



# How to bring about forest-smart mining: strategic entry points for institutional donors



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**About this report:** The World Bank's PROFOR Trust Fund developed the concept of Forest-Smart Mining in 2017 to raise awareness of different economic sectors' impacts upon forest health and forest values, such as biodiversity, ecosystem services, human development, supporting and regulating services and cultural values. From 2017 to 2019, Levin Sources, Fauna and Flora International, Swedish Geological AB, and Fairfields Consulting were commissioned by the World Bank/PROFOR Trust fund to investigate good and bad practices of all scales of mining in forest landscapes, and the contextual conditions that support 'forest-smart' mining. Three reports and an Executive Summary were published in May 2019, further to a series of events and launches in New York, Geneva, and London which have led to related publications.

This report was commissioned by a philanthropic foundation to provide an analysis of the key initiatives and stakeholders working to address the negative impacts of mining on forests. The purpose of the report is to provide a menu of recommendations to inform the development of a new program to bring about forest-smart mining. In the interest of raising awareness and stimulating appetite and action by other institutional donors to step into this space, the client has permitted Levin Sources and Fauna & Flora International to further develop and publish the report. We would like to thank the client for the opportunity to do so.

We would like to thank the client for vesting IP for this product in Levin Sources. By doing so, Levin Sources has been able to share our background stakeholder mapping with a Responsible Sourcing standard and another World Bank project that we are carrying out in partnership with the Alliance for Responsible Mining, to develop a forest-smart mining standard for artisanal and small-scale mining. As purpose-led organisations with impact missions we believe that donor money should enable knowledge to be freely mobilized for the greater good.

Cover photo: Worm's eye view of a forest, Kazued, 2020

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Social venture Levin Sources is working towards a sustainable minerals sector that builds enduring value for society and the environment by upholding human rights, conducting business responsibly and enabling good governance in accordance with the SDGs.

It provides practical and holistic solutions to the complex challenges the minerals sector and its clients face through innovative, multi-disciplinary problem-solving. Since its launch 10 years ago, Levin Sources has striven to put sustainability at the heart of the minerals sector.

It has assisted the private, public and third sectors to transform their operations, supply chains and sectors to become more sustainable. In 2020, it became the first minerals sector, first social venture and first SME to take up the CEO Carbon Neutral Challenge issued by Gucci President and CEO Marco Bizzarri in November 2019.

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Fauna & Flora International (FFI) is the world's first international conservation organisation and a registered charity, and works to conserve threatened species and ecosystems across 40 countries worldwide. Addressing the often conflicting needs of economic development and environmental conservation represents a key component of FFI's work. Proactive engagement with the private sector has been a core part of the organisation's activities for close to two decades, embedding biodiversity into the full life cycle of business operations, applying both strategic and pragmatic management approaches.

FFI's 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. Its mission is to act to conserve threatened species and ecosystems worldwide, choosing solutions that are sustainable, based on sound science and taking into account human needs. As an organisation FFI consistently applies a people-centred approach to conservation, ensuring that communities, including those most disadvantaged or marginalised, are empowered to influence decision-making processes regarding natural resources. This is deeply embedded within the people and relationships that constitute FFI, and has resulted in a strong network. The trust, experience and expertise that underlie this network allow FFI to operate credibly in the space between public and private sectors and between governments and civil society, overcoming barriers between them and tailoring responses to change. Today FFI has over 140 projects in over 40 countries worldwide.

For more information, please contact FFI at info@fauna-flora.org or pippa.howard@fauna-flora.org www.fauna-flora.org Mining and forests have important implications for addressing poverty and a sustainable future. Many countries face difficult decisions due to competing interests between the two sectors. The shift to a low-carbon future will require more minerals, many of which are predominantly located in forests. This has implications for forests that mitigate global warming, are a critical habitat for biodiversity, and provide essential ecosystems services vital to the livelihoods of more than a billion people around the world.

With the anticipated increase in demand for minerals and metals, a more sustainable approach to mining is urgently needed to ensure we have both clean energy technologies and healthy forests. The World Bank has adopted a forest-smart mining approach as part of its Climate Smart Mining initiative. The aim is to reduce the climate and environmental footprints of the supply chain of the critical minerals and metals needed for a clean energy transition. This approach provides practical guidelines for decision-makers across the public and private sectors to make better-informed decisions to ensure that the growth of mining will not be at the expense of forests..

#### Daniele la Porta, World Bank Group

"Mining is a significant and growing driver of deforestation. The expansion of mining into forests threatens the rights of the Indigenous Peoples and local communities while undermining the ability of forests--and the communities protecting them--to combat climate change. But it doesn't have to be this way. This comprehensive report takes stock of the problem and offers a vision for meeting essential demand for metals and minerals without violating human rights and destroying the environment. It is essential reading for funders and activists concerned about climate change and social justice who are looking for new strategies to align policies and practices in the mining sector with these goals."

Kevin Currey, Ford Foundation



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# **Executive summary**

**Mining is the fourth-largest driver of deforestation globally,** causing about 7% of deforestation in tropical and sub-tropical countries. The number of large-scale mines commissioned in forest areas has increased. Mining often has negative impacts on broader forest landscapes (biodiversity and ecosystem integrity) and ecosystem services, with eroding ecological health also impacting people and their livelihoods. Mining activities impact forests and ecosystems directly, indirectly and cumulatively and these impacts can vary in both intensity as well as spatial and temporal extent.

With rising demand for minerals and a proliferation in their uses, concerns regarding the increased intrusion of mining in forests are growing. Minerals and metals are fundamental to contemporary life; our ways of life cannot be substantially 'demineralized' without curtailing the boundaries of humanity's potential, and the transition to a green economy depends on continued mining for commodities such as copper, iron ore, lithium, cobalt and graphite. This necessitates approaches to mining that avoid, minimize and restore damage to forests and forest landscapes – an approach that is 'forest-smart'.

The World Bank's PROFOR Trust Fund developed the concept of Forest-Smart Mining in 2017 to raise awareness of different economic sectors' impacts upon forest health and forest values. PROFOR commissioned Levin Sources, Fauna and Flora International, Swedish Geological AB, and Fairfields Consulting in 2017-2019 to investigate good and bad practices of all scales of mining in forest landscapes, and the contextual conditions that support 'forest-smart' mining. Three reports and an Executive Summary were published in May 2019, further to a series of events and launches in New York, Geneva, and London which have led to related publications.<sup>1</sup> Forest-smart mining (FSM) is now one of the twelve building blocks of the World Bank's Climate-Smart Mining Initiative, and requires the application of a <u>set of principles of good practice that were developed by the authors for the World Bank as part of its Forest-Smart Mining strategy</u>, in terms of the planning, development and operation of mines in forested landscapes. These aim to avoid, minimize and restore damage to or loss of forest ecosystem integrity and function, which are fundamental to maintain biodiversity and multiple ecosystem services essential for human wellbeing.

This report explores and details the various policy and institutional challenges and opportunities related to FSM and documents a complicated landscape of stakeholders, drivers and policy levers. It is clear that any lasting solutions, at the international or national level, will require a coordinated and global effort.

# **Priority entry points for action**

There are a range of entry points for ensuring mining is more forest-smart. Programmatic interventions should prioritize:

- Those institutions with the most sway over sustainability outcomes at each distinct stage of the **mining life cycle**:
  - Exploration and prospection (Responsible Reserves, <u>IUCN No-Go Areas</u>, <u>Prospectors and Developers Association of</u> <u>Canada</u> (PDAC)
  - Mine development and expansion (International Finance Corporation (IFC) Performance Standards, improvements to national regulations that govern mining)
  - Mining operations (improvements to key standards and guidance including but not limited to the Initiative for Responsible Mining Assurance (IRMA), <u>International Council on Mining and Metals</u> (ICMM), <u>Towards Responsible</u> <u>Mining</u> (TSM), <u>Responsible Jewellery Council</u> (RJC), <u>Aluminium Stewardship Initiative</u> (ASI), <u>Responsible Steel</u>, <u>World</u> <u>Gold Council</u>, the <u>London Bullion Market Association</u> (LBMA), <u>Fairtrade</u>, <u>Fairmined</u>, <u>CRAFT</u>, <u>Responsible Minerals</u> <u>Assurance Process</u> (RMAP), the <u>Global Industry Standard on Tailings Management</u>, etc.)
  - Mine closure: see mining operations standards as well as (<u>Frugal Rehabilitation Methodology</u> (FRM) for artisanal and small-scale mining (ASM)

i. Please find all reports at <a href="https://www.profor.info/keywords/mining">https://www.profor.info/keywords/mining</a>. Related public fations include Bradley, S. (2020) Mining's Impacts on Forests. Aligning policy and finance for climate and biodiversity goals. At <a href="https://www.htttps://www.https://www.https://www.https://www.https://www.h

A 2019 World Bank's study into Forest-Smart Mining<sup>ii</sup> conducted by Fauna and Flora International, Levin Sources, and Swiss Geological, (for which mineral fuels (e.g. coal) and development minerals (e.g. sand, aggregates) were not in scope) revealed the following trends at these scales:

- Countries where there is the most forest mining in absolute terms, as well as accounting for area, economic importance, and forest cover; and key investor, consumer and producer nations that through their supply chains and investor requirements influence mining in forested areas. the most important countries (in descending order) for directing efforts to achieve forest-smart mining are: Brazil, Democratic Republic of Congo (DRC), Zambia, Ghana, Zimbabwe, Philippines, China, Indonesia, Albania, Russia, Australia, Canada, India, Mexico, South Africa, Sweden, Finland, Romania, United States, Colombia.<sup>1</sup> This is not just a Global South issue. Although countries like Ghana rely on forest mines for 41% of gold production, the problem is equally significant in the boreal forests of Canada and Russia where 38% and 50% of gold mines respectively are located in forests, and 100% of mining-related forest loss in Russia over the last ten years has been from natural forests.
- **Minerals** (a) with particularly strong negative impacts on forests, (b) that are most exposed to mining in forests, (c) with strong growth trajectories, and/or (d) where market reasons for attention are robust. Priority minerals based on a and b and excluding coal, include: gold, iron ore, copper (just less than half of all mines for these three metals are located in forests), nickel, zinc, bauxite and titanium.<sup>2</sup> Priority minerals for c and d are technology critical elements including metals necessary for the green transition, construction, and precious minerals especially gold and diamonds.
- **Markets** with competition reasons to promote FSM, such as the automotive and motion, jewelry, construction, and clean energy sectors.
- All **scales**, from artisanal and small-scale mining (ASM) through medium-scale mines (largely under-served by existing accountability frameworks) to large-scale mines (LSM). Particular attention needs to be paid to unlisted and medium-scale mines, which have fewer accountability mechanisms.
- **Companies** with high exposure to mining in forests, such as Vale S.A., Alcoa, Quantum Minerals, Arcelor Mittal, and RUSAL, as well as the state-owned companies of e.g. Russia, India, China, Georgia and Albania.<sup>3</sup>
- **Open pit and placer / alluvial mining,** for managing the negative impacts, and encouragement of (sustainable) urban mining and reworking of waste piles.
- The promotion of **circular mineral production**, such as tailings reprocessing to extract gold and rare earth elements such as cobalt and nickel could reduce pressure on forests and other greenfield sites and provide an opportunity to restore damaged land to ecological and/or economic productivity.
- Landscape level approaches, which blend mining interests and impacts with those of other economic actors, or other mining and mineral entities operating in the same landscape. Global hotspots for indirect and cumulative mining impacts include:

LSM coal landscapes in East and South Kalimantan, Indonesia<sup>4</sup> and Jharkhand and Assam in India, particularly Hasdeo
 Arand forest, which is about to be opened to create 40 new coalfields.<sup>5</sup>

- ASM landscapes in the Amazon basin (such as Zamora / Chinchipe, Ecuador<sup>6</sup>) and Congo basin<sup>7</sup> (Equatorial Guinea, Gabon, Republic of Congo, the DRC, Central African Republic, Cameroon).

 Bauxite landscapes in Sangaredi and Boke provinces in Guinea<sup>8</sup>, the 'iron quadrangle' in central-southern Brazil (Minas Gerais) and the transboundary Nimba/Simandou iron ore landscapes of Liberia and Guinea.

• **Nature based solutions and carbon finance mechanisms,** favoring projects that try to protect biodiversity and capture carbon at landscape level.

ii. Statistics on coal and forest-smart mining are not available. It has a huge footprint globally, despite production being in decline in many places. Analysis is rather one-sided. An overview of global mineral production can be found at https://www.world-mining-data.info/wmd/downloads/PDF/2020%20Lifeblood.pdf.

# **Priority institutions**

The report analyzes a number of institutions and summarizes the actions that foundations, development agencies and bilateral donors could feasibly take to better integrate FSM principles working through these actors.

Working with the public sector is necessary for creating and enforcing an enabling environment for FSM by influencing policy and regulatory systems, involving strengthened national policy but also international trade agreements. Specific actions that support the enabling environment include:

- **Technical support** for minerals host governments to improve institutional capacity to identify and respond to issues related to mining in forests.
- Support for **anti-corruption**, **transparency and accountability** initiatives in the extractives sector. It should also enhance participation and inclusion of affected communities, combined with support for civil society actors on these same aspects.
- Enabling tracking of the performance of individual companies and sectors of interest by supporting initiatives such as <u>Bankwatch</u>, <u>Extractive Industries Transparency Initiative</u> (EITI), <u>Publish What You Pay</u> (PWYP), <u>Natural Resource</u> <u>Governance Institute</u> (NRGI) etc.
- Work to empower local governance of forests and mineral landscapes and resources, strengthening institutions, improving environmental competence, and decentralizing decision-making.
- Coordinating with multilateral donor institutions such as the World Bank to build the enabling environment and develop guidance documents on mining governance, ASM, and policy frameworks. Specific programs with a strategic focus on poor and fragile/conflict-affected countries. include <u>the World Bank's Climate-Smart Mining (CSM) Initiative</u>, <u>The Forest Carbon Partnership Facility (FCPF) Fund</u>, and <u>Extractive Global Programmatic Support</u> (EGPS) Multi-Donor Trust Fund. Consider match funding program design for integrating FSM ASM standards into national regulations and carbon finance mechanisms with the World Bank.
- Coordinating with organizations such as the Intergovernmental Forum on Mining, Minerals, Metals and Sustainable
   Development (IGF), a voluntary initiative involving 75 countries, and the Organisation for Economic Co-operation and
   Development (OECD), which has significant influence over the international policy arena. Develop a why and how-to
   guidance to governments, at all scales, on how to create an enabling environment for FSM, perhaps with the IGF.
- Better data and monitoring of mining's impacts on forests.
- Finance the development of mining surveillance technology and associated guidance.
- Support scoping of development of a Sustainable Mining Fund: private equity or development finance fund with a focus on Indigenous rights / community based management of natural resources. Potential to incentivize Forest-smart mining approaches by offering more attractive interest rates for projects that follow FSM principles

National governments are a key stakeholder for development agencies and bilateral donors, noting that they not only have the potential to control their own jurisdictions but also how that nation's companies operate overseas. Mineral host governments should be the principal target of any efforts to manage forest impact, since they have the primary agency to regulate and enforce land use, climate policies and mineral rights, and the jurisdiction and responsibility to govern the use of their natural resources within international frameworks. Additional priorities for influencing the occurrence of forest-smart mining are actions by national litigation bodies that can hold companies accountable when operating abroad, and actions by local authorities to challenge, scrutinize, and demand more responsible business conduct. Market host governments can also play a crucial role in influencing forest-smart mining outcomes by influencing how their own companies operate in terms of mining, mineral trading and investment.

**Companies in all segments of mineral supply chains** have considerable influence over market demands and the connected requirements around social and environmental impacts, and thus play a key role in driving the performance of suppliers up to the point of mineral extraction. While different mineral sectors and different stages of the supply chain have seen the development of their own specific performance standards in recent years, a key leverage point has emerged in the form of market-based or consumer-facing standard setters. Key entry points for this sector include:

- Coordinating with and strengthening ICMM policies and guidance documents, particularly on FSM principles and indigenous peoples' rights, where the policies are currently relatively weak.
- Supporting uptake at company and national level of IRMA,
- Input to and strengthening the CRAFT Code, which helps ASM continuously improve their risk management systems in order to support responsible sourcing from ASM.

The leading association for LSM is the ICMM, which brings together 27 of the world's leading mining and metals companies and 36 associations. ICMM has developed mining principles as well as various guidelines that cover environmental impacts and indigenous peoples. IRMA has developed the most comprehensive standard applicable to large scale mining, which includes extensive requirements on environmental and free, prior and informed consent (FPIC) issues.

**Institutional and private investors** are a key group for pushing forward FSM principles within the extractives sector, and already have complimentary principles including the <u>UN Principles for Responsible Investment</u> (PRI). Principle 1: "We will incorporate ESG [Environmental, Social and Governance] issues into investment analysis and decision-making processes", creates the enabling environment to prioritize investment into companies that are 'forest-smart', as climate and deforestation are core environmental, social and governance (ESG) issues for PRI. Principle 2: "We will be active owners and incorporate ESG issues into our ownership policies and practices", involves more direct intervention, including the potential for signatories to exercise their voting rights to ensure development decisions are responsible (and potentially forest-smart). A key leverage point for PRI on FSM issues is through the <u>United Nations Environment Programme Finance Initiative</u> (UNEP-FI). Investor actions to better integrate FSM principles can be supported by:

- Working with UN PRI through UNEP-FI to produce guidance on how FSM principles are material to investors (and therefore require management), a good model is the <u>Aviva guide on sustainable palm oil</u>.
- Influencing how **ratings agencies** and **Responsible Reserves** integrate biodiversity and nature metrics in risk, due diligence and performance rankings.
- Working with investor forums and **transparency and reporting** bodies to incorporate FSM performance into companies' non-financial disclosure requirements.
- Introducing FSM into the scopes of **climate change and biodiversity investment programs** and **sustainable finance mechanisms**, such as green bonds.
- Working to influence and integrate FSM principles into the lending decisions of national export credit agencies which support national companies abroad and national development finance institutions.

**Civil society**, both in mineral host countries and in consumer or manufacturing countries, has a large role to play in pushing the FSM agenda. Civil society has the power to monitor, report, advocate and hold both governments and companies to account, while also bringing significant subject matter expertise to the table. However, their reach, capacities and financial resources are often limited, and their work is sometimes done under great professional and personal risk. Supporting **NGOs**, **civil society stakeholders, communities and research institutes** could include:

- Informing strategy and capitalizing on opportunities for leverage of existing cooperation mechanisms. Form mineralspecific, issue-specific or country-specific civil society FSM working groups to explore how cooperation and coordination amongst conservation NGOs and other stakeholders could generate better forest outcomes in the mining sector.
- Support NGOs in the delivery of strategic and technical support to local civil society initiatives engaged in FSM

- Building knowledge to empower all stakeholders through improved understanding and exposure of mining situations that are not forest-smart by funding research and reporting by local NGOs and advocacy NGOs.
- Creating a centralized online portal or FSM 'hub' with a library of relevant policy instruments, tools, guidance and multimedia that would support forest-smart mining.
- Support for NGOs and advocacy organizations to invest the time and effort required to ensure uptake and application of voluntary certification standards and to enable participation in the processes required.
- Support for a global campaign with key NGOs and civil society movements to raise awareness amongst general consumers downstream and supply chain actors upstream on the impacts of mining on forests.

**Standard-setting agencies** are key to mainstreaming FSM principles, but buy-in and consumer demand must be created in order to drive the uptake of the standards and justify the additional cost. Recommended actions to support FSM through these organizations include:

- Conduct a mineral evaluation or gap assessment to assess the extent to which minerals and metals standards and processes are actually addressing environmental impacts in order to critically provide suggestions for improvement.
- Develop a consensus-agreed standard for critical social and environmental governance issues applicable across all standards for the mining sectors and associated commodities.
- Build a calendar of when all the major standard setting initiatives will be next revising their standards and prioritize which to engage in a discussion on if/how they intend to improve their environmental requirements.
- Support the roll-out of specific standards such as <u>REDD+ Social and Environmental Standards</u> (REDD+ SES), IRMA, <u>Bettercoal</u> in Indonesia, India and China, the IFC performance standards and Responsible Steel across industry, but with a focus on state owned enterprises e.g. Russia, India, China, Georgia and Albania.

# **Priority international processes**

There are many **international processes** to which forest-smart mining is highly relevant. Of particular importance are efforts to protect indigenous peoples, the environment, human rights, efforts to drive good governance and integrity, and efforts in peace, security and conflict resolution. International climate commitments, specifically the Paris agreement, are particularly significant as they represent opportunities to achieve local, regional and global benefits to biodiversity and climate. Article 5 of the Paris agreement for example recognises the central role that protection and enhancement of forests play in achieving the aims of the agreement.

**International agreements, declarations and multilateral initiatives** can be used as policy levers to influence FSM. The most important international agreements and declarations that can enable the inclusion of environmental commitments and regulations include the New York Declaration on Forests, the Africa Mining Vision, the Minamata Convention, the Sustainable Development Goals (SDGs), IGF, EITI, the Aichi targets and the International Union for Conservation of Nature (IUCN) World Conservation Congress Resolution 37 and Recommendation 175. International trade agreements between countries, with associated commitments to abide by International Conventions and Agreements such as the Nationally Determined Contributions of the Paris Accord, SDGs, Convention of Biological Diversity, Human Rights, can be particularly powerful in influencing sustainability and human rights outcomes.

# Recommendations to donors and development agencies

In order to maximize their influence and impact it is important that foundations, bilateral donors and other development agencies seek to leverage and collaborate with existing work and actors in this space rather than developing programming in isolation. Donors should also seek to utilize their bi-lateral and multi-lateral relationships to further FSM. The primary avenues for this would appear to be working as donor coalitions to support: (1) Soft influencing through convening, political influence and dialogues, (2) selective financing of relevant local, national and/or international initiatives that further their objectives to promote FSM, and (3) strengthening national regulatory frameworks, local/indigenous governance structures and the capacity of decision makers/influencers in formal and informal institutions to make mining at all levels more forest-smart.

It is imperative that donors and governments acknowledge and strategize upon the significant implications of both state and private sector extractive and infrastructure development that falls outside of the influence of the major standard setters. In the meantime, the low-hanging fruit and first order of priority should be to influence institutions in their own countries to require stronger safeguards attached to lending and mineral sourcing conditions, and then seek to roll out these approaches through political influence in international forums and nations where the government has strong geopolitical influence.

#### Additional research and communications work recommended by the authors of this report includes:

- Additional case studies in other key nations such as Zambia, Zimbabwe, China, Colombia and Venezuela to identify additional possible entry points.
- A deeper dive into coal (equivalent in scope to the <u>World Bank FSM report</u>) and construction minerals like sand<sup>9</sup>, limestone, and clay for brickmaking which were out of scope of the original research that informed this rapid synthesis and strategic analysis, but are likely to have widespread and significant impacts on forests.
- Local community groups and indigenous peoples are often under-represented and typically do not have a cohesive international framework protecting their rights, which is a major barrier to forest-smart mining. Research into the initiatives and processes to protect the rights of local communities and forest peoples, including indigenous peoples, in land use management and the governance of natural resources, including forests and forest resources would enhance the work done for this paper. This research should a.) consider the role of FPIC in voluntary standards and how to increase its uptake, and b.) gather and publicize case studies of good and bad practice in community based natural resources governance, with an emphasis on nature-based solutions.
- Research to understand the biological, economic and land governance processes of post-mining forest restoration and ecosystem recovery and an assessment of the extent to which natural and engineered restoration work in different scenarios with a view to providing clearer guidance for forest-smart mining. This is all the more imperative since we are entering the UN Decade of Restoration in 2021.
- A pitch to the mining and minerals sector on the business case for investment in nature-based solutions. What is the
  opportunity presented by the climate change agenda and carbon finance mechanisms, such as REDD+, to the mining and
  minerals sector? How can these incentivize and facilitate the adoption of climate-smart, and thus forest-smart practices?
  What does this mean in practice for a mining company or minerals trader or consumer? Levin Sources, FFI and the Alliance
  for Responsible Mining are presently carrying out research that will contribute to this understanding for the World Bank.
- A pitch to the carbon finance, climate action and nature-based solutions community on how supporting climate action in the mining sector can support support climate change mitigation and the objectives of REDD+.

# Project purpose, objectives and methodology

Minerals and metals are of critical importance to societies all over the world. However, across the mining lifecycle, mining activities often have negative impacts on forest landscapes and habitats. The mining sector is anticipated to continue to grow and to increasingly interact with forests, at a time when accelerating rates of forest loss compel urgent action across nations and ecosystems. This report highlights key entry points for actors across the development sphere to ensure that the mining sector does not degrade forests or forest peoples. It synthesizes key findings on enabling institutions and recommends key entry points for future programming purposes.

The report seeks to answer the following questions:

- 1. How and why does mining impact on forests?
- 2. What is already being done to mitigate the impacts of mining in forests?
- 3. What more could be done and working with which institutions and frameworks that endeavor to incentivize and enable responsible mining and sourcing, at the international and national levels?

The research conducted was desk-based, relying on prior primary research by the authors and their institutions, and drawing on secondary research. In particular, the authors drew from information from the World Bank Program on Forests (PROFOR) reports on forest-smart mining, which we had co-authored in 2019 with Swedish Geological AB, to dive much more deeply into action-focused recommendations.<sup>10</sup> Given time and stakeholder availability constraints, a small number of brief email consultations were carried out to complement the desk research. Country experts conducted the case studies to identify entry points for managing the impacts of LSM and ASM on forests. Case study countries were chosen based on the importance of the country to mining and forest health. Coal was included but at a cursory level as prior research had not had it in scope.



# Introduction: Mining's impacts on forests

# What is forest-smart mining

Forest mining is mining that takes place in forest landscapes. The World Bank Program on Forests (PROFOR) defines forestsmart as "a development approach that recognizes forests' significance for sustaining growth across many sectors, including agriculture, energy, infrastructure, and water. It is sustainable and inclusive in nature, emphasizing that forests are part of a broader landscape and that changes in forest cover affect other land uses as well as the people living in that landscape. It transforms how sectors operate by identifying opportunities for mutual benefit and creating practical solutions that can be implemented at scale."<sup>11</sup> As a principle, forest-smart mining (FSM) is mining that is considering the needs of forests at the same time as the needs of mining and developing an approach that meets the requirements of both.

Forest-smart mining is one of the twelve building blocks of the World Bank's Climate-Smart Mining Initiative, which "will help resource-rich developing countries benefit from the increasing demand for minerals and metals, while ensuring the mining sector is managed in a way that minimizes the environmental and climate footprint."<sup>12</sup> FSM can be approached as a standalone concept and opportunity across mineral categories, or as a nested pillar in a larger movement to make mining more climate-smart; both are necessary to protect forests.



#### Figure 1: Climate-smart mining building blocks

iii. Defined by IFC PS1 as the area likely to be affected by: (i) the project and the client's activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project; (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent.

# State of the evidence

## **Mining hotspots**

A global study of forest loss that analyzed national data from 46 tropical and sub-tropical countries (reflecting ~78% of all forest areas) found that, excluding coal which is by far the most dominant commodity mined globally (83.38% of global mining production by volume in 2018)<sup>iii</sup>, mining caused about 7% of deforestation in these areas and was the fourth-largest driver, behind agriculture (73%), infrastructure (10%) and urban expansion (10%).<sup>13</sup> Regional differences are apparent, with the impacts of mining on forests being higher in Africa and Asia than in Latin America. However, it is important to note that the data refers to the direct impacts of mining on forest cover; it does not necessarily pick up indirect impacts, or impacts on forest ecology **and associated ecosystems** which can be far more significant than direct impacts.<sup>14</sup>

Forest mining occurs across the globe, but it accounts for over half of all mining in North America and South Asia. Regional differences in its contribution to forest loss can also be significant, for example nearly 10% of the deforestation in the Brazilian Amazon between 2005 and 2015 was due to mining activities<sup>15</sup> compared to an estimated 7% across the sub-tropics globally.<sup>16</sup> A number of regional hotspots also exist. Illegal gold mining, for example, made Venezuela's Yapacana National park a global hotspot for forest loss in 2018.<sup>17</sup>

Country	MFA count	MFA densityª	MCI rank⁵	Forest cover as percent of county size <sup>c</sup>	Forest GHG emissions as percent of national total <sup>c</sup>	Overall rank <sup>d</sup>
Brazil	128	1.4	27	58%	74%	1
DRC	25	1.1	1	72%	<b>92</b> %	2
Zambia	24	3	28	65%	95%	3
Ghana	26	10.7	14	39%	67%	4
Zimbabwe	31	7.1	45	36%	73%	5
Philippines	42	13.6	26	27%	33%	6
China	187	1.3	69	22%	70%	7
Indonesia	48	2.5	58	68%	76%	8
Albania	27	53.4	55	27%	42%	9
Russia	178	0.2	38	50%	9%	10
Australia	60	0.6	11	16%	28%	11
Canada	124	0.2	45	35%	24%	12
India	79	2.1	68	22%	27%	13
Mexico	59	2.5	73	34%	15%	14
South Africa	23	1.4	30	8%	8%	15
Sweden	25	1.1	59	62%	-30%	16
Finland	23	1.3	56	66%	-19%	17
Romania	14	2.9	122	29%	8%	18
United States	112	0.5	76	32%	1%	19
Colombia	15	1.3	70	51%	5%	20

Table 1: Importance of LSM in forested areas (MFA) and Mining Contribution Index (MCI) in the top 20 countries by mine count.<sup>18</sup>

Note: Red highlighted figures indicate top 5 values for each column. Note 2: Excludes coal.

MFA = LSM in forested areas. MCI = Mining Contribution Index – which shows the significance of the mining sector's contribution to national economies.

a. Total forest mines / country land area x 1,000.

b. From the 2016 ICMM Mining Contribution Index (ICMM 2016b), an assessment of the importance of mining in national economies. Ranks are out of 183 countries assessed.

c. From http://www.globalforestwatch.org.

d. Calculated as an average ranking of the five variables assessed.

iv. Statistics on coal and forest-smart mining are not available. It has a huge footprint globally, despite production being in decline in many places. Analysis is rather one-sided. An overview of global mineral production can be found at <a href="https://www.world-mining-data.info/wmd/downloads/PDF/2020%20Lifeblood.pdf">https://www.world-mining-data.info/wmd/downloads/PDF/2020%20Lifeblood.pdf</a>.

The number of large-scale mines commissioned in forest areas has increased.<sup>19</sup> In 2018, 1,539 large-scale mines were operational in forests, representing 44% of all operational mines at the time.<sup>20</sup> A further 1,826 mines were in development or currently non-operational and most of these were open-pit mines. Using an assumed area of influence (AOI)<sup>1V</sup> of up to 50 kilometers radius, an estimated 10% of all forests are potentially influenced by operational large-scale mining projects. This rises to nearly one third of all forests if the mines in development or currently non-operational are also considered.



Figure 2: Operational large-scale mines located in forest landscapes (excludes coal)

Excluding coal, most forest mining occurs in the largest countries (China, the Russian Federation, Brazil, Canada, and the United States of America), but when accounting for area, economic importance and forest cover, the key hotspots for mining in forest areas are Brazil, the Democratic Republic of Congo (DRC), Zambia, Ghana, and Zimbabwe. Much of this activity occurs in evergreen needleleaf forests in high latitudes, but 7% of all forest mine operations are based in tropical rainforest biomes, where biodiversity and carbon values are highest. In terms of likely emerging hotspots, Canada is seeing the highest level of exploration activity globally, followed by Australia and then Latin America. The African continent is seeing the fourth highest level of mineral exploration activity.<sup>21</sup>

iv. Defined by IFC PS1 as the area likely to be affected by: (i) the project and the client's activities and facilities that are directly owned, operated or managed (including by contractors) and that are a component of the project; (ii) impacts from unplanned but predictable developments caused by the project that may occur later or at a different location; or (iii) indirect project impacts on biodiversity or on ecosystem services upon which Affected Communities' livelihoods are dependent.

# Which metal/mineral/coal supply chains are responsible?

The extent of a mine's impact on forests is dictated by the type of commodity, the mining method, the national context, the scale of the mining entity and the stage of the mining life cycle (see Figure 3 and chapter 3).<sup>22</sup>

Figure 3: Issues that dictate a mine's impact on forests.

NATIONAL

CONTEXT

Particularly regulation and

enforcement of forest protection and mining laws and regulations,

and the rate of economic growth which influences the pace of

mechanization of ASM in

particular.

## MINING METHOD

Open pit (also called open cast) mining generates greater direct impacts on forest landscapes.



# Forest Health

#### STAGE OF THE MINING LIFE CYCLE The nature of impacts differs

according to the stage of the mine's life: prospection, exploration, development, operational, closure. The biggest forest impacts arise due to mine development as the associated infrastructure like roads and railroads open up forest landscapes to other economic activities.

#### SCALE OF THE MINING ENTITY

ASM entities commonly operate with low professionalism, capacity and capitalisation, leading to poor compliance with environmental regulations. The largest mines are often subject to greater pressure to operate responsibly, being scrutinised more closely and subject to robust accountability frameworks, due to parent companies being listed on stock exchanges, being members of industry associations, or having investors who are Equator banks. Medium scale, privately owned mines sit somewhere in between but due to the level of capitalisation and mechanisation can be particularly devastating in their impacts.

#### TYPE OF COMMODITY

Mine-life (the extraction period in years) and the nature of the deposit influence the scale and severity of impacts. Copper mines typically have the longest lifespans (>60 years), metallurgical coal mines can have lifespans of <35 years, and nickel mines have shorter lifespans (<22 years). The affected area ranges from less than 1 km<sup>2</sup> for commodities (e.g. diamonds, gold) to several thousand km<sup>2</sup> for high-volume, low-value bulk minerals (e.g. coal, iron ore).

Excluding coal, the top three minerals mined in forest areas are gold (473 mines, or 31% of all forest mines), iron ore (246 mines, or 16% of all forest mines), and copper (157 MFAs, or 10% of all forest mines). Together, these three minerals account for 57% of all forest mines. Nickel (88 mines, or 6% of all forest mines), zinc (83 mines, or 5% of all forest mines), and bauxite (78 mines, or 5% of all forest mines) represent the next most common minerals mined in forests by large-scale mines (*see Table 1 and Figure 2 above*). The dependence of bauxite, titanium and nickel mining operations on forest areas is a key challenge for a low-carbon economy, which strongly relies on these commodities.<sup>v</sup>

Looking only at the top 10 minerals by production value excluding coal, the industries most closely associated with forests are bauxite mining (64% of all mines are in forests), titanium mining (63% of all mines are in forests), and nickel mining (60% of all mines are in forests). Just less than half of all gold, iron, and copper mines are located in forests.

v. These minerals are strongly associated with lateritic soils which are formed by erosion of the earth's surface, resulting in concentration of these metals as mineral compounds. Lateritic soils are nutrient poor and not suitable for agriculture, one reason why these mines overlap significantly with non-converted forest areas.

	Commodity	Global total production value (%)	Total no. of mines	Total no. of MFAs	Total MFAs (%)	Mines in forests (%)	Countries with a strong reliance on forest mines for this mineral
1	Iron	11	506	246	16	49	Russia, India, Brazil
2	Gold	9	1,010	473	31	47	Canada, Russia
3	Copper	9	399	157	10	39	Zambia, DRC
4	Manganese	8	106	52	3	49	India, Mexico
5	Chromite	5	98	30	2	31	
6	Nickel	3	146	88	6	60	Canada, New Caledonia, Australia, Brazil
7	Zinc	2	187	83	5	44	Canada
8	Titanium	2	30	19	1	63	USA, Serbia, Russia, Albania, Kenya, Australia, Sierra Leone
9	Bauxite	1	122	78	5	64	Brazil, Hungary, Jamaica
10	Silver	1	113	31	2	27	Mexico

Table 1: Mining in forests for the top 10 commodities by production value.23

## Impacts of mining on forests

Mining, oil and gas, and energy development rank in the top ten drivers of species loss globally.<sup>24</sup> Mining activities themselves are very diverse and have different ecological and social footprints. There are visible and direct impacts from land degradation and clearance that vary depending on the type of operation but can be most pronounced in large-scale sand mining operations that target metals such as titanium.

#### **Mining Methods and Impacts**

Different scales, commodities and mining methods have varying impacts on forest landscapes and the people that depend on them. The most destructive type of mining, especially within tropical forests and most mines within forests globally, is open pit mining, see Figure 4 below.<sup>25</sup>

Figure 4: Ranking mining methods in terms of forest impacts



#### **Direct Impacts of Mining on Forests**

The most obvious direct impact from mining is the clearance of forest for the mine footprint (mine pit, processing facilities, associated infrastructure, waste and ore storage areas).<sup>26</sup> This can result in considerable loss of forest cover, constituent biodiversity, and associated ecosystem services, and ultimately it impacts on the livelihoods of local communities dependent on these resources. The level of direct impacts depends on the scale of the operation and the mineral commodity being mined, with the affected area ranging from less than 1 square kilometer for commodities such as diamonds and gold, to several thousand square kilometers for high-volume, low-value bulk minerals such as coal or iron ore.<sup>27</sup>

Mining operations can also have significant social impacts, which can include gender based violence, child labor (mainly in artisanal and small-scale mining (ASM)), criminalization and killing of environmental defenders (mainly in large-scale mining (LSM)), the (often involuntary) re-settlement of people (mainly in LSM), armed conflict (mainly in ASM), state capture and corruption, as well as a loss of access to forests on which they may have depended.

- **Resettlement** is a highly traumatic event. In addition to losing their homes, it disrupts people's sense of place, livelihood, social network and community connectedness, as well as their access to forest-based services. Resettlement is a major cause of human rights risks for companies; they must follow international best practice for any resettlement programs to minimize the emotional, physical and economic impacts.<sup>28</sup> Furthermore, there are cases where the displacement of artisanal miners from large-scale mining areas incentivizes miners to relocate to more remote regions, commonly in less habited, wilder landscapes, such as forests, where they are less likely to be disturbed again.<sup>29</sup>
- **Criminalization and killing of environmental defenders** is also an issue of concern, Global Witness has been monitoring the murder of environmental defenders since 2002 and has noted that mining and extractives related killings are higher than in other sectors (agriculture, logging, fishing, etc.), with a sharp increase in killings in the Philippines and Colombia.<sup>30</sup> Indigenous peoples are at disproportionate risk, since 40% of murdered defenders were from indigenous communities.<sup>31</sup>



• Gender-based violence and child labor are commonly observed in ASM operations. Most recent estimates suggest that 1 million children work in mining activities.<sup>32</sup> However, total numbers on child labor are unclear partly due to the often informal nature of ASM, which makes numbers difficult to track. Children working in ASM environments engage in a wide range of tasks, from mining activities, to providing services to miners, such as selling food or being involved in prostitution or trafficking. Women and girls are particularly vulnerable to sexual violence and prostitution. Moreover, gendered norms around what women should do (household and care work), delimits and devaluates women's mining work, which is most likely to result in fewer women being able to access mining licenses or participate in decision-making processes.<sup>33</sup>

During operation and closure, two other issues of particular importance in LSM, and to a lesser extent in ASM, are mine tailings and acid mine drainage. Mineral ores consist almost entirely of non-metallic materials often containing toxic metals (such as cadmium, lead, and arsenic), which must be separated. The process creates vast quantities of toxic waste (tailings). A mine will generate on average about one ton of tailings for every ton of ore it extracts.<sup>34</sup> Over time, companies have been increasingly forced to mine more marginal deposits as most of the significant high-yielding reserves have already been discovered and exploited. Mine tailings are typically stored in large volumes and contain toxic elements that may be released and introduced in the environment in slow leaks or in catastrophic events, such as the recent tailings dam collapses in <u>Brazil</u>.

Acid mine drainage is generally a slower process and is associated with mine closure. It often stems from exposure of exposed rock minerals and ore deposits to water and oxygen over time. A typical example of this process is the oxidation, in the presence of water, of sulfur-containing iron ore to produce soluble iron (giving acid mine drainage its typical orange color) and free hydrogen, which lowers the pH of the solution, acidifying it and the water courses into which it is released. The resulting acidic solution can in turn dissolve other toxic metals which are then mobilized and able to enter streams and rivers.

Countries that mine and use large amounts of coal, such as China and <u>Indonesia</u>, are also dealing with significant public health consequences from its impacts, such as poor air quality and polluted water. Coal processing is extremely water intensive as it requires washing before use.<sup>35</sup>

ASM can also have significant impacts on the environment, especially when deposits have been found in highly biodiverse habitats. ASM activity results in excavation of pits and tunnels, which are prone to collapse.<sup>36</sup> The most significant impacts on forests from ASM include air, water, and soil pollution through the use of chemicals like mercury and irresponsible disposal of wastes into water bodies.<sup>37</sup>

#### Indirect Impacts of Mining on Forests

For all mining operations, particularly in remote areas, the greatest impacts are often indirect or induced and therefore less manageable. Indirect impacts are impacts on the environment, which are not a direct result of the project, often produced away from or as a result of a complex pathway (e.g. creation of a road or infrastructure corridor; inducement of in-migration, etc.). They are sometimes referred to as second or third level impacts, or secondary impacts.<sup>38</sup> Indirect impacts:

Result from the actions of others, triggered or caused by business activities.

- Can occur in a different place and at a different time from the actions that trigger them.
- May represent a company's most significant risk of damage to biodiversity.
- Often are the most challenging to predict, identify, manage, and control.
- Can be caused by third party suppliers in the sourcing and production of goods and services used by a company.
- Can result from the use or disposal of a company's products by consumers or other business users.
- Can relate to changes in behavior by others, including local people and employees, prompted by a company's operations, which lead to induced negative impacts to biodiversity. This includes habitat loss and conversion from unplanned settlements and agricultural expansion, or increased demand for and depletion of natural resources as a result of in-migration.



Mining roads can encourage major movements of populations into previously low-density regions with severe consequences for forest landscapes; in the Brazilian Amazon, 95% of all deforestation and fires occur within 50 kilometers of highways or roads. In Suriname, most informal gold mining operations are located near roads, whereas in tropical Africa, hunting intensity is so elevated near roads that it strongly affects the large-scale distribution of species.<sup>39</sup> Dust, heavy metals, nutrients, ozone, and organic molecules are often elevated within 10 to 200 meters of road surfaces and lead pollution from car exhausts can be especially problematic, particularly in developing nations that still permit the use of leaded gasoline.<sup>40</sup> Improved access thanks to roads can facilitate farming, artisanal mining, hunting or logging operations that can severely impact forest cover and biodiversity and are very hard to control.<sup>41</sup> One study found that deforestation outside mining-lease areas removed twelve times as many trees as within the lease boundaries.<sup>42</sup> It also found that forest loss extended up to 70 kilometers from the mine lease area, caused by the development of infrastructure such as roads, staff housing, and airports cut into the forest.

Induced in-migration of people into mining areas seeking employment and economic opportunities often results in forest loss, increased hunting, poaching, land conversion to agriculture and urban use, and access for logging of timber and removal of non-timber forest products.<sup>43</sup> and it is thus vital to understand the factors that are likely to limit this potential. Attention to date has focused foremost on the consequences of biases in the spatial distribution of PAs for their effectiveness and efficiency in representing biodiversity. What is less clear is the extent to which these biases may also have affected the likelihood with which PAs coincide with or are influenced by particular kinds of threatening processes, further undermining their role. An obvious candidate for such concerns is metal mining activities. Here we demonstrate that approximately 7% of mines for four key metals directly overlap with PAs and a further 27% lie within 10. km of a PA boundary. Moreover, those PAs with mining activity within their boundaries constitute around 6% of the total areal coverage of the global terrestrial PA system, and those with mining activity within or up to 10. km from their boundary constitute nearly 14% of the total area. Given the distances over which mining activities can have influences, the persistence of their effects (often long after actual operations have closed down Various edge-related changes in forest structure, microclimate, and forest dynamics have been observed near linear clearings in the Amazon, the Caribbean, and tropical Australia. Forests within 50 to 100 meters of edges experience greater diurnal fluctuations in light, temperature, and humidity, being typically drier and hotter than forest interiors, with elevated tree mortality and numerous canopy gaps. Linear clearings can also facilitate species invasions in the tropics. For example, fire ants (*Wasmannia auropunctuta*), exotic earthworms, non-forest vertebrates, myriad weed species, and *Phytophthora* spp. which cause fungal dieback.<sup>44</sup> Unremediated artisanal and small-scale mining pits fill with water and become breeding grounds for malarial mosquitoes, bringing sickness to local communities. In the COVID-19 era, the connection between mining's increasing penetration of forests, role in the creation of forest 'edges' and reliance on wild meat for food also increases human-wildlife interaction and the risk of zoonotic disease emergence.<sup>45</sup>

#### **Cumulative Impacts of Mining on Forests**

Cumulative impacts are the successive, incremental, and combined impacts of one or more activities on society, the economy and the environment. Such impacts can be both positive and negative and can vary in both intensity as well as spatial and temporal extent. Cumulative impacts may be generated through the aggregation or interaction of impacts. In the context of the mining sector, they arise when the operations of several mining operations in close proximity begin to collectively affect biodiversity and can also involve the interaction between different types of activity such as mining and agriculture, having a collective impact on forest landscapes.

There are three levels of cumulative impacts:

- 1. **Project site level or localized cumulative impacts** which result from mining operations in the immediate vicinity of the project site and cause additive effects on the environment or human receivers. Such impacts include combined vegetation fragmentation and structural degradation, dust, noise, vibration, as well as groundwater drawdown and water pollution.
- 2. **Regional cumulative impacts** are combined impacts in a region, such as Eastern Kalimantan in Indonesia, which can severely degrade habitat value, water quality, and the socioeconomics of a region.<sup>46</sup>
- 3. **Clobal cumulative impacts** are linked to the emissions, and consequences, of greenhouse gas and mercury emissions. While individual contributions are relatively minor, mining is directly responsible for 4% to 7% of greenhouse-gas (GHG) emissions globally and approximately 30% of emissions are linked to indirect mining emissions including burning of coal.<sup>47</sup>

Examples of negative cumulative in	pacts Examples of positive cumulative impacts
<ul> <li>Examples of negative cumulative in</li> <li>Traffic congestion and road degradation</li> <li>Vegetation clearing and loss of biodiversity</li> <li>Price inflation (e.g. housing and rents) and disproportionate impacts on residents not of the mining industry</li> <li>Overloading of existing social services (e.g. healthcare and education)</li> <li>Reduced visual amenity (especially in high mining regions)</li> <li>Perceived and real loss of community ident demographic change</li> <li>Increased noise and vibration from blasting</li> <li>Reduced water quality (e.g. saline discharge</li> <li>Increased dust and associated air quality issociated air quality issociated air quality issociated air quality issociated water deviced and read the second and the second at t</li></ul>	pactsExamples of positive cumulative impacts• Increased employment and economic investment• Regional and community development benefits from mine community investments• Local business development from mine procurement• Creater royalties and taxes• Road and infrastructure upgrades• Investment in biodiversity offsets and rehabilitation (on and off lease)• Increased awareness of health and safety• Population increases that create a critical mass for better services and infrastructure (e.g. schools, and sporting teams)• Development of human capital (skills, employment, and training)
Greenhouse gas emissions, including fugiti	ve emissions

Table 2 Positive and negative cumulative impacts for both ASM and LSM (from CSRM Australia<sup>48</sup>)

Although it is relatively straightforward to determine the degree of overlap between active and planned mining operations with forest areas, it can be more challenging to assess current or future impacts on forests from mine development and expansion, mining activity, infrastructure development and the indirect impacts linked to in-migration of a workforce driven by changes in demand. For example, although coal supply chains are highly impactful on forests, commitments to reduce carbon emissions (through the Paris Agreement) *should* prompt a phasing out of thermal coal. However, in 2019, coal remained the largest revenue generating commodity globally, in addition to supporting 38% of global electricity generation.<sup>49</sup>.

Sedimentation is another key issue arising from both LSM and ASM. For example, cumulative sedimentation impacts from artisanal and small-scale gold mining have caused structural changes in fish taxonomic structure in the Guiana Shield, a geological formation and highly biodiverse coastal region in northeast South America.<sup>50</sup> These impacts persist – results from cumulative impact studies in Appalachian coal mining areas show that mines that were reclaimed over two decades ago still contribute significantly to water quality degradation.<sup>51</sup>

The most significant cumulative impacts on forests are related to the immigration of people (workforce as well as more general economic migration), which increases pressure on forests as a source for fuel, wildmeat and critically, clearing for agriculture. Depletion of the water table and of surface water quality impacts vegetation health, and dust can be generated in quantities that are harmful not only to human health but also to that of forests. Although it is encouraging that several companies are developing mitigation and restoration activities, there are few examples of where this has had a net positive benefit to forest cover in the impacted region.

# Factors contributing to mining in forests and key mining-related drivers

There are many factors that influence forest impacts, be it positively, neutrally, or negatively. These factors can be organized into the categories in the table below:

Table 3: Factors contributing to impacts on forests from mining

#### Economic and market factors

- Economic factors, such as demand and commodity price trends, changing patterns of investment and the structure of supply chains (resource nationalism, access to finance with weak safeguards, depletion of mineral resources elsewhere, changing demand for minerals), can influence the forest impacts of mining.
- Higher incomes, higher inequality, higher unemployment, and a higher contribution of mining to GDP are all associated with increased impacts from ASM on forests in least developed and more developed countries.
- Consumption of mineral resources has increased exponentially, and further growth is expected in response to rising demand and proliferation of uses of minerals and metals. Greater demand increases the likelihood that mining will spread into economically, socially, and environmentally sensitive forested landscapes.
- ASM is expected to continue to respond to increased demand for high-value minerals and increases in commodity prices.<sup>52</sup> Estimates for the growth of ASM globally vary significantly and cannot be stated with accuracy. However, the number of ASM miners has trebled since 1999 from 13 million to 40.5 million today, with about 16m of these miners pursuing gold.<sup>53</sup> ASM is predicted to increase if ASM drivers are not addressed.
- ASM in developing countries is increasingly driven by foreign investment, which can exacerbate the forest impacts of ASM, especially where such investment operates outside the formal economy and can violate the law with impunity. An intensification of ASM gold mining is expected given how relatively easy the mineral is to mine, how widespread it is, and how marketable. Gold rushes as well as new miner, trader, and investor entrants into ASM gold markets in the coming years – and especially during the coronavirus crisis – are forecasted.<sup>54</sup> This is due in part to recent, rapid growth in the gold price and predictions that economic uncertainty will maintain a bullish international gold market. In addition, economic disruption and unemployment in ASM nations, incentivizing more people to move into mining.

#### Political and governance factors

- Well established land tenure rights tend to have a positive impact on forests.<sup>55</sup>
- Legal recognition of ASM does not appear to influence forest impacts.<sup>56</sup>
- Recognition of indigenous peoples' rights is associated with lower forest impacts.<sup>57</sup>
- Corruption and lack of transparency is associated with less oversight from civil society, which can lead to increased impacts on forests.
- Pro-forest policies seem to favor forest outcomes.<sup>58</sup>
- · Conflict and instability affect enforcement and oversight, which can lead to increased impacts on forests

#### **Geographical factors**

- Physical geographies are a key determinant of forest impacts. Forests with greater mineral deposits will be more impacted. For ASM gold, forest impacts tend to increase in tandem with mercury usage.<sup>59</sup>
- The presence of LSM and ASM in the same landscape, or mining and other activities, tends to aggravate forest impacts because of the unclear accountability over forest impacts between each party.<sup>60</sup> This results in unmitigated impacts and a failure of accountability from government, mining proponents and communities. Active involvement in the management or containment of these impacts falls between the three stakeholder groups, with the outcome being increased loss of forest through land conversion to agriculture and often a loss of productivity.

#### **Other factors**

- Overall, mining is a broad spectrum with multiple variables (capitalization, labor, level and modes of organization, level of formalization and professionalization, methods used, acreage, motivation, etc.) that determine the impacts on forests. For ASM, greater levels of ASM organization<sup>1</sup> appear to be associated with higher forest impacts.<sup>61</sup> Greater forest impacts are also associated with phases of rapid growth, such as rush scenarios.<sup>62</sup>
- Other key pressures that impact forest health and exacerbate forest impacts of mining include climate change, the pressure from other sectors, the level of existing degradation and forest resilience, existing pollution levels and soil conditions (base levels of heavy metals in the soil, acidity levels, etc.).

# 2 Existing efforts to mitigate the impacts of mining on forests

The mining sector has a rich, diverse and complex institutional landscape across the private, public and civil society sectors. There is a profusion of initiatives with scopes varying according to geography, scale (small and medium-scale enterprises (SME) vs. industrial), mineral, supply chain tier, etc. Private, public and civil society institutions influence mining activities using different approaches (see table below). This section summarizes the generalized steps taken to engage different categories of stakeholder in the sector.

Institution type	Approaches used
Private institutions	
Industry associations	Form a network or platform of cooperation to influence mining activities by delivering training, developing standards and guidance documents, sharing resources, conducting research, convening a network of interested parties to exchange and build knowledge and understanding and align on sector priorities, etc.
LSM companies	Some LSM companies go beyond regulatory compliance to show leadership, building their own responsible mining policies and procedures and seeking to influence good practice for the sector at large.
<b>Civil Society institutions</b>	
Campaigns and community actions	Form an alliance, network or platform of cooperation to advocate and hold companies and governments to account by conducting research, sharing knowledge with wider society, demanding changes through a variety of actions (protests, signature collections, etc.), proposing changes to public and private institutions, monitoring mining practices, conducting investigative journalism, divesting from unethical mining companies, etc.
NGOs	Form a network of cooperation to advocate and hold companies and governments to account by providing technical expertise, conducting research, sharing knowledge with wider society, setting off campaigns, monitoring mining practices, conducting investigative journalism, etc.
Federations	Form a cooperation network or platform to influence mining activities through training, sharing resources, conducting research, convening a network of interested parties to exchange and build knowledge and understanding and align on sector priorities, etc.
Public institutions	
Public agencies	Influence mining activities by developing legally binding regulations and laws, overseeing law enforcement, monitoring practices, signing international agreements, providing investment and policy direction to incentivize and enable responsible production and trade, and (in theory) creating the enabling conditions for responsible business conduct, etc.
International public bodies, rights and agreements	Form a coalition of public stakeholders to develop regulations, laws, agreements, rights and alliances.
Other institutions	
Funders and investors	Invest in activities, projects, initiatives, mining operations, or other institutions, to improve mining activities
Multi-stakeholder initiatives	Form a multi-stakeholder platform or network to influence mining activities by delivering training, developing standards and guidance documents, sharing resources, conducting research, etc.
Standards setters	Develop guidance and standards for responsible sourcing, responsible mining, product specification, and investors and financial markets.
National and international litigation bodies	Conduct legal actions against companies, governments or organizations that have infringed rules or rights.
<b>Research institutes</b>	Conduct research to inform on decision making of private, public and/or civil society.

#### Table 4: Approaches used by institutional stakeholders to influence mining

## Private and multi-stakeholder institutions

The uptake of FSM and protection of indigenous communities' rights varies across the efforts of private and multi-stakeholder institutions. Some, such as the International Council on Mining and Metals (ICMM), Aluminium Stewardship Initiative (ASI), or the Initiative for Responsible Mining Assurance (IRMA), have developed guidance for avoiding or minimizing negative impacts on indigenous peoples or have an indigenous peoples' advisory forum; others, such as Bettercoal or ResponsibleSteel require members to apply free, prior and informed consent (FPIC); whereas others, such as the Swiss Better Gold Association (SGBA) or the London Bullion Market Association (LBMA) have no provisions on indigenous rights. With regards to FSM, most of the institutions analyzed provide coverage on *some* environmental issues but there is universal scope for improvement.

### **Standards and standard setters**

There are many different standards developed by private, public, civil society or multi-stakeholder institutions. Standards and certification schemes can be classified as:

- 1. Responsible mining standards requirements for upstream supply chain tiers (ASM or LSM)
- Responsible sourcing standards –requirements for downstream supply chain tiers to source minerals responsibly from LSM or ASM
- 3. Financial market influencer standards requirements on responsible investment
- 4. Product specification standards requirements for final manufactured products

Responsible mining and sourcing standards have varied scopes in terms of mineral(s) coverage, geographies and mining scales, whereas financial market influencer standards and product specification standards normally have a global scope in terms of minerals, geographies and scales.



The majority of **ASM responsible sourcing and mining initiatives** seek to enable responsible sourcing that aligns with the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (OECD DDG), which cascades from the due diligence requirements in the United Nations Guiding Principles for Business and Human Rights (UNGPs). Otherwise, some ASM standards, such as <u>Fairtrade</u>, <u>Fairmined</u> or the <u>Maendeleo Diamond Standard</u> (MDS), seek to uphold achievement of the Sustainable Development Goals (SDGs). The majority of ASM responsible sourcing and mining standards give greater attention to human rights and responsible business conduct rather than environmental issues.

At the LSM level, most **responsible mining certification initiatives** cover a broader range of environmental requirements, although these requirements could also be strengthened in every case. In particular, most initiatives are not multi-stakeholder and are often driven at a commodity level rather than as chains of custody or through supply chain accountability. Whilst there may be consultation at various stages in the development or publication of certification or standards, these are often inflexible or do not cover sustainability topics adequately. Most fall short of setting clear objectives for biodiversity, for example no net loss or net gain objectives, and fail to include clear no-go/avoidance requirements for sensitive biodiversity or protected areas.

# **Civil society initiatives**

Civil society coalitions and NGOs act as advocates, lobbyists, scrutinizers, and facilitators to induce and enable the introduction of more responsible mining practices. They are important in all societies, be it authoritarian states, fragile states with weak governments, or neoliberal democracies where the line between business and government is increasingly blurry. Civil society action has been crucial to inducing change in industry and government behavior; civil society remains, however, largely underfunded and, in some cases, intentionally constrained by powerful groups.

**Campaigning NGOs and civil society advocacy groups** help communities make informed decisions, and monitor companies and governments to make them accountable for negative impacts and protect vulnerable groups from negative impacts associated with bad practices. The majority of campaigning NGOs analyzed have more provisions on indigenous rights than on environmental requirements, although there is potential for the inclusion of FSM in all of them.

**Implementing NGOs** (and technical consultancies) help build the capacity of local and national government agents and support the restructuring of institutions to facilitate improved behavior and better decision-making across stakeholder categories. Whether introducing materials efficiency and forest-smart mining practices or educating government agents on their duty to protect human rights, implementing NGOs play a crucial part in inducing sustainable production systems. As of yet, although many already institute related measures such as environmental management training, FSM is a relatively new concept and so FSM best practices are not implemented as standard. The creation of the FSM ASM 'bolt on' standard by Levin Sources, Alliance for Responsible Mining (ARM) and Fauna & Flora International (FFI) for the World Bank should help build awareness, will and capacity of international NGOs (iNGOs) and others to integrate FSM best practices into their activities.

**Conservation NGOs** are key enablers, although they tend to focus on dealing with deforestation and habitat conservation and sometimes have a strong prejudice against mining. A few conservation NGOs, however, have a mining-specific department, or team up with other organizations to address the threats posed by mining. These NGOs can do much to raise awareness of the case for helping the mining and minerals sector become more forest-smart, through general advocacy work as well as by building capacity in countries where they are implementing existing conservation programs.

Moreover, **indigenous communities'** groups focus on monitoring mining activities impacts, and take actions to defend their rights and hold governments and companies accountable for the negative impacts caused.



# **Public initiatives**

International agreements, declarations, rights and public initiatives are key policy levers. The majority of public initiatives analyzed have provisions on indigenous rights and FSM, although, in most of the cases these could be strengthened. Key public initiatives that are not strong in indigenous rights provisions are REDD+ and the OECD DDG.

# Strategic entry points to better mitigate the impacts of mining on forests

The lenses we can use to identify feasible entry points for mitigating mining's impacts on forests are geography, mineral, scale, types of operations, and the landscape context. Other entry points for action exist according to the different types of institutions and different types of processes at play in the international and national policy arenas.

For additional context, it is worth referring to the principles and guidance developed by Levin Sources, FFI and Swedish Geological AB (SGAB) for the World Bank as part of a two-year study to assess and conceptualize FSM Principles.<sup>vii</sup>

# The how, where, what of mining and minerals

## The mining life cycle

The nature and scale of impacts differ according to the phase of the mining life cycle, and so programmatic responses will vary according to the phase.

There is no **prospecting or exploration** without money. Investors can do much more to set terms for improving the protection of nature and human rights (see <u>Investors</u> and financiers). At the very outset, when all there is are maps and drills, a critical decision is *where* to prospect. At this stage, two initiatives matter: the <u>Responsible Reserves</u> initiative, and action by governments, industry associations, multilaterals and civil society to ensure some key biodiversity areas are 'no-go' areas for mineral development.<sup>63</sup> Programmatic responses should consider how to engender greater traction for both initiatives.

Once a prospecting and/or exploration license is granted, the tools and guidance documents of the <u>Prospectors and</u> <u>Developers Association of Canada</u> (PDAC) come into play. PDAC has developed a detailed set of guidance to encourage responsible exploration. It was last updated in 2009 to form the Excellence in Environmental Stewardship program. Since then additional guidance has been released, several applicable to mitigating climate change. There could be scope to produce forest-smart mining guidance for exploration companies.

At the point of **mine development and expansion**, the design of the mine and infrastructure development, and the mining license application (which rests upon an Environmental and Social Impact Assessment (ESIA)) are critical processes for ensuring the mitigation of direct, indirect and cumulative environmental risks. At this point the International Finance Corporation's (IFC) Performance Standards and national regulation and process are of paramount importance.

The IFC Performance Standards, which govern approximately 80% of private project finance in developing countries, require borrowers, often large mining operations, to achieve No Net Loss on any impacts to natural habits, and Net Gain for impacts to critical habitats as defined by the standard. They take an ecosystem-based approach which is sympathetic to the FSM Principles, thereby requiring consideration of health, function and integrity of natural habitat in addition to achieving clear objectives on no loss or net gain where habitat is particularly vulnerable. The performance standards are due to be updated in 2020; as the IFC is part of the World Bank group, and with FSM an initiative of the World Bank, one would expect FSM to gain additional traction in the next iteration.

vii. The World Bank. 2019. Making Mining Forest-Smart: Executive Summary Report. PROFOR. (https://www.profor.info/content/making-mining-forest-smart-executive-summary-report). The World Bank. 2019. FOREST-SMART MINING: Identifying Factors Associated with the Impacts of Large-Scale Mining on Forests. PROFOR. (https://www.profor.info/content/forest-smart-mining-identifying-factors-associated-impacts-large-scalemining-forests) The World Bank. 2019. FOREST-SMART MINING: Identifying Good and Bad Practices and Policy Responses for Artisanal & Small-Scale Mining in Forest Landscapes. PROFOR. (https://www.profor.info/ content/forest-smart-mining-identifying-good-and-bad-practices-and-policy-responses-artisanal-small). The World Bank. 2019. FOREST-SMART MINING: Offset Case Studies. PROFOR (https://www.profor.info/ content/forest-smart-mining-offset-case-studies).

During **mining operations**, there are a plethora of standards and guidance documents, as well as market and investor due diligence systems that come into play to ensure that structures and processes operate in ways that minimize liabilities for the mining company and society. The ICMM, <u>Responsible Jewellery Council</u> (RJC), IRMA, <u>Towards Responsible Mining</u> (TSM) standards and guidance documents are examples for LSM, as well as Fairtrade, Fairmined and <u>CRAFT</u> for ASM. The World Bank is financing the creation of an FSM Standard for ASM which will propose principles, criteria, indicators and a guidance for other standards to adapt and adopt.<sup>viii</sup>

**Mine closure** should be planned from the outset, but this is not always the case. Historic mines, stranded assets and legacy tailings offer enormous opportunities to positively impact forests and communities, but the barriers to their rehabilitation are significant. Mining companies are increasingly looking at the opportunity posed by the secondary metals discarded as waste in old tailings, with multinationals and smaller niche businesses exploiting and innovating, especially for technology critical elements (TCEs) and gold. In some cases, however, the mineral content is not (yet) payable or else protectionism of one country keeps prices artificially low and undermines the financial feasibility of re-mining, recovering and rehabilitating such sites. New business models (e.g. social venture tailings reprocessing) and new incentives (carbon finance or higher market returns, e.g. the <u>RESOLVE Salmon Gold Initiative</u>) are at conceptual or early phases and could be supported to be better scoped, piloted, demonstrated, and scaled.<sup>64</sup>

The authors are aware of LSM who are keen to scope how the application of the forest-smart mining principles to their restoration and mine closure planning could help deepen their positive legacy for local communities. These LSM can be anchor institutions around which landscape level forest-smart mining programming can be built and managed through a public private partnership. An independent facilitator and matched funding could really unlock exciting empowerment and development possibilities for local and regional communities.<sup>65</sup>

In the case of ASM, rehabilitation is extremely rare but it has been done successfully in Cote d'Ivoire, Central African Republic, and Sierra Leone (diamonds) and Mongolia (gold).<sup>66</sup> However there remains a gap in investment to promote and scale these successes as part of government-led processes, and to build capacity of institutions working in ASM to support communities to rehabilitate well. With funding from Swiss Development and Cooperation (SDC), the Asia Foundation managed a multi-year project called Engaging Stakeholders in Environmental Conservation (ESEC II) to create a <u>Frugal Rehabilitation</u> <u>Methodology</u> (FRM) to rehabilitate former ASM sites in Mongolia. The project was very successful, but uptake in other countries has been limited.

Tailings reprocessing is but one way that the concept of circularity is gaining traction in the mining sector. Since many impacts by mining are caused simply due to the enormous amounts of earth and rock that must be moved, crushed, stockpiled, and so on, dematerialization of processes and wastes throughout the mining life cycle would do much to not only reduce pollution and costs, but also to protect forests and people. Further exploration of the dematerialization of mining as a route to forest-smart mining is merited.

viii. The "Developing Forest Smart Artisanal and Small-scale Mining (ASM) Standards project is being implemented by a Consortium of Levin Sources, the Alliance for Responsible Mining and Fauna and Flora International.

## Geography

Excluding mineral fuels and development minerals, countries with the most forest mining in absolute terms are predominantly in the Global North. However, when accounting for area, economic importance, and forest cover, the key hotspots for mining in forest areas in descending order are Brazil, the DRC, Zambia, Ghana, and Zimbabwe.<sup>67</sup> These are also countries where forest and natural resource governance is particularly weak and therefore there is great opportunity for constructive supporting interventions and capacity building. Specific recommendations for action in Brazil (LSM, <u>ASM tin</u>, <u>ASM gold</u>), DRC (ASM), Ghana (LSM, ASM) and Indonesia (LSM, <u>ASM</u>) are proposed in Chapter 4.

Other countries which merit attention for programmatic intervention are key **consumer and producer nations** that through their supply chains influence mining in forested areas (e.g. OECD and EU countries, China, India, etc.) as well as jurisdictions registering mining companies that operate in producer nations in company registers or stock exchanges, such as Canada, Australia, the UK, and offshore jurisdictions.

## **Minerals**

Programmatic interventions should prioritize minerals a.) with particularly strong negative impacts on forests, b.) that are most exposed to mining in forests, c.) with strong growth trajectories, and/or d.) where market reasons for attention are robust.

Minerals that are known to already **contribute to negative impacts** on forests, including forest cover loss and wider forest health, and those whose impacts are not yet understand such as coal, sand, and other 'development minerals' require the most urgent attention. The top six minerals mined in forest areas are gold, iron ore, copper, nickel, zinc, and bauxite.<sup>66 ix</sup> The minerals most exposed to mining in forests (percentage of mines in forests) are bauxite, titanium, and nickel. These industries have a stronger reputational case for becoming forest-smart.

Other minerals may also be considered for inclusion in programming that are forecast to be subject to increased demand in the medium to long-term – identifiable, for example, through increased investment – especially, where deposits are known to overlap with forested areas. Minerals with a sustained historic and forecast **price growth and investment** trajectory, especially gold, also fall into this category.

FSM has a crucial role to play in the **clean energy transition**. A green economy is not green when the hardware that supports it is composed of materials whose production has damaged society and the environment, and market players like Umicore, Tesla, and Apple are increasingly pushing for products from mines that achieve high standards. This imperative to green the production of TCEs, such as rare earth elements, makes FSM particularly attractive to this mineral category.

**Precious gemstones** and in particular diamonds carry a strong business case for becoming more climate-smart generally, and thus forest-smart. The natural diamond industry is having to overhaul its environmental performance in order to compete with synthetic diamond producers who are marketing their products as the more climate-friendly option. Collaborations between diamond industry actors and pro-forest initiatives could go a long way to introduce climate-smart and forest-smart mining practices into the sector's operational practices. This is especially the case for artisanal mining of diamonds which is frequently in forest landscapes, e.g. Liberia, Sierra Leone, Guinea, Central African Republic, Democratic Republic of Congo, Brazil, Angola, etc.

The overlap of **coal mining** and **development minerals** with forests is yet to be analyzed in any detail. Given the huge climate and direct impact footprint of coal and development minerals, this analysis is urgently needed in order to engage fully with these sectors. The climate implications of coal mining are catastrophic, and demand a primary objective to demonstrate the accumulated impact of forest loss from coal mining and the release of carbon through burning coal.<sup>1</sup> The impacts of a changing climate on forest health are obvious on many fronts, most dramatically through forest fires on numerous continents. The imperative to #buildbackbetter in response to the COVID-19 crisis is going to increase demand for construction materials in domestic and international markets.

ix. Note that coal was excluded from this assessment

x. Further reading on calculating carbon footprint of coal mines: Tribrewal, K and Sahu, H. 2016. Carbon Footprint in Coal Mining. (https://www.researchgate.net/publication/309358481\_Carbon\_Footprint\_in\_Coal\_Mining)

## Scale: from ASM to regional mineral landscapes

Forests are impacted, albeit in different ways, by all scales of mining. Large-, medium-, small-scale and artisanal mining require attention and should be incorporated into planning in a way that is sensitive to the different drivers, opportunities and constraints encountered by the different types of mining institution.

Artisanal and small-scale mining may appear to be 'small' but with over 40 million direct participants operating in over 80 countries, producing billions of dollars of minerals each year, its impacts can be huge. For example, work done by Levin Sources for a brand in 2016 found that alluvial artisanal diamond mining disturbed 100 times more land per carat than industrial kimberlite mining. In 2018 Levin Sources, SGAB and FFI discovered that the environmental impacts of ASM are much greater in countries experiencing rapid growth and foreign direct investment.<sup>69</sup> The most significant impacts of ASM on forests arise from pollution of air, water, and soil.<sup>70</sup>

Medium-scale mines (MSM) are often forgotten as observers simplistically categorize mining into 'ASM' and 'LSM'. Mediumscale mines have a market capitalization of \$10m to \$100m and can be particularly destructive since they are often privately owned, tend to operate with much smaller margins, are less resilient to shocks, and do not have the same reputational, shareholder and jurisdictional pressure to conduct business responsibly.<sup>71</sup> Consequently they frequently face issues with the social license to operate, community opposition, human rights and security, and environmental management.<sup>72</sup> <u>Solidaridad</u>'s gold program has made a point of targeting MSM for support to improve responsible production practices. Distinct attention needs to be given to the MSM sector in addition to efforts in ASM and LSM. This might include engagement with jurisdictions where private mining companies tend to register, such as Canada and Australia, as well as offshore centers like the Channel Islands, Mauritius, and the British Virgin Islands (BVI). The island of Guernsey, for example, is pushing hard to become a global leader in green finance and has just passed its first climate policy.



The number of large-scale mines commissioned in forest areas is increasing. 10% of all forests are potentially influenced by operational large-scale mining projects.<sup>73</sup> This rises to nearly one third of all forests if the mines in development or currently non-operational are also considered.<sup>74</sup> Implications are:

- Introducing FSM practices into prospection, exploration and the mine development phases of the mining life cycle is urgent, given the pace of growth of mining in forests.
- Efforts should be made to engage and build forest-smart mining practices for LSM with the highest proportion of mines in forests or operating in critical landscapes. The best way to engage with these companies is through the associations that they are members of.<sup>xi</sup>
- The state-owned companies of Russia, India, and Albania hold significant portfolios of forest mines. Efforts should be made to engage and support improved governance of forest mines in these countries.

When LSM and ASM are in the same landscape, poor relationships, prejudice and conflict are common as LSM and ASM perceive their 'claims' to a resource differently (state vs. customary rights). There is growing international attention being paid to the issue of LSM-ASM relations Levin Sources and FFI have been promoting the creation of an LSM-ASM community of practice to generate understanding, guidance, tools, and political will amongst LSM and their stakeholders to improve their management of and engagement with ASM on or near their concessions. This would be a first step towards more joined up approaches to mining's impacts on society and the environment because it is crucial to enable these mining 'cousins' to align their interests and cooperate in the spirit of SDG 17. There is a greater role for governments, who are ultimately responsible for the sustainable production practices of miners on their territories, and for local communities. Mining-specific public private partnerships (PPPs) could provide an attractive vehicle at the local or regional level to address the impacts of ASM and LSM on forest landscapes. Regional PPPs whose purpose is to protect forest health in transboundary landscapes could be particularly effective in the face of multiple pressures.

Opportunities exist to encourage focus on high-yielding resources and a concentration of operations rather than a number of large-scale operations spread over much larger areas targeted lower value ore bodies or deposits. Global hotspots for indirect and cumulative mining impacts include the following landscapes:

- LSM coal landscapes in East and South Kalimantan, Indonesia<sup>75</sup> and Jharkhand and Assam in India, particularly Hasdeo Arand forest, which is about to be opened to create 40 new coalfields.<sup>76</sup>
- ASM landscapes in the Amazon basin (such as Zamora / Chinchipe, Ecuador<sup>77</sup>) and Congo basin<sup>78</sup> (Equatorial Guinea, Gabon, Republic of Congo, the DRC, Central African Republic, Cameroon).
- Bauxite landscapes in Sangaredi and Boke provinces in Guinea<sup>79</sup> and 'iron quadrangle' in central-southern Brazilian (Minas Gerais) and the transboundary Nimba/Simandou iron ore landscapes of Liberia and Guinea.

## **Mining methods**

Programmatic responses should focus on open pit and placer / alluvial mining which are known to have the most negative impacts on forest health. By contrast, urban mining and reworking waste piles are more circular and thus more climate-smart overall. There is also significant scope to indirectly decrease pressure on mining in forested areas through enhancing or supporting initiatives that are contributing to meeting mineral demand through recycling and reworking of waste. The promotion of tailings reprocessing for the extraction of gold and rare earth elements such as cobalt and nickel could reduce pressure on greenfield sites (i.e. forests) and provide an opportunity to restore damaged land to ecological and/or economic productivity. This is an area of growing attention and investment by the private sector in particular. See, for example, the RESOLVE Salmon Gold Initiative.

xi. Examples are Vale, Alcoa, Quantum Minerals, Arcelor Mittal, RUSAL. See The World Bank, 2019, Forest-Smart Mining: Large-Scale Mining on Forests (LSM) URL: http://documents1.worldbank.org/curated/ en/104271560321150518/pdf/Forest-Smart-Mining-Identifying-Factors-Associated-with-the-Impacts-of-Large-Scale-Mining-on-Forests.pdf

## Landscape context

One cannot look at mining in isolation from other economic impacts. Cumulative impacts compel us to consider forests in landscape terms, and thus multi-sectoral PPPs or multi-stakeholder platforms that unite economic actors to understand and address their collective impacts on forests will be important. Landscape approaches have been applied in one form or another in environmental conservation and natural resource management (e.g. forestry, watershed management) for decades. Momentum has been building around the need for landscape-level thinking, planning and management that fully incorporates production and extractive activities alongside other objectives. New initiatives include The Landscapes for People, Food and Nature Initiative – an international collaboration to support integrated landscape management, and the World Business Council for Sustainable Development's 'Business Learning Hub on Landscapes' – a new collaborative platform to help businesses develop impactful landscape solutions.

# Institutions

There are multiple external levers for incentivizing or forcing change in the behavior of an institution. Change is more likely to arise when an institution is subject to pressure from multiple angles. This section works through each of these pressure points. Any strategy to drive change to make mining more forest-smart should seek to take action across each of these domains, putting pressure on businesses as well as governments.

## **Markets**

Responsible Sourcing initiatives provide key entry points for the introduction of FSM and greater protection of indigenous rights because they bridge market interests with capacity building actions and measures to improve monitoring and accountability on the ground. Key institutions representing the organizations with significant market influence and relevance to the adoption of FSM practices in the mining sector include the OECD, the <u>Responsible Minerals Initiative</u> (RMI) of the Responsible Business Alliance, the <u>London Metals Exchange</u> (LME), the LBMA, the <u>World Economic Forum's Mining and</u> Metals Unit, and the European Partnership for Responsible Minerals (EPRM), amongst others.

Until recently, environmental issues were overshadowed amongst some of the sector's leading initiatives by other issues, compelled by landmark legislation, namely the US Dodd-Frank Act of 2010 and the EU Conflict Minerals Regulation of 2017, as well as the OECD Due Diligence Guidance for the Responsible Sourcing of Minerals from Conflict-Affected and High-Risk Areas (OECD DDG) (as the defining voluntary standard underpinning these laws), none of which puts any emphasis on environmental crimes.<sup>80</sup> This has particularly incentivized the minerals in scope for these laws (the 3TG – tin, tantalum, tungsten and gold) to privilege the management of the most serious human rights violations and white-collar crimes predominantly per Annex II of the OECD DDG. Over the years, the OECD has made it clear that all minerals are in scope for this Guidance, prompting NGO and industry action to also privilege these Annex II risks as part of other mineral standards and initiatives, such as diamonds, colored gemstones, cobalt, aluminum, steel, and so on. Whilst the OECD does also promote the fact that the Annex II risks are a sample of priority risks and it is up to individual businesses to decide which risks should be given attention as part of their risk management processes, the fact is that without pressure from other stakeholders (regulators, customers, shareholders) the vast majority of businesses simply focus on the Annex II risks only, leaving environmental risks out in the cold.

Given the centrality of the OECD DDG to the scope and emphasis of other standards and industry sectors for responsible mining and sourcing, the OECD has an opportunity to lead standard setters that support company compliance with the DDG to *encourage* and *enable* companies to adopt improved practices that would better protect the environment and indigenous peoples. The motive for that may arise sooner rather than later due to emerging legislation (the governments of several important market nations are tightening laws and regulations to advance responsible sourcing) and an awakening amongst market players, like the LME, to the imperative of climate action by metals traders. Raising awareness of FSM and seeking opportunities to include due diligence on FSM in these regulations and guidelines could incentivize improved practices

amongst corporations and reactive regulatory improvements in producer nations.

- According to Ropes & Gray, an international law firm specializing in Corporate Social Responsibility (CSR), Environmental, Social and Governance (ESG) and business, and human rights and supply chains, "corporate human rights due diligence legislation is awaiting adoption, has been proposed, has been called for by civil society stakeholders and/or is at the discussion stage in several other jurisdictions, including Belgium, Canada, Denmark, Finland, Germany, the Netherlands, Norway, the United Kingdom, the United States and at the European Union level."<sup>81</sup>
- The European Union introduced a conflict minerals regulation which comes into force in 2021. The EU is now preparing a more comprehensive regulation that is applicable to all minerals and across all human rights issues, including the environment.<sup>82</sup>
- The US Securities and Exchange Commission Investor Advisory Committee is recommending updating public reporting requirements to include ESG factors.<sup>83</sup>
- Switzerland is bringing mandatory human rights due diligence to a public vote.<sup>84</sup> Switzerland is one of the most important commodities trading hubs in the world, especially for gold.

Other market nations, such as India and China, are also taking action to facilitate and encourage responsible sourcing of minerals. The Chinese Chamber of Commerce of Metals Minerals & Chemicals Importers & Exporters (CCCMC) has formed voluntary guidelines relevant to mining. The Chinese Due Diligence Guidelines for Responsible Mineral Supply Chains and the Guidelines for Social responsibility in Outbound Mining Investment include some environmental and indigenous communities' requirements as an attempt, through a voluntary mechanism, to give Chinese companies guidance on responsible sourcing and responsible mining investments respectively. The uptake of the guidelines for social responsibility in outbound mining investments respectively. The uptake of the guidelines for social responsibility in outbound mining investment is not widespread particularly because CCCMC does not have a curated network or the authority to compel action, partly because the manual for implementation of those guidelines was never formally approved. Additionally, thinking on a new CSR for Chinese companies working in Africa is currently being shaped, presenting an opportunity for the donors and other agencies to engage.

Notwithstanding the marginalization of environmental risk in mineral supply chains by the major normative documents, other markets and responsible sourcing initiatives have not been entirely inactive on environmental due diligence or action.

- Companies using diamonds and colored gemstones have been seeking to better understand and mitigate their environmental impacts. Fashion house Kering, for example, which is a fashion industry leader on biodiversity, has applied its environmental profit and loss accounting tool to the responsible sourcing of its gemstones and gold. A coalition of luxury jewelers convened around the 'Responsible Ecosystem Services Platform', a UN-funded initiative, before forming the Coloured Stones Working Group. The natural diamond sector has invested somewhat in experimenting with the rehabilitation of mined out artisanal diamond mines in West Africa.
- There is a suite of initiatives seeking to make Technology Critical Elements (TCEs) (e.g. nickel, cobalt, tin) more sustainable in their production, noting their importance to the green economy. Key institutions working in this space include the <u>World Bank's Climate Smart Mining (CSM) Facility</u>, <u>Resolve</u>, Cambourne School of Mines, and the <u>Global Environment</u> <u>Facility</u> (GEF)<sup>85</sup>.
- As with TCE miners, other sectors of relevance to the transition to the green economy (e.g. copper, bauxite, steel) are ripe for the adoption of more environmentally friendly mining practices. For example, an electric vehicle (EV) may be more sustainable than a diesel one based on functionality, but the manufacture of an EV has greater environmental impact in terms of GHG emissions<sup>86</sup>. Combine this with batteries comprising minerals mined in ways that destroy forests (nickel, cobalt) and the 'green economy' is not so green. This is compelling investors to demand higher ESG performance by mines delivering product into the green economy.

### **Investors and financiers**

It is only very recently that mainstream investors began paying serious attention and assigning importance to the management of ESG risks. Evidence is mounting that businesses that put ESG at the heart of their models and strategies fare better during crises, face less turbulence in their stakeholder relations, and provide better returns over time. ESG is increasingly accepted as essential to both the protection and creation of value in businesses, across sectors.<sup>87</sup>

In mining specifically, ESG has been of greatest importance as a condition of achieving the license to operate by governments and society. Only a few investors and financiers – notably the IFC and Equator Banks – really demanded the meaningful management of ESG risks as a condition of their investment or the provision of financial services. Now a proliferation of investor standards has emerged across sectors, including mining and metals, so heralding a new era of 'sustainable finance' which can be enabling and indeed prompt and accelerate the transition towards more sustainable economies.

Against this backdrop, it is unsurprising that discussions in policy circles about the protection of and respect for human rights in the mining and minerals sector involved very few financial institutions and investors until about two years ago. The minerals policy community had been so focused on supply chains and the role of governments, markets, and responsible production standards that the 'money men' were largely absent from the conversation. A gradual awakening over the past five years that finance was the missing piece in shifting the dial towards more sustainable production and sourcing of minerals has driven significant resource allocation to efforts to engage with and meaningfully involve various sections of the financial sector, including investors, as partners in generating a more sustainable minerals sector.

A notable example is the sector's response to the Mariana and then <u>Brumadinho tailings disasters</u>. Subsequently Vale S.A., who was involved in both dam burst disasters, lost its place on Bovespa's Sustainability Index.<sup>88</sup> Large investors such as the Church of England (14 trillion US dollars in assets) and Calpers investment fund (402 billion US dollars in assets) disposed of the mining company's shares. An ESG investment leader, Robeco, put Vale in a list of companies with investment restrictions.<sup>89</sup> A group of institutional investors led by the Church of England Pensions Board then asked 726 of the world's largest mining companies to disclose details about their tailings dams. Many of the companies complied, but the report relies on self-reporting by companies so its reliability may be limited.<sup>90</sup>

This defining moment, when investors like the Church of England Pensions Board began asking questions about the 2019 Brumandinho Tailings Disaster in Brazil, and how, after the independent review ICMM had done post-Samarco, a similar disaster could have happened, prompted the mining sector to take a hard look at its management of risk and seek collaboration from the <u>UN Principles for Responsible Investment</u> (UNPRI) and the UN Environment Programme (UNEP) to improve performance.<sup>91</sup> The result was the <u>Global Tailings Review</u> and <u>Global Industry Standard on Tailings Management</u>, which was released on 5<sup>th</sup> August 2020<sup>92</sup>. These disasters have put the importance of managing ESG issues firmly on the list of investor priorities.

At the other end of the scale from 'business as usual investment with ESG considerations' is the Impact Finance and Green Finance movement. Impact investors are beginning to look at the mining sector as an untapped opportunity for driving substantial progress towards the SDGs. However, there is a gap to bridge wherein these investors lack the experience of investing in mining, whilst traditional mining investors – who may increasingly be willing to consider ESG – do not have the appetite to gear their investment strategies more towards impact than profit. Some institutions are stepping in to help fill that gap but there is much scope for financial and strategic support to really attract and enable sustainable finance into the mining and minerals arena. Forest-smart mining could pose an obvious focal point.<sup>xii</sup>

xii. For example, the Impact Facility work to enable responsible mining (and thus sourcing) in cobalt and gold ASM in Central Africa, to the Innovest-Resolve-Levin Ventures Sustainable Mining Fund



There are five key entry points for accelerating and deepening investors' roles in bringing about forest-smart mining.

- 1. Rating Agencies. These institutions produce investor-facing ESG risk rating scorecards on a range of companies, including industry specific report cards analyzing a sub-set of ESG indicators for mining companies. They also produce ESG indices showing financial and ESG performance of a selection of companies, as more global focus is placed on responsible mining, the importance of these indices in investment decisions will increase<sup>93</sup>, driving better environmental and social performance and reporting. There is ample scope (and rapidly increasing appetite) to integrate biodiversity and nature metrics in risk, due diligence and performance rankings of rating agencies, and to work with the UNEP Finance Initiative to mainstream biodiversity and FSM Principles into rating agencies.
- 2. Reporting and Transparency are increasingly important as investors are becoming progressively more wary of social and environmental concerns. <sup>94</sup> Consequently, the mining sector has a number of different reporting requirements according to whether or not and where the companies are listed, who their investors are, and what they commit to. These requirements include reporting under <u>Global Reporting Initiative</u> (GRI) Standards, <u>CDP</u> (formerly Carbon Disclosure Project) questionnaires, the World Gold Council's <u>Responsible Gold Mining Principles</u> (RGMPs), <u>ICMM Performance Expectations</u>, the IFC Performance Standards (where these apply) and the Dow Jones Sustainability Index (for listed companies). They represent an important driver and enabler for FSM principles by requiring companies to report on their performance against these principles, with <u>GRI 304</u> already requiring reporting on operations in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas as well as habitats protected or restored. Incorporating FSM Principles, Criteria and Indicators (PCI) into companies' reporting requirements would be a powerful tool to incentivize greater attention and thus improved performance by miners in the protection of forests; it would also create pressure on producer nations to enable this as miners would lobby national governments more to improve forest governance. Engagement with key investor forums and those pushing the agenda on ESG reporting requirements to ascertain the extent to which FSM PCI are included or could be in future iterations would be helpful too.
- 3. **Responsible Reserves** seeks to expand the definition of a mineral reserve from being what is economically feasible to also responsibly minable. The goal is that all stakeholders "apply the same value to 'responsible extraction' of minerals as it would become an integral part of all calculations for the value of an asset." The concept is under development and will influence how investors rate a deposit. There is therefore scope to include the principles of forest-smart mining and indigenous rights into the definition of a responsible reserve. This would influence how investors, customers, miners, civil society and others perceive the mine-ability of a reserve. For example, at present the value of a reserve in an important forest is not affected by the fact that it is in a forest.
- 4. A lot of investment is being put into supporting climate action and the transition to a green economy. These climate change investment programs are gaining a lot of momentum and there is scope for the introduction of FSM. Key climate change investment related programs include the <u>Global Climate Change Alliance Plus</u> (GCCA+) or the <u>European Climate Foundation</u>, among many others.
- 5. There is a gap in the market for a **sustainable mining fund**, which could prioritize investments in climate-smart solutions, and especially nature-based solutions in the mining sector. Candidate investees could include Resolve's Salmon Gold project, tailings reprocessing projects for the recovery of rare earth elements and other critical minerals, frugal rehabilitation of mined out ASM areas, projects pioneering FSM in ASM, and so on. This fund could have a focus on the empowerment of indigenous peoples and local communities in the management of forest and mineral resources, with a prioritization for projects in forested landscapes. Such a fund could seek to crowd impact and conventional finance into the forest-smart mining space.

### **Donors**

Donors have been at the heart of driving change towards more responsible production and consumption in the mining and minerals sector, with an emphasis on responsible business conduct and human rights. Of particular importance has been the World Bank, various UN agencies, and the Dutch, German, Swiss, and US governments. These investments have generated many important lessons that are relevant for the FSM agenda.

The major donor priorities which could align with the quest for FSM are as follows:

- Illicit finance and natural resources trade, including wildlife trafficking
- Critical minerals, including technology critical elements
- Conflict, peace and security, including conflict minerals
- International trade and development, including responsible minerals trade
- Circularity, materials efficiency, and the transition to a green economy, including climate smart mining
- Climate change, carbon finance and REDD+
- Biodiversity and ecosystem services
- Sustainable finance
- Human rights, including gender, diversity & inclusion, the protection of environmental defenders
- The SDGs
- Responsible Business Conduct, including integrity and responsible sourcing
- Planetary health and human health, including management of chemicals and waste (e.g. mercury).

Donors of particular note are the World Bank's <u>Climate-Smart Mining (CSM) Facility</u>, the <u>Extractive Global Programmatic</u> <u>Support</u> (EGPS) Multi-Donor Trust Fund, the World Bank's <u>Forest Carbon Partnership Facility (FCPF) Fund</u> and GEF. **The World Bank's CSM Initiative** is a blended finance vehicle to support resource-rich developing countries to benefit from the increased demand of minerals needed for a low-carbon future, while ensuring that the mining sector is managed in a way that minimizes its environmental and climate impacts. Anglo American and Rio Tinto are the first private funders. Importantly, whilst the CSM Initiative offers a huge opportunity to drive change in the production of TCEs, other important minerals for FSM are out of scope, e.g. gold. There is thus a huge gap in the market for a donor or convenor who will make gold, other precious minerals, coal and construction materials priority commodities for FSM.

**The World Bank's ECPS Fund** seeks to assist World Bank client countries and governments in developing effective legal and regulatory frameworks, improving their fiscal regimes and providing revenue transparency and efficient management of resources. The fund also facilitates the incorporation of environmental and climate-change related priorities into extractives industries policies.<sup>95</sup> In 2018, the ECPS funded a project to assess the growing role of minerals for a low-carbon future. Given the World Bank's leadership on CSM, one would expect FSM to be mainstreamed across the ECPS projects, including gold projects.

The World Bank's FCPF Fund supports REDD+ efforts through its Readiness Fund and Carbon Fund. Currently, the World Bank is financing a project to stimulate the uptake of FSM principles, criteria and indicators by certification schemes and standards and the mainstreaming of FSM into regulations and governance frameworks in a suite of countries in the ASM sector. A second LSM project focuses particularly on the role of nature-based solutions as part of a forest-smart approach, aiming to promote their uptake by large scale mining projects operating in forests by addressing the cognitive and financing gaps that prevent their wider adoption within efforts to meet corporate and national sustainability targets.

**The Global Environment Facility** (GEF) is the largest donor to ASM initiatives today, through its <u>PlanetGold Programme</u>, which focuses on chemicals and waste seeks to tackle mercury usage in the ASM of gold. Whilst it focuses on mercury management and elimination, and is funded through the Chemicals and Waste division of GEF, the Program has developed criteria that include elements on <u>indigenous rights</u> and <u>environmental commitments</u>. GEF has also commissioned research to understand the supply chains of Technology Critical Elements and how GEF financing could reduce the impacts associated with extraction and enable greater production efficiencies in order to improve global environmental benefits from the transition to a green economy.

### Governments

The importance of governments to the achievement of forest-smart mining cannot be overstated. Consumer country governments create the incentives and enabling environment for all scales of business to lessen the onshore and offshore environmental impacts of their products, services and supply chains (e.g. through the application of circular principles into design processes, subsidizing environmental accounting, mandating environmental reporting, building the capacity of SMEs to do better environmental due diligence, creating 'green strings' to 'build back better' investments, and so on.)

Mineral host governments at all scales should be the principal target of any efforts to manage forest impact, since they have the primary agency to regulate and enforce land use and mineral rights, and the jurisdiction and responsibility to govern the use of their natural resources within international frameworks. Key entry points for engaging with and in mineral host countries have been drawn from the case studies in this report, and are summarized in the case studies chapter below. Additional priorities for influencing the occurrence of forest-smart mining are actions by national litigation bodies that can hold companies accountable when operating abroad, and actions by local authorities to challenge, scrutinize, and demand more responsible business conduct. Table 5: Potential national accountability mechanisms

Potential national accountability mechanisms	Investor Host Nations and Jurisdictions where mining and mineral processing companies register	Mining host Nations	Market / Consumer Nations (Metallurgy, manufacturing, retail)
National forest protection institutions such as the Ministries of Environment are key enablers for FSM in mining. In many cases, there needs to be better coordination between Environmental and Mining Ministries. Even in cases where minerals and forests are managed by the same ministry, the necessary coordination is normally lacking. Greater decentralization of sectoral regulation can allow for a better planning of local government in addressing mining issues at the local level, as long as the local government demonstrates the capacity to take responsibility.		Yes	
National public sector legal frameworks – can also be key enablers for FSM, legal frameworks include investment guidelines, formalization policies, mining licenses regulation, land use, land rights and land governance, etc.		Yes	
Regulatory Frameworks with appropriate checks and balances to ensure mining's impacts on forests are understood, manageable and managed in line with the mitigation hierarchy.	Yes, on stock exchanges	Yes, as part of licensing	Yes, as part of responsible sourcing regulations
Country-level commitments to sustainable development and to implement due diligence (e.g. alignment to the EU Directives on responsible sourcing, UK Global Resourcing Initiative) should take into account no harm objectives to forests and biodiversity and commitments to achieve climate change mitigation objectives.	Yes	Yes	Yes
National and international litigation bodies that conduct legal actions against companies that infringe rules. Litigation processes are crucial to ensure compliance with regulations and compensate for damages caused.	Yes	Yes	Yes
Independent ombudspersons, who are responsible on advising the government on responsible business conduct abroad. Although not all countries have an ombudsperson, Canada, which is the major country with mining operations abroad, created one in 2018.	Yes	Yes	
Advocating for the implementation of responsible mining practices within priority jurisdictions where businesses registered in its jurisdiction or on its stock exchanges have mining activities. There are different potential leverage points, such as pushing for a normative framework, ensuring implementation on the ground or using a suite of tools of disposal; anywhere from soft diplomatic influence to potential sanctioning from economic incentives for behavior.	Yes		
Requiring embassies, agencies and other organs of government to understand the impact of mining particularly in forests and indigenous communities of the mining companies they support, and take that into consideration in the competition for access to that support.	Yes		Yes

**Local authorities** such as mining committees can be key enablers for FSM. As our <u>case study</u> shows, in Atewa, Ghana, the local district has one of the most active district mining committees and local leadership has high environmental awareness. This committee has coordinated at least one replanted forest and made recent efforts to rehabilitate sites of former ASM operations. Strong local authorities with jurisdiction over mining areas and decent environmental awareness and activism can be excellent starting points for building programs to drive FSM.

# International processes

International agreements, declarations and public initiatives are key policy levers. The most important international agreements and declarations that can enable the inclusion of environmental commitments and regulations include the New York Declaration on Forests, Africa Mining Vision, the Minamata Convention, the SDGs, the Intergovernmental Forum on Mining (IGF), the Extractive Industries Transparency Initiative (EITI), REDD+, the Aichi targets and the International Union for Conservation of Nature (IUCN) World Conservation Congress Resolution 37 and Recommendation 175. International trade agreements between countries, with associated commitments to abide by International Conventions and Agreements such as the Paris Accord, SDGs, Convention of Biological Diversity, Human Rights, can be particularly powerful in influencing sustainability and human rights outcomes.

Of particular importance are efforts to protect indigenous peoples, the environment, and human rights, efforts to drive good governance and integrity, and efforts in peace, security and conflict resolution.

**The protection of Indigenous Peoples** has been moving up the policy agenda in recent months in light of three converging issues: first, the disproportionate impact of COVID-19 on indigenous peoples<sup>96</sup>; second, the destruction of sacred aboriginal sites in Australia by Rio Tinto<sup>97</sup>; and third, outrage at the murder of George Floyd in the US and the subsequent growth of the Black Lives Matter movement, which has been reframed by some as attention to diversity and inclusion, including the protection of the rights of BICOC (black, indigenous and people of color) communities.<sup>98</sup> Our work in 2018 for the World Bank's PROFOR trust fund made clear the importance of the authority of indigenous peoples in natural resources governance as a key factor in increasing the likelihood of mining causing less harm to forests compared to places where indigenous peoples' voices were unheard or prerogatives marginalized or ignored.<sup>99</sup>

Our analysis shows a lot of scope to strengthen minerals' standards treatment of indigenous peoples' rights. In particular the LBMA Responsible Gold Standard is an obvious candidate given the number of gold mines in forests, and the reported abuses of indigenous peoples by miners, both large and small (see <u>Brazil</u>).

There are a series of conventions and initiatives intended to protect indigenous peoples which provide entry points for the protection of forest peoples from negative impacts associated with mining through the promotion, instigation and assurance of FSM.

- 1. Free Prior Informed Consent (FPIC) is a consultation process by which indigenous communities, and by some guidelines all potentially affected local communities, can theoretically determine how development decisions are made in some cases providing the right to reject a project. FPIC is internationally recognized but its implementation varies widely. For instance, under ICMM Principles, FPIC does not provide communities with the right to say no to mining; even if communities say no, projects can still go ahead. FPIC is also not recognized or integrated as a right in many country regulations. As referenced earlier, Hasdeo Arand forest in India is about to be opened to create 40 new coalfields, which will displace many indigenous groups and cause huge damage to the forest.<sup>100</sup> It is likely that if FPIC had been properly applied, these new coalfields would not be permitted.
- 2. UN Declaration on the Rights of Indigenous Peoples (UNPRIP), adopted in 2007, is a framework which establishes 'minimum' standards for the 'survival, dignity, well-being and rights of the world's indigenous peoples'. The declaration covers individual and collective rights; cultural rights and identity; rights to education, health, employment, language, and others; and outlaws discrimination against indigenous peoples. It is not legally binding but so far 146 countries have adopted the declaration and are therefore obliged to respect it, although integration into national law varies.

**Efforts to protect the environment** appear to have gained greater traction generally in the past decade, having struggled for so long to demonstrate nature's importance to humanity relative to other issues in the business and policy arenas. At the heart of this has been the business and biodiversity movement and international agreements such as the SDGs, the Paris Climate Accords and a suite of other international agreements which have provided stronger mandate for environmental action by government and business. Eight instruments offer the greatest possibilities for the adoption of more FSM practices.

- 1. The 2019 resolution adopted by the Fourth United Nations Environmental Assembly (UNEA 4) in Kenya urges UN Environment to support actions to improve the governance and sustainability of the global mining industry.<sup>101</sup> The resolution calls for governments to support research and innovation, capacity building and advocate for sustainability, explicitly highlighting the need to decouple economic growth from environmental degradation. Nevertheless, the resolutions are seen by sustainable mining activists as failing to explicitly include a call for zero tailings dam failures, the main driver of recent forest destruction in the Iron Quadrangle region.<sup>102</sup> Biodiversity COP-15, in May 2021, may be a window of opportunity to ask for more concrete commitments from LSM sector regarding biodiversity (including forests), as part of the process to develop the post-2020 framework.<sup>103</sup>
- 2. The **UN Decade of Restoration** begins in 2021. The UN Decade of Restoration can offer an opportunity to restore damaged land in the mining sector, which would benefit economic development, provide greater food security and increase biodiversity.
- 3. **REDD+** has great potential to include FSM, but it is important to tie it to indigenous communities' rights, such as FPIC. The World Bank's Forest Carbon Partnership Facility (FCPF) and Forest Investment Program (FIP) both refer to the right to 'Free, Prior, Informed Consultation.' The Climate, Community, and Biodiversity Standards (CCB) on the other hand, require documentation of a process that respects the right to FPIC of indigenous peoples and local communities whose rights may be affected. Implementation and adherence to REDD+ Social and Environmental Standards, designed to apply to national or sub-national level REDD+ programs, represent a clear mechanism to integrate FSM by engaging with members of the <u>international steering committee</u>.
- 4. IUCN World Conservation Congress Resolution 37 and Recommendation 175 are very relevant for ASM in forests. Resolution 37 touches upon the importance of nature conservation criteria in land-use planning policies, and recommendation 175 seeks to strengthen the autonomy of Colombia's black communities for sustainable natural resource management with an emphasis on mining. The next IUCN Congress will have a number of sessions on FSM and there will be CEOs from major mining companies speaking at these events, the detailed schedule for which will be complete by the end of 2020 (assuming IUCN Congress proceeds as planned).
- 5. The Paris Climate Accords represents a significant opportunity to address 'imported' deforestation and carbon emissions from UK mineral supply chains, mirroring Amsterdam Declaration commitments made for soft commodities. In relation to FSM, Article 5. Of the Paris Agreement calls for Governments to take action to conserve and enhance sinks and reservoirs of greenhouse gases, including forests. Article 6 lays out options for companies to take actions that feed into nationally determined contributions, these in turn provide a route for governments to develop incentives for FSM that are mutually (company and government) beneficial.
- 6. The <u>COMBO Project</u>: Conservation, impact Mitigation and Biodiversity Offsets in Africa, is a project that aims to embed the no net loss principles and guidance of the <u>Business and Biodiversity Offsets Program</u> (BBOP) and BBOP Standard, the IFC Performance Standard 6, Equator Principles and other best practice policy and methodologies, into national laws.
- 7. The Minamata Convention on Mercury is a global treaty to protect human health and the environment from the adverse effects of mercury, with particular relevance to ASM. Although it focuses on mercury management, it is key because mercury aggravates forest and environmental impacts. The convention is operationalized through a 147 million US dollar fund managed by the Global Environment Facility. The Gold Program is a 180 million US dollar program seeking to mitigate and eventually eliminate mercury from artisanal and small-scale gold mining (ASGM) in eight countries, and elsewhere, focusing on Burkina Faso, Colombia, Guyana, Indonesia, Kenya, Mongolia, Peru and the Philippines<sup>104</sup>.
- 8. The <u>New York Declaration on Forests</u> is a voluntary and non-binding international declaration to take action to halt global deforestation, which was endorsed at the UN Climate Summit in 2014. To date there are approximately 200 signatories, some of which are important mining host nations (e.g. DRC, Guinea) and none of which are mining companies. Following a review of progress in its first five years in 2019, the NYDF is undergoing a refresh process and intends to involve mining sector stakeholders in this in order to raise awareness of the Declaration and the opportunity it presents, as well as to encourage commitment to the goals by the mining sector.

Forest-smart mining would support the **protection of human rights.** Forests provide people with ecosystem services<sup>105</sup> that are fundamental to the protection of human rights: they provide half of the world's oxygen, supply drinking water and pharmaceuticals, act as buffers and provide resources to minimize the impact of disasters, provide livelihoods to 25% of the world population<sup>106</sup>, and provide cooking and heating materials for 30% of people worldwide.<sup>107</sup> The destruction of forests through mining not only erodes people's human rights, but is often accompanied by human rights violations, including but not limited to land grabbing, modern slavery, the murder of environmental defenders, pollution, and so on. Three examples that merit consideration are gender, health, and modern slavery:

- Gender environmental degradation disproportionately impacts upon women and girls. Engaging with women's
  networks and organizations prioritizing gender issues and children's rights in mining could provide traction too. These
  include but are not limited to <u>International Women in Mining</u> (IWiM), <u>Association of Women in Mining in Africa</u>
  (AWIMA), <u>Bon Pasteur</u>, <u>IMPACT</u>, <u>Pact</u>, the International Labor Organization (ILO), <u>Women's Rights and Mining</u>, and <u>African</u>
  <u>Women Unite Against Destructive Resource Extraction</u> (AWID).
- Health from the minimization and elimination of mercury in artisanal gold mining, to the reprocessing of tailings dumps that leach heavy metals and pollutants into water systems, to ensuring food security through continued access to healthy forests, efforts to limit mining's impacts on forest health would positively impact human health. Since the COVID-19 pandemic and the Ebola epidemics in West and Central Africa, increasing attention is being placed on health in ASM communities and the risks of zoonosis, offering an opportunity for greater consideration of planetary health and relationship between nature and forest health and human health in ASM communities.
- Modern slavery forced labor exists in the ASM sector across a range of countries with important forest landscapes, such as Brazil, Peru, the Democratic Republic of Congo, Madagascar, Ghana, and more.<sup>108</sup> According to Kevin Bales, modern slavery poses a severe threat to the environment.<sup>109</sup> Programmatic interventions could include liberation programs in ASM communities through, for example, <u>Free the Slaves</u>, and promulgation of ARM's Practitioner's Toolkit for Addressing Forced Labour in ASM<sup>110</sup> in hotspots for forest ASM where modern slavery is known to exist.

**Efforts to ensure integrity and good governance** in the extractives sector have a lot of scope to influence the uptake of FSM practices by business and government alike. Corruption is one of the major barriers to good practice. There are seven initiatives that merit attention:

- The EITI is an important accountability initiative that seeks to enable transparency in the government of natural resource sectors with a view to tackling corruption and mismanagement of mining revenues by governments. Its standard has a very limited focus on environmental issues. If disclosure requirements were expanded to include issues affecting the environment and indigenous peoples, it could have a higher potential to influence the forest outcomes of mining activities.
- 2. The IGF is a widely recognized institution with strong potential to influence mining practices through educating its 60 member states and motivating and facilitating them to incorporate best practices into national governance and legal frameworks. The IGF's countries are committed to promoting the positive impacts of mining on sustainable development. Its guidance document on ASM<sup>111</sup> recommends its member states provide technical training to artisanal miners to improve productivity and safeguard the environment, and develop and enforce regulations with a particular emphasis on water sources, deforestation, and the illegal use of mercury. The IGF has given platform to forest-smart mining at its 2018 conference and could be encouraged to do so again. They could also introduce guidance for governments on FSM and their role in making it happen, and potentially convene a forum with governments on the underlying issues that cause environmental damage, such as land use and land rights, management of 'common' goods, guaranteeing FPIC in legal frameworks, and so on.

- 3. The <u>Natural Resources Governance Institute</u> (NRGI) is an independent nonprofit organization dedicated to improving countries' governance over their natural resources. NRGI helps governments realize the benefits of their countries' natural resources and mitigate related harms. NRGI's areas of focus include: getting a good deal, managing revenues, navigating the energy transition and addressing corruption and state capture.
- 4. The <u>Africa Legal Support Facility</u> (ALSF) is dedicated to providing legal advice and technical assistance to African countries in negotiation of complex commercial transactions, creditor litigation and other related sovereign transactions. The ALSF also develops and proposes innovative tools for capacity building and knowledge management.<sup>112</sup> It is under pressure from donors to do more on climate action. As a team of lawyers, it could be supported to do a legal review of laws in, three countries on barriers to and opportunities for the introduction of forest-smart mining, analyzing ways in which existing legal regimes are supportive or unsupportive of forest-smart mining with a view to creating guidance for writing laws that are more likely to induce FSM.
- The Extractive Communities Human Rights & Legal Support Program of the Centre for Public Interest Law (CEPIL) is designed to provide legal assistance to communities living in or around mining concessions. This includes free courtroom representation.
- 6. The Africa Mining Vision (AMV) was formulated in in 2008 and adopted by African heads of state in 2009. Its implementation is overseen by UNECA and the African Union. It provides African governments with international mandate to prioritize mining as a key enabler of economic growth, whilst ensuring it does not undermine sustainable development. There are broad provisions on environmental issues, but not specific to forest protection. The African Mining Vision aims at ensuring compliance of industry players with the highest standards of corporate environmental stewardship but, overall, it appears to be a fairly general and weak instrument. The AMV is frequently referenced, but it is more of a soft tool.
- 5. G7 Countries are among the top 20 largest emitters of CO2, and significant potential therefore exists to promote more active restoration, from Canadian mining companies operating overseas for example, as well as collectively screening out the most damaging mineral supply chains. In 2014, the G7 established the G7 CONNEX Initiative to support governments of developing countries and economies in transition in the negotiation of complex commercial contracts in the extractive sector. The CONNEX Initiative, perhaps in cooperation with the IGF and ALSF, could strengthen licensing negotiation processes and build capacity for governments to ensure 'green strings' as part of mining lease negotiations.

**Efforts to improve surveillance of mining activities** in sensitive ecosystems, including forests, are turning more to remote sensing and the use of geographic information systems. In recent years, numerous governments, development agencies and private sector actors have recognized the need to better monitor and manage the ASM sector, in order to control its negative impacts and leverage its economic potential.

A major issue in the governance of ASM is the lack of reliable information about the sector which is needed to inform policy decisions. Common challenges in monitoring the ASM sector are the widespread informality of the sector, its remoteness and dynamic and rapid changes of location and size of operations, as well as limited financial and human resources of mining agencies in some jurisdictions. Two common ways of detecting ASM sites are the use of drones or in-person site visits. The use of drone technology can be very expensive, limited to selected geographical areas, restricted in certain jurisdictions, and the level of detail seen on drone imagery versus high-resolution satellite images is mostly not necessary. Observations from the ground are extremely expensive, as they require personnel to travel in remote areas, which can also pose a security threat for the people involved. Remote sensing solutions are a third, and increasingly popular, option for ASM monitoring.

Satellite imagery allows monitors to study larger geographical areas, to detect changes in mining activity over time, and to overlay ASM locations with maps of protected areas, mining concessions and other land uses. Remote sensing systems permit monitoring of ASM developments more easily, and can inform formalization efforts or due diligence programs by addressing the lack of information about the ASM sector, and allowing targeted interventions. Remote sensing solutions using satellite imagery are increasingly looking to incorporate artificial intelligence and machine learning, to make them less costly and more effective.

Such solutions have great potential to reduce the reliance on external expertise in the long run, and to make high-quality monitoring over large geographical areas cost-effective. One example is the work of the US Geological Service in Guinea, Central African Republic and Cote d'Ivoire. Another example of such a solution is ASM Spotter, an AI software to monitor and track open-pit ASM sites from satellite imagery, a concept developed by <u>dida</u>, <u>RWTH Aachen University</u> and <u>Levin Sources</u>. The technology, which won the Microsoft AI for Earth prize at the Conservation XLabs <u>Artisanal Mining Grand Challenge</u>, has significant implications for the promotion of FSM, potentially providing mineral producer governments with cost-effective data on the impacts of ASM on forests in some of their most remote and inaccessible geographies.

For governments in ASM host nations, it is valuable to have an overview of ASM activity in the country, in order to know where intervention is necessary and where formalization efforts should focus. This can also support rapid response to handling rushes in sensitive ecosystems, such as the government of Peru was able to achieve in Madre de Dios thanks to remote sensing by Planet.<sup>113</sup> For LSM, remote sensing allows monitors to find out whether there are potential overlaps with ASM activity that might need to be managed. Mid- and downstream buyers are interested in learning whether there is ASM in the areas they buy from, in order to integrate these findings in their due diligence efforts.

Responsible mining and sourcing initiatives and research institutes such as the <u>International Peace and Information Service</u> (IPIS), <u>Just Cold</u>, the <u>iTSCi Programme for Responsible Mineral Supply Chains</u>, ARM, <u>Better Mining</u>, the <u>Delve Platform</u>, and others, are generating large amounts of data which could be better used in the pursuit of the protection of human rights, peace and security. For example, the IPIS <u>Conflict Mapping</u> maps conflicts, its actors and their motives in ASM sites in order to understand what drives conflicts and how to tackle them.



Many of the conflicts IPIS tracks in the extractive sector are in priority forest landscapes, such as the African Great Lakes Region and Central African Republic. IPIS has developed a network of enumerators who gather data that is mapped and reported to other international stakeholders downstream, and who can ground-truth data gathered through other means (such as remote sensing).

IPIS, and these other data generators, could be enfranchised to gather data relevant to the monitoring and evaluation of forest-smart mining over time, providing insights that could direct government and corporate policy and practices towards improved governance.

On the other hand, Norway's Ministry of Climate and the Environment has entered into a contract with private satellite companies to "provide universal access to high-resolution satellite monitoring of the tropics in order to support efforts to stop the destruction of the world's rainforests," so revolutionizing forest monitoring by making it accessible to everyone from retailers wishing to do due diligence on the provenance of critical commodities to indigenous peoples needing real time oversight of others' activities in their territories.<sup>114</sup> This provides an opportunity for convergence between those mapping ASM with those mapping deforestation to identify hotspots and facilitate more active management of degradation and destruction – but ideally with a human rights based approach.

Lastly, there is scope for greater use of digital technologies in the promotion of FSM generally. For example, the creation and delivery of remote training to ASM miners on how to be forest-smart in practice could massively reduce the costs and increase feasibility of training in COVID- or conflict -stressed economies.

# Case studies

This chapter of case studies is intended to provide illustration of the report's overarching analysis and recommendations, as well as provide some examples of concrete actions that could be taken to improve forest outcomes in specific contexts. Case studies were chosen from some of the top hotspots for mining in forests. Some build upon the case studies researched and written for PROFOR in 2017-2019; readers can find 29 case studies of LSM and 21 for ASM in forests in the World Bank Forest Smart Mining reports.<sup>115</sup>

# **Key lessons learned**

Looking across the case studies some key recommendations stand out for donors or philanthropic organizations wishing to advance FSM by engaging with:

### Public sector - mineral host countries:

- Poor environmental standards by ASM operations and lack of enforcement capacity in government institutions can worsen forest fragmentation and ecosystem degradation. Improving standards and enforcing the law should be priorities for forest-smart mining.
- 2. Invest in programs that address spatial planning of rural development and forest management. Promote the development of 'regional forest-smart management plans' (basin scale), engaging in technical and financial partnerships with LSM companies, national and sub-national governments, NGOs and other sector representatives (agriculture, industries, to include indirect impacts' mitigation).
- 3. Consider **decentralized approaches to FSM regulations and enforcement**: work with local governments, environmental authorities (including conservation NGOs in charge of specific protected areas) and customary authorities to define priorities and timelines, no-go areas and economic options.
- 4. **Regulatory barriers**, as well as **corruption** and **enforcement**, **need to be addressed** to ensure that impacts on forested areas are reduced.
- 5. Empower local governments in LSM territories to have stronger responsibility regarding traditional people's safety, health, livelihoods, cultural values, with help from LSM companies, maybe discussing potential environmental offsets for indigenous/communal lands creation/expansion.
- 6. Focus on formalization of the ASM sector. Approaches to legalize the industry, provide access to financing, promote sustainable practices, and help illegal ASM miners find alternative livelihood opportunities, should be prepared and implemented while the ban is active.
  - Formalization will require technical support in the form of geological exploration, metallurgy, development of sustainable practices and remediation. It will open opportunities to access finance and drive the need for sustainable practices.
  - Build the institutional capacity of and empower the public sector; invest in programs that build trust and confidence between stakeholders and enhance understanding and will to comply with formalization requirements; improve the policies that govern ASM, investing in knowledge development and training; and invest in grassroots governance, including prioritizing the needs and rights of indigenous peoples.
- 7. Leverage and build on existing forest-protecting institutions and programs on a national and international level. Available funding from national and international programs can be sought to develop forest recovery, biodiversity conservation and management of protected areas and indigenous territories.

### **Private sector:**

- 1. Work through **mineral certification initiatives** already present in the mineral host countries. Encourage these to include Forest Smart Mining principles into their standards, to emphasize these aspects to LSM operators in forested habitats and train evaluators and raise their awareness of these principles.
- 2. Try to **influence the ASM business model to make it forest-smart**: work with investors and traders to seek market solutions (access to tools and equipment, creation of sustainable food supply chains to relieve mining sites from bushmeat hunting and slash-and-burn agriculture) that could extend to unregulated, informal operations.
- 3. Invest in long-term changes to sustain improvements in environmental management by ASM, focusing on allocating sufficient technical, financial, and human resources to ensure concrete action to eliminate the worst practices, garnering a commitment to environmental management by miners and mining communities.
- 4. **Promote the co-existence of LSM and ASM** through financial and permitting incentives, to leverage implementation of environmental and social best practices that will allow forest restoration and maintenance of traditional livelihoods.
- 5. Foster concrete **commitments from the LSM sector regarding no-go areas**, although this is likely to be very challenging as it would certainly impact production scores and profitability, e.g. in the iron quadrangle.
- 6. Build upon current legislation to **promote historic tailings and wastes explorations** by large-scale companies associated with progressive rehabilitation during the life of mine, including historic liabilities not currently considered economic assets (i.e. waste rock piles and historic tailings deposits).
- 7. Discuss with the investment sector (pension funds, investment firms, etc.) the development of an **FSM Index** (an investment ranking), in order to classify LSM companies and create a rating approach for investment decisions, considering the current and huge reputational risk aversion from investors in the face of bad forest management, manifested recently by major investment funds.

### Civil society – mineral host countries

- 1. Local communities and civil society organizations can be effective enablers of forest-smart mining. Donors and philanthropic organizations should **prioritize support to them in any country level programming.**
- 2. Invest in **environmental and legislative education** with local stakeholders, so that they are fully aware of potential environmental impacts and their land rights to facilitate fair negotiations.
- 3. Support conflict resolution programs for communities in and around contested protected areas, to seek to improve the integrity of protection by addressing and resolving and remedying as many community grievances as possible.
- 4. Establish programs that **support the pursuit of nature-based solutions** to local economic challenges in communities dependent on forest-based livelihoods and natural resource exploitation

# 1. Ghana

# LSM gold mining in the western region



### Background

Chana is **Africa's largest gold producer** with 23 active large scale gold mines and a production of 180 tons in 2018.<sup>116</sup> Cold mining is an important component of the Ghanaian economy (5% of Ghana's gross domestic product (GDP), 90% of the total mineral exports and the country's highest single source of tax revenue).<sup>117</sup> The LSM sector is dominated by a relatively small number of largely foreign-owned firms, such as Asanko Gold, AngloGold Ashanti, Goldfields, Newmont, Perseus, BCM International, Kinross and Golden Star Resources.

Ghana has in the past two decades, taken major strides toward democracy under a multi-party system and an independent judiciary winning public trust. Ghana consistently ranks in the top three countries in Africa for freedom of speech and press freedom, which together with peaceful elections are providing the country with solid social capital. Ghana's economy continued to expand in 2019 as the first quarter GDP growth was estimated at 6.7%, compared with 5.4% in the same period of last year. Ghana's three main export commodities are oil, gold and cocoa, providing in a trade surplus of 2.8% of GDP.<sup>118</sup>

### Policy recommendations for forest-smart mining in LSM in Ghana

- Support the Forestry Commission of the Ministry of Lands and Natural Resources to extend and enforce forest protection. Protected areas cover only 4% of land surface, but this excludes forest reserves, as most of the forest reserves in the Western Region of Ghana are classified as IUCN Management Category IV,<sup>119</sup> known locally as production reserves. Examples include the Bonsa Ben, Ben East and West, Nueng North and South among many others. This classification allows the allocation of mining permits. However, these forest reserves in Ghana serve important biodiversity, ecosystem service provisioning and climate regulating roles, and their level of protection needs to be increased. Forest protection should be supported with a landscape-based biodiversity planning approach that identifies the critically important habitats and important ecological support areas.
- Engage influential organizations, such as international financiers and standard setters, to encourage LSM to acknowledge the importance of forests for biodiversity protection, provisioning ecosystem services and climate regulation, and make voluntary commitments to avoid the destruction of intact forest, and to increase the restoration of forests on degraded land.
- Engage the Ministry of Finance and Economic Planning to conduct a reassessment of mining-related revenue flows. Increased investment into regional development, developing alternative income strategies, and supporting the economic diversification of local populations away from natural resource-based livelihoods.
- Work with the district authorities to improve the coordination of spatial planning for rural development
  with the Environmental Protection Agency (EPA), and the Minerals and Forestry Commissions.
  The districts authorities are second-level administrative subdivisions of Ghana, below the level of region. Technical
  support from the central government may be required. This coordination is currently lacking despite the Minerals
  and Forestry commissions being within the same Ministry of Lands and Natural Resources.
- Provide greater **support to the district agricultural sectors**, and particularly to **farmers adversely affected by LSM mining**. **Support cooperatives by** providing them with **technical expertise to modernize** their agricultural operations to become forest-smart. This means increasing yields per unit area and moving away from traditional approaches such as shifting slash and burn agriculture.

- Develop awareness programs to provide rural populations with a greater understanding of the environmental and social consequences of mining. Training of district and NGO employees will be required for them to deliver the awareness-raising programs. Transparency needs to be established when negotiating land use rights between mining corporates and local people, and supported by the strengthening of legislation. The Minerals and Mining Act 2006, Act 703 should be broken down and explained properly to local people to enable them to participate in fairer land use negotiations.
- Engage the Ministry of Lands and Natural Resources to strengthen and enforce the implementation of legislation designed to mitigate environmental degradation, balance mining and local livelihood needs, and to transition toward sustainable resource use. Legislation change needs to drive the emphasis on restoring premining land tenure, biodiversity and ecosystems services, once LSM operations cease. The extent to which there is a window of opportunity to influence change needs further investigation.

Key institutions to engage Summary of levers and potential discussion

<b>NGOs</b> (e.g. Sympathy International, Transforming Lives International, Actionaid Ghana, World Vision Ghana, Friends of Earth Ghana, Alliance for a Green Revolution in Africa (AGRA), Global Alliance for Climate-Smart Agriculture (GACSA))	Understand key areas of sensitive forest landscapes under threat, social issues including impacts on livelihoods of forest- dependent peoples, capacity to engage with communities at the grassroots level, and key levers for engaging government institutions.
<b>Local and International LSM Companies</b> (e.g. Asanko Gold, AngloGold Ashanti, Goldfields, Newmont, Perseus, BCM International, Kinross, Golden Star Resources, and Ghana Chamber of Mines)	Understand industry perspective and response to current environmental and social issues, particularly on how to level the playing field between international and domestic operations and control illegal mining. Encourage them to recognize the Fairmined standard.
<b>Assurance</b> (e.g. Initiative for Responsible Mining Assurance (IRMA), Responsible Jewellery Council (RJC))	Work through investors to seek adoptions of best practice standards including IFC Performance Standards 3, 5, 6 and 7,
<b>Financial Lenders</b> (e.g. IFC, African Development Bank, bilateral donors)	and development of new best practice guidance on mining in forested environments, with greater emphasis on restoration.
Ministry of Finance and Economic Planning	Understand and revise the process for allocation of government funds to support local development.
Environmental Protection Agency (EPA)	Environmental and social oversight in allocation of areas for mining. Understand conditions, enabling environment and
<b>Ministry of Lands and Natural Resources</b> (includes Minerals Commission and Forestry Commission)	business drivers to ensure progressive restoration of coal mining.
	Raise the levels of protection for ecologically important forest reserves.
	Strengthen interaction between departments on allocation of coal mining licenses, spatial planning of new concessions, monitoring of restoration plans.
Regional Government and District Authorities	Improve oversight of mine restoration, illegal mining operations and ensuring that licensing conditions are being met.
	Capacity to engage with communities.

Table 6: Institutional levers for forest-smart mining in LSM in Ghana

### **Lessons learned**

- Prioritize forest protection and enforcement activities.
- Invest in programs that address spatial planning of rural development and forest management.
- Invest in **environmental and legislative education** with local stakeholders, so that they are fully aware of potential environmental impacts and their land rights to facilitate fair negotiations.
- Support rural development and farmers impacted by LSM.

## ASM gold mining in the eastern and western regions of Ghana

### Background

**Over 10% of the population** are **dependent on artisanal and small-scale gold mining** (ASGM) for their livelihood.<sup>120</sup> Since 1989, ASM has been an increasingly **important component of the economy**; an estimated 1.1 million people are employed in the sector which constitutes 60% of the total mining workforce.<sup>121</sup> In **April 2017, the government banned all ASM activities.** This was in an attempt to address the high proportion of operations classified as illegal (known as galamsey) or informal. There was a thin line between illegal and legal operations in terms of compliance with national and international regulations or guidelines on mining and processing best practices. ASM had become an increasingly capital-intensive, mechanical and politically driven cash-generating venture, involving many players including local businessmen, politicians, security personnel, traditional leaders and other foreign nationals. The **ban was lifted** in **December 2019**. There are no recent estimates on total ASM production in the country since restrictions were removed, but before the ban ASM in Ghana was estimated to account for around 34% of the country's annual mineral production.<sup>122</sup>

ASM is a driver of forest loss in Ghana. There are limited data on known ASM incursions into forest reserves and protected areas. The case study focuses on ASGM activities in the Eastern and Western Regions of Ghana. In the Eastern Region, the Atewa Range Forest Reserve, a key biodiversity area, is threatened by ASM, LSM, farming, illegal logging and hunting. The national ban reduced ASM in the region, although it was not eliminated, and had a significant impact on vulnerable groups, and in particular women.<sup>123</sup> ASGM is still present primarily along the river Birim.<sup>124</sup> In April 2019, A Rocha Ghana found that illegal mining activities in Atewa forest were ongoing.<sup>125</sup> The government has also granted a concession to Ghana Integrated Aluminium Development Company (GIADC) to mine bauxite in Atewa Forest Range.<sup>126</sup> Illegal mining activities occur in the forest, where policing is led by GIADC and the national security forces.<sup>127</sup> ASM is also prevalent in the Western Region; Tarkwa-Nsuaem Municipal District is the center of gold and manganese mining and USAID has financed studies into ASM of gold in Wassa Amenfi West District in order to inform programming for the USAID Integrated Land Use Project, Supporting Deforestation-Free Cocoa in Ghana.128



### Policy recommendations for forest-smart mining in Ghana

- Engage with national and district level governmental institutions. Build on existing schemes which enable forest-smart mining and work through local mining committees. During the mining ban, the government started a process to provide alternative livelihood opportunities for illegal miners.<sup>129</sup> The current status and success of this process is unknown, but training and alternative livelihood schemes began in Tarkwa during the ban.<sup>130</sup> The Atewa District Mining Committee is very active and local leadership has high environmental awareness<sup>131</sup> They coordinated the replanting of a forest and have rehabilitated sites of former ASM operations.<sup>132</sup> They are an example of a grassroots organization that could do much to demonstrate forest-smart mining to other Ghanaian authorities.
- Support civil society initiatives, such as <u>Wassa Association of Communities Affected by Mining (WACAM)</u>, <u>CEPIL</u>, the <u>Africa Centre for Energy Policy</u> (ACEP) or Muse Africa, in mitigating the harmful impacts of ASM.<sup>133</sup> They influence both legislation, including the Minerals Revenue Management Act which will help increase transparency over mining revenues,<sup>134</sup> and work on the ground to support ASM mines in meeting standards. Solidaridad, a Dutch NGO, supports artisanal and small-scale miners towards voluntary sustainability standards compliance, like the CRAFT Code or Fairmined.<sup>135</sup>
- Engage with organizations that empower the participation of local community members. Their participation in forest management measures (rehabilitation, mitigation of ASM impacts) could bring about more positive change, as demonstrated by successful community reforestation efforts in East Akim.<sup>136,137</sup>
- **Coordinate with and leverage the impacts of current programs of financial institutions**. In 2019, the World Bank scaled up the 'Ghana Forest Investment Program', which aims to pilot ASM rehabilitation approaches.<sup>138</sup> The proposed activities of the program reduce the pressure on high biodiversity areas.<sup>139</sup>

Key institutions to engage	Summary of levers and potential discussion
NGOs (e.g. Sympathy International, Transforming Lives International, Actionaid Ghana, World Vision Ghana, Friends of Earth Ghana, Alliance for a Green Revolution in Africa (AGRA), Global Alliance for Climate-Smart Agriculture (GACSA), Earthworm) WACAM, CEPIL, ACEP or Muse Africa.	Understand key areas of sensitive forest landscapes under threat, social issues including impacts on livelihoods of forest- dependent peoples, capacity to engage with communities at the grassroots level, and key levers for engaging government institutions. Promote increase transparency over mining revenues.s
<b>Medium and small mining operators</b> (key players need to be identified).	Understand local perspectives and response to current environmental and social issues, particularly on how to level the playing field between international and domestic operations and control illegal mining.
Chana Chamber of Mines	Explore how they can promote cooperation between LSM and ASM in joint forest management efforts.
<b>Assurance</b> (e.g. Initiative for Responsible Mining Assurance (IRMA), Responsible Jewellery Council (RJC))	Separation of standards and target objectives between LSM and ASM, to make targets achievable for smaller operators.
<b>Financial Lenders</b> (e.g. IFC, African Development Bank, bilateral donors)	Developing mechanisms for smaller operators to access finance. Promote and support the Fairmined standard.
<b>Small-scale mining Associations</b> (e.g. Ghana National Association of Small-Scale Miners (GNASSM), Wassa Association of Communities Affected by Mining (WACAM))	Recognise the platform and collective voice of Small-Scale Miners. They serve as advocates for small-scale miners and can champion adherence to environmental guidelines.
Ministry of Finance and Economic Planning	Understand and revise the process for allocation of government funds to support local development

Table 7: Institutional levers for forest-smart mining in ASGM in Ghana

Key institutions to engage	Summary of levers and potential discussion
Environmental Protection Agency (EPA)	Identify ways to support and encourage the EPA's ongoing
<b>Ministry of Lands and Natural Resources</b> (includes Minerals Commission and Forestry Commission)	Environmental and social oversight in allocation of areas for mining. Understand conditions, enabling environment and business drivers to ensure progressive restoration of mine sites. Raising the levels of protection for ecologically important forest reserves. Strengthen interaction between departments on allocation of mining licenses, spatial planning of new concessions, monitoring of restoration plans.
Regional Government and District Authorities	Improved oversight of mine restoration, illegal mining operations and ensuring that licensing conditions are being met. Encourage greater effort into spatial planning at the district level. Capacity to engage with communities.

### **Lessons learned**

- Extreme measures such as bans cannot be sustained in the long-term. It justifies illegality, rather than being a motivator to legalization and formalization. Remove bottlenecks in the licensing process to promote legalization.
   Focus on formalization. Approaches to legalize the industry, provide access to financing, promote sustainable practices, and help illegal ASM miners find alternative livelihood opportunities should be prepared and implemented while the ban is active.
- **Encourage formalization of ASCM.** Formalization will require technical support in the form of geological exploration, metallurgy, development of sustainable practices and remediation. It will open opportunities to access finance and drive the need for sustainable practices.
- Address ASM impacts on agriculture. Improving agricultural efficiency will reduce associated deforestation in many countries and have little impact on mining. As recommended for LSM, work with district agriculture sectors to provide farmers and cooperatives with technical expertise to increase yields per unit area and move away from more damaging traditional practices. There may be an opportunity to generate revenue through the creation of agricultural opportunities after the restoration of ASM impacted lands.
- Forest protection should be extended and properly enforced. Ghana is one example but the challenge is found in many countries. Take a landscape-based biodiversity planning approach that identifies the critically important habitats and important ecological support areas.
- In areas where ASM and LSM interact, forest management needs to address mining as a whole, to take into account indirect impacts.
- **Recognize that mining is more profitable for populations than forestry and agriculture in the short term** and use that to **inform alternative livelihood programs.** This will likely be the case in other contexts.
- Invest in programs that address spatial planning of rural development, forest management and protection.
- Local communities and civil society organizations can be effective enablers of forest-smart mining. **Prioritize** support to them in any country level programming.

### November 2020

# 2. Indonesia

## LSM coal mining

### Background



Coal remains the **largest revenue-generating mining commodity**, supporting **38% of global electricity generation**. The price of thermal coal reached its peak early in the second half of 2018, the highest since 2012, due to unexpected hot weather across Asia and Europe that resulted in greater electricity consumption for air conditioning. Many parts of the world — e.g. China, India and South East Asia — are expected to continue to use coal to meet their primary energy needs. The above average economic growth in these countries suggests that the demand for coal will continue in the short to medium term. In the long term, renewable sources will reshape the energy mix and coal consumption is expected to plateau from 2023.<sup>140</sup>

**Indonesia is one of the world's largest producers and exporters of coal** (80% is exported), particularly of thermal coal, of which it is the leading exporter globally. The country ranks **ninth** in terms of **global coal reserves**, hosting approximately 2.2% of total proven global coal reserves.<sup>141</sup> The majority (60%) of these reserves are cheaper, lower quality (sub-bituminous) coal, containing less than 6100 cal/gram. According to Indonesia's Ministry of Energy and Mineral Resources, national coal reserves are estimated to last around 83 years, at the current rate of exploitation.<sup>142.</sup> The main export markets are India and China; total consumption of these countries represents two-thirds of global demand. However, the proportion of domestic coal sales is increasing as the Indonesia government rolls out a new energy program involving the construction of various power plants, mostly coal-fired.

### Policy recommendations for forest-smart mining in Indonesia

- New mining law could present a policy lever. Law No. 3 of 2020, was formulated on the basis of a deregulation bill passed on 12 May 2020 and contains changes favoring large-scale coal mining companies. Companies will be able to continue mining until coal deposits are exhausted. Coal miners will be exempt from having to rehabilitate their concessions, as that requirement only applies to mining companies whose permits have expired. Mine rehabilitation is key to avoid accidents as well as offering opportunities to transform unused land into carbon capture (reforestation).
- If influence could be exerted on the provisions and enforcement of the law, it would be a significant opportunity to improve mining landscapes across the three major coal-producing regions of Indonesia. Whether or not there is a window of opportunity requires further investigation.
- Build on the existing requirements of the Indonesian regulatory system for Environment Impact Assessment (EIA), Analysis Mengenai Dampak Lingkungan (abbreviated AMDAL). The EIA already requires community/public consultation as input to the AMDAL Terms of Reference which is a positive step in creating local accountability. Key institutions to engage include Provincial Environment Impact Control Agency (BAPEDALDA) who have oversight of coal mining operations.
- There's an **opportunity to enhance landscape-level approaches**. The central and regional governments are obliged by law to compile **Strategic Environmental Assessments** to ensure that the principles of sustainable development are fundamental and integrated into the development of a region.
- There is significant **room for growth in Indonesia's renewable energy sector**, which currently accounts for 5% of its energy production with huge scope for the development of solar and offshore wind energy projects to meet Paris Agreement NDC Commitments. **Support for development of this sector could reduce the political and economic case for protecting Indonesia's coal production** and help **remove barriers to improving the sustainability performance** of the country's coal mining sector.

- There is **potential to apply best practice guidelines more broadly.** The <u>ASEAN Minerals Cooperation Plan (2016-</u> <u>2025</u>), and associated Sustainable Minerals Development Guidance could be extended to cover **coal mining landscapes**, particularly with regard to progressive and closure restoration practices.
- Promote and enable the use of voluntary mining initiatives such as the <u>Bettercoal Code</u> or IRMA in mandatory legislation and guidelines. Mechanisms include referencing the <u>requirements of the standard in legislation, or</u> requiring accreditation by an approved voluntary standard. This is about levelling the playing field for companies, but also ensuring that the law and standards/best practice do not contradict each other. Government has several different roles, including to incentivize, facilitate or at least not to obstruct implementation of voluntary standards.
- Ensure that policies of emerging market banks in Indonesia (e.g. New Development Bank) are aligned with the safeguard policies of the financial sector (particularly the World Bank and IFC as highlighted in Chapter 2) as access to capital is an important driver for responsible mining.
- Work to address corruption, as it is linked to forest protection. There is a high risk of corruption in Indonesia, and mining companies operating in the country agree that the impact of corruption on the sector is significant.<sup>143</sup> There are 8,663 unlicensed mines in Indonesia, a quarter of which are gold mines. Decentralization of mining sector management authority in 2001 has increased corruption in land administration and natural resource management generally. Evidence indicates mining permits were obtained in protected forests through informal agreements between the national Ministry of Environment and Forestry and the district heads<sup>144</sup>. This dynamic will shift with the increasing centralization of mining licensing and management under the new Mining Law. However, the threat of imprisonment and fines for officials who take bribes or commit other crimes in issuing mining permits was removed, which could incentivize more corruption.

Table 8: Institutional levers for forest-smart mining in coal mining in Indonesia

Key institutions	Summary of levers and potential discussion
<b>NGOs</b> (e.g. Burung Indonesia, Cl, WWF, WCS, Publish What You Pay, Jatam Advocacy Network, Wahana Lingkungan Hidup Indonesia Walhi, Anti-mining Mafia Coalition, Auriga Nusantara)	Understanding key areas of sensitive forest landscapes under threat, social issues including impacts on livelihoods of forest-dependent peoples and key levers for engaging government institutions.
<b>Companies</b> (e.g. Indonesian Coal Mining Association, Bumi Resources, Adaro Indonesia, Golden Energy and Resources, Indo Tambangraya Megah, Mantimin Coal Mining, Arutmin)	Understand industry perspective and response to current environmental and social issues, particularly on how to level the playing field between international and domestic operations and control illegal mining. Given mines are major energy users, incentivize those owned or run by international mining houses, to divest from coal power sources.
<b>Investors and standards</b> (e.g. Asian Development Bank, the World Bank, IFC, New Development Bank, Bettercoal Code)	Work through investors to seek adoptions of best practice standards including PS6 and PS7, Better Coal Standard for all new mining operations.
Ministry of Energy and Mineral Resources (MEMR)	Environmental and social oversight in allocation of areas for mining. Understand conditions, enabling environment and business drivers to ensure progressive restoration of coal mining.
Ministry of Labor	Understand key labor and social issues and better integration with MEMR and MEF.
Ministry of Environment and Forestry (MEF)	Understand and strengthen interaction between MEF and MEMR on allocation of coal mining licenses, spatial planning of new concessions, monitoring of restoration plans.
Ministry of Agrarian Affairs and Spatial Planning	Understand and discuss options for monitoring cumulative
Ministry of Industry	Impacts and opportunities for the use of restored mining areas. Integration of mining restoration into regional development plans
National Development Planning Agency	to drive support for stronger enforcement on mine restoration.
Regency Government	Improved oversight of mine restoration, illegal mining
Provincial Government	operations and ensuring that incensing conditions are being met.

### **Lessons Learned**

- **Reducing coal demand** in high consumption economies like India and China will impact coal production in countries like Indonesia. **Work to facilitate a green transition in those countries**. Integrating FSM into standards for the coal sector, such as Bettercoal, and then engaging the organization to increase membership by companies in India and China would be one method of facilitating the transition.
- Recognize that tackling corruption can improve forest outcomes in mineral producing countries.
- Identify gaps in mining legislation, for example around responsibility of miners to restore mined land, and engage national governments to understand how these can be addressed.



## ASM tin mining in Bangka Belitung

### Background

The mining sector in Indonesia represents 4.7% of the country's GDP.<sup>145</sup> Over the past two decades, Indonesia has become an Asian epicenter for artisanal and small-scale mining (ASM). Indonesia is the world's second largest producer of cassiterite (an ore of tin) and responsible for one-third of the global tin supply. Most cassiterite is mined by up to 50,000 cassiterite ASM miners in Bangka Belitung Province.<sup>146</sup> Indonesia is also the world's fifth largest producer of gold, and in 2013, there were at least 300,000 ASM gold miners working in the country.<sup>147,148</sup> The country has significant forest landscapes, which, in some cases are poorly managed and threated by ASM. 72% of its intact forest has been lost.<sup>149</sup> Tens of millions of Indonesians depend on forests, with coastal communities particularly reliant on mangrove forests.<sup>150,151</sup> This case study focuses on **ASM tin mining** in **Bangka Belitung**, specifically the Bangka Regency, although medium and large-scale mining also occurs. Two-fifths of Bangka Belitung land surface is covered by forests, including hardwood, ironwood, and mangroves. A government and industry-owned mining and smelter company, PT Timah, holds a concession stretching across three quarters of the province.<sup>152</sup> However, the company sub-contracts much of its concession to medium-scale mining companies, and it is estimated that approximately half of PT Timah's production comes from ASM, which do not have expressed permission from the company to operate there, with the exception of one area: East Belitung's People's Mining Area, which appears to be devoid of a viable deposit.<sup>153</sup> Cassiterite mining is increasingly moving offshore, including into coral reefs.

### Policy recommendations for forest-smart mining in Indonesia

- Build on the success of completed rehabilitation projects organized by donors and industry associations. Investigate avenues for incentivizing and monitoring mine restoration efforts. The <u>Tin Working Group</u>, convened by the Responsible Minerals Initiative (RMI), sponsored health and safety training for ASM miners, and commissioned scoping activities for mine site rehabilitation, which includes wetland restoration and reforestation.<sup>154</sup> However, activities have ceased as funding expired in 2019.<sup>155</sup> The German Federal Institute for Geosciences and Natural Resources (BGR) collaborated with authorities, local universities, PT Timah, and a local reclamation contractor to demonstrate best practice reclamation and generate knowledge at a pilot site within Bangka Regency. The project was finalized in 2019 and PT Timah is responsible for the maintenance of the pilot area that was rehabilitated.<sup>156</sup>
- Engage the International Tin Association (ITA) and its members to understand how it's policy on ASM standards could be implemented by companies sourcing from Indonesia. Investigate what support tin miners need to comply with the standard and what would incentivize them to do so. ITA has a policy on ASM that outlines how the tin industry seeks to "positively influence supply chains and policymakers towards a step-by-step improvement of the standards of ASM operators".<sup>157</sup>
- Engage mining companies, refiners, miners and exporters operating in Indonesia to understand what would incentivize them to mitigate environmental risks. What are the barriers to improving their practices and implementing environmental due diligence on their suppliers? For example, PT Timah, onshore and offshore unconventional miners, independent smelters, PT Refined Bangka Tin, Asosiasi Export Timah Indonesia (AETI), and PT Pulo Mas Sentosa (a sand and tin offshore mining company).
- Work with government agencies, such as the State Ministry for the Environment, which monitor mining companies' environmental performance and approves environmental impact assessments, the Ministry of Marine Affairs and Fisheries, whose mandate is to advise the MEMR on how the rehabilitation of offshore mine sites should take place, the Ministry of Forestry, who oversees protected areas and forested areas, and the Ministry of Agriculture Agency of Bangka Belitung. Assessing the effectiveness of their current policies, capacity to enforce regulation, and so forth, requires further investigation.
- Explore the **opportunity of developing** a **blue carbon project**<sup>wiii</sup> which would generate revenue through a blended financial vehicle to restore local mangroves, rehabilitate mined-out areas, and thus protect local fisheries and generate opportunities for agricultural development as well.

Table 9: Institutional	levers for forest-smart	mining in tin	mining in Indonesia
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Key institutions to engage	Summary of levers and potential discussion
Tin Miner/Smelters (e.g. PT Timah)	In charge of tin mining operations and tin sourcing requirements. If they adopted FSM practices as part of their standard operating procedures, it would do much to improve the environmental performance of the sector. Investigate how they could share their practices with other companies.
<b>Government agencies</b> (e.g. Bangka Belitung provincial and regency governments, the Cooperative and SME agency, the agriculture and livestock agency)	They provide technical capacity building services to the miners and smelters.
<b>NGOs</b> (e.g. Telepak or Earthworm Foundation)	Understand key areas of sensitive forest landscapes under threat and the governmental actors and key levers to achieve change.
<b>Civil society organizations</b> (e.g. village heads or land owners)	Provide permission to mine or charge a rent to unconventional miners. Could they set criteria for FSM practices as a condition of access to land?
International Tin Association	Drive responsible tin supply chains
Responsible Minerals Initiative (RMI)	Houses the Tin Working Group. Sets responsible sourcing standard for tin (RMAP).
<b>Private sector actors</b> (tin manufacturers, or market aggregators)	Provide initial capital and access to the market
Police	Enforces infractions of the mining law, and frequently crack down on informal miners, although they are not usually prosecuted. Engaging the police is important but extremely sensitive.
<b>Academic institutions</b> (e.g. University of Bangka Belitung Fisheries department, the Research Centre for Oceanography or Bogor Agricultural University)	Provide key research to inform decisions.
<b>BCR</b> (Bundesaltstat fur Geowissenschaften und Rohstoffe) - German Federal Institute for Geosciences and Natural Resources	Recently completed a rehabilitation and reclamation program in Babel. Key lessons to share.
Tin Working Group	Multi-stakeholder initiative that has initiated programs in rehabilitation and reclamation, as well as labor rights. Presently dormant following successful completion of phase 2; potentially seeking support for phase 3.
Greenpeace	International campaigning NGO whose publication in 2013 mobilized IDH and major tech companies to take action on the environmental destruction and human rights violations taking place in Indonesia's tin sector.

### **Lessons learned**

- **Pilot schemes to rehabilitate degraded, mined land are possible.** The **challenge** is building the enabling model which means these schemes can be scaled and become **sustainable**. Current initiatives are reliant on donor or industry funding, with little longer-term plan. Could carbon finance be an option?
- Some mining companies are already implementing good practices on forest management. Engage them to understand how to support other companies to do the same.
- **Regulatory barriers**, as well as **corruption** and **enforcement**, **need to be addressed** to ensure that impacts on forested areas are reduced.

# 3. Brazil

# LSM iron ore mining in the iron quadrangle, minas gerais state



### Background

**Iron ore** large-scale mining (LSM) represents **70% of Brazil's entire metallic minerals production** by value; 64% of iron production comes from the Iron Quadrangle, in Minas Gerais state.<sup>158</sup> LSM contributes to **4% of the country's GDP** with minerals exports generating 30 billion US dollars in 2018.<sup>159</sup> Most LSM operations are legal and formal, carried out primarily by large mining companies, but cases of illegal iron mining still occur.<sup>160</sup> Almost half the Iron Quadrangle is covered by natural remnants (mostly forest), and until recently LSM was considered a driver of forest protection due the network of private reserves. However, the landscape is threated by climate change, charcoal production, forestry, and of most relevance to this case study, LSM dam disasters.

There have been two serious **dam disasters** (in Mariana – 2015 - and Brumadinho – 2019 - municipalities, in Iron Quadrangle) which have **shaken the reputation of Brazil's LSM** sector and **provoked losses to forest ecosystems**. 300 deaths were reported, and 100,000 square kilometers within the Doce and Paraopeba basins were affected. Losses to natural forests and associated ecosystems' biodiversity and services within Doce region were initially valued at 30 billion US dollars.<sup>161</sup> The Mariana disaster suppressed an area twice as big as the annual deforestation rate. The largest Brazilian mining company, Vale S.A. is taking steps to reduce its operations in the Iron Quadrangle, ceasing operations in mines with safety issues. In parallel, it is struggling to promote non-extractive economic alternatives for the region (such as forest restoration<sup>162</sup>), as well as managing its obligation to remedy the disaster by promoting the recovery of the region from the socio-environmental impacts from the tailings dam disasters.<sup>163</sup> There have been limited results from other implicated companies (Samarco and BHP) and the institution (Fundação Renova) created to manage the reparation process.<sup>164</sup>

### Policy recommendations for forest-smart mining in the Iron Quadrangle, Brazil

- The environmental legislation in place provides a strong foundation for future policy interventions. Brazil's environmental licensing legislation requires that at least 0.5% of the value of any envisaged development should be invested in an environmental compensation fund to create or manage strictly protected areas.<sup>165</sup> Companies can agree to allocate that amount towards private protected areas creation. Minas Gerais legislation requires the offsetting of any natural area converted for mining use. The offset must be an ecologically similar natural land of at least equal size, allocated to the state for protected area creation.<sup>166</sup>
- Build on the commitment and momentum for judicial enforcement. Federal and state prosecutors responsible for the two disasters' enquiries are committed to improving judicial agreements, particularly when it comes to the recovery process and assistance to affected populations. They have improved mechanisms that guarantee the effective participation of those affected at all stages of the damage repair decision-making process and established a renegotiation process for recovery programs between companies and impacted populations.<sup>167</sup> The agreement also established a renegotiation process for socio-environmental and socio-economic recovery programs, involving responsible companies and impacted populations.
- There is opportunity to add further amendments the new Brazilian mining code which already tightens legislation on high-risk mining practices. The new code, which came into force in 2018, includes some significant changes mostly designed to make LSM sector more attractive to investors and manage risks which lead to dam disasters.<sup>168</sup> Amendments on enforcement of safety, health and environment are under discussion at the National Congress.<sup>169</sup> A new federal plan on mining development, to be released in early 2021, is expected to include sustainability parameters, as stated by the Mining and Energy Ministry.<sup>170</sup>

Key Institutions to engage	Summary of Levers and Potential Discussion
Federal and State Prosecution Services	Improve already established disaster recovery agreements with major LSM companies (as "TAC Governança") towards stronger corporate commitments with recovery goals, effective implementation of Mitigation Hierarchy, ecological corridors development, and other FSM approaches.
<b>NGOs</b> (e.g. WRI, SOS Mata Atlântica, AMDA, Fundação Biodiversitas, Instituto Pristino)	Work in partnership on large-scale projects for protection and restoration of sensitive forest and grassland landscapes under threat, including improvements of livelihoods of forest- dependent peoples.
<b>Multisector coalitions for sustainability</b> (e.g. Coalizão Brasil Clima, Florestas e Agricultura, Observatório do Clima" (Climate Observatory) and "Observatório do Código Florestal" (Forest Observatory))	Enforce, especially through formal recommendations, reprimands or even membership suspensions, quick and effective adoption of FSM practices by local LSM sector.
<b>Businesses coalitions for sustainability</b> (e.g. WBCSD, CEBDS, ICMM)	
Investors and standard setters	Enforce, through investor prerogatives, the effective adoption and verification of 'golden standards' (as IFC PS6 and PS7), especially regarding critical habitats, endangered species, and traditional communities livelihoods.
Federal and state (Minas Gerais) government	Build and implement (along with LSM companies) plans to reduce region's economic dependence from LSM, promoting alternative activities related to natural forests' restoration and conservation. Also ensuring that rigorous licensing conditions (including effective impact mitigation and ecologically equivalent offsets) are being met.
Federal and state legislative houses	Improve Brazilian mining code (and related legislation) towards adoption of more strict safety procedures by LSM and incorporation of mitigation hierarchy approach.

Table 10: Institutional levers for forest-smart mining in the Iron Quadrangle in Brazil

### **Lessons learned**

- Change can be advanced when there is combined multi-stakeholder pressure. LSM are adopting higher safety, environmental and social standards in the Iron Quadrangle following the combined efforts of government authorities, the market and civil society. However, full recovery to ecosystems post environmental disasters is most likely unachievable.
- Strong and verifiable commitment to sustainability standards (including ecosystem protection commitments and actions) has reputational and commercial benefits for LSM companies, as can be seen by overlaying sustainability and stock market indexes.<sup>171</sup> Neglecting risks to the environment and people potentially caused by mining operations' malfunction and safety breaches is severely harmful to companies. This is exemplified by the flight of local and foreign investors, drop in market value, and other negative commercial consequences in Brazil.

- Clear and mandatory technical guidelines within current industry standards are still needed, and current improvement efforts cannot be enough to adequately protect communities and ecosystems from operational failures.<sup>172</sup> Standards and public commitments must include recommendations to abandon technologies and practices that present elevated risks, such as upstream dam construction. New multilateral initiatives such as the Global Tailings Review can help to address these gaps, if the opportunity is taken seriously.
- Historical debts with indigenous peoples can be reduced by promoting new studies towards evaluation
  of local tribes' required territories, and proposals of new official indigenous lands creation by Brazilian
  Indigenous People Foundation (FUNAI), also increasing forest protection (with benefits for the whole society,
  as ecosystems services enhancement).
- Encouraging LSM corporate promotion of more productive and less ecosystem-impacting livelihoods can build the foundations of a new local 'green economy' that is less mining-dependent.
- Where LSM is operational within a region, there is a need to **promote greater local government responsibility for traditional people's safety, health, livelihoods, cultural values**, with help from LSM companies, maybe discussing potential environmental offsets for indigenous/communal lands creation/expansion.

# ASM tin mining in Rondônia state

### Background

Tin is a **Technology Critical Element (TCE)** and in **growing demand**. Tin oxide (SnO2), also called cassiterite, is commonly extracted by artisanal and small-scale mining (ASM) operations in secondary (paleo-placers of historic alluvial plains) and primary (hard-rock) sources in tropical forests of developing countries in Asia, Central Africa, and South America. In Brazil, **Rondônia Cassiterite Province** (Província Estanífera de Rondônia), which encompasses 87,000 km<sup>2</sup> across the Brazilian Amazon, hosts **12% of the world's cassiterite** reserves.<sup>173</sup> ASM activity has occurred in the region since the 1950s, and today most mining takes place in **Garimpo Bom Futuro**, in the municipality of Ariquemes.



Garimpo Bom Futuro is **the world's largest ASM site**, spanning over 10,000 hectares.<sup>xiv</sup> It's within the Jamari River watershed and surrounded by agriculture (soybean), free-range cattle ranching, timber extraction and highly fragmented forest ecosystems. The site is characterized by exposed soil, mine wastes and tailings deposits. Informal, manual mining in the 1970s progressed to formalized cooperatives by the 1990s, using more mechanized small-scale operations. Some exploitation of primary and placer deposits occurs but **80% of cassiterite extraction involves reprocessing historic high-grade tailings and mine wastes**.<sup>174</sup> Investments by international tin companies seeking controlling tailings reprocessing operations in the region opens opportunities for reclamation and reforestation of historic liabilities and circularity.<sup>175</sup>The coexistence of manual scavenging activities and small-scale operations (including TNT blasting, heavy equipment excavations/hauling) has led to several fatal accidents involving informal ASM miners working nearby active heavy equipment since 1990s.<sup>176</sup>

### Policy recommendations for forest-smart mining in Rondônia State, Brazil

There is an **opportunity to attract international investment to mining companies** in Bom Futuro. This would enable the **harnessing of the economic potential of historic high-grade exposed tailings and mine waste** (less environmentally damaging than mining unexploited deposits). Investment would support the formalization of better environmental and social management processes, as new operations would require technical capacity building and adherence to international standards. The companies seeking investments at Bom Futuro are currently members of the Responsible Minerals Initiative<sup>177</sup> and are conformant with four international standards.<sup>W</sup> They also must demonstrate participatory stakeholder engagement and a have grievance mechanism for traditional informal ASM miners and downstream riverine communities.

**Engage government ministries** to assess what could be done to **create financial and regulatory incentives** for international large-scale mining companies to harness the economic potential of the tailings. There are **opportunities for reclamation and restoration of extensive liabilities**, while promoting circular economy in the Bom Futuro tin operations. The ANM Decree n° 9.406 (2018), which regulates ASM in Brazil, already states that the extraction and processing of tailings, and/or other mine wastes shall be promoted by the Mining and Energy Ministry and the National Mining Agency through financial and regulatory incentives. In addition, progressive rehabilitation aligned with mining of historic tailings present future opportunities for forest ecosystem restoration harnessing benefits from payment programs for ecosystem services and biodiversity conservation, such as REDD+ and the Floresta + by the Ministry of the Environment (Ministério do Meio Ambiente - MMA).

Learn from other initiatives and conduct a multi-stakeholder consultation to determine which methods of rehabilitation could be suitable in Rondônia state. Is there scope for the introduction of frugal rehabilitation at the landscape level, akin to the frugal rehabilitation mechanism designed, piloted and proven by the Swiss and Mongolian governments as part of the bilateral cooperation program, ESEC and ESEC II? What can be learnt from the Tin Working Group (TWG) and BGR's separately instigated restoration programs in Bangka Belitung, Indonesia?

xiv. "Garimpo" is the Brazilian Portuguese word defining a region where artisanal and small-scale mining occurs.

xv. Responsible Minerals Initiative (2017), International Tin Code of Conduct v3.2: Principles and Standards of Practice, OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (2016), Pact Mines to Markets (M2M) Program (2017). ASM occupational health and safety: A Draft Response Guide for Mid and Downstream Stakeholders to Identify and Mitigate Risk

### Table 11: Institutional levers for forest-smart mining in Rondônia State, Brazil

Key Institutions to engage	Summary of Levers and Potential Discussion
<b>Tin Miner/Smelters Associations</b> (e.g. CooperSanta; CooperMetal and CooperFuturo)	In charge of tin mining operations and tin sourcing requirements. If they adopt international Tin Standards as part of their standard operating procedures, it would do much to improve the social and environmental performance of the sector.
<b>The National Service for Industrial Learning (SENAI) of Rondônia</b> and <b>Tin refineries</b> (e.g. White Solder Mining and Metallurgy)	They provide technical capacity-building on more efficient and safer mining and processing to the local ASM communities of Bom Futuro
<b>Government institutions</b> (e.g. Rondônia State of Environmental Development (SEDAM) and the Federal Prosecutors Office (MPF))	Deeply involved in the investigation and enforcement of environmental permitting and sensitive social- environmental issues of Bom Futuro.
<b>Civil society organizations</b> (e.g. Bom Futuro Residents Association and the Ariquemes Mining Extraction Industry Workers Union (SINTIEMA))	Leverage social transparency and stakeholder participation in policy development for tin mining developments at Bom Futuro.
International Tin Association	Drive responsible tin supply chains.
RMI & Tin Working Group	Multi-stakeholder initiative that set responsible sourcing standard for tin (RMAP), including rehabilitation and reclamation, and labor rights.
<b>International mining investors</b> (e.g. Meridian Mining and Tin-Br)	Large and medium-scale mining investors seeking to develop tin mining and smelting operations at Bom Futuro, which could bring circular -economy approaches and better environmental and social management.
<b>Academic institutions (</b> e.g. The Rondônia, Minas Gerais and Brasília Federal Universities)	Provide key research to inform decisions on environmental management on forest and water-resources.
<b>Government environment ministries</b> (e.g. The Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) / Ministry of Environment – Ministério de Meio Ambiente (MMA))	Responsible for monitoring and enforcing environmental compliance, and forest protection and restoration.
<b>Government mining ministries</b> (e.g. The Brazilian Mining Agency – Agência Nacional de Mineração (ANM) / Ministry of Mining Energy (MME))	Responsible for mining permits and tenures in the regions, including large, medium and small-scale operations.

### **Lessons learned**

- **Poor environmental standards** by ASM operations and **lack of enforcement** capacity in government institutions can worsen forest fragmentation and ecosystem degradation.
- Information on environmental impacts is often patchy. There is no information about geochemical stability waste materials in the long term, including an assessment of potential contamination of water and fisheries resources through sediments transport, tailings spills, acid rock drainage, and metals leaching.
- Investment opportunities by international large-scale companies represent opportunities for better waste management that would reclaim and potentially restore historic tailings and low-grade waste rock, while promoting circular economy and opportunities for ecosystem restoration in the tin operations.
- Tailings reprocessing-based mining activity can provide an **opportunity for avoidance of forest suppression**, **habitat restoration and forest/biodiversity gain.** Successful experimental restoration undertaken by smallscale mining cooperatives in Brazil in the past demonstrate that REDD+ projects can be implemented in future reclaimed tailings deposits.

# ASM gold mining in the Amazon region

### Background

Artisanal and small-scale gold mining (ASGM) generates almost 30% Brazil's gold production, and employs up to 500,000 people.<sup>178</sup> ASM has been an important economic activity in the Amazon region since the 1950s, burgeoning particularly after the high rural unemployment of the droughts in the 1970s. Immigrants from rural regions began occupying previously uninhabited areas of the rainforest and the Tapajos River is still considered one of the largest hotspots globally.<sup>179</sup> After a diminishing of activity in the 1980s and 1990s, the rising gold price and lure of fast enrichment has seen the growth of ASGM once again in many remote regions of the Amazon. **Recurrent gold rushes have increased populations of miners** (colloquially known as garimpeiros) in established hotspots, as well as in protected areas and aboriginal lands in Para, Amapa, Rondonia and Mato Grosso. Although artisanal mining is common in other parts of the country, the **Amazon region is the most significant** in terms of miner population, gold production, mercury consumption and overall socio-environmental impacts.

### Policy recommendations for forest-smart mining in the Amazon, Brazil

The legal framework requires reform. The Mining Code – Decree Law No. 227 (1967) and Decree No. 62.934 (1968)

 is complex. It does not address the social and environmental issues associated with ASGM, nor the diversity of scales and formalization of operations.<sup>180</sup> Whilst the Decree 97.507/1989 of the National Department of Mineral Production (DNPM) calls for environmental assessments, labor rights, and compliance with environmental and occupational health and safety standards in mining operations, and Law 199/06 of the DG DNPM defines the criteria for transfer of concession titles, allowing for joint ventures between ASGM operators and formalized operations, fluctuating gold prices, low geological knowledge, and low buy-in by marginalized and informal miners have hindered joint-venture initiatives.<sup>181</sup> Miners whose operations do not fit within the terms of the regulations do not have opportunities for formalization and, with that, environmental compliance, and are further marginalized.

- **Provide support to the Brazilian government which lacks the resources and technical capacity** to effectively manage the sector to promote revenue generation by ASGM sustainably.
- There was some political interest from the national government in addressing the challenges. These engagements have become less prioritized since the election of a new government in 2018 and in some cases weakened.
- Build on the first program for voluntary conservation launched by the government. The 'Floresta +' program was recently launched by the Ministry of Environment as a response to the growing pressure by the Union and National Agriculture Associations for better environmental governance of the Amazon Region. Although in its early stages, it is the first action by the current government to promote, through Payment for Ecosystem Services, voluntary conservation actions in the Amazon.
- Brazil has engaged in several **UN multilateral environmental agreements** which support the development of policies to address the environmental and social problems of the ASGM sector.
- The **ratification of the Minamata Convention on Mercury** is particularly important to promote sustainable ASGM through capacity building for mercury-free technologies, technical and financial assistance for impact mitigation and restoration. Brazil has begun to design its **National Action Plan to address ASGM environmental impacts** according to the convention.
- Brazil is a **member state of the International Union for Conservation of Nature** (IUCN), adopting the Recommendation 2.82 on the protection and conservation of biological diversity of protected areas from the negative impacts of mining and exploration. As such, policies ought to be implemented to prohibit mining in protected areas, and develop planning, monitoring, and restoration for mining-affected protected areas and indigenous territories. The IUCN's influence has diminished since the election of the new administration in 2018.
- Another international agreement to which Brazil is a signatory is related to efforts to co-manage resources in the Amazon Basin, such as the **Treaty of Amazonian Cooperation.** A bi-national agreement signed by Brazil and France in 2008, is a targeted approach to combat ASGM along the Oiapoque River in Protected Areas bordering the State of Amapá and French Guiana. Since 2019, institutions responsible for enforcing forest protection and indigenous stewardship have been weakened.
- To date, the <u>Global Mercury Project</u> (GMP) of the United Nations Industrial Development Organization (UNIDO) that began in 2002, is the most significant initiative in the Amazon region. Its aim was to provide technical training and promote sound policies for addressing risks in ASGM areas (GMP 2010). More recently, training initiatives have been focused on **promoting coexistence and collaboration between ASGM groups and junior mining companies.**

Key institutions to engage	Summary of levers and potential discussion
<b>Mining cooperatives</b> (e.g. Gold Miner Cooperatives of the Amazonian (COOGAM) and the Brazilian Association of Precious Metals (ABRAMP))	In charge of gold mining and refining operations and sourcing. If they adopt international standards as part of their standard operating procedures, it would do much to improve the social and environmental performance of the sector.
<b>Government ministries</b> (e.g. The Mineral Technology Center (CETEM) / Ministry of Science and Technology - Ministério de Ciência e Tecnologia (MCT))	Executing agency of the Minamata National Action Plan for ASGM. They provide technical capacity-building on more efficient and safer mining and processing to the ASGM.

Table 12: Institutional levers for forest-smart mining in the Amazon, Brazil

Key institutions to engage	Summary of levers and potential discussion
<b>Government institutions</b> (e.g. the Brazilian Institute of Environment and Renewable Natural Resources (IBAMA) / Ministry of Environment – Ministério de Meio Ambiente (MMA) and the Federal Prosecutors Office (MPF))	Deeply involved in the investigation and enforcement of environmental permitting and sensitive social-environmental issues of ASGM in Protected Areas and Indigenous Lands
The Secretariat of the Minamata Convention of Mercury	Promotes implementation of the Articles of the Minamata Convention relevant to environmental stewardship in ASGM affected areas.
<b>Gold certification mechanisms</b> (e.g. Fairtrade from Fairtrade Labelling Organization (FLO) and the Fairmined from the Alliance for Responsible Mining (ARM))	Set social-environmental standards for sustainable and ethically-sourced gold suppliers
<b>NGOs</b> advocating for forest stewardship and indigenous rights such as the Instituto Socio Ambiental (ISA), Fundação Renova,	NGOs acting for the protection of Amazonian indigenous peoples and forests from illegal ASGM activities. Work on on reparation, impact monitoring, sustainable use and remediation, and can have a quite significant budget (eg. Fundação Renova has c.a.a USD\$ 3 billion). They are also closely monitored by public agencies and pushed to perform.
<b>The Institute of Agriculture and Forest Management and</b> <b>Certification</b> (Imaflora) and the <b>Banco do Brasil Foundation</b> – Fundação Banco do Brasil (FBB)	Developers of Amazon Fund projects for conservation and the sustainable use of the Amazon forest in the Xingu and Yanomami regions.

### **Lessons learned**

- **Complex regulatory frameworks** which make formalization and environmental compliance difficult for artisanal miners, **keep the sector marginalized and promote the illegal gold trade**. A series of problems cascade down from this situation in Brazil: (1) Taxes are collected in urban centers away from mining sites, diverging royalties from mining centers. (2) Unregistered miners are technically illegal and become hostage to middlemen (who hold the 'Permissão de Lavra Garimpeira' Artisanal Mining Permit) to whom they sell their output for lower prices. (3) Local politicians control cooperatives creating bias when performing their political duties.
- Protected areas or traditional indigenous territories may have illegal and un(der)managed ASGM operations within them, leading to **violence from miners towards indigenous groups**, and the risk of **spreading infectious diseases**, including COVID-19. One solution could be **demarcation of official ASGM territories** to prevent illegal operations within protected areas or indigenous territories, which lead to social-environmental conflicts.
- The **implementation** of the **regulatory mining framework requires adjustments** and **capacity building** to encompass and address the diverse set of issues relevant to ASGM activities.
- Improvements in environmental compliance can only be achieved through **increased government support**, including updated, practical, and responsive policy and legislation for the sector.
- Promote the ratification of the Minamata Convention on Mercury in countries which have not ratified the convention. Its particularly important to promote sustainable ASGM through capacity building for mercury-free technologies, and technical and financial assistance for impact mitigation and restoration.
- Available funding from the national and international programs (e.g. REDD+, the Amazon Fund and the Climate Fund) can be sought to develop forest recovery, biodiversity conservation and management of protected areas and indigenous territories affected by ASGM.

#### November 2020

# 4. DRC

# ASM tin and tantalum mining in eastern DRC



### Background

The Democratic Republic of Congo (DRC) harbors the **world's second largest swath of rainforest**, currently spanning over 152 million hectares, but the forest has been decreasing by one million hectares per year since 2000. The trend is steadily worsening; the **annual deforestation rate** has increased by 19% since 2010 and again by **38%** since 2017.<sup>182</sup>

Meanwhile, the DRC is also a **great mineral producer**, accounting for 6% of worldwide cobalt, 62% of tantalum, 4% of tin production, and producing an annual estimate of one to two billion US dollars in gold.<sup>183</sup> Its **economy is heavily dependent on mining**, which in 2018 provided 29% of the country's GDP, 98% of its export revenues, and 25% of employment.<sup>184</sup> **ASM makes up a significant proportion** of this production; a third of cobalt, 80% of gold, and the majority of wolframite, coltan and cassiterite (the '3Ts'). Around 10 million people, or 16% of the population, derive their livelihoods from ASM. **Technological progress and global demand** will keep on pressuring miners to discover and exploit new sites, many of which, in the case of **tungsten**, **tin**, **tantalum and gold** (the '3TGs'), are located in the eastern part of the country's primary forests. World Heritage sites and other national parks (e.g. Kahuzi Biéga National Park (KBNP), Okapi Wildlife Reserve, Virunga National Park, Garamba National Park, Salonga National Park) as well as natural reserves (Itombwe) are particularly endangered,<sup>185</sup> as **42% of the mineralization of these metals occurs in forested areas**.<sup>186</sup> The case of 3TG ASM in eastern DRC shows the environmental impacts and the possible remedies to a fragmented, remote and weakly governed mining sector.

### Policy recommendations for forest-smart mining in the DRC

Leverage and build on existing forest-protecting institutions and programs. These coordinate under the leadership of the Ministry of Environment and Sustainable Development within the Investment Framework established by the 2012 national consensus on forests and the National REDD+ Strategy. The Multi-partner Trust Fund Office (MPTF) established by the United Nations Development Program (UNDP) and capitalized by donors united under the Central African Forest Initiative (CAFI) administers the DRC REDD+ National Fund (FONAREDD). Despite the fact that only a fraction of the funds—4.8 of 210.4 million US dollars—is earmarked for the mining sector, mining drivers do fall under other areas such as governance (26.4 million US dollars) or land use planning (21.6 million US dollars). In December 2019, after years of delay due to the revision of the Mining Code as well as allegations of illegal awards of forestry concessions by the ministry, the government and partners approved a 'Programme for the Sustainable Management of Forests'. The program is still at the policy level. The Congolese Agency for the Environment (ACE) recently produced a draft manual for the design and monitoring of REDD+ norms in mining investment, and the second tranche of CAFI funding can now be programmed for effective implementation. Now is a perfect time to enter and support the CAFI coalition. Other key partners are UN Habitat, the World Bank, and USAID's Central Africa Regional Program for the Environment (CARPE). USAID has been quite effective in promoting ecotourism initiatives in protected forest areas and transforming the charcoal trade through the production and distribution of improved stoves. These programs would benefit from a stronger coordination between the mining and forestry sectors.

- Work through mineral certification initiatives which already cover the majority of tin production in the DRC. They align with and implement the OECD Due Diligence Guidance.<sup>187</sup> The 'Certified Trading Chains' by the German Geological Services (BGR) deal with all 3TGs while ITSCI focuses on tin. These initiatives help local ASM producers, traders and exporters comply with certification norms in order to enter the global legal trade. Because of their strong upstream auditing and monitoring systems, these players enjoy a prodigious and nuanced granular knowledge of ASM systems and practices, but do not have the protection of biodiversity as objectives. However, they do have the capacity to understand and monitor producers, and therefore to help design local solutions and facilitate dialogue.
- Engage with conservation NGOs who lead land-use planning initiatives but be mindful of an institutional belief in advocating alternative livelihoods for ASM. These include the World Wide Fund for Nature (WWF) or African Park Networks (APN), which deal with deforestation and, sometimes, with ASM, within protected areas in partnership with the <u>Congolese Institute for the Conservation of Nature</u> (ICCN) Regional Office in Bukavu. Building on their remarkable knowledge of customary practices and responsibilities within their areas, these key players often spearhead 'zoning' and land use planning initiatives with uneven success. The demarcation of zones for integral conservation or for environmentally-friendly economic activities in Itombwe in particular has been a bumpy road for many years, but it keeps the channels of dialogue open with the population.<sup>188</sup> These actors, however, have little knowledge of, and often a strong prejudice against mining. Many community projects are grounded in the assumption that alternative livelihoods should replace ASM, but those barely provide the same levels of income and so their basis for success is questionable.
- Engage with large-scale mining companies, some of whom have successfully negotiated collaborative agreements with ASM that ensure environmental compliance. The OECD Due Diligence Guidance has prompted several companies to negotiate solutions with ASM near/on their concession. Canadian gold miner Banro in the Maniema province works with conservation NGOs, the ICCN and local populations on the Itombwe zoning efforts. Mauritian tin miner Alphamin Resource Corp. Bisie (North Kivu) has registered a remarkable success story when it turned, in 2017, a major ASM cassiterite pro duction site influenced by armed groups into a peaceful and environmentally compliant industrial site. The initiative relied on a combination of generous community-run social trust fund (the 'Lowa Alliance'), continuous engagement with ASM site managers and traders,<sup>®VI</sup> involvement of the Mining Ministry, and led to clear options for miners—compensation, reconversion or recruitment.<sup>189</sup> LSM are particularly competent in understanding local market drivers and the challenge of ASM formalization within the Congolese law. They do not yet coordinate under a national umbrella but tend to collaborate with the Assistance and Management Service for Small-scale Mining (SAEMAPE) in the Mining Ministry. The new 2018 Mining Code also offers new ways to facilitate work between LSM and ASM.
- Support further research to understand the extent to which mining practices across mineral categories are
  forest-smart, province by province and commodity by commodity. This would be instructive for a suite of
  stakeholders. For example, a study to gauge how forest-smart the practices are of mines owned and/or managed
  by the large listed companies (such as Barrick, Glencore, ERG) as well as private unlisted companies, could
  influence the risk controls of these companies, government regulations, and the due diligence practices and
  requirements of market players. If conducted in combination with market engagement, e.g. through the OECD,
  the RMI, the <u>Cobalt Institute</u>, the <u>Global Battery Alliance</u>, the LBMA, the <u>Dubai Multi-Commodities Centre</u> (DMCC),
  etc., as investor engagement, then real change could be incentivized.

xvi. The inclusion of informal value chain players who both prefinance ASM operations and buy from the producers was unprecedented and absolutely critical in the success of this initiative.

- Engage local NCOs at grassroots level to improve mining practices, taking a 'forest-smart livelihoods/economy' perspective. Since mining-related economic activities such as fuelwood collection or bushmeat hunting cause more negative impacts upon forests than mining extraction itself, efforts to improve practices should take a holistic focus which includes agricultural and mining livelihoods at the village / town level in key sites, with the introduction of FSM techniques in demonstration sites. This would be especially effective where there are large populations of migrant miners, noting that they can then take these new practices into other communities when they are mining there.
- **Invest in environmental education** with communities around protected areas and reserves impacted by mining, and in unprotected Key Biodiversity Areas.
- **Support conflict resolution programs for communities in and around contested protected** areas, such as Virunga and Kahuzi-Biéga, to seek to improve the integrity of protection by addressing and hopefully resolving and remedying as many community grievances as possible.
- Establish programs that **support the pursuit of nature-based solutions** to local economic challenges in communities dependent on forest-based livelihoods and natural resource exploitation, including mining.

Key institutions to engage	Summary of levers and potential discussion
Central Africa Forest Initiative (CAFI)	Join coalition; participate in policy dialogue and program design; support relevant earmarked programs.
<b>Independent environmental donors</b> working under the CAFI umbrella (e.g. World Bank, UN Habitat, French Development Agency AFD, USAID's CARPE)	Map out relevant programs and initiatives; monitor impacts and seek relevant pilots to upscale at more strategic levels.
Ministry of Environment ICCN Agence Congolaise de l'Environnement	Understand the REDD+ policy framework and participate in its improvement; map out specific initiatives and programs in local conservation areas.
Mineral certification initiatives (e.g. ITSCI, BGR, etc.)	Understand the scope and nature of ASM production and the formalization challenges; help introduce environmental concerns into their capacity building and policy work and the certification schemes.
<b>Conservation NGOs</b> (e.g. World Wide Fund for Nature, African Parks Networks, African Wildlife Foundation, etc.)	Local stakeholder mapping; understand dynamics in specific protected areas; participate in local efforts to diminish illegal/ informal ASM pressure on forests through FSM practices and forest-smart livelihoods.
<b>Large-scale mining companies</b> (e.g. Banro, Alphamin, Barrick, Glencore, etc.)	Understand industry perspective; understand ASM trade; promote and support local programs associating ASM population and local communities in FSM or alternative charcoal trade; introduce FSM practices themselves regardless of their relationship to ASM.

Table 13: Institutional levers for forest-smart mining in ASM tin and tantalum mining in the DRC

There are a host of additional players that a stakeholder mapping exercise would reveal; typically organized around the mineral commodity (3Ts, cobalt, gold) and the region. Some minerals are excluded from this as their contributions are smaller, but they are worthy of consideration too (e.g. colored gemstones, development minerals).

### **Lessons learned**

**Localized solutions** work better in contexts like the DRC, in a context of weak governance, conflict of competencies between institutions, or the 'autarky' of mining sites which are unlikely to improve radically in the medium term. This would mean choosing a few targeted mining areas and working with communities, local (statutory and customary) authorities and program operators (mining companies, conservation NGOs and mineral certification initiatives) to introduce environmental education and alternative practices through a local agreed upon framework. Self-governed communities are more likely to adhere to a framework they participate in building.

**Market-orientated solutions** are most effective where mine sites are remote (as they typically are) and there are economic vulnerabilities. These do not require strong coercive enforcement because they appeal naturally to the stakeholders' rational profit-seeking behavior. For example, establishing a steady meat supply route from nearby cities or through livestock raising to replace bushmeat reliance, or to provide extension services to miners in the form of tools and equipment to diminish the pressure on forests (including simple items such as sand bags to replace trunk-made dams), are avenues worth considering. Instead of a regulatory framework, the angle would be to make the ASM business model forest-smart which has limited efficacy in de facto regulation.

**Promote coordination, education and dialogue between stakeholders.** As in many countries, in the DRC there are multiple active players combatting mining-induced deforestation. Each of them has specific and complementary strengths and competencies, which can be capitalized upon for pro-forest outcomes.

# **G** Conclusions

The report has demonstrated that the case for action on forest-smart mining is strong. Firstly, minerals and metals are fundamental to contemporary life; our ways of life cannot be substantially 'demineralized' without curtailing the boundaries of humanity's potential. For example, low carbon economic development depends on continued mining for commodities such as copper, cobalt and iron ore. Secondly, the growing demand for certain minerals is likely to increase pressure on forests, with most growth predicted to occur in tropical landscapes. Lastly, the mining and minerals sector offers plenty of existing initiatives into which better forest and forest peoples protections could be built.

Bringing forest-smart mining to life requires influencing all three pillars of society (public sector, private sector and civil society) in mineral host countries, consumer countries and the international arena. Noting the profusion of initiatives underway in the minerals space, donors should privilege actors, institutions and processes that combine a number of key elements that serve as a basis for leverage and scalability, namely initiatives that:

- Already work on the nexus between mineral sector growth, sustainability and land use issues.
- Are already active and have political and financial backing, with potential and / or entry points for positive impact on FSM.
- Build miners' understanding on forests and their role in enhancing forest health and respecting the rights of forest peoples
- Build the climate and biodiversity action community's understanding on mining's potential to enhance forest health and help forest communities thrive
- Focus on addressing governance failures in mineral host countries.
- Focus on shaping market demands and requirements in mid- and downstream economies / manufacturing and consumer countries.
- · Focus on shaping investor demands for environmental and human rights safeguards or improvements
- Tie into policy processes at international / multi-lateral level, or have an international or regional reach, or can be replicated across jurisdictions / bi-lateral arrangements or can be scaled within a jurisdiction.
- Use multi-stakeholder approaches and build coalitions across the 3 pillars.



# Key entry points for Institutional Donors

Based on these general recommendations, there are a number of potential concrete entry points for institutional donors to influence FSM in each pillar of society and on each level of mineral supply chains. Decisions about which of these are most appropriate will crucially depend on strategic priorities, policy choices and budget availability. This report provides a diverse menu and does not claim to be definitive or comprehensive.

# I. Public sector

# **Mineral host countries**

**Host country governments** should be a primary target of efforts to manage forest impact. They have the jurisdiction and responsibility to govern the use of their natural resources within international frameworks. Despite challenges related to capacity and/or corruption in many mineral host nations – factors which correlate with negative forest impacts – governments nonetheless have the primary agency to regulate and enforce land use and mineral rights and should be empowered and incentivized to do this better.

The main entry point for this is to support mineral sector governance programs and influence international trade agreements to enhance the enabling environment for realizing forest-smart outcomes. Key aspects to be tackled within this programming should be:

- Policy, legal and regulatory reform to include greater attention to environmental protection and regeneration, as well as support measures to ensure greater uptake. Reforms should be sensitive to the different scales of mining and the capacity of the actors to implement them, with attention to the international legal framework, standards setters, and technical assistance providers. Promoting an enabling environment in isolation of support for initiatives that could harness this is likely to lead to minimal impact: there is a strong correlation between a strong enabling environment and forest-smart outcomes, and weak governance and capacity has been identified as undermining or limiting this impact.
- **Technical support** for minerals host governments to improve institutional capacity to identify and respond to issues related to mining in forests, including for example:
  - (a) Supporting host governments to **negotiate contracts** with international firms with interests in developing operations in forested areas.
  - (b) **ASM formalization**, which adopts a dual approach to incentivizing and enforcing ASM operators and supply chain actors to adhere to the law as the rational choice, especially insomuch as it relates to environmental stewardship.
  - (c) **Enhancing inter-ministerial collaboration and cooperation**, with a focus on mining and environmental ministries, particularly in relation to legal and regulatory alignment, and the centralization of the collection and hosting of land use data in integrated cadastral systems to improvement management.
  - (d) **Strengthening FPIC** in legal and governance frameworks, and its enforcement, e.g. by supporting community-based ASM initiatives such as those led by the Alliance for Responsible Mining in Colombia or Tetra Tech in Ghana and Central African Republic.
- Continued support for anti-corruption, transparency and accountability initiatives in the extractives sector. Go beyond financial transparency to focus on also contract terms and contract negotiation processes, fulfillment of legal obligations in relation to environmental and social impact assessments, and free prior and informed consent. It should also enhance participation and inclusion of affected communities, combined with support for civil society actors on these same aspects.

- Empower local governance of forests and mineral landscapes and resources, strengthening institutions, improving environmental competence, and decentralizing and democratizing land use and permitting decision-making processes. Pay particular attention to the participation of and leadership by indigenous peoples in natural resources governance. Establish and respect no-go areas.
- Integrate FSM in countries' **climate strategies**, and in particular their Nationally Determined Contributions, as well as climate funds' strategies.

In addition, there is an opportunity to improve governance, transparency and performance especially of state-owned enterprises (SOEs) in mineral host countries such as Russia, India, and Albania, which hold significant portfolios of forest mines. Supporting governments to improve oversight over SOEs and the implementation of performance standards within SOEs could be promising entry points in these geographies.

Institution	Entry points
IGF	Technical assistance to member governments on policy, legal and regulatory reform
	Development of guidance documents on mining governance, including environmental management, local content, ASM, mining policy frameworks etc.
	Hosting dialogues and conferences to facilitate sharing of best practice.
WB funding, CDC Group, Extractive Global Programmatic Support fund / bilateral loans and grants	Multilateral donor institution with significant finances to fund resource-dependent developing countries in the governance of mineral resources, with a strategic focus on poor and fragile/conflict-affected countries. Assistance supports the implementation of a range of reforms that build a robust, transparent extractive industries sector.
Transparency initiatives – Bankwatch, EITI, PWYP, NRGI etc.	Tracking the performance of individual companies and sectors of interest, entry points: Engagement with EITI Secretariat to strengthen country reporting requirements on environmental performance (currently weak).

Table 14: Non-exhaustive list of institutions that could support efforts to further these recommendations:

# **Consumer and manufacturing countries**

**Consumer / manufacturing governments** are the principal governance institutions within the countries that drive the demand for mineral resources and therefore have significant influence over how supply and production is structured. Normative requirements and legal frameworks represent the primary tool at the disposal of these governments but have so far focused on a minimum set of requirements that generally do not account for environmental performance. This sits uncomfortably with the policy direction of many mineral consuming countries toward the green growth and energy transition, particularly when it comes to forest-smart mining policies which have the potential to mitigate carbon impacts.

Consumer / manufacturing / market nations could choose to leverage their own existing policy frameworks and priorities when targeting funding to bring about more FSM This could for example involve:

- The planned introduction of legislation that aims at mandating businesses registered in their jurisdiction to conduct due diligence on whether their supply chains use raw materials or products that contribute to illegal deforestation.
- Support the creation of an independent ombudsperson for the market nation's metals sector.
- Develop or support the creation of a multi-stakeholder platform to integrate FSM and climate-smart principles into mining operations through national institutions.
Analysis of the institutional landscape and key stakeholders to bring about forest-smart mining



In addition, there is significant space to demonstrate leadership to drive forward this agenda, which has been receiving increasing attention from influential (inter-) governmental bodies:

**OECD:** the OECD has significant influence over what gets attention in the international policy arena for minerals, and the large majority of consumer-nation supply chain regulations and industry standards is based on its guidance and policy recommendations. The OECD could do more to educate, incentivize and enable supply chain participants to start environmental due diligence. To date they have largely focused on the imperative to combat serious human rights abuses, conflict financing and white collar crime in mineral supply chains originating from conflict affected and high risk areas; however the increasing uptake of this guidance has led to growing pressure from stakeholders to expand it to include other issues such as environmental performance. This could be advanced through long-term engagement and influence on the following:

- Thought leadership that demonstrates the relationship between environmental impacts (including forest-smart mining) and human rights impacts in the minerals sector. This may include commissioning research, developing a brief and promulgating key findings on the topic etc.
- Contributing to the development of normative guidance by the OECD around inclusion of environmental risks as a standalone issue in due diligence requirements.
- Influencing topics on the agenda of the annual multi-stakeholder forum on responsible mineral supply chains that brings together host and consumer governments, private sector and national and international civil society groups.

**India, China, UAE**: These countries play important roles as destinations for minerals from developing countries. Influencing their outbound investment into mineral production and processing, as well as shaping the sourcing requirements of their domestic manufacturers is a key lever in furthering the FSM agenda.

If we take the example of China, including the Chinese government and business actors in conversations about responsible sourcing has proven challenging to date. However, initial achievements have been made via collaboration with the Chinese Chamber of Commerce of Metals Minerals & Chemicals Importers & Exporters (CCCMC) to develop several key guidelines for responsible mining and investment of Chinese companies. These guidelines already include requirements on the environment and indigenous communities, but are voluntary. Greater uptake and implementation of these guidelines would require:

- Collaborating with the Chinese government and CCCMC to strengthen the uptake and implementation of the existing guidance (by e.g. helping to translate general guidance into actionable manuals for Chinese companies), and to include FSM requirements.
- Exploring partnering CCCMC on the new corporate social responsibility (CSR) platform the Chamber has been asked to develop for Chinese companies operating in Africa.

### II. Private sector

### Mid and downstream

Consumer-facing, design, and manufacturing companies have considerable influence over market demands and the connected requirements around social and environmental impacts, and thus play a key role in driving performance of suppliers up to the point of mineral extraction.

While different mineral sectors and different stages of the supply chain have seen the development of their own, specific performance standards in recent years, a key leverage point has emerged in the form of market-based or consumer-facing standard setters. These are usually industry associations and bodies acting as gatekeepers to specific markets through their certification and approval mechanisms, which play a crucial role in pushing requirements and increased performance throughout the supply chain through market-based incentives. The entry points with the most widespread potential impact are the following:

Table 15: Private sector mid and downstream entry points

Organization	Entry points
The Responsible Business Alliance (RBA) and its Responsible Minerals Initiative (RMI)	RMI has 380 corporate members and aims to improve regulatory compliance and support responsible sourcing of minerals. Its Responsible Minerals Assurance Process (RMAP) is auditing and certifying refiners and smelters of tin, tantalum, tungsten, gold and cobalt based on its OECD-conformant standards. Gold and cobalt are the obvious entry points given the existing impact of the former and the forecast growth of demand in both. This audit and certification is one of the key requirements for refiners to access responsible markets in the US, Europe and elsewhere. It multiplies impacts as refiners usually source from multiple mines and geographies.
	RMAP is currently undergoing a revision, which aims to include environmental considerations. Collaborating with RMI in this process and bringing in considerations on FSM and FPIC offers an opportunity to influence entire supply chains and markets.
	Interestingly, this is an example of a market-based solution that is considering ways in which it may go beyond OECD requirements, which in turn can be leveraged to make the case for the inclusion of wider sustainability issues as minimum market entry requirements both through guidance (OECD) and regulations (EU, US SEC etc.)
London Metal Exchange (LME)	The LME is the world's center for industrial metals trading (aluminum, aluminum alloy, cobalt, copper, lead, nickel, tin and zinc). Companies trading minerals through LME (those listed as 'good delivery') are required to adhere to its responsible sourcing standards, which come into force in 2022. Like the RMI, these standards follow the OECD's requirements and provide a market incentive for trading companies and their suppliers to adhere to them. The standards also include limited requirements on environment and health and safety, although have been criticized for not going far enough on this issue. Furthermore, there are question marks over the degree to which the 'comply and conform' approach to sustainability issues can shift the discourse on sustainability to ensure behavioral change follows compliance with the tick-box approach favored by audits.
	Collaborating with the LME and member companies, as well as with cross-recognized audit systems, to expand on environmental requirements or guidance, and to include aspects of FSM and FPIC in the due diligence requirements, offers a key entry point. Advancing this agenda at the LME could further be a way of extending influence on other global exchanges such as the Intercontinental Exchange and CME Group exchanges in key trading centers that are yet to require their own members and brands to meeting international normative requirements. <sup>190</sup>

Organization	Entry points
London Bullion Market Association (LBMA) and Responsible Jewellery Council (RJC)	The LBMA and the RJC are the two primary standard-setting and certification organizations in the downstream gold sector globally (as well as connected minerals such as silver, platinum and palladium, and also diamonds and gemstones in the case of RJC), though the Dubai Multi Commodities Center and GJEPC have regional importance in UAE and India. Fulfilling the requirements of the LBMA's good delivery status is essential for companies trading in the bullion, banking and general gold sector, and being certified by RJC has become increasingly important for companies delivering to or working in the jewelry and watch making sector. Both audit and certification systems include environmental considerations, including for the companies' suppliers. As above, collaborating with these institutions and enhancing their environmental standards, guidance and audit systems for companies is a key entry point, particularly considering the gold sector's likely future expansion and increased forest impacts. Sensitizing industry members of these groups to government policy on FSM and demonstrating the case for its adoption as a rational business choice that build resilience into their operations, will be key to ensuring any gains in standard development are met by increased adoption and impact across the industry.
GIA (Gemological Institute of America)	GIA is looking to pilot a concept around "Conservation Gemstones", colored gemstones which are "upcycled", and is interested in working with auction houses to carry out this pilot which would focus on gemstones from Sri Lanka being mined near critical habitats, which could have important FSM outcomes. The concept was earlier described in an archive blog post on the National Geographic site: <a href="https://blog.nationalgeographic.org/2012/01/12/conservation-gemstones-beyond-fair-trade/">https://blog.nationalgeographic.org/2012/01/12/conservation-gemstones-beyond-fair-trade/</a>

#### Upstream

**Mineral extraction and production** in the upstream segment of supply chains are the direct source of mining impacts on forests. LSM companies and ASM operators both cause such impacts – though in different ways and are thus the main entry point to implementing the vision of forest-smart mining, alongside mineral host governments. While there is a long history of addressing the impacts of mining on the environment (longer than addressing social impacts, in fact), the impacts specifically on forests have only recently gained more attention in the sector.

**Clobally**, this is driven largely by the debates around green growth, energy transition and climate change, which has been taken up on a global level by The World Bank Group. The World Bank is currently both setting the agenda and implementing key actions to make FSM a reality, in particular through The Climate-Smart Mining Initiative (CSMI), The Forest Carbon Partnership Facility (FCPF) Fund and the Extractive Global Programmatic Support Fund (EGPS). Engaging with the World Bank and these funds is a key entry point to fostering the FSM vision with mining companies and governments. Institutional donors should support these funds or match-fund some of their programs, or provide human resources and expertise with the specific objective of furthering the implementation of FSM principles.

In addition to this, there are entry **points specific to the LSM and ASM sectors**, again harnessing the power of industry associations as standard setters, and the efforts of multi-stakeholder or multilateral programs.

Table 16: Private sector upstream entry points

	Initiative / organization	Entry points
LSM	Mining industry associations and standards setters across different mineral sectors and across different phases of the mining life cycle: ICMM, IRMA, TSM, WGC	<ul> <li>The ICMM brings together 27 of the world's leading mining and metals companies and 36 associations. They have developed mining Principles as well as various guidance documents that address environmental and indigenous peoples' issues.</li> <li>IRMA is the most comprehensive standard applicable to large scale mining and includes extensive requirements on environmental and FPIC issues.</li> <li>TSM is the Mining Association of Canada's responsible mining framework, which also includes environmental and indigenous peoples' issues.</li> <li>The World Gold Council has 28 gold mining company members with mining operations in 45 countries and a strategic focus on climate change. Their recently launched Responsible Gold Mining Principles provide miners with confidence that their gold is produced responsibly.</li> <li>While these have less broad uptake than the downstream market-facing 'gate keepers' such as LBMA and LME, they have more expansive requirements when it comes to environmental issues. Collaboration with these initiatives could enhance these and bring in FSM principles.</li> </ul>
	Sector specific standard- setters	Depending on the mineral focus, sector specific LSM standard setters may be an additional entry point; in a similar way to the above organizations. These could be Responsible Steel, Bettercoal, Copper Mark, Aluminum Stewardship Initiative.
ASM	Large ASM formalization programs: GEF, World Bank	<ul> <li>ASM formalization is a precondition for reducing its impact on forests. Large bi-lateral and multilateral programs are already being implemented to support this.</li> <li>The Global Environmental Facility's Planet Gold program is the largest donor for ASM projects globally and seeks to tackle mercury usage in ASM gold mining through larger formalization processes and in collaboration with ministries of environment. The program has developed a set of criteria that include elements on indigenous rights and environmental commitments, which could be enhanced and is presently designing its second phase to expand from nine countries into seventeen .</li> <li>The World Bank's bilateral funding for extractive sector governance generally includes components on ASM formalization. Such programs are planned or under way in several mineral host countries. While they are not yet focusing particularly on environment or forest impacts, these could be leveraged to integrate components on Forest Smart Mining. Similar opportunities exist with USAID.</li> </ul>
	Standard setters: CRAFT	The CRAFT Code is a standard specifically for ASM with strong acceptance across different stakeholder groups. It is applicable across all minerals. It is modular in design to allow for progressive improvement and includes requirements on mercury and other environmental impacts. The CRAFT Code is an open source document and can be used to set up responsible ASM sourcing schemes, some of which are currently in development. CRAFT is also taken as a basis for the development of other guidance and standards for ASM, and thus has the potential for widespread dissemination. The code is currently being revised, which provides an entry point for engagement and inclusion of FSM principles into some of the later modules.

#### Investors

**Institutional and private investors** are a key group for promoting FSM principles within the extractives sector. Complementary principles already exist, including the UN Principles for Responsible Investment. Principle 1: "We will incorporate ESG issues into investment analysis and decision-making processes" creates the enabling environment to prioritize investment into companies that are forest-smart, as climate and deforestation are core ESG issues for PRI. Principle 2: "We will be active owners and incorporate ESG issues into our ownership policies and practices" involves more direct intervention, including the potential for signatories to exercise their voting rights to ensure development decisions are responsible (and potentially forest-smart). Key leverage point for PRI on FSM issues is through UNEP-FI.

A range of innovative financial mechanisms are emerging that seek to promote sustainable landscapes and therefore overlap significantly with the objectives, intent, and in many cases the landscapes of FSM. These include loans with subsidized interest rates (Govts of Brazil, USA and France) or longer repayment times ((EcoAgriculture Partners in Vietnam<sup>191</sup>), and private funds (Moringa Fund, Terra Bella fund, Permian Global and Althelia Ecosphere)<sup>192</sup> or companies investing in sustainable land use including L'Oréal Nature Regeneration initiative, a €50 million fund managed by Mirova<sup>193</sup>.

Future programming could seek to influence how **ratings agencies** and **Responsible Reserves** integrate biodiversity and nature metrics in risk, due diligence and performance rankings, and how **reporting and transparency** initiatives could incorporate FSM principles, criteria and indicators into companies' reporting requirements There is also an enormous opportunity to attract **sustainable finance** into the mining and minerals world, especially from climate change investment programs, so incentivizing business to improve environmental performance as a condition of accessing untraditional investment capital. Innovative financial instruments, such as green bonds and carbon markets, are logical starting places.

## III. Civil society

Civil society, both in mineral host countries and in consumer or manufacturing countries, has a large role to play in pushing the agenda of FSM and should be a priority for support by institutional donors. Civil society has the power to monitor, report, advocate and hold both governments and companies to account, while also bringing significant subject matter expertise to the table. However, their reach, capacities and financial resources are often limited, and their work is sometimes done under great professional and personal risk.

Where globally active environmental and climate action organizations have engaged in and with the mining sector to date the relationship has frequently been confrontational rather than collaborative. A number of organizations have started to consider mining as an important sector, such as through the Cambridge (Business and Biodiversity) Group, and these provide a key entry point for fostering FSM through their existing programming and industry partnerships.

Indigenous peoples' coalitions are crucial to ensuring appropriate implementation of FPIC in mining projects, and groups such as the Indigenous Peoples' Advisory Forum (IPAF) have been set up specifically for this purpose. IPAF engages as a member of the board and standards committee of the Aluminium Stewardship Initiative. Two other important coalitions which tend to work more on advocacy against poorly planned mining projects are The Forest People's Programme and Asia Indigenous People's Pact.

In general, it is recommended to support NGOs, civil society stakeholders, communities, technical institutes, and research institutes in both consumer and mineral host countries by supporting their research, campaigns and awareness raising activities to include FSM principles, providing funding and incentives for greater attention to the role of mining in deforestation and the opportunity restoration offers for biodiversity gain, helping to promote key research documents and make them accessible to communities, commissioning studies, engaging with organizations that work to disclose LSM information to include FSM principles, and empowering them to mainstream FSM in countries where they operate, especially in training local authorities, CSOs and representatives of local communities on what forest-smart mining is and could be.

## Beyond the global level, there are also specific entry points to further FSM through civil society in mineral host countries as well as consumer and manufacturing countries:

Table 11: Civil society entry points in mineral host and consumer and manufacturing countries

	Entry points
Mineral host countries	<ul> <li>Support empowerment of civil society organizations to monitor and report on environmental / forest impacts, and to conduct advocacy on local, national and international level, both with governments and companies – some extractives programs by GIZ are supporting this for example.</li> </ul>
	• Support the protection of environmental and human rights defenders by helping to provide access to justice and pushing for investigation into their killing and harassment.
	<ul> <li>Enhance capacities in community-based natural resources management, in community involvement / participatory decision making around mining projects, in enhancing FPIC.</li> </ul>
	<ul> <li>Support management of the 'commons' by those who have a stake in it – learning from community-based management approaches of common goods over the past decades.</li> </ul>
Consumer and manufacturing countries	<ul> <li>Support and provide information to advocacy organizations like Global Witness, Public Eye, London Mining Network.</li> </ul>
	<ul> <li>Work to influence investors through supporting organizations such as Bankwatch who work specifically to publicize project risks from international public finance to projects such as mining operations.</li> </ul>



## IV. Standard setters

Engage with standard setters to improve their commitments to protect the environment and indigenous peoples.

- Develop a consensus-agreed standard for critical social and environmental governance issues relating to forests and mining. The standard should be applicable across all mining and mineral commodity standards. Work to socialize these within different (often competing) standards to ensure uptake by standard setting organizations/initiatives and use this to develop an even playing field across commodities and the sector. Since the World Bank is already funding such an effort for artisanal and small-scale mining in 2020/21<sup>wii</sup>, either support this process (the standard will need to be ground-truthed in multiple scenarios and accompanying guidance for miners will need to be developed) or support the development of an FSM bolt-on standard and accompanying guidance for LSM.
- Support NGOs and advocacy organizations to invest the time and effort required to ensure uptake and application of these standards and to enable participation in the required processes.
- Build a calendar of when all the major standard setting initiatives will be next revising their standards and prioritize
  which to engage in a discussion on if/how they intend to improve their environmental requirements. Engage in standards
  revision processes and seek to get involved during their review phases to improve their requirements. For example: ASI's
  next consultation round will be on Q1 2021, or RMI's Responsible Minerals Assurance Process (RMAP), which is presently
  being updated to include environmental considerations, could be expanded to include FSM criteria.
- Conduct a mineral evaluation or gap assessment to assess the extent to which minerals and metals standards and
  processes are actually addressing environmental impacts in order to critically provide suggestions of what can be done to
  improve them.
- Support the uptake of standards particularly of IRMA, Bettercoal in Indonesia, India and China, the IFC performance standards, and Responsible Steel in state owned enterprises.
- It is imperative that institutional donors acknowledge and strategize upon the significant implications of both state and private sector extractive and infrastructure development that falls outside of the influence of the major standard setters, such as those driven by private equity developers and Russian, Chinese and Indian interests.

xvii The "Developing Forest Smart Artisanal and Small-scale Mining (ASM) Standards project is being implemented by a Consortium of Levin Sources, the Alliance for Responsible Mining and Fauna and Flora International.



Mining causes deforestation and forest degradation. We are on a trajectory of growth in mining as the world accelerates its transition towards a green economy, and much of this growth will be in forest landscapes. We are also on a trajectory of continued deforestation caused by a range of activities, including mining. The world is waking up to the possibilities of the restoration and regeneration agendas, as a way to not just stem the storm of degradation but reverse it. The time to act is now, however most institutions working in the minerals sector are yet to wake up to and own the role they should be taking in helping to protect forests. Outside of minerals, only 2% (\$5-9bn) of philanthropic grants were targeted at climate mitigation in 2019, and only \$100m of that was targeted at forests.<sup>194</sup> The scale of the challenge and opportunity is immense, but the resources are not available. This needs to change.

FFI has called upon the global community to start by investing \$500 billion per year in nature, with a significant portion of this needed to invest in forest protection and restoration – not only for climate mitigation, but for biodiversity, water security and human health and well-being. This investment needs to increase year on year if we are to arrest the climate and biodiversity crises.

Levin Sources and FFI welcome all organizations who would like to do more to advance Forest-Smart Mining or who are already taking action to get in touch at <u>hello@levinsources.com</u>.

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# How to bring about forest-smart mining: strategic entry points for institutional donors

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