REPORT

planetGOLD

Making a world of difference
in small-scale gold mining.

A GEF Initiative

Unlocking Finance for Artisanal and Small-Scale Gold Mining

A Frontier Investment Sector

March 2020

Table of Contents

Supported by the Global Environment Facility and led by the United Nations Environment Programme, planetGOLD works in partnership with governments, the private sector, and ASGM communities in nine countries to significantly improve the production practices and work environment of artisanal and small-scale miners. By working to close the financing gap, supporting formalization, raising awareness, and connecting mining communities with mercury-free technology and formal markets, the programme aims to demonstrate a pathway to cleaner and more efficient small-scale gold mining practices that benefit everyone, from mine to market. The planetGOLD programme is implemented in partnership with the United Nations Industrial Development Organization, United Nations Development Programme, and Conservation International.

Executive Summary

Artisanal and small-scale gold mining (ASGM) is a significant global livelihood and supplier of gold. To date, this sector has been left largely on the margins of the formal economy with little access to formal finance—that is, finance that falls within the purview of international or national law.

Currently, ASGM is largely financed by the informal economy with a finance-first mandate, which prioritizes commercial financial returns and has little or no regard for environmental, social or governance (ESG) considerations, including mercury reduction or elimination. To date, formal finance reaching the ASGM sector has generally been restricted to donor and grant finance, with minimal evidence of finance from commercial lenders, including from impact investors.

This paper seeks to assist ASGM programs in accessing finance by better understanding the perspective of investors and the implications of ASGM's status as a frontier investment sector. Building and de-risking frontier investment sectors, in order to unlock commercial finance at scale, can take several decades. While there is growing interest in ASGM from commercial investors, only a few have allocated funds to the sector. This paper reviews barriers to finance, but, importantly, also discusses how ASGM may become a new investment sector as these barriers are progressively dismantled. The intention is that this analysis will help ASGM owners and project developers to more effectively access finance by being able to target appropriate sources of finance—in which there is alignment between the needs of both the ASGM projects and the investor. It will also assist in conveying a message about ASGM as an investment opportunity to the finance sector.

This paper aims to present an informed discussion on access to finance for ASGM. The analysis and recommendations presented within are grounded in a review of business, investment and development literature, and they are the product of insights garnered from more than 40 interviews with impact investors, commercial banks, mineral offtakers, development finance institutions, traditional investors in mining (including resource funds and private equity) and ASGM practitioners—as well as of the authors' own experience and expertise.

To shift the focus from barriers to investment in ASGM to the unlocking and accessing of finance, this paper concentrates on the knowledge and tools needed for the identification of appropriate sources of finance. For the purposes of this report, 'finance' includes money ranging from grants from donors —when money is simply donated with no expected return—through to commercial loans and allocation of capital, when competitive rates of return are expected including the return of the principal sum invested.

To assist in bridging the perspectives of the ASGM and finance worlds, key business and investment concepts are explored, including:

- The supply and demand of finance, to understand the needs and perspectives of the supply side, investors, and of the demand side, ASGM businesses seeking investment;
- The curve of adoption, which can be used to identify and understand investor archetypes, to ascertain how likely individual investors (regardless of the type of institution they work for) are to engage with ASGM; and,
- The investment continuum, which describes different sources of finance and their appropriateness for ASGM investment as the sector matures.

The supply side consists of finance potentially available to ASGM; this paper reviews these sources with the intention of seeking alignment with ASGM owners and project developers, the investees. To enable a deeper understanding of these sources of finance, they are further described by their investment type (such as debt or equity), attributes (including investment size and targeted rates of return), investor archetypes (which indicates willingness to seek proven versus unproven concepts), barriers, and relevancy as the ASGM investment sector changes and matures.

One of the most commonly cited barriers to investment is that ASGM is simply misaligned with the investment mandate, the rules and guidelines that dictate how finance is allocated. Even if investors see a potential fit for ASGM within their mandate, ASGM is largely excluded due to its perception as a high-risk investment. Another barrier is the newness of ASGM as an investment sector and the current lack of infrastructure to enable investment. Lastly, investment is considered in terms of risk versus reward and ASGM is perceived as not demonstrating returns, either financial or in the form of positive social or environmental impacts, that would warrant the risk involved. The risks raised during the interviews carried out for this paper predominantly cluster around 1) lack of track record of management and execution in ASGM projects, 2) exposure of the investors to reputation risk, and, similarly, 3) risk associated with actual measurable environmental, social and governance impacts or effects.

There are, however, innovative investors who recognize the opportunity in ASGM investment and are willing to be first movers. Some are already engaging, in particular where there is a strong impact or business motivation to do so. Others are intrigued by the investment opportunity but may be waiting for clear proof of concept, including evidence that return on investment or measurable If the demand side can better understand the supply side perspective, it can focus efforts on identifying finance opportunities for ASGM where alignment between the investor and investee is more likely. This requires segmentation of the supply side—essentially the identification of subgroups of finance. Segmenting the supply-side finance options will assist in revealing those more likely to invest in ASGM both now, as early-mover investors, and in the future, as an ASGM project matures.

In parallel, the demand side can also play a proactive role in dispelling overly-generalized perceptions of ASGM, de-risking projects and presenting specific investable opportunities. This will facilitate an evidence-based approach in understanding the risks and practical barriers to investing in ASGM—thereby enabling informed investment decisions on a case-by-case basis by the supply side. By developing and presenting investment opportunities that are articulated through an investor lens and sufficiently de-risked, new pools of finance may be accessed not only to generate impact at a project level but also to de-risk the ASGM sector for investment and impact at scale.

It is envisaged that this paper will be used to bridge the worlds of finance and ASGM. Recommendations and preliminary tools are presented for groups working with ASGM to assist in program design that will improve the likelihood of accessing finance at a project level and conveying the investment opportunity to the supply side. These efforts will contribute to the global effort of unlocking finance for the ASGM sector at large. A collective effort is required between the development community, the finance world and ASGM businesses to enable progress and demonstrate that responsible ASGM businesses are a viable frontier investment and impact opportunity.

Introduction

Artisanal and small-scale mining (ASM) provides the minerals for a growing global economy, including for the green infrastructure required for de-carbonization and electrification. Employing over 40 million people and supporting a further 250 million globally, it is the chief source of income for many rural communities. Artisanal and small-scale gold mining (ASGM) is a significant part of the ASM sector, and accounts for approximately 20% of global gold supply.

Yet public commentary on ASGM is largely negative, dominated by activists and media reporting on a multitude of issues such as gold smuggling, money laundering, links with organized crime, environmental destruction and child labor. References include National Geographic's "The Toxic Toll of Indonesia's Gold Mines",[1] Human Rights Watch's report on "Hazardous Child Labor in Small-Scale Gold Mining in the Philippines",[2] and a report published by Thomson Reuters, "Taking the shine off gold: How illegal mining creates financial risk ".[3]

While there are clear negative activities and effects associated with ASGM, ASGM enterprises can also be a catalyst for the generation of economic, social and environmental benefits. These benefits are not restricted to mine operators but are also felt in communities surrounding ASGM, by virtue of an economic multiplier effect far greater than many other sectors, such as agriculture.

For ASGM to be an economic catalyst and part of a thriving responsible mining sector, it requires access to finance, markets and appropriate technology, all within an enabling policy environment. Although advances have been made in many of these areas, such as in responsible sourcing and progressive ASGM public policies, barriers remain against access to finance—specifically, to the types of formalized finance that can incentivize positive economic and social impact and reach a scale to be applied to many members of the ASGM sector rather than just a few at a time.

The case for access to formal, commercial finance

To date, ASGM has largely been financed by informal lenders that do not operate within legal frameworks governing commercial transactions, such as local mining community groups, family members and gold or mercury traders who offer finance in return for access to future gold production.

Informal finance enables the continued production and flow of gold to markets, but the relatively small size of investments and the sometimes stringent investment terms restrict the potential of the ASGM sector to grow in productivity and profitability. While such informal finance can bridge operating costs between the recovery of gold and its sale, it is typically not invested in much-needed business improvements that enhance productivity or operating efficiency. Services and technology to support effective exploration, mining, processing and remediation activities remain largely out of reach for ASGM.

In the worst cases, informal finance arrangements can result in ASGM being locked into unfavorable agreements, with enterprises owing significant portions of future gold production to lenders, becoming trapped in perpetual debt cycles or intertwined with illicit financial flows.

In addition, this informal finance is not tied to any environmental, social or governance (ESG) criteria and so there is no inbuilt incentive for ASGM to improve practices, to safeguard workers' health and safety for example, or to drive mercury elimination.

1 https://www.nationalgeographic.com/news/2016/05/160524-indonesia-toxic-toll/

2 https://www.hrw.org/report/2015/09/29/what-if-something-went-wrong/hazardous-child-labor-small-scale-gold-mining

3 https://blogs.thomsonreuters.com/answerson/illegal-gold-mining-creates-financial-risk/

Donors and development agencies channel funding to ASGM projects, primarily focusing on addressing environmental and human rights issues associated with ASGM. However, few of these initiatives engage ASGM with the goal of unlocking their business potential. Continued reliance on donor or grant finance can reinforce a dependent donor-beneficiary model that is difficult to break. This is changing with increased recognition that economic sustainability, including the participation of the private sector in development programs, is a critical factor in achieving development impacts that can be sustained beyond the life of donor and grant funding.

This paper focuses on access to formalized and commercial finance as a natural progression from a dependency on informal finance or non-commercial grant and donor funding. Formal finance, finance that is provided by entities such as lending banks or impact investors, could enable long-term investment in appropriate technology and resources for operational and productivity improvements, all at a scale that allows for the growth of economically viable and environmentally responsible artisanal or small-scale gold mining enterprises. This finance can also be tied to compliance with improved environmental, social and governance performance, thus incentivizing more responsible mining practices.

The complete elimination of informal finance, where it is not exploitative or tied to illicit financial flows, is not realistic, or even desirable, in the foreseeable future, however. For particularly remote communities, informal finance, at least in the short term, remains a viable option for many ASGM enterprises, especially for those seeking small amounts of finance over short payback periods or those who simply do not have access to formal finance services (Box 1). Over time, it is preferable that informal finance providers are incorporated into formal financing mechanisms. Likewise grant and donor funding will likely continue to play an important role in building capacity of ASGM enterprises and addressing development challenges in mining communities. Access to formal finance, however, is key to establishing responsible and economically viable enterprises to create a long-term, sustainable solution to finance access and enable the ASGM sector to realize its full potential.

Purpose and methodology

The purpose of this paper is to provide an overview of ASGM finance for mining projects, to guide them in their search for access to formal finance that is appropriate to their investment needs. This paper was commissioned to study the barriers to investment in ASGM, to determine practical recommendations for overcoming these barriers, and appropriately targeting investors for ASGM investment. The foundation of this research was more than 40 semi-structured interviews with impact investors, traditional investors in mining (including resource funds and private equity), mineral offtakers, lending banks, development finance institutions (DFI's), and ASGM practitioners to gather a range of perspectives on access to finance for ASGM. These first-hand insights were supplemented with a review of the public and grey literature from the business, investment and development communities. While there is a relatively small (but growing) body of published literature on investing in ASGM, many useful references and concepts from other small producer sectors, business and investing can be applied to ASGM and have been reviewed for this purpose. A bibliography can be found in Appendix 1.

Also, the paper draws on the in-house expertise of the authors, accrued through years of practical experience of working with the investor community while developing and rolling out an investment-led model for ASGM through the dedicated social enterprise The Impact Facility for Sustainable Mining Communities.

The findings and recommendations in this paper set out to provide insights that enable the ASGM sector and development community to better understand the perspective of finance sector, the status of the ASGM investment sector, and how ASGM enterprises can improve their ability to access finance.

Organization of this report

At its simplest, investment is a matching between investor and investee. Section 1 explores this concept through the supply and demand framework that it introduces, explains, and applies to ASGM. The supply side comprises sources of finance and the investors who make decisions about how and where capital is allocated. Potential sources of finance, the factors investors consider when allocating funds, and what their investment interests, or 'mandates', are, are all reviewed. Section 1 also includes insights from the demand side, in this case comprising ASGM businesses or intermediaries with a variety of investment needs.

Section 2 follows with a review of the current status of access to finance for ASGM, and of the path forward to expand this access. It then discusses the "barriers" which have inhibited investment to date, with insights drawn from the interviews and literature. Financing ASGM is new, and barriers are to be expected in any new investment sector. But if it is understood that these barriers can be lowered over time, this reality need not be a persistent obstacle for ASGM. Indeed, this paper takes the position that the apparent barriers to ASGM finance are issues faced by any new investment sector, not ASGM specifically, and focuses instead on the assertion that ASGM presents a frontier investment for which the door is open and opportunities are beginning to flow.

To begin reframing ASGM as a frontier investment opportunity, Section 3 introduces the "curve of adoption". The "curve of adoption" provides a graphical representation of how new products or services are received in financial markets. This paper applies the curve to investing in ASGM, taking insights drawn from interviews with those engaging with or interested to invest in ASGM. As mentioned above, some investors, motivated by their nature or mandate, are more willing than others to be pioneers. Understanding the characteristics and motivations of those more likely to engage in the early stages of the ASGM investment sector's development will enable projects to more effectively target these sources of finance.

Section 4 introduces the "investment continuum", which considers how an investment sector emerges, scales and matures over time, and demonstrates how and when a range of investor types engage. ASGM projects, identified through interviews and research, are mapped on to the continuum to understand ASGM's current status. The investment continuum can then be used to guide ASGM projects in effectively targeting finance appropriate to the maturity of their project in particular, and the sector generally.

The paper concludes in Section 5 with a summary of recommendations for ASGM projects to

- develop investable opportunities;
- dispel, manage or mitigate known barriers to finance;
- target investors most likely to engage; and
- promote an enabling environment for the ASGM investment sector generally.

Section 1. Supply and demand – A matching between investor and investee

Access to finance requires a matching of needs between the investor, the supply side, and the investee, the demand side. This matching can be enabled by an intermediary. The supply-side and demand-side framework has been widely applied to social impact investing, by the Organization for Economic Co-operation and Development (OECD, 2015) among others, and to specific investment sectors, such as agriculture, housing and healthcare.

To enable a matching between supply and demand sides ASGM projects can first define their investment needs. Knowing what the ASGM project needs assists the project developers and owners to identify investors on the supply side who are most likely to meet those needs. The flow of finance may be facilitated by an intermediary. Together these three entities constitute the components of the investment value chain. Considering both the supply and demand perspectives can help to improve the likelihood of success by focusing the search on targeting finance from investors that is appropriate to the needs and capacity of the investee. This framework is adapted to ASGM for this paper and is presented in Figure 1.

Supply side

The supply side comprises sources of finance allocated by a diverse community of firms and individuals with a range of objectives, expectations, conditions, and investment criteria.

The supply side includes 'finance first' investors seeking commercial financial returns, such as banks or private equity mining funds. They operate on a traditional investment value chain (see Figure 1). Investors seeking to generate positive impact in addition to an often lower financial return, are the "impact first" investors, who operate on an impact investment value chain. The supply side, with its potential sources of finance for ASGM, is explored in more detail in Section 1.1.

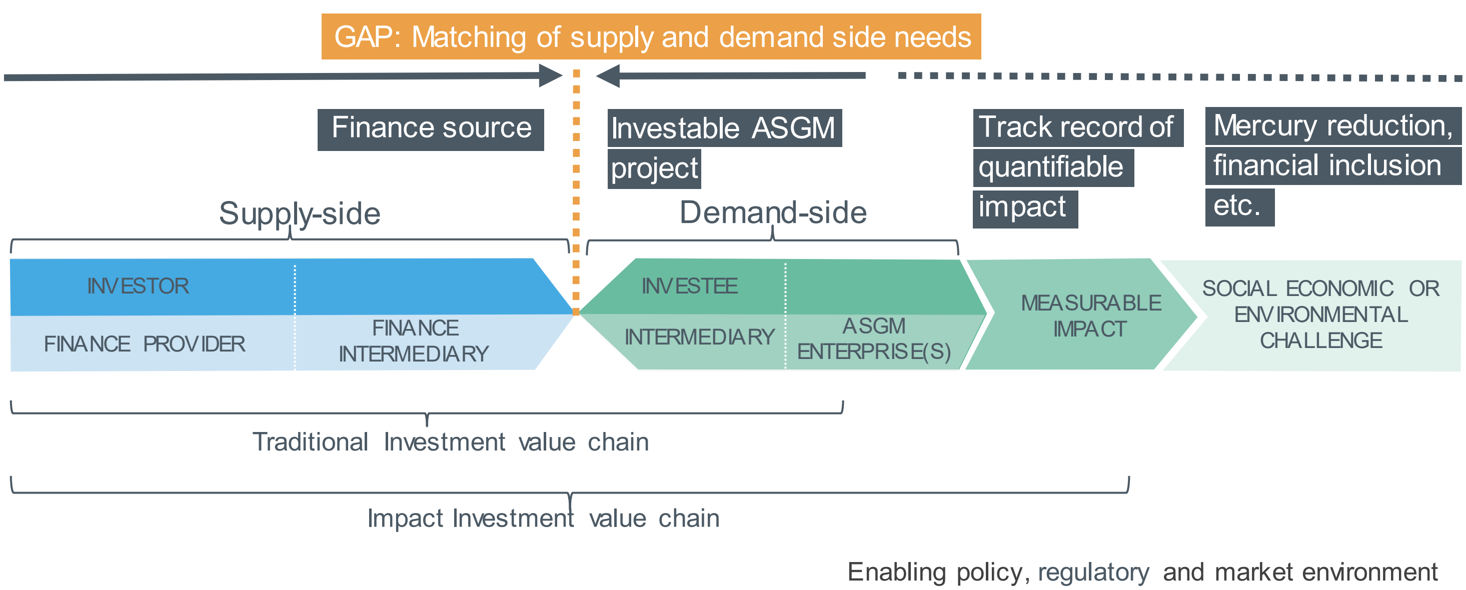


Figure 1: Supply and demand sides applied to the investment and impact investment value chain in ASGM. (Adapted from Asset Allocation Working Group, 2014).

In some cases, a finance intermediary, such as a local bank, acts as an in-country distribution channel for international finance institutions to disburse investment across multiple investees and support in management and mitigation of investment risk. The role of financing intermediaries can be especially important for the ASGM sector, which, without a convening point, can be highly fragmented. A finance intermediary may have more success in channeling larger investment allocations to the ASGM sector than investors seeking to make direct investments in a sector that is currently new and relatively unknown to sources of formal finance.

Demand side

The demand side comprises investees seeking finance for ASGM. These might be intermediaries, such as social ventures, including charities, social enterprises and NGOs. They might also be ASGM enterprises themselves with the confidence to seek investment directly. Demand side intermediaries may be particularly helpful in building an investable portfolio of ASGM enterprises or providing specialist knowledge of ASGM to potential investors who generally lack in-house expertise on ASGM. The demand side is considered in Section 1.2.

Appropriate finance

A good match between the supply and demand sides will only be found where there is alignment between the investment needs and capacity of the ASGM project looking for finance with the needs and expectations of the investor providing it. When a match is found the finance is "appropriate". Some finance is simply inappropriate for ASGM. As an example, an investor with a mandate to invest a minimum of US$1 million when the total investment needs of a cluster of ASGM enterprises is US$150,000, would not consider the ASGM project investable. To give ASGM projects insight into investor considerations and be better equipped to identify appropriate finance, common considerations for an investment are reviewed in Section 1.3.

BOX 1: ASGM, Banks and Access to Financial Services

Many marginalized communities, including a large number of ASGM communities, are in desperate need of business-driven social, economic and environmental improvements but are not even banked (Figure 2). Indeed 1.7 billion adults are unbanked according to a Global Findex study (2017). For ASGM to benefit from formally regulated finance, investees must have access to financial service providers or intermediaries through which investment funds and returns can flow.

Formal borrowing, however, may not be a typical means of accessing finance for ASGM. As is common of developing economies in general, borrowing from friends, family or other semi-formal or informal sources is more typical than borrowing from a financial institution or through the use of a credit card—services which are often simply not accessible.

Where formal financial services are available, ASGM enterprises might not be familiar with how to access or use these formal mechanisms. Appropriate local service providers or third-party intermediaries, such as social enterprises, may be required to deliver finance and manage repayments. These intermediaries may also have to work with ASGM businesses to define and present their investment needs until financial and business literacy is strengthened.

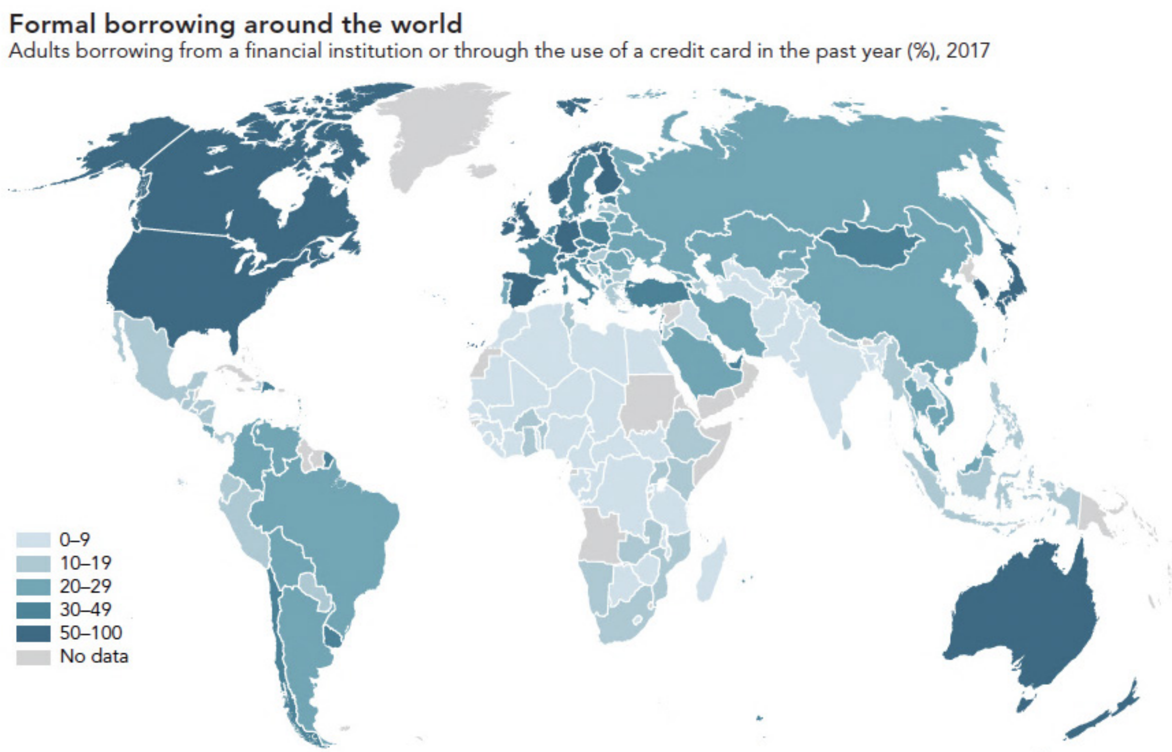


Figure 2: Percentage of adults borrowing from a financial institution or through the use of a credit card, (Global Findex, 2017).

Even in cases where ASGM can access financial services, loan applications are often rejected. In the gold mining region of Busia in Uganda, for example, several ASGM enterprises were found to have applied to local banks, but none had been able to secure loans from them. Efforts to engage with these banks regarding service provision returned little interest due to the perceived high risk of default and general poor reputation of the industry (Sturmes, 2017). Even if national or local banks do offer loans to ASGM there is little evidence to suggest this finance is accessible, appropriate or attractive to ASGM.

Reasons for this include ASGM enterprises' inability to meet collateral requirements, uncompetitive interest rates, unattractive repayment terms (such as including no grace period to account for seasonal fluctuations in productivity), or prohibitively high costs of compliance to meet due diligence expectations. Misaligned incentives mean that, to date, ASGM businesses have generally struggled to access locally available formal finance (Sofala Partners and BetterChain, 2019).

1.1 Finance Sources – the supply side

For the purpose of this paper, a full landscape of sources of finance was considered for ASGM, including banks, institutional investors in gold mining (including private equity mining funds and resource investment funds), non-institutional equity investors, impact investors, downstream offtakers (or buyers of gold), mining companies, development finance institutions, and donor and grant finance. A brief overview of sources of finance considered for their potential fit with ASGM is given below.

Banks

Banks provide loans to businesses, offer investment products and provide financial services to customers. They operate at global, national and local levels and are accountable to regulated standards and codes of conduct. There are many types of banks including commercial private banks and cooperative mutually-owned banks. Ultimately, banks are tasked with managing risks to investments that they manage on behalf of their customers and shareholders. They are obliged to seek market rates of return by investing in low risk sectors.

Generally, commercial banks are relatively conservative lenders. Their investment strategies can be tightly constrained by regulations and standardized corporate governance frameworks, compliance requirements for due diligence processes can add significant costs that are passed onto investees in fee structures, and the need for investees to have hard asset collateral can rule out many small businesses.

Cooperative banks operate to serve their member communities who are their shareholders. Often, they are mandated to provide services to small businesses. While banks may make available loans to small businesses, to date there is little evidence of their willingness to lend to ASGM.

Many global banks do invest in gold or in gold mining, provide finance to gold refineries or take equity positions in large mining companies, trade gold or hold physical gold on behalf of their customers, but they do not invest in ASGM. The Sofala Partners and BetterChain report published in 2019 concluded ASGM has a "universally negative image" among banks. Other studies indicate that even local and national banks in mining countries are not engaging with ASGM. These institutions perceive a link between non-industrial-scale gold production and money laundering, with which it is categorically unacceptable to be associated. Unfamiliarity in evaluating or understanding ASGM in particular was indicated, compounding this negative perception. Such knowledge of how mining businesses function and generate revenues is fundamental if lenders who are responsible for customers' money and shareholders' interests are to allocate funds to the ASGM sector.

Even if banks might consider lending to ASGM it is worth noting that options for access to formal financial services may not even exist, as is explained in Box 1: ASGM, Banks and Access to Financial Services.

Institutional investors in mining and gold

Institutional investors—large institutions specialized in evaluating, investing in, and capturing value from gold mining—were considered in this research, as they are familiar with investing in mining and gold and in many cases will have indirect exposure to ASGM through their primary investment. They may come into contact with ASGM where its presence presents as a risk to a mining company or project in which they are investing. To date, ASGM has not been considered directly as an investment opportunity by institutional investors.

Institutional investors target commercial financial returns and generally adhere to responsible investing standards to mitigate environmental and social risk and to meet the expectations of their clients, but environmental and social issues or evidence of positive development impacts are not central to their strategy. While they are generally not yet motivated to engage with ASGM, this may change as the responsible sourcing and impact investing movement gathers momentum and becomes mainstream. They may invest into ASGM as a corporate responsibility or encourage responsible investment into ASGM by the large mining companies in which they directly invest. More information on Private equity investors and Resource investment funds is included in Box 2.

Individual investors

Some investors are individuals investing directly, or groups of individuals operating as a consortium and investing through a convening point. As these are non-institutional equity investors, it might be more difficult to obtain information on the source of financing. This group is very broad and may contain some individuals who strive to generate financial returns through "responsible" investing, mitigating risk and broadly pursuing impact outcomes, and may be a good source for ASGM investment.

BOX 2: Investing in Gold – A Brief History

Gold has served as a store of value and has been widely traded as a form of currency for thousands of years before becoming the well-established investment sector it is today. Following the introduction of paper money in Europe beginning in the 17th century, the Gold Standard was established, essentially creating gold-backed paper money. England was the first country to adopt the Gold Standard, in 1821, but it became more widely used when the International Gold Standard was established in 1871, with most countries adopting it by 1900, apart from China and several Central American countries (WGC, 2019a).

Major currencies remained backed by gold and, between 1944 and 1971, the exchange rates between these currencies and gold were controlled under the Bretton Woods Agreement. In 1971, the USA unilaterally withdrew from the agreement and, converted the US Dollar to a fiat currency, one no longer backed by the intrinsic value of gold. Other currencies followed suit, bringing an end to the Gold Standard. Reserve banks, however, still hold significant stockpiles of gold, previously used as collateral against their currencies, and they remain an important buyer and seller of the precious metal.

Gold is still regarded as a safe haven investment. It is a physical asset with a finite supply and, once mined, it cannot be destroyed and therefore remains in circulation. Further, it is regarded as an uncorrelated asset. The gold price is not directly driven by broader economic conditions and therefore it does not necessarily move in the same direction as the rest of the market. It therefore provides a natural hedge within a diversified portfolio.

There are many ways to invest in gold. Private investment in physical gold is typically through jewelry or through bars and coins. Institutional investors in gold are large institutions specialized in evaluating, investing in, and deriving value from gold mining, including commercial banks, resource investment funds and private equity mining funds. They then offer investment products. The desirability of investment in physical gold exploration and production is pitted against other lower risk routes for investors to get exposure to gold.

The World Gold Council (WGC) estimate there have been just over six and a half billion ounces (190,000 tonnes) of gold mined throughout history and available to the market. Annual gold production from mines is approximately 80 million ounces per year, therefore increasing the total available stock by approximately one per cent per annum. Jewelry, a store of wealth in many cultures, accounts for almost half of this total stock of gold at 48%, with private investment accounting for 21%. Central Bank reserves account for a further 17% and the remaining 14% includes industrial, particularly electronics use, and gold for which the use is unaccounted (WGC, 2019b).

continued

BOX 2: Investing in Gold – A Brief History *(continued)*

Retail Investors

Retail investors are individual investors who value gold for both its inherent value but also its emotional connection, particularly in the case of jewelry. Jewelry is the largest market for physical gold, although demand fluctuates with the gold price. The greatest increase in demand in recent years has been purchasing of physical gold for private investment. Traditionally, investors buy bars and coins, which are often held in the vaults of banks. The recent introduction of gold-backed exchange-traded funds (ETFs) has provided investors with direct exposure to gold without the costs and challenges of storing the physical metal. Physical gold investment products, ETFs and retail investment constitute a growing market.

Private Equity Investing

Investors have also sought exposure to gold through equity investing, buying the shares of gold mining companies, be they explorers, developers or producers. Prior to ETFs, equity investment provided an easier means of gaining exposure to gold than buying the physical metal and had the added attraction of providing investment leverage—the use of debt to acquire assets. Gold explorers offer investors enhanced returns through exploration success while producers should offer increased operating margins in a rising gold market. In reality, exploration risk is very high and, while spectacular returns can be generated from genuine discoveries, these are rare. Furthermore, in recent decades, rising gold markets have typically also been at times of escalating capital and operating costs, thereby offsetting any growth in margins. Investment returns in gold equities have, over recent decades, been generally poor and, coupled with the accessibility of ETFs, led to capital flowing out of the sector.

Private equity (PE) funds receive commitments from a small number of investors, known as Limited Partners, against an investment mandate. They invest in mining companies, including gold miners, for an equity stake. The General Partner, or manager of the fund, will identify investment opportunities, present the investment case to the Limited Partners and then draw down capital from the Limited Partners to make the initial and subsequent investments. General Partners receive a management fee and a carried interest, which is normally a fixed proportion of the outperformance above an annual return of typically 8-15%. PE funds normally have fewer holdings, perhaps ten, but hold larger positions and can invest in listed or private companies. Where the PE fund holds a significant position, they may have the right to appoint representatives to the investee company's Board of Directors. Generally, PE funds have a fixed life of seven to ten years with an initial investment period followed by a realization period during which positions must be sold. PE funds will invest in a range of strategies that include companies at different stages of maturity. Some will invest in more advanced companies that they anticipate being able to exit, possibly through acquisition by larger companies. Some PE funds are Venture Capital Funds (VC). These funds invest in young companies that are not necessarily advanced. ASGM investments can be considered young ventures and could attract VC funds.

Resource Investment Funds

Gold-focused or resource-focused investment funds provide investors seeking exposure to gold equities with a portfolio of gold equities managed by an investment professional (WGC, 2019c). Resource investment funds invest in natural resource companies, including publicly listed gold miners. Resource investment funds may be one of a number of structures including investment trusts, closed-ended investment companies or open-ended investment companies. Capital is raised for the fund, usually through the issue of shares, and this capital is then deployed against a clear investment mandate. Generally, investment funds will take minority positions in listed equities and may have restrictions on the number of investments, percentage of the company they hold, size of the company, geographic region, stage of development and commodity. Typical resource funds will diversify the investment risk through holding a number of positions, normally at least twenty. These positions are in publicly listed entities and are relatively small proportions of the investee company's share capital so the position can be easily traded at market price. The portfolio of positions will often be bought and sold directly on a trading market or stock exchange and the fund will seek to outperform the market or a specific benchmark and attract new investors, thereby growing the size of the fund over time. Funds will often have no fixed life. Fund managers will generally receive a management fee that is based on the total assets under management and a performance fee that is a proportion of out-performance of the fund above a benchmark or index.

Impact investors

Impact investing is a socially responsible financial product that requires the generation of financial return but also, and most importantly, of measurable positive social, economic and environmental impact attributable to the investment. Impact investing is dominated by dedicated fund managers, who represent two thirds of the impact investing community, while foundations, development finance institutions, family offices, high-net-worth individuals and a small number of pension funds make up the remainder.

Impact investors seek to generate and measure impact through their investments. This can be shaped by the UN sustainable development goals, for example, or aligned with global standards such as IRIS+[4] developed by the Global Impact Investing Network (GIIN), or metrics developed in house for example (GIIN, 2019a&b).

To date, there has been limited evidence of engagement from impact investors with ASGM. Impact investors are not necessarily risk takers and thus are not always open to new investment sectors such as ASGM, even if they do present the potential for impact. Opportunities for high-risk, high-impact projects may, however, be found among more risk-tolerant investors—often high-net-worth individuals (HNWIs) or family offices. HNWIs and family offices have the flexibility to follow their individual investment interests, as well as the ability to invest the relatively low sums appropriate for early-stage unproven concepts. For example, those that include capital preservation in their portfolio target impact-first investment opportunities (for which no financial return is required) with a higher degree of risk tolerance than those who do not (see Figure 3). More detail on impact investing, and consideration of potential for ASGM to be accepted, is presented in Box 3.

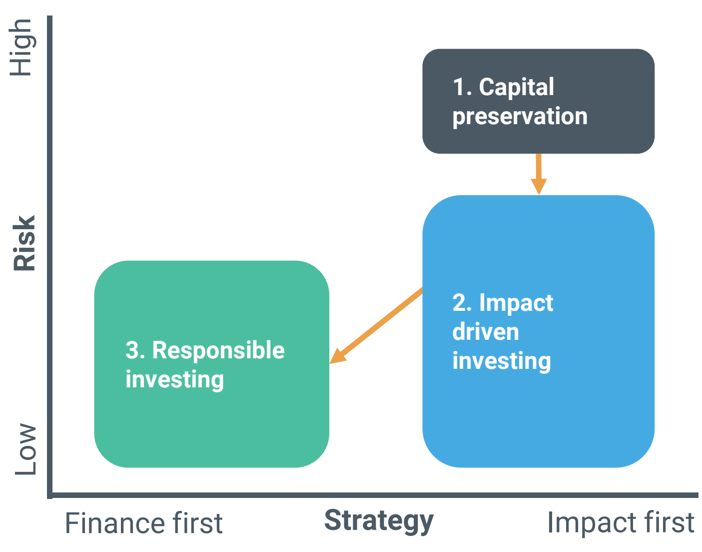


Figure 3: Impact Investment Portfolio Strategy demonstrating a sample impact investment strategy balancing different objectives across the risk vs return spectrum (adapted from Ceniarth, 2018).

Mining companies

Mining companies are known to invest in the acquisition of smaller mining companies or exploration projects, and also to invest in community enterprises through community development funds to augment corporate social responsibility initiatives. Traditionally, corporate social responsibility initiatives are funded from philanthropic budgets, but there is a notable shift towards more private sector initiatives using community investment funds. There is growing recognition of the opportunity for mining companies to be an avenue for investment in ASGM, and of the business case for them to do so. One observer notes that “Glencore, Ivanhoe and Barrick routinely say the presence of illegal miners on their properties is one of their greatest challenges”, (Salie, 2019). There is growing recognition that working with, or investing in, ASM may be a solution to this challenge. Some gold producers, such as b2gold (2018), include artisanal mining strategies in their sustainability reporting and recognize the need to engage with these stakeholders by supporting alternative livelihoods. Others have sought to co-exist with legitimate ASGM by allowing mining within their mineral concessions, as Newmont has done in Suriname (Newmont, 2017). Mining companies can provide interim solutions for investing in ASGM and contribute to progressing the sector in the absence of other sources of finance.

4 https://iris.thegiin.org

BOX 3: Investing in Impact and the Potential for ASGM

Impact investing is growing; US$77.4 billion was reported to be under management in 2015 and this is projected to reach US$2 trillion by the end of 2025 (Martin & Lohin 2017). Despite this sizeable availability of impact finance, the amount invested is limited by the volume of investable projects matching the needs of investors (Philips and Johnson, 2019).

Many impact investors interviewed for this paper noted the lack of available investable and impactful projects—or deal flow—which is a constraint to mobilizing impact-led finance. Impact investing is relatively young and, as Amit Bouri, CEO of the Global Impact Investment Network, stated, "capital and deals aren't connecting the way that they need to be (Financier Worldwide, 2017).

The reach of impact investors is not equally distributed. Impact investment capital is geographically concentrated. A recent study by GIIN, an impact investment industry group, indicates that in 2019 the U.S., Canada and Europe headquarter 72% of impact investing groups, and 59% of those hold over 75% of their assets in developed markets.

It is a sector of great diversity, with a multitude of investment instruments not simply restricted to debt. Indeed, private equity and real asset-investing comprise 17% and 25% respectively of the impact-investing sector, and social impact bonds are gaining more traction (Martin & Lohin 2017).

There are huge amounts of impact finance available to small and medium-sized enterprises. Often this money is absent where it is arguably needed most: in emerging or overlooked impact-investment sectors (Bannick and Goldman, 2012a). Instead it is earmarked for "market scalers", those investing in well-established investment sectors where investment can be made at a larger scale. As a result, the average deal size may be beyond the capacity and needs of some ASGM projects that in the early stages might only require a few hundred thousand dollars to invest in equipment.

The GIIN reports average 2018 deal sizes as US$3.6 million when targeting market rates of return, and US$1.2 million for investments targeting below-market rates of return. To overcome this mismatch in deal size, an intermediary such as a social enterprise or social finance group may facilitate multiple smaller investments in ASGM projects. The majority of these investors are seeking proven concepts that can deliver both measurable impact and market rates of return at scale, and ASGM has not yet demonstrated these attributes.

Presently, impact investing (as defined by GIIN, 2019) falls into the following sectors: Energy Microfinance; Financial services (excluding microfinance); Food & agriculture; WASH (water sanitation and hygiene); Housing; Healthcare; Forestry; Infrastructure; Education; Manufacturing; ICT; Arts & culture; and Other (including real estate, retail, community development, and multi-sector allocations).

Impact finance is currently generally not "mining friendly". Many impact investors are publicly wary of and single out the sector as being inseparable from pollution and negative social impacts. This sentiment in part can be explained by the lack of familiarity with mining from the point of view of investors with a small appetite for risk. Even the more skeptical investors acknowledge that there are 'good' and 'bad' actors in every sector and the categorical exclusion of entire industries is counter to the goal of incentivizing better practices by individual businesses.

The majority of impact-investment capital goes to well-established impact sectors, such as agriculture. The sectors of focus are not, however, set in stone. The GIIN reports that an emerging impact-investment sector is "refugee investing". Investing in communities of displaced people, to foster impact through sustainable enterprise creation, has been promoted by the Refugee Investment Network,[5] established in 2018, that has set up necessary infrastructure to enable flows of impact-investment capital. This shows potential for relatively rapid change among the impact-investment community. It also shows that groups perceived as "transient" or high-risk can overcome their negative perception with the right support to become investable (Kluge and Docking, 2019).

continued

5 https://refugeeinvestments.org

BOX 3: Investing in Impact and the Potential for ASGM *(continued)*

While ASGM may currently be perceived as high-risk in the impact-investing community, it should be remembered that risk is inherent in any impact investment, and so care must be taken to distinguish general risks from risks peculiar to ASGM. General risks that may present barriers to impact investment are summarized by the Global Impact Investing Network (GIIN), 2019) and ranked in order of severity in Figure 4. Where the investee can demonstrate the presence of a strong management team, it can alleviate concerns around general risks, as well as specific issues associated with ASGM, such as mercury use.

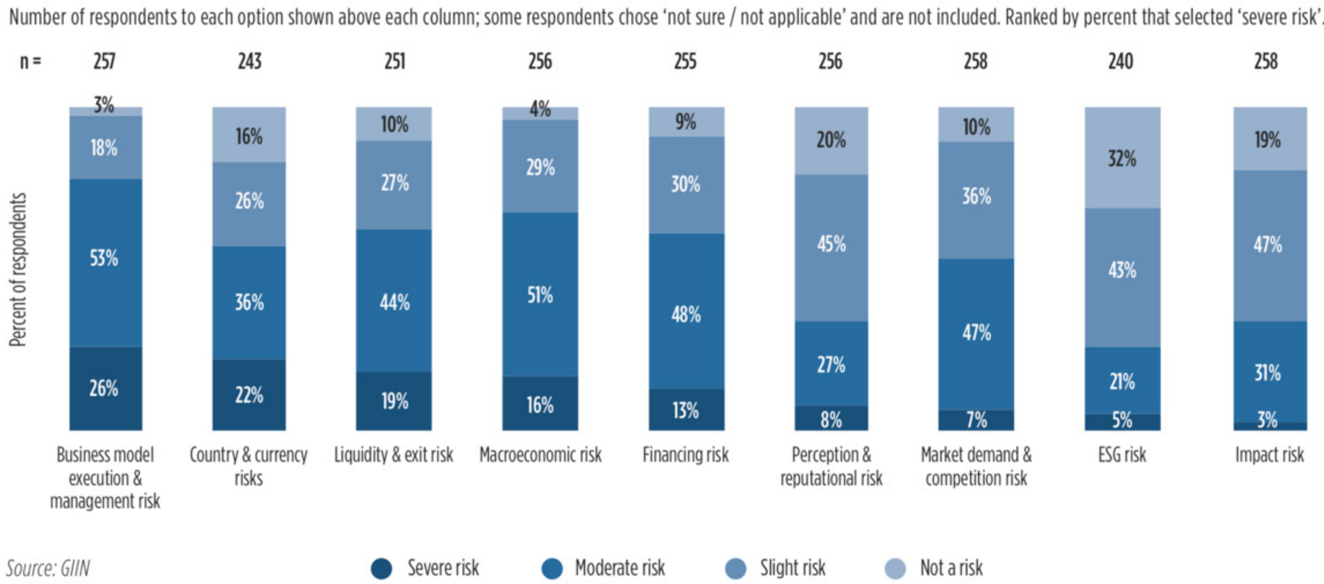


Figure 4: Contribution to risk in impact investment portfolios (GIIN, 2019)

Downstream offtakers (refineries or commodity traders)

While downstream offtakers—or buyers of physical gold—are not traditionally investors in gold mining entities, they do enter into royalty or streaming agreements, in which an advanced payment is made in return for the right to purchase future gold produced by that mine, often at a discount. Recently there has been growing interest from midstream and downstream companies in the origin of gold and some are actively engaging ASGM through streaming agreements and pre-financing. Other offtakers have taken a do-not engage approach, driven by NGO pressures and the risk of inadvertent non-compliance (SwissInfo, 2019). It is estimated that in Peru alone, gold worth US$1.8 billion is exported annually from illegal mines, which are often linked to deforestation, mercury pollution and human rights issues (Dupraz-Dobias, 2014). There is a growing realization, however, that boycotting ASGM is not a solution. Rather, there is an opportunity for downstream refineries and brands to engage with ASGM and, in the process, clean up their supply chain and meet the expectation for ever-increasing standards on responsible and transparent sourcing.

As investors in gold production, offtakers have different motivations from investors who seek financial returns. Rather than seeking above-market rates of return, they may be willing to invest in ASGM, targeting capital preservation, in return for access to responsibly-mined gold and greater influence over the ESG performance of their upstream supply. Other policy levers influencing this sector include the London Bullion Market Association (LBMA) requirements, OECD due diligence compliance, and increasing scrutiny from manufacturers and even consumers. Supply-chain financing, in which buyers of goods provide short term credit to sellers of goods for working capital, is a growth sector (BSR, 2018) but may be more suited to 3rd party financing entities. Offtakers are not formal "investors" and are not best placed to directly finance ASGM in the long run, but in the short to medium term, they could make significant contributions to the strengthening of ASGM as an investable sector in the absence of other sources of finance.

Development finance institutions

Development Finance Institutions (DFIs) exist to invest in projects that contribute to their development purpose of combating poverty and contributing to economic growth in less-developed countries (Bannick and Goldman 2012a). In theory, they should be well-suited to investing in ASGM, but their mandated size of investment is generally far greater than the requirements of ASGM projects. Additionally, these entities are sensitive to reputation risk and very often require that IFC performance standards are met (Sofala Partners and BetterChain, 2019). Engagement is not completely absent, however, as evidenced by the Dutch Development Bank, FMO, that enabled the early-stage venture The Impact Facility for Sustainable Mining Communities[6] by providing seed-funding to establish this specialist venture dedicated to investing into ASGM. Another example is found in Nigeria, where the Bank of Industry collaborated with the Ministry of Mines to establish the "Nigerian Artisanal and Small-Scale Miners (ASM) Financing Support Fund" to provide short-term loans or working capital to ASM (Leadership Newspaper, 2017).

Donor and grant finance

Grant or donor funding may be supplied by trust funds, charities, foundations or donor agencies, many of which are engaging with ASGM. These funders now seek to tie the onboarding of commercial partners or capital to their funding objectives. There is growing recognition of the importance of ensuring that donor money does not become trapped in addressing a market failure but instead focuses on catalyzing economically-viable solutions that are sustained beyond the life of the grant (Bannick and Goldman, 2012a). While these entities do not typically expect their capital to be returned, some will engage in program-related investing (PRI). PRIs are investments made by charities or foundations to further their programmatic strategy but are different to the traditional philanthropic model. The expectation is for the principal capital to be returned with or without an additional, below-market interest rate. The financial return is secondary to the furthering of the impact mission.

1.2. ASGM projects – Demand side

The demand side has a key role to play in attracting finance from investors (Brown and Norman, 2011). To play the demand-side role effectively, ASGM owners and project developers must understand their own capacity to accept commercial finance, their own investment needs, and the terms on which they can and cannot engage an investor. Once this understanding is reached, the demand side can better participate in designing investment terms and effectively articulate an investment proposition to potential sources of finance.

> Ultimately, investors invest in people. They trust their money to individuals or management teams. Their willingness to invest will rely greatly on the confidence they have in the capacity of their counterpart to repay a loan or generate profits.

6 https://impactfacility.com

Demand-side composition

The ASGM demand side comprises ASGM enterprises or intermediaries, which act as convening points to funnel investment into ASGM.

ASGM enterprises are diverse. There is no “one size fits all” definition. By its nature, the sector is unconsolidated. There can be many enterprises remotely located and distant from each other or, in some cases, forming clusters in mineralized regions. ASGM enterprises can be collectively-run cooperatives, controlled by a group of local investors, or owned by individuals. Workforces range from tens to thousands of individuals, who can be itinerant or, conversely, well-established in the local community. Operations can be focused on underground or open pit bedrock deposits, or on alluvial gold. The capacity of ASGM enterprises also varies in their application of available technology, technical knowledge, financial knowledge and ability to manage environmental and social issues around their operations.

If an investment is not made directly into an ASGM enterprise, it may be channeled through an intermediary. Intermediaries can sit on the supply or demand side of the investment value chain. For example, a local bank backed by a DFI can supply loans to ASGM from a specific loan fund. Intermediaries on the demand side largely fall under the category of social ventures, including NGOs, charities and social enterprises. They raise finance for ASGM projects by developing and pitching an investment opportunity to an impact investor, for example. Intermediaries can be effective convening points to develop investment portfolios comprising multiple ASGM enterprises. Such convening or bundling is often required if working with small enterprises, as capital allocations in the hundreds of thousands of dollars (as typically required by ASGM projects) are regarded as uneconomical by investors. The cost of finance – due diligence, monitoring, reporting and collecting repayments – is high when compared with the potential total financial return on relatively small allocations to single enterprises.

Demand-side capacity

Ultimately, investors invest in people. They trust their money to individuals or management teams. Their willingness to invest will rely greatly on the confidence they have in the capacity of their counterpart—an ASGM enterprise, for instance, or the intermediary representing that enterprise—to repay a loan or generate profits. An ASGM project is well placed if it is able to gauge its own management capacity, understand how its capacity might be perceived by investors, and articulate that capacity to the supply side. Understanding the limits of its organizational capacity will assist an ASGM project in targeting sources of finance that are appropriate to its circumstances, and minimize the risk of mismatched expectations between investor and investee.

Financial capacity is also important and will vary between ASGM enterprises and intermediaries. ASGM enterprises may only be familiar with local lenders and have limited financial literacy and low investment needs, unable to handle large loans. However, the financial capacity and investment needs of viable ASGM enterprises will evolve as their businesses grow and this capacity gap can, in the interim, be bridged by intermediaries. A well-established intermediary may be able to handle loans of one million dollars or more with fund management experience and capacity. Intermediaries that are able to demonstrate financial and technical competency to potential investors, and to speak the language of investors, can have success in accessing finance on behalf of ASGM.

Investment needs and terms

Investment needs in ASGM are highly variable and dependent on aspects of the nature of the mining enterprise, such as the size of the operation and its organizational capacity. An artisanal or small mining operation, for instance, could benefit considerably from an investment of US$10,000 to buy a pump to extract water from a flooded mine pit, whereas US$1.5 million might be needed for equipment at a processing hub serving multiple ASGM enterprises.

Investment Needs	Cost USD	Local or Import	Explanation
Compressor	15,000	Local	Improves productivity by drilling using compressed air to more easily blast and disintegrate the rocks to access high grade ore zones.
Mud water pump	3,530	Local	A water pump has benefits for both safety and productivity by reducing the water level in shafts or adits to enable safer working conditions. It can then enable continued work during rains or at depths which would be otherwise inaccessible or dangerous.
Handheld rock drill	7,500	Import	Improves productivity through enhanced ability to explore and target high grade zones underground.
Generator	11,300	Local	Improves productivity though a reliable power source.
Ball mill	8,000	Local	A ball mill crusher will effectively grind the gold bearing rocks to powder and alternative to hand crushing which is slow and less precise.
Gold kacha	3,000	Import	Centrifugal concentration equipment, such as the Gold Kacha replace sluice boxes in the concentration process and promote mercury elimination. Not only does this process take significantly less time than traditional sluicing, it can also increase recovery to up to 95% when used by trained personnel.
Shaker table	13,000	Import	The shaking table works in synergy with concentration equipment to separate out gold particles from gold concentrate, enabling mercury elimination through subsequent smelting of the final concentrate.
Winch	15,000	Local	A winch is helpful to hoist waste rocks and ore from underground to the top of the pit enabling pit development and safety improvement
Equipment clearance and transport costs	TBD	n/a	Budget for clearance and transport costs must be allocated.
Installation and training costs	13,000	n/a	Installation of equipment and training in its use is required to ensure any purchases are used safely and effectively. Training on repayment schedules, monthly mine and ESG data are also important considerations to measure the positive impact activities and the provision of equipment has on the mines.
Repairs and maintenance	TBD	n/a	A contingency budget may need to be set aside for repairs and maintenance beyond warranties.
Sub-Total	**89,730**		

Note: Building a sample list of investment needs following a scoping of the ASGM mine site, considering additional costs to be covered by working capital such as import fees, installation of equipment and ongoing monitoring and maintenance, and repairs for example. Costs are not definitive.

Figure 5: Sample investment needs table for an ASGM mine site (The Impact Facility, 2019).

The involvement of an intermediary can expand the effective organizational capacity of individual projects; several small mines clustered together could address more substantial investment needs through significant mining infrastructure with proportionate positive effect on their productivity.

An example of the investment needs of an individual ASGM enterprise, based on the experience of The Impact Facility, is shown in Figure 5. While a typical ASGM enterprise might need a five-figure investment sum, many investors seek larger opportunities. In the case of a well-established intermediary that can cluster the investment needs of multiple mines into a portfolio or develop a single processing hub, investment needs could potentially reach a more attractive range of between US$2-5 million.

If an ASGM project can justify a prospective investment by projecting the impact on its business model and profitability, it will build investor confidence in its ability to repay the loan and allow greater clarity on the length of repayment period required and the rates of interest that would be feasible. All this would equip the project to effectively negotiate and engage on realistic terms with a prospective investor. If, on the other hand, an ASGM enterprise expects to derive no or very little economic benefit from such an investment, it would be better suited to donor and grant funding, or perhaps to impact investors satisfied with preserving capital or generating a low financial return.

An ASGM project may also wish to consider how investment might resolve specific environmental or social challenges within the project or its community, and if that impact would be measurable. For example, a mine might use investment to process old waste dumps, or restore old mine workings to a safe condition. If such measurable impact is possible, then impact investment might be a suitable source of finance for the project.

A participatory approach to defining ASGM investment terms

Examples from the agricultural sector suggest that when the party seeking investment is involved in the design of financial services to best fit its context and provides input on the allocation of funds, there is greater likelihood of successful investment outcomes (Blum and Chipeta, 2016). This applies as much to the institutional mandates of development agencies that focus singularly on environmental or social outcomes as it does to impact investors attempting to balance financial and social returns. If ASGM enterprises participate actively in articulating their own investment needs, they can drive the financing proposition and improve chances of both social and financial returns. This is not to say that the requirements and expectations of investors are unimportant, but that any financing proposition must work for the ASGM context. This is best ensured through ASGM involvement rather than leaving investors to shape an investment in isolation.

ASGM enterprises generally have a good idea of what they need to improve the viability of their businesses. Social enterprises and other intermediaries can facilitate their vision by assisting them in articulating their needs to potential investors. Often, ASGM enterprises prioritize issues that directly affect miners or the viability of their operations, such as a lack of safety equipment, or low productivity. While this does not preclude tackling tough development challenges such as eliminating mercury through the financing of mercury-free technology, such challenges are not always an immediate priority for ASGM enterprises. Considering their needs, or even having them participate in designing an investment, throws into relief the imperative to fund social goals in concert with financing the fundamental business of the operation. Seeking ASGM involvement in finance-formulation can also shape the terms on which investees repay their loans; for example, in regions where productivity is affected by seasonal rains, repayment plans might include seasonal pauses or 'grace periods' on loan repayments.

Investment offering

Lastly an ASGM project might consider what its investment proposition might be. An ideal investment in ASGM will offer any or all of the following to a prospective investor:

1) **Exposure to gold**, which can appeal to private equity or resource funds, and offtakers such as commodity traders or refineries;

2) **Generation of impact**, which can appeal to donor or grant funds, development finance institutions, social entrepreneurs and impact investors;

3) **ASGM engagement** resulting in a business advantage for the investor. Some groups' core business operations are directly impacted by ASGM. This may include offtakers whose business advantage would be to access responsible ASGM gold, or mining companies seeking a social license to operate, risk mitigation, or collaborative opportunities to advance their exploration and mining projects. It can also include first-mover impact investors or local banks who want to gain in-house ASGM investment expertise ahead of competitors; and,

4) **Return on investment**, which appeals to any source of finance that is targeting financial returns, such as lending banks or equity investors and many impact investors.

1.3 Making the match – Appropriate finance and the investment mandate

To find a fit between the supply and demand sides, the investee's needs and proposition must align with the mandate of the potential investor. Whatever the source of finance, there are inevitably criteria that the investor expects to be met. The investment mandate sets the objectives, restrictions and parameters for each investment and determines how capital is allocated. Not all ASGM projects will be able to meet these criteria, however. The mandate can dictate the asset classes (such as equity or debt) available, the risk parameters, targeted rates of return, specific impact objectives, geographic restrictions and other criteria that the investor considers important. For example, an impact investor might want to see evidence of impact metrics tied to mercury reduction, while a bank might look for legal rights to the mineral concession and a credit history. Some may require compliance to specific in-house due diligence standards or international standards, such as those published by the OECD or the Global Reporting Initiative (GRI). While an investor may have general criteria that need to be met in order for a project to be considered for an allocation, each investment is considered on its individual merits.

Seven key attributes are summarized below to give ASGM projects an insight into the common considerations of a potential investor: investment size, targeted returns, security, region, impact, risk versus return, and type. These attributes and their relevance to ASGM were discussed during the interviews conducted for this report.

Investment size

Investment mandates include minimum and maximum investment sizes. Some investors will not look at the opportunities that are less than US$2 million, or, in the case of large private equity or resource funds, US$20 million. Others invest low six-figure sums. When trying to confirm appropriate investment sizes for ASGM, the authors' experience and that of interviewees for this paper returned a range of responses reflecting the diversity of the ASGM sector and its investment needs. Generally, five to low six-figure sums are appropriate for individual ASGM enterprises unless projects are clustered or centralized investments are made in which case investment can be larger around US$1-2 million for example. This finding is supported by the World Bank research that suggests the gap in early stage funding for emerging economy small and medium-sized enterprises (SMEs) is tens to hundreds of thousands of dollars, similar to levels expected from angel investors (Bannick and Goldman, 2012a). As the viability of a new investment sector is proven and reliable data is generated, investors start to look for scale and investments can grow to reach millions of dollars.

Targeted returns

Targeted returns are another attribute of an investor mandate and can vary considerably. It can be assumed that the majority of investors, including commercial lenders and traditional mining investors, are seeking market-rate returns unless they are non-profit or impact-first investors. An expected rate of return can be as high as 21% for private equity investors, and about 15% for direct investments from DFIs. Loans to small enterprises are generally lower, but seldom dip below 12%.

Some investors now apply a 'risk adjustment' measure that considers the rate of return relative to risk taken over a period of time. This is useful when assessing multiple potential projects for investment.

Investees should ensure they are confident that the rate of return and repayment schedule expected by an investor can be achieved by their organizations. Some may not expect a return, such as in the case of donor and grant finance, or 'impact-first' investors. When it comes to impact investors, a return is typically expected; approximately 66% target competitive, risk-adjusted market rates of return, and seek out proven investment concepts (GIIN, 2019). The rest target capital preservation—essentially returning the principal sum invested or a below-market rate of return.

Finance Source	Below Market Rate	Market Rate	Note
Fund managers (for profit)*	16%	84%	
Fund managers (not for profit)*	72%	28%	
Foundations*	71%	29%	
Banks*	31%	69%	
Development finance institutions*	25%	75%	
Family offices*	22%	78%	
Other*,**	58%	42%	
Private Equity (Mining)	0%	100%	
Resource Investment Funds (Mining)	0%	100%	
Downstream offtakers***	?%	?%	There is a willingness or interest to invest into the supply chain even if not commercial
Mining companies***	?%	?%	There is a willingness to invest into proximal mining communities even if not commercial
Donor and Grant Finance	0%	0%	Expecting no return unless a program related investment but finance may be tied to securing commercial investment

***Data points from GIIN, (2019)*
*** Includes university endowment, NGO, corporations, community development finance institutions, cooperatives, and social impact investment wholesalers*
**** Inferred following discussions during this study*

Figure 6: Targeted returns by investor type adapted from GIIN 2019

The impact investor industry organization GIIN completed a study on the target rates of different investors, the results of which are presented in Figure 6 and augmented by general findings of this paper.

Security

In the case of a debt investment, many investors require a marketable asset to be put up as collateral. Failing that, they might require a guarantor who can step in to cover at least some potential losses. Having some form of security in place before seeking investment makes the proposition more attractive by reducing risk, and for some investors is a requirement. It is useful to understand an investor's needs, such as the precise percentage of the principal investment they require the collateral to cover or the nature of security they will accept.

Region

Many investors include a geographic or jurisdictional restriction in their mandate, which is based on either perceived risk or regulations that prevent their investing in certain regions. While some portfolios focus on a specific region as part of a strategy to find opportunities that match their investment criteria, other managers' portfolios are constrained by categorical exclusions imposed by their investors, such as countries under EU, United States or United Nations sanctions. Some of the investors interviewed for this paper flagged conflict areas such as Somalia and South Sudan as non-investable, while others considered conflict-affected or high-risk areas to be opportunities to effect positive change through 'impact first' investment.

Impact

Formal sources of finance can be organized by their expectations for return on investment along a spectrum of "impact first" through to "finance first". Finance-first investors are those who prioritize the generation of financial return on investment. Impact-first or "impact" investors seek to generate some measurable impact in tandem, or as a priority over, financial return. However, impact investors can deploy quite different definitions of the concept of "impact", with a variety of expectations. Investors that seek to create impact often have specific areas of focus, such as the environment or financial inclusion, and associated impact metrics. Impact investors investing in ASGM will expect some kind of quantifiable impact to be returned. As the ASGM sector intersects a variety of development challenges, such as mercury usage and forced labor, "impact first" finance may have a specific role to play in ensuring environmental and social improvements across the ASGM sector. Impact-first finance is often tied to specific impact-performance criteria that can incentivize such improvements.

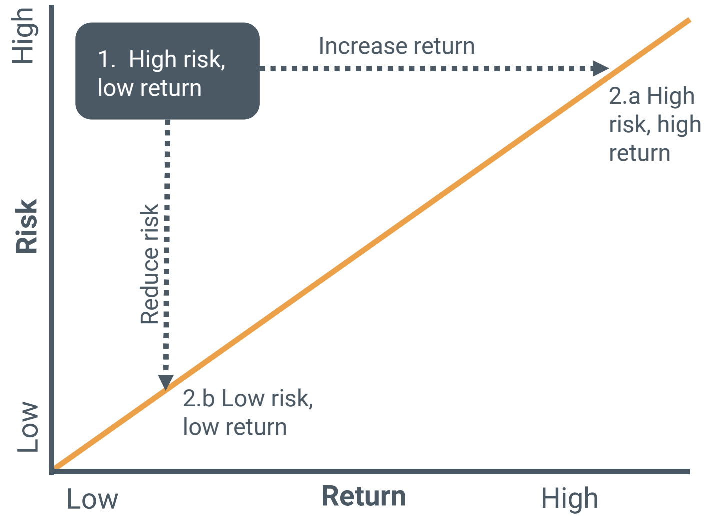


Figure 7: Balancing risk and return, a prospective investment must carry risk that is appropriate to the expected return if It is to be an attractive proposition.

Risk vs return

All investments carry risk. Investors weigh that risk, and the ability of the underlying project or projects to manage it, against their expected return when evaluating an investment. Generally, investments that are categorized as high-risk carry a higher cost for the investor. They require more in-depth due diligence, monitoring, reporting and non-core investments into technical assistance or capacity development, to correct problems or improve practices. Where the perceived costs associated with managing and monitoring a high-risk investment outweigh the potential for return compared with other projects, investors are unlikely to allocate funds.

In addition to financial risk, impact investors also consider the risk of not achieving their desired impact. Some impact investors strategically accommodate higher-risk projects within their portfolio, willing to take higher financial risk in the hopes of generating high impact (Figure 3).

Projects that are high-risk, low-return (see 1. in Figure 7) must demonstrate an acceptable risk-return profile by reducing risk or increasing return to fall between points 2.a and 2.b. Building a financial track record to demonstrate ability to repay loans and provide evidence of reliable cash flow is required for projects to access commercial finance and indeed to unlock finance across the risk vs return spectrum (Newman, 2019).

Risk can be both real and perceived. If a risk is perceived but can be eliminated or managed, then real risk is lower than perceived risk. For example, investors may perceive working in ASGM in parts of Africa as extremely high-risk, but the reality might be that the risk can be managed and mitigated, and that the real level of risk is therefore much lower. Those who invest when the perceived risk is higher than the real risk secure an advantage in gaining geographical or sector-specific expertise and accessing the best projects while their competitors choose to invest in more proven markets.

Investment types

The instruments investors use to invest vary. Broadly speaking, finance is delivered as either debt or equity. Debt can be secured by the presence of a guarantor or collateral. If these are absent, the debt is referred to as unsecured. Equity investments can be made in public or private companies. Investments in public companies are made by buying shares that can be publicly traded on a stock exchange, and are accountable to the regulations of the public markets. Investment in private companies are done through private transactions, and such transactions may have more flexibility, with fewer and less-onerous disclosure requirements. Increasingly, debt to equity conversion, or mezzanine finance, is becoming more common: in this arrangement, the investee transfers some ownership of the company to the investor in place of some or all of the original debt. This demonstrates trust between investor and investee; the investor is confident and optimistic enough about the enterprise's quality and potential that they are willing to exchange lower-risk debt for higher-risk equity—which would be worth nothing if the enterprise failed and went out of business.

Financing instruments are growing in complexity, with more than a thousand instruments designed to mobilize private funds. This includes blended finance, guarantees, and the emerging green bonds and impact bonds sector (UN, 2019). Blended finance is a growing US$50 billion market (Blended Finance Taskforce, 2018) that allows development projects to benefit from both "impact first" grants and "finance first" commercial loans from different entities (Huppé and Silva 2013). By combining philanthropic money with private capital, funds can be unlocked for frontier markets, such as ASGM. An arrangement might comprise a DFI providing a direct deposit to a national commercial bank as a guarantor function to unlock loans to ASGM businesses, or a philanthropic donor supplying a technical-assistance grant to an ASGM project that de-risks and unlocks investment from a commercial impact investor. There is growing recognition that this approach facilitates cooperation between development partners and financial institutions to deliver on impact and be profitable if well-managed from the outset. This approach has been applied in agriculture with success (Charles, 2018) and this experience and knowledge is already being applied to the ASGM sector, such as in the work of The Impact Facility for Sustainable Mining Communities. In some cases, impact-investment funds offer blended grant and debt financing directly where the added grant component can catalyze greater impact (Blended Finance Taskforce, 2018).


Conservation International

Section 2. Status of access to formal finance and barriers to progress

ASGM enterprises are struggling to access formal finance and, as a result, several institutions have recently commissioned studies focusing on barriers to finance, including: "The barriers to financial access for the responsible minerals trade in the Great Lakes Region"[7] authored by Sofala Partners and BetterChain; "Barriers to Private Sector Engagement in the Artisanal and Small-Scale Gold Mining Sector" currently in draft and to be published by Solidaridad and Global Initiative; and "Accessing formal finance for exploration and upgrading of Rwanda's mining sector",[8] a publication of the Sustainable Development of Mining in Rwanda Program (SDMR).

These papers complement the research of this paper, including in recognizing barriers to accessing finance for ASGM. This paper takes the position that barriers are to be expected in any new investment sector, not just in ASGM. Simply put, ASGM is a frontier investment sector; it is in the early stages of maturity as a viable investment opportunity. The barriers so often identified are real, but if properly understood they are not immutable and will lower with time, particularly as the sector begins to effectively dispel, mitigate and manage the various risks associated with ASGM and build the necessary market infrastructure to enable investment. Section 2.1 briefly reviews the current status of access to finance, embedding demand-side insights, followed by Section 2.2 which highlights key barriers identified, including but looking beyond, perception of risk and reputation issues. The newness of ASGM as an investment sector underpins much of the challenge. These insights can be used as tools to enable action to dismantle barriers over time and reframe the focus on ASGM as a frontier investment sector. Opportunities for access to finance then begin to become more apparent as explained in Section 3 and Section 4.

2.1 Current access to finance status

Interviewees for this paper from the demand side commented that donor and grant finance is more accessible to ASGM than commercial finance, and that it is typically directed to sponsoring NGO programs on capacity development. Some noted that, while useful, this funding can fail to align with a business-led approach to develop sustainable long-term solutions based on building the business fundamentals needed at ASGM enterprises.

Several of those interviewed for this paper representing the demand side perspective articulated that there are challenges for ASGM in accessing commercial finance. This can be largely attributed to a variety of reasons stemming from a mismatch between the needs of ASGM and the mandates of investors, (Section 1.3) and also from key barriers that are further explored in Section 2.2, including: a lack of fit with the investment mandate, the newness of ASGM and current lack of investable projects, the negative perception of ASGM, the consequent risk profile of ASGM, and compliance with regulations, standards and guidelines.

Considering the investment offering of ASGM (Section 1.2) and the potential sources of finance available (Section 1.1.) it is clear that ASGM does not neatly fall into the mandate of any particular source of finance. It is possible that this is because impact, mining and investment are things that, to date, have simply not aligned with the mandates or expertise of investors. The types of investors that understand gold mining enterprises are motivated by value sets which traditionally do not align with the impact investment opportunity in ASGM. Likewise, those seeking to invest in impact do not generally consider mining as a sector with impact potential. Furthermore, even those who do have a greater understanding of ASGM than typical

7 https://www.resolve.ngo/docs/ppa_-_barriers_and_opportunities_for_artisanal_access_to_finance_-_april_2019_-_final.pdf
8 http://sdmr.co.rw/wp-content/uploads/2019/12/SDMR-6-A2F-Policy-Brief-1.pdf

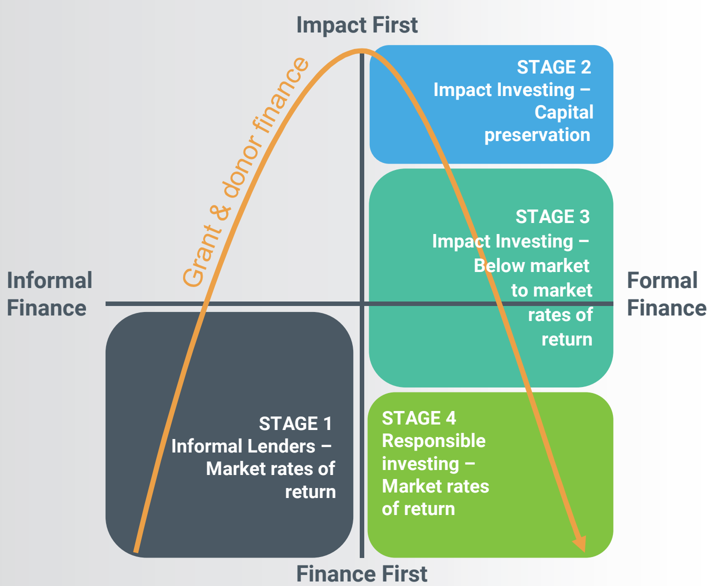
banks or impact investors, and who have more direct motivation to engage, such as mining companies, refineries and downstream brands, are not necessarily able or willing to act as investors.

Specific challenges cited by interviewees included impact investors' lack of interest in gold mining or mining generally (Box 3), a generally poor perception of ASGM's social and environmental practices among potential investors, banks not being open to talking about lending to ASM, or ASGM enterprises not being able to meet the collateral and due-diligence requirements of lenders. This is discussed further in Section 2.2.

Fundraising and the seeking of investment can be a protracted and resource-intensive process. Some indicated that even when promising investment leads were found, the fundraising process was slow and that the due diligence and decision-making process was often long and the rate of success was low.

ASGM enterprise and projects face frustration as they continue to struggle to secure loans from the formal finance sector. ASGM's needs for basic access to formal finance remain largely unmet, even from local lending banks—who, like the formal finance sector generally, often do not understand ASGM, or do not have the mandate to invest in ASGM. There is a lack of affordable and appropriate financial products that serve the needs of ASM, which results in the stagnation of the sector's evolution (Development Minerals, 2018). Consequently, the ASGM sector remains largely reliant on informal finance or on donor programs and grants.

Graduating from donor and grant funding to commercial finance is not a challenge unique to ASGM. It has been noted in other impact investment sectors, including stable, low-risk jurisdictions such as Canada. Philips and Johnson (2019) interviewed non-profits and intermediaries seeking investment for affordable housing and community economic development projects and found that investees, often more geared



Grant and donor finance is used to build ASGM projects to a stage where they are viable investment targets, enabling progress along the investment continuum, depicted by the orange arrow.

STAGE 1 represents the present financing status for ASGM, which is largely informal and driven by local lenders or traders who focus on financial return and provide no incentives to improve environmental and social performance

STAGE 2 is when impact and capital preservation are the primary goals of investors into ASGM. This may be supplied by foundations though program-related investments or impact investors who do not seek a commercial rate of return. This finance can be used to demonstrate ASGM as responsible investees, paying back loans and generating impact. It can also be used to specifically target development goals, such as mercury elimination.

STAGE 3 is unlocked as impact investors become confident that investing in ASGM can meet its spectrum of impact and financial needs. Finance tied to impact is still important to continue to incentivize improvements, such as mercury elimination through applying impact criteria.

STAGE 4 represents the point at which the ASGM sector is largely able to access business loans from lending banks or other types of investor, with a finance first mandate. While this finance operates within a legal framework it does not inherently address development challenges, its mandate is to secure a return on investment with minimal risk.

Figure 8: A schematic to show the envisaged path of the ASGM sector as it moves from having access to only informal finance first investment (stage 1) to unlocking access to formal finance with an impact-first through to finance-first focus (stages 2 - 4).

towards non-profit business models, faced challenges in accessing finance due to limited understanding of the supply side, basic financial literacy, and how to demonstrate quantifiable impact.

Lack of investment in ASGM by finance-first investors is not surprising given that ASGM is largely associated with environmental and social development challenges, and viewed as high-risk rather than as an investment opportunity. However, even those who balance or even prioritize impact over financial gain have not allocated significant funds to ASGM. ASGM is simply not yet able to compete alongside other well-established impact investment sectors, such as agriculture, when it comes to its risk-reward profile (Figure 7).

Nonetheless, there are some examples where investment-focused initiatives and pilots are seeking to demonstrate proof of concept for commercially viable lending models. These span investments from social ventures, local banks, responsible equity investors, impact investors, public private partnerships and development programs and will be highlighted later in Section 4, and in a complementary study commissioned by planetGold, "Access to Finance: Options for Artisanal and Small-Scale Mining", currently in draft.

The path forward

Despite progress made by a relatively small number of individual projects, ASGM remains largely dependent on informal finance or donor and grant funding. Figure 8 summarizes the current status of access to finance for ASGM (Stage 1) and the path forward. The horizontal axis categorizes sources of finance as either informal or formal, while the vertical axis is a spectrum between impact-first and finance-first investors. Figure 8 represents a simplification of the investing continuum which will be discussed in more detail in Section 4, alongside examples of projects showing progress in unlocking access to finance.

Key barriers to investment were identified during interviews to help better understand what may be inhibiting ASGM access to formal finance and leaving the ASGM sector dependent on informal sources, or grant and donor funding. Perceptions of ASGM were clustered around key themes, summarized in Figure 9, according to whether respondents are "engagers" (those already working with ASGM, both on the supply-side and the demand-side), "non-engagers" (those on the supply-side not engaging with ASGM) or "interested" (those on the supply-side interested in working with ASGM under the right conditions). This analysis was conducted in order to understand dominant perceptions of the sector and reveal any variation between engagers, non-engagers and interested parties; to identify key barriers that can be turned to opportunities or potentially mitigated or managed; to identify investor segments more likely to engage; and to inform proactive solutions to work with known barriers (discussed later in Section 3, 4 and 5). Common perceptions and associations identified are summarized in Figure 9.

Understanding investor limitations due lack of fit with the investment mandate

First and foremost, ASGM may simply not be a fit with prospective investors' mandates. This barrier was most frequently noted in fourteen of the conversations held with impact investors and mining investors not currently engaging with ASGM.

Indeed, as shown in Section 1, the ASGM proposition does not necessarily fit comfortably with certain sources of finance. Investors familiar with investing in gold and securing a return on investment perceive ASGM as a risk and a sector that does not fit with their investment mandate, while investors that seek impact are largely mining-averse or do not understand the ASGM sector.

Specifically, investors that are incompatible with ASGM may be grouped into two types:

- Type 1) Those who face practical barriers, such as:

    a) An impact investor that has categorically excluded mining, without exception

Risk Perception/Barrier ASGM investment	Total	Engagers	Non-engagers	Interested
Does not currently fit investment mandate or strategy	14	0	12	2
Conflict with formal mining	13	7	5	1
Unknown legal status or illegal	12	6	5	1
Criminal activity including money laundering	11	3	8	0
Poorly understood (including recognition of misperceptions and newness)	8	1	2	5
Opaque management structures/lack of accountability	8	2	3	3
Mercury use	7	3	2	2
Very challenging and complex (no one size fits all)	6	3	1	2
Not yet able to deliver attractive returns	6	2	2	2
Unknown production, production uncertain or low	5	3	2	0
Current inability to deliver on ESG or impact metrics	5	1	3	1
Not yet able to scale	5	2	2	1
Lack of trust (with or between ASGM groups)	5	4	1	0
Disconnected from finance world	5	5	0	0
It is isolated with lack of on ground presence for assurance	5	2	1	2
Human rights abuses (gender, forced labor)	4	1	2	1
Inability to provide collateral and default risk	4	3	0	1
Lack of government support or clear regulation/law	4	3	1	0
Lack of financial literacy (no reports, accounting)	4	2	1	1
Responsible for environmental destruction	4	2	1	1
Transient miners, ad hoc and disordered	3	2	1	0
Child labor	3	1	2	0
Generally negative (driven by influencers from media, NGO and high profile impact investors)	3	1	1	1
Mining itself is negative	2	0	2	0
Engaging would bring a reputational risk	1	0	1	0
Risk of perpetrating inequality ("elite")	1	0	1	0
The investment opportunity is too small/margins are too tight	2	1	1	0
Margins are too tight in ASGM	1	1	0	0
Unsafe	1	1	0	0
Unclear investment needs	1	1	0	0
Positive association	**Total**	**Engagers**	**Non-engagers**	**Interested**
Positive economic impact in their community	4	1	2	1
It is a good investment	3	3	0	0
They know the ore body, knowledgeable	2	2	0	0
Undiscovered investment opportunity	1	0	0	1
Hard working	1	1	0	0
Entrepreneurial	1	0	1	0
Not all are illegal	1	1	0	0

Figure 9: Barriers and risk matrix presented for engagers (including demand side or experts working with ASGM), non-engagers and interested investors

b) Resource funds or private equity not able to invest in ASGM given lower risk-tolerance resulting from shareholder obligations or the publicly traded nature of the company

c) An investor with a minimum investment size that is far higher than the needs and capacity of an ASGM project, or

d) Investors blocked by a fundamental inability to reconcile the activities of the ASGM operation with regulations or standards to which their source of finance adheres. In these cases, such investors might never be a fit for ASGM.

- Type 2) Those for whom ASGM is an unknown opportunity or whose perception of ASGM is as a high-risk, low-return opportunity that cannot compete with other investment projects on offer in other sectors such as agriculture or energy. This may be due to ASGM's association with negative perceptions, the newness of the sector, the lack of investable projects, or a perceived inability to align with internal or external regulations or guidelines. In some of these cases these barriers may be overcome in the short to medium-term.

While Type 1 investors might simply never be able to invest in ASGM, Type 2 investors may, over time, engage with the sector.

Acknowledging the newness of ASGM and current lack of investable projects

ASGM largely operates within the informal economy; it is a nascent sector for formal investors. The formal finance sector is not well acquainted with ASGM, as to date there has been little information available on the commercial viability of, or investment successes in ASGM. The newness and lack of understanding of ASGM was mentioned most by interviewees who exhibited interest in investing in ASGM. Because ASGM is relatively new as an investment sector, there is a lack of market infrastructure, including, for example: established intermediaries to act as convening points, an ASGM due-diligence toolkit, or accepted impact metrics for the sector. The lack of such expertise and tools makes it hard for investors to access, or even understand, potential ASGM projects. This is compounded by the fact that ASGM often operates in difficult-to-reach areas with little or no access to formal financial services (Box 1).

Several interviewees, on both the supply and demand sides, recognized the need for ASGM investment propositions to be more robust. Indeed, several investors mentioned that they had been approached by one or more ASGM projects but had not been able to invest. Some key barriers highlighted during discussions include:

- A lack of specialization in ASGM within the investment sector, which means that investing teams are not sure how to assess projects.
- The lack of a track record in the sector, which results in challenges in quantifying and managing risk.
- The relatively high costs of investing in this sector, meaning that the costs of due diligence may be greater than the potential returns.
- A lack of demonstrated ability to scale financing solutions, worsened by the perception of the sector as being highly fragmented and informal.
- The lack of available data from pilot projects to prove quantifiable impact potential.

- The shortage of investable ASGM proposals with clearly-articulated investment needs and terms of engagement, and of well-established intermediaries to present these opportunities.
- A lack of investment opportunities that match the large minimum-dollar figures of many investor portfolios which are currently beyond the needs of ASGM enterprises or the capacity of intermediaries to manage.

There is potential to deliver great social, economic and environmental impacts through investing in ASGM. However, the sector is not yet on the radar of the impact investment community at large. A lack of available and robust impact data from this sector makes it hard for investors to justify the reallocation of impact capital from other proven sectors, such as agriculture, to ASGM. Nevertheless, there is an opportunity to position ASGM as a frontier investment opportunity; as evidenced in impact investment literature, new investment sectors emerge over time (Box 3).

Understanding the perception of ASGM

The perception of ASGM has been largely informed by media and activist groups, with the result that negative headlines—from conflict and child labor to mercury pollution—routinely rise to the top. Indeed, a recent Public-Private Alliance (PPA)-commissioned report concluded that ASGM "has a universally negative perception among global financial institutions" due to the association between ASGM and money laundering. The "spotlight shone on artisanal mining by global NGOs in recent years may also inadvertently have reinforced this reluctance by global banks to engage with ASM" (Sofala Partners and BetterChain 2019).

The top negative perceptions of ASGM among the interviewees were clustered around the following themes:

- **Illegality** of ASGM and the risk of uncertain or absent ASGM mineral rights or the ability of ASGM to secure and maintain permits to export their gold. For example, the legal system or natural resource governance mechanisms around ASGM generally are not as robust or clear as around large-scale mining. While some countries may have public policies and regulatory frameworks recognizing ASGM, it is understood that monitoring the sector and enforcing regulations is difficult and expensive.
- **Association with money laundering or association with criminal activity**. The Financial Action Task Force (FATF, 2015) highlight gold's vulnerability as a commodity used in money laundering, which has permeated global banks' perception of integrity risk in the sector (Sofala Partners and BetterChain, 2019). The illicit activity associated with ASGM may range from individuals illegally smuggling gold across borders to terrorist groups engaging directly in the mining, smuggling and laundering of gold.
- **Association with conflict**. For many traditional mining sector investors in particular, their first exposure to ASGM is as a risk or a conflict-based impediment to large mining-project investments.

Interestingly, the frequency of references to child labor and mercury use, two of the major issues addressed by NGO and donor-led initiatives, was lower than anticipated.

Non-engagers in the investment community also mentioned their concerns around management structures and inability to deliver on environmental, social and governance requirements and goals.

Those expressing interest in ASGM investing most commonly cited its newness, and did not return such a variety and frequency of negative associations. They were most concerned by management structures, the complexity of the sector, the potential lack of assurance, mercury use, and a perceived inability to deliver a return on investment.

Those already engaging with ASGM, both on the supply and demand sides, recognized the disconnect between ASGM and the finance communities. They also noted the issues of conflict, legal status and trust.

GIIN Investment Risk Categories	GIIN Rank	Themes Feeding into Risk Categories (Key: > 5 occurrences; > 10 occurrences)	Rank (Total # of occurrences)
Business model execution and management risk generating lower profits than anticipated due to ineffective management	**1**	▶ Not yet able to deliver attractive returns ▶ Disconnected from finance world ▶ Challenging and complex sector ▶ Opaque management structures/lack of accountability ▶ Unknown production or uncertain or low ▶ Transient miners, ad hoc and disordered ▶ Margins are too tight in ASGM ▶ Unclear investment needs ▶ Lack of trust (with or between ASGM groups) ▶ Lack of financial literacy (no reports, accounting) ▶ It is isolated with lack of on ground presence for assurance	2 (42)
Country and currency risk resulting from political, regulatory, economic or currency changes	**2**	▶ Lack of government support or clear regulation/law	6 = (4)
Liquidity and exit risk resulting from being unable to exit the investment as planned	**3**	▶ Inability to provide collateral and risk of default	6 = (4)
Macroeconomic risk resulting from regional or global trends	**4**	n/a	7 = (0)
Financing risk resulting from the investee being unable to raise further capital to grow	5	▶ Not yet able to scale ▶ Not yet able to deliver attractive returns ▶ The investment opportunity is too small	4 (12)
Perception and reputational risks resulting in damages to the investor or investees reputation	6	▶ Criminal activity including money laundering ▶ Unknown legal status/or illegal ▶ Conflict with formal mining ▶ Does not fit investment mandate ▶ Mining itself is negative ▶ Child labor ▶ Engaging would bring a reputational risk ▶ Human rights abuses (gender, forced labor) ▶ Mercury use ▶ Responsible for environmental destruction ▶ Risk of perpetrating inequality ("elite")	1 (76)
Market demand and competition risk resulting from a lower than anticipated demand for the investees product or competition	7	n/a	7 = (0)
ESG risk resulting from noncompliance with environmental social or governance criteria	8	Overlap with aspects of GIIN category 1 and 6 including: ▶ Human rights abuses (gender, forced labor) ▶ Transient miners, ad hoc and disordered ▶ Conflict with formal mining ▶ Child labor ▶ Responsible for environmental destruction	3 (35)*
Impact risk resulting from a failure to achieve the desired social economic or environmental risk	9	▶ Current inability to deliver on ESG or impact metrics	5 (5)
Overarching barrier feeding risk across multiple categories:	n/a	▶ Recognition ASGM is poorly understood (driven by misperceptions and newness)	n/a (8)

The information presented in this table is derived from discussions held during the course of this study, it is for guidance purposes to give insights into risks most prominently associated with ASGM and does not claim statistical significance. Results were analysed against investment risk categories as categorised by GIIN.
**Note these occurrences are double counted due to interpreted overlap of risks falling into GIIN category 1 and 6 also applying to GIIN category 8*

Figure 10: Risk perception themes clustered into GIIN investment risk categories

Negative perceptions held by investors clearly work against the reputation of the sector, placing it in a high-risk category. Hundreds of delegates, including ASM owners and operators and representing 72 countries, gathered in Zambia in 2018 to discuss this, along with other challenges. The outcome was the Mosi-oa-Tunya declaration.[9] In recognition of the negative impact of generalized perceptions of ASM, this declaration called on the collective responsibility of all stakeholders to "eliminate any language, discourse and behavior that worsens the stigma associated with ASM; and act in a way that empowers miners to chart their own vision of development".

There is an opportunity to improve the perception of the sector and, indeed, not all interviewees expressed negative opinions of ASGM. Positive attributes identified during interviews included ASGM's being knowledgeable about ore bodies, entrepreneurial, hardworking, and constituting a good investment. There was also recognition by some interviewed that not all ASGM is illegal and an acknowledgement that ASGM can have a positive economic impact in local communities.

Risk profile of ASGM

ASGM perceptions were clustered and mapped onto the GIIN risk categories (first shown in Figure 5) to guide ASGM projects in prioritizing their de-risking efforts, Figure 10. This research revealed that the majority of ASGM concerns fall into 1) perception and reputational risk which has overlap with ESG risk, and 2) business model execution and management risk and categories.

In some cases, the perception of risk may be heightened by the sweeping generalizations around ASGM and overall negative narrative in the media, or by interactions with ASGM through investing activities in large-scale mining. In other cases, investors may be lacking awareness of specific ASGM risks having simply never properly considered the sector, as is indicated by the relatively low volume of negative associations returned by those who were interested in engaging with ASGM.

Many aspects of investment risk in ASGM are not that different from investing in agriculture or other impact opportunities. De-risking this sector comes down to risk management and reframing the ASGM narrative, which could be aided by careful segmentation of ASGM, as will be discussed in Section 5. However, there are some risks specific to ASGM that are fundamental and must be mitigated. For example, a lack of technical exploration or resource-definition studies might cast doubt on the expected life of the mine, or unclear mineral rights might undermine the legality of the business operation itself. If an ASGM project does not have an attractive risk-versus-return profile (Figure 7)—whether that return is measured financially or by its development impact—it can simply not compete with other more investable projects on the market.

Understanding how investment risk is evaluated by investors enables ASGM projects to better proactively mitigate it and present their strategies to prospective investors.

Regulations, standards and guidelines

Formal finance operates within domestic and international legal frameworks and must comply with those systems' requirements, which usually preclude engagement with informal parts of the economy. Barriers faced by formal-finance investors investing in ASGM may include regulation of foreign investment or ownership; inconsistent or unpredictable policy for foreign direct investment and taxes; interest rate caps; limited or non-existent reporting regulations; an absence of national regulation for impact investing; and restrictive application or interpretation of fiduciary duty (the legal and ethical responsibility of the investor) (GIIN, 2019).

Ensuring compliance to regulations and standards requires extensive due diligence and continued monitoring. In the case of ASGM, this cost may be considered prohibitive, in particular in countries perceived as high-risk, such as the DRC (Sofala Partners and BetterChain, 2019). In some cases, investment

9 www.developmentminerals.org/index.php/en/resource/studies-handbooks?view=download&id=39&usg=AOvVaw1p2Hwtx2DTTVEkTCB60wic

may result in conflicts of fiduciary duty, in which investors can simply not deliver appropriate risk-adjusted financial returns and comply with internal and external rules and regulations.

During the interviews for this paper, several regulations, standards and guidelines were highlighted as being important. These are organized in Figure 11 by type and the frequency of referencing by interviewees. The most frequently-cited considerations are adherence to: 1) internal due diligence, 2) government or national legislation, and 3) in-house ESG criteria. The GIIN, Equator principles, Principles for Responsible Mining, IFC Performance Standards, UN Global Compact, and Sustainable Development Goals were also noted by some as considerations. Generally, only gold offtakers are considering requiring or encouraging ASGM and gold-specific standards or guidelines, including specifically Fairmined, Fairtrade, Better Gold Initiative, LBMA, CRAFT and the Impact Facility's criteria and Gold Escalator.

Also, of general note are geographic considerations identified during interviews and research. The importance of the presence of, and adherence to, national mining legislation was revealed as an important theme. Some investors are simply unable to work in certain areas, such as the DRC, due to restrictions on financial transactions. Countries on sanctions lists are also excluded.

Potential investors into ASGM might perceive international regulations or standards as prohibitive to ASGM engagement. International regulations may have inadvertently restricted flows of capital in particular to conflict-affected or high-risk areas. On the other hand, one interviewee identified revised OECD guidelines that create the potential for wider engagement. The presence of more inclusive guidelines for ASGM engagement may be leveraged to raise awareness and participation among the wider investing community. Understanding of potential compliance considerations faced by various sources of finance enables ASGM projects to be proactive in their self-assessment, where required, against key standards or standard equivalence tools such as the Impact Facility's "Impact Escalator".[10]

10 https://impactfacility.com/blog/the-impact-escalator-2-0/

Standard, guidelines or accountability mechanism referenced	Total number of occurrences	Status				Finance Source							
		Experts (non-investors)	Engagers	Non engagers	Interested	Donor and Grant Finance	Impact Investors	Mining Investors	Mining Companies	Offtakers	Commercial Lenders	Development Bank	Individual Equity Investors
Responsible sourcing standards or guidelines*	10		8	1	1		2			7	1		
Internal due diligence	9		5		1		5			1	1	1	1
Government/national legislation	5	2	1	1	1						2	1	1
In house ESG criteria/monitoring	5		2	3			3			1	1		
Accountability to public market	3			3				3					
GIIN and IRIS (impactful investing)	3			1	2		3						
UN Global Compact, Principles for Responsible Investing and IFC Performance standards (sustainable investing)**	3			3				3					
SDGs	2	1		1							1		
Accountability to shareholders	2							2					
Compliance with sanction list	1		1				1						
Equator principles (responsible investing)***	1			1				1					

The information presented in this table is derived from discussions held during the course of this study, it is for guidance purposes to give insights into common standards, guidelines or accountability mechanisms cited by: a) investors from different finance sources or b) those engaging, not engaging or interested.

**Including Better Gold Initiative (1), Craft (1), Fairmined (1), Fairtrade (1), LBMA (1), Impact Facility Escalator (2), OECD (3)*
***Mitigating risk by managing environmental and social risk in project finance, a minimum standard for due diligence to support responsible risk decision-making*
**** Sustainable and socially responsible investing considering ESG best practice*

Figure 11: Summary of standards, guidelines and regulatory considerations flagged during interviews

Section 3. The curve of adoption – Accessing “innovator” finance

Some investors are willing to engage with ASGM and are even incentivized by the opportunity to be first movers in a new investment sector. Focusing on securing investment from these investors first offers ASGM an opportunity to begin building a track record as an investable sector.

As mapped on the investment curve of adoption in Figure 12 (based on Rodgers, 2003), it is possible to see that there are multiple “archetypes” that engage with an innovative product or service at different stages as the market matures. Innovators are visionary and creative with a high risk tolerance; Early Adopters seek a competitive or strategic advantage with a view to reinventing the mainstream; the Early Majority is cost sensitive and risk averse, and seek proven concepts and simplicity; the Late Majority are highly conservative, risk averse and compliant with social norms; and finally, the Laggards are last to accept, and may be driven to do so by external factors (Robinson, 2009). Those investing early in the curve of adoption—the innovators and early adopters—can secure a competitive business advantage (Martin and Lohin, 2016).

Looking to other, more-established sectors can shed light on the future for ASGM as an investment prospect as it progresses along the curve of adoption. One example is the “fair sourcing” movement that started with agricultural commodities and drove impact investment into associated small and medium-sized enterprises. By 2014 US$2.151 billion of impact finance was invested into food and agriculture and by 2018 this had more than doubled to US$5.048 billion. By 2019 91% of investors surveyed by the Global Impact Investor Network (GIIN) were active in this sector, with only 2% withdrawing and the remaining 7% interested to assess it for investment (GIIN, 2019).

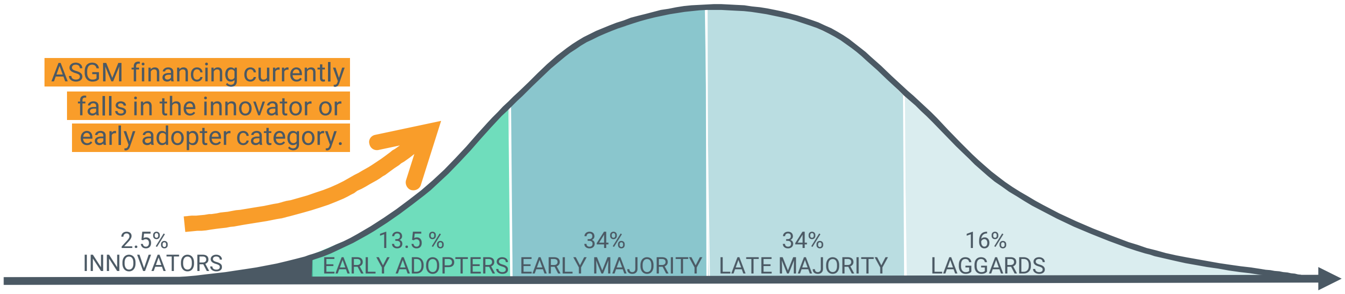
Applying the curve of adoption to ASGM

The responsible sourcing movement is now well documented in gold, and the demand for responsible ASGM gold is outstripping supply (Hentschel et al., 2018), suggesting that this sector can realize impact potential in parallel with meeting market needs driven by market growth. Based on the curve of adoption it can be inferred that, over time, ASGM has the potential to become more widely accepted as an impact investment sector.

Different investor archetypes will be willing to enter the ASGM sector at different points on the “investment continuum” described above. Results from the interviews have been mapped onto the curve of adoption to broadly define the spread of investors, better understand where the ASGM sector presently sits on the curve and, more importantly, identify the characteristics of innovators and early adopters, those either already investing or interested in doing so.

Key insights for the ASGM sector from Figure 12 include:

- Innovators and early adopters span multiple categories, including offtakers, impact investors (including debt from a family office, social impact bonds, and blended finance combining DFI and national commercial banks), donor and grant finance, responsible equity investment (as private investors or an investor consortium) and investment through ASM-mining partnerships. Entities such as national banks may be viewed as more traditional or risk-averse sources of finance, but interviews revealed that some, with the right support, might be willing to engage with ASGM. This confirms that it may be more effective to segment by investor archetype than finance type, since innovators and



Commodity Trader (blending impact investment and streaming agreement) already engaging with one ASM group **Private equity investor** (with hybrid Impact focus) Invested in one ASGM with local partner **Impact Investment** through social enterprise/Family Fund hybrid actively investing in and engaged with ASGM project **Grant funding** (to unlock commercial loan) actively invested in ASGM **ASM & Corporate Partnership** (non-gold) need driven innovation that led to seeking and experiencing a business advantage **Local lending bank & DFI** disbursing loans to ASGM **Refinery** investing in ASGM to promote change in supply chain and eventually demonstrate commercial viability **Refinery** investing in ASGM as corporate responsibility **Grant funding** for ASGM social enterprise **Private equity investor consortium** profit sharing agreement with ASGM **Impact Investor** invested and exited from ASGM project	**National commercial bank** interested to loan to ASGM with a 3rd party facilitator including a guarantor function **Social Impact Bond** scoping and interested in developing an innovative product for ASGM **Impact Investing** (blended finance) not currently investing in ASGM but interested and risk tolerant **Impact Investing** interested to engage through programmatic investing	**Cooperative bank** expressed some interest in ASGM but were limited by lack of evidence of manageable ESG footprint **Impact Investing** (general) ASGM is just not mainstream enough for the Impact Investing majority **Impact Investing** perceive ASGM as too young and unproven but may revisit this in 2-4 years as they see the impact potential **Impact Investing** perceive ASGM as not ready but should, over time, be able to deliver market rates and manage risk **Foundation** have reviewed ASGM projects, but the sector is not ready **Impact Investing** are interested in ASGM but at a firm level it would require >2Million investment size	**Private equity fund** Simply not "investor grade" and too much risk. May consider investing into ASGM through a 3rd party with a view of cleaning up the sector (impact) **Private equity** unable to invest under current structure as fund targets USD20M transactions and ASGM is perceived as very high risk, however sustainability is becoming of more longer-term interest **Mining company** (general) perception is ASGM as a risk however if co-existence becomes more proven it (investment) may become a viable solution to conflict and companies are becoming more interested in this **Impact Investor** ASGM is not currently investable	**Resource fund** unwilling and unable to invest in ASGM. It is not perceived as a commercial opportunity and the lack of corporate structure is a risk. They are limited by shareholder obligations and see ASGM as a development challenge **Resource fund** unwilling and unable to invest in ASGM, the only invest in publicly listed entities. ASGM is outside the remit of resource funds **Resource fund** unable to invest in ASGM as listed with a shareholder mandate but if mining companies start investing in ASGM, resource funds may follow **Impact Investor** not willing to consider ASGM as it is not a sector they support **Refinery** where ASGM is not part of the business model **Investment banking** ASGM is generally not appropriate and poorly understood. Lower risk, stable investments are typically sought **National bank** cannot finance ASGM due to current due diligence requirements **Impact Investor** has no plans to finance any kind of mining project

Note: Interviewees were placed on the curve of adoption where they were interpreted to fit based on the discussion. This plot gives general insights into different financing sources and where they might fall on the curve of adoption. Non-responses may not necessarily indicate a disinterest in ASGM.

Figure 12: Interpreted archetypes of supply side interviews mapped on to the curve of adoption. Artisanal and small-scale gold mining currently accesses formal finance from the innovators (visionaries with high risk tolerance) and the early adopters (seeking a competitive advantage. Unlocking investment from the early majority requires proof of concept that the risks of investing in ASGM can be managed. (Based on curve of adoption theory, Rogers, 2003)

early adopters are not confined to specific finance segments. They might be impact investors with a high-impact high-risk component in an otherwise stable investment portfolio, philanthropic foundations aligning an investment-led approach with their mission, offtakers driven by a need to generate positive impact in their supply chain, mining companies seeking to de-risk their project, or innovative social entrepreneurs.

- Key motivations present in those who are likely to invest and actively engage include one or more of the following; 1) they are mission or impact-driven, 2) are seeking a competitive advantage, 3) are willing to take more risk, 4) are able to secure return on investment or believe they will in the long run. Innovators and early adopters recognize the high-risk and (future) high-reward opportunity in ASGM by investing when the perceived risk is greater than real risk. These are the “trail blazing” entrepreneurs who see ASGM as a viable investment opportunity. They are willing to take the risk in return for the reward of de-risking the sector, fulfilling a philanthropic or impact mission, or having a competitive or first-mover advantage.
- Innovators and Early Adopters are more likely to be: high-net-worth and family-office impact investors; offtakers (who while not necessarily investors, can offer an interim solution to access to finance in the absence of investment from traditional sources of finance); non-institutional equity investors; mining companies (as a bridging solution); DFIs; and, under the right conditions, lending banks.
- Traditional mining finance, either private equity or resource funds, and large or mining-adverse impact funds are low-priority targets based on this research.

Innovators and early adopters in ASGM

By understanding what defines innovators and early adopters, ASGM projects can target their offerings to this segment and maximize their chances of securing finance, rather than diluting resources targeting the full spectrum of investor archetypes.

Key characteristics and motivations of innovators and early adopters were clustered to identify key themes to build an ASGM investor archetype (Figure 14). While these types of investor are clearly creating impact at the project level, they are also impacting ASGM at a sector level by de-risking it and supporting its evolution on the investment continuum. This has been the case in other investment sectors historically, but it is a story that is not commonly told (Bannick and Goldman 2012b).

Indication of investors from other segments of the curve of adoption

- Early Majority - There is evidence of an early majority; there are some interested parties waiting for proof of concept, a track record of impact metrics, and evidence of ASGM investees’ ability to deliver on a repayment schedule.
- Late Majority - One investor was currently restricted by their investment mandate from investing in mining but was impressed by the previously-unknown impact opportunity presented by ASGM. They might form part of a late majority as ASGM investing becomes normalized.
- Laggards - Others, laggards, are just not able to engage in this space now and possibly ever due to their risk-averse nature, exclusionary categories for mining, shareholder obligations or publicly-traded nature.

ASGM Engager Characteristics	Evidence
These are risk takers, excited by the opportunity in ASGM (50%)	They specifically define themselves as risk takers or have genuine enthusiasm and passion for the opportunity within financing ASGM, seeing it as interesting or challenging with finance with real impact potential.
They are not publicly traded (100%)	Those identified and interviewed fall under the off-taker, mining company, impact investor, commercial bank, donor and grant finance or private equity categories.
They are willing to work with in imperfect system (40%)	They recognize the present limitations of the sector (namely the limited ability to deliver ESG impact and limited or no economic viability at pilot stage) and take a longer-term view. They engage without "perfect becoming the enemy of good enough
They made significant time investments, learning along the way (40%)	Many of the investors refer to significant commitments (>4 years) and recognize that a substantial amount of learning is required.
They are actively involved and have/had trusted people on the ground (60%)	Trust and personal connections are the way in. Often, they are actively engaged and working with the site. Many specifically emphasized this highlighting that, "you also can't be a passive investor in ASGM you need to be involved and active or have someone your very much trust involved" for example. This approach may not appeal to the finance world at large.
They are entrepreneurial and recognize and follow the market opportunity or business case (70%)	There is typically an entrepreneurial business motivation (in parallel with impact). Examples include; A responsible investor was presented an ASGM project while working on another project and recognized an investment opportunity; An impact investor while working on impact investing in agricultural projects, noticed youth groups that were previously farming had shifted to ASM at old colonial mine sites and around the time the gold price jumped from $400 – 900$/oz, and followed this new impact opportunity; A commodity trader identified a serious case of commercial viability in ASGM and recognized engaging early will bring a first mover advantage and engagement may actually be a benefit to PR; An impact investor that wanted to demonstrate the ASGM thesis; A mining company interfacing with ASM realized they could not remove them and that there was a benefit to integrating ASM in their business model as they are a hardworking, knowledgeable workforce. This reduced risk; A refinery decided to invest in ASGM even though it was not yet commercially viable, but they wanted to engage to start de-risking and promote change. The risk of not engaging was perceived as worse than the risk of engaging; A refinery was specifically interested in a potential value add downstream if they could demonstrate impact though ASGM engagement and also saw it as a corporate responsibility to establish effective ASGM supply chains as a responsible actor in the field.
They leverage their presence and experience in certain geographies in mining or other industries (40%)	Many were already working in the region on other impact led projects or on their core business and came across ASM. Examples include; An impact investor saw the opportunity recognizing that ASGM are the same communities as fair trade coffee or tea, so they could leverage impact experience that translates sectors; A refinery that already had a footprint and a network on the ground on other projects that were proximal to ASGM; An equity investor that was working on a water project in country and came across ASGM.
They recognize their role in unlocking the impact potential of the sector (60%)	Many are motivated by impact or responsibility. Examples include; making sure ASM are not left out of supply chain, governance problems should not be village level programs; Investing in ASGM could unlock other impact opportunities such as basic jewelry production in country; ASM is just a small business, like a farmer but underground. You can make money, but you can also make impact demonstrating mercury free processing is an option; can create vital impact with simple technology to improve environment and living standards; It's the right thing to do; If they can have an impact (beyond economic impact) in parallel with facilitating gold offtake from ASGM this is even better; they wanted do demonstrate economic, social and environmental impact was possible in ASGM plus return on investment.

Note: Total number of discussions with ASGM engagers was 10 including 2 with an individual having been involved or facilitated an access to finance solution. Comments were raised during semi-structured interviews rather than a quantitative survey. Outputs were clustered around common themes highlighted during discussions to reveal key factors that may characterise or enable financing of ASGM at this stage.

Figure 13: The ASGM Investor Archetype - Characteristics of an ASGM investor

Section 4. Investment continuum – Looking forward

Innovator and early adopter investors are key in the initial search for finance for ASGM, but the story does not end with them. Like other sectors, ASGM will, over time, progress along an "investment continuum", eventually reaching a bigger investor audience.

The "investment continuum" (Bannick and Goldman 2012b) demonstrates how new investment sectors, specifically those which offer both impact and financial returns, have the potential to evolve until they become mainstream investment sectors. The investors along this continuum have different target returns and profiles. Figure 14 shows how different sources of finance have different roles in building a new impact investing sector as they move along the continuum. Market infrastructure builders are the catalyst for a new sector, followed by market innovators and lastly market scalers. The different finance sources engaging at these various stages are guided by different mandates. The key is for investees to target the right finance at the right time (Bannick and Goldman, 2012a).

The investment continuum has been a useful instrument to explain maturation in other investment sectors, such as microfinance. Most microfinance organizations (MFIs) were established initially as grant-funded non-profits but this sector now operates at scale (Bannick and Goldman, 2012b).

ASGM can be located at the early stages of the continuum, but there is no reason why it should remain there. Rather, it should be anticipated that responsible ASGM enterprises will progress and eventually access mainstream finance options across the full continuum, like any other small or medium-sized enterprise. Figure 14 adapts the investment continuum to ASGM and considers its current position on that continuum. By understanding the continuum, ASGM projects can position themselves to take advantage of new financing opportunities that will be unlocked as ASGM evolves as a sector. However, there will likely remain certain geographic regions or ASGM sites that require philanthropy-funded capacity building irrespective of an overall maturing of the ASGM sector on a global level.

Current place on the continuum: Building market infrastructure

Currently the ASGM sector is at the market infrastructure-building stage. Market infrastructure is largely built with philanthropic and impact-only finance—that is, finance for which the mandate is purely one with no expectation of financial gain. There is strong evidence that access to grant and donor funding has been broadly unlocked for ASGM and is being used in several different ways. This type of finance, if used effectively, enables the demonstration of sufficient proof of concept, often with the support of intermediaries, to enable the subsequent involvement of early-mover investors who are described in this model as market innovators.

There are several project intermediaries that seek to demonstrate the proof of concept necessary to unlock formal, commercial sources of finance at scale. They draw on blended finance models or were seeded with grant and donor funding to build capacity in ASM projects, develop investable ASM portfolios and pilot lending models. Examples include: the Barksanem social enterprise[11] based in Burkina Faso, which raises blended finance to deploy technology to ASGM; the UK aid-funded Sustainable Development Mining in Rwanda (SDMR) project[12] tasked with creating an enabling business environment through various interventions including access to finance in 3TG mining; and the Impact Facility for Sustainable Mining

11 https://www.barksanem.com/offering/?lang=en
12 https://sdmr.co.rw

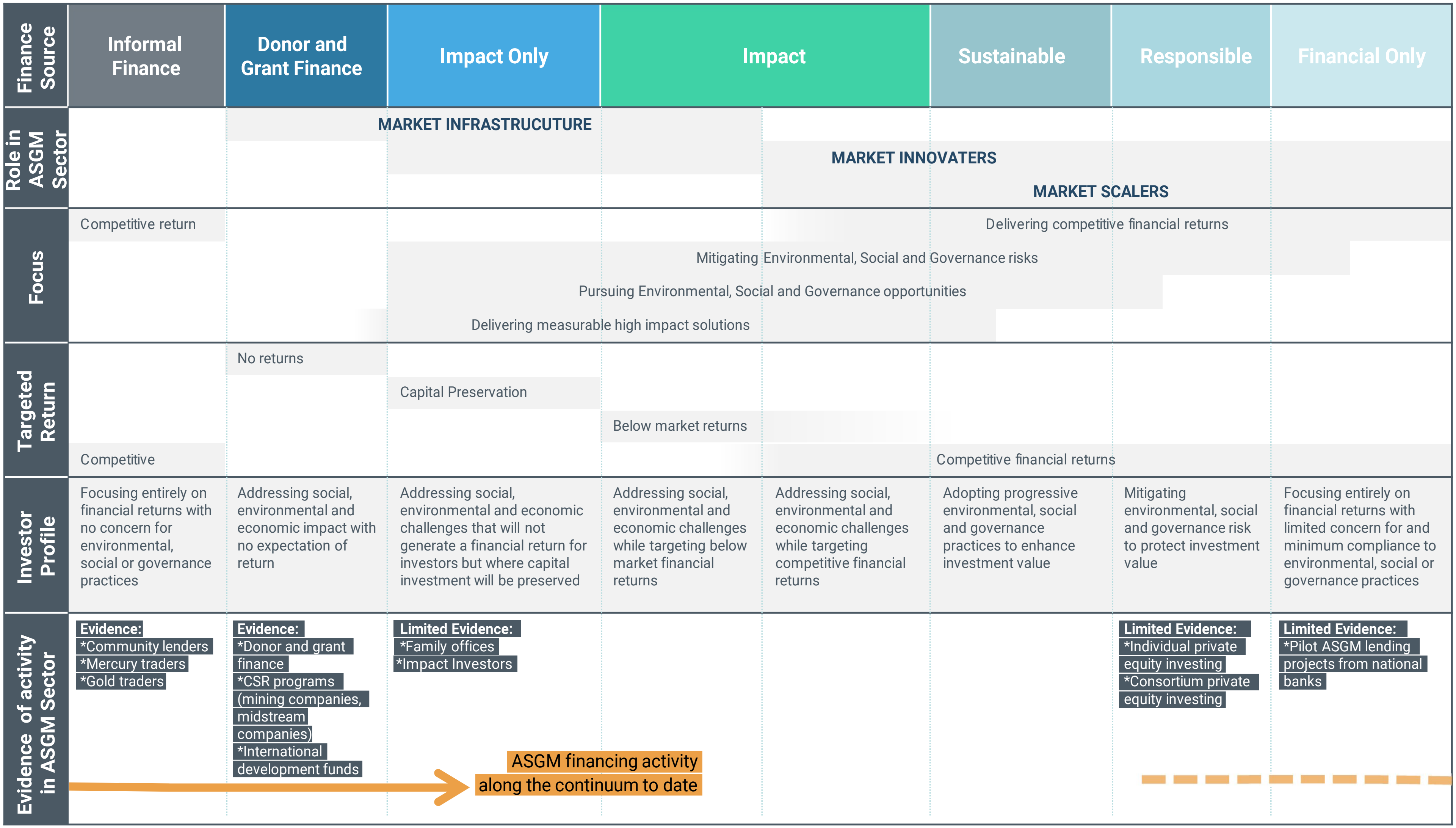


Figure 14: Finance types mapped onto an investment continuum. Traditionally ASGM has been financed by the informal economy, seeking financial returns. To date capital channeled into ASGM from the formal economy falls primarily into the donor and grant category with limited evidence of impact-only, responsible equity investing and finance only lending. (Figure based on Asset Allocation Working Group, 2014 and Bannick and Goldman, 2012b).

Communities[13], which has leveraged donor and grant-funding to build ASGM capacity and infrastructure, as well as tools to enable commercial loans across a portfolio of ASGM projects. The planetGOLD program, meanwhile, seeks to build structures and partnerships to enable its ASGM country projects to graduate onto formal finance and continue to realize environmental, social and economic improvements after the life of the initial grant funding.

Donor or grant finance can also be employed to de-risk the engagement of commercial lenders. One example is the Sustainable Artisanal Mining Project[14] in Mongolia. The Swiss Agency for Development and Cooperation provided a guarantor function for a commercial lending bank to successfully disburse US$60,000 to ASGM miners in Mongolia.[15] In the absence of widespread service provision or investment from the formal finance sector, offtakers and mining companies may provide interim solutions. They may be particularly motivated to invest in ASGM where there is a clear business advantage or corporate responsibility to do so. This may be through direct investments or through public private partnerships. The Minera Yanaquihua project[16] in Peru is an example of cooperation between industrial mining and ASGM, facilitated by the NGO Solidaridad, to enable productivity and operational improvements. Another example is that of the Goldlake Group[17] which integrated artisanal mining cooperatives into its business and, through a mutually-beneficial agreement, invested in productivity improvements in return for demonstrative commitment to improved health, safety, environment and labor practices.

However, while offtakers and mining companies may play a critical role in supporting the building of market infrastructure, and may even be acting as market innovators in the absence of other investors during the early stages of the ASGM sector's evolution, they cannot replace the finance sector in the long term. ASGM should be a legitimate investable sector in its own right, not necessarily tied to offtake agreements, corporate responsibility objectives, premiums or other subsidized models. Indeed, decoupling investment from the supply chain should be the desired natural progression as domestic and international sources of finance open up to ASGM.

On the horizon: First signs of market innovators

Market innovators spot the profit-potential of a sector before other investors, and are willing to allocate funds even though there is limited track record or data on the opportunity. They tend to have a higher risk-threshold and a mandate for 'patient' capital, which means their expectation for the timing of loan repayment or exit can extend to many years. They may, in some cases, be willing to accept below-market rates of return.

There are some examples of impact investors engaging with ASGM, driven by the opportunity to generate impact and unlock potential in a new investment sector. Fair Congo is an example where impact investment from the Chambers Federation, who first invested in ASGM in Kenya[18] and subsequently took that learning to the DRC,[19] has been deployed to prove ASGM as a viable and impactful investment sector even in conflict-affected areas. Sotrami in Peru is another example of impact investing in which a high five-figure sum was invested into the expansion of a small mining operation.[20] More recently, the Impact Facility has received investment from the impact investor Ceniarth, alongside other institutions supported by Genesis Charitable Trust and the charitable donor Comic Relief, whom support the investment-led approach for developing ASGM.

There are also limited examples of formal lending from responsible, finance-first investors in ASGM. The Clean Gold Community Solutions Program[21] in Ecuador

13 https://www.impactfacility.com
14 http://sam.mn/sustainable-artisanal-mining-project/
15 (personal communication, Singo, 2019)
16 https://www.solidaridadnetwork.org/content/minera-yanaquihua-mysac
17 http://www.goldlake.co.uk/public/File/Goldlake/SustainabilityReport/Sustainability-Report.pdf
18 http://chambersfederation.com/kenya-mining-cooperative-project/
19 http://chambersfederation.com/faircongo/
20 http://www.impact-finance.com/en/ifm-project-profiles?projetID=4
21 http://www.sefcleangold.com

enabled investment from a private equity investor consortium through a profit-sharing agreement with ASGM, facilitated by Sustainable Economic Futures (SEF). As explored in Section 1, by addressing the economic stability of ASGM enterprises, and by ensuring buy-in from ASGM first and foremost, this responsible equity investing model could scale over time, unlocking additional social, economic and environmental improvements in parallel.

For the future: market scaling

Market scalers are less risk tolerant and seek proven concepts with competitive returns. They will wait for the market innovators to sufficiently de-risk the sector and demonstrate market rates of return and, if the scalers are impact investors, measurable development impact results.

The demand side must evolve too

For the supply side to invest, ASGM enterprises, intermediaries, and the sector must build its capacity to absorb investment and create a successful track record. Initially, village savings and loan associations, for example, may help build financial literacy and a basic financial track record for ASGM enterprises, but they have limitations and don't naturally scale. If they are working with a grant or donor-funded social venture, they may have an opportunity to grow their businesses and demonstrate they can be responsible investees.

Once the financial capacity of a project is strengthened, ASGM enterprises will have a sufficient level of financial literacy and will have better defined their investment needs. Small loans in low-to-mid-five figure amounts may be appropriate for the investment needs and financial capacity of ASGM enterprises at this level. Innovators may be willing to invest at this early stage as they recognize the high-risk high-reward opportunity at this stage. These investors may be social entrepreneurs, high-net-worth individuals, midstream companies, or early-mover impact investors, for example.

Following the demonstrated ability of ASGM projects to repay loans, impact investment capital may become increasingly available, but this must go hand in hand with scale. Clustering ASGM enterprises in investment portfolios or building centralized processing hubs makes investment at scale increasingly possible. For many, the minimum investment exceeds millions of dollars and so will require established intermediaries, such as social ventures, or equity investor consortiums to facilitate investments.

As both the finance and ASGM sectors mature, ASGM enterprises will be able to access normal financial services for small or medium-sized enterprises from banks.

Enabling factors

The demand side should focus concretely on building enabling factors into ASGM projects and conveying their presence in investment propositions to help drive the sector forward along the maturing investment continuum. The Enabling Factors presented in Figure 15 were identified in thirty-three of the interviews and clustered on common themes regarding what would enable engagement from the various sources of finance reviewed by this paper. For some interviewees, such as private equity mining funds, resource funds and impact investors there was found to be nothing that would enable them to engage at this point in time.

For others, priority factors included:

- Structural de-risking, including blended finance, collateral or underwriting;
- Trusted organizations, presence of local people and teams on the ground to ensure strong oversight;
- A financial track record with a good business-led approach, a clear legal status, compliance to various regulations and evidence of production and technical competence;
- Basic knowledge on ASGM in the investment sector;
- Being able to deliver a market rate of return; and
- Evidence of government engagement, support or an enabling policy environment.

Enabling factor	SUM (33)	ASGM Supply side	Grant and Donor	Development Finance Institution	Impact investors	Offtakers	Mining Company	Non-institutional Equity investor	Mining Investors	Banks
Structural de-risking, leveraging collateral, blended finance, underwriting but be cognizant if using assets as collateral they may be hard to recover	11	2	1	1	3	1				3
Trust with well run organizations, presence of local staff or field staff with strong oversight +/- partnerships	11	1			6	2	1	1		
Track record of gold production and supply +/- geology information on the deposit and feasibility study	10			1	2	3		1		3
Compliance to regulations or guidelines (see Figure 12)	10		1		3	3				3
Financial track record do demonstrate financially sustainable enterprises backed by business model, cash flow projections and good financial literacy etc.	10			1	3	1		1		4
Clear legal status including a mining license and understanding of the rule of law	9	2		1		1	1			4
Building knowledge of ASGM in investor sector	7	2			3			1		1
Demonstrate ability to deliver a market rate of return	7	0			4			2		1
Evidence of government engagement, support and enabling ASGM policy	7	2			2		1	1	1	1
Nothing - ASGM is not investable	7	0			3				4	
Strengthening of local finance sector working with existing actors where possible	6	1	2		2					1
Clear understand of who is benefiting, their profile and demographics, (including assurance that funding is not fueling corruption or propagating the elite),	5				1		1			3
Minimize risk (e.g. jurisdiction, ESG, mining))	5		1		0	1				3
Innovative investment vehicles that can invest in ASGM, innovation on financing structures and mechanisms	4		1		3					
Demonstrate ability to deliver capital preservation	3				2					1
Demonstrate ability scale	3		1		2					
Transparent gold sales and supply chain	3		1		1					1
Track record of impact with clear impact messaging, metrics and target	3				3					
A structured investment proposition, presented in investor terminology e.g. internal rate of return, sensitivity analysis, anticipated break even point, anticipated investment term etc.	3		1		1			1		
Demonstrate non-dependency on grants	2				2					
Investing opportunity through a 3rd party	2			1					1	
Investable projects presented to market	2		1		1					
Evidence ASGM dedicated to formalization and/or continuous improvement	2					1				1
Mitigating strategy to overcome value destruction, for example dealing with job destruction due to introduction of new technology	1				1					
Profit sharing agreement with ASGM buy-in	1							1		

Figure 15: Potential enabling factors for ASGM investment highlighted during interviews clustered around themes to give general insights

Section 5. Unlocking access to finance

Based on the insights gained from interviews and literature review, the following summarizes actionable recommendations to support ASGM projects in better targeting and securing investment most appropriate to their needs and in elevating the sector as a whole as an investable proposition. These are presented across three themes:

	Target	What	Why
1	Demand side	Investment-centric project design	Define and deliver investable propositions
2	Supply side	Mapping the supply side	Effectively allocate resources to target appropriate investment
3	Sector level	Advocacy and knowledge sharing	Redefine ASGM as a viable frontier investment sector

1. Demand side – Investment centric project design to define and deliver investable propositions

Build capacity of demand side by leveraging grant and donor money to demonstrate impact and financial track record that will benefit the sector overall

The social ventures on the demand side can focus on building their capacity and that of ASGM enterprises to develop "attractive ventures" that better resonate with the expectations of investors. ASGM projects can leverage grant and donor money to build the required capacity among ASGM investees and social venture or intermediary that is facilitating the project. Donor or grant funding should not result in dependency, but rather should be used to make an enterprise investment ready with evidence of business accountability and demonstrable development impact.

Some examples include:

- Building capacity of convening points (e.g. social ventures/intermediaries) that understand ASGM and can be investor-facing.
- Building partnerships with existing local actors, for example local finance service providers, to establish a local team with a presence on the ground.
- Enable ASGM to build financial literacy, establish finance and accounting systems, and articulate their investment needs, business model, and projected cash flow.
- Ensuring that grant-funded investment pilots produce a data-based track record to demonstrate that enterprises are financially sustainable and investees have the ability to repay loans and deliver on quantitative impact metrics. This may be through pay-per-use or lease equipment models to demonstrate both the capacity of the social venture and the ASGM enterprises to manage such financial arrangements.
- Building a track record of gold production and supply with geological information on the gold deposits and basic resource estimations to understand the potential life of the project.
- Building innovative investment vehicles and articulate financing structures and mechanisms that can facilitate investment in ASGM and have the potential to scale.

De-risk the project by addressing general and country specific risks

The results of the literature-review and interview phase revealed a range of perceived risks associated with ASGM (Figures 9 and 10). Ultimately ASGM projects can seek to demonstrate attractive risk-return profiles, as explained in Figure 7. To do so, ASGM projects can proactively seek to dispel, manage or mitigate risks ahead of seeking investment. Some examples, addressing concerns identified by interviewees, include:

- Building in structural de-risking to their project though blended finance, collateral, a guarantor function or underwriting to address default risk.
- Demonstrating compliance to appropriate standards (Figure 11) or an action plan towards formalization, and compliance to regulations or guidelines using a tool such as the Impact Facility's Escalator.
- Ensuring projects have necessary permits and an understanding of the rule of law.
- Reducing technical risk though documenting gold grades, projected and past gold supply and productivity, and conveying a basic understanding of the resource potential including the size of the ore deposit and understanding of gold mineralization and how to target new high-grade zones.
- Providing evidence of strong management, with a clear corporate structure and worker records. Social ventures facilitating investment, can demonstrate the presence of trusted management teams with local representation and insight to reduce management risk.
- Presenting clear indications of who is benefiting, their profile and demographics, including assurance that funding is not fueling corruption or propagating socio-economic inequality.

Certain regions carry specific perceived risks. Some examples of these specific risks for planetGOLD countries are summarized in Figure 16. These may be used as a starting point to consider country-specific de-risking to dispel, manage or even leverage perceptions to tell a unique impact story.

Define and articulate the investment proposition

In order to develop an investable opportunity, ASGM projects need first to profile their mine sites, understand their investment needs to then articulate the investment opportunity using investor "language".

Profiling may include an ESG baseline, a risk assessment, and mine records such as production, cash flow, worker demographics etc.

An ASGM enterprise's business plan, the resources required to achieve that plan, and gaps identified in the ESG baseline, will all help to determine investment needs and to identify the economic impact the investment would have. Understanding the business impact of the proposed investment will allow the ASGM project to better understand what rate of return it may be able to offer and under what repayment period. This will also improve the risk-return profile (Figure 7).

The write-up of the investment opportunity can include: why the investment is required; what it will be used for; the expected rate of return; expected investment term; how the enterprise will benefit (economic growth, and measurable impact if required); volumes of gold it may be able to deliver; a sensitivity analysis to understand best and worst-case scenarios; and underwriting to cover financial loss where possible (through partnership with a guarantor).

A pitch to a finance-first investor will be centered on risk and return from a financial perspective. Investors seeking impact will also seek a proposition that clearly outlines social, economic and environmental impacts, and the scalability and replicability of the investment model.

Theme	Examples of geography specific perceptions to manage or leverage
Ability to scale	Location may affect a projects attractiveness in terms of ability to scale e.g. Kenya is known for its artisanal gold projects but has perceived limited ability to scale due to the fragmented small-scale nature of the mining operations and fine gold. Others like Colombia and Peru are considered attractive given their larger volumes.
Conflict	Some perceive post conflict zones as a no-go area such as Colombia and indeed alluvial gold mining in Colombia has been associated with organized crime and the narcotics trade with 8% of artisanal gold extraction located in territories where coca is farmed (TDI, 2018). On the flip side some are actively interested in investing in conflicted affected high-risk areas and would like to replicate their experience in other high risk areas. If the project can demonstrate perceived risk is greater than real risk the investor stands to gain financially. Colombia, for example, presents a post conflict, economic empowerment opportunity. .
Distinct challenge (e.g. mercury pollution or indigenous rights)	There may be a distinct story, challenge or opportunity that can be built into the investment opportunity e.g. depending on project locations protecting biodiversity in the Amazon may be relevant in Peru, Colombia and Guyana. Some perceive ASGM as a driver for deforestation and mercury pollution in this highly sensitive region. Some regions have known links between mining and indigenous rights, for example in Peru or Colombia, this could be presented as an opportunity for improved economic empowerment of indigenous communities ensuring they better benefit from their mineral wealth.
Familiar geography	By targeting investors already active in the ASGM project area, for example the Great Lakes Region for Kenya, projects may be more likely to find investors comfortable investing there again whether or not they have experience in ASGM.
Child labor	Some perceive child labor as being higher risk in certain countries e.g. Burkina Faso (Pieth, 2019).
Landscape approach	There may be an attractive landscape approach where impact investors can enter first through a "known" industry or spread risk across multiple enterprises e.g. a landscape investment opportunity combining coffee, cocoa and gold. This could work well in Colombia for example.
Political unrest or instability	Some countries are perceived as less politically stable than others. For example, the 2019 GIIN survey revealed Kenya is on the list of countries considered at higher risk.
Governance	Indonesia for example may be perceived as highly challenging given the de-centralized governance system. There is also a track record of extensive and unregulated mercury use and pollution.

Note: The table presents general country specific considerations on perceived and real risks uncovered in both the literature and during discussions. This list is not exhaustive but provides some initial thoughts on how an awareness of country specific contexts are important to understand for risk mitigation, communication and presenting opportunities.

Figure 16: Examples of geographical perceptions that can be proactively dispelled, mitigated, or even in some cases, leveraged.

Additional potential motivating factors for investors may be included in an investment pitch. Some examples which emerged during this research include:

- ASGM is an undiscovered, small and medium-sized enterprise impact and investment sector; it is interesting and thought provoking.
- Investing in ASGM is not just investing in mining. It touches on many accepted themes of interest raised by various investors which could be leveraged, such as: rural livelihoods and income generation, energy access, gender, responsible supply chains and environmental improvements. For mining companies, it offers conflict-mitigation between ASGM and large mining.
- Investing in ASGM is an opportunity to create resilient businesses through bottom-up enterprise growth and employment opportunities for sustainable rural livelihoods, decoupling ASGM from supply chain financing dependency in the long term.
- Early investing in ASGM is an opportunity to create sector-level impact by unlocking investment at scale for ASGM once the necessary market infrastructure is in place.

2. Supply side – Mapping the supply side to effectively allocate resources to target appropriate investment

Mapping the supply side

Projects may conduct a preliminary mapping of the various possible sources of finance, from local to global entities, including information on their investment mandates, using Section 2 as a guide to begin their search for appropriate finance. This may be followed up with meetings or conversations with investors to better ascertain their potential interest in investing in ASGM.

Segmenting the supply side to reveal investors who exhibit "innovator" or "early adopter" qualities

One way to narrow the search is through segmentation of the sources of finance identified on the supply side. This is important as there is no one-size-fits-all within any one source. For example, impact investors are a hugely diverse sector in terms of the types of investment they target. ASGM projects should work with investors who exhibit characteristics of early engagers or innovators given the newness of ASGM as an investment sector as explained in Section 4, and Figures 12 and 13.

Figure 17 shows a checklist of common characteristics exhibited by those engaging or willing to engage with ASGM that may give a general indication as to the likelihood of a potential financer to be a fit for an ASGM project.

Innovator/Early Adopter investor characteristics (check all that apply)	
High risk tolerance	
Excited by the investment or impact opportunity in ASGM	
Not publicly traded	
Willing to make significant time investments in engage with the project and understand ASGM	
Willing to work with an imperfect system and learn along the way	
Willing to be actively involved	
They trust the project proponent people on the ground	
They are entrepreneurial	
They seek a competitive advantage	
They can leverage their presence or previous experience in the project geography	
They want to play a role in unlocking the potential of ASGM	
They do not need proof of concept	
They do not categorically exclude mining	
They are seeking to make investments X million and below	
Engaging with ASGM positively affects their business model (e.g. off-taker)	
Total*	

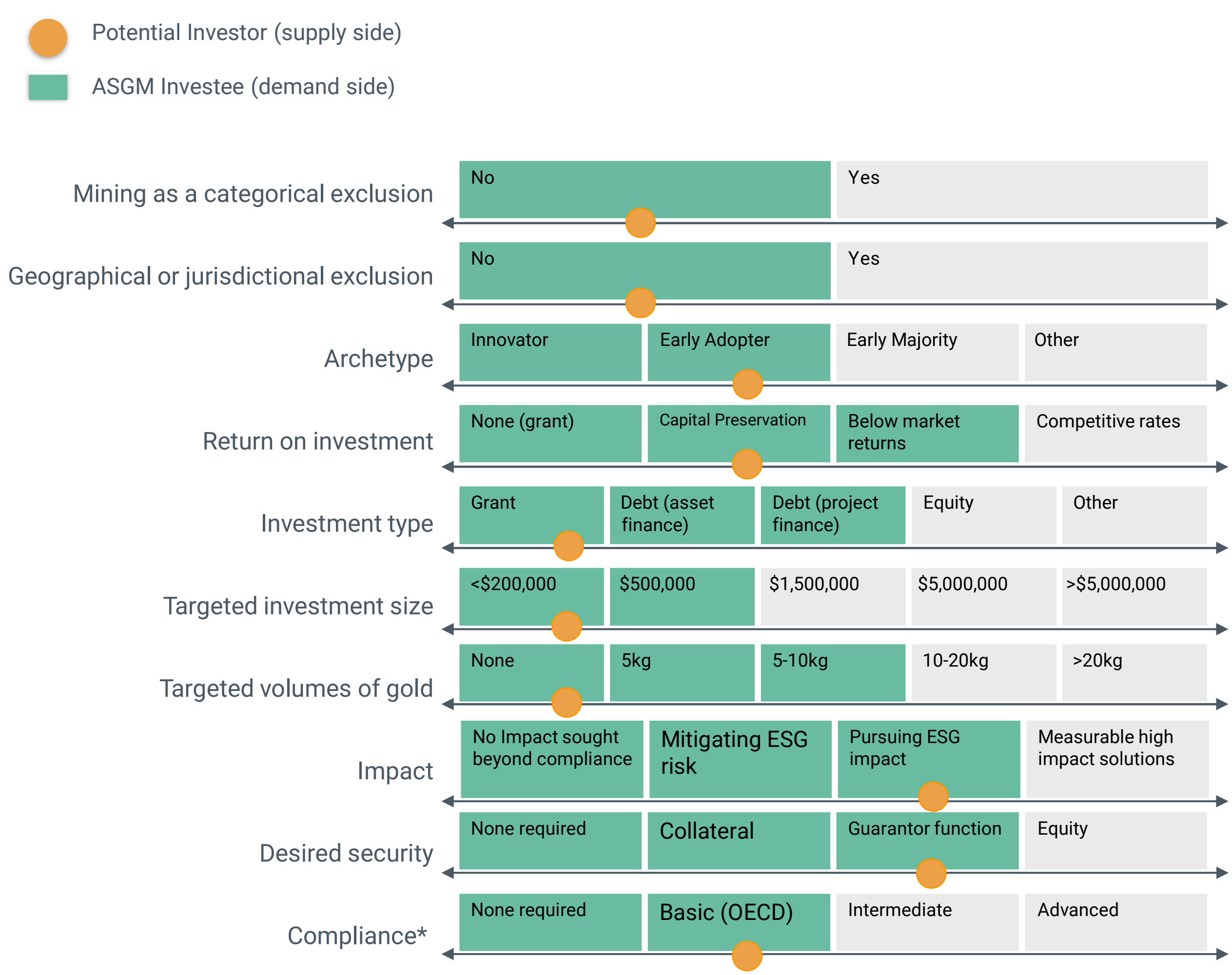
**A higher score indicates a higher likelihood of engagement based on a review of characteristics*

Figure 17: Sample checklist tool to guide identification of innovators or early adopters who may be more likely to engage with ASGM

Targeting investors whose supply side offering matches the demand side needs and offering

A second way to narrow the search for appropriate finance is through a simple matching exercise.

By first establishing their project needs, capacity and investment proposition, ASGM projects can prioritize resources targeting sources of finance that are likely to align with their investment proposition. A sample tool shown in Figure 18 illustrates this approach, designed to map out the ASGM project offering and investment needs in order to identify alignment with potential sources of finance when screening the supply side. In the example shown, the ASGM project meets or exceeds the expectations of the potential investor.



**See Impact Facility Impact Escalator equivalence tool*

Figure 18: Illustrative example of an ASGM project offering to enable a demand side and supply side match.

3. Sector level – Advocacy and knowledge sharing to redefine ASGM as a viable frontier investment sector

Segment the demand side to demonstrate that ASGM mining enterprises can be a positive force

Investors may not have the tools or knowledge they need to see beyond the generalized negative perceptions to identify investable opportunities in ASGM. Distinguishing illegal, non-investable cases from responsible, investable businesses may allow investors to see the part of the spectrum that is an investment opportunity.

Figure 9 showed that negative perceptions of ASGM far outweighed positive ones. Demonstrating the positive characteristics of ASGM enterprises and their wider impact both within and beyond their mining community is important in order to address this imbalance. The ASGM sector, its enterprises and social ventures, can collectively address the perception issues the sector faces and ensure the wider dissemination of "good news" stories, as well as stories that demonstrate proof of concept for financing ASGM.

Knowledge sharing and partnerships to create an enabling environment

One theme raised by interviewees was the importance of government engagement and support with clear legal frameworks and ASGM policy. If ASGM projects are to have the option to operate within the formal economy, they require support from government and policy makers to enable their transition. Some supporting factors might include lower export royalties for ASGM gold, or well-defined and accessible systems for the granting and maintaining of ASGM licenses. Integrated national financing frameworks may also be leveraged to implement financing at a national level in line with ASGM policy objectives and promote coherence between public and private financing. (UN, 2019).

Local partnerships with finance service providers are important, not only for project success but to ensure access to finance interventions do not undermine the evolution of local and national entities. Rather they might partner to enable local and national lenders to participate in ASGM investment and build domestic expertise in this sector. Working with local finance service providers will also enable scaling in hard to reach areas.

Many interviewees highlighted the need for more knowledge sharing on ASGM among the finance sector. The importance of framing ASGM investment propositions through an investor lens was also highlighted. By getting input from commercial finance entities and building relationships to facilitate bi-directional dialogue, finance and ASGM can better understand each other's needs.

Build a new narrative – Recognize ASGM as a frontier investment opportunity

Through the lens of the investment continuum (Section 5) the bigger picture begins to reveal itself, and the potential of ASGM as a frontier investment opportunity that could scale over time becomes clear. This is an exciting narrative, and one that resonates with the innovator and early adopter investors (Section 4). Despite barriers, this research has identified that there are in fact several innovative and willing financiers who recognize the ASGM opportunity—some who are already engaging and some who are interested in engaging in the future under the right conditions. Indeed, the narrative on access to finance for ASGM should not be one of barriers but one of huge opportunities that can be unlocked with the right approach. ASGM can also draw on experiences in other sectors that are at a more advanced stage on the continuum, from the well-established microfinance sector to the more recently-established refugee investment sector.

Appendix 1 – Bibliography

*note all websites accessible up to December 2019

- Asset Allocation Working Group. (2014). Allocating for Impact. Available online: **https://www.bridgesfundmanagement.com/wp-content/uploads/2017/08/Allocating-for-Impact-Subject-Paper-of-the-Asset-Allocation-Working-Group.pdf**
- Bannick, M and Goldman, P. (2012a). Gaps in the Impact Investing Capital Curve. Available online: **https://ssir.org/articles/entry/gaps_in_the_impact_investing_capital_curve**
- Bannick, M. and Goldman, P. (2012b). Embracing the Full Investment Continuum. Available online: **https://ssir.org/articles/entry/embracing_the_full_investment_continuum#**
- Blended Finance Taskforce. (2018). Better Finance Better world. Available online: **http://s3.amazonaws.com/aws-bsdc/BFT_BetterFinance_final_01192018.pdf**
- Blum, M. and Chipeta, S. (2016). Innovative Financing Mechanisms for Demand-driven Agricultural Advisory Services. GFRAS: Lausanne, Switzerland. Available online: **https://www.agrilinks.org/library/innovative-financing-mechanisms**
- Brest, P. (2016). Investing for Impact with Program Related Investments. Available online: **https://ssir.org/articles/entry/investing_for_impact_with_program_related_investments**
- BSR. (2018). Win-Win-Win: The Sustainable Supply Chain Finance Opportunity. Available online: **https://www.bsr.org/en/our-insights/report-view/win-win-win-the-sustainable-supply-chain-finance-opportunity**
- B2gold. (2019). Responsible Mining Report. Available online: **https://www.b2gold.com/_resources/reports/B2Gold-Responsible-Mining-Report-2018-Web.pdf**
- Ceniarth (2018). Impact Investment Portfolio Strategy. Available online: **http://ceniarthllc.com/wp-content/uploads/2018/04/Ceniarth-Portfolio-Presentation-January-2018.pdf**
- Charles, K. (2018). Business Unusual. The Use of Blended Finance Mechanisms in Agricultural Infrastructure in Tanzania.
- Dupraz-Dobias, P. (2014). Criticism mounts over 'dirty gold' imports. Available online: **https://www.swissinfo.ch/eng/precious-metal_criticism-mounts-over--dirty-gold--imports/38257264**
- Equator Principles (2019). A financial industry benchmark for determining, assessing and managing environmental and social risk in Projects (In draft for consultation). Available online: **https://equator-principles.com/wp-content/uploads/2019/06/DRAFT-FOR-CONSULTATION-Equator-Principles-version-4-June-2019.pdf**
- FATF and APG (2015). Money laundering and terrorist financing risks and vulnerabilities associated with gold. Available online: **http://www.fatf-gafi.org/media/fatf/documents/reports/ML-TF-risks-vulnerabilities-associated-with-gold.pdf**
- Financier Worldwide. (2017). Bridging the gap between impact investors and social impact opportunities. Available online: **https://www.financierworldwide.com/bridging-the-gap-between-impact-investors-and-social-impact-opportunities/#.XVQ-NS-ZNp4**

- Global Impact Investing Network (GIIN). (2019). Annual Impact Investor Survey. Available online: **https://thegiin.org/assets/GIIN_2019%20Annual%20Impact%20Investor%20Survey_webfile.pdf**
- Global Impact Investing Network (2019b) IRIS+ Systems and Standards. Available online: **https://iris.thegiin.org/standards/**
- Goldlake Group. (2013). Sustainability Report. Retrieved from: **http://www.goldlake.co.uk/public/File/Goldlake/SustainabilityReport/Sustainability-Report.pdf**
- Hentschel, T., Carter, A., Krauer, N. and Culillas, D. (2018). Better Gold Initiative for ASM. Milestone 2 Report.
- Huppé, G. A., and Silva, M., H. (2013). Overcoming Barriers to Scale: Institutional impact investments in low-income and developing countries. Available online: **https://www.iisd.org/pdf/2013/overcoming_barriers_to_scale.pdf**
- Inca One Gold Corp. (2019) Ore Processing in Peru. **https://www.incaone.com/_resources/presentations/corporate-presentation.pdf**
- Kluge, J., and Docking, T. (2019) The New Era of Refugee Investing. Available online: **https://ssir.org/articles/entry/the_new_era_of_refugee_investing**
- LBMA (2017) LBMA Responsible Gold Guidance. Available online: **http://www.lbma.org.uk/assets/downloads/responsible%20sourcing/Responsible_Gold_Guidance.pdf**
- Leadership Newspaper. (2017) NEWSFG, BOI Launch N5b Artisanal and Small-Scale Miners (ASM) Financing Support Fund. Available online: **https://leadership.ng/2017/08/29/fgboi-launch-n5b-artisanal-small-scale-miners-asm-financing-support-fund/**
- Leotaud, V. (2017) A Canadian company wants to help artisanal miners produce "clean gold". Available online: **http://www.sefcleangold.com/news**
- Martin, R and Lohin R. (2017). Impact Investing: Tracking the Adoption of a Financial (and Social) Innovation. Rotman Management. Available online: **https://issuu.com/rotmanmag/docs/winter_17/67**
- Mosi-oa-Tunya Declaration on Artisanal and Small-scale Mining, Quarrying and Development (2018) **http://asmconference.org/pdf/Mosi-oa-Tunya_Declaration_EN.pdf**
- Newman, D. (2019). Why demand for impact investing is already outstripping supply. Available online: **https://www.globalbankingandfinance.com/why-demand-for-impact-investing-is-already-outstripping-supply/**
- Newmont (2017). Sustainability Report, Beyond the Mine. Available online: **https://www.newmontgoldcorp.com/wp-content/uploads/2019/05/Newmont_2017-Beyond-the-Mine-Full-Report.pdf**
- OECD. (2015). Social Impact Investment: The Impact imperative in financing sustainable development. Available online: **https://www.oecd.org/dac/financing-sustainable-development/development-finance-topics/Social-Impact-Investment-2019.pdf**
- Pieth, M. (2019). Boycotting artisanal gold miners is not the answer. Available online: **https://www.swissinfo.ch/eng/opinion_metalor--mark-pieth-gold/45037966#.XQo9ARY1hp8.twitter**
- Phillips, S. D and Johnson, B. (2019). Itching to Impact: The Demand Side of Social Impact. **https://link.springer.com/article/10.1007/s10551-019-04241-5**

- Robinson L. (2009). A summary of Diffusion of Innovations. Enabling Change. Available online: **https://twut.nd.edu/PDF/Summary_Diffusion_Theory.pdf**
- Rogers E. M. (2003). Diffusion of Innovations, Fifth Edition, Free Press, New York. p221
- Salie, F. (2019). Withdraw troops or risk bloodbath at Tenke Fungurume, DRC army told. Available online: **https://www.miningmx.com/news/base-metals/37436-human-rights-watchdog-urges-drc-army-to-avert-bloodbath-at-tenke-fungurume-mines/**
- Schultz, A. (2018). Champions of Impact Investing. Available online: **https://www.barrons.com/articles/champions-of-impact-investing-1537794000**
- SDMR. (2019). SDMR POLICY BRIEF #5 Accessing formal finance for exploration and upgrading of Rwanda's mining sector.
- Sofala Partners and BetterChain. (2019). The barriers to financial access for the responsible minerals trade in the GLR. Available online: **https://www.resolve.ngo/docs/ppa_-_barriers_and_opportunities_for_artisanal_access_to_finance_-_april_2019_-_final.pdf**
- Solidaridad South America (2018). Minera Yanaquihua (MYSAC). Available online: **https://www.solidaridadnetwork.org/content/minera-yanaquihua-mysac**
- Sturmes, D. (2017). Developing a model for a sustainable & scalable route to market for ethically produced gold of ASM origin.
- SwissInfo. (2019). Metalor cuts ties with small mines over sustainable gold. Available online: **https://www.swissinfo.ch/eng/compliance-costs_swiss-gold-refinery-turns-back-on-artisanal-miners/45036052**
- The Dragonfly Initiative (2018) Material Change. Material Profile: Gold.
- UN (2019) Financing for Sustainable Development Report. Available online: **https://developmentfinance.un.org/sites/developmentfinance.un.org/files/FSDR2019.pdf**
- World Bank Group. (2017). The Global Findex Database. Available online: **https://globalfindex.worldbank.org**
- World Bank Group. (2018). Financing for development at the World Bank Group. Available online: **http://pubdocs.worldbank.org/en/822151531513670691/FinancingforDevelopmentattheWBGBrochureJuly2018Edition-Updated-July-22-2018-reduce-file-size-final.pdf**
- World Gold Council. (2019a). The classical Gold Standard. Available online: **https://www.gold.org/about-gold/history-of-gold/the-gold-standard**
- World Gold Council. (2019b). How much gold has been mined? Available online: **https://www.gold.org/about-gold/gold-supply/gold-mining/how-much-gold**
- World Gold Council. (2019c). Gold market structure and flows. Available online: **https://www.gold.org/about-gold/market-structure-and-flows**

Appendix 2 – Glossary

Abbreviation/Phrase	Definition
Appropriate finance	Finance in which there is alignment between the investment needs of the investee and the investment offering of the investor
ASGM	Artisanal and Small-Scale Gold Mining
ASM	Artisanal and Small-Scale Mining
Asset class	The type of investment being made. This may range from equity, mezzanine finance, unsecured debt, secured debt, or offtake
Below-market rate of return	A rate of return which is non-competitive, in which financial return might be forgone in the pursuit of impact, for example
Better Gold Initiative	A nonprofit organization creating a sustainable gold value chain from mine to market
Capital preservation	An investment strategy in which the investor seeks only to recover the principal sum rather than obtain a rate of return
CRAFT	The Code of Risk Mitigation for ASM engaging in Formal Trade
Demand side	The side of the demand/supply relationship comprising the projects demanding investment, the investees
Early adopters	Those who seek a competitive or strategic advantage with a view to reinventing the mainstream—they accept new products or services second only to the innovators
Early majority	Those who are cost sensitive and risk averse—they want proven concepts and simplicity
Equator Principles	A finance industry benchmark for determining, assessing and managing environmental and social risk in projects
Equity investing	The purchase of shares in a company
Equity-like debt	An instrument between debt and equity, such as mezzanine capital or deeply-subordinated debt. Often a debt instrument with potential profit participation, such as convertible debt, warrant, royalty, debt with equity kicker

Abbreviation/Phrase	Definition
ESG	Environmental, social and governance — criteria used to measure the impacts of investing in a company
ETFs	Gold-backed exchange traded funds
Fairmined certification	A certification developed by the Alliance for Responsible Mining to incentivize responsible ASM practices
Fairtrade	An institution designed to assist producers in developing countries secure improved trading conditions
Finance first	The style of investing which prioritizes financial returns
Financial instruments	Various mechanisms for delivering finance e.g. debt, equity, public, private
Formal finance	Finance which is supplied by formal economy entities such as banks or equity investors tied to a legal system, as opposed to informal lending at the community level
GIIN	The Global Impact Investing Network — a nonprofit organization dedicated to increasing the scale and effectiveness of impact investing
IFC Performance Standards	Policies set out by the International Finance Corporation, requiring their clients to meet certain standards of environmental and social business practice
Impact escalator	A framework for continuous improvement in ASM enterprises with three stages, basic, intermediate and advanced, aligned with globally accepted standards and criteria and expectations from OECD to Fairtrade.
Impact first	The style of investing which prioritizes impact
Informal finance	Finance in the informal economy, in which there is lending of money with the expectation that it be returned in the future, but, unlike in formal finance, there is no reference or recourse to a legal system
Innovators	Those who are visionary and creative with a high risk tolerance—they are the first to accept new products and services
Institutional investors	Institutional investors in gold are large institutions specialized in evaluating, investing in, and deriving value from gold mining, including commercial banks, resource investment funds, and private equity mining funds
Investment continuum	A conceptualization of the range of different sources of finance that become available depending on the stage of a project or investment sector (such as ASGM) and the accompanying motivations and activities while building and maturing a new investment sector

Abbreviation/Phrase	Definition
Investment mandate	The instructions that guide the management of finance and strategy in selecting projects for investment to meet profit and/or impact objectives
Investment sector	A sector where investment is made. Examples include agriculture, microfinance, renewable energy and others
IRIS	Developed by GIIN, IRIS+ is the generally accepted system for measuring, managing, and optimizing impact
Laggards	The last to accept new products or services, who might be driven to do so by fear or criticism
Late majority	Those who are highly conservative, risk averse, and compliant with social norms when it comes to accepting new products or services
LBMA	The London Bullion Market Association
Market infrastructure	The necessary structures, entities and processes to enable investment in new investment sectors such as ASGM. This is largely built by philanthropic or impact led (capital preservation) finance
Market innovators	Early-mover investors who are risk tolerant. They identify the profit potential of an emerging investment sector and will allocate funds even if there is no documented track record
Market rate of return	A competitive interest rate sought by investors who prioritise financial returns (but not necessarily at the cost of impact)
Market scalers	Investors who seek mainstream finance opportunities where investment can be made to scale, with larger investment sizes, proven concepts, and low risk
Mezzanine debt	A debt-equity hybrid in which investors have the option to convert debt into equity
OECD	The Organization for Economic Co-operation and Development
Patient capital	A loan for which the expectation of repayment or exit can be extended for many years
Principles for Responsible Investment	A UN-partnered organization which explores the effects of ESG factors on investment and sets out a set of principles against which signatories are required to publish their commitment to implement
Private debt	Bonds or loans placed to a select group of investors rather than being syndicated broadly
Private equity	A private investment into a company or fund in the form of an equity stake (not publicly traded stock)

Abbreviation/Phrase	Definition
Program related investments (PRIs)	PRIs allow the mobilization of investments from foundations or philanthropic organizations where low-interest or interest-free loans are granted to further to further their programmatic strategy or mission
Public debt	Publicly traded bonds or loans
Public equity	Publicly-traded stocks or shares
Real assets	An investment of physical or tangible assets as opposed to financial capital, such as real estate or commodities
Secured debt	Debt for which the investee offers collateral, thus securing the investor against losses if the investee fails to repay the loan
Segment	A subgroup of a bigger group. Segmentation of a group is the process of dividing of that group into subgroups (segments) based on shared characteristics. It is a tool commonly used in marketing.
Sources of finance	For the purpose of this paper, potential sources of finance are grouped into: Development Finance Institutions, Commercial Banks (National/Local/Global), Resource Investment Funds, Mining Investors (Private Equity and Resource Funds), Impact Investors, Downstream Offtakers, Responsible Equity Investors, Mining Companies, and Donor and Grant money
Supply side	The side of the demand/supply relationship comprising the sources of finance potentially available to the demand side investee
Sustainable Development Goals	Seventeen global goals established by the UN in 2015 to enable progress towards a "better and more sustainable future for all"
UN Global Compact	A UN agreement to encourage and monitor sustainable and socially-responsible business practices
Unsecured debt	Debt for which there is no guarantor or collateral to mitigate or eliminate an investor's loss if the investee fails to repay their loan

Appendix 3 – Interviewees and Authors

Interviewees

Interviewees were selected where possible to provide a range of perspectives including the supply and demand sides but focusing on the supply side. Interview notes are confidential but those happy to be acknowledged are listed below with their primary association. Some were able to provide insights from one or more perspectives on the demand or supply side. Other insights were drawn from general or academic experience. Where possible the focus was ASGM, but insights from other commodities were also included.

With thanks to those who shared time, experiences and insights, including:

- Andrea Barrios, Innovative Finance, The Rockefeller Foundation | Foundation
- Angelos Damaskos, Sector Investment Managers |Mining Investment, Resource Fund
- Brad Van Den Bussche, Artisanal Gold Council | ASGM Expert
- Cédric Lombard, Impact Finance | Impact Investing
- Chikomeni Manda |Artisanal Miner, Artisanal & Secretary for Small scale Mining training Centre | Demand side ASM Enterprise
- Erik Lindamood, Barksanem | Demand Side Intermediary
- Gavin Hilson, University of Surrey | ASM expert, Academia
- Gregory N. Kituku, Ministry of Petroleum and Mining- State Department for Mining | ASGM and Government
- Harry Davies, Ceniarth, LLC | Impact Investing
- Jamie Lesser, Tono Resources | Mining Investment, Resource Fund
- Jean Louis Robadey, Impact Consulting Group | Impact Investing
- Jeremy Weate, Sustainable Development of Mining in Rwanda| Demand Side Intermediary
- Jon Coates, Mining industry consultant | Mining Company
- Jose Valer Davila, EPG Universidad de Lima | Bank, Development Finance Institution, Academia
- Joshua Newman, Sonen Capital LLC | Impact Investing
- Kathleen Charles, Agribusiness Investment and Rural Finance for Africa | ASM expert
- Mathew Chambers, Chambers Federation | Impact Investing
- Nicolas Vesval, Societe Generale Corporate and Investment Banking | Impact Investing
- Olivier Demierre, MKS Switzerland SA | Offtaker

- Patience Singo, IMPACT | ASM Expert, Development Bank and National Bank Partnership
- Peter Lattey, Antelope Mine | Non-institutional Equity Investor
- Rachel Perks, World Bank | Development Finance Institution
- Suzette McFaul, Sustainable Economic Futures | Intermediary (and perspective of Non-Institutional Equity Investors)
- Tamara Beradaze, Oxfam Enterprise Development Programme | Impact Investing
- Tom de Boinville, INTL FCStone | Offtaker
- Tom Hoyle, Genesis Charitable Trust | Grant Funding
- Virginie Bahon, Valcambi | Offtaker
- Washington Ayiemba, UNDP | Demand Side Intermediary
- Anonymous | Bank x 3
- Anonymous | Impact Investment x5
- Anonymous | Mining Company x 1
- Anonymous | Mining - Policy and Sustainable Development
- Anonymous | Mining investment, Resource Fund and Private Equity x 3
- Anonymous | Offtaker x 1

Additional Insights also included from Assheton Carter, Ed Bowie, David Sturmes and Sarah Caven, The Impact Facility |including demand side intermediary, mining investment and mining company perspectives.

Summary of interviewees

Type	Innovators, Early Adopters & Early Majority*	Late Majority & Laggards	Non-Responses
Donor and Grant Finance or Foundation	2	0	1
Offtakers (Refinery or trader	3	1	2*
Responsible Equity Investor	2	0	0
Impact Investor	9	3	5
Traditional mining Investment (Private Equity or Resource Funds)	0	0	5
Commercial Banking	2	3	2
Development Finance Institution	1	1**	3
Mining Company	1	1	3

**Allocation based on authors interpretation of comments made during interview*
*** Double counted from interviewee with bank and DFI perspective*

Author Biographies

Sarah Caven – Project Development and Impact Investing Lead for The Impact Facility

Sarah develops projects, partnerships and investment opportunities for TIF, bringing international mineral-exploration expertise to ASM. Experienced working with investors, clients, communities and governments she has contributed to mineral resource definition, secured investment and licence tenure. Her industry experience is complemented by governmental and international development projects including: regional mineral prospectivity analysis to investment; capacity building for ASM communities in Latin America; and research into the development of ASM as a frontier investing sector. Sarah holds a Masters in Geology from the University of Leicester, and a Master of Business Administration from the University of British Columbia.

Dr. Assheton Carter – The Impact Facility Founder and Executive Director

Assheton Carter has 25 years of experience creating business value for shareholders, communities and society though business sustainability and responsible investment. He has managed over US$100 million in donor funds. He co-founded Spartacus Capital Mining Fund, a private equity firm dedicated to ESG investments and was a member of the founding team of Althelia Ecosphere, an asset manager focused on the generation of REDD+ credits. For ten years, he was board advisor at Goldlake Mining, a responsible gold mining enterprise in Honduras. He has 5 years' experience managing SRI funds and currently sits on the advisory board of the Proterra mining fund. Assheton holds a first-class degree from the Royal Agricultural University, and a PhD from the University of Bath.

Ed Bowie – Impact Fund Design Advisor for The Impact Facility

Ed has over 20 years' experience managing gold investment funds and raising capital for gold-mining projects, responsible for investor relations, design of equity and loan packages, finance strategy and over two-hundred due diligence research projects. Ed has managed grant schemes for start-up and technology businesses with an annual budget of £12 million. He brings his experience and investor network to the ASM sector. Ed holds an MA in Geology from the University of Oxford and an MSc in Mineral Deposit Evaluation from the Royal School of Mines, Imperial College, London.

planetGOLD

Supported by:

Led by:

In partnership with:

planetgold.org