASM populations, save where they comprise a workforce for settled communities and can be enfranchised into forest-smart mining (FSM) processes through those relationships
- Illegal ASM activities, save where the miners, traders, and financiers involved are being engaged into a process of formalization
- Criminal ASM activities, understood as those ASM entities benefiting crime: criminal networks, money laundering, contributing to serious abuses and conflict financing, and so on

These guidelines are targeted at any organization whose activities can create the enabling conditions that make the achievement of the PCI more feasible for ASM entities and communities. Further to piloting this first version of the FS-ASM Standard, a future evolution of these guidelines could include stakeholder-specific guidance for supporting ASM to become forest smart.

It is envisaged that the guidelines could offer opportunity to specific stakeholders:
• Governments seeking to introduce strategic approaches and regulations that could better mitigate the impact of ASM on forests

• Carbon finance project developers seeking to include ASM in REDD+ or voluntary carbon schemes

• Non-artisanal small-scale mines for whom world-class guidance on responsible mining—such as from the International Council on Mining and Metals (ICMM), Initiative for Responsible Mining Assurance (IRMA), Responsible Jewellery Council (RJC), and Toward Sustainable Mining (TSM)—would be deemed to be too ambitious for their scale and capitalization but who are looking for ideas to incorporate into their enterprise risk management system so that they can better address the impacts of their mining on forests, forest values, and forest communities

• Mineral buyers or processors seeking to influence the environmental, social, and governance (ESG) or human rights performance of their suppliers by introducing elements of the PCI into their supplier codes of conduct, responsible sourcing policies, and supply chain due diligence systems

• International policy makers developing law or guidance on environmental due diligence that applies to ASM, or mining in forest landscapes

• Any entity, partnership, or multistakeholder initiative seeking to
  » Formalize ASM (for example, bilateral donor programs focused on ASM or natural resource governance, Minamata Convention National Action Planning processes);
  » Develop ASM (for example, responsible mining standard setters);
  » Support responsible trade with ASM (for example, responsible sourcing initiatives);
  » Improve the ESG or human rights performance of mineral supply chains (for example, downstream companies); and
  » Protect forests utilizing carbon or other types of environmental finance

C.2.2 Where to Use the Guidelines

This standard essentially captures the key elements of an environmental management plan (EMP) for ASM. While the PCI in this bolt-on standard are intended to support the protection of forest ecosystems, they can, could, and should be applied more universally, from forest to swamp to desert. We encourage users to adapt the PCI and guidelines to support better environmental management in diverse environments where they see benefit in doing so.

The carbon finance requirements, which are optional, are intended to be used in forested landscapes where REDD+ activities or voluntary carbon standards are implemented.

C.2.3 How to Use the Guidelines

Each guideline (C.3.1–C.5.4) is a condition whose realization will maximize the probability that the PCI will be achieved by the miners and that their achievement will protect forest values better. The reasons for each guideline are explained, followed by supportive actions that government, civil society, mineral buyers, financiers, and development organizations can take to develop an FSM initiative and/or to create an enabling context for the ASM to comply with the FSM PCI. These guidelines thus set out what needs to be done; they do not set out how to do it because the how is most appropriately determined through a locally driven human rights–based approach to program design, implementation, and evaluation, to ensure that the program is appropriate to the opportunities and challenges presented by the local context.

Figure C.1 explains the process of assessing the enabling environment to allow FS-ASM to succeed.

1 And in section B only, covering the production of emission reductions/removals for use as offsets or attracting results-based payments under the United Nations Framework Convention on Climate Change (UNFCCC). Other types of carbon finance have other sets of rules. Details on these exceed the scope of PCI for ASM entities of this FS-ASM Standard.
The guidelines aim to facilitate the creation and implementation of project plans and/or environmental management plans that can support ASM entities to become forest smart. They envisage partnership-based cross-sectoral collaboration models as the underpinning model for FS-ASM support projects.

The elements of the guidance that address carbon principles and carbon finance do not set out to be comprehensive for carbon finance as a whole and assume a level of familiarity with the fundamental principles of carbon finance. Instead, this guidance sets out to facilitate the carbon financing of FS-ASM initiatives that use the PCI, or the development of an enabling context for carbon-financed FS-ASM.

C.2.4 Circumstances in Which the PCI and Guidelines Should Not Be Used

It is not possible for all and any mining to be forest smart. In principle, mining should not happen in places that have been identified as “no-go zones” as captured in land use policies by government and recommended by civil society. Such no-go zones include certain Key Biodiversity Areas (KBAs), certain categories of protected areas, and certain categories of intact forest such as High Conservation Value (HCV) areas. Many no-go zones are contested territories where not all stakeholders agree with privileging environmental protection over human activity. On the other hand, it is precisely in the most precious places where ASM is happening and relocation is expected to be unenforceable or unsustainable that FSM practices can at least minimize the extent of environmental damage and bring some degree of control.

C.3 Conditions for an Enabling Context

Forest-smart ASM will only come about if certain conditions are met. This section articulates the guidelines that establish these conditions and how stakeholders can help create them.

C.3.1 Government Prioritizes Forest Protection and Recognizes the Legitimacy of ASM as a Source of Livelihood

In contexts where national and local governments do not prioritize the protection of forests politically, legally, institutionally, and financially, there will be a diminished incentive for miners to be forest smart. Where government does not recognize ASM as a legitimate livelihood, miners will struggle to claim their rights, build resilient businesses, and adopt more sustainable production methods. Put simply, for mining to be forest smart, the optimal context is the development and implementation of policies that safeguard forests and support environmentally and socially responsible ASM.
C.3.2 There Is Good Governance and an Enabling Policy Environment

Good governance and a legal and regulatory framework that reflects and is based on an enabling policy environment is a key precondition for forest-smart mining.

C.3.2.1 Policies for Land Use Allocation and Ownership Are Clear and Fair

For the purpose of this FS-ASM Standard, land use allocation and ownership refer to all surface and subsurface resources and rights. Land use decision-making processes vary tremendously across communities and countries, and they must be well understood and worked with/through as part of the introduction of FS-ASM.

Subsurface rights relate (as a technical term) to the mineral resource that is or might potentially be subject to extraction. Subsurface rights are commonly governed by mining or minerals laws and their regulations. To be considered clear and fair for ASM, mining laws and regulations need to do the following:

• Clearly define ASM, differentiating between the characteristics of artisanal and small-scale mining.
• Provide for requirements and procedures that are understandable and accessible to the ASM population of the jurisdiction, seeking to eliminate barriers to formalization of the ASM sector.
• Provide for sufficiently large extensions of mining areas and sufficiently long periods of tenure that allow for complete mineral deposit depletion using artisanal or small-scale technology, ensuring that mined-out areas, once they are rehabilitated, contain no further mineral resources that attract re-mining.
• Ensure that gendered barriers to land ownership and resource use are addressed, safeguarding women’s equal right to land, resources, and/or compensation.
• Ensure that mine inspections take a didactic approach, guiding miners toward good and best practice, while predictably enforcing the rule of law.

Surface rights relate to land tenure and usage of aboveground resources such as the land itself for purposes like agriculture, forestry, biodiversity conservation, Indigenous reserves, and so on, as well as water (even if belowground) for purposes like irrigation, fishery, human consumption, and so on. To be considered clear and fair for all land users, laws and regulations need—in their relation to ASM—to do the following:

• Clearly establish and communicate where mining can be permitted and which areas are considered no-go zones.
• Be coherent with customary law, as well as between sector authorities.
• Provide transparent, rights-based mechanisms to resolve resource usage conflicts, ensuring that the rights of all involved or affected stakeholders are respected.
• Provide that land use for mining is temporary and that mined-out areas have to be restored or rehabilitated according to the future land use as agreed between stakeholders and land users.
• Ensure that oversight and enforcement by different sector authorities is coordinated.

C.3.2.2 Laws and Regulations Provide the Right Incentives for Forest-Smart Mining

An enabling policy environment is characterized by providing balanced rights and obligations. While obligations are subject to enforcement, rights leave room for a broad portfolio of incentives. Where the presence of the state in remote areas is weak, incentives are often the more efficient instrument to achieve compliance.

In cooperation with civil society and the private sector, government needs to explore, design, and implement a portfolio of possible incentives, as appropriate to the jurisdictional context, such as access to carbon credits for forest-smart conformant ASM entities (see B.5.5) or access to producer support, finance, and markets. In all cases, these incentives should encourage the implementation of responsible business conduct aligned with the Organisation for Economic Co-operation and Development (OECD) recommendations on risk-based due diligence, and so on.

C.3.2.3 Laws and Regulations Take Special Consideration to Safeguard Comparatively Weaker Individuals and Communities and Those with Special Rights

Power is commonly distributed in an imbalanced way between men and women, settlers and Indigenous People, companies and smallholders, miners and communities (except in ASM community mining), ASM and large-scale mining (LSM), mining and forest interests, and so on. An enabling policy environment that equally benefits all stakeholders and safeguards all legitimate
interests gives special consideration to the protection of weaker stakeholders. It furthermore encourages and incentivizes the implementation of responsible business conduct aligned with OECD recommendations (OECD 2018).

In particular, unmechanized ASM is often strongly associated with low levels of development, high degrees of poverty, subsistence lifestyles, and in some countries the presence of Indigenous Peoples or vulnerable communities. There are thus strong social justice and human rights implications with regard to the regulation of ASM in these particular contexts, over which special care needs to be taken. ASM regulations need to be less financially demanding but aspire to be as effective as for LSM. The Frugal Rehabilitation Methodology (see B.4), where adopted by policies, is one possibility for ASM to achieve a coequal positive ecosystem outcome.

C.3.3 There is Peace, Justice, and Strong Institutions

Where there is conflict, human insecurity, and a lack of rule of law, the introduction of improved ASM practices will be harder and/or less likely to be sustainable or impactful. Where institutions are weak and corruption is rife, it is more likely that action is determined by who has power rather than what is right for society at large. In these contexts, forest values are more likely to be damaged or destroyed, violence is more likely to occur, and the artisanal and small-scale miners are less likely to be able to develop their businesses and communities and so attain the level of organization, formalization, and professionalization necessary to achieve the requirements of the FS-ASM Standard (see C.4.7). Without political stability and personal safety, miners are unlikely to be able to make the necessary investments and changes in behavior for realizing FS ASM because they will understandably be more focused on living hand to mouth and being sufficiently agile to respond to a dynamic and high-risk environment.

Peace, justice, and strong institutions are the aim of Sustainable Development Goal (SDG) 16, whose achievement can be secured by "promoting peaceful and inclusive societies for sustainable development, providing access to justice for all and building effective, accountable and inclusive institutions at all levels." Programs that support miners to become more forest smart can help fulfill this goal by doing the following:

- Ensuring there are grievance mechanisms through which stakeholders can report grievances associated with the implementation of the program to the miners and the program managers
- Ensuring there are dispute resolution mechanisms associated with program design and implementation, which are inclusive and not subject to discrimination or corruption
- Being aware of the corruption risks associated with the program (how it may be impacted by corruption in the community; how it might offer opportunities for corruption) and seeking to mitigate these through a strong anti-corruption policy, procedure, and monitoring activities
- Making sure the local leaders are accountable to the community in relation to how forest-smart ASM is pursued and in the management of its impacts
- Institutionalizing environmental monitoring systems that disclose incidents and trends to the miners, communities, and local authorities so corrective actions can be designed and implemented, in a fashion that is human rights based

C.3.3.1 Law Enforcement

To build peace, justice, and strong institutions, it is important that the law is enforced and there are effective accountability mechanisms that monitor and ensure this. However, a number of countries have elegant legislation for the development of the ASM sector but lack the capacity or political will to enforce it. A lack of enforcement creates ambiguity for economic actors, increasing risk associated with making investments and facilitating malpractice like corruption and abuse. In either case, the results are underperforming ASM sectors that disproportionately damage society and the environment, and a gap between what is envisaged and what is real.

Enforcement of the law requires functioning legislative, judiciary, and executive branches, where strong accountability structures ensure that any violations in good governance are addressed and redressed. Each branch must be incentivized to enforce the law, going so far as to have vertical incentives (for example, key performance indicators for enforcement actions in state functionaries’ job descriptions) and horizontal incentives (for example, platforms for joint monitoring and enforcement across different state arms like mining and environment). Good framing is not enough and resources are key; without enough competent people and money, the law will not be enforced.

Good law enforcement is not just about adjudication
of who is or is not in compliance and the distribution of consequences and corrections for those who break the law or operate outside of it; it also involves the introduction of supportive measures that make it more feasible and thus likely for individuals and economic actors to comply with the law. For example, a law may require ASM to minimize and eliminate the use of mercury in gold processing, but without outreach, sensitization, and training programs that predispose miners to cleaner production methods, without a commercial case for adoption of these alternative methods, and without interventions that facilitate and reward adoption, the compliance rate will be low.

Good law enforcement is proportionate and led by the state's duty to respect human rights. Whereas action against criminal entities that exploit vulnerable miners or impede the introduction of forest-smart mining measures is merited, the seizure and destruction of equipment or miners' personal properties without due process may not be. For interventions to be sustainable, enforcement should avoid violence or threats to the human security of miners as these can lead to escalation and the generation of "protection economies" as miners arm themselves and officials are bribed to turn a blind eye and prevent interference.

C.3.3.2 Transparency and Accountability

Transparency and accountability mechanisms are central pillars of good governance in democratic societies. They are key to monitor and ensure that the law is enforced. They are at the heart of enabling responsible business conduct because an organization's activities can be known, understood, and then responded to. They ultimately help protect human rights, avoid corrupt practices, prevent resource wastage, and improve the likelihood of achieving an FS-ASM program's objectives.

Accountability works in multiple directions. For example, the program supporting the miners to become forest smart must be accountable to its stakeholders and foster accountability between stakeholders. The miners (as economic actors with the responsibility to respect human rights) must be accountable to the community. The state, as duty bearer, must be accountable to the miner and mining communities, as rights holders (Levin Sources and IUCN 2020).

Accountability is fostered through structures and processes that facilitate organization, communication, clarity, and checks and balances on what is happening and why. The organization that supports the miners to become more forest smart should work with the miners and their communities to do the following:

- Be clear on roles and responsibilities, and hierarchy. Who manages what and whom? Who reports to whom?
- Put in place the right decision-making bodies, like committees and councils.
- Set up forums to facilitate information exchange, learning, and questioning.
- Ensure these institutions are run in ways that are inclusive and where participation and transparency are fostered.


Transparency is used as a tool to ensure good governance in programs, policies, organizations, and nations (Ball 2009). It involves having open and understandable rules, procedures, and information. It means that "substantive and procedural information is available to, and broadly understandable by, people and groups in society, subject to reasonable limits protecting security and privacy" (Johnston, n.d.). It facilitates scrutiny of an organization's activities by its stakeholders, thus making accountability more possible. For programs seeking to bring about FS ASM, this translates into allocating resources to and ensuring that stakeholders understand what the miners are doing to achieve FS ASM, and so through the accountability structures can influence these actions through a negotiated process.

In a number of countries, governments do not have the capacity, knowledge, or political will to establish the right transparency and accountability mechanisms. Support organizations and civil society can advocate for key processes that support governments and mining stakeholders to establish good transparency and accountability mechanisms, such as the following:

- Complying with the Extractive Industries Transparency Initiative standard for open and accountable management of mineral resources
- Following recommendations from Publish What You Pay to make all mining revenues transparent
- Seeking advice, supporting and engaging with the Natural Resource Governance Institute, the Open Government Partnership, the World Bank Extractives Practice, Transparency International, and the International Council on Mining and Metals
C.3.3.3  Anti-corruption

Corruption is the abuse of entrusted power for private gain. The prevention of corruption is governed internationally by the United Nations Convention against Corruption (UNCAC), which sets out a range of obligations for signatory states, such as preventing and criminalizing corruption, promoting international cooperation, recovering and returning stolen assets, and improving technical assistance and information exchange in both the private and public sectors (Timilsina 2020).

Countries that implement UNCAC, and especially where there is an anti-corruption program specific to natural resources governance, are more likely to achieve forest-smart mining. Where corruption is rife, transparency, accountability, and thus law enforcement will be compromised. In these situations, the introduction of improved ASM practices will be harder or less likely to be sustainable or impactful, as actions are determined by who has power rather than what is right for society at large.

Corruption is very common in artisanal and small-scale mining for a range of factors, including but not limited to the following:

- The high value of commodities mined by ASM
- The utilization of high-value minerals like gold, colored gemstones, and diamonds to facilitate money laundering
- The existence of a predatory state or government officials who choose to use their position of authority to intimidate miners and mining communities into paying bribes or assigning privileges
- Deal-making between authorities and miners to facilitate access of ASM to protected areas and the selective persecution of ASM operating in these spaces, as well as in certain other land areas such as LSM concessions, forestry concessions, and so on, based on protection economies
- Ambiguous laws that allow for discretion in their implementation
- Barriers to formalization, such as overcomplicated formalization procedures or the requirement for in-person applications, which present opportunities for bribery
- The vulnerability of the miners because of their identity (for example, gender, citizenship) or illegality

Much of the attention on corruption in mining focuses on the allocation of mining permits by large-scale mines, but many forms of corruption also occur in ASM (for example, grand corruption, petty corruption, bribery, extortion, sexual extortion, nepotism, cronyism, undue political influence, and so on), but these are understudied. The OECD recently published an FAQ for businesses on how to address bribery and corruption risks in mineral supply chains, which provides additional guidance (OECD 2021).

Figure C.2: Forms of Corruption

Corruption is not just about bribery

![Diagram of forms of corruption](Source: Timilsina 2020)
Key processes to reduce corruption should include but are not limited to the following:

- FS-ASM stakeholders can help prevent corruption from being a barrier to the realization of forest-smart ASM by advocating and supporting the government to design and implement an ASM sector anti-corruption strategy and plan (Timilsina 2020).

- Any FS-ASM initiative should
  » Mainstream anti-corruption measures across its design and implementation (see the UNODC resource guide on integrating anti-corruption into the programming process (UNODC 2014);
  » Abide by the principles of transparency, accountability, integrity, participation, inclusion, equality, and empowerment;
  » Coordinate with anti-corruption activities in the region and country where it is operating;
  » Have an anti-corruption policy and procedures to govern how it will handle incidents of corruption that could affect implementation of the program;
  » Appoint an anti-corruption officer to monitor and report corruption incidents to the relevant authorities and stakeholders; and
  » Carry out a corruption risk assessment of its program and the environmental management plan. This can include an illicit financial flows study in order to understand the protection economy that may have developed to protect the vested interests in the status quo of unsustainable ASM in forest environments. Guidance can be found in the GIFF Project’s handbook on financial flows linked to ASM (GIFF 2017).

- The miners should
  » Commit to full transparency and accountability, starting with a transparent and accountable process for obtaining their mining permit and land rights, and carry out ongoing due diligence on their environmental compliance and performance; and
  » Implement and mainstream anti-corruption safeguards across the mining life cycle and educate members on corruption and what to do if it happens.

Where miners are organized, settled, and engaged in a process of formalization, the introduction of improved ASM practices based on this bolt-on FS-ASM Standard will be more sustainable and impactful.

ASM is a well-organized system, not chaotic or random. Economic and social organization exist but are often informal. ASM can happen on a wide spectrum of formality and different terminology is used to designate different states on the formality scale, such as legal/illegal, formal/informal, criminal, or “legitimate.” See Table C.1.

### Table C.1: Definition of States on the Formality Scale

<table>
<thead>
<tr>
<th>Legal</th>
<th>Formal</th>
<th>Legitimate</th>
</tr>
</thead>
<tbody>
<tr>
<td>In accordance with the law</td>
<td>Having obtained permission</td>
<td>Consistent with the law</td>
</tr>
<tr>
<td>Formal</td>
<td>Fulfilled legal requirements</td>
<td></td>
</tr>
<tr>
<td>Illegal</td>
<td>Informal</td>
<td>Criminal/Illlicit</td>
</tr>
<tr>
<td>Prohibited explicitly by law</td>
<td>Not fulfilled all requirements</td>
<td>Benefiting crime: criminal networks, money laundering, etc.</td>
</tr>
</tbody>
</table>

Source: Jorns and Levin-Nally 2020.

When the organization of ASM is informal, illegal, or criminal, it is more likely for miners to be transient and not have a stake in the land they mine. Informal, illegal, or criminal ASM’s lack of access to land pushes them into remote and/or protected areas because they cannot operate in the wider environment. The FS-ASM Standard will only be viable and feasible if an ASM entity can assume responsibility for the piece of land where they mine. Therefore, formalization is key to ensure the preservation of forest values. Legal and legitimate miners, but particularly formal miners, can improve the likelihood of adoption of the PCI and enhance positive impacts on forests.

Formalization is a long-term process of bringing ASM into the formal, legal economy and through that address the environmental and social issues connected with the sector’s impacts on society and the environment. There are three key components to the process of formalization:

- The legal and policy framework for ASM: Does it enable and encourage the development of formalized forest-smart ASM?
- The state’s role in promoting and enforcing compliance with this framework, using “carrots and sticks”;

C.3.4 Miners Are Organized, Settled, and Engaged in a Process of Formalization
Is there a balanced and fair approach that guides the ASM sector through both incentives for adopting and demonstrating forest-smart practices and disincentives for failing to adopt such practices?

• Participation and (self-) organization by the ASM itself: Can the ASM sector enhance its environmental performance through the adoption of accessible, affordable, and practical approaches to mining?

While the state has a leading role in developing a forest-smart legal and policy framework for ASM, if this is not undertaken with a view of providing a supportive environment for ASM to engage with the process, the risk is that ASM communities will not recognize the value of complying with such regulations. While formalization is mainly the responsibility of the state, civil society organizations and other stakeholder groups can play a key role in promoting and supporting it. Typical examples for entry points are ASM support programs addressing organization and formalization, or programs based on a supply chain approach, creating market opportunities for responsible formalized ASM.

C.4 Process-Related Guidelines to Set the Miners Up for Success

C.4.1 Cooperation, Partnership, and Multistakeholder Approaches (SDG 17)

In developing and advocating forest-smart PCI, there is a recognition that the sector is not as well placed or resourced to transform its mining practices to higher forest smart standards in isolation. It requires a cooperation effort as envisaged by SDG 17 (UN 2015). Government, civil society, other relevant stakeholders, and local community groups will need to collaborate to facilitate a participatory process of ASM engagement. Such collaboration would involve advocating for improved forest-smart laws/policies, organizing inclusive workshops and trainings, establishing ASM-inclusive stakeholder platforms, undertaking intermediary interventions between ASM and the government, supporting ASM to access the necessary resources to implement the improvements necessary to conform to the standard, and so on.

The ASM sector will be best placed to transform to forest-smart practice if there is an enabling environment:

• Institutional alignment and policy recognition of ASM’s socioeconomic benefits, impacts, responsibilities, and capacity constraints

• The appropriate exercising of leverage through incentives that promote forest impact avoidance through measures that steer ASM away from forests that have high biodiversity and carbon storage values (for example, protected areas, KBAs, HCV areas) yet facilitate equitable access to land that can be mined with less significant impacts

• Well-resourced programs that are integrated with the above aligned national policy approaches yet provide incentives and support in the development, adoption, practice, and demonstration of forest-smart mining practices

• The adoption of cross-sector partnership approaches to building forest-smart capacity for ASM entities

C.4.1.1 Capacity Gaps and Actions to Be Considered by Diverse Stakeholders in Developing an Enabling Environment for the PCI

ASM entities will have varying degrees of capacity or incapacity in meeting the "PCI for ASM entities" in section B. These capacity gaps and the risks associated with them range from a lack of technical knowledge to lacks in organizational and stakeholder engagement skills, including the capacity to engage in participatory collaborative platforms at the local level. It may also include a lack of capacity to prioritize forest-smart mining in the face of other competing priorities among their core business functions (for example, paying workers), accessing productive sites, securing finance, aspirations (for example, providing personal protective equipment to workers), and so on.

The table in appendix 2 attempts to indicate what capacity shortfalls an ASM entity might face in seeking to meet a particular requirement of the mitigation hierarchy phase, from impact avoidance to eventual mine closure and beyond. It suggests proposed solutions that could be developed and deployed to address these shortfalls. Such solutions might range from decision-making on land access to ASM to informed planning guidance from government. Solutions may take the form of basic training in the various technical components of the Frugal Rehabilitation Methodology as well as stakeholder communications and engagement approaches that might lead to ASM participation in local-level environmental planning, among others.

The table then identifies the key stakeholder sectors and their respective roles in supporting the development of an enabling capacity and environment for forest-smart ASM actors. No one stakeholder is well placed to bridge the ASM capacity gap in isolation. A cross-sector approach, drawing on a wide range of skills,
capacities, and financial (as well as other) resources, will be necessary if the ASM sector is to develop progressively to forest-smart capacity.

In its last column, the table indicates the range of outputs, actions, and tools that could be used to specifically enhance the ASM entity’s capacity to address these specific requirements. It proposes tools and models for collaboration with stakeholders who help encourage and provide for an inclusive and diverse local planning approach, where both direct (mining and nonmining) and indirect impacts of ASM activities in forested landscapes can be considered and addressed within a wider landscape context through a process of participatory environmental management planning.

C.4.1.2 Partnership Approaches and the Role of Civil Society Organizations

Cross-sector partnership (partnering) approaches are frequently adopted when there are inequalities in capacity and resources across sectors (PBA 2019). Single entity or even bilateral interventions often fail to achieve the hoped-for results in bringing about behavior change because they may be too narrow in their approach and too restricted in their reach. They often overlook that stakeholder communities can play significant roles in identifying obstacles and in participatory problem-solving. Partnerships can be forged comprising government departments, private sector organizations (such as supply chain beneficiaries), and local stakeholder groups. Civil society organizations (CSOs) that have the motivation, skill, and capacity can play appropriate intermediary roles and facilitate change. The ASM sector and its social and environmental interrelationships are complex and connected to both local and national stakeholders, and their activities are responsive to often unpredictable global markets. Given this environment and its associated challenges, partnership approaches between government, private sector, and development agencies with ASM entities wishing to develop and demonstrate forest-smart mining should be considered.

Resourcing partnership initiatives will be crucial, and there are roles for development agencies, banks, supply chain beneficiary companies, standard setters, and others to collaborate with governments on working with the ASM sector to develop forest-smart skills and capacity. Collaborative multistakeholder partnerships can be effective vehicles for building capacities of all stakeholders for forest-smart ASM.

Dependent on context, in-country CSOs may have a valuable role to play as intermediaries facilitating the implementation of capacity-building engagement with ASM sector/entities (Levin Sources and IUCN 2020). CSOs may have a unique, adaptable, and flexible role in engaging with ASM sector stakeholders on a wide range of issues. In particular, they can influence and inform both government and wider stakeholders and can be effective brokers in designing and implementing solutions to environmental capacity building, within the wider formalization process. Given the complexity of the ASM stakeholder environment, it is important that an approach to engage with ASM and relevant stakeholders is developed and undertaken through a planning process that ultimately leads to multistakeholder partnerships or platforms. Such a process may be formalized through a memorandum of understanding (MoU) between partners, which could form the basis and potential to evolve into more formal agreements established at the local level between the ASM entity, local government, and the local multistakeholder forum. In designing effective multistakeholder partnerships or platforms, impartial objective stakeholder mapping and analysis is key.

C.4.1.3 Interrelationships between LSM and ASM

Within forested landscapes, the ASM sector—either formal or informal—often operates in close association with industrial or large-scale mining operations. Such proximity of operations may be a cause for concern and even conflict. Case studies have shown that the combined presence of LSM and ASM in forested landscapes typically aggravates the forest impacts of ASM, with negative consequences for both LSM and ASM (World Bank 2019). However, it is important to consider the opportunities for positive synergy between ASM and LSM and build cooperation and alliances to enable ASM to perform better on forest impact mitigation. Such interrelationships are real opportunities for mutually beneficial partnerships.

To achieve this guideline, stakeholders would need to take the following general actions:

- Develop collaborative alliances between government, LSM, ASM, nongovernmental organizations (NGOs), and local communities.
- While LSM is generally better positioned and resourced than ASM to positively influence forest outcomes in the landscape, it does need help in identifying and exploiting opportunities for synergy with ASM, such as resourcing and implementing affordable rehabilitation techniques (such as identified in the PCI). Supporting the development of forest-smart ASM capacity not only will benefit ASM entities but can bring such skills and capacity to bear on LSM companies’ own rehabilitation programs and outcomes, through the development and
• LSM should take greater responsibility for the induced and indirect impacts associated with mining operations, including ASM and the cumulative socio-ecological impacts on the forest landscape. These duties do not necessarily mean fully assuming all responsibilities, but supporting ASM to fulfill theirs will build appropriate ASM capacity and reduce intersectoral conflicts.

C.4.1.4 Interrelationships between ASM and Downstream Businesses

A growth in consumer awareness and the establishment of mandatory environmental and human rights supply chain due diligence requirements by market nations means that there will be greater demand for minerals from provenances where environmental, social, and governance risks are well managed. By contrast, provenances that cannot demonstrate the management of these risks will struggle to sell into responsible markets. This standard provides a framework that enables ASM entities to stand the test of the environmental due diligence requirements of the market, and so keep them included in responsible supply chains.

On one hand, the miners may not have the financial resources or initial understanding to embark on the process for introducing FS-ASM. On the other hand, as the general public is increasingly demanding “ethical” or “sustainable” products in diverse markets from the Americas to Europe to Asia, brands are compelled to seek to drive positive impacts on the ground as part of their risk mitigation actions on the one hand and contributions to the achievement of the SDGs on the other.

The concept of insetting will create an enormous opportunity for ASM. The term “insetting” refers to the direct investment of a company within its own value chain (up- and downstream) to reduce its carbon footprint. Jewelry brands, banks, electronics companies, automotive companies, and other major sectors in the luxury and green economies are finding themselves subjected to increased scrutiny of their supply chain performance. FS-ASM projects offer such players the opportunity not only to offset their carbon within their own supply chains (either fully traced to source, or even nominally connected through supply chain transparency work) but also to support the fulfillment of human rights, contribute to the protection and enhancement of biodiversity, and support the strengthening of institutions of democratic governance.

C.4.2 A Human Rights–Based Approach Is Taken

The guiding framework for the fulfillment of human rights in business are the United Nations Guiding Principles on Business and Human Rights (OHCHR 2011) and the OECD Guidelines for Multinational Enterprises (OECD 2011b), which align with the former. The United Nation’s guiding principles set out the duty of the state to protect human rights, the responsibility of business to respect human rights, and access to remedy for people whose human rights have been violated. Through the pursuit and achievement of the requirements in this bolt-on standard, ASM will be partially fulfilling their responsibility to respect human rights. Through the implementation of these guidelines to support these small businesses with their responsibility to respect human rights, state actors will be partially fulfilling their duty to protect against human rights abuses within their territory and/or jurisdiction.

A human rights–based approach (HRBA) (UNSDG, n.d.; Purevjav et al. 2014) ensures that the design and implementation of a development intervention is guided by human rights standards and principles, such that the intervention helps achieve the fulfillment of human rights through its process and its outcomes. It says that every individual has certain rights, given by the constitution of a country and international human rights convention, and that achieving these rights should be both a means and the goal of an intervention/project. This means that the process of the intervention is as important as the outcome—so the way to go about working with ASM is as important as the goal of ensuring a formalized, legal sector.

An HRBA empowers individuals and communities to know and claim their rights as rights holders, and it helps increase the accountability and ability of government institutions to respect, protect, and fulfill these rights as duty bearers:

• **Rights holders**: Individuals with rights. The HRBA wants to empower the rights holders to know, claim, access, and realize their rights and acknowledge their responsibilities. It is important to recognize here the ASM right to livelihood, within a context of recognizing other stakeholders’ rights to livelihoods. Indigenous forest communities receive a particular consideration here, requiring specific approaches to engagement (for example, free, prior, and informed consent [FPIC]).

• **Duty bearers**: Government has the duty to respect, protect, and enhance the fulfillment of the rights of individuals. The HRBA supports government agencies in fulfilling this role—not just by monitoring
and controlling but also by providing services and supporting individuals and communities, such as ASM.

The following key principles of the HRBA should be taken into account when helping artisanal and small-scale miners and communities design a program for fulfilling the requirements of this standard (Stacey et al. 2020).

**Equity and nondiscrimination:** ASM communities often operate under economic and social stress and are therefore vulnerable. In some situations, they can wield significant political power; in others, they are marginalized and ostracized relative to communities dependent on other economic activities, like agriculture or trade. Within communities, there can be a great diversity of individuals with protected characteristics (for example, age, gender, race, disability) or unprotected characteristics that may make them more vulnerable and particularly at risk of exploitation or discrimination (for example, ex-combatants, single mothers, orphaned children, and so on). Furthermore, the impacts of unsustainable mining practices on forest values may affect different categories of people differently. For example, women may be disproportionately affected where they must travel farther to gather fuelwood or freshwater because of deforestation or pollution of closer territories.

- Within communities, any actor involved in an FS-ASM initiative should recognize those who are most vulnerable and marginalized, those who are not listened to or are usually “invisible,” and ensure that they are included and treated equally.
- Recognize gender inequalities and factor these into the process of engagement.
- Consider the status of ex-combatants and the stabilizing role ASM can play in securing peace in post-conflict or conflict-affected communities.
- Indigenous communities that practice minimal contact with incomers may require particular approaches for engagement. FPIC-based approaches specifically designed to represent and safeguard the perspectives and interests of Indigenous Peoples need to be enabled (see below).

**Participation and inclusion:** The HRBA’s foundational tenet is that those most affected by an issue should be involved in addressing it. By that logic, stakeholders whose human rights may be affected by the ASM’s impacts on forest values should have a say in how miners go about mitigating these impacts. An HRBA to forest-smart ASM thus has inclusion, participation, and cooperation at its core.

- Enable all stakeholders to participate actively and freely in the process of learning about and undertaking the changes that will affect them. Stakeholders should be empowered to articulate and voice their expectations; they should be consulted and included in decision-making processes.

**Accountability:** A program of developing and implementing forest-smart PCI should be accountable to wider stakeholders and also foster accountability between stakeholders. For example, forest-smart PCI should be acceptable not only to the ASM communities undertaking them but also to wider stakeholders impacted by ASM activities. Wider stakeholder support or endorsement of forest-smart PCI outcomes are essential if forest-smart practices are to be accepted within the ASM environment. Government, both at the national departmental level and local authority level, may need to be held accountable to the implementation of such standards.

**Empowerment:** An HRBA will support marginalized people to know and claim their rights. In the context of forest-smart mining, this first means equipping the miners with the skills, expertise, and confidence they need to be autonomous and capable in the identification and management of risks. Through this empowerment, they also become more accountable to their stakeholders. Second, it means helping stakeholders to know how the miners’ activities will impact upon them and to have the capacity to engage in the forest-smart mining programming and implementation.

The following processes and tools can help support organizations ensure the ASM and their communities understand who their stakeholders are, how their actions may impact on them directly or indirectly (for example, by degrading the forest), and so design the right stakeholder engagement processes that are participative, inclusive, and empowering.

- Map stakeholders who may be impacted by the introduction of forest-smart ASM practices, especially those whose lives may be improved or worsened by the project itself or the achievement of its goals.
- Profile stakeholders in terms of their interest in the FS-ASM project and seek to understand their relative interest in the project.
- Design a holistic stakeholder engagement strategy, with category-specific consideration and plans for vulnerable groups—for example, how will your process meaningfully involve people who are blind, widows, children, ex-combatants, and so on?
- Do a responsibility assignment analysis (for example, RACI chart) to determine how different stakeholders should be engaged in the program.
C.4.2.1 Free, Prior, and Informed Consent

Indigenous Peoples and local communities are sometimes negatively impacted by ASM activities. On the other hand, Indigenous Peoples may well be actively involved in ASM as a livelihood opportunity. Yet the empowerment of Indigenous Peoples, the protection of their rights, and granting them greater control over the management of natural resources are fundamental to the protection of forests and forest values in the face of mining (World Bank 2019).

In 2007, the UN General Assembly adopted the United Nations Declaration on the Rights of Indigenous Peoples (UN 2008), recognizing their rights and making specific mention of free, prior, and informed consent as a prerequisite for any activity that affects their ancestral lands, territories, and natural resources (FAO 2016). While FPIC initially was focused on addressing the rights of Indigenous Peoples impacted by development interventions from external parties, there has been recognition that the FPIC approach is appropriate good practice to undertake with local communities more widely, as involving them in the decision-making of any proposed development activity increases their sense of ownership and engagement and, moreover, helps guarantee their right to self-determining, autonomy, and development as basic human rights principles. There is significant alignment and overlap between the HRBAs described above and elements of FPIC.

The incorporation of FPIC principles into the HRBA approach for FSM involves the following actions:

• Informing local communities about their rights broadly (for example, human rights, natural resource rights, land rights, property rights, and so on), but more specifically vis-à-vis how they may be impacted by mining directly, or indirectly (for example, through mining’s impacts on forests or forest values)

• Educating the miners in Indigenous and local communities’ rights and the responsibility to respect, and what this could mean in practice

• Building the capacity of local communities on the understanding and exercising of rights so that they can engage in the process through which the miners’ activities become more forest smart in ways that will generate greater equality, justice, and sustainability

• Pursuing state participation throughout the engagement process

• Carrying out capacity-building activities to train public sector employees in Indigenous and local communities’ rights in the context of the state as duty bearer.

• Raising awareness of grievance and redress mechanisms among Indigenous Peoples and local communities in particular, but broader stakeholders generally

The organizations that are supporting the ASM to become forest smart should carry out these activities; however, building awareness and understanding of these principles among miners and mining communities helps create an enabling environment in which they are more likely to be realized.

FPIC as a concept is not well developed for ASM settings because of the capacity limitations of artisanal and small-scale miners. Any attempts to incorporate FPIC into FS-ASM programs should be documented and published to generate learnings for society at large and inform the evolution of future policy and program design.

C.4.3 A Risk-Based Approach Is Taken to Environmental Management Planning

It is not conceivable for the miners to address all risks at once; they must prioritize and choose what to do first, second, and later, in what time frame and in what way. They must have a plan.

It is important that the environmental management planning is based on a risk identification and assessment process that categorizes risks based on their salience (likelihood x severity) and the feasibility of mitigation. For example, each risk should be considered on the following factors and scored, after which all risks could be ranked and a “heat map” designed using color-coding to flag those risks that are most severe, likely, and manageable, versus those that aren’t.

• Likelihood: How likely it is to arise

• Severity: If it were to arise, how severe it could be

• Mitigation possibilities: What actions could be taken to mitigate the risk

• Mitigation impacts: The extent to which those mitigation actions would reduce risk likelihood and/or severity

• Mitigation feasibility: The feasibility of those mitigation actions in terms of resources required, who would be responsible, the time frame over which period the investment is likely to reduce the risk salience, and so on

This process could be guided by the OECD Due Diligence Guidance for Responsible Business Conduct risk prioritization framework (OECD 2018). This allows for prioritization of which risks should be addressed and in
what order, and it ensures that the miners will get the highest possible return on their investments in terms of generating positive environmental and human rights impacts and safeguarding important issues. Additional guidance is anticipated in the forthcoming OECD Practical Actions for Environmental Due Diligence Tool (GGKP 2021; UBA 2021).

Prioritization, however, does not just rest on risk salience; it is ultimately determined by a range of factors. Ultimately, a few key questions must be asked to prioritize risks:

- Which are the salient risks and why?
- What are the barriers to mitigating these risks and are they surmountable? For example, what resources are necessary to mitigate each risk per the PCI, and how affordable and feasible is each risk mitigation action then?
- Which risks do stakeholders think matter most and why? How could not prioritizing these preferences generate new or extenuate or enhance risks for the FS-ASM initiative?

C.4.4 A Landscape-Level Approach Is Taken

The development and implementation of forest-smart ASM practices is unlikely to be realized if the sector is regarded in both institutional and geographic isolation. As with other economic development sectors that draw on natural resources, government can better assist stakeholders in a given (forested) landscape if resources are allocated through the development of regional and local planning systems. Such landscape-level planning systems need to be informed by information and analysis that prioritize environmental, economic, and cultural needs over agreed timescales.

Given the global importance of forests for biodiversity and ecosystem services outlined in principle 1 of the PCI, landscape-level planning needs to be informed by global-to-local awareness of forest landscapes. Stakeholder values regarding the diversity of other land uses need to be considered, together with an appreciation that some of these land uses might be competing for space and resources, representing a variety of different economic interest groups. Such a data-gathering approach can result in a converging collation of information that can help determine the extent and location of land allocations. The resulting policies can help enable a range of economic developments while managing for and reducing competition, conflict, and the inequitable allocation of land resources, which is one of the key drivers pushing ASM into sensitive forest areas. It is important to recognize that in such landscape-level planning, biodiversity conservation and associated ecosystem services provided by forest landscapes need to be regarded as a land use, not as a background value to lands being exploited for economic development.

C.4.4.1 Develop and Use Global, National, and Local Information on Forests and Geology to Inform Landscape-Level Planning

International organizations and institutions—intergovernmental, governmental, nongovernmental—concerned with identifying and evaluating the importance of forested landscapes provide a range of tools and information that national governments can draw upon to help identify and safeguard priority areas for forest conservation (Olson and Dinerstein 2002; Plumptre et al. 2021).

The approaches to identifying, mapping, and presenting such information are many and various, but some of the more effective approaches referenced in this draft standard involve the use of Key Biodiversity Areas, and their earlier predecessor designation, Important Bird Areas (IBAs). Identification and prioritization of the global KBA data set is ongoing, but information and boundaries of more than 16,000 sites are known, including large ecologically intact areas as well as smaller, degraded, and fragmented sites that nevertheless retain their global importance for biodiversity. KBAs are identified to an established globally accepted standard that values biodiversity, ecological intactness and integrity and irreplaceability (IUCN 2016).

In addition, HCV areas and associated High Carbon Stock (HCS) areas are also increasingly documented for forested landscapes important for certification of economic development to specific environmental standards. Therefore, it is important to ensure that such information feeds into and informs landscape-level planning processes at regional, national, and local levels. Further, there is a need for the capacity to identify and avoid impacting such areas to be developed through enabling support from relevant stakeholders with an interest in ASM products, such as, for example, supporting the extension of the HCV Resource Network (or an equivalent) to be applied to the ASM environment.

Within deforested, fragmented, and degraded landscapes, it will be important to consider the identification of corridors linking priority areas as well as buffer zones surrounding them. The development of strategic forest planning informed by safeguard of priority sites would help forest-smart ASM avoid impacting such forest areas for which it does not have capacity to mitigate and manage. Where ASM already occurs in such areas,
adoption of FS-ASM practices should be prioritized and encouraged.

Notwithstanding, data on the geologic potential are as important as data on forest features. Wherever mineral resources economically minable at ASM scale are located, pressure of the local population or migrant miners to exploit them must be expected sooner or later. Informed landscape-level planning allows intervening early in the mitigation hierarchy, preventing those sensitive areas from being converted into ASM sites. On the other hand, to encourage ASM away from ecologically critical areas, it is imperative to be able to offer the ASM population alternative sites where ASM is possible with less critical environmental impact. Existing geologic information allows earmarking such areas for ASM. Where such data are not available, it should be a priority to create it.

C.4.4.2 Develop Equitable Access to Formal Mining Rights for Environmentally Responsible ASM within Context of Other Competing Land Uses That Impact Forests

Government policies and economic and social incentives for access to land for ASM strongly influence ASM presence and behavior nationally. Governments can consider more equitable access to formal mining rights across the ASM-LSM spectrum, recognizing that formalized obstacles to ASM in favor of LSM have damaging consequences for ASM migrating into and becoming established in sensitive forest areas, including protected areas and KBAs. The development of incentives favoring forest-smart ASM as part of the formalization process, integrated through land-access regulatory frameworks and licensing systems, can work constructively to strengthen landscape-level planning, reducing the impacts of informal ASM on forests and providing a pathway to wider adoption of FS-ASM.

C.4.4.3 Develop Public-Finance Mechanisms That Support FS-ASM Adoption and Planning at the Local Level through Stakeholder-Inclusive Local Environmental Management Plans

Government ministries can align to develop policies for royalties, taxation, and public financing that bring support to local government to finance the development and implementation of FS-ASM-inclusive local environmental management plans. Such resources can be used to cofinance the implementation of FS-ASM rehabilitation efforts. In some countries, unfortunately the mandate may exist, but implementation is poor; in these contexts, development aid or private financing are more likely to be realistic options.

Local EMPs can play a key role in improving environmental governance through a participatory ASM-inclusive process (Levin Sources and IUCN 2020). Led by an established local multistakeholder forum acknowledged as representing all relevant environmental stakeholders within a local authority area, EMPs can be a progressive approach to ensuring that FS-ASM is accountable to, and benefits from, an equitable planning process that recognizes ASM as one of many land uses operating within a landscape. Civil society organizations well versed in both ASM and local stakeholder engagement are well placed to play a key role in the facilitation and development of such EMPs, through a step-by-step process of relevance to a given local community. An EMP requires the following:

- Mapping of relevant environmental stakeholders and land uses
- Identification of local government roles and responsibilities with respect to environmental stakeholders
- Participatory process of identifying environmental attributes/values: Key biodiversity features; ecosystem services; habitats; species; protected areas, KBAs, HCV areas; sacred places; and so on
- Scoping of environmental impact of land uses and economic activities
- Discussion of relationships between the key environmental stakeholders with regard to common resource use: Conflicts, neutral relationships, positive synergies
- Risk assessment of stakeholder relationships with these key values identified above (are they positive, neutral, negative?)
- Establishment of specific control measures compliant with local/provincial, national, and international legal requirements, to avoid and mitigate impacts and conflicts
- Conflicts/interactions presented as a program for discussion with/through local government and the local multistakeholder forum
- Local EMP to be developed for 3–5 years, with annual review and action plans that are presented to local government for approval and reported up into national land use planning processes

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2 Environmental stakeholders are people or institutions with an interest in exploiting or protecting natural resources.
• Approved plan to form the basis for informed funding of priority actions within a local government budget cycle (relevant public finance mechanisms)

The development of such capacity will require policy alignments between government ministries at the national level, thence to be transferred through to the local level. However, this will require support from external stakeholders, too, through jointly funded consortia of ASM-relevant organizations to develop, establish, and demonstrate such a participatory approach to environmental governance.

C.4.5 The Route to Forest-Smart ASM Is Evidence-Based

An evidence-based approach to forest-smart ASM is a key precondition to achieve improved and sustainable ASM practices on forests. Evidence should come from both quantitative and qualitative data on forest’s values; artisanal and small-scale miners, entities, and communities; and the mining impacts on people and forest ecosystems.

C.4.5.1 The Forest’s Values Are Profiled

In developing forest-smart road maps for ASM, there needs to be an appreciation of what the diversity of forest values might be in any forest landscape. Identifying these values will inform the road map to achieve forest-smart ASM. ASM occurs within a wide range of landscapes, from boreal forests in Mongolia to temperate forests in Ukraine. Forest-smart practices will need to be adapted to forest types across this spectrum and attuned to the particular values and constraints associated with them.

More specifically, what range of forest values should be recognized in the development of a forest-smart ASM road map?

1. Biodiversity

The most obvious value of forests—particularly tropical forests—is that they comprise a diverse array of species across a wide range of taxa: vegetation communities of higher and lower plants, fungi, reptiles, a vast number of invertebrate species, fish, amphibians, birds, and mammals.

Further, some tropical forested countries host globally important biodiversity hotspots, regions known to support at least 1,500 endemic plant species and that have lost at least 70 percent of their natural habitat (Mittermeier et al. 1999). A finer-grained appreciation and location of priority forest areas within these regions is provided through the identification and documentation of Key Biodiversity Areas, areas that are specifically identified through assessments to global criteria for species irreplaceability, endemism, and threat status (among other criteria).

This is surely indicative that the forested environments within which we seek to develop forest-smart practices for ASM are among those with the highest biodiversity values—and risks—on Earth. Many of these forests are no longer fully intact. KBAs and protected areas represent some of the most intact or important areas of forest biodiversity. “Intactness” has historically been undervalued, yet it is now increasingly recognized as a critical consideration in regional and national planning for biodiversity impact avoidance. Intact forests represent a precious and rapidly declining resource. There is emerging evidence that remaining intact forest supports an exceptional array of ecosystem services: carbon sequestration and storage, water provision, Indigenous culture, and the maintenance of human health. In contrast, degraded forests that have experienced poorly managed or unregulated exploitation are less significant in terms of resilience and the range of ecosystem services delivered (Watson et al. 2018). Such intact forests are a critical priority for global efforts to halt the ongoing biodiversity crisis, to slow rapid climate change, and to achieve sustainability goals.

Currently, 48 percent of KBAs are covered by protected areas, therefore, some congruence between KBAs and protected areas exists. However, this also means that more than half of KBAs are unprotected, and as more sites are identified, it is likely more of these will be outside the existing protected area estate. As such, there is a need to identify KBAs at a national level to help guide planning for ASM.

2. Regulating and provisioning forest ecosystem services

• Carbon storage and sequestration: Carbon is readily stored in all forms of terrestrial organic matter, soils, and rock formations. In forested landscapes, there are three main carbon storage facilities: aboveground carbon, belowground carbon, and in peatlands and sediments associated with forest wetlands and riparian corridors.

• Atmospheric and climatic regulation: The role of forests in relation to climate change extends far beyond carbon storage. Forests play a major role, through respiration and evapotranspiration, in the

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ensuring that REDD+ activities are not used for the conservation of natural forests and biological diversity, and supported: the following safeguards should be promoted safeguards note that, “when undertaking [REDD+] activities, the following safeguards should be promoted and supported: […] e) actions are consistent with the conservation of natural forests and biological diversity, ensuring that REDD+ activities are not used for the conversion of natural forests, but are instead used to incentivize the protection and conservation of natural forests and their ecosystem services, and to enhance other social and environmental benefits” (UNFCCC 2010).

Voluntary emission reductions programs within voluntary markets will require the quantification of carbon within project area or jurisdictions and the development of an understanding of the rate at which that value is being eroded. Further, voluntary certifications may require the baselining of social and biodiversity values, including High Conservation Values.

C.4.5.2 ASM Miners, Entities, and Communities Are Profiled

Understanding ASM miners, entities, and communities’ realities is crucial for developing a sustainable road map to forest-smart status. As explained in A.5.1, there is a wide spectrum of ASM in scale and organization. Forest-smart ASM practices will need to be adapted to the particular miners, entities, and communities involved. Therefore, a road map to forest smart needs to acknowledge particular ASM types, situations, and contexts where FS-ASM will be applied. The road map should be specific to the ASM realities and should be informed by the drivers and impacts of ASM in that particular context.

C.4.5.3 Nature of Mining Impacts on People and Forest Ecosystems Is Understood and Used to Prioritize Actions in the Approach to Forest-Smart ASM

Similar to forest’s values and ASM contexts, the nature of mining impacts on human health, forest landscape degradation, and ecosystem services needs to be understood to inform the design and prioritization of actions that are appropriate, realistic, and have a higher chance of success to achieve the criteria in the bolt-on FS-ASM Standard. All impacts of mining (direct, indirect, and cumulative, based on current and future scenarios) should be considered when designing road map actions and interventions. The environmental and social impact assessment is a crucial tool for identifying and assessing all impacts.

The following key studies, among others, give specific guidance to government, miners, and mineral buyers on how to improve understanding on ASM impacts:

- ASM PACE Global Solutions Study (ELL and WWF 2012)
- Forest-Smart Mining: Identifying Good and Bad Practices of ASM in Forest Landscapes (World Bank 2019)
- How to Bring about Forest-Smart Mining: Entry Points
Once impacts have been identified and understood, priority actions can be drafted. We have not prioritized the PCI to allow those applying them to prioritize them in ways that make sense for their own missions and beneficiaries (standard setters) and local realities (ASM communities).

Prioritization could happen in three different ways:

1. During the process of adoption into an existing standard or framework, the standard setter prioritizes core and progress PCI from among the global list of PCI in the bolt-on FS-ASM Standard.

2. During piloting (future phase, for example, 2022) in the five pilot countries, the issue of prioritization is considered at the local level. Once results are shared at the global level, key themes may allow for prioritization of the global PCI, if the World Bank chooses to do so.

3. At the point of implementation (per the point above), the artisanal and small-scale miners, in collaboration with their stakeholders, design an action plan of which PCI to address in which order and why, as appropriate to the local reality.

C.4.6 The Process Is Pragmatic and Realistic to the Miners’ Situations

The FS-ASM Standard recognizes that artisanal and small-scale miners may not be able to conform with all requirements without external support (see B.1). A pragmatic and realistic approach needs to be taken. Similarly, the standard’s PCI recognize that in most if not all cases, artisanal and small-scale miners will not be able to obtain carbon finance without external support (see B.5.5). Section C.5 encourages stakeholders to work toward limiting the cost and complexity of participation in carbon financing for FS-ASM initiatives.

C.4.6.1 Miners and Their Communities Are Incentivized to Pursue FSM

As outlined in C.3.2.2, laws and regulations need to provide an incentivizing policy environment that enables forest-smart mining. Such laws and regulations need to be operationalized by a functional inter-institutional framework that is not solely the responsibility of the state. Government, private sector, and civil society have a shared responsibility to collaborate on outreach to ASM communities and miners through forest-focusing ASM support programs and ultimately to incentivize ASM entities to commit to the principles of forest-smart mining and ultimately adhere to the FS-ASM Standard. Carbon finance could be an incentive if government and voluntary initiatives structure emission reductions programs in a way that is inclusive for FS-ASM initiatives, limiting the cost and complexity of participation—this is expanded upon in C.5 below.

For ASM entities to pursue forest-smart mining, a strong business case needs to be built and supported, acknowledging the range of potential impacts that ASM may have on the environment and on stakeholder communities. The possibility to access carbon finance is only one element of this, and perhaps in some cases even an indirect one (for example, financing ASM support programs). To build the business case, it is essential to understand which incentives can be effective in motivating practices that are more forest smart.

Elements and steps to build such a business case:

- Environmental education: The miners and their communities are sensitized on and educated on how their activities may lead to deforestation, degradation, and unsustainable land use, and the disadvantages of these situations, as well as the advantages of maintaining forest health, sustainable land use, and restoration. [bushmeat hunting]

- Participatory profiling of ASM and impacted communities, recognizing self-determination and empowerment of communities and the fact that different communities in different landscapes have different aspirations, which makes a one-size-fits-all approach unfeasible.

- Incentives mapping and analysis (leverage and incentives matrix), to gauge the relevance or feasibility of pursuit of carbon finance, and work out what the business case for the miners would be.

C.4.6.2 Implementation of the PCI Is Affordable but Balanced with the Needs to Address Social Acceptability and Ecological Viability, as Defined by the FRM

For successful sustainable implementation of the FS-ASM Standard, the incentives and costs of implementation for ASM entities need to be balanced, providing a positive net result. This implies that the requirements for conforming to the FS-ASM Standard must be affordable at the income levels of the miners. To the extent possible, the FS-ASM Standard aims to facilitate this by using the FRM framework (see B.4).

Notwithstanding, some requirements of the PCI for ASM entities (section B) might exceed the technical, organizational, and financial capacities of ASM entities.
It is here where a co-responsibility of government, private sector, and civil society exists. Successful implementation of the FS-ASM Standard benefits several actors:

- Miners, who retain or gain access to ethical markets and buyers carrying out environmental and human rights due diligence for voluntary or mandatory reasons
- Mining communities, who enjoy the forest ecosystem services set out above as well as improved environmental health outcomes generally, such as through lower pollution of air, water, and soil, as well as a sense of social integration and inclusion within the wider communities who value their commitments to the FS-ASM
- Government, supporting them to fulfill their duties as per international environmental and human rights law and achieving national priorities aligned to the United Nations 2030 Agenda for Sustainable Development, as well as per their electoral promises to work toward greater well-being of the citizen
- Private sector sourcing from or otherwise linked to the mineral supply chain, supporting them in fulfilling their obligations to prove compliance with environmental due diligence requirements and delivering on their own corporate social and environmental responsibility commitments
- Civil society, providing them with opportunities to materialize their vision and mission and contribute to sustainable development

These benefits have a value; therefore, there are practical advantages for these stakeholders to contribute to successful FS-ASM implementation. Financial contributions by these stakeholders, equivalent to the benefits they gain from successful FS-ASM implementation, are expected to facilitate the implementation of forest-focusing ASM support programs.

C.4.6.3 Pursuit of Compliance with the PCI Is Well Planned, Implementation Is Monitored, and Success Is Rewarded

Implementation of the FS-ASM Standard is recommended to be understood as an ASM-led but expert-facilitated (that is, by forest-focusing ASM support programs) process, driven by (a) the aspirations of the ASM entity and (b) the mandate and goal of the ASM support program.

This needs to be based on a mutually agreed road map that

- Prioritizes which issues and criteria to tackle first, second, third, recognizing that ASM entities cannot be expected to have the capacity to address all issues simultaneously, and that FS-ASM implementation in a real-world scenario starts not from the outset but at some point in time of ongoing ASM operations;
- Provides justification for this prioritization, reflecting a balance between the aspirations of the ASM entity and the expertise, focus and scale of the support program;
- Sets out an action plan as to how compliance will be achieved and monitored; and
- Defines how the agreed incentives will be delivered.

C.4.6.4 Roles and Responsibilities of Stakeholders Are Clearly Defined and Understood by All

For successful implementation of the FS-ASM Standard, ASM entities, government, private sector, civil society, and communities have a shared responsibility. None can achieve a forest-smart outcome on its own. This requires robust multistakeholder platforms at local, landscape, or jurisdictional levels to be in place, such as roundtables, coordination committees, or similar. These platforms will need to communicate with similar bodies developing country REDD+ and voluntary carbon programs.

On the other hand, the stakeholders’ competencies, capacities, and contributions will differ, so their roles and responsibilities should also be designed accordingly, set out in partnership agreements, such as memorandums of understanding, and understood by each. Accountability structures should seek to ensure that these agreements are upheld.

C.4.7 Capacity of Miners and Other Stakeholders Is Built to Support the Design and Implementation of a Route to Forest-Smart ASM

Capacity and funding limitations of artisanal and small-scale miners and other stakeholders will make the introduction of improved practices in ASM very hard and unlikely. Capacity limitations to ensure good governance, secure peace and justice, implement a human rights–based approach, monitor practices, enforce laws, implement a landscape-level approach, among others, deeply undermine the successful design and implementation of evidence-based road maps to forest-smart ASM.

Non-mechanized artisanal forms of ASM in particular are strongly associated with low levels of development,
high degrees of poverty, subsistence lifestyles, and, in some countries, the presence of Indigenous Peoples or vulnerable communities. In these contexts, the barriers of entry into a legal, formal market may be too high: The legal requirements may be too costly, too complicated, too difficult to achieve, and so on, and thus might hinder a formalization process and inadvertently any potential uptake of a forest-smart road map.

There are thus strong social, justice, and human rights implications with regard to the regulation of ASM in these particular contexts, over which special care should be taken. To address capacity gaps, capacity limitations need to be understood and accommodated into a plan and training across stakeholders needs to be built as well as sensitization across stakeholder categories. Key processes to follow to support addressing capacity gaps are summarized below.

**C.4.7.1 Capacity Limitations of Miners and Other Stakeholders Are Well Understood and Accommodated in the Plan**

A capacity assessment is key for addressing capacity limitations of the miners and other stakeholders to implement the FS-ASM Standard. Once capacity limitations are well understood and accommodated in a plan to address the identified limitations, the likelihood for adoption of the PCI can increase.

Capacity limitations will vary widely in each context; thus, the plan to address those will also differ. There is no “one size fits all” plan that can be applied to all ASM contexts and all minerals. Although some approaches might be transferable, it is imperative that baseline studies are conducted to deeply understand capacity limitations, social structures, key stakeholders and power structures, community perceptions, and the environment.

Some approaches that might be transferable to all plans to address capacity limitations can include the following:

- Strengthening Indigenous Peoples’ rights through no-go commitments to Indigenous Peoples’ territories and empowering Indigenous Peoples to claim their rights and push the forest-smart agenda.
- Building participatory approaches to forest restoration and rehabilitation, building on Indigenous and local communities’ ecological knowledge as appropriate.
- Building participatory approaches for monitoring of practices.
- Taking a rights-based approach when designing and applying regulations for artisanal and small-scale miners. Solutions won’t be sustainable without multistakeholder ownership.
- Under an HRBA, strengthening the capacity of local and central governments to fulfill their duties, or adapt the duties to their capacities. For example, simplify formalization processes to make them more accessible to all miners.

**C.4.7.2 There Is Appropriate Training across Stakeholder Categories**

Training across all relevant stakeholder categories is also key for building the capacity to implement the FS-ASM Standard. This training should also be tailored to each context and stakeholder category. Key trainings transferable to almost all contexts can include the following:

- Training for ASM on developing and implementing a forest-smart requirement action plan
  - Training should empower ASM to build the action plan and set a timeline for action.
  - The training could share successful stories from others by proactively capturing positive stories of miners across all scales as environmental stewards and seek avenues for reproduction of these successes.
- Training for developing a local ASM-inclusive multi-stakeholder governance forum
  - This multistakeholder governance forum can be built as an online knowledge sharing and action-oriented platform for stakeholders to share key information and find alliances to tackle identified issues.
- Training for support organizations—for example, training of trainers, monitors, auditors, technicians
  - Support organizations may include governmental agencies, NGOs, local communities, Indigenous Peoples, and other stakeholders in the supply chain beyond mining. These support organizations are very important to ensure that the right environment is in place for miners to be able to implement the PCI.

Cross-sectoral partnership-based approaches can also be key for transferring knowledge and developing appropriate environmental best-practice tools, stakeholder-inclusive planning, and governance. This should include the development, dissemination, and adoption of alternative ASM technologies that avoid and minimize environmental impacts, and, where applicable, the targeting of mercury reduction, water, soil, and air pollution, habitat degradation, and forest restoration.
C.4.7.3 There Is Appropriate Sensitization of Stakeholders as Part of a Broader Communications Plan to Support Implementation of the Road Map

Appropriate sensitization of stakeholders will also increase the likelihood of implementation of the FS-ASM road map. Therefore, a broader communications plan to support the implementation of the road map targeted to each stakeholder category is very important. Although the communications plan should also be tailored to each context, the following actions should be considered:

• Working with the environmental education agenda to disseminate facts related to the need to safeguard/protect forests.

• Planning which communication technologies to use as a tool to share information is very important. Different technologies speak to different stakeholder categories and contexts. Communication tools that can be used include social media (Instagram, WhatsApp, Twitter, Facebook, YouTube, LinkedIn), radio stations, street performances, TV programs, and so on.

• Ensuring that all voices and views are heard and represented in the communications plan.

C.5 Financing Support Programs for Forest-Smart Mining

Implementation of the FS-ASM Standard will require financial support. Recent developments mean that the timing couldn’t be better for raising the profile of forest-smart mining and attracting finance to support the seeding and scaling of implementation of the FS-ASM Standard across ASM sites and sectors.

Environment is now in fashion and the interplay between environment and human rights is gaining greater enquiry (IUCN 2021; Fischborn and Trevor 2021). For instance, the OECD will publish a Practical Actions for Environmental Due Diligence in Mineral Supply Chains Tool in 2022 (UN COP26 2021); just recently, at COP26, more than 100 world leaders have committed to raise nearly £19 billion in public and private funding to halt and reverse deforestation and land degradation by 2030 (UN COP26 2021); and the European Union Conflict Minerals Regulation (EU 2017) and the upcoming European Battery Regulation (EU 2021) and “horizontal due diligence law” (CBI 2021) are among many examples of how the landscape is changing.

This landscape can translate into political incentive and financial opportunities to invest in FSM if donors are adequately aware and informed of (a) the role forest-smart ASM could play in supporting them to achieve their goals; (b) the reasons to avoid unanticipated fallout in terms of negative human rights impacts on small producers, and especially on artisanal and small-scale miners, where they are not adequately considered or included in the pursuit of these goals; and (c) how to do forest-smart ASM or incorporate it into their programming.

Potential financing models where investment could be sought are presented below.

C.5.1 Development Finance

Institutional donors, like multilateral development banks, bilateral donors, or philanthropic foundations, have been crucial at driving change toward more responsible mining, production, sourcing, and consumption, as well as improved forest governance, management, and protection. Institutional donors supporting these efforts include, among others, the World Bank, various UN agencies, and the Dutch, Australian, Swiss, German, Canadian, and US governments (Levin Sources and FFI 2020).

Donor priorities with fund allocations to programs focused on climate change mitigation, human rights, extractives, sustainable economic development, planetary health, tackling illicit financial flows and transnational organized crime, among others, could align with the quest for FSM.

Donors who have demonstrated commitment in the nexus between mining and environmental impacts, and more concretely in the protection of forests, could drive FSM forward. Some examples include the following:

The World Bank’s Climate-Smart Mining Initiative aims at supporting resource-rich developing countries to benefit from increased demand of minerals needed for a low-carbon future while ensuring mining minimizes its environmental impacts. Although climate-smart mining offers an incredible opportunity to implement FS-ASM, the facility only finances minerals needed for a low-carbon transition; therefore, gold and other precious minerals, which are mostly mined by ASM, fall out of its scope.

The Climate and Land Use Alliance (CLUA) seeks to realize the potential of forests and land use to mitigate climate change and protect the environment. It financially supports efforts in Brazil, Indonesia, Mexico, and Central America, and at the global level it supports international public and private sector policies, programs, and finance that help conserve forests and land.
The World Bank’s Extractives Global Programmatic Support (EGPS) Fund aims at assisting governments in developing effective regulatory frameworks, improving their fiscal regimes, transparency, and efficient management of resources. The fund also facilitates the incorporation of environmental-related priorities. The FS-ASM Standard could be mainstreamed across the fund’s projects.

The United Nations Development Programme (UNDP) is currently leading a forests and mining dialogues series that will lead to a program of work on the interactions between mining and forests in up to nine countries involved in their Extractives and Governance Programme. There is the potential to enhance FSM with the program of work currently being developed.

The Global Environment Facility (GEF) through planetGOLD seeks to reduce the use of mercury in artisanal and small-scale gold mining, but the program has also developed criteria to include broader environmental safeguards. The uptake and support for FSM could be enhanced with GEF funding in other focal areas such as biodiversity.

Other donors who could be engaged include but are not limited to the following:

- Intergovernmental Forum on Mining, Minerals, Metals and Sustainable Development (IGF) and the International Institute for Sustainable Development (IISD)
- Organisation for Economic Co-operation and Development (OECD)
- Deutsche Gesellschaft für Internationale Zusammenarbeit (German Agency for International Cooperation) (GIZ)
- Bundesanstalt für Geowissenschaften und Rohstoffe (Federal Institute for Geosciences and Natural Resources) (BGR)
- Inter-American Development Bank (IDB)
- African Development Bank (AfDB)
- Asian Development Bank (ADB)
- United Nations Environment Programme (UNEP)
- European Commission
- UK Foreign Commonwealth and Development Office (FCDO)
- US Agency for International Development (USAID)

When engaging potential donors, consider these concrete actions, among others:

- Raising awareness among these donors on what FSM is, why it matters (tied to climate change, biodiversity, responsible sourcing, SDGs, human security agendas)
- Informing donors of next steps needed to bring FSM to a reality
- Informing donors of financing gaps to achieve those desired next steps
- Applying for funding when an opportunity arises
- Convening partnerships and engagements among potential donors to drive FSM forward in a collaborative way

C.5.2 Corporate Social Responsibility and Impact Finance

C.5.2.1 Supply Chains – Downstream Finance

Downstream responsible sourcing commitments provide key entry points for the introduction of FSM because they translate market interests into upstream actions and measures to eliminate or reduce the salience of specific risks in supply chains. (See also C.5.3.2.) For example, a jewelry company invests in a program to support the restoration of mined-out land in gemstone-producing areas; an automotive company invests in a program to eliminate child labor in cobalt mining in the Democratic Republic of Congo; an electronics company seeks to tackle its Scope 3 emissions by supporting an ASM responsible mining initiative to minimize forest degradation.

Key institutions representing organizations with significant market influence and that might be interested in the adoption of FSM include the OECD, CSR Europe, Drive Sustainability, the Responsible Minerals Initiative of the Responsible Business Alliance, the Global Battery Alliance, the London Metals Exchange, the London Bullion Market Association (LBMA), the GIZ Regional Economic Cooperation program, the World Economic Forum’s Mining and Metals Unit, the European Partnership for Responsible Minerals, the Chinese Chamber of Commerce of Metals Minerals & Chemicals Importers & Exporters (CCCMC), and specific industry associations for metals, minerals, specific technologies (for example, batteries, solar power), and more.

Although historically many of these initiatives put environmental issues at the bottom of their priority lists, we are seeing very recent changes that are putting environment center stage.

Some concrete actions to consider when engaging potential funders include but are not limited to the following:
• Lobbying and sensitizing them on how FS-ASM can help them achieve their human rights, biodiversity, and climate commitments and help de-risk their ASM supply chains

• Supporting industry associations and market-based multistakeholder initiatives to influence their members about the importance of FS-ASM and to amplify FSM messages within their organizations

• Convening a community of downstream leaders looking to act on forest-smart ASM (for example, LBMA refiners, jewelers) and matching them to candidate projects for development and implementation

• Convening a community of large-scale miners seeking to address environmental impacts at the landscape level in a specific region who have a business case to include ASM in order to minimize negative impacts (for example, Faleme River region in West Africa)

• Exploring what support the World Bank could offer to facilitate these types of investments by market players in bringing about FS-ASM in their supply chains—for example, by tackling structural barriers through an innovation fund (consider the Responsible Gold Innovation Fund model of USAID’s Zahabu Safi program, for example) or by helping improve the business case

• Submitting funding proposals to implement FS-ASM

### C.5.2.2 Sustainable Finance

Sustainable finance is the process of taking into consideration environmental, social, and governance risks when making investment decisions. Evidence has shown that businesses that put ESG at the heart of their operations are more resilient during crises, provide better returns over time, and face less turbulence in stakeholder relations (Childe 2020).

It is increasingly mainstream for traditional finance to the mining sector to consider ESG risks. A few investors and financiers (such as the International Finance Corporation and Equator banks) already demand mining companies meaningfully manage ESG risks as a condition for their investment. Moreover, ESG management is also important to acquire the license to operate.

Further, impact investors are looking at the mining sector as an untapped opportunity for accelerating the transition toward sustainable economies, backing the decarbonization of mining operations and the integration of circularity into production processes along the mining life cycle. These efforts are yet to be pursued in the ASM sector, however (and could be well supported through the development of a guide to miners on “how to be circular”).

ASM entities generally struggle to access formal finance, and this acts as a major barrier to their overall development. Demonstrating how they are managing environmental and human rights risks can remove one of these barriers to formal finance.

As standards for sustainable finance continue to grow, and more investment feeds into sustainable businesses, ASM entities who comply with the FS-ASM Standard could be more successful in receiving finance. Those ASM entities that are already involved in responsible mining and sourcing initiatives like Fairmined, Fairtrade, GemFair, planetGOLD, and the CORE Standard, or supported by NGOs like Pact, Impact, and ARM to achieve more sustainable production generally, are the more likely candidates for receiving finance to cover the up-front and ongoing costs of adopting the practices recommended in the FS-ASM Standard.

Some concrete actions to consider when engaging potential funders include but are not limited to the following:

• Lobbying and sensitizing them about the need of FS-ASM to address sustainability in the minerals sector

• Informing them of financing gaps to achieve FS-ASM

• Submitting funding proposals to implement FS-ASM

• Convening partnership and engagement among potential funders to drive FSM forward in a collaborative way

### C.5.3 Carbon Finance

#### C.5.3.1 Carbon Finance Principles

These guiding principles are for government, civil society, downstream industries, development organizations, financial entities, and research institutions. The principles referred to in this section principally refer to carbon finance for offsets created for the voluntary carbon market or for results-based payments under the UNFCCC.

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4 Other types of carbon finance have other sets of rules, with carbon insetting specifically addressed in C.5.3.2. Also, certain compliance markets will accept the emission reductions developed under the certifications/from the initiatives discussed. For example, the International Civil Aviation Organization’s Carbon Offsetting and Reduction Scheme for International Aviation (CORSIA) accepts “VCUs issued to project-level activities under a jurisdictional program following Scenario 2 of the VCS JNR framework.” However, the principal focus of this section is carbon finance for offsets created for the voluntary carbon market or for results-based payments under the UNFCCC.
Carbon finance for FS-ASM can be sought where FS-ASM is creating a benefit (emission reductions/removals) against baseline; this can be done as part of country REDD+ program under the UNFCCC process or under a voluntary emission reductions program (ERP) within voluntary markets, with program rules needing to be followed in both cases.

Both the voluntary market and country systems can provide finance to initiatives that reduce emissions. Projects can be developed for the voluntary carbon market using voluntary standards (for example, the Verified Carbon Standard). Emission reductions are quantified and certified under such standards and can be sold on the voluntary market. Country REDD+ programs develop their own rules within the UN framework but can allow the development of projects that can attract their own finance under voluntary standards to nest within their jurisdictions. The World Bank (2021) recently published a manual for policy makers on nesting REDD+ initiatives. Also, countries can provide for a share of the payments they receive for emission reductions achieved within their program areas to go to stakeholders/project developers contributing to emission reductions within those landscapes under benefit-sharing schemes.

The standard’s PCI reflect a process by which ASM entities can choose to pursue carbon finance—working toward participation in existing government or private sector voluntary ERPs or independently developing a voluntary emission reduction project—or choose to become ready for carbon finance—collating information with a view of participating in possible future ERPs.

The REDD+ or voluntary activity causing the emission reductions/removals is the implementation of the FS-ASM plan or more broadly the forest-smart environmental management plan.

ASM entities (with perhaps a few exceptions globally) do not have the technical expertise to implement an ERP on their own. The term “ASM entity” includes therefore support organizations and project developers acting in support of or on behalf of the ASM entity, if applicable, and it should be emphasized that the development of voluntary projects can be pursued with specialist project developers that can also provide a link to buyers/private finance.

An enabling context needs to be developed to ensure ASM entities can participate in an ERP and attract carbon finance. Implementation of this guideline will support the emergence of such an enabling context.

Country REDD+ programs must be developed according to requirements developed under the UNFCCC process, particularly the Warsaw Framework, which requires the development of a national REDD+ strategy, a forest reference emission level (FREL), a national forest monitoring system, and a safeguards information system.

It is possible to develop country REDD+ programs in a way whereby voluntary emission reduction projects are nested within subnational/national jurisdictions and lower-level jurisdictions are nested within higher-level jurisdictions. For example, Verra’s Jurisdictional and Nested REDD+ (JNR) framework identifies the following scenarios as available to jurisdictions:

- Jurisdictional FREL with crediting to nested projects and/or jurisdictional programs
- Jurisdictional program with crediting to the jurisdiction and/or nested projects/lower-level jurisdictional programs
- Jurisdictional program crediting only

Further, it is possible to develop a country-based REDD+ program under the UNFCCC and develop innovative detailed rules for the internal functioning of REDD+ in-country. (A standard like The REDD+ Environmental Excellence Standard [TREES] may facilitate this.) We encourage the creation of jurisdictional and nesting programs that are innovatively structured using the tools available to provide enabling environments that limit the cost and complexity of participation in carbon financing for ASM initiatives. This could include developing arrangements for benefit sharing from REDD+ jurisdictions to FS-ASM initiatives without requiring these initiatives to develop themselves as independent emission reduction projects. Considering the small scale of most ASM in terms of land area, this may enable FS-ASM to be carbon financed; otherwise, the cost of participation may outweigh the benefits.

Examples of how carbon finance/offsetting might work include integrating activities into an existing landscape-scale carbon initiative or developing a voluntary project within the landscape that could then attract funding (including perhaps from benefit sharing within a landscape-scale initiative). Voluntary projects would likely need to aim toward limiting mining and other impacts within the landscape broadly to be viable. They could nest with government jurisdictional programs or stand alone. Payments for emission reductions could typically come from companies looking to offset emissions and purchasing emission reductions from projects on a voluntary basis—the voluntary carbon market—or

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from countries/the private sector making payments for results to countries for emission reductions achieved in landscape-scale carbon initiatives—national and subnational jurisdictional REDD+ under the UNFCCC.

In terms of theoretical examples illustrating how this would function within the forest-smart ASM landscape, it is envisaged that some typical circumstances would be encountered, particularly the following:

- Projects could be viable as stand-alone or nested projects if ASM has caused and continues to cause significant deforestation and degradation in the relevant area. Viability in terms of scale may require that the project is implemented in the broader landscape and limits other impacts as well as mining impacts and restores cleared areas, as opposed to simply avoiding the deforestation and degradation impacts of ASM at a limited site. Viability may be dependent on the baseline activity already implemented at the sites/in the landscape.

- Smaller-scale forest-smart ASM activities that avoid deforestation/degradation or reforest at specific sites could be viable if integrated into the country’s REDD+ benefit-sharing system or an existing jurisdictional ERP. As noted above, arrangements for benefit sharing from REDD+ jurisdictions to forest-smart ASM initiatives that do not require these initiatives to develop themselves as independent emission reduction projects are encouraged because these could limit the cost and complexity of participation in carbon financing for ASM initiatives. Viability may be dependent on the baseline activity already implemented at the sites and how the benefit-sharing system works.

- One configuration implemented in a landscape should not necessarily preclude another. Also, it should be noted that the solution could vary in detail from landscape to landscape.

### C.5.3.2 Carbon Offseting versus Insetting

Carbon offsetting is the process of compensating for CO2 emissions through acting to make equivalent emission reductions/removals against a business-as-usual baseline elsewhere. Carbon offsetting could generate funds for forest-smart ASM where forest-smart ASM creates a benefit against a business-as-usual baseline as part of a country REDD+ program or a voluntary ERP. Broadly, the benefit is quantified and linked to finance, which comprises “payments for results” made to countries for REDD+ or through the voluntary carbon market.

Carbon insetting is the process of reducing a company’s CO2 emissions that are directly related—either by geography, production, or commodity—to a company’s supply chain. The technical definition of insetting refers to a partnership or investment in a greenhouse gas emissions-reducing activity within the “sphere of influence” of a company (Ecosphere+, 2018). Carbon insetting could generate funds for forest-smart ASM through organizations investing in sustainable practices within their own supply chains. The International Platform for Insetting notes: “Insetting currently does not require verification or certification against agreed global standards. Nevertheless, many insetting companies choose to work with an independent verifier or auditor to certify their results according to existing standards, as verification gives an insetting project more credibility.”

Therefore, an organization that sources from ASM sites could develop initiatives, with some flexibility in certification, to implement FS-ASM and reduce emissions through ASM. This could involve investing in avoiding emissions or sequestering carbon. The activity causing the emission reductions/removals could be the implementation of the FS-ASM plan or more broadly the forest-smart environmental management plan.

### C.5.4 Public-Private Partnerships

Within the context of the possibilities of results-based payments under the UNFCCC and the voluntary carbon market, specific initiatives have been developed that could be characterized as public-private partnerships. These are considered here with the following examples:

- **Nested REDD+ may be considered a public-private partnership**, with trends pointing toward country REDD+ being developed as jurisdictional nested REDD+ systems within which projects can be independently credited (for example, under Verra’s JNR Standard), or as subnational/national jurisdictional REDD+ with benefit-sharing systems distributing benefits to stakeholders/project developers (for example, under TREES). **Voluntary emission reduction projects** nested within broader programs are often being implemented by private developers and NGOs in collaboration with government. Any type of subnational/national jurisdictional program will likely be, by its nature, a public-private partnership, with government participation necessary and private entities very likely to contribute to funding/implementation in some way.

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• To further illustrate, large corporations (for example, energy companies), specialist project developers (for example, Vertree, South Pole, Everland), and conservation organizations (for example, Fauna & Flora International) are developing and implementing significant voluntary certified REDD+ projects (for example, under the Verified Carbon Standard/Climate, Community, and Biodiversity Standards). These entities can be expected to either expand their activities to develop jurisdictional initiatives or collaborate extensively with government jurisdictional proponents in the future under standards like Verra’s JNR and TREES. The collaborative dynamic in the landscape can be expected to develop with these entities and government partnering to develop projects/jurisdictional programs. Forest-smart ASM initiatives will need to be developed within this context.

• Per its website, the "Forest Carbon Partnership Facility (FCPF) is a global partnership of governments, businesses, civil society, and Indigenous Peoples focused on REDD+." "The FCPF supports REDD+ efforts through two separate but complementary funds. The FCPF Readiness Fund helps countries set up the building blocks to implement REDD+." "The FCPF Carbon Fund pilots results-based payments to countries that have advanced through REDD+ readiness and implementation and have achieved verifiable emission reductions in their forest and broader land-use sectors."⁷ Regarding forest-smart ASM, the Readiness Fund could support the development of enabling contexts that support ASM entities to participate in ERPs and attract carbon finance (for example, benefit-sharing mechanisms that include ASM practitioners), and the Carbon Fund could make payments for emission reductions to programs that involve ASM practitioners.

• The Lowering Emissions by Accelerating Forest finance (LEAF) Coalition, which aims to mobilize at least $1 billion in financing, could support FSM. Its website notes that it is expected to become one of the largest ever public-private efforts to protect tropical forests, to the benefit of billions of people depending on them, and to support sustainable development. The coalition is mobilizing finance to support government subnational/national jurisdictional programs to make reductions in emissions from deforestation, with the jurisdictions being certified under the Architecture for REDD+ Transactions Standard. Emergent, a nonprofit intermediary, will broker the sale of the emission reductions between jurisdictions and buyers (however, it is understood that emission reductions can also be independently sold to other buyers). Forest-smart ASM activities/projects integrated into these jurisdictions could benefit from this finance.

Donors are more likely to provide funding where they are part of a consortium of partners, including supply chain partnerships. Blended finance models that could match public funding to scope the possibility of an FS-ASM pilot (for example, designing the road map, workplan, and budget) with blended public and private funding from an ASM entity (for example, using its Fairtrade or Fairmined premium), a downstream actor taking a supply chain approach, and/or an LSM taking a landscape based approach to support a local implementing partner (NGO?) and artisanal and small-scale miners to implement the FS-ASM Standard may be the most probable funding model.

---

# Appendix 1: Glossary

<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asm entity</td>
<td>The FS-ASM Standard is applicable to ASM as defined by the OECD Due Diligence Guidance, but the organizational scope of section B of the standard is the “ASM entity,” which may be a legally established ASM organization (ASMO) or a legitimate ASM mineral producer (AMP) with any de facto or formally established organizational structure. According to the characteristics of the FS-ASM Standard as a “bolt-on” standard, it inherits the organizational scope definition of the adopting standard.</td>
</tr>
<tr>
<td>Awareness of local forest values</td>
<td>Awareness developed at a local community (and ASM entity) level that recognizes both high and local biodiversity values and ecosystem values of the forest in vicinity of ASM operations and of impacted stakeholders.</td>
</tr>
<tr>
<td>Biodiversity of soils</td>
<td>Soils are an ecological community of vertebrate, invertebrate, fungal, microorganisms, and microbial species that interact to break down organic detritus and mineralize underlying geology, providing the resources for sustained ecological development and growth as well as actively sequestering and storing carbon.</td>
</tr>
<tr>
<td>Biodiversity trigger elements</td>
<td>Biodiversity values or species whose globally threatened status, endemism, or significant presence in a forest environment meet the qualifying criteria for Important Bird Area (IBA) or Key Biodiversity Area (KBA) status.</td>
</tr>
<tr>
<td>Carbon sequestration (above- and belowground)</td>
<td>The process by which carbon dioxide is removed from the atmosphere.</td>
</tr>
<tr>
<td>Carbon storage</td>
<td>The storage of carbon in plant biomass and soils.</td>
</tr>
<tr>
<td>Climate-relevant environmental sustainability</td>
<td>Activities in the environment that recognize the need to reduce emissions of the greenhouse gases (GHGs) that contribute to climate degradation and thus pose a risk to a sustainable future.</td>
</tr>
<tr>
<td>Compaction</td>
<td>Impact of heavy machinery on the soil surface that reduces its natural permeability and limits capacity for vegetation regeneration.</td>
</tr>
<tr>
<td>Conserved area (oecm)</td>
<td>Other Effective area-based Conservation Measure is a geographically defined area other than a protected area that is governed and managed in ways that achieve positive and sustained long-term outcomes for the in situ conservation of biodiversity, with associated ecosystem functions and services and, where applicable, cultural, spiritual, socioeconomic, and other locally relevant values.</td>
</tr>
<tr>
<td>Consultation with local stakeholders</td>
<td>For the FS-ASM Standard, consultation with local stakeholders means initiating and sustaining constructive external relationships over time, bringing meaningful and constructive engagement, not one-off meetings.</td>
</tr>
<tr>
<td>Containment and exit strategies</td>
<td>Strategies to contain mining activities and facilitate ASM miners’ responsible exit out of protected areas or KBAs where ASM is occurring.</td>
</tr>
<tr>
<td>Critical natural habitat (critical ecosystem)</td>
<td>Critical habitat, as defined by the International Finance Corporation (IFC) Performance Standard 6 (PS6), represents areas of high biodiversity value. Critical habitat is identified based on five criteria that address habitat of significant importance to threatened, endemic, congregatory, and migratory species; threatened or unique ecosystems; and key evolutionary processes. Such habitats may be located within specific areas identified for high biodiversity values, such as protected areas, KBAs, and High Conservation Value (HCV) areas, but they are not restricted to such areas and can be recognized in OECMs (see “conserved area” above) or in nondesignated areas of habitat hosting such criteria indicated above.</td>
</tr>
<tr>
<td>Term</td>
<td>Description</td>
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<td>------------------------------------------------</td>
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<tr>
<td>Downstream stakeholders</td>
<td>The downstream supply chain comprises stakeholders operating in processes used to create finished goods from the smelter or refiner through to the distribution and sale of the goods.</td>
</tr>
<tr>
<td>Ecological recovery</td>
<td>The return of habitat degraded by mining (or other land uses) through a successional process toward the restoration of a natural habitat that over time will see the reestablishment of key values of the original habitat that was lost.</td>
</tr>
<tr>
<td>Ecosystem services</td>
<td>Ecosystem services are the many and varied benefits to humans provided by the natural environment and from a variety of functional healthy ecosystems. Terrestrial ecosystems include forest, grassland, and scrub ecosystems, while aquatic ecosystems include freshwater, brackish, and marine ecosystems. Ecosystem services are grouped into four broad categories: provisioning (e.g., forest products, water), regulating (e.g., carbon storage, flood risk), supporting (e.g., nutrient cycling), and cultural (e.g., spiritual, recreational benefits).</td>
</tr>
<tr>
<td>Emission reductions program (ERP)</td>
<td>A formal or organized arrangement for the recognition of activities leading to GHG emission reductions or removals, and/or the crediting or issuance of instruments representing or acknowledging GHG emission reductions or removals (Verra 2019).</td>
</tr>
<tr>
<td>Enabling responsibilities</td>
<td>The activities and actions assigned to or expected or required of a person or stakeholder group.</td>
</tr>
<tr>
<td>Environmental stakeholders</td>
<td>People or institutions with an interest in exploiting or protecting natural resources.</td>
</tr>
<tr>
<td>Forest reference emission level</td>
<td>A benchmark for emissions from deforestation and forest degradation and removals from sustainable management of forests and enhancement of forest carbon stocks.</td>
</tr>
<tr>
<td>Forest-related environmental sustainability</td>
<td>Activities in the environment that recognize the need to utilize, manage, and conserve forest ecosystems so as to continue to meet ecosystem service needs as well as maintain the forest ecosystem's levels and qualities of biodiversity into the future.</td>
</tr>
<tr>
<td>Forest-smart mining</td>
<td>Forest-smart mining (FSM) essentially balances forest and mining interests. FSM seeks to protect forest values in the face of mining activities, ensuring effective and coordinated governance of forest and mineral resources. FSM acknowledges and understands the relationship between forests and other land uses such as socio-economic uses and ecosystem services, and actively seeks to reduce loss or damage to those uses, and in some cases, promote a net gain for them.</td>
</tr>
<tr>
<td>Forest values</td>
<td>Forest values include but are not limited to ecosystem services, biodiversity, and the fulfillment of human rights that forests provide.</td>
</tr>
<tr>
<td>FS-ASM initiative</td>
<td>Any initiative (project, program, etc.) that applies, incorporates, uses, or builds upon the FS-ASM Standard.</td>
</tr>
<tr>
<td>Gender</td>
<td>Gender refers to all the attributes, activities, and responsibilities connected to being a male or a female in a given society. Gender norms and practices determine how men and women are perceived and the particular gender roles they are expected to perform.</td>
</tr>
<tr>
<td>Gender analysis</td>
<td>A rigorous exploration of the conditions and position of women relative to men. It highlights how gender relations and inequalities—within households, at the community level, in value chains, as well as in legal and policy environments—affect sourcing of minerals, and in particular how inequalities can lead to differential risks, impacts, and outcomes for women and men.</td>
</tr>
<tr>
<td>Gendered risks</td>
<td>The different potentially harmful consequences of company operations for women and men that may exacerbate gender inequalities. Addressing gendered risks is critical to ensure that sourcing of minerals does not have negative impacts on women and that gender inequalities are not exacerbated.</td>
</tr>
<tr>
<td>High conservation value area</td>
<td>High Conservation Value (HCV) areas are sites identified through a system based on six values covering species diversity, landscape-level ecosystems, rare ecosystems/habits, critical ecosystem services, community livelihood needs, and cultural values. The HCV concept was developed by the Forest Stewardship Council (FSC) in 1999 for use in forest management certification. They differ from KBAs and IBAs in the process of identification (company-led) but bring added value to the process of identifying important areas of forest for conservation and management purposes. They are generally smaller than KBAs and may occur within or outside a protected area (or KBA) boundary.</td>
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<tr>
<td>Term</td>
<td>Description</td>
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<tr>
<td>Human health</td>
<td>The complete state of physical, social, and mental well-being, not merely the absence of illness, disease, or infirmity</td>
</tr>
<tr>
<td>Human rights</td>
<td>Human rights are rights inherent to all human beings regardless of race, sex, nationality, ethnicity, language, religion, or any other status. Human rights include the right to life and liberty, freedom from slavery and torture, freedom of opinion and expression, the right to work and education, and many more. Everyone is entitled to these rights, without discrimination.</td>
</tr>
<tr>
<td>Hydrological design plan</td>
<td>Informed by an assessment of the behavior of water (hydrology) through the area to be rehabilitated, the hydrological plan integrates a design into the rehabilitation effort that seeks to restore the watercourse to a behavior that is compatible with a sustainable rehabilitation outcome. This may seek to emulate the pre-mining hydrological behavior of the watercourse in the final rehabilitation. It also seeks to ensure that the ongoing mining activities that use water in process are designed in such a way as to reduce impacts of pollution and turbidity.</td>
</tr>
<tr>
<td>Insetting</td>
<td>The process of reducing a company’s CO2 emissions that are directly related—either by geography, production, or commodity—to a company’s supply chain.</td>
</tr>
<tr>
<td>Key biodiversity area</td>
<td>Key Biodiversity Areas (KBAs) are sites contributing significantly to the global persistence of biodiversity, in terrestrial, freshwater, and marine ecosystems, that have been identified through meeting a range of globally significant criteria. <a href="http://www.keybiodiversityareas.org">www.keybiodiversityareas.org</a>.</td>
</tr>
</tbody>
</table>
3. Ecological Integrity comprising wholly intact ecological communities  
5. Irreplaceability as calculated through a complementarity-based quantitative analysis |
<p>| Large-scale mining          | For the purposes of the FS-ASM Standard, large-scale mining refers to mining operations that are not considered to be an ASM entity.                                                                           |
| Local employment            | Employment created and provided by the ASM entity in a local area of a country.                                                                                                                              |
| Miner                       | For the purpose of forest-smart mining, and the mitigation of risks posed by mining to forests, a miner is any individual or entity involved in any aspect of the mining life cycle, from prospection to closure, and in any aspect of the mining process at the mine site. This may also include mining investors, financiers, or others who hold equity or a stake in the mining’s returns, e.g., landowners. |
| Mine-track                  | The area of land that is actively mined over time, which includes land already degraded by mining, existing operational areas as well as a progressive directional trajectory of where mining will take place in the future. This mine-track can be contiguous or fragmentary. |
| Offsetting                   | The process of compensating for the emission of CO2 or other GHGs through taking action to make equivalent emission reductions/removals against a business-as-usual baseline elsewhere.                        |
| Operational area            | The area of land subject to the range of activities that the ASM entity undertakes in its mining and associated supportive daily activities, including forest clearance, exploration, active mining and processing, storage of waste materials and substances, storage of rehabilitation resources (soils and vegetation), built infrastructure, and any supportive agricultural activities. |
| Protected area              | A clearly defined geographical space, formally recognized, dedicated, and managed, through legal or other effective means, to achieve the long-term conservation of nature with associated ecosystem services and cultural values. The status of protected areas can vary from international (e.g., World Heritage Sites, Ramsar) to national (e.g., national parks and monuments) to state/provincial to local (e.g., local nature reserves). |</p>
<table>
<thead>
<tr>
<th>Term</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Red</td>
<td>Activities that reduce GHG emissions by slowing or stopping conversion of forests to non-forest land.</td>
</tr>
<tr>
<td>Redd</td>
<td>Activities that reduce GHG emissions by slowing or stopping conversion of forests to non-forest land and/or reduce the degradation of forest land where forest biomass is lost (Verra 2019).</td>
</tr>
<tr>
<td>Redd+</td>
<td>Activities that reduce GHG emissions from deforestation and/or degradation by slowing or stopping conversion of forests to non-forest land and/or reducing the degradation of forest land where forest biomass is lost; and/or activities that enhance carbon stocks through improved forest management and/or afforestation, reforestation, or revegetation (Verra 2019).</td>
</tr>
<tr>
<td>Regrade</td>
<td>Movement and redistribution of mined-out waste rock, gravels, tailings, and subsoils to a topographic form that minimizes risk to and erosion of the rehabilitation effort.</td>
</tr>
<tr>
<td>Rehabilitation</td>
<td>The process of planning and working with lands and waterways degraded by mining activities to reduce ongoing erosion and pollution and to restore the land to ecological productivity through eventual revegetation within an acceptable timescale.</td>
</tr>
<tr>
<td>Reprofile</td>
<td>Following the regrading process, the movement and redistribution of mined-out waste materials to a topographic form that can best accommodate and support the successful redistribution of topsoil and the biological rehabilitation efforts. The resulting topography will resemble general pre-mining surfaces wherever possible.</td>
</tr>
<tr>
<td>Restoration</td>
<td>Rehabilitation that is targeted specifically to the ecological recovery of the ecosystem or habitat that was lost through mining activities. Where deforestation is caused by mining and associated impacts, this would mean rehabilitation to an eventual forested outcome.</td>
</tr>
<tr>
<td>Salience (of risk)</td>
<td>Issues that stand out because they are at risk of the most severe negative impact through the ASM entity activities.</td>
</tr>
<tr>
<td>Stockpile</td>
<td>Ore (commonly also called mineral), pre-concentrate (any intermediate product), or concentrate that awaits further processing or sale.</td>
</tr>
<tr>
<td>Tailings</td>
<td>Materials left over after the process of separating the valuable fraction (concentrate) from the uneconomic fraction (gangue) of an ore. It is common in ASM that, because of the use of inefficient processes, concentrate may remain in tailings.</td>
</tr>
<tr>
<td>Target standards</td>
<td>ASM standards to which the FS-ASM principles, criteria, indicators, and/or guidelines could be bolted on.</td>
</tr>
<tr>
<td>Topsoil</td>
<td>The upper, outermost layer of soil, usually the top 15–30 centimeters. It has the highest concentration of organic matter and microorganisms and is where most biological soil activity occurs. Topsoil is composed of mineral particles, organic matter, water, and air. Organic matter varies in quantity on different soils.</td>
</tr>
<tr>
<td>Toxic chemicals</td>
<td>Chemicals that have chronic or acute toxic effects on humans, animals, or plants that are exposed to the substance in concentrations usually applied in mineral processing.</td>
</tr>
<tr>
<td>Operational area</td>
<td>All areas inside and outside of a mining area (e.g., concession, license area) that are directly or indirectly used in any way for the purpose of mineral production, processing, and commercialization.</td>
</tr>
<tr>
<td>Waste rock</td>
<td>Material that contains no valuable fraction but needs to be displaced during mining for the purpose of accessing the ore body. Waste rock is then dumped on a waste rock pile without being processed.</td>
</tr>
<tr>
<td>Water quality</td>
<td>Chemical, physical, and biological characteristics of water based on the conditions of its usage. The most common standards used to monitor and assess water quality convey the health of ecosystems, safety of human contact, extent of water pollution, and (if applicable) condition of drinking water.</td>
</tr>
</tbody>
</table>
**Appendix 2: Capacity Gaps, Risks, and Actions for Stakeholders to Consider in Developing an Enabling Environment for the PCI**

This table can be used as a separate tool for risk assessment purposes. It is recommended to expand the assessment below to include specific considerations on severity and impacts of each particular risk, likelihood of the risk, constraining factors, and time frame. The assessment of severity and likelihood is recommended to be done following the United National Guiding Principles approach (OHCHR 2011; UNGPRF 2016).

<table>
<thead>
<tr>
<th>Section B ref. PCI</th>
<th>Phase(s) of mitigation hierarchy</th>
<th>FS-ASM requirement (PCI criteria)</th>
<th>Capacity gap and risk</th>
<th>Proposed solution</th>
<th>Actors and stakeholders: Role to play in bridging the capacity gap</th>
<th>Output/action</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Avoidance</td>
<td>Avoid impacts on high biodiversity values, such as occur in Key Biodiversity Areas (KBAs) and High Conservation Value (HCV) areas</td>
<td>Artisanal and small-scale mining (ASM) does not possess technical expertise to identify such values and mitigate, manage, or offset impacts</td>
<td>Land-access and planning policies that ensure ASM access to land but steer future ASM away from KBAs and HCV areas</td>
<td>Partners: National and local government, national and international conservation nongovernmental organizations (NGOs) or other institutional expertise</td>
<td>1. National/local integrated and informed planning systems that recognize protected areas, KBAs, HCV areas 2. HCV Resource Network or equivalent available to FS-ASM</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Use of WCMC/World Database and Integrated Biodiversity Assessment Tool (IBAT) to identify and obtain data on existing KBAs</td>
<td></td>
<td>Funders: Development agencies, private sector, standard setters</td>
<td></td>
</tr>
<tr>
<td>B.5.1</td>
<td>Situation assessment and planning</td>
<td></td>
<td></td>
<td>Implementation: National and local government, civil society organizations (CSOs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Avoidance</td>
<td>Proactive engagement with local government and relevant stakeholders</td>
<td>Awareness of forest and local stakeholder (cultural) values and identification of impacts</td>
<td>Facilitated engagement of ASM with local authorities and relevant stakeholders</td>
<td>Partners: National and local government, FS-ASM, local ASM-inclusive stakeholder forum</td>
<td>First phase FS-ASM consultation with local authority and relevant stakeholders: scoping and sharing/gathering of information</td>
</tr>
<tr>
<td>B.5.1.1</td>
<td></td>
<td></td>
<td>ASM has limited resources to communicate adoption of forest-smart approaches</td>
<td>Facilitated engagement of ASM with local authorities and relevant stakeholders</td>
<td>Funders: Development agencies, private sector, standard setters</td>
<td>Large-scale and localized communication campaigns</td>
</tr>
<tr>
<td>B.5.2</td>
<td>Direct impacts – Mining</td>
<td>Avoidance to government and local stakeholders</td>
<td>Implementation: CSOs or intermediary party with experience/expertise in ASM engagement</td>
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<tr>
<td></td>
<td></td>
<td>ASM may lack effective approaches in engaging equitably with local stakeholders</td>
<td>An engagement approach designed and facilitated by an intermediary (brokering) entity</td>
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<tr>
<td></td>
<td></td>
<td>ASM may lack experience in formalizing agreements with government and stakeholders</td>
<td>Engagement with local government and stakeholders informs an agreement on post-mining closure and land use</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Local and ASM-inclusive stakeholder forum established</td>
<td>Formalized high-level agreement acknowledging/incorporating key stakeholder issues and post-mining closure land use</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>B.5.2.1</td>
<td>Planning and preparation of mining activities</td>
<td>Experience in planning mining activities with stakeholder input and access to information</td>
<td>Training in development of FS-ASM planning</td>
<td></td>
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<tr>
<td></td>
<td>Where to mine</td>
<td>Knowledge on which features to avoid</td>
<td>Training: FS-ASM Planning: Capacity to access, document, and map significant information</td>
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<tr>
<td></td>
<td>Partners:</td>
<td>AS-FSM, national and local government, local stakeholder forums</td>
<td>1. FS-ASM training module developed</td>
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</tr>
<tr>
<td></td>
<td>Funders:</td>
<td>Development agencies, environment and development programs, carbon finance organizations, private sector, standard setters</td>
<td>2. Training module piloted/implemented</td>
<td></td>
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<tr>
<td></td>
<td>Implementation:</td>
<td>CSO alliance or intermediary parties with expertise/experience in ASM</td>
<td>3. Training of FS-ASM trainers</td>
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<td></td>
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<td></td>
<td>4. FS-ASM outline plan produced informed by government authorities and relevant stakeholders</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>1. Annotated map of mine-track and associated buffer area</td>
<td>2. FS-ASM access to (and inputs from) HCV Resource Network or equivalent</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Section B ref. PCI</td>
<td>Phase(s) of mitigation hierarchy</td>
<td>FS-ASM requirement (PCI criteria)</td>
<td>Capacity gap and risk</td>
<td>Proposed solution</td>
<td>Actors and stakeholders: Role to play in bridging the capacity gap</td>
<td>Output/action</td>
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<td></td>
<td>How to mine</td>
<td>Training: FS-ASM Planning: Planning activities that integrate impact avoidance and rehabilitation into the process</td>
<td>1. Production of forward-looking map of mine-track, hydrologic features, and rehabilitation resources for Frugal Rehabilitation Methodology (FRM) implementation</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Minimize deforestation footprint</td>
<td>Training: Rationalized and planned road network and an exploration methodology that minimizes deforestation</td>
<td>2. Formulation of closure plan</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Forest set-aside within mine-track</td>
<td>Training: Assessment of mine-track that recognizes value of set-aside opportunities compatible with mining</td>
<td>FS-ASM plan for recognizing both strategic and opportunistic set-aside</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Hydrology: Water quality and flow</td>
<td>Training: Hydrological management planning for quality (pollution/turbidity) and flow</td>
<td>FS-ASM plan for effective water management for quality and value of flow in enhancing site stability and rehabilitation outcome</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Frugal Rehabilitation</td>
<td>Forest and vegetation clearance prior to mining</td>
<td>Awareness of value of organic materials harvested during forest clearance</td>
<td>Training: Organic materials generated through forest clearance have great value if recycled and integrated into FS-ASM rehabilitation process</td>
<td>Plan for identifying, safeguarding, and storage of organic materials for recycling into rehabilitation (and other useful products)</td>
<td></td>
</tr>
</tbody>
</table>

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**How to mine**

Knowledge on how to mine in order to minimize impacts and integrate actions that enhance rehabilitation outcomes and cost-effectiveness.

**Minimize deforestation footprint**

ASM exploration sampling activity and road networks cause unnecessary deforestation.

**Forest set-asides within mine-track**

ASM failure to recognize and design for forest set-asides that can enhance avoidance and rehabilitation outcomes.

**Hydrology: Water quality and flow**

ASM failure to recognize and design for maintenance of water quality and management of flow.

---

**Training**

- How to mine: FS-ASM Planning:
- Minimize deforestation footprint: Training:
- Forest set-asides within mine-track: Training:
- Hydrology: Water quality and flow: Training:
- Forest and vegetation clearance prior to mining: Training:
<table>
<thead>
<tr>
<th>B.5.2.3</th>
<th><strong>Technical rehabilitation</strong></th>
<th>ASM may not be mindful to separate and store mine waste materials separate from topsoil and in using such materials to reestablish acceptable profile of mine site</th>
<th>Training: Technical rehabilitation component of FRM</th>
<th>Plan for handling extraction, storage, and redistribution of mine waste materials that maximizes mine site stability and minimizes topsoil loss</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Waste management: Industrial and domestic equipment, materials, plastics</strong></td>
<td>Awareness of priorities and regulations for waste management</td>
<td>Training: Handling, storage, and disposal of non-mine waste, chemical, fuels, toxic materials</td>
<td>FS-ASM (nonmining) waste management plan</td>
<td></td>
</tr>
<tr>
<td>B.5.2.4</td>
<td><strong>Topsoil conservation and management</strong></td>
<td>Awareness of critical values of topsoil for effective rehabilitation outcomes in FS-ASM</td>
<td>Training in identification, storage, and redistribution of topsoil in the mining and rehabilitation process</td>
<td>Topsoil identification and safeguard protocols</td>
</tr>
<tr>
<td>B.5.2.5</td>
<td><strong>Biological rehabilitation</strong></td>
<td>Appreciating value of cleared forest materials not appreciated and lost to rehabilitation process</td>
<td>Training: Organic materials generated through forest clearance have great value if recycled and integrated into FS-ASM rehabilitation process</td>
<td>Organic material recycling plan: Value of organic materials harvested during forest/vegetation clearance for mining are recycled into rehabilitation process</td>
</tr>
<tr>
<td></td>
<td>Awareness of opportunities for accessing organic materials from adjacent forest environment missed</td>
<td>Training: Recognition of available resources to enhance more effective rehabilitation</td>
<td>Low-impact use of forest materials from adjacent forest effectively identified and deployed where needed to enhance rehabilitation outcome</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Knowledge of contextual forest types and species useful to rehabilitation</td>
<td>Training: Identification and harvesting of seed/fruits of key plant species, including and particularly successional species</td>
<td>Partners: AS-FSM, national and local government, international/national institutes with botanical/forest expertise, local stakeholder forums</td>
<td>FS-ASM locally appropriate guides on forest species useful for rehabilitation</td>
</tr>
<tr>
<td>Section B ref. PCI</td>
<td>Phase(s) of mitigation hierarchy</td>
<td>FS-ASM requirement (PCI criteria)</td>
<td>Capacity gap and risk</td>
<td>Proposed solution</td>
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<tr>
<td></td>
<td></td>
<td>Awareness of invasive alien species relevant to area and risk to rehabilitation effort</td>
<td>Training: Awareness of invasive species programs relevant to contexts – identification and control</td>
<td>Funders: Development agencies, environment and development programs, carbon finance organizations, private sector, standard setters</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lack of resources to support effective rehabilitation through tree nursery establishment for seedling production and tree-planting (where considered useful)</td>
<td>Training and financial resources: Nursery establishment and management</td>
<td><strong>Implementation:</strong> National CSOs with support from international NGOs with focus/experience in ecological restoration</td>
</tr>
<tr>
<td>B.5.2.6</td>
<td>Site closure and handover</td>
<td>Experience with formal agreements with local government and stakeholders</td>
<td>Training: Closure and handover; integral part of rehabilitation plan and agreement with local government and stakeholder forum</td>
<td>Partners: Local government, FS-ASM, local ASM-inclusive stakeholder forum  Funders: Development agencies, private sector, standard setters  Implementation: CSOs or intermediary party with experience/expertise in ASM engagement</td>
</tr>
</tbody>
</table>
| B.5.3 | **Direct impacts**  
**- Nonmining** | Experience and capacity for formal engagement with local stakeholder community and local government in benefits-sharing approach to assessing impacts on forest and use of forest ecosystem services |
| B.5.4 | **Indirect impacts** | 1. Training of trainers in multistakeholder engagement (MET), including HRBA to local and participatory governance  
2. Establishment of local stakeholder environmental governance forum  
3. Training of trainers in participatory local EMP  
4. Deployment of EMP training to FS-ASM and associate stakeholder communities to facilitate participatory development of EMP |
| | **Partners:** National and local government, local stakeholder forums with FS-ASM equitably represented, external expertise resources | **Partners:** National and local government, local stakeholder forums with FS-ASM equitably represented, external expertise resources |
| | **Funders:** Development agencies, development banks, environment and development programs, private sector companies, standard setters. | **Implementation and facilitation:** Relevant CSOs with across governance and technical expertise spectrum |
| | **Implementation and facilitation:** Relevant CSOs with across governance and technical expertise spectrum | 1. Production and agreement on 3- to 5-year EMP, including monitoring and reporting program  
2. Local EMP sign-off by local government |
Appendix 3: The Three Principles for Forest-Smart ASM: Rationale

The concept of forest-smart mining (FSM), defined simply, is mining that acknowledges the interlinkages between forests, their intrinsic values, and other land uses (including socioeconomic uses and ecosystem services), and that actively seeks to reduce loss or damage to those values, and where possible, achieves a net neutral (or even positive) outcome. While this may be appropriate for the large-scale mining sector, the artisanal and small-scale mining (ASM) sector has resource and capacity challenges that need to be acknowledged and for which adjustments need to be made. The realization of FSM for the ASM sector needs to be guided by three basic principles that will underpin and inform the development of criteria (or requirements) and associated indicators. Principles 1 and 2 serve as key terms of reference informing and guiding the design and implementation of the principles, criteria, and indicators (PCI) through principle 3, the commitment to working through the mitigation hierarchy. Principles 1 and 2 provide the values and cross-reference through which principle 3 is applied. The PCI that are applied through the application of an adapted mitigation hierarchy for ASM will be informed by integrating the values both pertaining to the forest and to the peoples living in association with that landscape, whether they be miners or other communities dependent on a forest’s ecosystem services.

Figure 3.1: Forest-Smart ASM: The Principle Triangle – The Basis for Developing Forest-Smart Practices for ASM

Principle 1: Forest ecosystem safeguard and resilience: Biodiversity, carbon, and ecosystem services

In developing forest-smart practices for ASM, there needs to be an appreciation of what the diversity of forest values might be in any forest landscape. Identifying these values will inform the range and specific attributes of the PCI and how they might contribute to forest-smart practice. What features of the forest environment are we working to conserve, sustain, and promote? ASM occurs within a wide range of landscapes, from boreal forests in Mongolia to temperate forests in Ukraine. However, this study focuses mostly on ASM activity in forests in tropical countries, which are experiencing very high rates of deforestation and ecosystem degradation. The landscapes range from the cloud forests (yungas) of the tropical Andes to lower-altitude rainforests such as is typical of much of the West African landscape and upper reaches of the Amazon basin. With decreasing rainfall, rainforest merges progressively through wet savanna/woodland into drier woodland ecosystems. Recognizing the broad definition of forest as indicated and used earlier in this document, forest-smart practices will need to be adapted to forest types across this spectrum and attuned to the particular values and constraints associated with them.

More specifically, what range of forest values should we recognize in the development of forest-smart PCI?

**Biodiversity:** The most obvious value of forests—particularly tropical forests—is that they comprise a diverse array of species across a wide range of taxa: vegetation communities of higher and lower plants, fungi, reptiles, a vast number of invertebrate species, fish, amphibians, birds, and mammals. Many of these taxa are incompletely documented, and tropical forests represent those terrestrial ecosystems where species diversity is at its highest and where many new species continue to be discovered, particularly plants, fungi, invertebrates, herptiles, and fish. Birds and mammals, although the best known of the taxonomic groups, are still surprising us with occasional discoveries of species new to science.

Furthermore, some tropical forested countries, such as Colombia, Peru, Liberia, and Ghana, host globally important biodiversity hotspots, regions known to support at least 1,500 endemic plant species and that have lost at least 70 percent of their natural habitat (Mittermeier et al. 1999). Such areas represent some of the highest biodiversity priorities on Earth. Globally, the 36 biodiversity hotspots cover only 2.3 percent of the planet, but they are home to half of all plants and 77 percent of terrestrial vertebrates (Myers 1988). The Tropical Andes Hotspot—focused on the forests of Colombia and Peru—has the greatest biological richness on the planet: It houses more than 34,000 species, including plants and animals, of which half are endemic.

Of the hotspot regions, it has the highest diversity of plants on Earth (30,000+ species), highest avian diversity (1,724 species), highest mammal diversity (570), and second-highest herptile diversity (610). Similarly, in West Africa, Ghana, Liberia, and neighboring countries host the Guinean Forests Hotspot, which supports impressive levels of biodiversity, with about 9,000 vascular plant species (of which 1,800 are endemic), 416 mammal species (about 25 percent of African species), 917 bird species, 107 reptile species, and 269 amphibian species within the wider hotspot boundary (CEPF 2020). Of these, 65 mammal species, 48 bird species, 20 reptile species, and 269 amphibian species are thought to be endemic to the hotspot region. Furthermore, the hotspot hosts 5 critically endangered and 25 endangered primate species (CEPF 2015). A finer-grained appreciation and location of priority forest areas within these regions is provided through the identification and documentation of Key Biodiversity Areas (KBAs), areas that are specifically identified through assessments to global criteria for species diversity, endemism, and threat status (among other criteria).

This is surely indicative that the forested environments within which we seek to develop forest-smart practices for ASM are among the forests with the highest biodiversity values—and risks—on Earth. Many of these forests are no longer fully intact. KBAs and protected areas represent some of the most intact areas of forest. Intactness is a feature that is undervalued yet is now increasingly recognized as a critical consideration in regional and national planning for biodiversity impact avoidance.

Intact forests represent a precious and rapidly declining resource. There is emerging evidence that remaining intact forest—with its highly complex biodiverse interrelationships and ecosystem function in good health—supports an exceptional array of ecosystem services: carbon sequestration and storage, water provision, Indigenous culture, and the maintenance of human health. In contrast, degraded forests that have experienced poorly managed or unregulated exploitation are less significant in terms of resilience and the range of ecosystem services delivered (Watson et al. 2018). Such intact forests are a critical priority for global efforts to halt the ongoing biodiversity crisis, to slow rapid climate change, and to achieve sustainability goals.

Other systems of valuing, identifying, and managing biodiversity within the context of commercial land use have been developed. High Conservation Value (HCV) and High Carbon Stock (HCS) approaches are used to identify and protect important environmental and social values that should be conserved. The Forest Stewardship Council (FSC) led in developing the HCV approach in 1999 for use in forest management certification, which helped define forest areas of outstanding and critical importance. Such HCV areas/forests are used where companies extracting or cultivating products from a forest landscape wish to apply for forest product certification.

HCV areas are considered a keystone principle of sustainability standards for palm oil, soy, sugar, biofuels, and carbon; they are also widely used for landscape mapping, conservation, and natural resource planning and advocacy. There is potential for such approaches to be embraced by and adapted to the FSM approach being developed here. There is very significant overlap and alignment between the KBA criteria used to identify areas such as critical natural habitats, whether they be in protected areas, KBAs, International Bird Areas (IBAs), internationally recognized areas, or outside of these areas, such as within modified habitats supporting high biodiversity values. Such valued areas are highlighted within IFP Performance Standard 6 (a source standard for FSM), which recognizes both approaches for valuing and identifying priority conservation areas.

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HCV area identification is based on six values: species diversity (HCV1), landscape-level ecosystems (HCV2), rare ecosystems/habitats (HCV3), critical ecosystem services (HCV4), community livelihood needs (HCV5), and cultural values (HCV6). They have the potential to be applied at a finer grain of scale than KBAs, which gives them complementary values in conservation approaches. However, within the context of FSM, HCV areas would also require identification through technical expertise that is likely beyond ASM capacity. Using HCV areas approaches to inform impact avoidance would best be delivered through an enabling stakeholder environment.

Regulating and Provisioning Forest Ecosystem Services

Carbon storage and sequestration: Carbon is readily stored in all forms of terrestrial organic matter, soils, and rock formations. In forested landscapes, there are three main carbon storage facilities: aboveground carbon, belowground carbon, and in peatlands and sediments associated with forest wetlands and riparian corridors.

- **Aboveground carbon:** This is the most obvious storage capacity of forests, with the vegetation’s capacity to convert atmospheric carbon to lignin (wood) and cellulose. This is manifest in trees, lianas, shrubs, herbaceous plants, and associated foliage but also significantly within the deadwood component of a forest. In addition, leaf and deadwood litter is also important at the interface of decomposition into soil organic matter and storage as belowground carbon. Intact old-growth forests will trend toward having a higher level of species diversity, although secondary forest—once well established—can also display high levels of diversity. In intact forests the combination of a diverse range of niches, giving rise to structurally diverse, tiered vegetation communities, allows for carbon storage to develop aboveground in a variety of ways. Deadwood is an important component. Intact forests support diverse biotic communities and trophic levels that dynamically interact to facilitate ongoing carbon sequestration through aboveground growth and decomposition into belowground soil storage. The carbon storage capacity per unit area will obviously vary depending on intactness, forest age, and levels of degradation, but it will also vary across the spectrum of forest types, from lowland evergreen rainforest to dry savanna/woodland.

- **Belowground carbon:** This is a very significant yet underrated carbon storage and sequestration service provided by forest soils. Largely invisible, it is nevertheless important but difficult to quantify. Ecological communities within topsoil are diverse: Invertebrate fauna, microbial communities, and diverse fungal mycelia (including symbiotic myco-rrhizal relationships with higher plants) all function together to facilitate the recycling of organic matter into carbon and its long-term storage into soils. The topsoil-subsoil interface sees carbon seques-tered within soil horizons. Taken together, such belowground soil communities play an important role. Colonial Hymenoptera (ants) and Isoptera (termites) also play huge roles in carbon- and nutrient-recycling and sequestration into soils. In addition, we need to consider the extensive root systems of vegetation that penetrate to various soil horizon depths. A range of land uses can see significant carbon emissions associated with soil disturbance, such as in agriculture and mining, particularly where soils are deeply disturbed and their ecological functioning disrupted.

- **Forest riparian carbon and peatlands:** Given that much ASM occurs along riparian corridors, it is worth considering the importance of carbon storage and sequestration services provided by rivers, drainage systems, and wetlands within forests. The role that rivers play in the terrestrial carbon cycle has been significantly underestimated, but recent work is highlighting its importance. While rivers convey carbon to the oceans, they also retain carbon within riparian floodplains, with potential for long-term storage. Analyses of organic carbon (OC) in river systems indicate that a significant proportion of terrestrial carbon is stored within river networks. While there is more work to be done on the dynamics of storage and sequestration in river systems, three primary organic carbon reservoirs are associated within fluvial systems: standing riparian biomass, dead biomass instream and across the floodplain, and importantly, organic carbon beneath the floodplain surface and locked within sediments, including litter, humus, and within soils and sediments. While there are both aboveground and belowground components here, it is the dynamic nature of river systems that enables organic matter and soil carbon to be cyclically redistributed and stored within river systems. This additional associated component to carbon storage is relevant when considering land uses that impact rivers and floodplains.

- **Peatlands:** Peatlands provide a very significant carbon storage facility in some forest types. Most are associated with boreal forest ecosystems and more limited within wet temperate forests, but they are also renowned in certain tropical forest ecosystems, such as the peat swamp forests of Indonesia, the eastern Congo basin, and within the Amazon basin. They occur at lower elevations and are relatively localized, even though they can be very significant reservoirs of organic carbon (Piland 2017). As with HCV areas discussed above, there is a methodo-
logy that specifically identifies High Carbon Stock (HCS) values in forest landscapes. The methodology, launched in 2013, goes beyond the identification of high carbon areas: it is a strategy for no deforestation and for defining and protecting “viable forest areas” (HCS Approach Steering Group 2017) through identification and protection of intact natural forest areas, HCVAs, and community lands (Proforest 2014). The HCS approach makes a distinction between HCS areas (viable natural forest) and non-HCS areas (degraded land). However, it is not a tool for carbon accounting. Both HCV areas and HCS areas are identified for their considerable ecosystem service values, both for carbon stock as well as for other regulating and provisioning values.

**Atmospheric and climatic regulation:** The role of forests in relation to climate change extends far beyond carbon storage. Forests play a major role, through respiration and evapotranspiration in the atmospheric gaseous exchange of CO₂, O₂, and water vapor. Their contributions are both global and local, and their influences in the maintenance of rainfall regimes at continental and local scales are critical. Forests regulate climate at local, regional, and continental scales by producing atmospheric moisture and precipitation and moderating temperature. Such hydrologic and climate-cooling effects should be recognized as a principal contribution of forests to climate regulation and to climate change mitigation and adaptation. Carbon storage is an associated regulatory benefit of forests but not a stand-alone value. Extensive stands of forest influence and maintain precipitation recycling at local and continental scales. These gaseous exchange processes are also significant in atmospheric purification functions.

**Water regulation and purification:** As indicated above, forests provide multiple water-related services, including rainfall recycling, water purification, filtration, and groundwater recharge and storage. Such recharge capacities provided by forests ensure that moisture is held within their watersheds/catchments so as to ensure maintenance and regulation of water supplies. These services are often underrated but are crucial in ensuring surface water and groundwater availability and quality for agriculture and other land uses, and indeed for human consumption and flood control.

**Erosion control and soil protection:** Often only fully appreciated when forest cover is removed and soils are exposed to the elements, forests protect the landscape from erosion and ensure that the process of soil development can occur unimpeded. This process allows for the delivery of a range of associated ecosystem services, including sediment and nutrient retention and maintenance of soil fertility; such attributes contribute significantly to water purification and quality.

**Timber and non-timber forest products (NTFPs):** These services are generally recognized as the more “traditional” ecosystem services, whereby forests provide materials, fuels, and fibers, but they are now extending into new niche market economies such as wildlife-based ecotourism. Many of these services are drawn upon by ASM in forests, so their significance and needs for sustainable use will be highlighted where relevant.

- **Timber products:** Forests have been providing timber products for construction materials, furniture, and a range of other uses since time immemorial. Unsustainable timber extraction has been one of the leading drivers of deforestation historically and continues to be so. Tropical hardwoods have been very much in demand historically and key species are often targeted, resulting in logging operations that deplete and degrade forest ecosystem integrity. However, forests can sustainably provide timber for a variety of uses and such sustainable harvesting is a key ecosystem service provided by forests. If well managed, forests can sustain their values within appropriate harvesting regimes. ASM provides a need and a local market for forest timber products, such as for mining-related infrastructure or for settlement construction.

- **Non-timber forest products and resources:** Forests provide a range of wild food products (fruits, nuts, seeds, foliage, roots, oils, and so on, but also significantly wild meat, covering a wide diversity of species—invertebrates, fish, birds, and particularly mammals). Unsustainable harvesting is one of the more significant impacts associated with the bushmeat trade, and in many cases it has driven some species to extirpation and even impending extinction (for example, some primate species). The bushmeat trade is an ongoing problem throughout tropical forests around the world, and ASM communities in forests may draw on such resources or actively participate in organized trade as a supplementary livelihood. While forests and their wildlife can provide such resources, there are also serious health risks associated with zoonotic disease transmission through such activities. The pet trade is another economic activity that draws on wildlife, often focusing on specific bird or reptile species that have local or international market value. Harvesting of fur-bearing animals is significant in certain countries.

Wild plants are harvested and used for nonfood purposes, either for medicinal use or for a wide range of other traditional uses.

- **Two final products of great significance are fuelwood and charcoal.** Market demand for these products can become major commercial enterprises and become
a significant driver of deforestation and habitat degradation. As forests become more fragmented within increasingly settled areas, the demand for fuelwood and charcoal can become unsustainable, leading to significant depletion of resources. ASM presence in forests can be a factor in the demand and supply for these products.

**Natural capital and ecosystem valuation:** The diversity and range of forest-related ecosystems services outlined on the natural capital provided by the forested landscapes. Ecosystem services are the flow of benefits that people gain from natural ecosystems, with natural capital being the stock of natural ecosystems from which such benefits flow [Jarrett 2012]. So, the natural capital approach would consider forest as a component of natural capital, while climate regulation or timber might be the ecosystem services it provides. The important link between natural capital and ecosystem services is that when some classes of ecosystem services are appropriated by land users at an unsustainable rate, the stocks of natural capital that provide them may be depleted. This is clearly happening across forest landscapes. A wide range of models can be used to demonstrate the monetarized value of these ecosystem services. Such models can focus on local or regional economic values of commodities such as charcoal and fuelwood, or the agricultural value of forest soils that may diminish over time. National or global monetarized values attributed to the carbon stock and sequestration values for forest are more challenging to estimate. The greater the complexity of ecosystem values that collectively contribute to the whole, the more difficult it will be to attribute an accurate value to that whole. Yet, such estimates of ecosystem valuation need to be considered. A key reference in this effort to account for ecosystem valuation was the study "The Economics of Ecosystems and Biodiversity" [TEEB 2010], launched at the CBD COP10 at Nagoya in October 2010, the meeting that gave rise to the Aichi Biodiversity Targets. Strategic goals (A–E) identified targets to be achieved through 2011–2020 [CBD 2020].

Recognition that such ecosystem services have monetary values that can be usefully expressed at the local level as well as contribute to national and global natural capital stock represented by these forests could help inform and be factored into strategic decision-making on the funding of an enabling environment for the development of forest-smart mining. This will be explored further in the guidelines.

**Principle 2: Human rights–based approaches: Communities and livelihoods**

Currently, the ASM sector is predominantly informal with a developing process of formalization bringing ASM communities into a more regulated environment. This process is not without its challenges. ASM communities often operate with the minimum of resources and with minimal supporting institutional capacity. The process of increasing the sector’s capacity for taking on higher standards of environmental responsibility and performance needs to recognize the sector’s capacity limitations and level of resources. Designing forest-smartness through what will be seen as increasing demands for environmental responsibility needs to take account of limitations while laying out a road map for the development of an enabling institutional and stakeholder environment. A variety of approaches can engage the process. Formalization is a long-term process of bringing ASM into the formal, legal economy and through that addressing the environmental and social issues connected with the sector’s impacts on society and the environment. There are three key components to the process of formalization:

- • The legal and policy framework for ASM: Does it enable and encourage the development of formalized forest-smart ASM?
- • The state’s role in promoting and enforcing compliance with this framework, using "carrots and sticks": Is there a balanced and fair approach that guides the ASM sector through both incentives for adopting and demonstrating forest-smart practices and disincentives for failing to adopt such practices?
- • Participation and (self-) organization by the ASM itself: Can the ASM sector enhance its environmental performance through the adoption of accessible, affordable, and practical approaches to mining?

The realization of forest-smart mining by ASM will present many challenges. The state has a leading role in developing a forest-smart legal and policy framework for ASM, but if this is not undertaken with a view of providing a supportive environment for ASM to engage with the process, there is a risk that ASM communities will not recognize the value of complying with such regulations. While formalization is mainly the responsibility of the state, civil society organizations and other stakeholder groups can play a key role in supporting it. There are many entry points where the ASM sector can positively engage with both the relevant government authorities responsible for the sector as well as with civil society and local multistakeholder platforms who have an interest in addressing the challenges posed by ASM and its activities within the environment.

In developing and advocating forest-smart PCI, there is a recognition that the sector is unlikely to be able to transform its mining practices to higher forest-smart standards in isolation. Government, civil society, other relevant stakeholders, and local community groups
will need to collaborate to facilitate a participatory process of ASM engagement. Such collaboration would involve advocating for improved forest-smart laws/policies, organizing inclusive workshops and trainings, establishing ASM-inclusive stakeholder platforms, undertaking intermediary interventions between ASM and the government, and so on. An effective guide on how to undertake such a process is through adopting a human rights-based approach (HRBA) (Purevjav et al. 2014). An HRBA is essentially a way to program or plan interventions and projects. It helps achieve holistic outcomes, and it states that those most affected by an issue should be involved in addressing it. The HRBA takes human rights standards and principles as a guide for any project or intervention. It says that every individual has certain rights, given by the constitution of a country and international human rights convention. The approach says that achieving these rights should be both a means and the goal of an intervention/project. This means that the process of the intervention is as important as the outcome—so the way to go about working with ASM is as important as the goal of ensuring a formalized, legal sector. An HRBA empowers people (individuals) to know and claim their rights, and it helps increase the accountability and ability of government institutions to respect, protect, and fulfill these rights. In the approach, there are two types of actors:

- **Rights holders:** Individuals with rights. The HRBA wants to empower the rights holders to know, claim, access, and realize their rights and acknowledge their responsibilities. It is important to recognize here the ASM right to livelihood, within a context of recognizing other stakeholders’ rights to livelihoods. Indigenous forest communities receive a particular consideration here, requiring specific approaches to engagement (for example, free, prior, and informed consent).

- **Duty bearers:** Government has the duty to respect, protect, and enhance the fulfillment of the rights of individuals. The HRBA supports government agencies in fulfilling this role, not just by monitoring and controlling but also by providing services and supporting individuals and communities, such as ASM.

The following key HRBA principles should be taken into account when planning or implementing the development and adoption of FSM PCI by ASM communities/sector (Stacey et al. 2020):

- **Equity and nondiscrimination:** ASM communities often operate under economic and social stress and are therefore vulnerable. Within communities, recognize those who are most vulnerable and marginalized, those who are not listened to or are usually “invisible,” and ensure that they are included and treated equally. Recognize gender inequalities and factor these into the process of engagement. Indigenous communities that practice minimal contact with incomers may require particular approaches for engagement. Free, prior, and informed consent (FPIC)-based approaches specifically designed to represent and safeguard the perspectives and interests of Indigenous Peoples need to be enabled (see below).

- **Participation and inclusion:** Enable all stakeholders to participate actively and freely in the process of learning about and undertaking the changes that will affect them. Stakeholders should be empowered to articulate and voice their expectations; they should be consulted and included in decision-making processes.

- **Accountability:** A program of developing and implementing forest-smart PCI should be accountable to wider stakeholders and also foster accountability between stakeholders. For example, forest-smart PCI should be acceptable not only to the ASM communities undertaking them but also to wider stakeholders impacted by ASM activities. Wider stakeholder support or endorsement of forest-smart PCI outcomes are essential if forest-smart practices are to be accepted within the ASM environment. Government, both at the national departmental level and local authority level, may need to be held accountable to the implementation of such standards.

**Particular attention needs to be paid to women, who are disproportionately affected by mining and climate change but also are key enablers for the success of shifting to a forest-smart ASM sector. To address existing gender inequalities and avoid perpetuating these gaps, women must be meaningfully included in the design and implementation of forest-smart ASM practices.**

Such approaches foster the development of an enabling environment in which ASM communities can be encouraged to adopt new forest-smart practices while responding to positives incentives to do so. The process is a progressive one, whereby we can consider how far ASM communities and associated stakeholders can travel together on a journey of engagement. Can it lead to community-based and local environmental management planning that benefits all stakeholders, where forest-smart ASM is recognized as an equal among other land users and stakeholders?

The principle of FPIC and its application in informing development and community engagement has been considered. In 2007, the UN General Assembly adopted the United Nations Declaration on the Rights of Indigenous Peoples, recognizing their rights and making specific mention of FPIC as a prerequisite for any activity
that affects their ancestral lands, territories, and natural resources (FAO 2016). While use of the FPIC approach initially focused on addressing the rights of Indigenous Peoples impacted by development interventions from external parties, there has been recognition that the FPIC approach is appropriate good practice to undertake with local communities more widely, as involving them in the decision-making of any proposed development activity increases their sense of ownership and engagement and, moreover, helps guarantee their right to development as a basic human rights principle. There is significant alignment and overlap between the HRBAs described above and elements of FPIC. The requirement for such approaches as given below bring appropriate FPIC principles into the HRBA:

- Informing local communities about their rights
- Building capacity with local communities on the understanding and exercising of rights
- Ensuring state participation throughout the engagement process: Involving relevant stakeholders
- Capacity-building activities for public sector employees as duty bearers
- Awareness of grievance and redress mechanisms

While the corporate sector is not considered a primary stakeholder in such ASM, similar expectations with respect to transparency on financial flows and permitting arrangements with local authorities and government agencies should be realized. FSM-ASM should be able to progress within an enabling environment that seeks to uphold and respect international labor, environmental, and human rights standards and national legislation, aligned with OECD guidelines and the UN Guiding Principles for Business and Human Rights. With respect to Indigenous Peoples, there is a recognition that Indigenous communities are sometimes negatively impacted by ASM activities. Alternatively, or additionally, such Indigenous communities may well be actively involved in ASM as a livelihood opportunity.

Principle 3. Commitment to the mitigation hierarchy: Practical approaches to forest-impact avoidance, minimization, and rehabilitation

As indicated earlier, forest-smart mining, defined simply, is mining that recognizes the interlinkages between forests, their intrinsic values, and other land uses (including socioeconomic uses and ecosystem services), and that actively seeks to reduce loss or damage to those values, and where possible, achieves a net neutral (or even positive) outcome. For the ASM sector, this raises significant challenges due to lack of resources and poor social and institutional status and capacity. Nevertheless, the challenge of bringing FSM practices to the sector requires a full and realistic consideration as to how the mitigation hierarchy can serve as a guiding principle for forest-smart ASM and how its uptake by the sector may be modified to address those resource and capacity limitations.

The mitigation hierarchy is defined as a planning and operational discipline that when implemented in mining activities seeks to avoid, mitigate, restore/rehabilitate, and finally offset or compensate for the biodiversity impacts resulting from such mining activity. Forest-smart PCI for ASM will target those mining activities that are within the direct control of any given ASM entity or community. These will focus on the development and provision of practical undertakings or requirements (criteria) that will enable the ASM entities to do the following:

- Maximize their ability to avoid negative impacts to forest values, such as biodiversity, carbon storage, and other relevant ecosystem services.
- Minimize ongoing impacts throughout the operation of mining and extraction.
- Maximize the rehabilitation to an agreed targeted outcome for the relevant forest values that have been negatively impacted.

Given the above, when considering the full spectrum of commitments to the mitigation hierarchy for ASM, ASM entities will likely be unable to meet the requirements that might be expected of a large-scale mining company in two key areas: impact avoidance and biodiversity offset/compensation.

For a large-scale mining company operating in a regulatory environment, there is an expectation, indeed a regulatory requirement, that the company undertakes a comprehensive environmental (and social) impact assessment (EIA/ESIA) that systematically scopes and assesses the range of potential impacts of the planned operation, from exploration to mine closure. Such an assessment would require comprehensive baselines studies to be undertaken to provide a context against which the proposed development could be assessed. Subject to regulatory review, a permit (with conditions) may be issued for mining to proceed. For large mining projects, the permitting and assessment requirements might be separated into distinct exploration and operational phases. As indicated in IFC Performance

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Standard 6 and the IRMA standards, there is an acknowledgment that the mining company may need to commission technically advanced expertise to provide such baseline studies and the resulting ESIA. Such a requirement will be beyond the available resources and the technical capacity of (most) ASM entities. Therefore, while the requirements for forest-smart ASM will outline how ASM in forests can implement impact avoidance throughout their on-site activities, there needs to be an appreciation that there will be a limit as to how effective such avoidance might be with respect to impacted values. In recognition of this, a supporting framework is needed within which government, civil society, and relevant stakeholders (from global to local) can convene their efforts to provide appropriate guidelines that integrate avoidance mechanisms into planning and permitting systems. This will help steer ASM activities away from areas where their impacts may have the most significance but be undocumented and not assessed. It is in this sense that government should seek to provide clear guidance for ASM with regards to protected areas, internationally recognized areas for biodiversity, and critical natural habitats, such as are identified within KBAs, HCV areas, and HCS areas. If future ASM activity can avoid such areas, then this will reduce ASM impacts on high value areas and reduce ASM’s association with such impacts.

The second component of the full spectrum mitigation hierarchy in which ASM is severely limited in terms of resources and capacity is in identifying and implementing an appropriate biodiversity offset response. The identification of an agreed offset response is technically demanding and is usually dependent on and addressed through the ESIA process. It is expected to identify the net residual negative impacts of mining and then offset or compensate for them—on a “like-for-like” basis where possible.

Within the ASM context, the capacity and resource constraints of the sector—generally comprising small organizational units or entities—mean that measurable like-for-like biodiversity offsets are not achievable or appropriate. However, targeted additional conservation actions (ACAs) or compensatory actions could be effective if relevant to context. ASM entities can be encouraged to engage with local conservation initiatives being implemented in forested landscapes that might bring support to forests either in the immediate vicinity of ASM activity or targeted to high value areas such as KBAs, protected areas, and HCV areas. In this way, ASM entities could be incentivized into forest stewardship roles that could champion targeted conservation actions at selected priority sites. Such actions have even greater significance where ASM is already operating in proximity to protected areas or KBAs. Incentives for ASM engagement in such efforts could be diverse:

- They could contribute directly toward reducing an ASM entity’s net residual impact at a site that would support their developing FSM status.
- An ACA could qualify for carbon finance that could also be invested in the progressive adoption of FSM practices through capacity building and training.
- An ACA could attract other diverse sources of funding to contribute to the progressive adoption of FSM.
- ACA commitments could enhance forest-smart ASM access to appropriate land and license to operate.

With these exceptions in mind, forest-smart ASM will be expected to follow the mitigation hierarchy when planning and developing mining projects. While this generally refers to addressing the direct impacts the ASM entity might be responsible for through mining, it needs to go beyond this. It needs to scope and plan for ASM’s indirect impacts beyond the mining activities themselves, such as how the ASM community might be living within the context of the forest environment and the resources required to support such communities. It needs to recognize that in many situations ASM is an enabling factor in the development of other land uses or economic activities, for which ASM is not directly responsible but nevertheless a facilitatory factor.

The mitigation hierarchy can be used to guide the development of PCI that address the direct impacts of mining in forested landscape, by developing design, planning, and physical actions that an ASM entity can undertake to maximize impact avoidance within the scope if its ability, minimize operational impacts, and maximize rehabilitation effectiveness. The actions need to be designed to meet certain criteria: They need to be economically affordable, socially acceptable, and ecologically viable. In devising approaches that will help ASM become forest smart, we need to consider the following:

- Direct impacts of mining and access to mining.
- Indirect and cumulative impacts, spatially and over time, for which the ASM community has some shared responsibility with other stakeholders. Such communities will be dependent on a range of subsistence-level land uses within the forest landscape, other than mining. ASM does not occur in isolation—forest-smart solutions will be more effective if informed by and integrated into the wider landscape and its land uses.
- Consequences of impacts, not only on forest cover and on key species but on the protection of human rights and the wider ecological integrity of forested landscapes.
ecosystems—its biodiversity, structure, and function and its provision through these of a wide range of ecosystem and cultural services, such as the range of diverse forest products (timber, food, ethno-botanical and medicinal products); carbon storage, both above- and belowground; water regulation, supply, and quality; as well as cultural and spiritual values.

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