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A GEF Initiative

FINANCIAL ACCESS PROTOCOL

Lease-to-Purchase Scheme

KENYA

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THE IMPACT FACILITY

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Abbreviation Table

Abbreviations	Definition
ASGM	Artisanal and Small-Scale Gold Mining
CRAFT	Code of Risk-mitigation for ASM engaging in Formal Trade
EPRM	European Partnership for Responsible Minerals
ESG	Environmental, Social, and Governance
ICL	Impact Capital Limited
IPPs	Investment Partnership Plans
KCM	Kenyan Chamber of Mines
KES	Kenyan Shilling
LIF	Livelihood Impact Fund
LV 2030	Lake Victoria Gold Program 2030
MFIs	Microfinance Institutions
MoU	Memorandum of Understanding
OECD	Organization for Economic Co-operation and Development
OHS	Operational Health and Safety
RMOs	Regional Mining Officers
SMEs	Small and Medium-sized Enterprises
TIF	The Impact Facility
USD	United States Dollar
VSS	Voluntary Sustainability Standards

Executive Summary

Artisanal and small-scale gold mining (ASGM) in Western Kenya has long been excluded from formal financial services, relying heavily on costly informal finance. In response, The Impact Facility for Sustainable Mining Communities (TIF) launched efforts in 2018 to provide equipment to the sector. This model has since evolved into a lease-to-purchase blended finance program to provide equipment and foster sustainable mining practices.

TIF's financial model blends grant financing from the European Partnership for Responsible Minerals (EPRM) and GenEM Foundation (formerly Genesis Charitable Trust) for due diligence, onboarding, and technical assistance with returnable funds from a private investor used for equipment purchase. Investment decisions are guided by mine environmental, social, and governance (ESG) due diligence scores against The Impact Escalator, an ESG-criteria framework aligned with international standards (CRAFT, Fairmined, Fairtrade). Instead of collateral, miners provide a 10% security deposit upfront for equipment investments and make monthly lease payments after an optional grace period. TIF oversees equipment orders, installation, and training.

TIF collaborates with Solidaridad East & Central Africa, who provide miners with operational health and safety (OHS) and gender mainstreaming capacity support; the Chambers Federation, a gold trading family office that supports miner formalization efforts and explores offtake opportunities; and Datastake, an open-source software development company supporting TIF in the creation of a digital due diligence and ESG tracking platform to improve both miners and investor's access to credible mine data.

To advertise the leasing model to potential clients, TIF hosts recruitment events in the gold mining communities, where participation is by word-of-mouth referrals or referrals from the Regional Mining Officers in the localities. The minimum requirements for onboarding include business registration to verify the legitimacy of their operations, land rights for their area of operation, active production status for at least six months, and a minimum of three months of production records.

TIF has secured a financing commitment of USD 450,000 in returnable funds on a debt basis, from a private investor to provide equipment through the lease-to-purchase model in 2022. To date, USD 138,000 has been deployed across ten ASGM operators in Kenya. Contracts range from USD 7,800 to USD 51,000, with 12-36-month repayment periods. Miners have received generators, compressors, water pumps, ball mills, and winches (mine hoists) with one outlier, a mining operator in whom TIF financed the construction of a VAT leaching plant, a mercury-free chemical processing facility that uses sodium cyanide for gold processing.

Once onboarded, miners receive continuous support based on Investment Partnership Plans (IPPs) created against their baseline ESG performance to enable and incentivize continuous mine site improvements, where mercury reduction is emphasized as a priority, encouraging the long-term adoption of gravity-based systems or direct leaching or as medium to long-term substitutes. Miners are incentivized to make improvements against the Impact Escalator to unlock larger financing amounts and better contract terms in subsequent investments.

Qualified ASGM operators receive equipment investments on favorable contract terms contextualized to the sector; these include grace periods, complimentary payment breaks, and market-rate interest. The initiative reports a 10% default rate so far, with most contracts nearing completion.

Through the implementation of the project, TIF has encountered several findings:

- in the absence of stringent collateral requirements, miners are willing to repay loans at standard market rates;
- extensive due diligence is required to onboard credible and viable ASGM operators;
- Mine operators should proactively apply for funding, rather than onboarding mines based on 3rd-party recommendations or pre-existing donor project selections;
- data fatigue by miners can occur if the data-gathering process is too lengthy;
- there needs to be flexibility in the contractual terms to prevent future defaults; and finally,
- grant funding is crucial to cover the onboarding of miners, de-risking through capacity support and monitoring of smaller ASGM operators yet to professionalize their businesses; in the absence of blended finance, a more commercial approach would be needed, focussing exclusively on already more advanced small-scale miners.

Description of the Intervention

Background Relevant to the Intervention

ASGM plays a crucial economic role across Western Kenya, along the shores of Lake Victoria, where an estimated 40,000 individuals are involved in artisanal gold mining operations.[1] Migori County, at the heart of the Lake Victoria Gold Fields[2], stands as one of Kenya's most densely concentrated ASGM areas. In the county, gold mining has emerged as the predominant source of household income. ASM gold production contributes an estimated USD 225 million annually to the regional economy, based on the estimated gold production alone.[3] Notably, gold mining activity at Osiri Matanda Village in Nyatike sub-county alone, home to an estimated 5000 artisanal miners, is estimated to produce close to USD 2 million worth of gold a year.[4] As an informal sector, actual production figures might significantly exceed reported ones.

Miners underground a mine in Migori, Kenya, preparing to haul blasted ore out of the ground in sacks for processing.

1. East Africa Research Fund (2018) "Economic Contributions of Artisanal and Small-Scale Mining in Kenya: Gold and Gemstones." Available at: **https://www.responsiblemines.org/wp-content/uploads/2018/03/Kenya_case_study.pdf**
2. Heckel et al., (2016), "Lake Victoria Gold Fields", [online]. Available at: **https://www.researchgate.net/publication/305918166_Lake_Victoria_Goldfields**
3. East Africa Research Fund (2018), "Economic Contributions of Artisanal and Small-Scale Mining in Kenya: Gold and Gemstones", [online]. Available at: **https://www.responsiblemines.org/wp-content/uploads/2018/03/Kenya_case_study.pdf**
4. ibid.

Despite the sector's economic importance, and, even though Kenya has legally recognized artisanal mining in its mining code, ASGM operations continue to operate informally, as the government is yet to operationalize its 2016 sector regulation.[5] For miners to attain full legal recognition, regionally run county committees need to start operating, and grant, renew, and revoke artisanal mining permits, maintaining a register of artisanal miners. Due to a 2019 - 2023 government moratorium on licensing, no single license was issued to artisanal miners in the country in this period. Because of this situation, TIF considers miners striving for legal recognition as "legitimate" mining operations, in line with the OECD's Due Diligence Guidance's definition of legitimacy. Upon the operalisation of licensing procedures in the country, an active license would henceforth apply as qualification criteria for leasing.

Continuing to work informally, artisanal gold miners depend on traditional, informal financing networks. This reliance on informal capital sources ensnares miners in cycles of potentially exploitative financing from intermediaries, who exhibit a willingness to take on a high-risk, high-reward investment, which often translates into inequitable terms and conditions for the gold producers.[6]

General Approach and Main Intervention Activities

Findings from TIF's ASM projects, donor reports, and specialist consultants' analyses show that capacity building alone does not suffice to uplift Environmental, Social, and Governance (ESG) performance and miners' adoption of responsible production practices, as codified by CRAFT or other relevant voluntary frameworks. ASGM operators currently experience poor mechanization and low efficiency, leading to high production costs and low-profit margins. Miners are unable to save sufficient capital to fully finance larger investments that could adequately address these inefficiencies.

Improving mine efficiency warrants the adoption of improved mining and processing techniques, reliant on better equipment. For this reason, TIF prioritizes the provision of access to mining equipment on reasonable terms under the lease-to-purchase model, enabling miners' access to the preferred equipment to be repaid over time rather than loans against collateral, or outright purchases, incentivizing miners to subsequently improve their ESG standards for access to additional investment.

5. International Commission of Jurists (ICJ) Kenya (2016), "Mining Act, 2016 — Simplified Version", [online]. Available at: **https://icj-kenya.org/?smd_process_download=1&download_id=5175**
6. The Impact Facility (2019), "Equipment leasing services to Artisanal Mines in East Africa", [online]. Available at: **https://www.theimpactfacility.com/app/uploads/2022/04/The-Impact-Facility-EA-Equipment-Leasing-1-1.pdf**


TIF staff during a mine site visit to one of the mines.

TIF supports the professionalization of ASGM, engaging with miners as small and medium sized enterprises (SMEs), and seeking to strengthen their business literacy and increase their appeal to commercial investment, helping to ensure ASGM operators are ready for formalization. This focus on entrepreneurship, coupled with the continuous improvement support offered to miners to improve social and environmental performance, allows workers to benefit from increased productivity if paid through production share split as well as improved operational Health and Safety (OHS).

TIF operates Impact Capital Limited (ICL) a fully-owned subsidiary that serves as an investment fund. This enables the organization to apply a blended finance business model that leverages donor financing to identify, train and support SMEs in the mining sector and uses investor capital for equipment funding, seeking both a financial and a social impact return, to finance its lease offering to the ASGM operators.

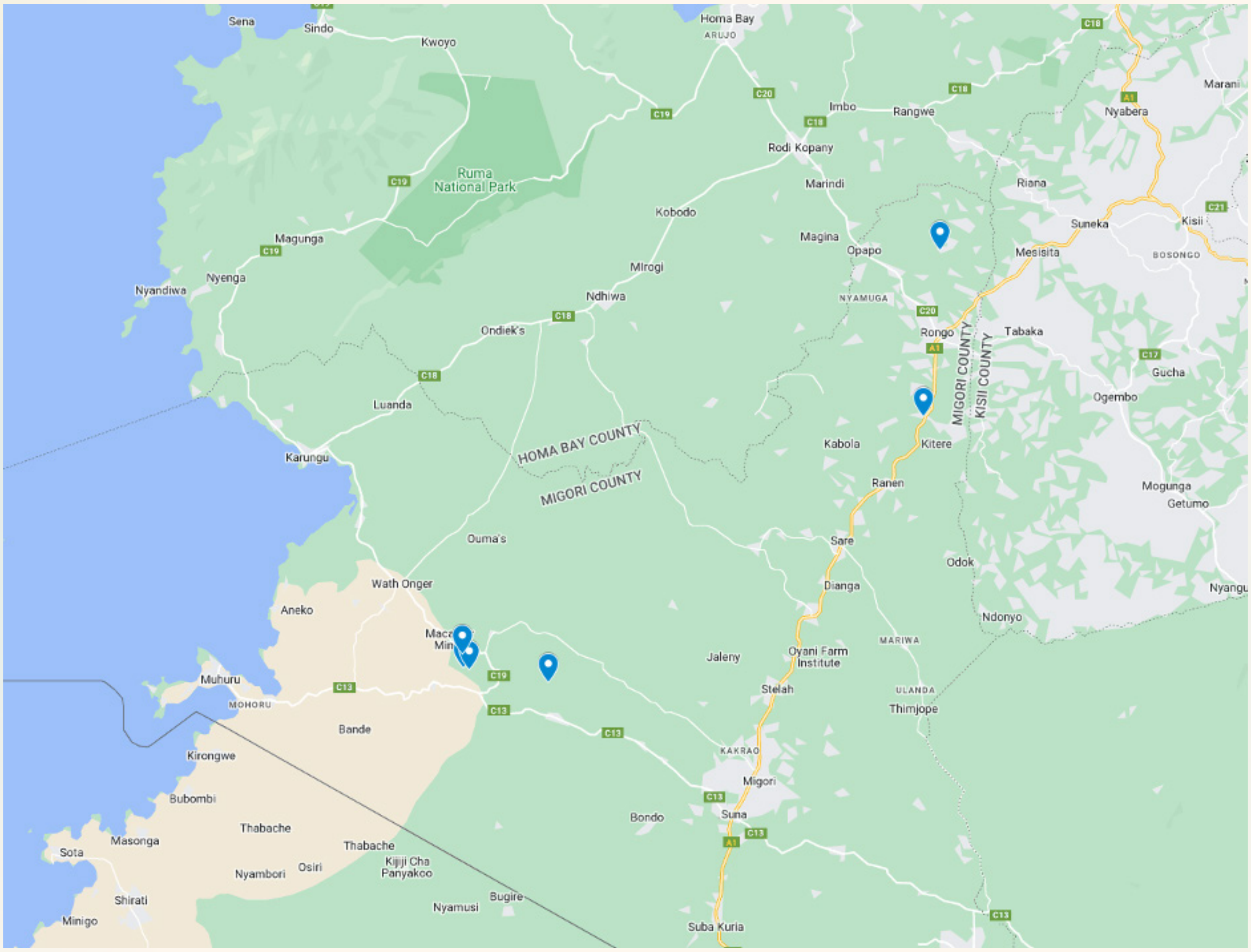
Working in collaboration with partners, most notably Solidaridad East and Central Africa, through which TIF leverages expertise and historical engagement that has built trusting relationships with ASGM operators, TIF seeks to incentivize and enable measurable ESG improvements by applying a stepped, ESG-performance-based equipment investment model tailored to the specific needs of ASGM.

The mine's ESG performance determines the level of service and financing access and terms of engagement within the leasing programme. The better an ASGM operator performs against TIF's Impact Escalator framework - a set of stepped ESG-based criteria that align with international voluntary standards such as the OECD Due Diligence Guidance for Responsible Mineral Supply Chains (OECD DD Guidance)[7], Alliance for Responsible Mining (ARM) Code of Risk-mitigation for ASM engaging in Formal Trade better known as the CRAFT Code[8], Fairmined and Fairtrade[9] - the bigger the financial offering to them. This strategy is designed to address the gap in access to capital and equipment, enabling miners to enhance productivity, adopt safer and more environmentally friendly mining practices, and improve their livelihoods–all on fairer, better lending conditions.

TIF currently operates the Lake Victoria Gold Programme (LV 2030) across Kenya and Tanzania. LV 2030 is in the process of moving from "proof of concept" to "scale"; and is financed through a range of institutional grants and impact investment, including a four-year grant from the EPRM (USD 220k; 2021 - 2024) supplemented with a grant from the GenEM Foundation (USD 486,500; 2022-2024), approximately USD 375,000 from a private investor subject to a targeted return of 6% p.a. starting in 2025 after deployment of the funds from 2021 – 2024. In early 2024, TIF secured an additional USD 1 million (60% returnable to finance equipment and 40% operational grant) from the Livelihood Impact Fund (LIF) to scale the model in Tanzania for two years starting April 2024.

7. The OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas provides step-by-step management recommendations endorsed by governments for global responsible supply chains of all minerals, in order for companies to respect human rights and avoid contributing to conflict through their mineral or metal purchasing decisions and practices. More information is available at: **https://www.oecd.org/en/publications/oecd-due-diligence-guidance-for-responsible-supply-chains-of-minerals-from-conflict-affected-and-high-risk-areas_9789264252479-en.html#:~:text=The%20OECD%20Due%20Diligence%20Guidance,rights%20and%20avoid%20contributing%20to**
8. The Code of Risk mitigation for Artisanal and small-scale miners engaging in Formal Trade (CRAFT) is an open source tool and the product of a multi-stakeholder consultation designed to bridge the gap between legitimate artisanal producers and refiners, jewelers, electronics companies, banks, and other supply chain actors. More information on the CRAFT Code is available at: **https://www.responsiblemines.org/en/2020/10/craft_v2-0/**
9. The Fairtrade and Fairmined Gold certification have been active since 2012, with a current footprint in Bolivia, Peru and Colombia as well as in Mongolia. Both schemes assure producers a minimum price share of the international price and consider a range of environmental, social and governance related risks in their assessment. To date, the amount of Artisanal Mineral Producers (AMPs) holding certified status remains small and concentrated in South America. Next to their standard 'Fairtrade' and 'Fairmined' gold label, both schemes offer eco-gold, which has been produced without the use of mercury. For Eco gold this premium is even higher at 15%. These costs are exclusive of potential costs for supply chain integration and certification of actors along the supply chain to ensure the integrity of the sourcing claim. More information available below:
   Fairtrade certification: **https://www.fairtrade.net/about/certification**
   Fairmined certification: **https://fairmined.org/the-fairmined-standard/**

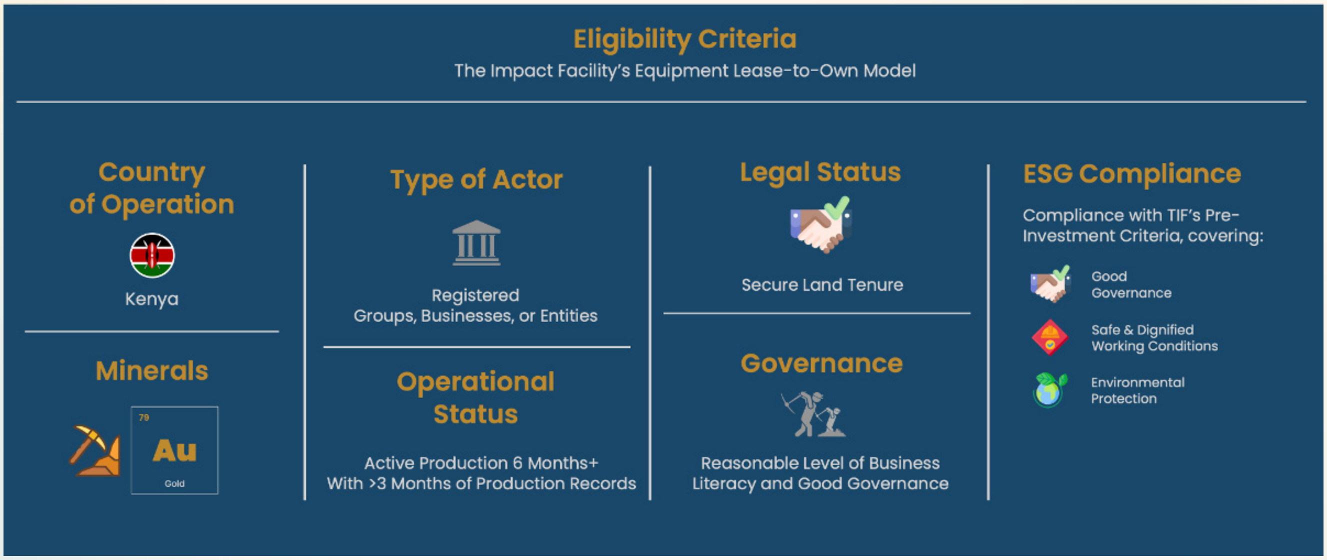
Target Areas and Target Groups



Map of ASGM lease-to-purchase equipment clients of TIF in Western Kenya.

TIF, the leading consortium partner in the EPRM-funded Project Access Gold Programme, targets legitimat[10] artisanal mineral producers (both individuals and miners organized into businesses) in the Western part of Kenya, predominantly in the counties of Migori, Kakamega, Narok, and Vihiga.

10. When the applicable legal framework is not enforced, or in the absence of such a framework, the assessment of the legitimacy of ASM will take into account the good faith efforts of artisanal and small-scale miners and enterprises to operate within the applicable legal framework (where it exists) as well as their engagement in opportunities for formalization as they become available (bearing in mind that in most cases, artisanal and small-scale miners have very limited or no capacity, technical ability or sufficient financial resources to do so).



Pre-Investment Criteria: ASGM operators wishing to receive equipment financing from TIF, need to qualify for the following set of **non-financial** requirements, as codified in CRAFT modules 1, 2, and 3;

Principle I: Good Governance

- All taxes, fees, royalties, and other tributes as required by applicable and enforced legislation must be paid to the relevant authority;
- The organization or its members must possess or be granted land rights and permissions for all areas on which it operates from the government or the original landholder(s);
- The organization has a dedicated bank account and maintains appropriate banking records for all its accounts;
- Workers' age must not be less than 15 years old unless existing national law for the sector of employment specifies this to be higher;
- All workers' wages must be equal to or exceed the sector national average wages or official minimum wages for similar occupations, whichever is higher, or workers receive shares of production or profit that are representative of their work;

Principle II: Safe & Dignified Working Conditions

- All workers must be fit for work;
- Workers must not engage in, support, or tolerate behavior, including gestures, language, and physical contact, that is sexually intimidating, abusive, or exploitative;

Principle III: Environmental Protection

- A mercury-free concentration process precedes amalgamation to prevent whole ore amalgamation.[11]

TIF's lease-to-purchase mining equipment provision model seeks to provide a bridge formal financing solution for ASGM operators to provide a track record of repayments and ESG improvements that will build a case for their inclusion in formal products in the future.

Partners and Key Stakeholders

TIF collaborates with its partners by participating in the Lake Victoria Programme 2030 (LVP2030), including leading a consortium of partners collaborating through "Project Access" the 4-year EPRM-funded program in Kenya and Uganda, as well as playing a key role in the five-year Dutch government-financed consortium project, 'Realising the Potential of Responsible ASGM Trade' led by TIF's strategic partner Solidaridad East and Central Africa in Tanzania.

A safety sign at one of the mine sites supported by TIF and its partners.

11. TIF has strongly championed for the use of mercury retorts at ASGM mines in the past and provided several retorts to ASGM operators for their use. Despite these efforts, miner's use of the device has been negligible, largely because the process is slower than the open burning process. As part of the continuous improvement efforts, TIF encourages miners to adopt the use of the mercury-free gold processing devise , a continuous improvement ESG criteria underlying the leasing model. More information about TIF's efforts on this available at: **Mercury Retort Training In Kakamega - The Impact Facility**

The key stakeholders for the leasing model are;

- Solidaridad: An international NGO whose role in the project is to build miners' capacity in operational health and safety (OHS) and socialize gender mainstreaming in the communities engaged through sensitization and training sessions.
- TIF maintains a cooperative relationship with the Ministry of Mines in Kenya. It regularly engages and keeps the relevant Regional Mining Officers (RMOs) and other government officials informed about all its operations in the region. TIF also seeks their support in validating miner applications where feasible.
- TIF also works closely with other international stakeholders in the region, including the Chamber's Federation,[12] Fairphone[13] and TDi Sustainability.[14]

Main Activities and Achievements

Status of ASGM financing prior to intervention and financial needs assessment

Mainstream banking and microfinance institutions (MFIs), perceiving high risks, do not extend their services to ASGM operators for their mining activities. Despite this, ASGM operators and individual miners routinely apply for loans for their mining activities from commercial institutions without disclosing the intended purpose of the loan by putting forward other businesses, commonly farming. The risks as perceived by these financial institutions include the informality of the sector, a lack of understanding of the ASM context (undetermined geological reserves and confusion about the profitability of the sector perpetuated by the production-sharing agreements common in the sector rather than fixed wage), hazardous working conditions that frame the sector and limit the miners' operational health and safety, and the sector's association with illicit financing and criminal activities globally – all factors that are exacerbated by the absence of legal ASM mining operations in the country.

To date, ASGM is predominantly financed by informal sources — ranging from local mining community groups, friends and family members, and private investors to gold and mercury traders. Gold traders mainly extend pre-financing for repeat gold suppliers/sellers under agreements that often grant them a claim on future gold production and profits, sometimes claiming as much as a 40% discount on gold purchases[15] or claiming half of the revenue in return for machinery, mercury,

12. Chambers Federation is a family-owned Investment Advisory firm and legal gold trading house, that supports the project in miner formalization and in the development and promotion of a sustainable gold-aggregation and value-addition mechanism, accessible to the miners engaged within the project. More information about Chambers Federation is available at: https://chambersfederation.com/
13. Fairphone is a Dutch-ethical smartphone (and other electronics) company supports the project in the development of a downstream business model connecting to the international market and in the future, aims to integrate responsibly produced gold into Fairphone's supply chain. More information about Fairphone available at: https://www.fairphone.com/nl
14. TDi Sustainability is a sustainability consulting company that Co-founded TIF together with fairphone, and leads in the administrative grant management of Project Access. More information about TDi Sustainability available at: https://www.tdi-sustainability.com/
15. The Impact Facility (2020) Turning mineral wealth into community prosperity: Equipment leasing services to Artisanal Mines in East Africa. Available at: https://www.theimpactfacility.com/app/uploads/2022/04/The-Impact-Facility-EA-Equipment-Leasing-1-1.pdf

Miners observing a demonstration on the use of a shaker table, a gold processing machine.

or working capital provision. In some extreme cases, informal financiers in Kenya have asked for up to 120% interest p.a. (10% interest per month) or through production sharing, where investors capture up to 60% of revenue. Despite providing miners with crucial operational expenses, these informal financial mechanisms seldom prioritize critical business enhancements that they do not believe will increase mine productivity in the short-term, such as health and safety considerations and mine ESG improvements.

Efforts to aid in the formalization of the sector have been limited to capacity trainings and awareness-raising campaigns around how to improve mine OHS and increasing knowledge on the environmental effects of mercury. However, these efforts do not address the need for more equitable financing required to adopt improved production practices reliant on new technologies that would foster sustainable businesses that could thrive independently of development aid.

Financial education

For TIF to be able to provide financing to an ASGM operation, it is a prerequisite to ascertain the financial literacy of the mine operators. In most cases, operators lack basic systems to keep track of their production, income, and expenditures, making it difficult to assess the mines' ability to take on debt based on their current business performance.

TIF has sensitized and socialized potential and existing clients to the importance of record-keeping and financial management in the sector, sometimes working through external trainers and through the support of its partners. TIF's technical field staff lead training on day-to-day management aspects, particularly on the record-keeping of factors such as ore and gold production, gold sales, mercury use, and mine expenses, with the financial manager providing more sophisticated training focused on the mine managers who have met the minimum requirements for onboarding. These higher-level trainings include 1) how to make a profit and loss statement and balance sheets (highlighting gold revenues, expenses, and profits), 2) the creation, and follow-up of, budgets and 3) how to leverage these financial management tools to create cash flow forecasts for the mining business. Lastly, ASGM operators are required to establish regular reporting and record-keeping to ultimately provide continuous production and finance reporting to TIF. The trainings introduced relevant tools and templates to the miners, with the TIF team subsequently reviewing the monthly self-reported data and providing feedback for continuous improvement to enable their compliance with mine best practices. The self-reported data is followed up on by the TIF team to monitor progress and support record-keeping.

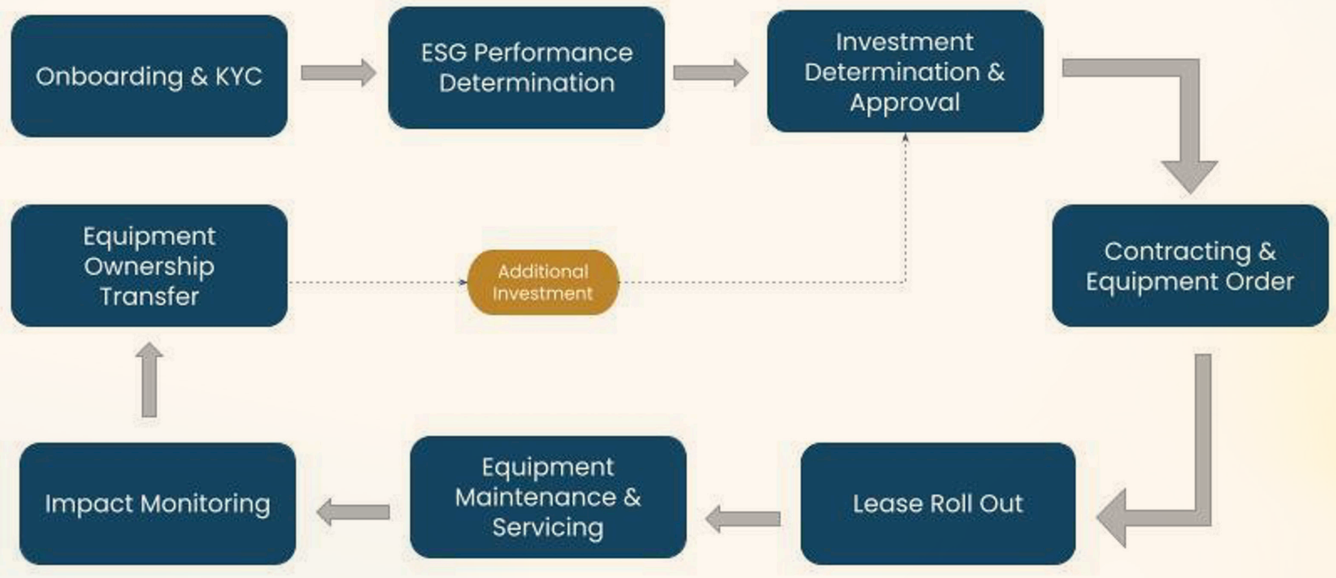
Description of the type of financial mechanism(s) piloted

After several pilots and different iterations, including a test of loan finance, TIF landed on lease-to-purchase agreements to be the most suitable tool for engagement, given the security provided through the asset that can be withdrawn and given that the need for collateral is reduced. Based on the ASGM operator's performance against The Impact Escalator, miners receiving first-time investment from TIF can qualify for investments of a maximum of $20,000 for meeting the pre-investment criteria outlined in the TIF Framework. They can qualify for higher amounts for additional investments, subject to meeting the mutually agreed ESG continuous improvement criteria.

Lease-to-Purchase Contracting Process

To be considered for equipment leasing, an ASM operator will first undergo the onboarding process by TIF. If an ASGM operator passes the initial desk-based due diligence done in accordance with the pre-investment ESG criteria (described in previous sections), the following process is triggered:

Figure 1: The Impact Facility's Leasing Process, simplified



1. TIF's mining expert validates the mine's ESG status through an on-site mine needs assessment to verify the mine's economic merit and expected impact of its equipment needs.
2. TIF experts check if the ASGM operators' capacity is correct and if this is the most sensible investment, advising the mines on what to prioritize. TIF secures a competitive quote for the specific equipment model that the ASGM operator seeks (offering technical advice on the best options available) and seeks miners' approval on the final machinery selected.
3. TIF staff then prepare an investment note for review by its Investment Committee[16]. This includes an overview of the mines' current ESG performance, the proposed equipment, the anticipated production, and ESG gains, as well as the estimated leasing fee, investment duration, and suggested terms. The leasing fee is inclusive of the following:
    - A landed cost (including transport, insurance, and installation) subject to national commercial rate interest (originally 15% but currently 18% as of the beginning of 2023 due to the inflation of the Kenyan shilling)
    - A service fee for technical support
    - Optional maintenance and spare part charge
4. If the investment is deemed viable, the TIF Investment Committee approves the investment note; if not, the technical team works with the ASGM operator to address the concerns of the committee and presents the investment note for their approval again with necessary clarifications.
5. Once approved, TIF sets aside the funding for the investment and presents a draft lease-to-purchase agreement to the ASGM operator that stipulates the contractual obligations between the leaser (TIF) and the lessee (the ASGM operator). The ASGM operators is granted time (up to 12 weeks) to pay a security deposit of 10% of the landed cost of the equipment in order for the contract to be executed.

The contract terms are stipulated as follows:

- Payments can be made using bank transfers or mobile banking;
- Optional: a grace period[17] of up to 2 months;
- Optional: two free annual payment breaks (taking into account factors such as mine site flooding, shaft development, or other delays that put a pause in mine production and hence mine revenue) assuming a 24-hour advance notice, and two paid payment breaks per year, to be issued at TIF's discretion, once the free options are exhausted at $60 each;

16. The Investment Committee, currently made up of four individuals, is a subject matter expert group of volunteer social investment and geological experts who ensure that the proposed investment is in line with the immediate needs, expectations, financial capacity, and expected efficiency/production gains of the artisanal mineral producer and ensure the benefit to miners. They are responsible for the final approval (or decline) of ASGM investment requests.
17. A grace period is the period from the date of signature of the lease contract to the first repayment of principal.

- Penalties for missed / late payments: the penalties are set at KES 1,000 (approximately $7) for every day after the monthly repayment due date (5th of the month) up to until the 20th of the month, for which the mine will be considered in default of the contract;

- When a default occurs, and it is not possible for TIF and the ASGM operator to reach a solution, TIF requires the return of the equipment and will aim to deploy it through a new lease-to-purchase agreement as soon as possible, taking into account the machinery's depreciated value.

6. Upon receipt of the security and the signing of the contract, TIF facilitates the procurement and delivery of the equipment. The delivery time, which often depends on the equipment type, averages two weeks.
7. TIF facilitates installations and induction training for relevant mine staff upon the official handover of the equipment. The mine signs a handover note confirming their responsibility for the maintenance and upkeep of the asset for the duration of the lease.
8. After an optional grace period timeline has ended, the ASGM operator begins to make monthly lease payments[18].
9. TIF facilitates servicing and maintenance in line with the terms of the specific lease agreement.
10. At the end of the lease period, the ASGM operator has the option to acquire ownership of the equipment for a nominal fee of KES 100 ($0.75).

Throughout the lease period, the ASM operator is equipped with the means to achieve improvements against the mutually agreed Investment Partnership Plans (IPPs), verified and updated by TIF staff twice a year, leveraging the monthly production self-reported data provided by the miners.

Socialization of the mechanism

To advertise the leasing model to potential clients, TIF has hosted a series of miner recruitment events. So far, 100+ miners have participated in six recruitment events, four of which were held in Kenya in the counties of Migori, Narok, Siaya, and Kakamega. Participation in the events is by invitation, largely from word-of-mouth referrals from existing clients, regional mining officers or miners in the pipeline to receive investment..

The objective of these one-day events is to introduce the leasing concept to miners and elaborate on the terms of engagement and enrollment into the programme. To make the meetings more engaging, TIF included as part of the program 1) client testimonials, where already existing clients volunteer to speak on the impact TIF investments have had on their operations, and 2) a slot for a representative from an equipment manufacturer to connect and share with the miners the type of machinery available for leasing through TIF. Miners are not compensated to attend the events.

18. ASGM clients that rely on leaching to make repayments, are at their request, granted a bi-monthly repayment schedule to cater for the time-consuming nature of the cyanidation process.

Performance of the mechanism

TIF's investment scheme has been capitalized with a $375,000 investment commitment from a private impact investor aimed at piloting its innovative financial mechanism.

As of May 2024, drawing on this facility, $138,701 — representing ≈30% of the total funds available — had been deployed across ten ASGM operators in Kenya (averaging ≈32 workers/mine, ≈30% of which are women)[19]. This investment boasts a notable 10% default rate (one single default recorded to date and one contract terminated), with all other contracts still active and some nearing completion. The contract values, ranging from $7,800 to $51,000 with timelines ranging from 12 - 36 months and averaging $12,000.

The Impact Facility delivers a generator to an artisanal mine site in Western Kenya.

19. Highest number of workers being ≈60 and lowest being ≈10.

Table 1: Performance of the mechanism, summarized

Investments Made	No.	Value ($)
Total ($) investment available	1	$375,000
Total ($) investment value deployed	10	$138,701
Total number of contracts terminated and value ($)	2	$26,265
Contracts completed (Including interest paid)	3	$20,579
Total ($) (re)payments made to date	71	$56,769
Contracts on track (2024)	6	
Total workers benefitting (KE)	**200**	

Sustainability

TIF provides mining communities with access to the technical assistance, capital, and equipment that enables the building of diverse local economies through viable and thriving small- and medium-sized enterprises.

Financing the leasing model, in tandem with providing the relevant capacity support to ASM operators to facilitate mine ESG improvements, has heavily relied on grants. The sustainability of the projects TIF conducts in East Africa, therefore, necessitates a dual approach: first, enhancing the investment appeal of ASGM operators by supporting their elevation of operational, environmental, social, and governance standards – and second, advocating for the credibility and attractiveness of investing in the ASM sector to both global and national financiers.

Cross-Cutting Issues

Environmental Issues (beyond mercury) and Climate Change Issues

One of three priority areas for TIF's ESG work with client ASGM operators is environmental protection, which prevents and counters potential negative impacts that increased productivity might have on nearby ecosystems. A direct impact of the equipment leasing program is that many ASGM operators require, as an initial investment, a diesel compressor used to power the mining operations and/or ball mill crushers. Thus, a consequence is that an equivalent to 3.9 liters of diesel[20] (≈100km in a

20. Assuming ore grade is 5g/tonne of ore (average grade quality), that operating hours are 6 to produce 50T of ore (30L/50T of ore), and that the ASGM operators use an Atlas Copco Portable Mining Compressor (Veritas-series).

diesel car[21]) is being consumed for every gram of gold– equalling about 10.56kg of CO_2 emissions/gram of gold[22]. For a client ASGM operator producing 40g gold/month, the CO_2 footprint would be 422 kilograms per month. This number can be notably higher for ASM operations due to various factors – including low-grade ore, higher energy intensity, and lower efficiency (e.g., operational hours) than industrial counterparts. There are, therefore, various complementary efforts needed to counter the increase in emissions and, above all, decrease the footprint per gram of gold – including, but not limited to, supporting geological information, increasing efficiency of operations, and, eventually, transiting to solar-powered (electric) generators and compressors.

TIF has been able to provide financing for the construction of a leaching plant[23], and a majority of the artisanal mineral producers clients still sell their tailings to leaching facilities to get additional revenue. Operators of leaching plants source tailings from different mines in the community. TIF clients have been sensitized around the dangers of leaching mercury-contaminated tailings, and while TIF cannot guarantee that no mercury-contaminated tailings are used in the cyanidation processes of gold extraction, its clients self-report strictly following best practices limiting themselves to direct leaching.

Gender

TIF's Impact Escalator Framework, and the subsequent social obligations that ASGM operators are encouraged to comply with, outline clear and stringent criteria for non-discrimination and women's rights in mining. However, on a broader level, women are often excluded from access to finance, due to various factors. A key observation of TIF is that women in Kenya often do not operate under incorporated companies — making it more difficult to manage risk and sustain investments. Whilst women may be benefitting indirectly from leased equipment to ASGM operators for which they work, there are still inconsistencies in the distribution of income, largely contributed by the double burden[24] women face in having to take care of their households, children, and work at the mines, limiting their time earning a livelihood.

Notably, this also highlights technological gaps—women (as the main handlers of mercury)[25] are in specific need of mercury-free technology, among other things. The perceived unintended consequence of leasing processing machinery is likely to be the slow exclusion of women miners from the gold extraction system, as men typically take on the technical role of operating this equipment.

21. Assuming 3-4 liters of diesel per 100 km
22. Assuming average emission factor for diesel combustion
23. A cleaner alternative to mercury use in gold processing, cyanide leaching is a process of gold extraction from low-grade ore where, in a large tank, gold particles in a tailings slurry turn into liquids once exposed to the chemical sodium cyanide, enabling their separation from other waste products. After this, the gold is turned back into a solid by attaching to carbon flakes, which are later burned to release the solid gold particles from the carbon. Cyanide leaching, however, poses an environmental risk when used in conjunction with mercury contaminated tailings.
24. World Bank. 2023 (2023) "State of the Artisanal and SmallScale Mining Sector." Washington, D.C. Available at: **https://www.delvedatabase.org/resources/2023-state-of-the-artisanal-and-small-scale-mining-sector?_gl=1*i634cc*_ga*MTgyNjAwNjE4MS4xNzE2MjM1MTYw*_ga_03THTD2TV9*MTcxOTMyNzUzMC40LjEuMTcxOTMyNzY3OS4wLjAuMA**
25. Women are more exposed to mercury use in comparison to their male colleagues as they are primarily responsible for gold processing using mercury in the ASGM sector which leads to neurological defects in unborn babies and young children, tremours, muscle weaknesses and changes in nerve responses, among other effects available here: **https://www.epa.gov/mercury/health-effects-exposures-mercury#:~:text=Elemental%20(Metallic)%20Mercury,-Exposures%20to%20metallic&text=Metallic%20mercury%20mainly%20causes%20health,irritability%2C%20nervousness%2C%20excessive%20shyness)%3B**

The initial crushing, hammering of the gold ore into smaller pieces before milling, is work largely reserved for women. They are typically paid a price per amount of ore they crush on behalf of other individuals.

Only one woman-owned ASGM operation has qualified for TIF investment since the inception of the leasing model in Kenya. This lack of female representation in the model is a result of investing into the mine operators with legitimate land rights (i.e., title deed and leasing rights) in place, and in the Kenyan context, these are often men; other reasons have been their lack of business registration and inability to meet the repayment terms. As such, TIF aims to pilot in 2025 the leasing of a mercury-free plant for women-led mining groups involved in sluicing to enable their use of more efficient machinery such as using centrifugal concentrators for primary concentration, followed by a shaking table, treatment by magnets and ultimately direct smelting using borax to enable pivoting from traditional sluicing and mercury-amalgamation —addressing, in particular, the need to reduce women's vulnerability to mercury exposure, subsidized by grant financing to further reduce their barrier to entry.

Local Communities

TIF's proof-of-concept has, to date, focused on individual private limited companies, expecting a wider economic uplift for the community as a consequence of the intervention. This is predominantly measured by the assumed increase in worker remuneration and the consequential spill-overs such an increase might have. Furthermore, key components of TIF's Impact Escalator Framework seek to ensure that any potential negative effects for local communities associated with increased productivity (such as, e.g., increased mercury usage and waste, noise, or pollution) are managed and mitigated by investments in appropriate countermeasures. This also includes that mine expansion retains the appropriate consent from local communities that it might affect. Notwithstanding, unintended consequences such as these might still prevail as the footprint expands.

Findings, Observations, Lessons Learned

Reaching a key milestone, one of TIF's inaugural investees completed their first full repayment of $10,000 by the end of 2022, securing ownership of essential mining equipment. This milestone not only demonstrated ASGM miner's viability for investment but also paved the way for a second round of funding, underscoring the sector's urgent need for formal financing. Building on the overall proof-of-concept, and the successful milestones therein, TIF has expanded its reach by securing a $1 million investment from the Livelihood Impact Fund (LIF) in the latter half of 2023. This substantial investment is earmarked for scaling leasing operations into Tanzania's ASGM sector, leveraging the proven model established in Kenya.

Suitability of Intervention Design

A key premise for TIF's finance model is that providing access to equipment finance will stimulate production and recovery and, therefore, the profitability of the ASGM operators. Consequently, the ASGM operators will be capable of investing in business literacy and overall ESG improvements that make them conducive for higher levels of investment – either from TIF or other financial actors. The suitability of the intervention design therefore relies on the assumption whether equipment leasing, indeed, stimulates production.

TIF has therefore focused on creating data flows from the client ASGM operators that include improved record keeping and, sequentially, reporting. TIF's track record from the past two years shows that equipment leasing has had a positive impact on production; with caveats of unavoidable rain seasons and subsequent hindrances to production. This is illustrated in a few cases below in Figures 2 and 3. Similarly, the repayment schedules have largely been successful, with two mines having graduated from their first contract and an additional three contracts on track to be completed in Q1 of 2024 – a key performance indicator for TIF.

Figure 2: Illustrative figure of gold production increases from point of onboarding/ equipment leasing to end of contract, two examples (monthly averages in grams)

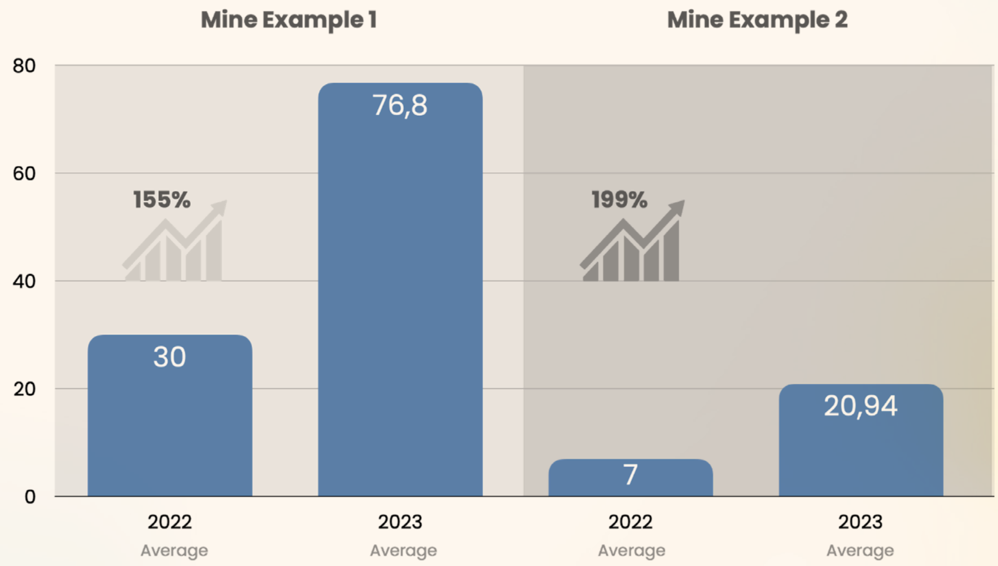


Figure 2 illustrates two examples of ASGM operator's production increases, from 2022 (the year of onboarding) to 2023 (latest production data). It showcases that the equipment leased to sustain and support production has led to positive output in gold (calculated from self-reported data and extrapolated ore output data).

Figure 3: Consolidated Production Data, example ASGM operators by month (in g)

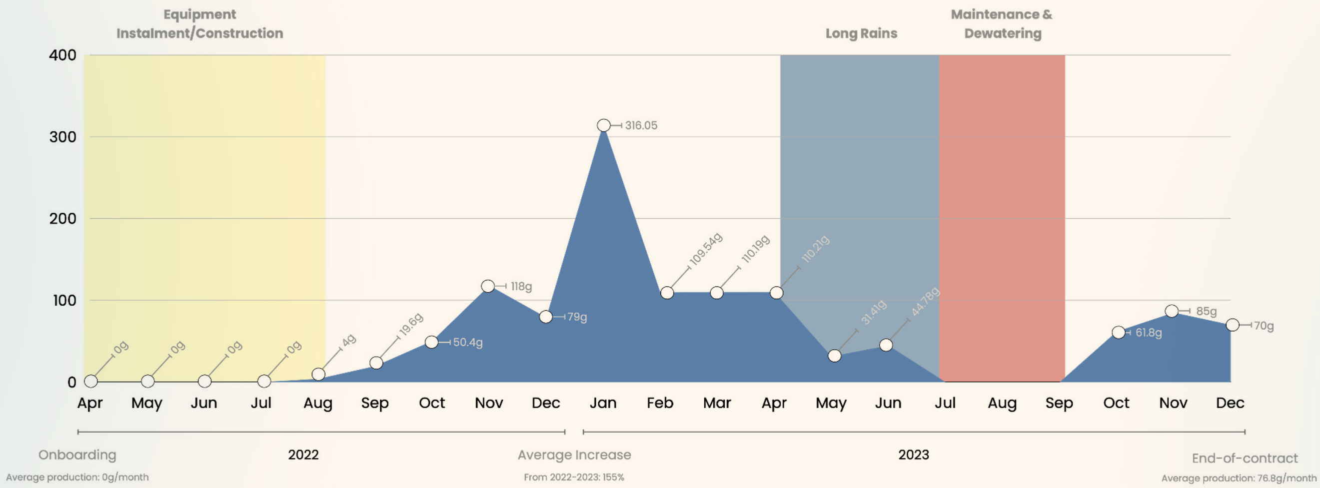
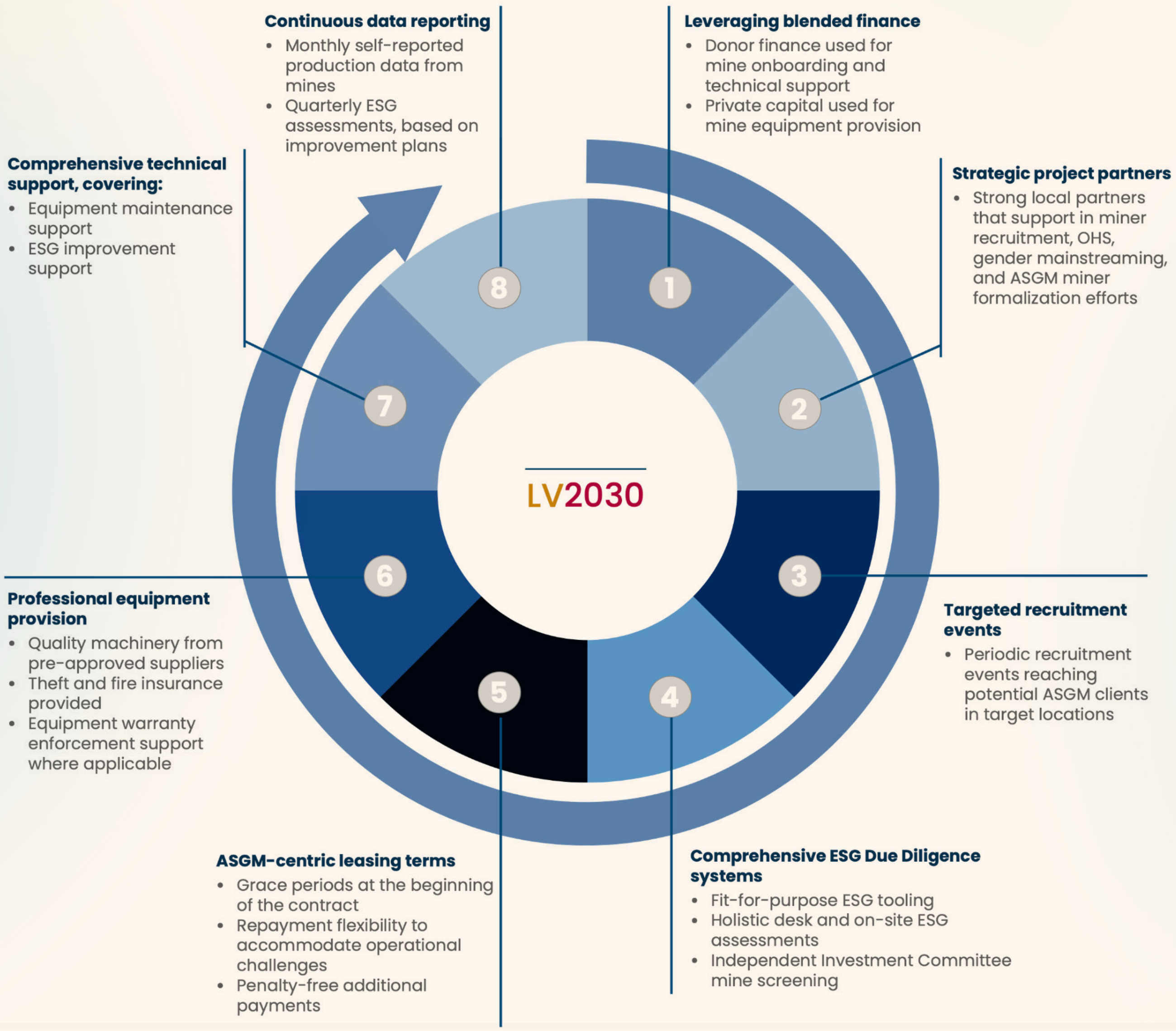


Figure 3 highlighted production spanning 21 months for one ASGM operator, illustrating the successive production increase following equipment installation (yellow and onward), the stabilization of production (September 2022 - April 2023), and the production decreases due to long rains in Kenya (blue and red), that sometimes lead to underground flooding, limiting mine production.

Specific Factors for Success

Active mine engagement and relationship building is a key factor in the success of TIF's proof-of-concept. Equally, TIF's due diligence and screening systems and processes are key in the identification of viable ASGM operations that benefit from sustained servicing, sensitization, and active, high-quality support from the TIF team. Below is a consolidated summary of the key components of TIF's success under the Lake Victoria Gold Programme 2030. The cycle outlines key achievements so far, including key factors underpinning those successes — ranging from outreach work and mine engagement to the long-term sustainability objectives and technical support offered.

Figure 4: Factors leading to success, summarized



The provision of equipment starts with lower-risk assets (e.g. mobile assets that can easily be relocated, like water pumps and compressors) and can graduate to higher-risk fixed assets (such as permanent mono-rope winches) only once a lending history has been established. It is, furthermore, important to note that the lease-to-purchase approach is attractive for mine sites because it enables ASGM operators to access (and, in time, own) equipment they need, but without going into permanent debt. Because equipment can be reclaimed and redeployed at short notice, the interests of investors are also protected in this arrangement.

Challenges

Striking a balance: impact vs. financial risk

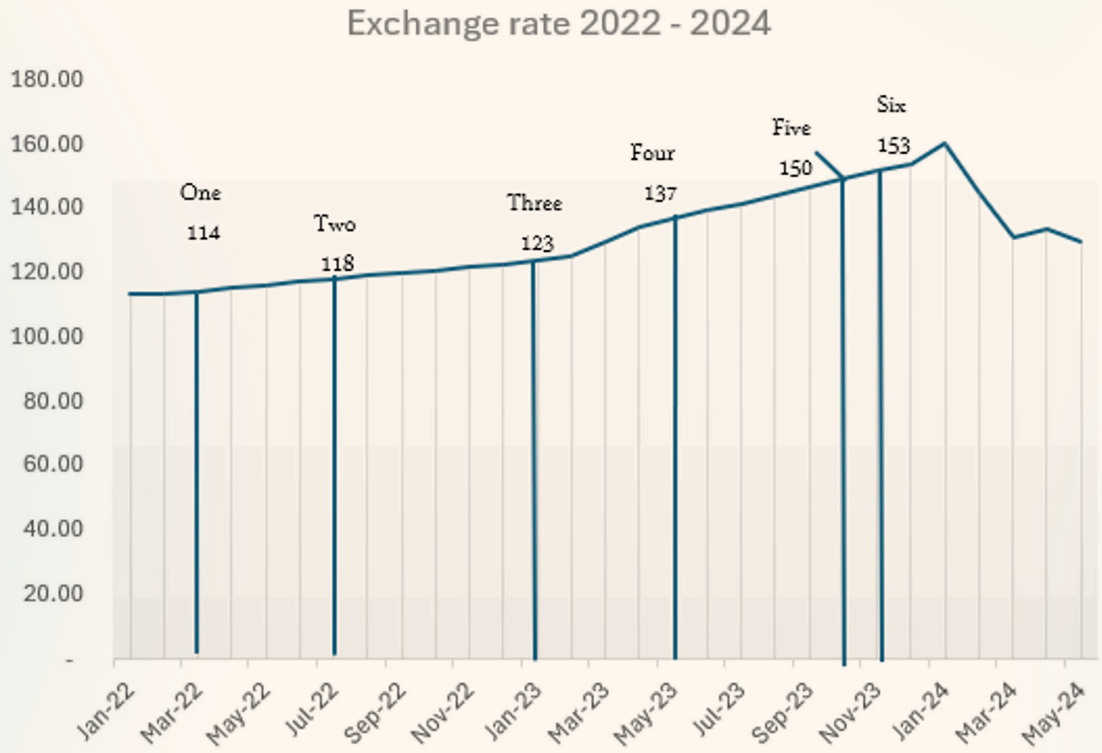
TIF is focused on achieving a financial return on lease contracts. To do this, one challenge has been the need to balance inclusivity for operators who are committed to improving their operations but are currently less advanced in terms of ESG and productivity, with the need to select ASGM operators who have the financial literacy and production capacity to make payments reliably, according to TIF's terms. This represents a trade-off between impact vs financial return; choosing between prioritizing inclusive development and addressing the worst conditions versus generating a secure return to impact investors, aiming to secure sufficient capital to scale the program commensurate with the size of the sector.

TIF has rejected several lease applications due to governance challenges linked to operators' informality (lack of business permits or land rights), financial literacy, and poor record-keeping. Where miners have met TIF's minimum investment due diligence expectations, the team has provided technical support to the management teams and mine workers, resulting in eventual lease provision several months to a year after first engagement.

Foreign Exchange Fluctuations

Another challenge experienced by TIF in the equipment leasing model has been the notable devaluation of the Kenyan Shilling against the US Dollar. Subject to unanticipated volatility, the exchange rate fluctuated from 114 KES per USD in March of 2022 to 160 Kes per USD at the beginning of 2024. TIF had entered into local currency-based contracts while borrowing investment capital in Euros. This means that even if repaid in full, the difference in currency conversion rates could result in much smaller if any, returns. Consequently, in April of 2024, TIF started using USD-based contracts, with an option for repayment in Kenyan Shilling at the current exchange rate, to minimize FX-related risks. With miners being paid based on the international gold price, which is set in US currency, their income is resilient to a devaluation of their local currency.

Figure 5: Value of the Kenyan Shilling against the USD, overlayed with contract dates.



The financial self-sufficiency and continuous growth beyond the project's influence is still largely contingent upon national financial and regulatory efforts that currently limit ASGM operators' ability to access necessary and equitable financial terms on their own. While TIF can stimulate conditions that are conducive to a higher level of investment and enable the economic sustainability of (and de-risk) ASGM operators as businesses, the core of the sustainability of TIF's vision relies heavily on the necessary regulatory environment and – above all – economic will of relevant financial institutions to engage with ASM operators, not only in Kenya but also regionally and globally.

Recommendations for Future Interventions

Moving from a proof-of-concept to a scalable model entails various adaptations. As TIF and its Lake Victoria Programme 2030 evolve, there are key insights that will affect the work conducted across East Africa. One such insight is the need to take a holistic - landscape - approach to ASGM improvement and financial access. Despite the various benefits associated with focusing on individual ASGM operators — tailoring the model according to needs — there are broader considerations of community welfare and social inclusion that must take precedence as the model matures. This includes tying access to finance with a broad array of cross-cutting issues, such as collective benefit, women's rights in mining, ecological sustainability across mining landscapes, and more comprehensive economic development. This will entail widened engagement with cooperatives — providing opportunities for co-accountability in lease repayments and the overall success of lease repayments.

Annex I: Leasing Case Studies

Successful leases

Mine One | **Location:** Migori, Kenya | **Workforce:** 20 workers

Mine one is an incorporated company established in 2019 that operates two mining shafts in Rongo, Migori town. The mine is located on a 2-acre piece of leased land. The ASGM operator's skilled and experienced leadership team comprises a mining engineer, an accountant, and an environmental expert.

Investment: Generator and Water pump

Value: USD 7,907

Contract period (without delays): 15 months at 15% annual interest rate. 3-month grace period.

Payment deviations: 4 payment breaks (2 complimentary and 2 paid), 2 partial payments

Total timeline: 24 months (1st May 2022 - 30th April 2024 includes three months grace period)

Repayment status: Complete. Equipment ownership transferred to the mine.

Production increase: 2022 (18.5g/Quater) → 2023 (62.8g/Quarter) = + 240.22% increase (in production average)

Mine Two | **Location:** Migori, Kenya | **Workforce:** 40 workers

Context: Mine two was incorporated in February 2018. It has an active mine site at Kabobo, Migori County, where it operates a mercury-free operation. The mine has two Directors, one of whom is the land owner. The mine needed to scale up production and processing from its 120-ft shaft and reached out to TIF for support.

Investment: compressor, winch and ball mill (1st) and second-hand generator (2nd)

Value: USD 10,000 and USD 7,610

Contract period (without delays):

Loan Capital: 7 months, at 15%. annual interest rate. 2 months grace period

Generator: 12 months at 15% annual interest rate. 2-month grace period.

Repayment status: Complete for both investments

Payment deviations: 3

Loan Capital: N/A

Generator: 3 payment breaks (1 complementary and 2 paid)

Actual timeline:

Loan Capital: 33 months (1st March 2021 - 5th December 2023)

Generator: 16 months (1st February 2023 - 5th June 2024)

Production increase: 2022 (172g/Quarter) → 2023 (218.6g/Quarter) = + 27% increase (in production average)

Mine Three | **Location:** Migori, Kenya | **Workforce:** 66 workers

Context: Mine three was incorporated in September 2017, and it has an active mine site at Kamagambo, Migori Country. While rebuilding an old shaft in 2021, the mine amassed a massive amount of tailings, some of which they were able to process by renting 3rd party leaching plants to fund their mine development and keep the operations alive. This led to their investment need to seek funding for the construction of a leaching facility to process their own ore material.

Investment: VAT leaching plant and a Ball mill

Value: USD 16,953 and USD 2,602 respective

Installation status: Installation is complete and operational

Repayment terms: 24 months at 15% annual interest rate. 4-month grace period.

Total number of payments: 14

Payment breaks taken: 7 (3 payment breaks, 4 paid payment breaks)

Total timeline: Expected 35 months (1st May 2022 expected to complete 5th April 2025. Not yet complete)

Repayment status: on track

Production increase: 2022 (90.3g/Quarter) → 2023 (234.7g/Q) = ~ 160% increase (in production average)

Defaulted Lease

Mine Four | **Contract termination due to dissatisfaction with equipment**

Contract length: 18 months **Contract live date:** August 2022 **Contract value:** $11,616 **Landed-cost value of equipment:** $9,010	**Equipment originally provided:** (Second-hand) Compressor **Equipment recovered:** Compressor **Resale value of recovered equipment:** $8,050 **Depreciation of recovered equipment (compared to landed cost):** $960

Context: The compressor provided by TIF was used during the grace period, but the ASGM operator terminated the agreement before the 3-month window elapsed. The mine chose to use a separate compressor on a rental basis from a local trader - claiming that the trader's compressor worked more effectively, a claim disputed by TIF due to the leased compressor having been inspected and tested by an engineer and found to be in full working order, and with a higher capacity than their alternative compressor. Nonetheless, the mine assisted TIF in the relocation process by providing temporary safe storage of the machine until a new lessee was identified.

Response to default: Following default, the compressor was re-inspected and then taken into safe storage, with these costs covered via the safety deposit originally provided by the ASGM operator. The compressor has subsequently been redeployed to a separate mine site at a depreciated value of $8,050, down from the initial purchase price of $9,010.

Annex II: The Impact Escalator Framework

Aligned with internationally recognised Voluntary Sustainability Standards (VSS), including the CRAFT Code, Fairmined and Fairtrade, the Impact Escalator framework is a comprehensive ESG framework ranging from requirements on formalization and permits to workers' rights, environmental management, and good business conduct. Grouping requirements by the level of attainability, on-site ESG assessments by the TIF team determine the general level of investment eligibility. SMEs seeking greater investment or repeat engagements need to show not only the successful repayment of their first contract but also boast measurable progress from one level to another. The Impact Escalator consists of three main principles: Good Governance, Safe & Dignified Working Conditions, and Environmental Protection. Each principle contains sub-categories of criteria, divided into different levels of performance:

Figure 6: Focus Areas of the Impact Escalator Framework

Figure 7: Performance levels

Best Practice

Requirements that represent best practices referenced by Fairtrade, Fairmined and other recognised frameworks, to be aspired over time. For the AMPs that have completed all requirements in Pre-Investment & Continuous Improvement and aspires to meet the full framework.

Continuous Improvement

Requirements describe progressively improved production practices (to ensure workers' health and safety, increased market transparency, reduced environmental impact of mining activities, etc.) that require access to financial and technical support to be achieved.

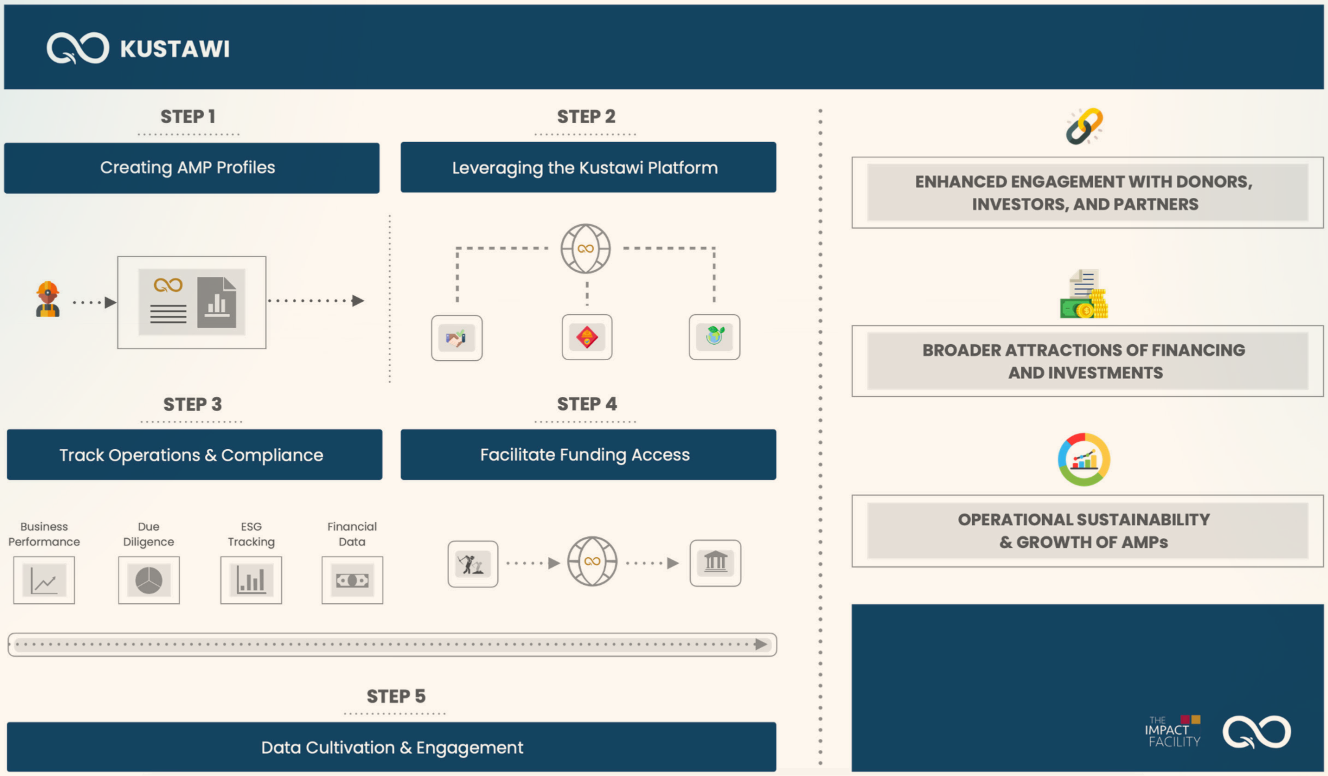
Pre-Investment

Requirements include minimum expectations that should be achievable without (significant) investment or external technical training. These requirements stipulate practices needed to address the risks specified in Annex II of the OECD's Due Diligence Guidance and the CRAFT Code Modules 1-3.

Annex III: Kustawi Information Management Platform

A key asset for ensuring continuous engagement with ASGM operators involves crafting detailed investability profiles with clients. These profiles, designed to be accessible to a broad spectrum of institutions and investors, leverage the capabilities of "Kustawi" – TIF's innovative data platform, developed together with Datastake[26]. "Kustawi", currently in beta testing, is an information management system created to encourage sustainable impact financing — specifically tailored for the ASM sector. Kustawi's goal is to meticulously track mining operations and gauge their progress against Environmental, Social, and Governance (ESG) criteria while facilitating access to funding for necessary equipment purchases and operational sustainability. This platform will empower ASGM operators to systematically organize their data, thereby enhancing their ability to engage more deeply and attract a broader array of impact investments.

Figure 8: Functions and mechanisms of Kustawi, summarized



Annex IV: Lease-to-Purchase Contract Template

See contract template below.

26. Datastake is an open-source software development company founded in 2021, specialised in building collaborative data management systems to improve access to information in mineral-rich countries. More information available at: https://datastake.io/

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 countries all over the world 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.

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Supported by: gef

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In partnership with: UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION; UNDP; CONSERVATION INTERNATIONAL

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