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Artisanal and Small-Scale Mining: A Fair-Trade Approach!

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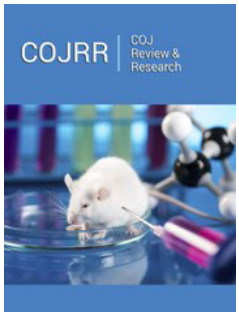

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Abstract

Artisanal and Small-Scale Mining (ASM) provides livelihoods for millions but generates serious social and environmental harms. This abstract reframes ASM as a potential fair-trade pathway: One that secures decent incomes, protects health and restores ecosystems while aligning with the United Nations Sustainable Development Goals. It highlights concrete case studies that illustrate how targeted interventions-savings schemes, women-led enterprise models and collaborative agreements between large and small miners-can transform ASM from an informal survival strategy into a regulated, sustainable sector. The core argument is that legalization, professionalization and multi-stakeholder governance, combined with nature-based restoration after mine closure, can reconcile poverty reduction with environmental stewardship. Thinking about the goals of Agenda 2030 we are facing a Hamlet's dilemma, how can we support these families to reach goals like "No poverty ", "Good Health and Well-being", "Decent Work and Economic Growth"?

From the Oxford Dictionary the meaning of "Fair Trade" is:

A system of trading with a developing country in which a good price is paid for their exports, and the people who produce the goods have good working conditions and are paid a fair wage:

a. The benefits of fair trade must reach the poorest communities.

b. The use of child labour goes completely against fair trade principles.

Artisanal And Small-Scale Mining (ASM) is based on extracting minerals for communications, construction, agriculture activity and clean technologies, or gemstones along alluvial deposits using non-technological tools. This activity typically requires low capital investment and employs highly labour-intensive technology. It often occurs in remote locations, and it has considered the foremost nonfarm income in rural areas like Africa, Asia and South America. Unfortunately, ASM development is still in its infancy, despite investments for about 50 years by many international organisations. Awareness of ASM role of in contributing to mineral extraction and facilitating the transition to a low-carbon economy, among other aspects, is of primary importance. It is essential to assess how ASM should evolve and how its potential can be maximised. ASM offers advantages such as low capital intensity and flexibility in responding to market dynamics, particularly price fluctuations. However, ASM also entails economic, social, environmental and ecological implications. Environmental concerns, in particular, impact the quality of life and health of mine workers, local residents, neighbouring communities and future generations.

This activity supports very poor families where short opportunities and diffuse poverty affect the countries; poverty alleviation could be reached if this activity is carried out according to the laws. In particular, SDGs (1 No poverty, 3 Good Health and Well-being, 5 Gender equality, 6 Clean Water and Sanitization, 8 Decent Work and Economic Growth, 10 Reduced Inequalities, 12 Responsible Consumption and Production, 13 Climate Action, 14 Life below Water, 15 Life on Land) might be a guide for a legitimate and sustainable policy for the development of the natural resources, considering the environmental impact too and the opportunity in remediating the area following the Nature-based Solutions (NbSs). The SDGs are key points to develop a policy to support social issues and the well-being of people while preserving biodiversity and respecting the environment.

While it is true that ASM creates jobs and supports many families, improving their quality of life, one must ask: at what cost? What about the mine workers' health? What about the quality of life of people living close to that area? What are the risks and the legacies for future generations? Three pillars are fundamental when ASM is studied: Environmental stewardship, occupational health and domestic revenue mobilisation. The suggestions to support the complementarity between international markets and the purpose of professionalising this sector to reach a better development is supported by the World

Bank whose goal is a world with no poverty on a liveable planet. The World Bank prompts in this direction with time and using resources for trust. The most critical point is to reduce the risk for mineworkers, people living in the same area and the environment, so social impact and environment are the two fundamental points to make ASM a legal and regulated activity. A successful and proper action is to think of a multi-stakeholder approach such as technical, scientific, legal and socio-economic aspects for a correct ASM evaluation. Each stakeholder should support ASM activity and the reduction of its environmental impacts following the SDGs goals. How ASM could become a sustainable choice to ameliorate life quality for someone and how ASM could be defined as a sustainable choice after the closure of the environment.

Social Risk

Recent studies affirm that about 225 million people work in this activity, with different duties as miners. Among these workers, about 30% are women working in several roles from labour-intensive mining activity to better qualifications, such as pit bosses, mine owners and financiers. Their percentage is relatively small compared with the male workers. However, the female non-mining activities (ancillary roles) are hidden or not identified as miners; this could cause a deep marginalisation of female workers. In other examples, women are less paid than men for the same labour (inequities in pay). On the other hand, ASM is also an answer to families' poverty, people find this opportunity as an easy way to gain support for their own families and themselves, and informal mining has chosen to sustain farming activities, household well-being, health care and shelter. Moreover, suggested factors for choosing this job are lack of alternatives, political leniency and in some cases law enforcement corruption. One of ASM's consequences is an inadequacy of control over mine activity from governments affecting the environment and life quality for the workers and their families (women and children).

Hard work and scarce knowledge about chemical exposure is a plague affecting health (dust and noise pollution, exertion from the intense activity) and safety. Some maladies like silicosis caused by the inhalation of fine crystalline silica dust and the Minamata disease due to the Hg presence in the environment are well known and present in mining workers. Metals, released in soil, freshwater and groundwater, can reach the food chain and affect human health. The plague of sexually transmitted diseases is also well known in this domain; a second plague is the dropout from the school of the youngest generations. Unluckily, these workers have limited access to a specific formation for this specific activity, on the other hand ASM workers can support their children's schooling and in starting a business activity. This is a strategy to support the poor populations and responsible mining activity is fundamental to mitigate all the issues and reduce further risks.

The furthermost important point is the sexual abuse towards women. Unfortunately, sexual and gender-based violence is increasing and many times are not addressed. A different form of violence that is conflicts between ASM and LSM. Conflicts about concessions, vandalism to property and sabotaging, and violent attacks against workers. ASM is expanding and competing with LSM. There have been attempts to find a solution, the suitable one should be a legal approach for ASM and economic support from LSM, as in some cases happens with good results. Fiscal regime is a further point to be valued; it could raise domestic resources and better regulation for ASM workers. A responsible fiscal regime should provide an income for workers and at the same time, it could secure social protection and the opportunity to get access to services. Positive example: In the Democratic Republic of Congo a saving scheme was offered to miners by Pact. This idea started from a women entrepreneur model in Myanmar.

Environmental Risk

Negative issues such as gender discrimination, child labour and unfair treatment of women might be reduced like environmental degradation (biodiversity destruction; air, sediments and water contamination and land degradation). This typology of mine activity is usually deleterious for the environment and mostly not sustainable, phenomena like deforestation and desertification, land and water pollution, soil degradation and erosion are observed. These phenomena affect climate change, and some studies have confirmed these phenomena are the answer to an increase in climatic risk. ASM rush means rapid environmental degradation like a deep land use change, whereas ASM in a forest is slowing changes which affect natural resources like charcoal making. Moreover, a mine can still contaminate the environment after the closure, in case of abandonment and not according to a safety procedure, fragile people (women and children) living close to the mining area are more affected by environmental degradation. All these points enable a decrease in biodiversity and an increase in carbon emission from soil to the atmosphere contributing to climate change. The World Bank could support people from LSM defined as expertise for ASM closure, applying well-known methodologies. ASM areas are sites defined abandoned ones, where ecological restoration and their reclamation will stand for a supported land-use change as agriculture, touristic, energy production areas and natural landscape restoration and possibly for gaining carbon credits.

Furthermore, ASM affects the environment during the extractive activity and when this activity has stopped, abandoned pits could release contaminants in water and groundwater, in soil reducing soil fertility but also reaching the food chain. Restoring the area will be difficult because the excavated materials are over the topsoil, and this material is poor in nutrients; this is a reason why fertility in these areas has reduced. Therefore, consequences from ASM activity are loss of agriculture, food insecurity and community vulnerability, this might oblige more people to work in ASM activity. On the other hand, ASM activity provides sustenance to people whose families also work in the agriculture activity (purchasing fertilisers and/or tools), it is a vicious circle. ASM should adopt progressive and simplified environmental standards due to the operation sizes. It is observed that improvements should be coupled with the goal to incentivize behaviour change for miners and at the same time ameliorating environmental governance.

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Professionalisation

Education and training for miners, working in ASM is a load-bearing pillar, at the same time, control of mining activity is a key point to making ASM a sustainable activity. Making a miner a professional in this sector and increasing scientific and social knowledge will reach the goal of generating new employment opportunities, increasing well-being for miners and their families and revenue generation supporting the future generations. There is a lack of personnel to conduct fieldwork (geological mapping) and to train ASM miners, policies and programmes are fundamental for correct development and there is observed a shortage about this point and some programmes are not correct and suitable for miners. Finally, yet importantly, miners are generally illiterate and cannot obtain training and educational material. Miners should be supported by incentives to change their behaviours at the site, such as for the mine closure.

Focusing on forming professional workers for ASM and investors who could support social and environmental standards implies reaching the best practice standards. Unfortunately, most of these standards are from LSM and are costly to put into action. A critical point to develop is the management of environmental practices minimising the risk on soil and water, supporting ASM with correct and deep geological knowledge makes these risks to be reduced. Geological and mineralisation knowledge will allow ASM workers to choose the area to exploit and develop a more sustainable activity and be aware of the activity from foreign mining companies, too.

Using modern technology like remote sensing could be a tool to monitor the characteristics of these areas and changes in land degradation, deforestation, and alteration of watercourses and water turbidity; generally, AMS are in impervious or unapproachable areas. Unfortunately, lack of geological knowledge and inaccessibility in ASM areas make miners abandon pits dug if they are unproductive. Further, if rehabilitation and/or restoration are absent, these pits affect soil, water, biodiversity and human health. To support sustainable ASM development, each government can decide on different standards for helping miners that is to project the mining activity, improve results from mining activity and manage the closure of mining activity. New technologies are helpful in the development and expansion of ASM activity, digital solutions will improve working conditions on site, fostering sustainability. Large mining companies occupy large territories but are not actively exploring. An agreement between the two typologies (LMA and ASM) and worker formation is a way to avoid forms of violence.

Positive Example: A wage gap has been determined between workers in ASM and those of large-scale mining in Chile, a partnership has been reported between the two typologies of mine for the Cu production, leasing activity to ASM to ease these miners and a rent ceiling of 5% of revenue is in return. This could be a way for large mine companies to get revenues from land defined as uneconomic due to the small scale for exploitation. ASM may be defined as a sector where from hard-to-access areas many people could have an income and livelihood. The agreement among ASM and large mine companies, governments, international agencies, and NGOs are of crucial importance.

The right of exploitation and the cost to acquire a licence should be simplified and digitised, to have an overview of all the ASMs and the total number of workers. Generally, to acquire a licence means to go around many agencies, great distances and forms to fill up and in some cases, it is valid only for a year and it is costly. Another crucial point to underline is the definition of these mines. In some states, these mines are defined as non-mechanised, which means using surpassed techniques and resulting in environmental degradation and not following the circular economy principle. Speaking about surpassed techniques or methods, these increase the danger for the miners' health and the environment too.

Positive example: In Uganda and Tanzania there is only one type of licence category and most important in Uganda this licence lasts for 21 years for a small-scale permit holder. Tanzania is decentralising mining offices, too. In Peru there is a web application accessible on the mobile phone to get the licence. Guyana is a good example of decentralization with offices and a connection to the headquarters in Georgetown. Sometimes financing the opening up of an ASM is due to illegal sources (illicit financial form, IFF) because of the absence and/or the difficulties in reaching legal financing and the high risk in this activity, supporters (banks, financial institutions, NGO) are exacerbated from the many barriers. IFF could be the reason for further conflicts. It would be necessary to support investments in sustainable ASM activities and a facilitation to access the international market for sales, to mine and sell legally is the pattern to follow to tackle this issue. However, governments and mining associations support miners but financing is not the most important topic. Finding ways to de-risk the deployment of capital is therefore essential for scaling up.

Positive example: In Tanzania the World Bank and the Tanzania Development Bank support ASM with a small business loan project, supporting the applicants with the procedure (possession of a primary mining licence) in improving technology, environmental protection and Occupational Health Safety (OHS).

Fair-Trade-Policy

The policy supporting fair-trade principles will also support opportunities to reduce the environmental impact of climate change promoting operations such as decarbonisation, application of circular economy principles and following the rules for mine closure. Some points have to be developed: The cost to acquire the licence and open an ASM, sustainable strategies for mine closure, and the support from institutions to encourage respect of the laws and/or the implementation of measures for mining activity. Following the rules ASMs could be a great tool to promote 3, 5 and 10 SDGs, which could contribute to well-being, and prosperity, 12, 13, 14 and 15 SDGs underpin environmental stewardship, and 8 SDG ASM is vital to global prosperity and SDG 8 finances domestic revenues. Suggesting a systematic approach in improving work conditions will serve to amend a better life for these communities and consequently for the environment. Building a participatory and transparent management model will support the evolution of ASM

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and well-being of the workers and local communities. Using digital solutions allows workers to register the licence for mining activity, support workers in improving their working conditions, gaining the support of multi-stakeholders to reach the SDG goals of Agenda 2030.

Fair-trade policy points (modified from Word bank 2024)

The assumption to apply a fair-trade policy is that thinking about a progressive application of standards, workers could grow according to the ASM and workers characteristics. ASM undertakes to ameliorate worker conditions and policies. These goals may be reached involving the parts, which are interested in with support and assistance.

i. Ensure a responsive and simple framework to follow for any workers

ii. Develop minimal standards: salary and equal salary per man and woman (gender equality), hours per day to work, days per week to work and rest and no child labour.

iii. Protection of health and safety of workers, sustain of security tenure. The use of digital solutions will be helpful in reporting Sexual Gender-Based Violence (SGBV) and Gender-Based Violence (GBV).

iv. Decentralisation and digitalisation to get any documents for opening an ASM, to promote a successful activity in impervious areas, and access to geological information. Mobile phone to support miners from ASM for the best practices, a so-called one-stop-shop approach for acquiring the licence, and mobile banking to support funding requests. The use of remote sensing for geological knowledge so that productivity could increase.

v. Support legal and sustainable financing in opening the ASM and later in selling the products, reducing the illicit Financial Flows (zero IFF). A support in reducing IFF could be a light fiscal regime (adaptive fiscal model) to incentivize ASM formalization.

vi. Workers' formation to reach a better knowledge of the procedures for sustainable mining activity, for their health risks, reducing the environmental risk and climate change.

vii. Supporting agreement between Large Legal Mine and ASM and other stakeholders, engagement between governments and miners for the decision-making processes.

viii. Suggesting the formation of a mining association as miners could be represented and advocate their rights and interests, these organisations may promote the sector development. Furthermore, gender-organizations could strengthen women and their work conditions too.

Positive example: https://virtugem.com/: Virtu Gem launched in Zambia, then moved into Malawi and Kenya with plans to continue expansion bringing equitable gem trade across the globe. In 2021 the EGPS (Extractives Global Programmatic Support), a part of the World Bank Group, awarded a grant to the Responsible Jewellery Transformative for the Virtu Gem program. https://moyogems.com/: Moyo Gems is a responsible miner-to-market gemstone collaboration born in East Africa. We are working with the women artisanal gem miners (and their male allies!) in Tanzania and Kenya to track rubies, sapphires, tourmaline, garnets, citrines and amethysts, from miner to market. We work to empower women miners to improve their financial security, access new, consistent market opportunities for fair trade and channel investments back into their communities. https://www.gemfair.com/: Gem Fair enables the tracing of artisanally produced diamonds from mine to market through specially tailored technological solutions, with miners also benefiting from the support of our expert local team. Gem Fair is an inclusive programme that engages with artisanal miners wherever they may be in their journey, whether that be entry-level through to best-in-class. Our thoughtfully designed programme incentivises miners to meet and exceed legal requirements, while also offering training in a range of areas to support continuous improvement in mining and business standards.

In Ethiopia mineworkers can deliver the processed gold to cooperatives with a legal authority to carry out the gold on the behalf of the government and then gold is sold to the National Bank of Ethiopia. In Zimbabwe there is also a model like in Ethiopia through a commercial bank at the rural interface. In Cameroon there is a semiautonomous institution which is working on behalf of the government. These are three examples where gemstones can be bought according to the Section 1502 of the Dodd Frank Act.

Consideration toward incentivising miners and governments to develop, own, and apply standards designed to improve mine performance and governance are crucial positive economic contributions highlighting the need for increased transparency in supply chains and sourcing from mineral-rich fragile nations to be conducted in a way that would promote stability and sustainability. To attenuate the social impact and consequently the environmental one, actions are necessary from governments and private sectors. Suggesting a policy for this sector means rules to promote accountability and transparency, respect human rights, reduce poverty, improve working and salary conditions, support low carbon transition and most importantly achieve the goals from Agenda 2030. Fair-trade path is a sustainable way to bring minerals and gemstone on international market according to the Section 1502 of the Dodd Frank Act. Positive examples are subsidized by international donors, but smaller ASM couldn't reach this goal. A fair-trade solution can be defined a cost-effective one and miners can enter in the legitimate market. This purpose is reached with at a slow rate due to the high costs of compliance. An important form of support is from LSM as investors and/or further typologies of agreements, from NGO, government and the World Bank too.

The aim of this article is to understand how a fair-trade idea would be possible in the ASM environment, supporting the three fundamental pillars suggested by the World Bank: Environmental stewardship, occupational health and domestic

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revenue mobilisation, promoting a sustainable approach for many populations, doing so many goals from Agenda 2030 will be achieved. A world of illegal and survival could become legal and wellbeing could be normal in a close future. A large number of people could start to have plans for their future, could lead a life following the principle of sustainability thinking to the future generations, and could promote respect for the environment and for minorities like women and children.

It is an opportunity to discuss and moot the wide dilemma about forwarding this activity, encourage sustainability and contributing to wellbeing of local populations in remote areas. The purpose and the opportunity for a fair-trade policy is to settle an old and large issue. This question could be compared to a black hole, it is enlarging and consequences are become more important passing the time.

A fair-trade policy is a way to support and respect workers, to reach sustainability, to highlight and pinpoint a solution, a pattern which needs time, but it will be successful as in other examples (positive examples).

Fair-trade is a well-known concept with a high percentage of positive results in different environments, with well-defined principles. The question is how would ASM reach the three pillars suggested from the World Bank? To define a path following the fair-trade examples make the path strong and successful, multi-stakeholder could trust and finance this activity raising the probability of outcome, affecting the market with legal minerals and gemstone, ameliorating life quality for many people. In a long-term point of view, this approach will also sustain the three pillars from the World Bank and the SDGs from the Agenda 2030 [1-18].

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