

# WHITE PAPER

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DE-RISKING ASM SECTOR TO UNLOCK  
INVESTMENTS AND FINANCES

THE PUBLIC PRIVATE MULTILATERAL PARTNERSHIP



JULY 2024  
FAIR LIFE FOR MINERS TO END POVERTY

## DE-RISKING ASM SECTOR TO UNLOCK INVESTMENTS AND FINANCES

Like the Marshall Plan in 1947, Africa, Caribbean and Pacific needs \$1.8 billion investment in Artisanal Small-scale Mining infrastructure and equipment to capture smuggled precious metals and critical raw materials

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White paper 2024/07

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**Fair Life for Miners to End Poverty (FLMEP).**

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FLMEP White Paper N°2024/07  
July 2024,

## **ABSTRACT**

Artisanal mining is the basis of how human beings began their mining journey before the discovery of the mining industry by companies. However, as mining development eliminates artisanal mining activities in the design while both sectors have interests in the same locations, we believe that strong public finance policies and multinational commitment are more than necessary to bring this sector out of the ruins of mining extraction.

For ASM (Artisanal and Small-scale Mining), access Finance need de-risking investment, a way to create resilient ASM economic systems to fight poverty on a national and continental scale (SDGs Goal 1). The objectives of de-risking projects are to make them more financeable by public, private and multilateral sector lenders or financiers to attract investors that can earn an acceptable “risk-adjusted” return. It offers a compelling case for greater financial inclusivity to formulate innovative, and context-specific solutions. This also represents a crucial opportunity to project and embrace a set of rules according to which the implementation of projects and joint ventures takes place. The more transparency that host governments can bring to development projects, the more comfortable and secure that lenders and investors will be in their support of those projects. Successfully transforming ASM poverty into prosperity means reducing project risks at the national level to demonstrate economic viability that justifies additional investments to convince all stakeholders to participate and protect their assets and investment capital. The best way to do that is by launching a collaborative and creative financing framework that uses the strengths of the private and international financial institutions to free up the capital necessary to realize the project. To achieve this, we conducted research and built the PPMP (Multilateral Public-Private Partnership) which announces the architecture of access to ASM financing in order to make ASM an activity that supports economic and social development of mining regions, while allowing States to recover a significant tax base and create budgetary space to finance its development programs.

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### **Keywords:**

Artisanal Small-scale Mining, Poverty, Africa Mining Vision, Technopolis, investment-risk, Raw materials, Productivity, Scale economy, Donors  
Pioneering investments/UN PRI.

**Acronyms:**

ASM	Artisanal Small-scale Mining
AMV	Africa Mining Vision
ILO	International Labor Organization
CTsP	Cultural Theories of Poverty +
STsP	Structural Theories of Poverty
SCTP	Sub-Culture Theory of Poverty
IATP	Individual Attributes Theory of Poverty
MPTPA	Marginal Productivity Theory of Poverty Alleviation
NCTP	Natural Circumstantial Theory of Poverty
PTP	Power Theory of Poverty
STP	Structure Theory of Poverty
TTP	Trickledown Theory of Poverty
VCTP	Vicious Circle Theory of Poverty
PIATP	Personal Income distribution and Alleviation Theory of Poverty
OPIH	Oxford Poverty and Human Development Initiative
NYT	New York Times
DDPs	Domestic Purchase Programmes
ASGM	Artisanal Small-scale Gold Mining
NGOs	Non-Government Organizations
PPMP	Public Private Multilateral Partnership
ESG	Environment Social Governance
EGPS	Extractive Global Pragmatical Support
GEF	Global Environment Fund
EPRM	European Partnership for Responsible Minerals
ACP-EU	Africa Caribbean Pacific-European Union
USAID	U.S. Agency for International Development
UAE	United Arab Emirates
SWISSAID	Swiss Aid
ENACT	Enhancing africa's response to transnational organized crime
SDGs	Sustainable Development Goals
GISTM	Global Industry Standard on Tailings Management
WHO	World Health Organization
UNEP	United Nations Environment Program
IFAD	International Fund for Agricultural Development
EV	Electric Vehicles
MMSD	Minerals and Sustainable Development
FCV	Fragility, Conflict and Violence
USD	US Dollar

## **1. Introduction**

Despite mining is a large contributor to the global economy with the top 40 companies contributing US\$544.4 billion in 2020 (PwC 2021), and despite African Mining Vision (AMV) reported that between 15 and 20 per cent of the world's non-fuel minerals, 18 per cent of Africa's gold, and almost all African gemstones, except diamonds are produced by ASM, we observed that while they are at the forefront of those who allow world economic to develop through the use of mining substances in technological processes such as telephones, vehicles, energy, etc., artisanal miners suffer many socioeconomic deprivations that make them as left-behinds of global society. The latest estimates reveal that more than 44.67 million people work in ASM in 80 countries worldwide (Pact 2022). By considering that initially this figure was 13 million people in the 2020s (ILO) and that it has tripled in 20 years to reach today's 44.67 million, we are aware that ASM will be faced in the years to come from a double phenomenon, that of the energy transition and the demographic transition. Other estimation show that at least 134 million people work in related industries that support the ASM sector (World Bank 2019, 71) and that 80-90% of ASM miners work informally, joining the 2 billion people globally—over 61 percent of the world's workers—estimated to earn their living in the informal economy (ILO 2018). This gap between the abundance of African mining resources which make it possible to manufacture the everyday goods that the world uses, and the meagre income which do not benefit artisanal miners, States and the continent can only be filled if a new economic model bringing together all private, institutional, financial, bilateral, multilateral and humanitarian actors is created inside mining areas to be closer to the resource and mining communities. This system will make it possible to develop the scale economy necessary for growth and development, and to fight against illicit financial flows, smuggling, as well as all forms of illegal exploitation of mineral resources coming from ASM, so that artisanal miners and their community can move from poverty to prosperity.

## **2. Developing Africa's ASM mineral resources**

### **2.a/- ASM's African Mining Vision**

The African Mining Vision is a shared vision supported by African governments to transform and build a well-governed and sustainable mining industry. With inputs from several regional, continental and global initiatives, particularly the Yaoundé Vision and the Mining Minerals and Sustainable Development (MMSD), AMV aims to create a transparent, equitable and optimal exploitation of mineral resources to underpin broad-based sustainable growth and socio-economic development. On the premise of ASM, AMV supports the development of an industry that harnesses the potential of ASM to stimulate and contribute to local and national economies, improve livelihoods and advance integrated rural social and economic development. The ASM sub-sector is recognised as a key development vehicle for rural communities submerged in poverty. In most developing countries, ASM activities started off as short-term solutions to provide livelihoods. However, these positive contributions have been clouded by a myriad of negative consequences which have become the centre of attention for policy makers. AMV asserts that much as ASM has contributed positively, the subsector continues to be neglected at both international agendas and more importantly in local poverty alleviation

strategies. This is despite ASM being recognised by most developing countries in Africa. AMV attributes this to the negative impacts associated with ASM activities, and so, ASM continues to be trapped in the vicious cycle of poverty with very little growth, if any, and non-existent future prospects. The legal and regulatory failures on the part of government were identified by AMV as the main underlying cause. The continuous struggles to obtain security of tenure, to access mineral rights or even access to high-quality mineral resources is as a result of inadequate legal frameworks which are inclined more to the development of large-scale mining (LSM). Pertinently, the AMV identifies the following challenges as being detrimental to the sector: poor understanding of specific needs of ASM; inadequate regulation and legal frameworks; lack of local infrastructure; lack of support for Research, Development and Innovation projects; and issues relating to technology and skill. The AMV recommends, firstly as a foundation, an improvement in the understanding of ASM sector and how it speaks to a myriad of issues such as policy, regulation, environment, health and safety, economic, and societal issues. The top-down approach which has been used by many governments is criticised by the Vision. Governments need to move away from centralised, short-term and ad-hoc solutions that lack permanence. Governments need to invest in more pluralistic, holistic and multi-pronged approaches when dealing with ASM issues. There is also a need to broaden the approach to diversify ASM so as to link it to other alternative livelihood strategies to ensure future sustainability even after mining has ceased.

In all these recommendations, AMV strongly requests that they be done in direct consultation with ASM. It is crucial that ASM miners are involved in the planning, designing, implementation and evaluation of ASM initiatives. This will allow them to contribute to the initiatives, and ultimately own up to the failures and successes that result from them. In addition, the Yaoundé Vision proposed that funding schemes be established, market opportunities be opened, and the formalisation and organisation of ASMs and the provision of analytical and business related skills be perfected. This will help raise the profile of ASM and, hence, stimulate the interest of potential donors. Much as the AMV recognises the positive contributions of ASM, it also acknowledges the many problems facing the sub-sector, which need to be addressed before it can realise its full potential. AMV attributes the low success rate of ASM initiatives to the regulatory failures and impractical policies on the part of government. The finances, skills and capacity to meet and, to also comply with these regulatory requirements are beyond the capability of ASM. There is a need to reassess the legal framework to ensure that the entire ASM sub-sector is accommodated and catered for. This can only be done once the ASM subsector and its peculiar needs are well understood by policy makers.

## **2.b/- The geospatial threat that comes from gold mining**

According to the latest SWISSAID gold report published in May 2024, each year, between 321 tonnes and 474 tonnes of gold produced through artisanal and small-scale mining (ASM) are not declared in Africa (corresponding to a value of between USD 23.7 billion and USD 35 billion at the price of gold on 1 May 2024). In 2022, this represented between 72% and 80% of total ASM gold production or between 32% and 41% of total gold production (artisanal or small-scale and industrial or semi-industrial) on the African continent whelming majority of this gold was imported into the United Arab Emirates (UAE) before being re-exported to other

countries. More than 435 tonnes of gold was smuggled out of Africa in 2022, representing more than a tonne a day. In 2022, 66.5% (405 tonnes) of the gold imported into the UAE from Africa was smuggled out of African countries. Between 2012 and 2022, 2,569 tonnes of African gold imported into the UAE was not declared for export in African countries. With a framework allowing the recovery of more than half of the gold that goes through smuggling and other forms of illicit trade, Africa would benefit from a significant financial mass allowing it to reduce its debt and progress in its vision for a prosperous Africa by 2063. The PPMP according to its design can effectively achieve this objective.

### **2.c/- The geospatial threat that comes from Critical Raw Materials**

When we know for example that according to the world's mining production of Cobalt estimated at 168,000 metric tons in 2018, only around 2% comes from legal mines which extract cobalt as their main product (Brown et al. 2019; Delve [2020 state of the Artisanal and Small-Scale Mining Sector](#)), it is obvious that around 98% of exploitation is informal or even illegal. Some reported figures estimate that between 20 and 40 percent of the cobalt mined in the copper-cobalt belt of Katanga Province in Southern DRC is produced by ASM (Sanderson 2019; Trafigura 2018; Petavratzi, Gunn and Kresse 2019). Although it is difficult to determine the certainty of these figures, they illustrate the significant contribution of ASM to overall global cobalt production.

Mining Critical Raw Materials will align with global demand. To replace hydrocarbons and achieve carbon neutrality by 2050, the European Union will need 35 times more lithium than today (800,000 tonnes per year) and up to 26 times more rare earths (3,000 tonnes per year of neodymium, dysprosium, praseodymium...). It will take twice as much nickel and three times as much cobalt. It will also require 33% more aluminium (4.5 million tonnes a year), 35% more copper, 45% more silicon, and 10 to 15% more zinc. These calculations are based solely on Europe's industrial plans planned in the automotive, renewables, battery, hydrogen and smart grid sectors alone.

Africa possesses a significant share of global mineral reserves including 80% of the world's platinum (African Development Bank, 2022b), 56% of cobalt, 54% of manganese and 36% of chromium. These minerals are used to produce green technologies such as electric vehicle (EV) batteries and wind turbines. Currently, minerals are largely exported from Africa in their raw property to be refined abroad. Increasing processing capacity within Africa, Caribbean and Pacific to export intermediate goods or final products, known as value addition, could help drive economic development of these countries by creating jobs and resulting in higher tax and income revenues.

Mineral	Clean energy technology	Share of global reserves in Africa	African countries with reserves
Platinum group metals	Green hydrogen	92%	South Africa, Zimbabwe
Cobalt	EVs	56%	DRC, South Africa, Zambia, Madagascar
Manganese	EVs, wind	54%	Gabon, South Africa, Côte d'Ivoire, Ghana
Chromium	Geothermal, solar, wind	36%	South Africa
Bauxite	Wind, solar	24%	Guinea
Graphite	EVs	22%	Madagascar, Mozambique, Tanzania
Zirconium (ores and concentrates)	Green hydrogen	15%	South Africa, Senegal, Mozambique
Vanadium	Steel, batteries	13%	South Africa
Copper	EVs, wind, solar	6%	DRC, Zambia
Lithium	Batteries	4%	DRC, Zimbabwe, Mali
Nickel	EVs, wind	4%	Madagascar, South Africa
Tellurium	Solar	3%	South Africa
Rare earth	Wind	1%	Tanzania, South Africa, Madagascar, Burundi

Figure 1: Availability of green minerals in Africa. Sources: UNCTAD, [Critical Minerals and Routes to Diversification in Africa](#), 2023; USGS, [Mineral Commodity Summaries](#), 2023; UNEP, [Environmental aspects of critical minerals in Africa in the clean energy transition](#), 2023; IRENA, [Geopolitics of the Energy Transition: Critical Materials](#), 2023

## Has ASM made progress in achieving the SDGs?

### *Sdg1: Failure to eliminate poverty in all its forms in ASM*

The percentage of informal and illegal activities remains very high and poverty is growing; in 2019, 35% of sub-Saharan Africa's population still lived in extreme poverty, while rates had fallen to 9% in South Asia and 1% in East Asia and the Pacific (World Bank August 2023). Since the launch of the SDGs in 2015, artisanal miners continue to wake up every morning and begin their working day in a context of multidimensional poverty. They are daily very poorly nourished, lack health care, and don't have the opportunity to go to school like city children. And when they have the opportunity, they rarely go beyond the first six classes of primary school; they are sorely lacking in everything; they cook with manure, tree branches, charcoal, improved sanitation facilities, they walk more than 30 minutes to fetch water of poor quality, they use hurricane lamps, they have no electricity, no cell phone, no TV receiver; their children play in the yard barefoot, wear torn clothes and the young people indulge in cigarettes and dangerous drinks to appear to belong to a respectable social rank, or to assert themselves as adults.



***Sdg2: Failure to end hunger, ensure food security and improve nutrition***

According to the World Bank, the world is behind the 2030 targets for under nutrition and these will not be achieved due to a lack of urgent and large-scale measures. Because of the very high disproportionate ratio between physical activity, income, and needs, artisanal miners continue to suffer malnutrition (adolescents nutritional needs, pregnant women, breastfeeding women, the elderly), as well as poor growth in children under 5 years old).

***Sdg3: Failure to ensure healthy lives and promote well-being for all at all ages.***

Due to lack of first-line medical infrastructure with a high mortality rate for children under 5 years, artisanal miners continue to suffer and die from malaria, water-borne diseases, AIDS, tuberculosis, hepatitis, and other communicable diseases. Mining communities do not always have health facilities with a range of essential medicines at an affordable cost.

***Sdg4: Failure to ensure equitable, inclusive and quality education and lifelong learning opportunities for all***

Analysis of survey data from 1980-1998 found that rural poverty was higher than urban poverty in 94% of countries (IFAD, 2001). In 65% of cases, rural poverty was one and a half times higher than urban poverty, and in sub-Saharan Africa, East and South Asia and Latin America rural poverty was three times higher (ibid). Multidimensional deprivation, poverty and destitution are strongly concentrated in mining communities. This is the reason why teaching staff and technical education remain non-existent in mining areas. Girls, women, men and children are always missing and when it comes to a makeshift school, not everyone has equal access

***Sdg5: Failure to achieve gender equality and empower all women and girls***

As State services are not enough representative in ASM communities, all forms of discrimination and violence against women and girls, including trafficking and sexual exploitation, continue to exist in ASM communities. Child marriage, early or forced marriage and female genital mutilation remain unresolved concerns in ASM circles although some NGOs try as best they can to provide support in this way. Furthermore, the involvement of women in the decision-making processes of ASM activities on an equal footing with men remains a taboo or even refused subject in mining communities.

***Sdg6: Failure to guarantee access for all to water supply and sanitation services management***

Drinking water remains a major challenge in ASM communities whose rivers, streams and groundwater remain contaminated and polluted by waste and toxic products from ASM. Nearly 99% of small-scale mining companies in Africa do not offer drinking water purification solutions through ultrafiltration to employees and local communities. Due to the isolation of public services, populations are abandoned in their traditional methods of drinking water. As a result, men, women

and children all suffer from waterborne diseases that increasingly reduce their life expectancy.

***Sdg7: Failure to guarantee access for all, to reliable, sustainable and modern energy services at an affordable cost***

If generally speaking countries of the South and particularly sub-Saharan Africa are behind in the consumption of renewable energies, the rural world remains disconnected from modernization and urbanization. In ASM communities, small businesses continue to prefer fossil fuels over renewable energies due to the high acquisition cost of green energy. Political support from States to enable the acquisition of these energies in ASM sites is not yet felt. The only visible changes relate to house lighting lamps and other equipment for recharging telephone batteries, radio receivers or even TV receivers.

***Sdg8: Failure to promote sustained, shared and sustainable economic growth, full employment, productive and decent work for all***

ASM remains the largest informal and illegal sector of the mining industry. The activity is historically perceived by States as a sub-entity of the Large Scale Mining (LSM) and therefore as a subsidence activity. The sector continues to promote forced labor, indecent job, modern slavery, the use of child soldiers, and all other worst forms of labor without real changes materializing on the ground. The absence of administrative and financial institutions in ASM regions attracts networks of smuggling, various trafficking, illicit financial flows and other cross-border economic crimes that prevent sustainable growth and productive jobs. Although ASM employs approximately 90% of the global mining workforce (approximately 44.65 million), ASM unfortunately does not capture the tax revenues enabling growth and development at local and national level.

***Sdg9: Failure to build resilient infrastructure, promote sustainable industrialization that benefits all and encourage innovation***

The construction of infrastructure such as paved roads, durable bridges, hydroelectric dams, airports and/or sustainable secondary airport runways, is sorely lacking in rural areas in Africa, due to the high debt rates of countries that do not allow them to contract other debts to finance these infrastructures. In most sub-Saharan African countries, ASM sites are located more than 100-800km from a paved road, and therefore far from basic socio-economic infrastructure which deprives mining communities of access to information technologies and communications such as mobile telephony, Internet, mobile payments, etc.

***Sdg10: Failure to reduce inequalities within the country***

The absence of key State services and benefits such as schools, health coverage, or even access to water and energy increasingly fuels inequalities within mining communities. This vacuum left by the State reinforces the feeling of exclusion of artisanal miners from the same society that belongs to them, which encourages and fuels conflicts and other social unrest.

***Sdg11: Failure to make cities and human settlements inclusive, safe, resilient and sustainable***

ASM being practiced in rural areas and given the difficulties of sub-Saharan African countries to invest in infrastructure to transform mining areas into urban areas, none, or very tiny "towns" have been created in ASM sites.

***Sdg12: Failure to establish sustainable consumption and production patterns***

Although some countries are signatories to the Minamata Convention, it was found in 2013 that ASM was emitting 35% of global mercury (UNEP-GMEP). Although alternative technologies to mercury already exist, they are unfortunately not accessible to the 44.65 million ASGM workers; it is therefore obvious that without an affordable mercury alternative solution for artisanal miners taken individually, mercury pollution will have difficulty decreasing unless awareness replaces the alternative technique to reduce the emission rates. Moreover, the majority of sub-Saharan African countries do not invest in mining waste management which allows mining products and materials to be shared, renovated, repaired, recycled and reused (circular economy).

***Sdg13: Take urgent action to combat climate change and its impacts***

A World Bank analysis suggests that 44% of all operational mines are in forests. It is therefore relevant that ASM activities reduce the absorption of CO<sub>2</sub> through deforestation, which foster the process of desertification in Africa where 46 out of 54 countries are at risk (Pravalie 2016). This process of desertification leads to another climatic impact which is the release into the atmosphere of CO<sub>2</sub> stored in burned or decomposed trees (Jayachandran 2017). Furthermore, studies have revealed that certain minerals impinge more environmental threat than others; for example, gold, iron and copper extraction generates the largest volume of mining waste in forests and the ASM takes very little initiative for Climate Smart Mining approach such as 1/ avoiding any negative climate impacts and biodiversity; 2/ minimize the impacts and losses that still occur; 3/ rehabilitating and restoring forest cover and biodiversity where there are unavoidable negative impacts and losses; and 4/ offsetting any remaining negative impacts or losses through substitution or compensation. From another point of view, 25 countries out of 54 in Africa have submitted to the General Secretariat of the MINAMATA convention their National Action Plan for the reduction of mercury in ASM, 05 years from the evaluation of the program (2030) auguring a weak contribution in the reduction of climate impacts.

***Sdg14: Conserve and sustainably use the oceans, seas and marine resources for sustainable development***

Marine mining in Africa relies on LSM diamonds and is currently practiced in Namibia where it produces approximately 64% of Namibia's total diamond production. There is no other place in the world where diamonds have been mined from the seabed than in South Africa and Namibia. Regarding ASM seabed, history tells us that in Namibia, small-scale near-shore mining of marine diamonds began

as early as the 1950s, peaking in the 1960s and a decline in the 1970s. We therefore believe that at the current stage, marine ASM does not have a lasting impact oceans, seas and marine resources. However, the ASM is full of small alluvial mining. This exploitation of diverting rivers to build dams to expose their beds to mining, kills all the fish and other creatures that live there when the water bodies are drained. It contaminates surrounding lakes and communities with the chemicals and toxic products it releases during operations, facilitated by the surge of winds. To date, no action to protect these waters and their ecosystem by artisanal miners has been taken, despite the fact that the activity is not very spatially representative in general.

***Sdg15: Failure to protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss***

One of the objectives of this indicator was to guarantee until 2020 the preservation, restoration and sustainable exploitation of terrestrial ecosystems, freshwater ecosystems and related areas such as forests, wetlands, mountains and arid areas. By the fact that artisanal miners justifies the occupation and the anarchic exploitation of the soil by the right to land and the absence of public services in most isolated regions, large areas are destroyed each year without forest management plans. This rush for minerals by artisanal miners is justified by the fluctuation in raw material prices which encourage artisanal miners to exploit more land in order to produce more minerals which allow them to live daily and fight against poverty without take care of the ecosystem. This rush for precious metals and soon critical raw materials will have a drastic impact on soils which already initially have a phosphate deficiency of around 46%, a much higher rate in tropical soils. If concrete measures are not taken, this could cause a serious food crisis and give rise to malnutrition problems with a stunting prevalence rate estimated at 30.3% in 2017 in Sub-Saharan Africa (WHO) and at 22% in the world in 2022 (World Bank). With 80-90% of ASM activity being informal, and not integrating GISTM standards or even SMART Mining concept, we can unfortunately deduce that the objectives set above may not be achieved by 2030.

***Sdg16: Very little progress to promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels***

Guaranteeing ASM equal access to justice is the ASM's main handicap. We can say that in sub-Saharan Africa, States have not yet succeeded in eliminating the presence of armed groups in mining sites, undoing corruption, illicit financing, cross-border smuggling and organized crime networks, drug trafficking weapons trafficking, and to prevent violence. Poverty, inequalities and situations of fragility, conflict and violence (FCV) are recurrent in Sub-Saharan Africa, and do not allow the creation of peaceful and inclusive mining communities.

### ***Sdg17: Failure to strengthen the means of implementation and revitalize the Global Partnership for Sustainable Development***

Apart from the efforts of international NGOs which implement formalization programs in the ASM sector, very few public-private partnership actions have been implemented by States since the adoption of the SDGs. This inaction is particularly favored by the security environment, the isolation of rural areas, the isolation of certain regions and areas rich in mineral resources, the lack of energy, the lack of communication infrastructure, the lack of tax policy that encourages investment and risk management, the lack of skills, etc. This situation led us to design the PPMP and announce it as a framework that can satisfy and contribute to achieving the requirements of the 17 SDG criteria and which addresses two major phenomena which do not allow the development of rural and mining communities:

- 1: Isolation and
- 2: Poverty

One can be poor and live in the city with minimum condition; but being poor and living in isolation is destitution

### **3. PPMP Economic Justification**

Nowadays, very little tax revenue from ASM is captured due to the very high propensity of criminal actors in Africa (crime index 7.29 ENACT 2023), and its informal and illegal character, (e.g. 0 % of tax collected in Chad, 1% in Mali, or 1% in Rwanda etc...)\* depriving States of funds to invest in the development of mining communities, and provide a social protection and retirement system for ASM sector. Illicit capital leakage cost Sub-Saharan Africa an average of US\$52.9 billion each year between 2003 and 2012 (KAR and SPANJERS, 2014), thereby depriving African economies of enormous tax revenues. Among these criminal actors are in the first places:

1. State agents,
2. cross-border criminal networks,
3. foreign actors,
4. private sector actors, and
5. Mafia system

\*(Source : ENACT 2023).

In addition to their serious impact on the well-being of the population, conflicts and financial crime hamper the ability of ASM to continue their resilience trajectory out of poverty. Almost  $\frac{3}{4}$  of African countries hosting ASM are under conflict or in a situation of insecurity and political instability\* leading to loss of life (human capital) and material damage (physical capital), thus restricting investment, growth and poverty reduction (World Bank 2023). Furthermore, due to the fact that ASM communities are not privileged in the processes of management, expropriation and relocation of land, as well as in public social expenditure, ASM continues to bear the brunt of the effects of multidimensional poverty.

\*(Enact2023), \* UN Comtrade, HS Code 7108.

## 4. The PPMP to contribute to poverty reduction

### 4.a/- Poverty in its complexity

In simple terms, poverty is not having enough money or access to resources to enjoy a decent standard of living, but we can argue that poverty is a common, complex, and invasive world phenomenon. For the World Bank Poverty is the state of being extremely poor, living on \$2.15/day that is, lacking the basic needs of life such as food, health, education and housing. However, deprivation (the other state of extreme poverty) is defined in terms of deprivation. The impeachment measure identifies people who live below \$2.15/day. So, even if we manage to “end” poverty measured at \$2.15/day, the situation of people living below \$2.15/day will not be resolved and their number will probably remain much higher than that of the poor. (Sabina Alkire, Adriana Conconi, Gisela Robles and Ana Vaz | June 2015-OPHI). The Global Multidimensional Poverty Index (MPI) highlights SDG 1 (end poverty in all its forms everywhere) and measures interconnected deprivations across indicators linked to SDGs 1, 2, 3, 4, 6, 7 and 11 (OPIH-UNDP2023).

However, wherever there is poverty, one observes negative effects on the physical and mental living conditions of people. From every angle, those who suffer from poverty cannot afford easy access to basic needs of life and services such as food, shelter, clothing, potable water, healthcare, electricity, education, decent jobs, and sanitation. Today, many people around the globe are compelled to sleep hungry, live under bridges or in precarious settlements, dress wretchedly, die of curable diseases, and drink untreated water from rivers or wells, light households with bush lamps, and drop out of school before completing primary education. Forgha (2006) observes that the striking features of poverty in Africa comprise low dietary intakes, low levels of education, low spending on public goods, and low life expectancy at birth, high marginal propensity to consume, and high rates of infant mortality. Ali et al. (2002) reveal that 75% of the population in rural Africa lives in poverty, whereas in urban centers poverty accounts for about 55% of the population. The same source argues that the lower degree of urban poverty compared to rural poverty stems from the relatively high access of city residents to social amenities such as education, healthcare, potable water, electricity, shelter, and sanitation. On the average 65% of the population in Africa lives in poverty, thus making the phenomenon a big challenge to the continent. (*Applied Economics and Finance Vol. 4, 2017*)

### 4.b/- Literature Review

Several theories attempt to explain the poverty phenomenon and its ramifications in the society. The literature on the phenomenon is mainly dominated by two streams – the cultural theories of poverty (CTsP), and structural theories of poverty (STsP). On one hand, the cultural theories of poverty attribute poverty to the characteristics embedded in the poor themselves through their pattern of behavior, attitude and judgment which prevent them from evolving in the social context. On the other hand, the structural theories of poverty tie the state of poverty to the conditions of lack of or limited access to education, health, decent jobs, proper shelter and sanitation, quality food and water, decent clothing, and regular energy supply under which the poor live and consider these conditions as adaptations or responses of the poor to the hostile arrangements of the society they are suffering from. The sub-culture theory of poverty (SCTP), individual attributes theory of

poverty (IATP) capture the arguments of CTsP. The personal income distribution and alleviation theory of poverty (PIATP) or marginal productivity theory of poverty alleviation (MPTPA), natural circumstantial theory of poverty (NCTP), power theory of poverty (PTP), structure theory of poverty (STP), trickledown theory of poverty (TTP), and vicious circle theory of poverty (VCTP) account for STsP

**SCTP** epitomizes an economic scenario of high rate of unemployment and underemployment, low wages, money economy, and people with low skills as factors that lead to the growth of the culture of the poor (Lewis, 1959)

**IATP** holds that the poor are answerable to their own predicament because an individual who has the ability, motivation and aptitude to perform some activities in the society can easily breakthrough and attain self-actualization on the ladder of income and wealth in the society (Gans, 1995)

**NCTP** recognizes geographical locations (Dwyer, 2010; Lichter et al., 2011), unforeseen natural disasters, physically and mental disabilities, old age, and unemployment, lack of or mismanagement of resources needed to generate well-being and income (Weber & Jensen, 2004) or lack of power to claim redistribution of resources as factors responsible for the presence of poverty in some places of the world (Morrill & Wohlenberg, 1971)

**MPTPA** addresses the micro-economic foundation of income inequality which translates into poverty. This theory focuses attention on the labor market and sees the demand and supply for labor as the main determinants of labor income in the classical system. It considers productivity as the driving force for poverty reduction in any economy (Mustapha et al., 2015; Fisher et al., 2016)

**PTP** is central in clarifying poverty conditions in LICs, particularly in Africa because it situates poverty in the dome of the political authority of the economy. The theory explains a situation where the ruling class expresses exploitative tendencies through which it determines economic models and organizes opportunities, income and wealth using the apparatus of the State power to act in their own selfish interest thereby enabling wealth and decision making to be concentrated in the hands of a few while the majority of the people lingers in poverty (Mead, 1993).

**STP** focuses attention on the macro-economy and views poverty as an offspring of macro factors. It holds that it is the configuration of the socio-economic and political order of the society that causes inequality, and thus poverty (Rank, Applied Economics and Finance Vol. 4, No. 3; 2017 2004). According to the theory, the dominant model of capitalism is the main promoter of high levels of income inequality and widespread of poverty across the world. It is argued that the structure of the United States (US) economy ensures that millions of people are poor irrespective of whether they are skillful or hardworking (Beeghley, 2000; Stoll, 2008; Lee, 2011), thus putting in place a social exclusion model through the stratification of the society into middle and wealthy classes or social, economic and political entities which accounts for the causes of poverty among people in the society owing to the practice and experience of exploitation (Daves & Moore, 1945; Bessie, 1995; Cancian & Danziger, 2009).

**TTP** argues that government expenditure is the driving force for any economic development plan. The theory considers that an increase in government expenditure on economic and social amenities such as the provision of infrastructure, storage and marketing facilities, educational training facilities,

healthcare services, good governance and subsidizing the production of essential commodities would produce a multiplier effect in the economy to benefit everybody. (Sachs, 2005), (Dauda, 2016).

VCTP explains that the existence of a system of mutually reinforcing relationships is the sole determinant of underdevelopment in LICs. It examines the poverty phenomenon by postulating an interrelated chain of events – a poor person or country is poor because the person or the country is poor, and may remain poor, unless the person's or country's level of income increases significantly enough to pull the person or country in question out of the poverty trap. The theory considers individuals and their communities as being caught in a spiral of opportunities and problems in which problems dominate and close opportunities to create a cumulative set of problems that make any effective response nearly impossible (Bradshaw, 2000).

## **5. The PPMP Framework**

For its regulation, the PPMP will house in a mining zone the entire ASM ecosystem comprising external services contributing to the responsible supply of minerals such as mining court, tax services, banks, law firms, bailiffs, accounting firms, insurance agencies, mobile phone/satellite operators etc.; then facilities tied to the supply chain such as crushing equipment, grinding, flotation separating and concentration dewatering, tailing dewatering, washing unit, mercury-free process, refining units or intermediary process depending on the energy capacity of the host country. All these units will be sized on a small scale so that a country can have several PPMP technopolis (from 1 to 5 or more depending on the spatial occupation of the ASM), to respond and reduce informal and illegal ASM activities. Depending on the mineral resources available to the country, the PPMP can host several types of mineral processing units such as foundries, refineries, cuttings (for precious stones such as diamonds, saphyrs, emeralds, etc.). In this framework we took into consideration the costs of setting up gold and copper/cobalt processing plant on a small scale.

### **5.a/- PPMP financing theory**

Donors have both the finance and the long-term relationships that could offset the externalities and political risks that impede pioneering investments. However, there are practical difficulties of how such support is best organized. These ambition run from infrastructure finance through subsidized capital and political risk insurance, to long-term partnerships with private firms. This being, the PPMP can be considered as a partnership between a State, a donor and a company which can be any provider of investment capital through which, subject to the agreement of the government, the necessary investments will be deployed on the ground. Under the PPMP, donor subsidy instruments are necessary to exploit the endogeneity of risk and compensate for the externalities that will be generated. The parties will agree on the revenue sharing mechanism according to distinct objectives (aid benefits, State social obligation reached, sharing profits, etc.).

### **5.b/- PPMP financing and management design**

The State and PPMP investors create a legal structure which will govern the project, and together determine the responsibilities and the terms of investments/financing.



The State will be able to provide land, mining and export authorizations, security of staff, people and property, tax incentives, labor, and administrative and technical support.

The PPMP architecture consists of the creation of a Small-scale industrial technopolis bringing together:

1. The State
2. The investor who can be:
  - a. A private/public fund
  - b. An international financial institution
  - c. A bilateral partner
  - d. A donor
  - e. A Non-Governmental Organization
3. Independent auditors
4. Local community

The first two participants decide to release funds or assets to finance the PPMP. The local community will sit within the PPMP as a simple observer. If funds or part of the funds for the implementation of the PPMP are allocated to the government in the form of a donation by a participant, the government and the donor will define the cooperation period within the framework of the project, so that the donor can ensure that the government had enough time to take ownership of the PPMP entire technical operating. If the funds are allocated to the PPMP as private finance, the PPMP will be structured in shares.

The PPMP operates on the principle of decentralization of the ministerial departments related to ASM activity in the PPMP technopolis, as well as the installation of representative offices of all its stakeholders (multilateral, bilateral, non-governmental agencies, etc.), inside its technopolis. In addition to the services mentioned above, the PPMP will have the necessary infrastructure for its governance such as administrative buildings, mining and geology services, environmental services, a community health centre, an ASM training centre, housing for administrative and technical staff, rolling logistics resources, an air strip for small planes which will have to carry out supply chain missions, a small market place for the supply of essential foodstuffs, materials etc. A country can have several PPMP sites in different mining areas in order to provide a country response that will allow mining resources to be channelled into legal institutions and actively participate in the development of said mining areas. Infrastructure financing can be provided by international aid, while ASM equipment and materials can be provided by the investor or any other financial partner, if the State don not have the necessary financial capacities.

The effectiveness and competitiveness of the PPMP to live up to its expectations comes down to:

- Minimize financial risk;
- Ensure better investment return;
- Integrate ASM into the national economy;
- Allow States to increase their tax base and create budgetary space;
- Contribute to social development;
- Guarantee transparency in the supply chain;
- Fight against illicit financial flows and mineral smuggling;
- Ensure decent work and the well-being of mining communities;
- Protect environment and biodiversity



Figure 2: PPMP scheme

**5.c/- How will the PPMP organize the supply of raw materials to its factories?**

For the PPMP, this involves:

- a) Purchasing raw materials from legal artisanal miners and cooperatives
- b) Working in JV with local cooperatives and buying offices to source raw materials
- c) Apply for small-scale mining permits to mine raw materials
- d) Setting up traceability and certification programs for minerals produced by artisanal miners and cooperatives.
- e) Implement small-scale tailing management system and environmental waste management programs
- f) Strengthen artisanal miners capacity in responsible mining

With 80-90% of ASM activities being informal, this represents a very large source of supply over time everywhere the PPMP will be set up.

**5.d/- Does the PPMP exclude ASM activities within it?**

The PPMP does not exclude artisanal mining which will continue to carry out its activities with the PPMP framework according to the law and regulations of the host country.

**5.e/- What benefits do artisanal miners derive from the PPMP?**

**First benefit**

Allowing Mine to Market Without Brokers (MMWT) framework, the PPMP is an added value for artisanal miners because, through the various ministerial departments located in its administrative and technical facility, artisanal miners will be able to carry out mineral export formalities on site and receive export

certificates instead of traveling far away to formalize their exportation which are generally located hundreds or even thousands of kilometers in the country capital.

**5.f/- Second benefit**

Through the presence of humanitarian NGOs working within the framework of formalization, mercury reduction, good practices such as low-impact mining, tailing management, waste management, mineral evaluation, environment protection and biodiversity, training on alternative activities to mining and capacity building programs on mining.

**5.g/- What appeal for Central Banks in their gold purchase programme?**

The PPMP is aligned with the ASGM London Principles on Central Bank Artisanal Small-scale Gold Mining Domestic Purchase Programmes (DDPs).

The PPMP paves the way for central banks to purchase gold as part of efforts to increase and strengthen their reserves. The framework will allow central banks to purchase gold produced from legal artisanal miners, aggregators and independent mining companies, and pay for it in local currency at the prevailing international market price, rather than to reduce their international foreign exchange reserves. Among the multiple advantages linked to the constitution of gold reserves, gold purchase by central banks through PPMP will make it possible to strengthen their monetary stability and improve their special drawing rights. The PPMP will also enable central banks to create a more attractive environment for foreign direct investment and leverage their gold holdings to find cheaper sources of financing to provide short-term foreign currency liquidity.

**5.h/- What appeal for the State and international regulation?**

The gold supply to central banks through the PPMP resolves the administrative, regulatory, security, health, environmental and socio-economic challenges that have long been unfavorable and harmful to public finances, mining communities and the responsible gold supply. One of the major challenges that central banks and government institutions face in justifying ESG standards during their gold purchasing operations lies in sourcing gold that is conflict-free, mercury-free and respectful of social values. Knowing that artisanal gold mining is the largest source of mercury emissions in the world, representing more than 35% of the total (UNEP 2013), and that this mercury has been declared dangerous (neurotoxin) for public health and biodiversity (contamination of the food chain), it has proven difficult for central banks and government institutions in charge of its collection, to justify the responsible, social, equitable and environmentally friendly nature of their operations and/or supply in local gold. Indeed, small-scale gold mining is constantly associated with water and soil pollution, environmental degradation, child labor, forced labor, gender-based violence, unsafe practices in health and safety, smuggling and money laundering. Thus the proof of the non-existence of all these negative impacts in the current gold stocks of central banks, as well as the establishment of traceability and certification systems in their supply chain can't be demonstrated in the current situation. Thus, gold purchased by central banks according to the PPMP model will allow States not only to considerably increase

their tax base and create budgetary space to finance their development program, but will also comply with international responsible sourcing regulations

#### **5.i/- Can all countries have the same PPMP financing scheme?**

No; not all countries have the same resources and mining potentials; they also do not have the same sociological and economic contexts, and do not have the same investment risks. Some countries can mine two, three or four minerals, and others can mine only one. As a result, the country that adopts the PPMP for a single ore will benefit from a reduced investment compared to others that have more ore. The lockdown and isolation factor will also be considered. The more landlocked a country is, the slightly it will see its investment increase. On the other hand, depending on the level of public finances of a country, a State may decide to substitute itself for an investment and provide the necessary funds for the implementation of the PPMP; the State may also prefer to engage with another voluntary country (bilateral cooperation) instead of agreeing with a private investor.

#### **Some funding issue?**

Certain programs can provide financial resources to support the PPMP such as the "Climate Smart Mining", and the "Extractive Global Pragmatical Support" (EGPS) of the World Bank, the ACP-EU Development Minerals Program, the Global Environment Fund (GEF), USAID, the Responsible Minerals Trade program (RMT), the European Partnership for Responsible Minerals (EPRM) and many others can still be used to finance the PPMP which currently offers one of the best mining governance scheme for sustainable supply chain.

## **Endnotes**

To formulate, establish and promote the PPMP for achieving responsible mining and the Principles Responsible Investment initiative (UN PRI), in accordance to LMEP goals and mission, the authors consulted following global references (papers, reports, websites, etc.) of relevant frameworks and initiatives such as Hilson, G. M. (2006). *The Socio-Economic Impacts of Artisanal and Small-Scale Mining in Developing Countries*. Taylor & Francis. Hilson, G., & McQuilken, J. (2014). *Four Decades of Support for Artisanal and Small-Scale Mining in Sub-Saharan Africa: A Critical Review*. *The Extractive Industries and Society*, 104-118 *Chains of Minerals from Conflict-Affected and High-Risk Areas*  
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