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1 Introduction

In 1972, the United Nations released its landmark publication, *Small-Scale Mining in the Developing Countries*, in which ‘small-scale mining’ was used in a development context for the first time.\(^1\) It provided the earliest detailed glimpses of the level of economic impact a supported artisanal and small-scale mining (ASM) sector could have in developing countries. It also identified the barriers to realizing this objective, the most significant being access to finance and appropriate technology:

In many, but not all cases, the artisanal and small-scale mines have been very successful in discovering mineralized areas, but, because of the technical and financial limitations of this class of miner, the probability is high that they have only scratched the surface of an area which might, if properly developed, become a significant large-scale mineral producer...\(^2\)

More than four decades later, ASM operators face the same financial and technological challenges. However, the perception of ASM, and the context in which it operates, have changed, which affects the resources available financially and technologically for the sector, and influences how it is administered.

These changes have important implications for designing new programs to assist ASM, including those that specifically aim to increase access to finance.

Research conducted over the past two decades has captured how dynamic – and international – the ASM sector has become: it contains a diverse range of actors, from full-time entrepreneurs with skills acquired at large mines, to part-time university students looking to secure money to pay their tuition, to poverty-driven women; is multi-dimensional, featuring visible labour, service provider, financier and sponsor, and managerial layers; and comprises an eclectic group of activities, which range from individual panners and families mining informally through to semi-mechanized operations akin to what is assigned the label ‘medium-scale mining’ in some countries. Given the diversity of operations and individuals in question, there is no ‘one-size-fits-all’ finance model that can be adopted in all circumstances.

Against this backdrop, this report reviews past experiences with delivering financial and allied services to ASM and makes recommendations regarding best practices and potential ways forward in improving access to finance based on this experience. The report is written specifically to inform the planetGOLD programme, a programme funded by the Global Environment Facility to help formalize artisanal and small-scale miners, improve their production practices, and increase their access to finance and markets, with the ultimate aim of reducing the use of mercury in the sector. Specifically, this report informs one of the program’s core goals, ‘Piloting a range of models for access to investment and finance for small-scale miners and their communities’ which is essential for ensuring the long-term viability and development of a legalized ASM sector. A wide range of finance options is considered here, given the eclectic range of operations found in the sector.

\(^2\) Ibid
2 Overview of Financing Concepts

Before describing the global experience on financing ASM, it is useful to review important basic concepts that underpin different financing approaches as well the types of finance and the sources of capital for finance, especially finance structures that have been typically employed for underserved sectors.

2.1 Types of finance

The two main categories of finance are debt and equity. Debt involves a lender extending a loan to an entity with interest. Interest is often paid in instalments, while repayment of the debt amount is done either by instalment or via a lumpsum payment at the end of the loan period. Sources of debt financing can vary. In the informal sector, friends and family are often the main sources of debt finance. Other private sources of debt financing include commercial banks, credit unions, and commercial finance companies. In some cases, equipment suppliers can serve as a source of direct financing, providing lines of credit to customers for purchases of equipment. Downstream buyers of a company's products may also act as a source of finance to their upstream suppliers through, for example, pre-financing (a cash advance offered to suppliers by buyers in exchange for future product) or inventory financing (an asset backed, revolving line of credit which enables a company to buy inputs, where inputs serve as collateral for the loan).

Leasing is another popular form of finance. A lease is a financial instrument that either grants the right of use or control of a tangible asset such as property, vehicles or equipment, to a third-party (lessee). Leasing usually involves three parties: namely, the lessor (entity that leases the asset), the lessee (the entity that acquires the asset) and a financier (provider of finance to the lessee; this could be a third party or the lessor). Where a lease only involves the right of use of an asset, the lessor maintains control and ownership of the asset while the lessee has the right to use the asset in exchange for periodic payments. When a lease involves the transfer of control of an asset to the lessee, the lessee is usually responsible for insuring and maintaining the asset. The lessee makes periodic payments to the lessor/financier and recognizes the lease as an asset and lease payments as a liability on his/her balance sheet. In some leasing (lease-to-own) programs, asset ownership eventually transfers to the lessee.

Equity financing involves an investor taking partial or full ownership of an entity in exchange for providing capital. A key feature of equity finance is that the investor can exercise some decision-making control by participating in the entity’s governance (such as having a seat on its board or voting at annual general meetings). Sources/brokers of equity finance for small business can again include friends, family and local community members but also private investors, venture capital firms, investment banks, insurance companies and large companies. However, small scale operations are most likely to find financing through friends/family, “angel investors” and other private investors. Partnering with a larger company through an equity arrangement may also work for some small businesses such as through a joint venture with a larger company in the same industry, or a licensing agreement. Recently, new models have emerged blending equity and debt (quasi-equity loans and convertible debt instruments). A quasi-equity loan, for example, is a debt instrument that converts into equity ownership if certain conditions are met or if the issuer goes bankrupt.

Blended finance involves the use of public or philanthropic money (grants or grant-equivalent tools) to buttress private and commercial financial products. For example, a commercial financial institution may face real and/or perceived barriers and constraints that lead to risk aversion to entering
or expanding financing in a specific industry or sector. Blended finance aims to facilitate financing to new or existing business in the sector by sharing the risk of loss with the financial institution. The typical objective of blended finance is to develop high impact, economically-successful business entities that also achieve socially and environmentally responsible objectives. Blending public or philanthropic development funds with private capital helps to reduce risk while simultaneously achieving high impact social and environmental change. The hope is that over time, as private financing institutions gain familiarity and become less risk-averse in providing services to the sector, the need for backing by public money will decline.

2.2 Financial structures for underserved sectors

Various structures have been developed for facilitating the delivery of finance to underserved sectors. These are designed specifically to assist with overcoming barriers such as lack of collateral and high-risk operating profiles. Some common instruments that have been used to finance underserved sectors are reviewed below.

The most widely patronized small-scale financing strategy for underserved sectors is microfinance. It involves providing debt products to small and micro enterprises which do not qualify for conventional banking products. The idea originated decades ago in Bangladesh through the efforts of Muhammad Yunus. The ideas and schemes pioneered there have since been globalized, evolving into interventions, spanning several different scenarios, including the provision of loan products, insurance and payment systems to a suite of small and micro enterprises.

Concessional loans are offered by public and private financial entities but have less stringent borrowing conditions than commercial loans. These financial products are commonly associated with lower cost of capital, grace periods, deadline payment extension and/or less stringent guarantee requirements. Concessional loans are often offered through government- or donor-sponsored programs. As commercial banks have repeatedly shown reluctance to finance ASM independently because of the perceived risk involved (see Section 3), government-backed concessional loan programmes administered through commercial banks can provide a mechanism to build experience and capacity working with the ASGM sector.

A risk sharing facility (RSF) is a finance structure which entails a loss-sharing arrangement a guarantor (often a government, donor or NGO in blended finance arrangements), and a provider of assets, such as a private financial institution. Under this arrangement,

the guarantor reimburses the provider for a portion of principal losses incurred on a portfolio of eligible assets, such as a loan portfolio.

A **revolving loan fund** (RF) is a loan fund intended to be maintained by repayment of loans outstanding such that new loans can be extended. RFs are often seeded with donor capital and target borrowers who do not qualify for traditional financial services. Particularly in a local economic development context, RFs have been associated with strong community-level ties, local management, and borrower empowerment. RFs are utilized in various contexts, including, for example, to support small-scale agribusiness, small and medium sized enterprises, water and sanitation, and housing. As specialized financing vehicles, RFs are designed to reach target clients through ‘fit-for-purpose’ distribution channels, and application processes may be streamlined and the approach to collateral security can be tailored. When used locally, community organizations can also act as monitors of performance of the borrowers, which can enhance repayment rates.

Finally, **impact investments** have emerged in direct response to changing investor desires for ownership in companies and projects which reflect their beliefs and principles as individuals. A heightened sense of social and environmental responsibility, coupled with a desire to stay true to one’s values, has seen some investors seek companies whose business activities have a direct social and environmental impact. Significantly, impact investment does not involve a complete sacrifice of financial returns but often offers returns which are comparable with conventional investments.
3 Financing ASM: A Look into the Past

This section reflects critically on examples of past interventions implemented to facilitate increased access to finance for ASM. It begins by exploring the more basic microfinance schemes, then turns to commercial loans, government-backed schemes, equity financing and other types of financing.

3.1 Microfinance

Papua New Guinea (PNG) is the location of one of the most intriguing and indeed promising microfinance interventions made in ASM to date, largely because of its reach and sheer complexity. It was unique because of its continuity, how it featured interlocking stages, and the way in which it engaged multiple donors and the private sector. In 1998, the Australian Agency for International Development (AUSAID) commissioned a comprehensive study of ASM communities in PNG which aimed to raise awareness of environmental issues and map the sector's social dynamics. At the Wau Branch Office of the country's Mining Division, two mining engineers and an extension officer were trained and educational materials (videos and seven books) prepared in the local Tok Pisin language that highlighted best practices, including finance. In total, up to 10,000 small-scale miners were reached through meetings and outreach tours in the Wa/Bulolo Area, and the project received additional finance from Morobe Consolidated Goldfields Ltd., a medium-scale mining company which, at the time, was in the process of opening up an operation at Hidden Valley near Wau. The findings from this intervention fed into a bigger project on microfinance in PNG, coordinated by the Asian Development Bank, which provided US$9.6 million. Although this was a general microfinance project, its main geographical focus was the Waubulolo area of PNG, where the AUSAID study was heavily concentrated. The project focused on empowering families engaged in multiple income-earning activities, providing credit through revolving funds which were dispensed at rural banks. Overall, an estimated 184,000 borrowers and 509,000 depositors were reached by the microfinance institutions under this project. The micro-banking pilot scheme in Wau, eventually named Nationwide Microbank (NMB), was ultimately granted full banking license by the government. Since then, NMB has operated on a commercial basis and became the biggest licensed microbank in PNG with over 100,000 active customers with savings accounts through its 14 branches. However, by end of project there were still some problems with its portfolio quality, with more than 18% of the portfolio “at risk”. Nonetheless, these efforts helped to spawn a project funded by EU’s SYSMIN facility, project in Papua New Guinea, under which a grant of 6.8 million euros was awarded to the Small-Scale Mining Branch of

5 The SYSMIN facility, a special arrangement providing financial aid for ACP countries (grants in instances where a mining-dependent economy was experiencing difficulties, financially), was established by the second Lome Convention (1980–1985), initially with an injection of 282 million ECU. It was established purposefully as a policy instrument to maintain output of eight minerals (copper, cobalt, phosphates, manganese, bauxite, alumina, tin and iron ore) in ACP countries. Under the third Lome Convention (1985–1990), substantial financial resources were pledged to support mining, particularly soft loans, The SYSMIN facility itself was allocated an additional 415 million ECU, resources which, very importantly, could be used by borrowing countries to support work at any stage of mining leading up to ore-processing (exploration, technical and economic assessment, and investment). Under the fourth Lome Convention (1990–2000), ECU 480 million was injected into SYSMIN under the first financial protocol (1990–1995) and an additional ECU 575 million under the second financial protocol (1995–2000). It was also extended to two new minerals: uranium and gold. Annex II lists the SYSMIN projects financed between 1980 and 1995. See European Commission. 1996. SYSMIN and Mining Development. European Commission, Brussels.
6 The severe decline in earnings from mineral exports in 1997 triggered Papua New Guinea’s eligibility for SYSMIN funding. Following a comprehensive study conducted in 2000–2001 that concluded the country did indeed meet all of the eligibility criteria laid out in the fourth Lome Convention, 50 million euros were awarded under the facility to support a six-year Mining Sector Support Programme (MSSP). The financing agreement was inked on 10 July 2002. The MSSP not only focused on ways of stimulating investment in large-scale mining but also but also, building on the efforts of AUSAID, supported heavily small-scale gold mining. See ‘Mining Sector Support Programme – SYSMIN’, www.mra.gov.pg/AboutUs/SpecialProjectsUnit/MSSPProject.aspx (Accessed 4 July 2019).
the Department of Mining. These monies were used to construct three miners’ training centres in Wau, Porgera and Wewak, to design a microfinance facility for ASM and to construct a women’s centre in Porgera. As an archipelago with highly-inaccessible terrain, PNG’s experience in engaging with ASM operators offers valuable inspiration on reaching inaccessible communities.

More recently, microfinance was used to support an equipment lending/leasing exercise, based heavily on ‘group sharing’ principles, in the Bolgatanga and Tongo communities of Ghana. Following a ‘group lending’ model, self-selected groups of between five and 10 people were assembled. Participants within the group were ranked according to financial strength. The ranking was used to determine the order in which members receive loans, and to elect a chairperson who coordinates repayment. The risk was spread or shared across the group, a useful feature given the high-risk perception banks, donors and lenders have of ASM operators. This effort was met with some success, although miners were awarded some equipment that proved inappropriate.

Other notable examples of microfinance supporting ASM include a USAID Business Centre in Tanzania, which, according to a baseline study commissioned by the World Bank at the time, seemed ready to support the country’s gemstone and gold miners through the Federation of Miners Association of Tanzania; a church-sponsored scheme in Nicaragua, which focused on distributing wheelbarrows and other rudimentary mine implements; and work carried out under the auspices of the Global Mercury Project, including efforts in Sudan, where the Intermediate Technology and Development Group (now PracticalAction), an NGO, was asked to assist with a US$400,000 batch of start-up funding to get an equipment-related microcredit scheme launched.

Table 1 on the next pages lists examples of selected microfinance schemes and summarizes their key attributes.

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<table>
<thead>
<tr>
<th>Type of Lender</th>
<th>Loan Size/ Purpose (US$)</th>
<th>Process</th>
<th>Collateral Required</th>
<th>Process Duration (Weeks)</th>
<th>Credit Terms</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Government, microfinance institutions, NGOs, donors and rural banks</td>
<td>$5,000–350,000 Loans fund:</td>
<td>▶ Client or MFI initiates contact</td>
<td>The non-current asset for which the funds are being sought (these could be the digging equipment, the installed washing bay or motor vehicles to be used for the business)</td>
<td>1–4</td>
<td>Interest rates: 24–36 per annum Repayment Frequency: Monthly or bi-monthly Penal charges: Where loans are defaulted on. The consequences are either a repossession of leased equipment, auction of collateralised asset and/or legal action Customer signs post-dated cheques to cover loan period Loan duration: 1–2 years</td>
<td>Model is driven by the perception of risk of the Client’s line of work which is oftentimes informal and highly risky Mining continues to be a huge source of income for the banking institutions which follow this model On the Donor/ NGO side the rationale is to assist with alleviating the barriers to growth of businesses and by extension poverty In comparison to other lines of work, ASGM has a quicker turnaround from borrow to production to sales.</td>
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<td>Examples:</td>
<td></td>
<td>▶ Working capital financing</td>
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<td>Examples:</td>
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<td>▶ Purchase of input</td>
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<tr>
<td>Ghana:</td>
<td>$5,000–350,000 Loans fund:</td>
<td>▶ Purchase of non-current assets such as excavators, washing plant installation</td>
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<td>Examples:</td>
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<td>▶ Client submits full application for loan along with supporting documentation</td>
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<td>Suriname</td>
<td></td>
<td>▶ MFI conducts due diligence including inspection review of client’s control to site, resources and equipment</td>
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<tr>
<td>Examples:</td>
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<td>▶ MFI commissions appraisal of collateral, where applicable</td>
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<td>Examples:</td>
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<td>▶ MFI commissions inspection of client’s domicile and office premises, where an effective address system does not exist</td>
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<td>Colombia</td>
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<td>▶ MFI conducts Credit Committee meetings to decide on case</td>
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<tr>
<td>Colombia</td>
<td></td>
<td>▶ If Credit Committee approves Client, loan is issued</td>
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</table>

Table 1: Summary of selected microfinance schemes

Institutions mentioned here are engaged in microfinance, though may not be directly engaged directly in ASM.
3.2 Commercial loans

While microfinance has been offered as a funding option for ASM, the levels of funding under such schemes are often inadequate for financing small-scale mechanized operations, in particular operations with equipment adequate for mercury-free processing. In such cases, more conventional levels of commercial finance are needed. However, it is no secret that small and medium-sized enterprises (SMEs) suffer from an acute shortage of funding. The situation is especially dire in developing countries, where it is estimated that two-thirds of SMEs lack access to the requisite financial support. According to the International Finance Corporation, the ‘credit gap’ for small but formal businesses in developing countries is in the range of US$1 trillion, a figure which is even higher when the informal economy is taken into account.15 This gap in funding has, very fittingly, been labelled the ‘missing middle’, in reference to how micro-level and large firms often find it easier to borrow than medium-sized enterprises.16 The case of ASM is even more dire, as it is not viewed as a typical SME; of the lending schemes that are available for SMEs, few have been tailored to the ASM sector.

The ‘missing middle’ notwithstanding, some commercial entities in many developing countries have a history of making some levels of finance available for SMEs and occasionally, have doled out money to enterprises linked to mining. For example, in Guyana, small-scale mining families who control the Guyana Gold and Diamond Miners Association take out mortgages using their houses and cars as collateral, from banks such as Citizens Bank Guyana and Republic Bank, to finance operations.17 In Indonesia, the PT Bank Rakyat Indonesia Tbk has specialized in providing small business lending, which, according to its annual reports, has included a handful of mine support service companies.18 The Banco Caja Social (www.bancocajasocial.com) in Colombia also has a steady line of customers, including medium-scale businesses, although there are no records to suggest that its schemes include interventions for ASM.19 The K-Rep (now Sidian) Bank and Rafiki Microfinance in Kenya, a commercial lender and conventional microfinance facility, respectively, have at times been pitched as ASM lenders.20-21 Ghana-based banks, including National Investment Bank, Stanbic and SG-SSB have also experimented with lending to ASM operators. In most of these cases, the commercial loans provided are highly collateralized, have high interest with strict repayment schedules, and require substantial amounts of money upfront (up to US$1 million) to land.22 Thus only a select group of individuals – mostly affluent and/or well-connected – can realistically access these sources of commercial finance.

Table 2 summarizes the typical elements of standard commercial loans for ASM.

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17 Personal communication, expert, Guyana, 2 June 2019.
20 See e.g. Barreto, M.L., Schein, P. Hinton, J., Hruschka, F. (context, mapping and compilation) as part of the EARF project ‘Understanding the Economic Contribution of Small-scale Mining in East Africa’ covering Kenya, Rwanda, and Uganda.
<table>
<thead>
<tr>
<th>Type of Lender</th>
<th>Loan Size/ Purpose (US$)</th>
<th>Process</th>
<th>Collateral Required</th>
<th>Process Duration (Weeks)</th>
<th>Credit Terms</th>
<th>Rationale</th>
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<tr>
<td>Commercial bank</td>
<td>$20,000–1,000,000</td>
<td>▶ Client or MFI initiates contact</td>
<td>▶ The non-current asset for which the funds are being sought (these could be the digging equipment, the installed washing bay or motor vehicles to be used for the business)</td>
<td>Typically 4–6</td>
<td>Interest rate: 24–30% annum</td>
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<td>▶ Client is informally prequalified, where possible</td>
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<td>Frequency: Monthly</td>
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<td>▶ Client submits full application for loan along with supporting documentation</td>
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<td>Penal charges: In case of default leading to repossession (if leased), sale of collateral, legal action</td>
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<td>▶ MFI conducts due diligence including inspection review of client’s control to site, resources and equipment</td>
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<td>Customer signs post-dated cheques to cover loan period</td>
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<td>▶ MFI commissions appraisal of collateral, where applicable</td>
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<td>Loan duration: 1–4 years</td>
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<td>▶ MFI commissions inspection of Client’s domicile and office premises, where an effective address system does not exist</td>
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<td>▶ If Credit Committee approves Client, loan is issued.</td>
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<td>In comparison to other lines of work, ASGM has a quicker turnaround from borrow to production to sales.</td>
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<td>Ghana</td>
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<td>▶ Working capital financing</td>
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<td>▶ Purchase of input</td>
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<td>▶ Purchase of non-current assets such as excavators, washing plant installation</td>
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<td>▶ Advisory services</td>
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<td>Guyana:</td>
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Table 2: Summary of commercial loans for ASM
3.3 Government and donor-backed support programs for ASM

3.3.1 Credit/support schemes

To address the need for more accessible commercial finance, some governments and international donor agencies have supported various types of credit schemes, with mixed results. In the1990s in Bolivia for example, two credit lines, the Sustainable Economic Development Support for Impoverished Mining Areas in Bolivia (APEMIN) and Medio Ambiente en la Pequeña Minería (MEDMIN), were launched, with support from the European Union, by the Episcopal Commission for Bolivia (CEPAS) to provide mining cooperatives with working capital. Despite attracting considerable attention in the donor community at the time, neither could be sustained. For APEMIN, it was a case of miners simply struggling to repay loans, which averaged in the range of US$30,000 and fetched an interest rate of 17 percent. Records show that in 2001, credits had been dispersed to 13 of the 17 approved applicants. Of these 13, only four companies had amortized their debts, nine were running up interest and one was in arrears. In the case of the MEDMIN, which provided loans in the range of US$20,000, it was a case of the lending criteria being too stringent. Only two loans had been dispensed by MEDMIN. To secure a loan, miners needed to provide details of their market (sales contracts), mortgage guarantees (for a house) and a technical assistance contract for the duration of the loan repayment.

In contrast, an initiative which has been successful in this space is the National Mining Company of Chile (ENAMI), a state-owned enterprise established on 5 April 1960 for the purpose of providing small and medium-scale miners with a range of services, including finance. Although ENAMI focuses on copper, its business model provides an intriguing example for ASGM. ENAMI has long had programs in place for ASM, each oriented toward promoting innovation and supporting operators with technical assistance in areas such as mining property, geology and topography, methods of exploitation, operation, risk prevention, commercialization and business practices. According to government data, there are an estimated 2350 artisanal mining and 217 small-scale projects in operation in Chile, employing a combined 37,201 people. Of this total, some 1200 producers (employing an estimated 20,000 persons) carry out their activities with support from ENAMI. It has in place grants to support exploration and mine planning to the tune of US$200,000 per project, offers loans of between US$25,000 and US$50,000, and provides specific funds for investment (that can exceed US$50,000), although the details of these loans are not publicly disclosed.

In addition to providing these financial services, ENAMI is an ore buyer and processor. It has offices with purchasing powers from Arica through to Rancua, and operates five plants where ores and concentrates can be processed: José Antonio Moreno, in Taltal; Osvaldo Martínez, in El Salado; Manuel Antonio Matta, in Copiapó; Vallenar, in Vallenar; Delta, in Ovalle. It also runs the Hernán Videla Lira smelter in Paimpote, which is the main plant patronized by small and medium producers in the country’s Atacama Region.

The commercial policy of ENAMI allows production from the ASM sector to be sold on the international market under the same commercial conditions that big producers in Chile obtain. To spread risk, ENAMI has a portfolio of feasible mining projects, each with different levels of investment and across different commodities (although copper is its mainstay). With an ongoing commitment to developing copper and having the strategic advantage of being the world’s...
largest producer of the metal, Chile has invested in all phases of operation with a view to ensuring the effective long-term functioning of an ASM sector, including exploration, monitoring, finance and administration.

Chile’s ENAMI system offers a glimpse of what could happen if there was a foundation and culture of assistance in place for ASM, fostered by government. Having an ENAMI-type model in place, which assists with the formalization of, and under which assistance is provided to, small-scale miners, provides a much-needed foundation to implement more comprehensive and specific finance schemes for ASM. It inspired World Bank officials to suggest that the ENAMI model could be adopted in both Ghana and Tanzania. However, the ability to replicate the success of ENAMI will be a function of similar government support elsewhere for ASM. ENAMI’s 60-year success is a reflection of the Government of Chile’s longstanding support for ASM: although not without its problems, its evolution as one of the most comprehensive platforms of support for the sector worldwide is a direct result of policymakers continuing to invest in and pledge funds towards its development. Few other countries have embraced ASM to the extent Chile has, especially in settings where large-scale mining has emerged as a primary revenue generator for governments.

Implementing a system such as ENAMI, as Bank officials believe can be done in the likes of Tanzania and Ghana, presupposes that there is a culture of support for ASM and a commitment on the part of government to formalizing it. In the case of ENAMI, this is the Chilean state-owned Mining Credit Union, which has, from the beginning, prioritized ASM concerns. Similar ASM-focused entities would need to be identified in countries that wished to replicate the model. Tanzania, for example, has fully decentralized its ASM licensing process; there, Zonal Mining Offices are now authorized to make decisions on applications for Primary Mining Licenses (PMLs). This decentralized system could potentially serve as a platform for dispensing the US$22.7 million made available from the recent World Bank mining sector loan,aimed at providing technical, financial, and managerial support to PML holders, including loans and equipment services.

The ENAMI model is the next logical step in countries which have committed, beyond rhetoric, to formalizing ASM. The ENAMI model shows very clearly that with an institutional foundation for supporting ASM in place which adequately insulates operators from large-scale mining, and fosters different types of assistance, from technological to financial, the sector can grow unimpeded and become a visible and sustainable contributor to a country’s economy. Most governments in the developing world have a dedicated unit for supporting ASM but these units typically lack funding, implement projects on their own and simply lack the influence needed to catalyze sweeping policy changes. A more robust institutional platform, akin to what ENAMI provides, changes the complexion of ASM finance completely.

3.3.2 State-supported mining funds

Several countries have experimented with state-supported mining funds. These have typically been jumpstarted with funds drawn from national development budgets and sustained with portions of revenue generated from permit fees, export earnings and/or sales linked to mining. In some cases, the fund from which monies are drawn is a more general development intervention used to support a range of different community-related projects. In other cases, these funds have been set up specifically for supporting ASM and are typically tied to the supply or leasing of equipment or other (mine) supplies.

In 2002, Mozambique launched its own mining development fund (Fundo de Fomento Mineiro – FFM), for the purposes of promoting and assisting the ASM sector both technically and financially. According to officials at the United Nations Economic Commission for Africa, by 2008, the fund was actively financing

ASM and purchasing gold from 30 percent of the ASM operators in the central part of the country. But the Fundo de Fomento Mineiro could not be sustained; due to production challenges and inconsistent production levels, miners failed to repay their loans and sell enough gold to the facility, therefore depriving it of the crucial finance which helped to sustain it.

In Namibia, SYSMIN monies were used to establish the Minerals Development Fund of Namibia, which provides financial support directly to ASM. Approximately 2.96 million ECU of the funds were to be used to support ‘Small-Scale Mining Ventures’. A pilot microlending program initiated under the Minerals Development Fund of Namibia involved 11 miners but only four of whom, following an evaluation, were determined to be in a position to repay their loans. Zambia pursued a similar strategy under the Mining Sector Diversification Program, which ran from January 2002 to May 2008, and included elements that offered small-scale mining entrepreneurs a combination of credit financing, training and capacity building and the provision of technical expertise.

Both the Minerals Development Fund of Namibia and the credit facility for ASM in Zambia, however, have struggled to have much of an impact. In the case of the former, small-scale miners complained that the fund failed to supply the level of finance they require. For the Zambian credit facility, miners were not able to access the €16.5 million credit facility because of the stringent conditions attached. Efforts to ‘soften’ the criteria did little to improve uptake and as of mid-June 2005, only nine loans amounting to 3.3 million euros had been approved.

In South Africa, where the government has a dedicated agency for ASM issues in the Department of Mineral Resources (DMR) Directorate of Small-Scale Mining, the National Steering Committee of Service Providers (NSC) was established and managed under the auspices of country’s National Small Scale Development Framework. The NSC’s principal objective was to provide technical, managerial, and financial support to small-scale mining projects, following a funding structure that was 90 per cent loan and the remaining 10 per cent raised by the applicant. Funds were made available for equipment purchase, to provide rehabilitation guarantees, and to cover operational costs. There are contradictory reports on exactly how many projects were supported by NSC: on the one hand, data compiled by Mutemeri et al. suggest that a total of 197 projects were handled, 173 of which were mining and 24 were beneficiation projects, while other sources have suggested that a combined R15.1 million was allocated to assist 20 small-scale mining projects. The key takeaway, however, is that borrowers were unable to repay their loans, which led to the program’s cancellation in 2005. But it may have simply been a case of unfortunate timing which led to the program’s demise: most small-scale mining

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30 Interview, ASM expert, Mozambique, 2 April 2019.
32 European Currency Unit prior to it being replaced by the Euro
operations found in South Africa are engaged in the extraction of industrial minerals, which have lower profit margins and are costly to extract and transport. With the country’s economy in slight disarray at the time of the NSC’s launch, a problem brought about by depressed gold prices and consequent decreases in resident large-scale mine production, delays linked to the government’s moves to privatize many of its parastatals and preoccupation with the launch of the country’s Black Empowerment Program, it may have been a case of the DMR simply not being able to monitor borrowers or even pre-screen their applications for loans effectively. The experience may not be indicative of the potential success of a similar model oriented around small-scale gold mining, which has much higher profit levels and does not demand the same level of sophistication that some industrial minerals require to process.

Ghana’s government has experimented extensively with ASM equipment-sharing programs in various forms since the early-1990s. A recent and notable foray took place in the mid-2000s, when the government mobilized funds, through its Mineral Development Fund supplemented with revenues from the Heavily Indebted Poor Countries facility. Coordinated by officials at the Minerals Commission, Ghana’s main mining policy-making body, a series of loans, amounting to a combined US$500,000, were awarded to groups of small-scale miners. Most beneficiaries were gold miners, though some were salt producers. To qualify, miners were required to follow a plan that had a “group lending” type design, in that they were forced to form cooperatives and were collectively bound by the terms of the loan. The loans were made out in the form of cash for working capital, as well as for mine equipment and consumables, and were approved by a loans disbursement committee (made up of officers of the Commission). The beneficiaries were required to repay the loan in agreed instalments (at a subsidized interest rate) once production began. A licensed buying agent of the Precious Minerals Marketing Company, a government entity, or an approved dealer acted as a guarantor to ensure that with each given volume of mineral sold, the agreed amount is paid into a loan recovery account. The results of this program, which required prospective borrowers to share machinery such as crushers, generators and pumps, and maintain meticulous records, were mixed. For gold, one tranche of funding of approximately US$150,000 was provided to a group of miners based in the town of Konongo in the south of the country. Despite initial teething problems linked to the government acquiring the wrong crushing machines and requiring groups of miners who apparently did not associate with one another previously, the loan proved relatively successful: its borrowers agreed to the terms, shared the equipment procured with the loan relatively incident-free, and complied with the regimented plan for repayment. In the District of Talensi-Nabdam in the north of the country, however, a second tranche of money was dispensed to a group of miners between whom there was considerable friction which proved too much to overcome and ultimately, undermined the intervention altogether.

One ongoing noteworthy development is in Tanzania, where there is a project being coordinated by the government, Halotel, NMB Bank and Gottek, involving 600 small scale miners from around the country (100 from each mining region). The plan is for the miners to open a bank account at NMB for 10,000 TZS and then buy a Halotel SIM card and dedicated bundles (WIFI credit linked to their bank accounts) that Halotel will design for these miners. These special bundles will also provide the miners with information on, inter alia,
mining and gold prices, and will cost between 1000 and 25,000 TZS. Part of the profit from the bundles will go to a fund from which the miners can receive loans, and the project itself is tied to three months of intensive training. The pilot project was initiated at a workshop in Geita in mid-July 2019, the details for which, at the time of writing this report, had not yet emerged.46

Inspiration may have been drawn from neighbouring Zimbabwe, which also has a lengthy history of assisting small-scale miners. Here, Fidelity Printers and Refiners, which is owned entirely by the Reserve Bank of Zimbabwe and is the sole authorized buyer and exporter of gold in Zimbabwe, launched the Gold Development Initiative Fund, established in response to small-scale miners’ grievances over a lack of support and capital. It was launched specifically to provide lending in support of the acquisition of gold mining plants and equipment by miners and is accessible to any Zimbabwean-owned business. The application process is fairly stringent, with Fidelity Printers and Refiners demanding prospective applicants to provide significant information, including: 1) mine management details (organizational structure and labour strength, details of executives and management and the CVs for executives and management); 2) technical information (geological report, mine production history, mining production plan or forecast, and gold processing production plan including flow sheet diagrams, life of mine (LOM) plan (applicable to medium and large scale, environmental impact assessment or EIA certificate, site of works plan/surface plans, infrastructure status report, due diligence report, and bankable document; and 3) financial information (financial statements of the applicant for the previous two years, latest management accounts such as an income statement & balance sheet, explanatory notes to the financial statement, asset register, tax clearance certificate, cash flow projections to cover the tenure of the loan & assumptions used, debtors & creditors age analysis and quotations).47 It is claimed that the facility contains US$50 million, and that the intention is to increase this amount to US$100 million, although it is unclear how it is running or if it has been successful so far.48 The application requirements, along with the size of the loan itself, suggest that this particular scheme, like most, is suited for mainly semi-mechanized small-scale miners.

### 3.3.3 Direct grants

In Tanzania, the Bank of Tanzania has been enlisted to manage a Grants Program, the pilot for which assisted 11 beneficiaries, each of whom used funds to improve the efficiency of their production. The additional funds provided by the World Bank under this project will increase the Grants Program from its current US$1 million to US$3 million. It focuses mostly on holders of a PML, considers up to a maximum of US$100,000 per applicant, and 30 percent of applicants must be women, making it one of few ASM finance schemes with a policy linked to gender.49

### 3.3.4 Revolving funds

In Zimbabwe, in the 1990s, a revolving fund scheme was implemented to finance low-cost mining equipment (pumps, generators and crushers), coordinated by the government with donor and NGO assistance, with payback periods of between one and three years.50 The equipment was dispensed from three depots: Harare, Gweru and Bulawayo. The scheme was administered as a revolving fund, the Mining Industry Loan Fund, and controlled by the Chief Government Mining Engineer. Any individual deemed to have a viable mining venture, following an initial assessment by government, was eligible to hire or hire-to-buy equipment under this scheme.51 The Mining Industry Loan Fund could not be sustained,

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46 Interview, ASM expert in Tanzania, 23 June 2019.
48 Interview, ASM expert, Zimbabwe, 10 April 2019.
however, because of hyperinflation. The country is, however, entertaining a relaunch.

3.3.5 Leasing schemes

In most countries where ASM is widespread, there is a culture and lengthy history of implementing financial services linked to equipment sharing/distribution in this sector. However, these have seen failures in some cases due to a combination of untimely repayments, damaged equipment and the absence of monitoring. In Ghana, for example, a flagship leasing scheme was funded by GTZ and coordinated by the local NGO CEDECOM, commissioned to distribute equipment and finance to small-scale miners in the Assin Fosu, Akim Oda and Tarkwa townships. The scheme targeted 1000 small-scale miners. However, the lack of monitoring and inexperience on the part of the staff of the NGO, which had worked mostly in the fisheries sector, ultimately contributed to the scheme’s demise. The equipment purchased, including pumps and generators, were mostly appropriate but a failure on the part of the NGO’s staff to adequately monitor the use of these machines led to many being damaged, overused and unserviceable and unrepairable. Miners who borrowed the equipment were unable to cover the costs to fix the damaged equipment.

3.3.6 Blended finance

The African Guarantee Fund (AGF) works with financial institutions to guarantee loans and other financial products for small and medium sized enterprises in a variety of sectors. In 2017, the AGF agreed to work with the ACP-EU Development Minerals Programme to make available US$12 million in credit guarantees (through credit guarantee agreements) to financial institutions in Cameroon, Guinea (Conakry), Uganda, Nigeria and Zambia, for loans provided to SMEs in the development minerals sector. This facility could leverage up to $24 million, since the guarantees would support about 50%-70% of the loan amounts. The program also included training by AGF and ACP-EU for financial institutions, focused on inclusive finance, particularly looking at a value-chain financing model. The ACP-EU program has provided training and support small scale miners in formalization, increasing their business skills and enhancing their ability to produce ‘bankable’ documents needed to take loans. As of 2019, the program supported more than 6000 ASM operators (half of them women) to formalize, and had worked to build the capacity of 164 savings and loans cooperatives, who act as the intermediaries for disbursing small loans to the miners. These cooperatives received training on market analysis and business management, as well as coaching and mentoring. Further, the program also worked with 57 commercial banks to provide loans to medium scale operations which have higher levels of finance needs. These financial institutions collaborate with UNDP in the focus countries and inspectors from ministries of mining to report on mining operations and their compliance with environmental, social and other requirements.

In Tanzania, the Bank of Tanzania recently pledged to provide a loan guarantee of up to 500 million shillings through registered commercial banks in the country, catalyzed by the World Bank’s Small and Medium Enterprises Credit Guarantee Scheme (SME-CGS) and providing a 50 per cent guarantee for up to five-year loans to small-scale miners.

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Sotrami S.A in Peru, which started as an artisanal mining operation of about 165 miners and is today made up of 1000 miners,\textsuperscript{56} benefitted from a loan of circa US$1.3 million from the Impact Finance Fund, a private sector-financed fund, between 2011 and 2014. The loan was secured against the fixed asset of Sotrami. As part of the conditions of the loan, Sotrami had to work with the ILO and the Swiss Cooperation of Development the Sotrami to completely eradicate child labour\textsuperscript{57}. Sotrami is Fairtrade certified and the funds received have enabled the entity to thrive. Cyanide has replaced mercury and better safety and hygiene methods are being used in addition to the mechanised production and processing methods. The gold mined is transported through Fairtrade channels and the Swiss Better Gold initiative thereby guaranteeing miners a good return on their ore.

Another example of blended finance is the Impact Facility for Sustainable Mining Communities, which has leveraged grant funding to build artisanal and small-scale mining capacity, infrastructure and tools. The aim is to develop an impact investment vehicle to onboard commercial loans and disburse them across its portfolio into the development of responsible ASM. It markets itself as an ‘innovative mechanism for enabling hard-to-reach mine sites to benefit from access to technical support, finance and markets’, through facilitating access to equipment, access to capacity development and access to ethical markets\textsuperscript{58}.

\textbf{3.3.7 Summary of government-backed ASM support schemes}

What are the key takeaways from these experiences? First, and on a positive note, governments have consistently shown a willingness to establish funds, often through creative means, to assist with the financing of ASM. Second, and quite commendably, host governments have dedicated the time to mobilize the finance and personnel to manage these schemes.

Whilst in virtually each of these cases, a donor has been involved, no doubt helping to catalyze action, the logistics involved in coordinating each of these schemes cannot be understated and have for the most part been handled by the governments in question. It is even more impressive that these schemes were launched by governments in countries where the emphasis has been on large-scale mine development, which has no doubt drawn away important resources that would otherwise be assigned to assist with coordinating the schemes developed for ASM.

Conversely, rarely have such interventions strayed beyond the walls of the local ministry of mines or its equivalent, which helps to explain their rapid demise. With other priorities, including attracting investment in large-scale mining, these ministries have simply been unable to sustain these schemes over the long term, struggling – as the cases of Zimbabwe and Ghana in particular show – heavily with managing the local-level components of the work, including monitoring miners’ repayments and their use of equipment leased. Some part of this is owed to these ministries failing to forge partnerships with other ministries or other partners to overcome resource shortages and to shore up monitoring efforts in remote localities. A shortage of expertise has contributed to key mistakes early on, such as the procurement of inappropriate equipment and the partnering with the wrong partners, as the Ghana experience aptly illustrates.

The success of such schemes also hinges upon ongoing participation from governments and/or donors. A number of challenges – fluctuating gold prices contributing to governments’ diminished interests as reflected in changing national budgets, bilateral funding drying up due to shifts in political interests in the donor country, and few guarantees that interventions will receive the level of monitoring they need -- have made designing and securing the required support for these schemes challenging. Further,\textsuperscript{56} ‘Impact Finance Fund’, http://www.impact-finance.com/ (Accessed 4 January 2020).
governments have struggled to mobilize additional funding beyond the initial pots of money, including local sources of commercial finance. Whilst this has proved elusive thus far, the blended finance examples and the new Tanzania pledge for loan guarantees provide a glimmer of hope moving forward.

3.4 Private equity financing

On occasion, ASM operators have managed to negotiate partnerships that have yielded direct investment in their activities. One example of a joint venture arrangement was the partnership between the ASM Munhene Association in Mozambique and ‘a Venture Capital fund from South Africa which resulted in a 75:25 sharing of the production’. However, this never actually materialized because SASOL, the South Africa-based partner, which was scheduled to provide Munhene with wheelbarrows, shovels and picks, decided to offer mechanical equipment instead, a move which the miners rejected, on the grounds that ‘the spirits did not want any noise caused by machinery in that area’.

In a more successful example, the Chambers Federation, an impact investor who first invested in a small-scale gold mining operation in Kenya, subsequently used this experience to establish Fair Congo in the Democratic Republic of Congo in 2017. Chambers Federation claims that Fair Congo is currently the only conflict-free ASM gold supply chain from an active Conflict and High-Risk Affected Area. Registered as a for-profit company, Fair Congo is fully licensed as a ‘comptoir’, an artisanal gold export office by the national Ministry of Mines, and 99% of shares are owned by US citizens with years of experience as impact investors.

Recently, Sustainable Economic Futures, a group in Canada, created the Clean Gold Community Solutions model (SEF Clean Gold) that aims to raise $1,500,000 through a responsible equity investor consortium to invest in processing operations serving artisanal mines in Ecuador. With the investment, SEF Clean Gold Community Solutions will enter into a 50-50 joint venture with miners, splitting all profits evenly. The idea is work with miners in Ecuador who currently use

60 Dreschler, 2001, p. 51. A recent visit by the lead author to this site, however, suggested otherwise. The South African partner had left all of his heavy machinery at the site in 2011, fleeing Mozambique, claiming that he needed more advanced machinery to ‘dig deeper’. The government claims, however, that his fleeing was over not having paid the required mining fees, and in 2016, the cooperative was awarded all of the equipment.
mercury, with an approximately 30-40% gold recovery rate, to substantially improve recovery (up to 90%) using cyanide to replace the mercury, and to improve other management practices.

Generally, however, equity financing in the ASM sector has been rare. Because of the rarity of these agreements, a ‘rebranding’ of the ASM activities seeking investment may be needed in order to fully exploit the suite of opportunities available in the equity financing space. These are most appropriate for what would be considered ‘medium-scale’ mining operations which are the closest to the Junior or Start-up companies who usually target this type of funding. Some of the more prominent options available are convertible loans, joint-ventures and direct investment by larger partners.64

In South Africa, some specialized mining investment funds have been developed for investment aimed principally at what would be considered junior or medium-scale mining companies, which could potentially also help small-scale mining. Most also focus heavily on funding ‘black-owned’ operations. Examples include:65 (1) The Anglo/Khula Mining Fund, a joint initiative between the Anglo American Corporation of South Africa Ltd. (‘Anglo’) and Khula Enterprises, a Department of Trade and Industry initiative that focuses mainly on investing and adding value to viable small and medium-sized black-owned and black empowered businesses, involved in mining and related activities in South Africa; and (2) the NEF, another Department of Trade and Industry initiative, which supports small and medium-sized entrepreneurs, and promotes a culture of equity investment and savings (for start-up businesses that require funding from R250,000 to R1 million, for the development and expansion of existing business requiring funding from R1 million to R3 million, and for the transformation of existing enterprises for which funding from R3 million to R10 million). There is also the African Lion Mining Fund III,66 supported by donor backing, specialized in providing early stage equity for medium-scale mineral resource companies with interests in sub-Saharan Africa, mostly to support exploration. Now US$79.2 million in size, with a commitment of US$15 million from the European Investment Bank, the fund prioritizes investment in advanced exploration, feasibility and development projects, mainly in the gold sector and usually at the pre-operational stage.67

3.5 Other sources of financing

3.5.1 Informal financing

In the absence of formal financial support, informal and smaller scale miners are often forced to forge ties with informal financiers. These ‘middlemen’ have often been branded as ‘unscrupulous’68, taking advantage of their monopolistic positions to broker unfair deals. References to ASM’s middlemen are ubiquitous, and in most cases, these relationships are portrayed negatively. There is constant mentioning of the need to remove them, despite there being few, if any, substitute sources of finance and support available to the individuals they serve.69

From a different perspective, these middlemen are crucial cogs in ASM systems. Miners’ – both informal and licensed – continued reliance on them for finance is perhaps a telling sign of how few finance alternatives

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69 See e.g. Hentschel et al., 2002; Carstens, J. 2017. The artisanal and small-scale mining (ASM) sector and its importance for EU cooperation with resource-rich developing and emerging countries. Strategic Dialogue on Sustainable Raw Materials for Europe, Horizon 2020 Program, European Union, Brussels.
exist for miners and also how little trust miners have in governments and formal lending institutions. In every informal setting, there are ‘complex relationships between miners, traders and middlemen’, who ‘provide loans to sponsor mining activities, offer access to markets, and can form long-term mutually beneficial relationships in complex supply chains of production and labour hierarchies’. At this level, ASM is mostly a poverty-driven activity for the miners involved and ‘is typically hierarchically structured, with various layers of [these] intermediaries’. Efforts to make formal financing as an alternative to these middlemen must, therefore, wrestle with the challenge of replacing these long-standing, trust-based business relationships.

3.5.2 Local/regional savings and credit schemes

ASM associations and other local entities are important partners and potential agents of change in the sector. Well-organized and influential small-scale mining associations, such as the Guyana Gold and Diamond Miners Association, can bring about change very quickly, and in the context of delivering finance, new equipment and facilitating environmental improvement, can be a catalyst. Even the associations which have limited resources, such as Mozambique’s Associacoa Nacional dos Operadores Mineiros de Mocambique, should not be discounted as agents of change. With 250 members scattered across six provinces, this particular association’s reach is vast, a reminder of how even the most under-resourced of units could play an important role in bringing together individual miners for the purposes of reskilling and educating.

These groups have also been at the center of local finance initiatives, skilfully positioning themselves with regularity to raise capital. Take, for example, the case of Tanzania, where, at the turn of the century, many ASM groups operating near Geita District began organizing themselves in ways which paralleled the Savings and Credit Cooperative Societies (SACCOS) model long rooted in the country’s agricultural sector. The Tupendane group in Rwamgasa, located 50 miles from Geita, was one such group, which registered on 13 June 2001 and by September 2005 had 40 members, raised US$7000 through share sales, and used the interest gained through lenders to build a modern office. Similarly, the Mshike-Mshike group, which operated 25 km from Geita Town, registered on 5 August 2004 and had 18 – mostly unlicensed – members at the time, started their SACCOS with US$940 raised through the sale of shares.


Some association initiatives focus on enhancing women’s participation in small-scale mining. For example, the mission of the Tanzanian Women Miners Association (TAWOMA) is to facilitate women miners to organize and access required financial, technical, and marketing services so that they can carry out mining activities that are both economically and commercially viable and environmentally sustainable and thereby raise the standard of living for women miners and their families. TAWOMA was registered in 1997 as an NGO, and today, its director works with more than 400 women in 11 districts in Tanzania, advocating for the rights of women engaged in small-scale mining of gemstones, gold, diamonds, and industrial minerals. Its long-term goal is the establishment of a centre for the rental of mining equipment and tools; a lapidary and jewellery production unit; and a skills training centre focusing on environmentally sustainable mining and processing methods, health and safety issues and the rehabilitation of ecologically sensitive mining areas.\(^{73-74}\)

Other locally-based schemes have also successfully delivered finance and other services to women miners and community members. Recently, under the Artisanal Mining Women’s Empowerment Credit & Savings (AFECCOR) project in DR Congo’s Ituri Province, coordinated by the Ottawa-based NGO IMPACT, miners are banding together to develop village savings schemes to access credit which are built around a local ‘gold economy’.\(^{75}\) The project supports women and men in artisanal gold mining communities to access savings and credit in an effort to promote entrepreneurship and economic security. AFECCOR provides coaching and training on business skills, gender equality and literacy to male and female miners. These miners are then supposed to establish savings and loans in their communities and train other community members. Every member contributes to the savings account.

Loans are advanced to members from this pot. Interest on loans are reinvested to ensure there is growth in members’ savings. By participating in the AFECCOR project, artisanal miners and community members decrease their reliance on informal credit networks that characterize the ‘gold economy’, where gold is used as currency to cover basic needs, small businesses and mine site operations, often with unfavourable conditions. The AFECCOR project promotes women’s leadership and economic empowerment in their homes, at artisanal mine sites, and in the wider community.


3.5.3 Financing of ASM projects by downstream gold buyers

The Better Gold Initiative for Artisanal and Small-Scale Mining (BGI for ASM) was established in 2013 as a public-private partnership between the Swiss Better Gold Association (SBGA), an association of Swiss gold buyers, and the Swiss State Secretariat for Economic Affairs (SECO). BGI for ASM is focused on a social and environmentally friendly, traceable and transparent supply chain system that adheres to the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict Affected and High-Risk Areas. The project was first launched in Peru. The project offers three benefits: 1) supporting ASM activities to ensure responsible mining, 2) facilitating access to finance and international markets for ASM operators and 3) encouraging social and environmental considerations. BGI works with miners to improve practices and in some cases to seek certification from existing schemes such as Fairmined. It also assists miners to export their gold to Switzerland, in the process, providing them direct access to the market. Miners who meet SBGA established criteria receive a premium that goes toward social and environmentally friendly initiatives such as building local schools, electricity and water pipelines, safety equipment and medical supplies in the mining communities.

An earlier example of downstream financing was Cartier’s sourcing of gold from Goldlake’s Eurocantera Mine in Honduras. In 2009, Cartier agreed to buy gold from Eurocantera for a minimum of three years: paying for its entire production during the first year and pledging a spend of at least US$10 million in years two and three. This steady stream of funding put the mine in a position to comply with environmental, ethical and social standards.

3.5.4 Mining partnerships/mentoring

During interviews for this report, experts from Guyana, Ghana and Tanzania noted that certain advanced small and medium-scale miners already assist some of the more artisanal of operators, including providing training on environmental matters, providing purchasing services for gold onsite, allowing the artisan to use machinery and processing facilities, and leasing sections of concessions to them. In Guyana, there is already a culture of ‘putting the small-scale miner first’. Here, various small-scale miners occupy influential political positions, control the town of Bartica (the gateway to the country’s interior), and sit on international and presidential committees. Many who hold claims in the likes of Matthew’s Ridge and Mahdia partner with smaller groups and have managed to grow their operations substantially over the past three decades, which includes a period of 20 years without large-scale mining activities, following the Omai disaster at Cambior’s site in 1996.

In other countries such as Ghana and Zimbabwe, there is a long history – perhaps a culture of collegiality – of tributor arrangements. In the former, the abusa system (‘abusa’ meaning ‘one third’ in the Twi language), which had been used in sharecropping to counter the labour shortage in areas such as Wassa, was adapted in the mining sector in the Gold Coast. These tributors were not salaried but rather given one third of the ore as ‘payment’. Similar arrangements have surfaced in the country’s diamond mining sector, specifically at the Akwatia Mine, where tributors secure plots from the company and in exchange for support are required to sell their stones to management. Whilst often pitched as exploitative, there are several additional examples where a mining company or more mechanized small-scale miner engages in a tributor arrangement or

77 https://www.ft.com/content/46f296c4-9d9d-11de-9f4a-00144feabdc0
80 Interview, ASM expert, Guyana, 1 May 2019; interview, ASM expert, Burkina Faso 4 May 2019.
joint venture with a local operator for the purposes of financing, notable examples being in Zimbabwe’s chrome sector, Sierra Leone’s diamond mining sector, and Guyana’s gold mining sector (under the pre-existing Mining Act 1989).

There are even instances where the law formally brings ASM groups and large-scale miners together, for example in Mali and Burkina Faso. In the former, prospective large-scale miners are, according to the law, required to ‘tolerate’ all artisanal mining activities within the boundaries of their prospecting license until they are ready to commence mining. At this point, the resident artisanal operators or *orpailleurs* are required to stop mining. In Burkina Faso, the law allows a mining company to demarcate sections of its concession to artisanal miners, which typically involves the ‘blocking out’ of areas that cannot be worked viably on a large scale. Again, in these cases, an interface and ‘forced partnership’ is created between ASM and large-scale mining, which could be seen as an opportunity to help finance and disseminate mercury-free technology and alternatives.

In the Minera Yanaquihua in Peru, cooperation between a medium scale mining and ASM has been facilitated by the NGO Solidaridad, which has advised on productivity and operational improvements. A key part of the cooperation is that some local miners are now working as “micro-contractors” of the medium scale mining, providing ore which is then processed by Yanaquihua. Solidaridad has worked to enhance the mutually-beneficial aspects of this arrangement, such as training of artisanal miners in the use of safer mining techniques, and assistance to the miners in their formalisation and application for permits, while Minera Yanaquihua has increased access to ores usually only reached by ASM. The mine has also improved its practices and become Responsible Jewellery Council (RJC) certified.

### 3.6 Direct ore/tailings purchasers

Successful models for business relationships between small-scale miners and centralized processors have emerged over the last decade. While not financing, these models offer a different business model that obviates the need for financing of mercury-free small-scale processing, since processing is done by the centralized processor/toll miller. In Ghana, Sankofa Gold, a subsidiary of the government-owned Ghana National Petroleum Corporation (GNPC), purchases gold-aggregated ore (and tailings) from small-scale mining operations (formal and informal). A similar setup exists in Tanzania, where, enshrined in the Mining Act 2010, there are provisions for a Processing, Smelting and Refining License, the holders of which can construct mini-cyanide vat leaching facilities and can process ore acquired from artisanal operators. Latin America has seen growth of the toll milling industry. The model involves sorting through the ore that ASM operators mine to select good quality ones, and then offering a price for the ore in accordance with gold prices on the global market. The ore is then immediately processed and sold globally. Mining companies which now employ this method are Dynacorp, Inca One Gold and Montana Mining. At the moment, these firms are thriving. This model requires building networks with numerous artisanal miners, a prerequisite of which is being very transparent with the miners. Good pricing models which offer good value and quick access to

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cash while at the same time leaving room for junior mining companies to realise a return on the sale of ore is imperative.

Toll mining is particularly attractive because it carries a relatively lower risk than financing processing for individually producing miners. However, to be successful, a toll milling company\(^\text{93}\) will have to use multiple sources of ore to ensure constant abundance of supply, have very good metallurgy and recovery processes, an experience and resilient management and technical team, have a pricing model that offers a good mark-up on cost and protects margins, and operates in areas where ASM is formalized with a plan to scaling up its operations in order to take advantage of operational efficiencies and low levels of labour.

### 3.7 Providing assistance to ASM through centralized processing centers

Established small-scale processing centers can serve as a vehicle through which to access and provide services to a larger community of ASM. The ‘depot’ or the ‘one-stop-shop’ is a model which has been heavily patronized by artisanal gold miners across the world and has enjoyed considerable success. It has typically taken the form of a centralized processing unit (albeit with centers using mercury processing), and has its roots in Zimbabwe, the location of the Shamva Mining Centre: a depot erected in the rural locality of Shamva which successfully lured informal miners away from their panning activities carried out using mercury along rivers. These miners instead patronized the amalgamation facilities at the Centre, and received technical and environmental training as well. Eventually, the center closed, but Shamva’s downfall had nothing to do with its failure as a strategy but rather ironically it was a victim of its own success: its ball mill was undersized and therefore incapable of meeting the largely-unanticipated processing demands of informal operators\(^\text{94}\).

Centralized processing is commonly carried out elsewhere. In Peru, for example, centralized processing has become increasingly popular. For example, in San Sebastian, where there were approximately 1300 people (in 2012) directly involved in mining and 46 cyanidation processing plants, each of which featured three percolation vats of 15 tonnes in capacity. Moreover, in Piura, 80 percent of miners were observed to be processing their ore in Nazca or Arequipa, in the south of the country\(^\text{95}\). In Colombia, processing centres use small ball mills referred to locally as cocos. They often process about 60–70 kg of ore using mercury, a substantial amount which is released during pulverization. However, the processing centres in these examples use mercury, and there are economic dynamics underpinning these operations that must be considered. Often, small-scale miners patronizing these processing centers are required to leave gold-rich tailings behind, which are then further processed by the center owners to earn profits. Promoting mercury-free centers must consider how the business model would need to change to accommodate better initial recovery with mercury-free technology, with less gold remaining in tailings.

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4 Lessons from Other Industries

Other industries with some similar characteristics to ASM that may offer some lessons for financing: artisanal fishing and agriculture. These two industries were selected for review because they have some similarities to ASM (informal, dispersed actors, lacking traditional collateral, etc.) and have long been key focal points in international development, including an array of interventions related to finance and banking.

4.1 Learnings from artisanal fisheries

Artisanal fishing shares several characteristics of the ASM sector: most actors are informal with little collateral for accessing formal sources of capital; the sector is complex in its structure, employing a range of people who come together under the leadership of a head fisherman and partake in the proceeds from daily/weekly or monthly catch; most people engaged in the sector borrow from friends, female fishmongers or other informal sources; and very few people involved have independent bank accounts.96

Artisanal fishing relies on community-level lending systems, which involve the advancement of cash, input and equipment loans to fisherfolk by individuals who or groups which are not linked to financial institutions. Typical lenders include locals who supply fishing input and boats to fishermen, kinsmen who advance loans to younger generations, and resident distributors and retailers. These systems feature prominently in the artisanal fisheries sector of several countries, including Nigeria, Uganda, Ghana, Senegal and Kenya (Africa), Italy (Europe), Sri Lanka, Pakistan, Fiji, India, Cambodia, Samoa (Asia-Pacific), and Chile, Guyana and Brazil (South America).97, 98

Closer examination of these informal financial provides insight into how trust, solidarity and partnerships are the foundations of financial services in these communities. Take, for example, the case of Ghana, where women have long dominated the artisanal fisheries trade. Here, despite the government’s best efforts to mechanize the sector, akin to what donors have attempted to facilitate in ASM for nearly four decades, fishermen have struggled to adapt. In the 1950s and 1960s, fishermen were advanced credit, at a relatively affordable cost of £150 and down-payment of 25 percent at an interest rate of 3 percent, by the government to purchase outboard motors to ensure that they could travel further distances but soon experienced difficulties covering repairs and consequently, repaying loans. Whilst more favourable lending schemes soon emerged, including only having to pay £20 upfront, still only 20-25 percent of the country’s fishing fleet was mechanized in the 1970s. Compounding the problem was the unwillingness of banks to support fishermen because of their lack of collateral. This is how ‘fish mammies’ became the main financiers of the new technology in the sector. Recognizing that their livelihoods depended upon fishermen sustaining their catches, groups of women combined profitable investments with crucial social contacts, emerging as a group of large-scale intermediaries.99 These dynamics have persisted through to the present day.

One distinctive feature of artisanal fishing is the relative ease with which lenders can be close to landing beaches to observe the activities of their customers.

This makes it easier for lenders to monitor the progress of beneficiaries, build confidence in borrowers, and ultimately to monitor and ensure repayment of loans. This helps explain why successful community based artisanal fishing schemes can now be found across the world. In India, for example, there are hundreds of schemes now in place, their existence owed heavily to individual fishermen taking the initiative on their own to become more visible and influential entities. One notable case is the work carried out by the Development of Human Action Foundation (DHAN), a professional development organization based in Tamil Nadu established in 1997. It has worked extensively with families involved in seashell collection, fish vending and labourers in four coastal blocks of Ramnad District, covering 105 coastal villages, and using uncomplicated finance schemes to support over 4000 individuals. The success of these initiatives is owed to the trust-based relationships shared by the families in these communities.

Similarly, in the Mexican State of Qintana Roo, the Fish Production Cooperative Societies of Cozumel and Vigia Chico are two cooperatives that were formed to advance a model of sustainable fishing. Focusing on lobster and scaled fish such as grouper, cod, and snapper, these cooperatives – Cozumel with 48 members and Vigia Chico with 80 members – support members with acquiring fishing permits, and in banding together, have landed grants from the UNDP/GEF to support their activities.

While most of these community-based finance mechanisms have limited reach in terms of beneficiaries, some development financing approaches have been developed to reach larger numbers of actors. The Meloy Fund, a wholly owned subsidiary of the international conservation organization RARE funded by a range of organizations, including JP Morgan and GEF, offers debt and equity financing tailored to individual viable businesses capable of directly benefitting 500–2000 coastal fishers in Indonesia and the Philippines. There is also Encourage Capital, an investment firm which ‘seeks to change the way investment capital is used to solve critical environmental and social problems’. Encourage Capital has a number of blueprint investment strategies which it uses across its portfolio. In small-scale fishing projects, funding is a mix of debt, equity, program-related investments (PRI) and grants. For each project, a specific impact objective is laid out, investment terms are in excess of 5 years and involve extensive fishery management improvement initiatives. Encourage Capital has launched its ‘Investing in Sustainable Global Fisheries’ strategy, which includes a ‘small-scale fisheries’ component currently comprising three flagship projects: 1) in Chile, the US$7 million Marsicos Strategy, a five-year intervention targeting clams, scallops and shrimps, involving seafood companies and supporting seven fishing communities and 550 people; 2) the US$15 million Mangue Strategy, a nine-year project in Brazil similar in its execution but focusing on the mangrove crab, involving 1300 people from 98 fishing communities; and 3) the Isda Strategy in the Philippines, a 10-year US$11.7 million program targeting tuna and other large species such as mahi, impacting the lives of 19,000 people across 40–80 villages.

Evidently, a strong community of artisans who trust each other, are focused on sustainable business models and support each other is critical to the success of any financing initiative at the local level. At a much broader level, models such as that employed by Encourage Capital demonstrates that a mix of funding types is required to be successful, due to the nature of artisanal operations.
4.2 Learning from small-scale agriculture

Similar to artisanal fisheries, small-scale agriculture is also a sector with obvious similarities to the ASM sector. Like many ASM operators, small farmers work in the informal sector and are often unbanked, and therefore lack typical forms of collateral required by commercial financial institutions. Like ASM, there are many external, unpredictable operational risks such as intermittent production, weather-related events, irregular cash flows and consequent unpredictable repayment. However, there are also important differences which caution against wholesale use of small-scale agriculture as a model for ASM. First, the focus of most agricultural schemes is household-level food security, rather than technological development and expansion, as is needed for transforming ASM into a mercury-free sector. Moreover, small-scale agriculture is dominated by family groups, which affects potential lending strategies, such as the ability to use “group lending” models. In fact, the World Bank has suggested that group lending is the most effective means of offsetting borrowers’ lack of collateral but this does not work with family-oriented smallholders, as the evidence suggests.

Nonetheless, there is a substantial history of development financing of small-scale agriculture that can be examined. A number of these efforts has been marked by lack of sustainable outcomes. In Asia, for example, under the auspices of the Bimas project (Indonesia) and the Masagana 99 (the Philippines), highly-subsidized loans were awarded to smallholders who agreed to adopt new technologies designed to increase farm productivity. Similarly, in Latin America, countries such as Guatemala, Peru and Bolivia launched subsidized credit programs, implemented through agriculture development banks and which provide credit at highly-subsidized lending rates, often using government resources as a source of loan funds. But most of these programs collapsed due to non-repayment of loans and poor fiscal discipline of rural borrowers. Even some of the world’s most established agricultural lenders, including Bai Tushum Financial (Kyrgyzstan), Caja Los Andes (Bolivia), Equity Bank Limited (Kenya), AccessBank (Azerbaijan), the Cooperative League of the USA (Mozambique) and Tushum Financial (Peru) have encountered problems with repayment.

The chief concern continues to be collateral: specifically, how loans can be awarded to asset-less individual smallholders. The type of collateral typically demanded by lending institutions from smallholder farmers include fixed assets backed by a legal title; movable property, secured with pledge on movable assets, such as equipment, inventories or warehouse receipts; or joint liability collateral, typically secured by a co-signer. There have been exceptions, such as Prodem (Bolivia) and Calpia (El Salvador), where organizations have taken steps to minimize risk and accept “unconventional” sources of collateral from smallholders. But for the most part, lending institutions are unwilling to finance without tangible assets, which limits their reach to most small farmers. Of the loans that are available, few are capable of positioning smallholders to accumulate income and generate wealth. In India, which has the highest market penetration for microfinance in the world at US$12.3 billion, the loans are unlikely able to push borrowers beyond a subsistence level. The Baroda Uttar Pradesh Gramin Bank, for example, allows borrowers to purchase a tractor, harvester or any other agricultural implement at any branch, typically against the simple mortgage of 103 Gallardo, J. 2002. A Framework for Regulating Microfinance Institutions: The Experience in Ghana and the Philippines. Policy Research Working Paper 2755, The World Bank, Washington DC.
agricultural land, with repayments of up to nine years.\textsuperscript{110} The Kerala Gramin Bank has an ‘Agricultural Gold Loan’, which it awards to prospective clients who are willing to use their jewellery as collateral.\textsuperscript{111} To facilitate repayment, India has experimented with intermediaries, most notably through its BASIX initiative, but even this has had its challenges, including significant monitoring costs, and the struggles endured by commissioned agents during drought years.\textsuperscript{112}

Where small-scale agriculture does provide a source of inspiration, however, is in the areas of gender and diversification. For example, while implementing the ‘group borrowing’ model in agriculture has proved challenging (in projects in the Philippines and Nepal for example\textsuperscript{113}), a focus on gender may be a viable entry point for this model. In Uganda, BRAC followed the group lending model when designing borrowing schemes for women in agriculture. Women were asked to organize themselves into groups of five to 20, many of whom, much like most BRAC clients, are mainly poor subsistence farmers who derive income from diverse farming and nonfarm activities and use various sources of funds to meet repayment obligations. These loans also have the potential to move families beyond subsistence and maintenance levels as the main objective for borrowing is to meet lump-sum monetary needs usually for school fees and for investment in informal small non-farm businesses. Encouragingly, the loan default rate is low.\textsuperscript{114} In Burkina Faso, the Hunger Project’s Microfinance Program, which is women-led, locally-owned and fully integrated, is on track for gaining official government certification to operate as a Rural Bank. Some 75 percent of the Board of Directors of the Rural Bank are women; all 15 epicentres of farm production in Burkina have a bank with an office, six of which are formally recognized rural banks; and the program has partners involved in a variety of livelihoods, including agriculture, food processing, handicrafts, pretty trade and general services.\textsuperscript{115} With women dominating ASM in a number of countries, most visibly in sub-Saharan Africa, parallel women-focused and managed financial services in ASM could be formulated.

Diversification, which helps to spread risk, has also been a key to some successful interventions in small-scale agriculture. It has long been recognized that ‘microfinance institutions that have successfully expanded into agricultural lending have tended to lend to a wide variety of farming households, including clients engaged in more than one crop or livestock activity’.\textsuperscript{116} Most people engaged in smallholder farming and ASM have diverse income-earning portfolios. Including a range of income generating activities as the basis for lending could appeasing lenders, something which has been demonstrated in certain cases. Often, it has been the lending organizations that have encouraged the diversification, a case in point being MiCredito (Nicaragua), in environments where, despite intermittent rainfall and a history of nonrepayment, loans are provided to farmers growing sesame or beans, but the organization also provides credit to those interested in rearing cattle.\textsuperscript{117} Caja los Andes and PRODEM of Bolivia, Calpiá of El Salvador, as well as a number of other microfinance institutions that have expanded into agricultural lending, require that their clients have diversified sources of income. Most of these organizations’ rural clients have two or more growing seasons, have cultivated links to markets

\textsuperscript{112} Mahajan, V., Ramana, N.V., 2004.
\textsuperscript{114} Namayengo, F., van Ophem, J.A.C., Antonides, G. 2014. Women and microcredit in rural agrarian households of Uganda: Match or mismatch between lender and borrower? \textit{Apstract} 10(2-3): 77-88
\textsuperscript{117} Andrews, M. 2006.
for crops, require a sizable nonfarm portfolio, and cap farm lending at 10–25 percent (of their portfolio).\textsuperscript{118}

In some cases this female-led, diversification model has already been undertaken in ASM settings: from Burkina Faso’s female artisanal miners who reinvest profits from gold into housing and hotels, and Sierra Leone’s women gold panners, who are using profits to acquire farm inputs and access agricultural markets in the country capital of Freetown.\textsuperscript{119} In the former, monies acquired from gold mining have been used to acquire plots of land and homes which are rented out, typically in the hometowns of individuals. In the latter, where gold mining is mostly controlled by women, there is a visible cycle of money flow: from production, where monies accrued are used to purchase seeds, bolster agricultural and hire more labour for mining, to Freetown itself, where product, specifically gold and harvested vegetables, are sold.

Models for larger scale agribusiness may also be worth examining for their potential application to ASM. One interesting model is that of the non-profit AgDevCo Limited which is owned by AgDevCo Holdings Limited, a five-member UK incorporated private limited company entity that operates as a blended finance vehicle. It has subsidiary offices in Ghana, Malawi, Mozambique, Tanzania, Uganda, Zambia and Cote d’Ivoire but also serves Rwanda and Sierra Leone. AgDevCo Limited raises concessional investment capital from its partners who invest in its portfolio of clients and relies on grant funding to provide technical assistance to its investees. The objective of the model is to enhance the ability of early stage agricultural businesses to attract additional private investment whilst increasing food security, driving economic growth and creating jobs.\textsuperscript{120} Funds are raised through concessional loans and grants from AgDevCo’s development partners who include the Department for International Development (DFID), the Mastercard Foundation, the DGIS Directorate-General for International Cooperation (Netherlands), the Small Foundation and Norwegian Ministry of Foreign Affairs and the Royal Norwegian Embassy. It also works with other co-investment funds. AgDevCo has been prominent in offering blended financing to entities in the agricultural industries of the countries within which it operates. An example of one of its initiatives is the loan product advanced to Tropha, a Northern Malawian subsidiary of UK-based farming company Jacoma which specializes in the commercial production of macadamia, chilli and paprika. Tropha both produces its own crops and buys from other small producers, before processing and exporting to markets in South Africa. Although Tropha itself is a large-scale agribusiness company with its own production efforts, it offers other small holders technical assistance and input on credit.

\textsuperscript{118} Christen and Pearce, 2011.
2014 saw the beginning of AgDevCo’s involvement in Tropha with equity/loan capital provided. To date, it has committed US$6.1M to Tropha, US$2M of which is held as equity ownership. With such equity ownership comes a seat on the board of Tropha and by extension control over its investment and a say in the overall strategic direction of the entity. AgDevCo’s involvement with Tropha offers it the opportunity to ensure that its requirements for its investment to have an impact is realised. The funds offered to Tropha have, at the same time, helped to mobilize additional private funds in the form of an equity investment to the tune of US$8 million, provided by the UK-based CDC Group for the development of a 100-hectare community irrigation scheme. Working in partnership with AgDevCo raised the profile and attractiveness of Tropha as a financially-viable investee. AgDevCo reports that at the end of 2018, Tropha had several significant gains in the areas of employment, job creation, export volume and gender participation, as detailed in Figure 1.121

Figure 1: Articulating the impacts of Tropha

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In another example, Aceli Africa has recently been established, through the receipt of a grant awarded to the Global Development Incubator (GDI) and its partner, the Council of Smallholder Agricultural Finance (CSAF). Aceli will be launched in 2020, with the aim of harnessing US$40 million for financial incentives paired with US$10 million in technical assistance to support agricultural SMEs. These funds are expected to mobilize in the range of US$700 million in private sector lending coupled with food security, job creation and business growth benefits within the agricultural sectors in selected countries in sub-Saharan Africa. The financial incentives will be used to reduce private sector risk by offering cash incentives to private local and international lenders in order to bear the high operating costs of providing financing to the “missing middle” in the agricultural sector and to share the risk involved in providing private financing facilities to SMEs which work in the less formal sections of the industry’s value chain. Unfortunately, the exact structure and mode of delivery is yet to be made public.

Annex IV provides a breakdown of schemes for agriculture and artisanal fisheries.

5 Constraints/Barriers to Financing ASM

Based on the review of global experience in ASM in previous sections, a number of common themes emerge as constraints and barriers to ASM finance.

The main constraint on financing is the perception of the sector as high risk, despite major developments in the sector and significant funding from donors to support its operators. One source of risk is lack of traditional collateral.123 In Tanzania, there has been extensive lobbying by miners to use their gold, as opposed to houses and land, for loans from banks to support ASM.124 This was an idea first proposed by the West African-based consultancy GEOMAN CONSULT in the late-1990s under the Mining Sector Capacity Building and Environmental Management Project in Burkina Faso.125 The GEOMAN team proposed using geological information, specifically, the quantity of gold in the concession, as collateral to secure loans from lending facilities, and tabled a proposal to the World Bank to put this into action in Burkina Faso and Ghana.126

Another source of perceived risk is the association of the sector with criminal activities, including its use as a mechanism for money laundering. These associations have raised the call for greater transparency and traceability. Anti-corruption initiatives, such as the OECD Due Diligence Guidance, demands that significant details about the origins of metals and the financial transactions surrounding their purchase and sale be provided. Financial institutions may want to see that ASM operators can meet these requirements for sale of their product into formal markets. These requirements, whilst important, may be difficult for ASM to meet without substantial assistance, as observed in East Africa.

The poor performance of many ASM finance initiatives to date, where miners have struggled to pay back loans and even return equipment intact, may also make some financial institutions reluctant to continue to engage in the sector. Inconsistency of yields, the costs of processing gold and constant need to replenish equipment have, in combination, made it difficult for borrowers to repay loans and even cover rental fees/interest. These institutions will need some incentive or convincing if they are to reengage as lenders. Perhaps a renewed commitment to buying gold from miners, irrespective of their legal statuses, could help to alleviate some of these concerns. A country such as Ghana, for example, has long had in place an intricate system of gold buyers who patrol the country and buy gold at the source. Whilst struggling to formalize these operations, what this system does do is provide a foundation on which to build a system of engagement with individual operators. Other countries which have in place intricate systems of gold buying, such as Guyana, the Philippines and Mozambique, all provide a fair degree of visibility to ASM operators, both licensed and unlicensed. It would seem that risk would be minimized significantly with improved transparency and the opportunity to view more closely individual transactions, which these systems have made possible.

A final constraint may be lack of understanding of the development potential of the ASM sector by governments and other parties which influence policy, notably donors and NGOs. Many governments covet foreign investment from large-scale mining but in doing so, heavily downplay ASM’s potential contribution to the economy, and thus do not provide support for formalization and/or de-risking or direct financing for this sector. One way to change the conversation may be to discuss ASM in the language of...
the SDGs, explaining how the development the sector will contribute to achieving many of these targets. Explicit data on the economic contribution of ASM is another way to communicate this. The DELVE platform attempts to provide such relevant information such as employment and tax revenues from ASM through encouraging a sharing of data from policymakers, donors, consultants and NGOs. The objective is to enhance the database for ASM with the aim of making improved decisions for the sector.127

Despite efforts to address these elements of risk, the persistent perception of ASM as a risk – often unjustly – means that continued intervention from public and philanthropic capital will likely be needed to offset risk for private sector financiers, until significantly more positive experience can be gained and documented in the sector. An accumulation of ‘good’ experiences is a key for ASM gaining traction in policy. Ongoing professionalization and financial capacitation of miners is critical to enabling them to create a better history of repayment.

6 Best Practices and Options for Further Investigation

This section of the report takes stock of the material presented in Sections 1 through 5 to highlight best practices and promising options for ASGM finance moving forward.

Underlying all recommendations is the assumption that governments are actively engaged in formalizing ASM (or at least committing to doing so) and are continuously identifying ways (or willing to do so) to improve the sector’s operations. Formalization provides the platform needed to catalyze the delivery of financial services to small-scale miners, and UNEP describes, very clearly, how this can be achieved in its Guidance Document for producing National Action Plans.\(^\text{128}\) To date, the lack of formalization has been one reason why few finance schemes for ASM have materialized and even fewer have had a lasting impact.

Designing elements that mitigate risk is the key to facilitating the implementation of a wider range of financial services. There are a number of ways to achieve this, in particular, strategies which aim to uncover more detail about ASM operations and measures to better ‘organize’ operations in ways which can build confidence of financiers.

6.1 Understanding the ASGM landscape

The experiences highlighted in this review illustrate very clearly the importance of having a comprehensive knowledge of target populations and local mineral markets for ASGM finance interventions. Scholars have highlighted repeatedly over the years the importance of not making assumptions when it comes to designing and implementing support-related interventions for ASM. As the Shamva (Zimbabwe) case reveals very clearly, asking simple questions beforehand to gain a better understanding of the demographic details of the miners in a given area, the potential demand for services and individuals’ needs, would go a long way toward facilitating the design of more appropriate lending strategies and allied support measures. In Shamva, this did not happen, an oversight which led to the services installed being unable to cope with demand. A similar problem was encountered in the gold mining community of Japa in Western Ghana, where efforts made to eliminate mercury use in remote areas simply could not cope with the high demand, leading to the processing centre’s eventual abandonment.\(^\text{129}\)

The market data which need to be collected include the following:

- Basic demographic data on the populations in areas being targeted. Particular emphasis should be placed on gathering qualitative and quantitative information about miners’ educational backgrounds, experience, tribe/caste, age range, motivations for mining and production levels. A much clearer picture of the mining population is needed before any action can be undertaken, and specific financial/lending needs can be determined.

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Geological data. Knowledge of the geological landscape is not only important for identifying and demarcating areas the alluvial and near-surface hardrock deposits that are capable of supporting ASM activities, it can also be used as a basis for attracting finance for ASGM operating in those areas.

Gold market and supply chain information. Every small-scale gold mining market is different. As mentioned, in Ghana, emphasis has been placed by government on collecting gold from ASM, which spawned the system of buyers mentioned earlier. In a country such as Guyana, the Guyana Gold Board captures 75% of gold mined in-country; its management does little to capture the remaining 25%, most of which goes into neighbouring Suriname, where the tax on gold purchases is far lower. In Suriname, a lot of gold is retained in villages and used as currency, and then subsequently ends up in Brazil. Every strategy aimed at financing gold production must, therefore, also be different, in line with the existing dynamics.

Information about the financial institutions present in a target country. Knowledge of the types of banks and financial services available in the country, especially those tailored to SMEs, is critical because the long-term success of any finance option for ASM hinges upon mobilizing local interest and having a series of organizations that are interested in continuing the tradition of finance. Having on hand the requisite geological and demographic information when talking to such institutions will go a long way toward increasing interest and ultimately catalysing finance locally.

### 6.2 Structuring financial interventions

#### 6.2.1 Pursue blended finance and impact fund approaches as vehicles for finance delivery

Finance schemes funded solely through public funds have struggled to mobilize additional funding beyond the initial pots of money. Blended finance approaches that leverage public funds to unlock private capital, and new sources of private investment, such as impact investment, provide promising models for moving forward. Impact funds, even those initially using public and philanthropic funds as capital, can help develop the capacity of ASM for self-sustenance and by extension position them to attract private investment. For example, the Impact Facility for Sustainable Mining Communities has leveraged grant funding to facilitate financing and infrastructure development towards responsible ASM.\(^\text{130}\)

#### 6.2.2 Provide a range of business services over a sustained period of time, rather than one-off infusions of capital

Schemes that have focused on one-off injection of capital or establishment of a near-autonomous funds suffer under considerable strain and are at a severe disadvantage during trying economic periods. Providing multiple services that are complementary to financial support improves the chances of an intervention being sustainable over the long term. It first and foremost shows broad governmental commitment, as the application of a wider range of services would entail that more government agencies and potentially specialized units become involved. The ENAMI model offers valuable inspiration in this area. Nearly 60 years in existence, the state-sponsored program, which began effectively as a start-up fund to support prospective small-scale miners, has since morphed into a comprehensive program, with tentacles extending to all areas of mining support and

across all phases of a project’s lifecycle. Its success is owed to continued government backing and belief in small-scale copper mining, a confidence rarely seen in nations where small-scale gold production takes place.

6.2.3 Share risks through group funding models

From the Ghana and DRC experiences, the importance of group solidarity and cooperative formation, to spread and minimize risk, has been underscored very clearly. While it is not advisable to ‘force’ this coming together of people, particularly in locations where there is no culture of group work (e.g., Mozambique), if the situation allows, it could be encouraged. The recent Ghana experience with equipment acquisition and sharing reveals the mixed fortunes of such an approach, but where miners are willing to band together to share equipment and spread risk, as has been the case in the locality of Konongo, the approach should be encouraged.

6.2.4 Diversify risk with large numbers of clients, and/or different types of businesses

A big part of minimizing risk in ASM is changing the mindset of lenders. History has shown that perceptions of ASM operators as high-risk borrowers have presented a major barrier in the launch of financial services for the sector. One way to overcome this perception may be to repackage lending as rural development finance more broadly, making schemes sound less about mining, which carries with it a stigma that is deeply engrained in lenders’ consciences, and more reflective of their day-to-day realities and more encompassing. Several artisanal and mid-level operators have diversified income-earning portfolios which include trading and agriculture. If more information can be gathered about these income-earning activities and a better idea of the embeddedness of these rural activities gained, then perhaps finance institutions would be more inclined to make available funds on different terms. Moreover, as experiences from the artisanal fisheries and agricultural sector show, there is merit in embodying a gender dimension to these financial services, given the increased donor attention being paid to women’s rights and equality under the auspices of the SDGs.

Further, funds designed to serve the broader spectrum of individuals engaged in the sector could help diversify risks. If one stream of funding struggles, the fund can still be sustained by the strands in place for some of the more established operators. For example, an approach providing three separate streams of finance could be the makings of a workable foundation. The first would lend to small operators – machinery such as pumps and generators – that the funds mentioned above mostly financed the leasing or purchase of. The second stream could target more mechanized and well-established operators. More comprehensive funding packages could be offered here, both in the form of capital and linked to equipment. The third stream could be linked to more advanced machinery, which provides a route for the least advanced and the start-ups to evolve and mechanize. Here, there is scope for host governments to involve international equipment suppliers such as Sandvik and Caterpillar, which, as explained, already have in place comprehensive financing schemes for customers.
6.3 Educating miners and the financial community

6.3.1 Build financial literacy and experience of miners step-by-step

Many previous ASGM interventions have undertaken to provide business and financial literacy education for miners, to enable them to improve the management of their operations and to make them more “bankable,” that is, more attractive to financial institutions and investors. As miners build literacy, the education efforts can be complemented by practical experience with increasingly more sophisticated financing mechanisms. For ASM operators who are unable or unwilling to take on debt and/or where upfront capital costs of low/mercury-free equipment is a barrier, leasing can be a more feasible way to facilitate access to equipment for ASM operators without paying high upfront costs. These leasing programs, accompanied by training, can be a first step to engaging miners to build capacity and a track record for responsible financial management. This can be followed by small short-term loans or revolving funds, building to larger loans or investment. One possible way of doing this would be to call on leading licensed small-scale/medium scale operators to take on responsibilities for more artisanal groups. This is already happening in places such as Guyana, Ghana and Zimbabwe: licensed small-scale miners leasing portions of their concession to tributers or artisanal groups. The difference between these arrangements and what is being proposed is that it would extend beyond production and include training and engagement on finance-related issues.

6.3.2 Educate and develop capacity of financial institutions

Risk perception by financial institutions may be based in part on ignorance and misperceptions of the sector. Education of key decision makers in the financial institutions could act to break down these perceptions and lead to generation of finance solutions. Even a basic knowledge of ASM operations and processes, as well as some discussion of potential for gold yield and potential profits, in small-scale concessions could help build interest in miners as desirable customers. For example, bank officers could be encouraged to look beyond traditional collateral and consider other evidence of credit-worthiness. For active sites, production history has been frequently suggested to provide evidence for the likelihood of future production, and thus ability to repay loans.

6.4 Creating a supportive environment for implementing financial interventions

6.4.1 Promote new business models that support mercury-free processing, and provide ongoing services and education to producers (miners)

In order to ensure sustainable mercury-free operations, new business models such as the toll milling model discussed above can play a critical part. Such models will involve building networks with artisanal miners to provide raw material and will be premised on trust and assurance of mutual financial benefit. Any such model will have to consider how existing financing networks can be leveraged to enhance new business relationships rather than undercut them. Access to processing centers/processing services that also serve as training and knowledge dissemination points can be an effective way for small scale miners to transition to safer and more effective production techniques. Shamva was in many ways this very model; observing how Tanzania’s new ‘Centres for Excellence’ develop over time could also offer some valuable lessons on this front. If pursued, this model may require a rethinking of the business model for the processors, who have often relied on reprocessing of gold-rich tailings for profit.
6.4.2 Enhance large scale/small scale mining relationships

Knowledge on efficient processing methods, safety, value creation, business skills among others can be transferred from large and medium scale operators to small-scale miners. For such transfers to be effective, trust relationships have to be built and sustained between the large-scale operators and the small-scale operators. As cases from the Solomon Islands, Cote d'Ivoire, Venezuela and Ghana, the locations where the greatest amount of investment has been made in cultivating these relationships, have shown, changes in ownership and a fluctuating gold price often make this approach untenable. In any case, these partnerships could be viewed as a step in transitioning toward a more independent, professional, sustainable licensed small-scale mining sector.

6.4.3 Use local actors for monitoring operations

One of key success factors for financing in the fisheries sector is the ease with which lenders can observe fish catches and purchasing patterns at landing beaches. Previous discussions with ASM lenders in countries such as Ghana and Suriname brought to light the possibility of replicating such observations at ASM sites, using local community actors for monitoring. However, some lenders indicated the ease with which such observers become corrupted by the quick access to cash that gold offers. It is therefore important that a hierarchical system of multi-stakeholders of observers is implemented, if such a system is to be used at mining sites.

6.4.4 Build on existing trust relationships, including the participation of trusted intermediaries

When designing finance interventions, emphasis should be on observing the organization and trust-based relationships that already exist. As examples from India and sub-Saharan Africa shared in this document illustrate, there is merit in building on these relationships and ‘scaling-up’ finance. It is unrealistic to assume that all these dynamics can be replicated, wholesale, in a system of ASM finance. But what cannot be ignored in the case of ASM is the value of informal trust-based relationships that have arisen due to the lack of confidence and trust in formal systems. The key role played by middlemen as trusted brokers in existing informal financing will need to be taken into account in the design of new programs. Unless alternative roles are found for these middlemen, they can be expected actively work to undermine changes in the status quo.

One type of group to consider is a strong industry representative, as the case of Guyana illustrates very clearly. Here, the Guyana gold and Diamond Miners Association has a very influential voice, which is precisely what is needed in an area – ASM finance – in which the actors involved need direction and assurance. Involving and empowering such national ASM associations, however weak they may be, could go a long way toward reaching and communicating with operators of all types. Other intermediaries can include social enterprises, local banks, NGOs, and other entities, who can work with ASGM businesses to define and present their financing needs until the businesses establish sufficient financial and business literacy on their own. Intermediaries can also develop investment portfolios (i.e., bundling) to help investors reach multiple SMEs, and facilitate investment at scale. Such intermediaries can be especially important for the ASGM sector, which, without a convening point, can be highly fragmented.

131 See Hilson, G., Sauerwein, T., Owen, J. 2020. Large and artisanal scale mine development: The case for autonomous co-existence. World Development (Accepted for publication).
6.5 Documentation

As new finance models are tested for ASM, the experiences with these interventions should be well documented in detail to enable later analysis of the causes of success (or failure); to date such documentation has been sparse. The obvious indicators of success in this area include the number of financial support packages dispensed, the repayment rate (success linked to repayment of instalments and the loans themselves), the number of people supported, and the application success rate. It is also advisable, once data on the suite of finance options are identified, to measure the numbers of corresponding applications/success rates/operators impacted. The gathering and maintaining of this information are seen as the foundation of a positive cycle: with more data comes more clarity and ultimately, greater interest, refinement, participation and money.

6.6 For further investigation: adapting models from medium/large scale mining and other financing initiatives

Several types of financing that are common or emerging on the medium- and large-scale mining sector could be considered for future use in the ASGM sector.

6.6.1 Streaming agreements

In the mining industry, streaming agreements have been used to mostly finance junior and medium-scale mining companies who find access to debt and equity financing extremely difficult in the ever-volatile financial market. In exchange for financing, a mining company enters into an agreement with an investor, where the investor obtains a stake in the future production of an agreed product of the mining company. The amount advanced to the mining coming is reduced every time produce is delivered the investor.

The investor’s stake is linked to either the core metals or by-products that the entity mines. The risk of political and economic uncertainty in sub-Saharan Africa has made this type of financing quite attractive in the region. Silver Wheaton, Franco Nevada and Royal Gold Inc. are the pioneers of streaming agreements. This type of financing starting in the Americas in 2004 and has since expanded to Australia, Asia Pacific and other parts of the world.

6.6.2 Direct financing of equipment

In the large-scale mining sector, the options for financing equipment seem limitless. There are finance companies that provide lower interest rates; minimal down payment; extended payment terms; delayed payments; and seasonal skip payments.¹³²

Mining companies require excavation equipment. Financing can be channelled in different ways, including through separate leasing arrangements, in part by banks, or in cases where project finance is involved, inter-creditor agreements.¹³³ There are scores of financing companies which will provide loans and leases for mining equipment. One of the largest is GE Capital, which, for two decades, has pledged over US$20 billion in commitments to the industry. Another option is Balboa Capital with its global reach and dedicated corporate financing division, which provides transactions ranging from US$250,000 to US$50 million to cover all types of mining vehicles and equipment.¹³⁴

For the more mechanized small-scale mining operations, it is the lower end of this range that mostly applies, which is where outfits such as Utah-based AvTech Financial Group fall. These companies ‘provide large and small-scale commercial real estate financing options, equipment leasing and financing for many types of equipment, including software’. This includes ‘Energy and Mining’, one of its more recent transactions being a US$306,897 deal for an Oklahoma-based mining company, which used the funds to acquire equipment.¹³⁵

134 ‘How to Finance Mining Equipment’.
Some lenders, such as the Florida-based Overseas Lease Group, specialize in providing customized lease solutions to organizations operating in developing countries. It provides 100 percent financing for mining vehicles and equipment: SUVs, double cab pick-up trucks, haulers, dump trucks, loaders, bulldozers, drills, draglines, electric shovels, hybrid shovels, crushers, wheel loaders, feeder breakers, conveyors, dredging systems, power supply units, and grinding mills.  

A number of global mine equipment providers also have their own financing departments. For example, Sandvik, a global engineering company with strong ties to the mining sector, offers flexible financial services, depending on the requirements of the project: leases, rent-to-purchase programs, rental conversions and flexible payment plans. Komatsu’s Global Mining Equipment Finance team offers similar flexible solutions, including leases/loans for new, used, and rebuilt equipment or systems, and financing for upgrades and service work, for terms up to 72 months. The most dynamic finance equipment finance strategies, however, are offered by Caterpillar. Its financing department (CatMiningFinance) has made available a suite of options, from leasing through to more structured options. With distributors on all continents, Caterpillar’s reach seems endless, and a reason why it is able to offer the range of customized finance options it does for surface and underground miners. The list includes insurance, loans and leases (revolving lines of credit and finance lease) to purchase equipment from Caterpillar dealerships.

Perhaps most impressively, Caterpillar has entered into agreements with development and commercial banks. One notable example is the US$12 million leasing framework facility funded by the European Bank for Reconstruction and Development for the distribution of Caterpillar equipment in Russia on a risk-sharing basis. The partnership involves not only involves these two organizations but also Raiffeisen-Leasing, a subsidiary of ZAO Raiffeisenbank Austria (RBA) and Raiffeisen Leasing International in Vienna. The RBA specializes in providing clients with banking products for domestic and cross-border purposes, in this case, an uncommitted facility of up to US$8 million to Raiffeisen Leasing to finance the purchase of Caterpillar equipment under a Master Loan Agreement, envisaged at the time as an alternative to the underdeveloped market for medium-term bank financing. Sandvik is catering more to the needs of what its management refers to as the ‘subscription-based economy’: moving away from deals involving the equipment manufacturer leasing a piece of equipment to a mining company and it using it until it falls apart, and toward a solution that focuses on using an item only for the duration required. To this end, Sandvik offers a finance-lease, asset-backed loans, trade finance solutions, and short-term rental type of solutions including or excluding services.

Similar schemes may be investigated for ASM. There are organizations in place that could be approached to consider mechanisms for direct financing of equipment for ASM customers. Notable examples include Tanzania-based YNC Mining Company, which specializes in the distribution of small-scale mining equipment; South Africa-headquartered MINTEK, which has a long history of training and disseminating equipment to a suite of ASM operators; Crown Mining, a leading distributor of small-scale mining

136 http://www.overseasleasegroup.com/
139 ‘How to Finance Mining Equipment’.
equipment in Guyana;\textsuperscript{145} and MNE, a major supplier of equipment to the Indonesian archipelago.\textsuperscript{146}

### 6.6.3 Crowdfunding and Peer to Peer Lending

In recent years, crowdfunding which involves raising funds from the general public through social media and peer to peer lending which involves matching lenders to investors on an online platform have emerged as new forms of lending. These media are gaining traction and have been used by NGOs to help artisanal industries in developing countries to gain access to financing.

### 6.6.4 Joint venture agreements between large scale mines and junior mining companies

The Project Generator Business Model is often employed by junior mining companies to reduce the risk involved in diluting their shares. Historically, junior mining companies identify mine sites and conduct exploration activities with the view to spinning off their mine to large scale companies. Oftentimes, this is risky and requires junior mining companies to go back to equity markets in search of additional funds to finance their exploration activities. With the Project Generator Business Model, junior mining companies secure concessions, conduct initial mapping and sometimes drilling in order to identify some ore and then enter into a joint venture agreement with a partner. The partner invests a specific amount of money into the concession for an agreed number of years. The investment entitles the partner to either a minority or majority interest in a property by funding exploration work in stages over a defined period. This form of agreement does not dilute the exiting equity shareholding in the Project Generator's company although it does in the particular concession that the partner finances. In some cases, the partner provides staff and manages the joint venture project. CIBC estimates that circa 50% of equity funding for junior mining companies on the Canadian Stock Exchange comes from large-scale mining companies. It is anticipated that this model will become increasingly popular in the industry.\textsuperscript{147}

The general structure of joint venture agreements across a number of junior mining projects currently in operation has enabled the development of Figure 2. Each joint venture agreement is different even within the same company. The nature of the project determines the type of structure used. Figure 2 shows typical financing structures.

<table>
<thead>
<tr>
<th>Value of Project Typically Financed</th>
<th>Up to 70% of costs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Term of Financing</td>
<td>Fixed period</td>
</tr>
<tr>
<td>Security Required</td>
<td>Royalties or joint ownership in project</td>
</tr>
<tr>
<td>Cost of Capital</td>
<td>N/A</td>
</tr>
<tr>
<td>ROI</td>
<td>Varies: Either periodic payments to partner, OR</td>
</tr>
<tr>
<td>Restrictive Covenants</td>
<td>Board representative/Advisory role/Management Company/Large scale mining company becomes the operator</td>
</tr>
</tbody>
</table>

Figure 2: Financing Structure


Joint Venture Approaches in Peru and Alaska: Miranda Gold Corp

One example of a joint venture approach is the Miranda Gold Corp (Miranda), a Canadian junior mining company which uses the Project Generator Business Model. Two different types of joint venture agreements entered into by Miranda will be explored here. The first type of agreement demonstrates how equity financing can be structured in stages over the life of a mine. The second is how a joint venture agreement can be structured like a debt instrument with a clear repayment strategy.148

- In its Peru-based Antares Project, Miranda has entered into options agreement with IAMGold. The agreement entitles IAMGold to acquire an initial undivided 51% interest in the mineral rights of the Antares Project by funding a total of US$5,000,000 in expenditures. This includes a commitment by IAMGold to drill at least 3,000 meters - over four years. IAM Gold has the further option of purchasing an additional 14% of interest with an additional exploration expenditure US$7,000,000 - including a commitment to drill at least 12,000 meters within a subsequent term of four years - from the exercise of the first option. Following that a further 10% interest can be acquired by IAMGold if it elects to provide Miranda with the required financing for the construction of the mine.

- An example of how a loan-type joint venture agreement is operationalised is that entered into by Miranda and Mr. Daniel Renshaw (Renshaw) on its Alaskan-based Willow Project. Mr Renshaw secured a 3.3% royalty in the Willow Project. The value of Mr Renshaw’s 3.33% of royalty is the equivalent of US$1,000,000. Miranda expects to recoup this equity as follows:

6.6.5 Potential Role of Export Credit Agencies

Export Credit Agencies (ECAs) provide government-based loans, guarantees, credits and insurance to private companies interested in carrying out business overseas, particularly in settings seen as risky financially and politically. They provide cover, in the event of a default on payment, to the exporters or bankers in the form of direct guarantees of payment to the financial institution engaged with a borrower overseas who has purchased goods and/or services. The OECD has identified 49 ECAs (see Table 3 for a list of selected ECAs), which, unlike development institutions, exist to promote the trade and industry of the country, and are therefore regulated by the relevant government department as opposed to a development agency. They support four times as many extractive industries projects than multilateral development agencies such as the World Bank and European Bank for Reconstruction and Development. Significantly, there is a history of ECAs providing support to mining companies of various sizes. Notable examples include:

1) The Antamina zinc and copper project in Peru (US$2.27 billion (1,339 debt and 935 equity, including US$245 from the Export-Import Bank of Japan) for mostly political and investment risk purposes; 2) Export Development Canada issuing CAN$163 million in political risk insurance to Cambior to cover its investment in Omai Gold Mines Ltd., Guyana; and 3) the Export-Import Bank of Japan in 1997 signing a US$450 million loan agreement in support of the Los Pelambres Copper Mine in Chile, a project which it co-financed with the Industrial Bank of Japan, the Bank of Tokyo-Mitsubishi Ltd., ABN-AMRO Bank N.V., Credit Lyonnais and the Union Bank of Switzerland.

The willingness of ECAs to support mid-tier mining companies should provide some inspiration for groups exploring options for financing – the more mechanized side of – ASM. A starting point could be with various equipment or the heavy machinery typically linked to more advanced, formalized setups. As ECAs provide the finance for a mining project’s purchases of goods and services in the agency’s home country, for a company such as Caterpillar, therefore, it would make sense to consult American agencies, given that is headquartered in Illinois. For a company such Komatsu, Japanese agencies should be the first point of contact.

152 Grieg-Gran, 2002.
Table 3: Selected Export Credit Agencies involved in mining finance

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>AGENCY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Australia</td>
<td>Export Finance and Insurance Corporation</td>
</tr>
<tr>
<td>Brazil</td>
<td>Brazilian Guarantees Agency</td>
</tr>
<tr>
<td>Brazil</td>
<td>Brazilian Development Bank</td>
</tr>
<tr>
<td>Canada</td>
<td>Export Development Bank</td>
</tr>
<tr>
<td>China</td>
<td>Export-Import Bank of China</td>
</tr>
<tr>
<td>Finland</td>
<td>Finnvera</td>
</tr>
<tr>
<td>France</td>
<td>Compagnie Francaise d'Assurance pour le Commerce Exterieur</td>
</tr>
<tr>
<td>Germany</td>
<td>Euler Hermes Kreditversicherungs-AG</td>
</tr>
<tr>
<td>India</td>
<td>Export-Import Bank of India</td>
</tr>
<tr>
<td>Japan</td>
<td>Japan Bank for International Cooperation</td>
</tr>
<tr>
<td>Norway</td>
<td>Norwegian Guarantee Institute for Export Credits</td>
</tr>
<tr>
<td>Russia</td>
<td>Export Insurance Agency of Russia</td>
</tr>
<tr>
<td>Switzerland</td>
<td>Swiss Export Risk Insurance</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>Export Credits Guarantee Department</td>
</tr>
<tr>
<td>United States</td>
<td>Export-Import Bank of the United States</td>
</tr>
</tbody>
</table>

6.7 Creating stable source of finance through gold taxes

The success of ASM finance schemes hinges upon a continuous replenishment of funds. How, in a space – that is, ASM – which is given so little priority by governments, can this be achieved? The view of the authors is that a tax on production, or a fraction of the earnings generated on gold purchases, could be used to accomplish this. The Government of Ghana had, in the 1990s, a Land Reclamation Fund, which, bolstered with 1 percent of all gold sales from ASM to the government, was used to reclaim landscapes affected by the sector’s operations. There is reason to believe that in countries where governments are capturing a sizable quantity of the gold being produced by ASM operators, such a scheme could be ‘scaled up’, bolstered with a fraction of the percentage of the revenue generated from gold purchases/sales/exports with a view to developing financial services for the sector.

In Guyana, for example, the Guyana Gold Board, which captures an estimated 75 percent of all gold produced by ASM in the country, could tweak its seven percent tax on purchases to facilitate this and use the Guyana Gold and Diamond Miners Association to ‘grow’ finance schemes. In Burkina Faso, where the National Agency for the Supervision of Artisanal and Semi-Mechanized Mining [Agence Nationale d’Encadrement des Exploitations Minières Artisanales et Semi-mécanisées, or ANEEMAS] was established to, among other things, minimize gold smuggling, a similar tax could be levied on gold collected for export.

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Access to investment, finance and markets is essential for small-scale miners and their communities in order to ensure the long-term viability and development of the ASGM sector. A number of financial interventions may be feasible options for ASGM enterprises, such as government-backed finance schemes or innovative impact investments. Incorporating elements in financial mechanisms that mitigate real and perceived risks is key to facilitating access to a wider range of financial services for ASGM enterprises. Due to the persistent perception among financiers that ASGM is a high-risk industry, continued intervention from public and philanthropic capital will likely be needed through blended finance models in order to offset risk for private sector financiers. Seeking financing from impact-driven high-net-worth individuals and family-office impact investors willing to take more risk can also maximize the chances of an ASGM project securing financing. Moving forward, as more positive experiences are documented in the sector providing proof of concept that these enterprises are viable, other financial actors that are less risk-tolerant will be enabled to engage and scale up investment in the ASGM sector. Developing the knowledge and capacity of both miners and financial institutions should additionally help open up access to more conventional financial services.
### Annex I: World Bank projects reviewed

<table>
<thead>
<tr>
<th>Fiscal Year</th>
<th>Country</th>
<th>Project Name</th>
<th>Financing (US$ Millions)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1988</td>
<td>Ghana</td>
<td>Mining Sector Rehabilitation Project</td>
<td>40</td>
</tr>
<tr>
<td>1989</td>
<td>Bolivia</td>
<td>Mining Sector Rehabilitation Project</td>
<td>35</td>
</tr>
<tr>
<td>1991</td>
<td>Mexico</td>
<td>Mining Sector Restructuring Project</td>
<td>200</td>
</tr>
<tr>
<td>1993</td>
<td>Mali</td>
<td>Mining Sector Capacity Building Project</td>
<td>6</td>
</tr>
<tr>
<td>1994</td>
<td>Ecuador</td>
<td>Mining Technical Assistance</td>
<td>14</td>
</tr>
<tr>
<td>1994</td>
<td>Peru</td>
<td>Energy and Mining TA Program</td>
<td>12</td>
</tr>
<tr>
<td>1995</td>
<td>Ghana</td>
<td>Mining Sector Development &amp; Capacity Building</td>
<td>12</td>
</tr>
<tr>
<td>1995</td>
<td>Tanzania</td>
<td>Mineral Sector Development</td>
<td>13</td>
</tr>
<tr>
<td>1996</td>
<td>Zambia</td>
<td>Economic Recovery &amp; Investment Promotion TA</td>
<td>23</td>
</tr>
<tr>
<td>1996</td>
<td>Argentina</td>
<td>Mining Sector Development</td>
<td>30</td>
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<tr>
<td>1997</td>
<td>Burkina Faso</td>
<td>Mining Sector Capacity Building &amp; Environmental Management Project</td>
<td>21</td>
</tr>
<tr>
<td>1998</td>
<td>Argentina</td>
<td>Mining Development TA</td>
<td>40</td>
</tr>
<tr>
<td>1999</td>
<td>Mauritania</td>
<td>Mining Sector Capacity Building</td>
<td>15</td>
</tr>
<tr>
<td>1999</td>
<td>Zambia</td>
<td>Public Sector Reform &amp; Export Promotion</td>
<td>173</td>
</tr>
<tr>
<td>2000</td>
<td>Papua New Guinea</td>
<td>Sector Institution Mining Strengthening</td>
<td>10</td>
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<tr>
<td>2001</td>
<td>Mozambique</td>
<td>Mineral Resources Project</td>
<td>18</td>
</tr>
<tr>
<td>2002</td>
<td>DR Congo</td>
<td>Economic Recovery Credit (Begin restructuring of mining sector)</td>
<td>100*</td>
</tr>
<tr>
<td>2003</td>
<td>Ethiopia</td>
<td>Energy Access Project (Mining Sector Reform)</td>
<td>2.5*</td>
</tr>
<tr>
<td>2003</td>
<td>Burkina Faso</td>
<td>Competitiveness and Enterprise Development (Mining Sector Reform)</td>
<td>3.9*</td>
</tr>
<tr>
<td>2005</td>
<td>Nigeria</td>
<td>Sustainable Management of Natural Resources</td>
<td>120</td>
</tr>
<tr>
<td>2005</td>
<td>Sierra Leone</td>
<td>4th Economic Rehabilitation &amp; Recovery Project (Capacity Building &amp; Regulatory Reform)</td>
<td>3.8*</td>
</tr>
<tr>
<td>2006</td>
<td>DR Congo</td>
<td>Transitional Support for Economic Recovery (Improve mining sector governance)</td>
<td>13.5*</td>
</tr>
<tr>
<td>2006</td>
<td>Serbia &amp; Montenegro</td>
<td>Programmatic Private &amp; Financial Development Policy (Strengthen mining legal framework)</td>
<td>2.2*</td>
</tr>
<tr>
<td>2006</td>
<td>Afghanistan</td>
<td>Sustainable Development of Natural Resources</td>
<td>30+10 (2010)</td>
</tr>
<tr>
<td>2007</td>
<td>Sierra Leone</td>
<td>Programmatic Governance Reform &amp; Growth (Capacity building)</td>
<td>2*</td>
</tr>
<tr>
<td>2008</td>
<td>Mongolia</td>
<td>Mining Sector Institutional Strengthening TA</td>
<td>9.3</td>
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<tr>
<td>2008</td>
<td>Papua New Guinea</td>
<td>2nd Mining Sector Institutional Strengthening TA</td>
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<td>2009</td>
<td>Tanzania</td>
<td>Sustainable Management of Mineral Resources</td>
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<td>2010</td>
<td>Lao PDR</td>
<td>TA for Capacity Building in the Hydropower and Mining Sectors</td>
<td>5*</td>
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<tr>
<td>2010</td>
<td>Sierra Leone</td>
<td>Mineral Sector Technical Assistance</td>
<td>4</td>
</tr>
<tr>
<td>2011</td>
<td>DR Congo</td>
<td>Growth with Governance in the Mineral Sector</td>
<td>50</td>
</tr>
<tr>
<td>2011</td>
<td>Solomon Islands</td>
<td>Mining Sector Technical Assistance</td>
<td>1</td>
</tr>
<tr>
<td>2011</td>
<td>Malawi</td>
<td>Mining Growth and Governance Support (under preparation)</td>
<td>12.5</td>
</tr>
</tbody>
</table>
Annex II: Selected SYSMIN projects, 1980–1995

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>FINANCING (MILLIONS ECU)</th>
<th>TYPE OF PROJECT</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Lome II (1980–1985)</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Zambia I</td>
<td>55</td>
<td>Rehabilitation of mining equipment</td>
</tr>
<tr>
<td>Zambia II</td>
<td>28</td>
<td>Rehabilitation of mining equipment</td>
</tr>
<tr>
<td>Zaire I</td>
<td>40</td>
<td>Rehabilitation of mining equipment</td>
</tr>
<tr>
<td>Zaire II</td>
<td>41</td>
<td>Rehabilitation of mining equipment and railway infrastructure</td>
</tr>
<tr>
<td>Guyana</td>
<td>34, 50</td>
<td>Supply of spares and rehabilitation of mining equipment</td>
</tr>
<tr>
<td>Jamaica</td>
<td>25</td>
<td>Diversification</td>
</tr>
<tr>
<td>Liberia</td>
<td>3, 50</td>
<td>Rehabilitation of mine</td>
</tr>
<tr>
<td>Rwanda</td>
<td>2, 84</td>
<td>Assistance for small-scale craftsmen</td>
</tr>
<tr>
<td>Guinea</td>
<td>35</td>
<td>Modernization of alumina plant and associated measures</td>
</tr>
<tr>
<td>Papua New Guinea</td>
<td>30</td>
<td>Diversification</td>
</tr>
<tr>
<td>Senegal</td>
<td>25, 50</td>
<td>Assistance with ore processing</td>
</tr>
<tr>
<td>Botswana</td>
<td>21, 65</td>
<td>Rehabilitation of mining equipment</td>
</tr>
<tr>
<td>Mauritania</td>
<td>18</td>
<td>Rehabilitation of transport equipment</td>
</tr>
<tr>
<td>Togo</td>
<td>15, 70</td>
<td>R &amp; D program for removal of cadmium and improvement of productivity</td>
</tr>
<tr>
<td>Niger</td>
<td>12, 45</td>
<td>Exploration</td>
</tr>
<tr>
<td>Zambia</td>
<td>60</td>
<td>Diversification</td>
</tr>
<tr>
<td>Namibia</td>
<td>40</td>
<td>Support for the mining industry</td>
</tr>
<tr>
<td>Niger</td>
<td>31</td>
<td>Diversification</td>
</tr>
<tr>
<td>Dominican Republic</td>
<td>23</td>
<td>Support for the mining industry</td>
</tr>
<tr>
<td>Gabon</td>
<td>14</td>
<td>Support for the mining industry</td>
</tr>
<tr>
<td>Burkina Faso</td>
<td>27</td>
<td>Support for the mining industry and rehabilitation</td>
</tr>
<tr>
<td>Mauritania</td>
<td>58</td>
<td>Rehabilitation of mining equipment</td>
</tr>
</tbody>
</table>

155 European Commission. 1996
### Annex III: Examples of loans/finance schemes for artisanal fisheries

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>RECIPIENT COUNTRIES</th>
<th>DONOR</th>
<th>AMOUNT</th>
<th>YEAR</th>
</tr>
</thead>
<tbody>
<tr>
<td>Artisanal Fisheries (Phase II)(^{156})</td>
<td>Mauritania</td>
<td>OPEC</td>
<td>US$4 million</td>
<td>2000</td>
</tr>
<tr>
<td>Microcredito “Credito a Piccoli Pesci”</td>
<td>Italy</td>
<td>East Sardinia FLAG(^{158})</td>
<td>€103 000</td>
<td>2017–2019</td>
</tr>
<tr>
<td>West Africa Regional Fisheries Program (WARFP)</td>
<td>Coastal West Africa</td>
<td></td>
<td>US$45 million</td>
<td>2009–2016</td>
</tr>
<tr>
<td>West Africa Regional Fisheries Program (WARFP)</td>
<td>Mauritania</td>
<td>World Bank</td>
<td>US$19 million</td>
<td></td>
</tr>
<tr>
<td>West Africa Regional Fisheries Program (WARFP)</td>
<td>Guinea</td>
<td>World Bank</td>
<td>US$10 million</td>
<td></td>
</tr>
<tr>
<td>West Africa Regional Fisheries Program (WARFP)</td>
<td>Ghana</td>
<td>World Bank, World Bank International Development Association (IDA)</td>
<td>GEF Grant of US$3.5 million, IDA Credit US$50.3 million</td>
<td>2012–2017</td>
</tr>
</tbody>
</table>


\(^{158}\) Fisheries Local Action Groups (FLAG)

\(^{159}\) [https://www.worldfishing.net/news101/regional-focus/grants-to-develop-sustainable-fisheries](https://www.worldfishing.net/news101/regional-focus/grants-to-develop-sustainable-fisheries)


continued
### Annex III: Examples of loans/finance schemes for artisanal fisheries

<table>
<thead>
<tr>
<th>PROJECT</th>
<th>RECIPIENT COUNTRIES</th>
<th>DONOR</th>
<th>AMOUNT</th>
<th>YEAR</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mangroves for the Future (MFF)</td>
<td>Ammathottam in Kalpitiya, Puttalam District (Sri Lanka)</td>
<td>IUCN</td>
<td>LKR 500,000.00</td>
<td>2011–2012</td>
<td>Dry fish production</td>
</tr>
<tr>
<td>Mangroves for the Future</td>
<td>Pesantren village is part of Ulujami Sub-District, Pemalang District (Indonesia)</td>
<td>IUCN</td>
<td>Total US$27,800 which breakdown into: US$25,000.00 (MFF) and US$2,800.00 (In-kind Mitra Bahari)</td>
<td>2012–2013</td>
<td>To increase local micro-business and saving-loan activities to support Presto-Milkfish production that managed by women group members.</td>
</tr>
<tr>
<td>Lake Fishing Credit Project</td>
<td>Lake Nokoué, Benin</td>
<td>Benin-German Rural Development Project in cooperation with the Atlantic section of the Regional Action Centre for Rural Development (CARDER)</td>
<td>50 loans totalling 117,217,267 CFA francs granted to fishermen's cooperatives.</td>
<td>1979–1986</td>
<td></td>
</tr>
<tr>
<td>Fisheries Development Project</td>
<td>Lake Kivu, Rwanda</td>
<td>UNDP/ FAO</td>
<td>US$108,588 was used to fund the project's credit scheme</td>
<td>1979–1982</td>
<td>Introduction of fishing activities for L. miodon on Lake Kivu.</td>
</tr>
<tr>
<td>Integrated Technical Assistance and Credit for Artisanal Fishermen in Lake Tanganyika</td>
<td>Lake Tanganyika, Tanzania</td>
<td>FAO</td>
<td>Revolving fund operated by the Cooperative and Rural Development Bank of Tanzania</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Annex IV: Breakdown of schemes for agriculture and artisanal fisheries

<table>
<thead>
<tr>
<th>TYPE OF LENDER</th>
<th>LOAN SIZE/TYPETYPE/PURPOSE (US$)</th>
<th>PROCESS</th>
<th>COLLATERAL REQUIRED</th>
<th>PROCESS DURATION</th>
<th>CREDIT TERMS</th>
<th>RATIONALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microfinance/ Semi-Formal Non-Bank Financial institutions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Grameen Bank</td>
<td>Size and Type</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Solidarity Group Loans</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>$50 to $10,000</td>
<td></td>
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<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Individual loans</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>$20 to $10,000</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>loan size is determined by crop value</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>mobile-based agricultural loans (Cashless and paperless)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Asunafo North Co-operative Cocoa Farmers and Marketing Union (Ghana)</td>
<td>Internal and External loans</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Purpose</td>
<td></td>
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<tr>
<td></td>
<td>Agro-processing</td>
<td></td>
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<tr>
<td></td>
<td>Livestock rearing</td>
<td></td>
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<tr>
<td></td>
<td>Land acquisition</td>
<td></td>
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<tr>
<td></td>
<td>Seeds</td>
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<tr>
<td></td>
<td>Production, Distribution, Marketing</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Cooperative League of the USA (Mozambique)</td>
<td>Individual Based</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Initial discussion</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Submission of request</td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Supplying of supporting documents</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td>Equipment and site inspections where applicable</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Borrower home and office premise inspections</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CARE Rwanda’s Savings and Loan Associations (SLAs)</td>
<td>Groups based</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Mobilize groups of 10–16 (often part of bigger umbrella association)</td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Select a chairman and other leaders</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Receive business training from link bank</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Groups can apply for loans as soon as one year after they have begun their weekly savings</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Group has a bank account with the local Bank</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Condition of 25–40% deposit of amount as savings met and cash is deposited.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SLA submits its loan application and business plan</td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td></td>
<td></td>
<td>Credit committee meetings</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Bai Tushum Bank (Indonesia)</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Character based lending</td>
<td></td>
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<tr>
<td></td>
<td></td>
<td>Group Guarantee</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Personal guarantors</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Household and business assets-based pledges</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Equity of about 25% contribution of loan amount</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bank Rakyat (Indonesia)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Risk associated with borrower</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Informal nature of business</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Type of business sector</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Social objectives including financial inclusion and women empowerment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Lower transaction costs</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>Quick turnaround times</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Caja Los Andes (Bolivia)</td>
<td></td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

Annex IV: Breakdown of schemes for agriculture and artisanal fisheries

<table>
<thead>
<tr>
<th>TYPE OF LENDER</th>
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<th>PROCESS</th>
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<th>PROCESS DURATION</th>
<th>CREDIT TERMS</th>
<th>RATIONALE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Sector-Focused Banks/ Venture Capital-Type Initiatives</td>
<td>Up to US$1 million Purpose</td>
<td>Individual Based</td>
<td>Equipment being financed itself, Titled landed property, Cash collateral (30-50% of required amount), Insurance bond, Personal guarantee, Third party corporate guarantee</td>
<td>7-14 days (barring all delays due to client submission of required documents)</td>
<td>Interest rates: 12-24%</td>
<td>Client’s line of business, Huge income source for bank, Support economic activity, Generally faster turnaround times</td>
</tr>
<tr>
<td>Equity Bank Limited (Kenya and Uganda)</td>
<td>Agricultural machinery and equipment, Post-harvest handling facilities, Storage facilities, Irrigation, Inputs</td>
<td>Enquiry and initial discussion with the institution, Borrower submits business plan/proposal, If it does not already exist, borrower opens an account with the Bank, Collection of details of account operation with other financial institutions. Borrower provides evidence of managerial capability to handle project, Proof of environmental clearance for the project, Cash flow analysis that to prove that the project can generate adequate cash flows to support repayment of facility.</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Agricultural Development Bank, Ghana</td>
<td>Working capital for Agriculture and agro-processing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meloy Fund (fisheries)</td>
<td>Working loan for grain trade, in the case of agriculture</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Encourage Capital (fisheries)</td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Annex V: Methodology

In fulfilling the ToR of this project, a five-part methodology was adopted. Documents, archives and published literature were analyzed in order to uncover details of schemes implemented in the past. English language newspaper databases were also searched, particularly those covering sub-Saharan Africa, where, to date, most of the ‘successful’ financial services have been implemented for ASM. Alongside this analysis, correspondences were initiated with key experts on ASM based in a number of countries across the world, as well as retired experts. The methodology followed is summarized below.

▶ An in-depth look at, and reconstruction of, the past. The documentation of all major World Bank mining sector reform projects has been reviewed between 1988 and 2011. The CASM files contain supplementary material, specifically documentation for complementary projects on ASM financed by the likes of GIZ and DFID. In many cases, follow-up communications with the official in charge of administering the project were made to clarify particular points. Alongside this, interviews with 10 ASM experts active at the time in the donor space were consulted to gain an understanding of the challenges faced on the ASM finance front at the time. The intention here was to reconstruct the past, in order to give a flavour of what the thinking was like, at a time when interference from large-scale mining was minimal, around the formalization of, and support for, ASM. A list of key projects from which documents were analyzed is presented in Annex I.

▶ Follow up two on intriguing cases. In-depth exploration of two intriguing case studies – Papua New Guinea and Burkina Faso – was seen as an obvious corollary of the above analysis. In the late-1990s and early-2000s, promising work on ASM finance was being developed in both countries, the former in particular. Here, in 2001, AusAid and the Asian Development Bank financed an Outreach Program on ASM and Microfinance, respectively, conducted under the auspices of the Department of Mining. Following this, the Asian Development Bank continued working with ASM operators in the country. In Burkina, under the US$21.4 million Mining Sector Capacity Building and Environmental Management Project, US$4.2 million was pledged to support ASM, including a promising financial component which involved geological assessment of deposits, the idea being to use this information as collateral for lending. Comprehensive interviews have been conducted with the two experts who coordinated both projects.

▶ Analysis of experiences from ‘sister’ industries. As part of this exercise, experiences from ‘sister’ small-scale industries were drawn upon to formulate more robust measures for finance services to gold miners: agriculture and artisanal fishing. The former offers some valuable insights but from analysis of past experiences, it becomes clear that, too often financial services for ASM are modelled, wholesale, after farming. The sector does offer some promising lessons, such as how to collateralize lending, and could be of value if loans are packaged as ‘household business loans’ (the assumption being that families are engaged in a multitude of income-earning activities, including farming and ASM) but fisheries could offer more transferable practices, particularly when it comes to approaching the informal segment of ASM. Artisanal fishing has a sizable and widely-recognized gender component, which speaks clearly to the SDGs, and offers a valuable lesson to the GEF Gold Program on a possible angle worth exploiting.

▶ Analysis of the Financial Landscape. The literature on financial services has been surveyed with a view to identifying key criteria for lending. Given the poor socioeconomic conditions of regions where ASM activities are found, a state centered approach to financing may be required initially to establish confidence in lending by financial institutions. This speaks very clearly to the IFC-led mining and oil and gas projects in regions with
weak governance and accountability. Previous studies have already identified that many financial institutions are hesitant to lend to miners, citing poor business management skills, an absence of clear business plans and poor or no financial records and forecasting as the main reasons for their disinterest. Through surveying documents and consultations with various personnel at lending institutions, an attempt was made to develop appropriate financial criteria for different schemes for miners who are on different development trajectories. The literature and documentation on the IFC’s small and medium sized enterprises and value chain solutions has been reviewed to see how solutions could be inserted into existing frameworks. Reflections on the various government support programs in the likes of Canada, the UK and China will assist in identifying potential lending criteria, the amount made available to business owners, the nature of the funds distributed – that is, determining whether they are geared towards supporting cashflow, machinery purchase or inventory purchases – and barriers to entry and the medium of distribution. Adoption rates and challenges faced by business owners were also reviewed.

**Interviews with technical experts.** Annually, the lead investigator delivers two interactive seminars with ASM experts – predominantly, technical staff – from around the world. Through these seminars, he has trained over 100 people, each of whom has returned to their home countries with fresh insights on formalization. As part of this research, 55 of these technical experts, who hail from a combined 22 developing countries, were interviewed, each of whom was asked specific questions about ASM and, in particular, about ongoing efforts to finance the sector and attempts made to do so in the past.

The findings reported here are based on an appraisal of over 1000 reports, journal articles and interviews/communications with the abovementioned financial experts and ASM practitioners from the 22 countries.
Annex VI: Author biographies

**Abby Efua Hilson**

Dr. Abby Efua Hilson holds the post of Senior Lecturer in Accounting at the Kent Business School, University of Kent. She conducts research on corporate social responsibility and stakeholder engagement within the extractive industries in sub-Saharan Africa. She advises organisations on the geo-political risk inherent in working in the extractive industries of the sub-region. On the back of an extensive knowledge of business models she is currently assisting women in artisanal, micro and medium sized enterprises in the mining industry to hone their business skills in an effort to develop new growth models. She holds a PhD in Management from Aston University, UK and a Master of Business Administration from the Schulich School of Business, York University Canada.

**Gavin Hilson**

Gavin Hilson is Chair and Professor of Sustainability in Business, Surrey Business School, University of Surrey. He is a leading global authority on the environmental and socioeconomic impacts of artisanal and small-scale mining, publishing over 300 papers, book chapters and technical reports on the subject. He is founder and editor of the international journal, The Extractive Industries and Society (Elsevier Science Ltd.). Professor Hilson received Bachelors and Masters degrees from the University of Toronto, and his PhD from the Imperial College of Science, Technology and Medicine.