



ROCK-SOLID CHANCES

For responsible artisanal mining



***Written By: Felix Hruschka
Cristina Echavarría***



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Acronyms

ARM	Alliance for Responsible Mining
APEMIN	EU funded development project in Bolivia
ASM	Artisanal and Small-scale Mining
ASGM	Artisanal and Small-scale Gold Mining
BATNEEC	Best available technology not entailing excessive cost
CASM	Communities and Small Scale Mining
DFID	Department for International Development
EIR	Extractive Industries Review
EU	European Union
FLO	Fairtrade Labelling Organization
HIV/AIDS	Human Immunodeficiency Virus / Acquired Immune Deficiency Syndrome
ILO	International Labour Organisation
IPEC	International Programme on the Elimination of Child Labour
LSM	Large Scale Mining
MEDMIN	SDC funded ASM Project in Bolivia
MMSD	Mining, Minerals and Sustainable Development Initiative
NGO	Non Governmental Organization
oz	Troy ounce (31,1 gram)
PRSP	Poverty Reduction Strategy Paper
RESPOMIN	Iberoamerican Network for Responsible ASM
SADC	Southern African Development Community
SDC	Swiss Agency for Development and Cooperation
SME	Small and Medium Enterprise
SOTRAMI	Sociedad de Trabajadores Minero Artesanales S.A.
STD	Sexually Transmitted Diseases
UN	United Nations
UNIDO	United Nations Industrial Development Organization
UNEP	United Nations Environment Programme
USD	US Dollar
VAT	Value Added Tax

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INTRODUCTION

Mining is as old as humankind. It enabled civilization by providing materials like flint stone, copper, bronze and precious metals such as gold and silver, which were sacred to many ancient cultures. The high value bestowed upon minerals and precious metals gave way to them being used as a universal currency for almost three millennia, spurring the growth of global trade.

Mining has always required hard, manual labour and it wasn't until the 19th century that ancient manual techniques became substituted by mechanization. "Industrial" mining took over the landscape and altered the face of mining forever. Artisanal metal and coal mining disappeared in industrialized economies due to the lack of competitiveness, but remained a predominant means of livelihood in the developing world.

At the same time, small-scale agriculture continued as an economic staple, even in more developed countries, and artisanal craftsmen (tailors, shoemakers, bakers, goldsmiths, etc) began to gain prestige for their hand-made products.

Following the first sharp rise in gold prices in the 1980s, artisanal gold mining again became a mainstream economic opportunity in developing countries. But, because modern mining and mineral processing technology required considerable investment that could not be made by the "new generation" of poor miners, artisanal mining reverted to the same technology used before mechanization in the 20th century.

Despite its key contributions to human civilisation, mining has a bad reputation. Various factors combine to create this reputation: the culture heritage of Roman and Colonial times when mine work was performed by slaves, the result of unsustainable and ruthless mining practices during early industrialisation and still maintained by some unscrupulous companies, and the general deficit of knowledge and information among the general public and decision makers.

The reality of artisanal and small-scale miners in developing countries is that they are often marginalized, discriminated, and persecuted. Lack of rights and development support for ASM, keeps artisanal miners and their families stuck in a vicious poverty cycle.

This publication attempts to illustrate ASM and its opportunities and challenges and to explain the issues and the development opportunities that it offers if well managed.

The "Vision for Responsible ASM", created by the RESPOMIN Latin American Network¹, describes what ASM can really be and guides the efforts of the Alliance for Responsible Mining in enabling the development of a responsible ASM sector worldwide:

"ASM is a formalized, organized and profitable activity that is technologically efficient and socially and environmentally responsible; the sectors' development takes place within a framework of good governance, legality, participation and respect for diversity. It makes an increasing contribution to decent work, local development, poverty reduction and social peace within our countries, stimulated by growing consumer demand for sustainable minerals and ethical jewellery." (1)

¹ RESPOMIN Latinamerican network of academics, NGO's, public officials and miners, was fostered during 2006-2008 by ARM and funded by the Iberoamerican Programme for Science and Technology for Development (www.cyted.org).

WHAT IS ARTISANAL AND SMALL-SCALE MINING?

Efforts to define “*Small-scale Mining*” have been made since the early 1970s. The term *small* is relative and varies according to regional context and is often misleadingly applied to some small but high-tech industrial mining operations. The term “*Artisanal Mining*” brought more clarity to the discussion, describing low-tech, low mechanized mining operations with predominantly manual (artisanal) work. “*Artisanal and Small-scale Mining*” (ASM) is a broader term, encompassing all lower segments of mining (non-mechanized and mechanized) that are not conventional, industrial mining operations. While this description helped to frame a common understanding, it is far from being a definition.

All efforts to agree on parameters for a global definition of ASM, like production capacity, number of miners, type of mineral deposit, size of reserves, technology, level of investment, income, capitalization, energy consumption, etc. have failed. If too general, definitions do not reflect the nature of ASM and if too specific, they do not cover all possible variants of this economic sector. ASM develops under a variety of socio-economic and cultural contexts and has many faces. This publication therefore aims at describing ASM rather than attempting to define it. Practical understanding of ASM is more important than an academic definition; a recent international ASM conference (2) in Africa “defined” the activity by stating: “*We recognize artisanal small-scale miners when we see them.*”

ARTISANAL MINING - A SNAPSHOT



Examples of typical deposits, suitable for artisanal mining: alluvial deposit in Sierra Leone, primary deposit in Peru, abandoned mine site in Ecuador

ASM COMMODITIES

Two typical ASM commodities can be distinguished:

- i. Low-price bulk material like coal, certain industrial minerals and construction materials for local markets
- ii. High-unit-value minerals like gold and precious stones (diamonds and coloured gemstones), as well as higher priced bulk ores and industrial minerals (tin, chrome, coltan, barite, fluorspar, etc.) designated mainly for export

The orientation of small scale bulk material mining towards local markets make small quarries, sand and gravel pits, and brick makers omnipresent, and thus are perceived as part of the construction sector, rather than the mining sector. This is very different from the mining of high unit value minerals like gold or gemstones, which have a greater presence in the public eye and reputation with public opinion. This publication deals mainly with this “visible” artisanal and small-scale mining, with emphasis on ASM gold mining (ASGM).

GEOLOGY: Size and grade of gold mineral deposits

In case of gold and precious stones, both primary and placer deposits² may be subject to artisanal mining. In both cases superficial location and relatively high grade ores are pre-requisites to become technically accessible for artisanal miners. The high labour intensity of ASM still allows for selective extraction of these small, but high-grade deposits, which are uneconomic for industrial level companies, while large, but low-grade deposits, which require heavy earth-moving equipment and high capital investment, are therefore of very limited interest to artisanal miners.

ABANDONED MINES

Another specific ability of ASM is the reprocessing of abandoned tailings and dumps or the extraction of remaining mineral from abandoned industrial mine sites. Artisanal miners frequently continue to work decades after the closure of large-scale mines reprocessing abandoned tailings and dumps or extracting the remaining mineral in the deposit. Artisanal miners are often ex-mine workers who turn to artisanal mining upon mine closure, to make a livelihood.

CHARACTERISTICS OF COMMON POOL RESOURCES

In most countries mineral resources are owned in first instance by the State. The State makes either direct use of its right for prospection, exploration and extraction (e.g. Geological Surveys, State owned companies) or licenses concessions to the private sector. In contrast, communities often claim mineral resources in their territory as their property, especially when these have traditionally been part of their livelihoods.

Mineral deposits suitable for ASM share characteristics of open access resources (3) with characteristics of common pool resources, that is, minerals are easily available on the earth's surface. The "open access" feature allows artisanal miners to usually skip the exploration phase and to proceed with extraction immediately after discovery. Similarly, common pool resources are characterised by the difficulty of excluding anyone from using them, but face problems of congestion or overuse, and the use by one actor implies that less is available for others. (4) This explains most Governments' problems in dealing with ASM, as well as the fact that ASM will persist in the long term. Artisanal miners extract deposits under a common property regime, where the common-pool resource appears as a private good to an outsider and as a common good to an insider of the community. (5)

THE ARTISANAL MINERS

ASM is both a poverty driven and poverty alleviating activity. It attracts economically weak and vulnerable rural, and some urban, populations seeking economic stability and the means to care for their families and offers opportunity and livelihood to those populations displaced by economic hardship, conflict, and natural disaster. ASM constitutes an important alternative to less attractive or profitable activities, and thus an outstanding opportunity to improve the individual economic situation.



Afro-American communities in Chocó, Colombia, combining artisanal mining of gold and platinum with farming activities, (corn, banana, cocoa and yucca), commerce, tourism and forestry

TYPES OF ASM

Four types of ASM can be broadly observed (14):

- i. *Permanent artisanal mining.* Full time, year round activity. Mining is frequently the only economic activity and is sometimes accompanied by other activities like farming, herding or other extractive tasks of indigenous groups.

² Primary deposits are geologic hard rock formations (e.g. vein type deposits) containing gold. Placer deposits are alluvial, elluvial or colluvial formations, created by erosion and sedimentation (e.g. gold bearing river beds).

- ii. *Seasonal artisanal mining.* Seasonal alternating of activities or seasonal migration of people into artisanal mining areas during idle agricultural periods to supplement their annual incomes.
- iii. *Rush-type artisanal mining.* Massive migration based on the perception that the expected income opportunity from recently discovered deposit far exceeds the current actual income of the people who are lured into it. It is not uncommon to observe former rush areas converting into new communities and rush miners converting into settlers. The rising price of gold plays a key role in the exacerbation of rush mining.
- iv. *Shock-push artisanal mining.* A poverty driven activity emerging after recent loss of employment in other sectors, conflicts or natural disasters. Many of the individuals, mostly itinerant and poorly educated, have no other options and remain trapped in the poverty cycle.

COMMUNITY BASED ASM

“Community mining” refers to permanent and seasonal ASM carried out by the local population, building their own livelihood strategy upon the mineral resources within their communal territory. Rush-type and shock-push artisanal mining have the potential to convert temporary miners into settlers who create new communities and convert to community mining.

An outstanding example is the community Cuatro Horas in southern Peru; less than five years after a violent gold rush with armed conflicts, the artisanal miners - after founding a formal mining company, owned by about 500 shareholders from the community - count on a vast spectrum of infrastructure services, like school, medical facilities, drinking water, electricity, television, communications, etc.



GROUP SIZE

ASM means “small-scale” and not “small-number” mining. ASM can therefore refer to individual gold panners, partnerships of two to a few dozen miners, and even large cooperatives or entire communities involving hundreds or even thousands of miners. The size of the mining area varies according to the number of miners.

Group sizes can be defined at operational and at organizational level. At operational level, it is common for work groups of 4-10 individuals, sometimes in family units, to share tasks at one single point of mineral extraction (e.g. excavating one tunnel). At organizational level groups of 30 – 300 miners are common, extracting jointly one mineral deposit (e.g. working in different tunnels), and sometimes sharing processing facilities.

Less common but more widely known through media coverage are concentrations of up to a few thousand artisanal miners in a single place. Cases like the 200 km² Galangan area in Indonesia or the world-famous gold rush of Serra Pelada in Brazil, which reportedly attracted up to 100,000 people during the 80’s, are very rare and closely tied to sharp increase in gold prices.

MINDSET

Artisanal miners are usually characterized by entrepreneurship on individual level. In the grey zone between self-employment and self-exploitation, they are engaging in mining to earn a living. Independent of the number of artisanal miners working jointly one deposit, the operational organization of miners into somewhat “autonomous” individual small workgroups or production partnerships is a common feature of ASM. On the contrary, industrial mining is planned, directed centrally, and driven by profit expectations.

MINING RELATED ACTIVITIES

ASM encompasses the entire production chain from prospecting, extraction, processing to marketing. Except in the case of individual gold panners, tasks become separated and specialization occurs in mining related services throughout the supply chain. Mineral sorting and processing, transport, provision of water and food, and other similar activities convert into “helper” tasks, which are often carried out by women, and sometimes by children. Artisanal mining commonly involves the whole family, very similar to small farming or other artisanal family businesses. Productive and reproductive tasks³ of “helpers” often carry the risk of being subjected to discrimination through income inequity or even unpaid work. As widespread cultural beliefs in many parts of the world do not allow women to work underground, most statistics don’t include women as artisanal miners at all.

MIDDLEMEN OR SERVICE PROVIDERS?

The wide range of services provided by local business-people selling supplies, providing credit, and purchasing the product of mining, are of vital importance for artisanal miners, but involve an inherent risk of creating dependencies and vulnerabilities. While these activities are characterized by an - in principle legitimate - entrepreneurial approach focusing on mineral resources, these activities need to be understood as clearly different from artisanal mining. In many cases artisanal miners are trapped in unfair supply chains dominated by these middlemen.



³ E.g. Child care, feeding, catering, caring for the sick, washing clothes, etc.

ENTREPRENEURIAL ARTISANAL AND SMALL-SCALE MINING

While artisanal mining focuses on making a living from mineral extraction, small-scale mining focuses more on investment and profits. If such entrepreneurs do not belong (or have no close links) to the community, then it is not considered ASM, but a small conventional mine. The criteria to distinguish such enterprises from legitimate small-scale ASM operations may appear somewhat blurred for outsiders; to community members it is very clear.

One particular type of setup is a profit sharing agreement between investors and contracted workers. From the investor's point of view, it is conventional (investment based) small-scale mining, even if applying artisanal techniques. From the workers' point of view and considering the acceptance of payment in form of profit sharing, it can be considered ASM. Sometimes this is a preferred organizational set-up in ASM, whenever investment is required to start-up a mine (e.g. to open shafts, buy processing equipment, winches, etc.). It can even be considered community based ASM if (i) the investor has strong linkages to or even represents the community (frequently in Africa: the Chief) or if (ii) the workers originate from local communities. These set-ups can range from fair to very exploitative depending on the kind of arrangement agreed upon between the investor and the contracted workers.

THE ARTISANAL MINES

LEGAL STATUS OF ARTISANAL MINES

Minerals laws are usually designed for industrialized mining, promoting private investment and providing tax revenues for the state. Mining companies operate under technically qualified supervision and with access to required financial means.

Artisanal mining, and sometimes even small-scale mining, is often not capable of meeting legal requirements and/or regulations designed for the medium or large-scale mining sector. ASM is therefore sometimes synonymous with informal or illegal mining and miners are kept vulnerable and at the mercy of unscrupulous middlemen. Countries with workable ASM legislations demonstrate that informality is not a generic characteristic of artisanal mines, rather ASM can be a formal and legal means of livelihood, and an opportunity to create jobs and tackle poverty.

PRODUCTIVITY AND PRODUCTION

Manual labour is the main asset of ASM. Mineral is usually handled manually and productivity is limited by the physical strength and endurance of humans. This represents perhaps the main quantitative difference to industrial mining where productivity depends mainly on the capacity of machines.

While productivity per man-shift of artisanal mines is low, production from numerous communities or cooperatives can sometimes exceed production figures of mid-size mines.

MINE SIZE

Deposits with widely scattered outcrops (e.g. series of small veins) or old riverbeds can sustain, sometimes for as long as a few decades, a large number of small artisanal workings. Each individual artisanal miner can only work a very tiny piece of the mineral deposit, while organized groups of artisanal miners require areas corresponding to the size of the organization. ASM is therefore not characterized by the mine size in terms of extension of the mining area. Long term planning is – even at the artisanal level – only possible if the mineral deposit and legal title allow for a longer planning horizon.

In La Rinconada (Peru), gold has been extracted under artisanal conditions since colonial times. 20 to 30.000 people live in the world's highest shanty town above 5,000 m; they produce between 3 and 4 tonnes of gold annually, currently worth about 150 million USD.



MINING AND PROCESSING TECHNIQUES

One of the key characteristics of ASM is the low level of mechanization and the use of skilled manual labour. This includes the use of suitable tools and machinery in an astonishing variety, from pre-historic stone mills, ingenious pre-industrial machinery to creative adaptations of current technology. While frequently described as “simple” or “obsolete” techniques, the solutions implemented by artisanal miners represent in many cases the cost optimum at their scale of operation, or – within their constraints of limited financial resources for investment – the best available technology not entailing excessive cost (BATNEEC). A typical example is the use of mercury for processing gold ores.

GOLD PROCESSING TECHNOLOGIES

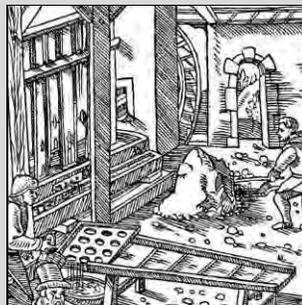
Until its replacement by cyanide leaching at the beginning of the 20th century, amalgamation was the “state of the art” technology for industrial processing of gold and silver ores. Amalgamation is still widely used by artisanal gold miners, due to its efficiency, short operation cycle, low investment requirements and low operating costs⁴. It is not rare for artisanal miners to extract a bucket of ore in the morning, process it in the afternoon and sell the gold in the evening.

Some technologies described in G. Agricola's book “De re metallica” in 1556 and currently still in use by artisanal mining.

Top: Two handled manual winch for shallow shafts
(Photo: Tanzania)



Bottom: Waterwheel powered stamp mill with integrated sieve and sluice box for grinding and concentrating gold ore
(Photo: Colombia)



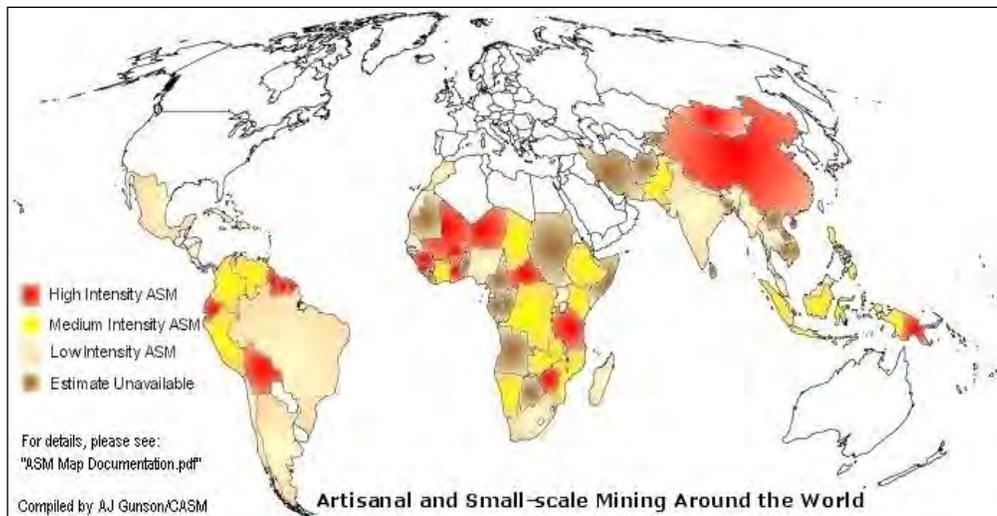
⁴ Amalgamation of a few kg of hand-picked concentrate requires an investment of less than 50 USD. An investment of approx. 1000 USD allows for installation of a small processing plant capable to mill and amalgamate between several hundred kilo and one tonne of ore daily.

But mercury is also well known for its toxicity and every effort should be made to reduce and substitute its use. From an environmental and occupational health standpoint, amalgamation is no longer an acceptable technology, but for the artisanal miner whose daily survival depends on the sale of a few grams of gold, it remains the best available technology.

Alternatives to amalgamation are gravimetric separation and cyanide leaching. Gravimetric separation, a chemical-free process (washing pan, sluices, centrifuges, etc.) based on the high density of gold, has the least environmental impact, but usually requires water availability and careful management of washing facilities to prevent sediment from polluting water bodies. The applicability of gravimetric separation depends on the achievable amount of gold that can be recovered, making it in some cases an alternative to amalgamation. Cyanide leaching is almost always an alternative to amalgamation, but it requires significantly higher investment, longer processing cycles, larger quantities of mineral, and more importantly due to the toxicity of cyanide, advanced levels of process control. (6)

ARTISANAL MINING – FACTS AND ISSUES

ASM IN NUMBERS



There are approximately 70 developing and transition countries with documented ASM activity. Many of these countries are known to be important mineral producers in the international marketplace, and in many of these countries ASM contributes a significant share to the national mineral production. Artisanal mining is widespread for easily marketable (high unit value) minerals such as gold, diamonds, gemstones, and coloured stones, but a wide variety of mineral raw materials are produced by ASM. For example there are more than 30 different minerals mined in small-scale operations throughout the SADC region. (7)

Ascertaining global ASM production of most mineral commodities is complex and confounded by widely varying national definitions, lack of statistics on local production and consumption of industrial minerals, and the informal nature of most ASM activities. Illegal trading of commodities degrades many national statistics to a "best guess". However, in 2002, UNIDO estimated that up to 12% of metallic minerals, 31% industrial minerals, 20% coal, 10% diamonds and 75% of gemstones production come from ASM operations (8). Annual global gold supply from ASM is estimated in the range of 200-300 tons.(9)

EMPLOYMENT IN ARTISANAL MINING

Due to the self-employed nature of artisanal miners and current widely varying definitions about artisanal miners, only estimates are available for ASM employment. To try and find an accurate employment number, the ILO attempted a comprehensive and global census of the ASM workforce in 1999 but a few factors contributed to inconsistency within the data⁵. (10) For many countries official statistics are the only available source of nationwide information and due to issues of definition and political correctness aimed at attracting foreign investment, informalities within the mineral sector were ignored, causing underreporting of artisanal miners. In some countries, only licensed artisanal miners were reported.

Taking into account the above mentioned limitations, ILO reported that ASM employed in 1999 some estimated 13 million people worldwide, equivalent to between 80 and 100 million people, whose livelihoods depended directly or indirectly on the activity. Mineral commodity prices have increased sharply during the last decade (e.g. gold was 300 USD/oz at the end of the 90's, by 2010 it is at 1400 USD/oz) and it has had a direct effect on the number of people entering into artisanal mining. In 2003 and 2005, some experts considered figures of up to 30 million artisanal miners and 15 million artisanal gold miners as realistic. (11, 12)



Gold price over the last 10 years. Estimations suggest that the number of artisanal gold miners increased similarly.

A current extrapolation of about 25 million artisanal miners and 150-170 million involved people can be considered on the conservative side, given that in several countries the number of artisanal miners has dramatically multiplied between 2005 and 2010.

SOCIO-ECONOMIC ISSUES

MICRO ECONOMIC IMPACT

The UN Economic Commission for Africa considers *“the contribution of artisanal mining to income generation and employment creation, especially in rural areas, is not negligible. ASM also has the potential to catalyze SME development and to foster local economic multipliers and micro mineral cluster formation.”*(13) A similar appreciation is expressed in the World Bank’s Poverty Reduction Strategy Paper (PRSP) Handbook: *“Small-scale and artisanal mining can be important sources of employment and income for workers, families, and communities. The income they generate can be substantial and critical for further economic development, giving rise to the growth of microeconomic enterprises that supply miners and their families. In some cases, artisanal mining has been well established for many decades, taking place in an orderly manner, and providing reliable cash incomes. However, more often than not, small-scale mining is a default option chosen as a direct result of economic contraction in other sectors or geographic areas. In that case, miners and their families often expose themselves to harsh working conditions for minimal income in a high-risk context.”* (14)

Given the generally remote location of mines, employment or self-employment opportunities by artisanal mining are created in rural areas where most people of developing countries live below the poverty line of 1 USD per day, and where sources of income are urgently needed. Artisanal mining provides an attractive alternative to other sectors as the economic opportunities are significantly higher.

⁵ For example ILO (1999) reports up to 50,000 artisanal miners in Peru and up to 200,000 in Colombia. However, investigating child labour issues in 2001, ILO estimated 50,000 children working in Peruvian and 400,000 children in Colombian artisanal mines. As obviously not all Peruvian or Colombian miners can be children, it comes clear that children working in mining related activities were not counted as miners.

Table: Estimated income of artisanal miners in comparison to alternative local economic activities (14)

Type of ASM	Description	Factor
Permanent ASM	Generally higher income than alternative occupations in the same region	1.5 – 5
Seasonal ASM	Similar or slightly higher income than alternative occupations; opportunity to generate additional income during idle periods of other occupations.	0.8 – 1.5
Shock-push ASM	Lower income than previous occupation, but still best available opportunity or buffer at a given moment.	0.5 – 0.9
Rush type ASM	Significantly higher income than most other employment opportunities.	0.5 – 20

ASM plays a significant monetary role in communities by putting money directly into the local economy. Revenues derived from upstream and downstream process in ASM generate local purchasing power and stimulate production of local goods and services, either specifically required for mining (e.g. tools, equipment, infrastructure) or for reproductive or day-to-day living (e.g. housing, food, other catering).

The spending pattern of miners strongly influences the nature and extent of economic impact on the community-level:

- Revenues from permanent and seasonal ASM are likely to be invested in improving livelihoods and local infrastructure.
- In the case of rush-type ASM revenue, male miners' priorities tend to be oriented towards satisfying personal interests, while women miners focus on directly improving family or community wellbeing. Escalating prices reduce the saving and investment capacity of community residents, instead benefitting immigrated shopkeepers who take over local business and services.

Poverty driven shock-push ASM has an important employment buffer function in economies that lack formal safety nets. During periods of structural adjustments, in the wake of natural disasters or even during and after armed conflicts, ASM may become a vital survival strategy for the affected population.

MACRO ECONOMIC IMPACT

Macro economic benefits and importance of ASM are widely ignored and frequently intentionally denied. While the individual miner remains poor, the national economy benefits significantly.

BALANCE OF TRADE

Limited access to markets is a serious development obstacle for ASM. Most miners do not have access to information about real market prices and more often than not, prices for mineral commodities are set arbitrarily and unilaterally according to profit expectations of local buyers, who sell to intermediaries who usually export the gold or gemstones to international markets. Regardless of the procedure of export (formal or informal), the commodities are paid for in foreign currency at the point of export.

If gold is not exported but bought and held by the National Central Bank, ASM production directly increases monetary reserves. For industrial minerals or coal, ASM substitutes imports. In all cases ASM creates a trade surplus by exporting considerably more than is imported.

LOCAL ECONOMIC DEVELOPMENT

Artisanal mining creates local economic development from the bottom up: the main factor of production in ASM is local manual labour, hence generating local income; Tools and machinery are mostly local or national products, and service providers are usually locals. Imported supplies usually account for less than 5% of production costs.

Artisanal miners produce mineral and sell it to local traders, who in turn sell the mineral outside the region and return with capital to repeat the cycle. The accumulated individual income of the miners converts into financial capital circulating within the community, and through trade relations on a national level. As gold is effectively the equivalent of foreign currency, miners are literally producing money.

TAXES AND ROYALTIES

ASM is often accused of evading payment of royalties and taxes. This however is not a characteristic of artisanal mining but a generic issue of the informal economy.

Most artisanal miners would be more than happy to pay the relatively low governmental royalties (usually 3-5%) in comparison to informal royalties to landlords or concession holders (usually 10-20%), or to pay clearly defined taxes on profits, instead of being permanently subject to extortion and paying bribes.

Informal ASM actually generates fiscal income through taxes that are indirectly paid by informal miners. In countries with VAT tax regimes, indirect tax income from informal producers, unable to recover VAT on consumables or tools, may even outperform potential income taxes generated by formal artisanal mining. (15)



Women miners selling gold near Puerto Maldonado, Peru

TRADING CHAINS

Similar to industrialized mining, ASM's role is the production of mineral raw materials. Apart from selling their product, trading is not the business of artisanal miners. Traders on different levels (from gold shops buying from the miners up to export wholesalers) provide the indispensable link between mine and market. Extraordinary profit opportunities exist for traders where local ASM is informal and gold trading restrictions exist and where smuggling and extortion of miners flourishes. Unbalanced and non-competitive markets lead to frequent exploitation of miners by paying below market prices and cheating on weight and/or pure gold content. However, such illegal transactions occur in a different sphere than grassroots ASM and frequently involve decision makers on various political levels that contribute to keep ASM informal. This disconnect applies even more to money laundering where ASM is the victim of organized crime.

POVERTY AND CONFLICTS

SHOCK-PUSH ASM AS A POVERTY TRAP

Shock-push ASM occurs as a result of economic crisis, armed conflict, or natural disaster. It affects rural areas lacking other income opportunities but offering mineral resources as a last alternative. Local government institutions, and governance, in these areas are typically underdeveloped or nonexistent and miners and their families are left with little support to improve their situation.

Due to this lack of government support, public goods, community infrastructure and capital, artisanal miners are forced to depend on intermediaries, landowners, machinery owners, shopkeepers and other groups (in some cases illegal armed groups who impose illegal taxes on miners, businesses and traders), who not only pre-finance the mining operations, but also the living expenses, creating cycles of debt and bonded labour.

Such poverty traps usually continue until the causes disappear. While shock-push ASM is the "ugly" face of ASM, it is noteworthy that this activity at the very least, provides a means of survival for the affected population during the crisis. The situation of the miner in a crisis would be far worse if he or she did not have the option of mining to survive.

GOLD RUSHES AND CONFLICTS

In rush-type situations, where miners flood a single area, motivated by the expectation of extraordinarily high profits, and live cramped together, tensions and conflicts are inevitable. (14, 15). Conflict patterns are very similar to those in sub-urban areas. In countries where there is armed conflict, illegal armed groups focus on mineral rich regions to finance their war.

Where illegal miners (artisanal and others) invade the lands of rural communities and indigenous peoples complex social, cultural and political conflict occurs. Local community members can be the victims of violence, women are raped, and degradation of natural resources is extensive.

In these situations, governments have demonstrated limited capacity to react to protect local communities and the environment.

After the discovery of a new mineral occurrence, an initial rush phase may lead to a tendency by “outside” ethnic groups to simply “occupy” lands and water systems that traditionally belong to indigenous people. Two important issues are frequently not reported or analyzed in-depth:

- i. The conceptual differentiation between land rights and mineral rights, existing in almost all legislations, conflicts with the holistic understanding that indigenous peoples have of their “territory”, as the sum of all the resources on their lands (underground, surface, water, and forests, etc.). This leads to similar or even worse conflicts with conventional extractive industries projects (solid minerals, hydrocarbons, hydroelectric, etc).
- ii. ASM, as a historically marginalised sector, has a chance of horizontal dialogue with communities and therefore the possibility to “blend in”. In practice, the percentage of artisanal mining operations in conflict with communities is marginal, though this is of no interest to the media, which usually shows only the rush and shock-push types. Besides, many of these conflicts are not even about mining, but about competing interests in possession of the mineral rights. Other conflicts in rush-type situations between agriculturalists and artisanal miners focus on the use of agricultural and pasturelands, destruction of forests, and water pollution, which become complex where government intervention is absent or weak.



ASM camp, Ayacucho, Peru

ASM AS AN OPPORTUNITY FOR DECENT WORK

It is important to understand artisanal miners as people committed to working hard to earn a living. If they lacked a great work ethic they wouldn't work eight or more hours a day in a mine but migrate to the immense shantytowns surrounding large urban areas that are rife with conflicts and violence. ASM has even been used as an opportunity to re-socialize ex-convicts and ex-combatants, and give them the chance to earn a decent living.⁶

⁶ It's more, in some cases artisanal mining communities are even second opportunities for re-socialization of ex-convicts; people who would not have a minimum chance to find a job in a regular employment, but who are willing to start earning their money in an honest way:

Personal information from the village head of an artisanal mining community in Peru: He informed that about 15% of the community members had criminal records, but the community accepts immigrants under the condition of good conduct, offering them a “second chance”. The 5,000 inhabitants village doesn't count with a police post, but can be considered one of the places in Peru with the lowest crime rate. No shop or bar in the village is allowed to sell alcohol.

GENDER ISSUES AND CHILD LABOUR

GENDER ASPECTS

ASM usually involves the whole family. Women's roles, either indirectly supporting the activity through domestic work or directly involved as service providers or in mineral extraction, vary according to the local cultural setup. In Asia, generally less than 10% of miners are women, whereas in Latin America, the proportion tends to be higher, approximately 20%. The percentage of female artisanal miners is the highest in Africa, ranging between 40 and 50%. These statistics vary regionally and from site-to-site. In some regions of Africa, the involvement of women reaches 60 to 100%, while in parts of Latin America and Asia, ratios can approach 50% and 70%, respectively. (16)



Women pallaqueras (mineral selectors) accompanied by their children, Peru

The exhaustive nature of work undertaken by women in artisanal mining varies little from men's work, although cultural, religious or even legal (17) limitations restrict women's participation in underground work in many regions of the world. Women's roles are frequently confined to jobs such as the transport of ore, providing supplies and water to the men, manual crushing and grinding, selection of ore from dumps and tailings, or occupations considered as traditionally female domains. This limits women's direct access to mineral resources, control of the mine site and its revenues, and consequently, their income opportunities. With increasing mechanization, the participation of women tends to decrease even further. The productive roles of women in artisanal mining often coincide with their roles as primary caregivers and at many mine sites, women work with young babies tied to their backs and toddlers at their side.

CHILD LABOUR

As childcare or schooling facilities are frequently unavailable or insufficient in ASM communities and supplemental income is often needed for a family, children are increasingly involved in mining activities such as hauling ore and water or breaking rocks. For older children, such involvement is usually considered "part of their education".

Children may become involved quite young, some as young as 4, by accompanying their parents or relatives to the mine site. By the age of puberty, they may already be involved in adult tasks and exposed to similar health and safety risks. However as children, they have the disadvantage of lacking judgment or physical strength to protect themselves in certain dangerous situations. (18) ILO conventions 138 and 182 classify participation of minors in mining as one of the "worst forms of child labour". (19, 20)



Children working in mineral transport, Nigeria

There are three different patterns of child labour in artisanal mining, each of which has different features and implications: (21)

- i. *Child Labour within a Family Context*: working to contribute to the family income; frequently understood as "educational skill training" within the family context by parents;
- ii. *Self-employed Child Labour*: survival strategy of abandoned children, in particular orphans of war or disease;
- iii. *Bonded Child Labour*: contracting children as cheap workforce.

Although artisanal mining only accounts for 0.8% of worldwide child labour (21), its eradication is seen as a priority not only by governments but also increasingly by artisanal miners themselves. While participation of children

in the family context - as the most frequent type of child labour - is the easiest to eradicate or at least reduce to levels not interfering with education, poverty driven self-employed child labour, and especially bonded labour, present the most challenging issues to be resolved urgently. Self-employed child labour is frequent in Africa and closely related with civil wars and HIV/AIDS as a particularly crude sub-type of shock-push artisanal mining.

SAFETY AND HEALTH

Health and environmental issues of ASM are closely related to access to available and appropriate technology. As long as locally available technology has shortcomings with regards to minimum safety requirements, negative impacts on occupational health and even fatal consequences will remain inevitable. Rock fall, ground failure and shaft collapses, obsolete machinery, intoxication due to lack of ventilation, and explosives are reported as predominant causes of accidents. Silicosis, injury and stress from dust and noise pollution, and extreme exertion from highly labour-intensive jobs are the direct causes of chronic diseases. (10).

The dilemma for most artisanal miners is that they can choose between putting themselves at risk and paying a high price for a better life or abandon the activity and continue a life in extreme poverty.

Other issues of public concern are the HIV/AIDS and STD prevalence in temporary mining camps of shock-push or rush-type artisanal mining and malaria propagated by stagnant waters of abandoned diggings. Public health services rarely exist in these areas and regional authorities are frequently neither able nor feel they have the mandate to intervene in developments that are largely uncontrolled and difficult to monitor. (14)

ENVIRONMENT

ENVIRONMENTAL COST AND ECOLOGICAL FOOTPRINT

Most artisanal miners have little knowledge or awareness about environmental impacts of their activity; their main concern is the subsistence of their family or figuratively speaking the “bread on the table the next day”. The economic situation of artisanal miners forces environmental protection issues to be a secondary concern as expenditure on environmental protection remains a lesser priority as long as basic needs are not satisfied. As affirmed by the United Nations in the *Universal Declaration of Human Rights*, satisfaction of basic needs (... *living adequate for the health and well-being of himself and of his family, including food, clothing, housing...*) is a universal human right (22).

The externalized environmental cost per unit of product of ASM is often higher than that of industrial mining, especially in the case of informal ASM. Large-scale mining (LSM) is generally well controlled and supervised and multinational mining companies conform to international environmental standards more rigid than those of the host country. Externalization of environmental costs by ASM needs to be seen under a rights-based approach. Where ASM is not granted similar rights as LSM, ASM cannot be expected to comply with similar obligations.

The ecological footprint however, to produce an ounce of gold by ASM using mainly manual labour, is without any doubt much smaller than that of a highly mechanized, energy consuming, industrial large-scale mining operation.

Mercury

An issue of special public concern regarding ASM gold mines is the use of mercury, which is a long-term toxic chemical element that persists in the environment and enters the food chain (23, 24)

As already discussed earlier in the section titled “

The artisanal **mines**”, in many cases amalgamation is the only gold recovery technology available to artisanal miners. As a result, artisanal miners are themselves the population group most exposed to all related health and environmental risks by being in daily contact with mercury.

In several countries, artisanal miners trying to escape the poverty trap are further criminalized by laws banning amalgamation and extorted by markets selling mercury legally for dental amalgams.

Amalgamation is carried out in two steps; first, the mineral or gravel is brought in contact with mercury in order to get the gold trapped as amalgam and second, the gold is separated from the mercury. In order to reduce mercury emissions, it is important to minimize the amount of ore brought in contact with the mercury and to recover and recycle mercury throughout the process.

As “Any loss of mercury causes a loss of amalgam and any loss of amalgam is a loss of gold” and “Any loss of mercury is a risk for health and environment”, there is still much room for improvement in ASM. (6, 25, 26)



Amalgam, Gold and Mercury losses

ALTERNATIVES TO MERCURY: gravimetric separation and Cyanide leaching

Substitution of amalgamation faces a number of challenges. Low-cost gravimetric methods (e.g. sluices) rarely produce immediately marketable gold concentrates and improved gravimetric methods (e.g. shaking tables, centrifuges) are costly, require a power supply, and stable operation parameters. The main objective of gravimetric concentration is to reduce the amount of mineral that is treated with mercury and prevent “whole ore” amalgamation. Gravimetric methods can be combined with direct smelting of concentrates in order to produce marketable bullions.



Cyanide leaching replaced amalgamation decades ago in industrial large-scale mining. While cyanidation itself is also widely controversial due to the toxicity of cyanide, it is a feasible and more environmentally friendly alternative to amalgamation if correctly managed.



Cyanidation requires considerable investment in safe installations, larger volumes of mineral, longer processing cycles, more financial capital, and most importantly, highly qualified operators due to its highly toxic nature. Unlike mercury, cyanide does not persist in the environment; it is a chemical compound made of sodium, hydrogen, nitrogen and carbon and as such, is biodegradable in the presence of oxygen and the ultraviolet spectrum of sunlight, even in the absence of proper controlled destruction. (27)

Artisanal miners can do safe and efficient cyanide leaching. Processing plants like the one in Santa Filomena (Peru) require considerable investment and care, but leads to mercury elimination.

In recent years, substitution of amalgamation with cyanide leaching can be observed as a major trend in ASM. This trend is stronger among the more advanced Latin American artisanal miners than among artisanal miners in Africa and some parts of Asia. Switching from amalgamation to cyanidation is to a certain extent also related to a scaling-up of ASM from an *ad-hoc* and informal subsistence mining, to formal artisanal – and in some cases even small-scale – mining.

AN OPPORTUNITY FOR THE POOR

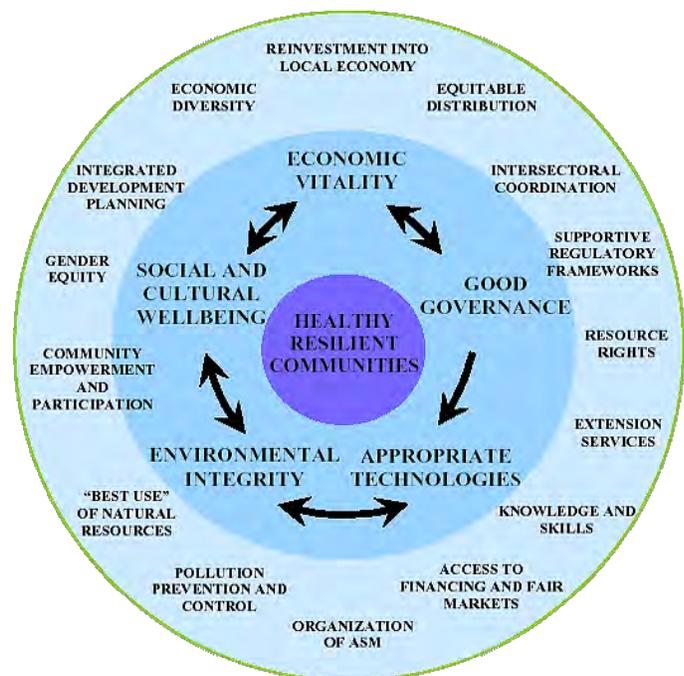
All economic, social, health and environmental problems related with ASM are in reality issues related to poverty. ASM provokes a public discussion of these issues in the media and they are in urgent need to be discussed. As the economic opportunities provided by ASM lure poor people into this activity, the issues become visible when looking at artisanal mining.

Artisanal miners are not attracted to artisanal mining because of its problems, but lured by the opportunity to escape from poverty. ASM offers them this “once-in-a-lifetime” opportunity.

CHALLENGES AND PAST EFFORTS

Regardless of the vast number of benefits and opportunities created by artisanal mining, most artisanal miners are poor and many (especially in Africa) are still living near or below the poverty line of 1 USD per day.

A series of efforts involving a variety of stakeholders during the past few decades have demonstrated that sustainable artisanal mining is a viable livelihood opportunity for millions of poor families. As a positive result of these efforts, many of these families are now better off than they were a decade ago. Compared with other economic sectors, the number of ASM projects or programmes is significantly limited, leaving the sector mainly on its own. However, the lessons learnt and experiences derived from initiatives throughout the World have provided valuable guidance on how to address the important issues of ASM. Effectively transforming the vicious circle of poverty into a virtuous one requires a fully integrated approach; encompassing and articulating the whole spectrum from grass-roots poverty relief actions to “high level” political advocacy, addressing good governance, appropriate policy, and legal frameworks that consider ASM as citizens with rights and responsibilities.



The Virtuous Circle: ASM as a Catalyst for Development (28)

Although no single program is able to cover all aspects, programmes aimed at contributing to the solution of a single problem like environmental protection, child labour, inter-sector coordination, and economic diversification, among many other issues, have shown important synergy effects, contributing to the solution of other problems as well. Even the smallest step can be an important step forward towards a virtuous circle.

THE VULNERABILITY OF ARTISANAL MINING POPULATION NEEDS TO BE REDUCED

Challenge: People dependent on ASM for their livelihood are highly vulnerable. Life in mining communities involves high-risk activities, harsh living conditions, and the predominant informal status provides scarce legal protection and limited safety nets, and the weakest - like children - are frequently the most affected.

Progress: Advancements on a community level to improve livelihoods and attack vulnerabilities requires grassroots interventions. A considerable number of NGO's in many countries intervene in the artisanal mining sector, to help and defend the most vulnerable. These efforts, although often resulting in tangible empowerment of local communities and visible improvement of living conditions, frequently remain confined to the target groups of beneficiaries and lack replication or impact on a policy level.



The weakest - like children - are frequently the most affected

Child-labour, a particularly urgent issue, was addressed globally by ILO through the International Program for Eradication of Child Labour (IPEC). Impact on the policy level was assured by simultaneous and coordinated interventions in various countries in Africa, Asia and Latin America.

In the diamond sector, the Kimberly process aims at reducing the market for conflict diamonds and the links between conflict funding and ASM. As a side effect, hundred thousands of artisanal miners' families in conflict-free areas lost vital income opportunities; the Diamond Development Initiative is now looking into this issue.

Other equally urgent issues to resolve, like gender equality, health and safety in the mines, HIV/AIDS and malaria still lack an international lead organization committed to include ASM in their agenda, and are limited to isolated pilot experiences.

ARTISANAL MINING NEEDS TO BE LEGAL

Challenge: ASM is considered in many countries a synonym for informal mining. Informality is one of the most serious barriers to development, benefitting only middlemen and corrupt bureaucracies. Promoted as a measure to attract foreign investment in the mining sector, ring fencing mineral resources for investors and denying access to mineral rights to ASM is often the cause of conflicts between industrialized mining and communities and therefore highly counterproductive.



Regional meeting of AMASUC, the Peruvian umbrella organization of legal ASM companies

Progress: Legislation is controlled by each individual country and as a result is difficult to be externally influenced. However, several countries have started to enact legislations enabling ASM and are experiencing positive effects from integrating artisanal miners into the formal economy. Large sector restructuring programs, usually supported by the World Bank, Regional Development Banks or the European Community, can be most effective in providing legal advice to governments when based on Poverty Reduction Strategies that include a realistic baseline assessment of the ASM sector. Good governance is also progressively becoming a central issue of bilateral development cooperation.

ARTISANAL MINING NEEDS TO BE ORGANIZED

Challenge: ASM in general draws on individual entrepreneurship and the will to subsist and overcome an economic shock. However, individuals are doomed to remain in the poverty trap, as only organized groups are resilient against external stresses.



Only organized groups of artisanal miners are resilient against external stress

Progress: Incentives and calls to organize are a common feature of all programmes and projects intervening in the ASM sector by national Governments, NGOs, development agencies, and even by large-scale mining companies seeking agreements with artisanal miners.

Progress on a local level largely depends on cultural settings and the advantage of being organized. Progress on an institutional level is evident as in most developing countries, umbrella organizations of artisanal miners are in place and international events, like those organized annually by CASM, contribute to create regional networks.

SAFETY, HEALTH AND ENVIRONMENT NEED TO BE PROTECTED

Challenges: Artisanal technology, environmental degradation and human health risks are closely linked. Pollution of ecosystems and siltation of aquatic systems are most commonly reported as environmental impacts. Direct or indirect risks for human health are the price artisanal miners have to pay to earn a living. Addressing these technical issues requires consideration of social, economic, legal and cultural factors.

Progress: The most emblematic environmental issue in ASM is mercury contamination. While the 80's and early 90's were characterized by academic studies on this topic, bilateral development cooperation slowly began to address technological solutions in the early 90's, based on "appropriate technology approaches". Some approaches (e.g. SDC) evolved to resolve the mercury issue by empowering artisanal miners and promoting alterna-

tive and more advanced technologies to organized and formalized groups of miners. Others (e.g. UNIDO) continued promoting appropriate technology like mercury recovery retorts. Both approaches can be considered successful as long as they are in line with local mindsets (SDC's approach was successful in Latin America, UNIDO's approach was successful in Africa). This confirms that approaches have to follow local characteristics rather than rely on one-size-fits-all solutions. The Global Mercury Partnership, led by UNEP, addresses the issue within a broad multi-stakeholder initiative, which tackles mercury abatement in a number of sectors, ranging from coal plants, through dentistry, to artisanal and small scale gold mining (ASGM).



Cotapata Processing Plant (Bolivia)

A considerable number of national and international NGOs (e.g. WWF) are involved in grassroots projects supporting ASM in improving ecological restoration and protecting biodiversity. ILO, according to its mission, is promoting occupational safety in artisanal mining.

ARTISANAL MINING NEEDS TO GAIN INDEPENDENCE

Challenges: In the past, artisanal miners and ASM communities were seen as “beneficiaries” of projects by Governments, NGOs or development agencies; miners and their families were considered unable to express their own problems and concerns and in need of awareness building campaigns. This assembles a strategy of “we have the solution and are looking for the problem that matches”. Approaches are shifting and will require artisanal miners to express and formulate their own demands.

Progress: Evolution from “beneficiary” to “stakeholder” is an important goal for the future. Very few groups of artisanal miners have reached that level of empowerment. Even development agencies still need to learn to interact with artisanal miners on a horizontal level, considering them as partners for development. This is not an easy task as the rhythm of communities is different from planning cycles of development agencies, sometimes faster (less bureaucratic), sometimes slower (waiting for the next mining season), but almost never synchronized.

Most progress can be observed in countries where ASM has the possibility to formalize, providing rights and demanding obligations. This provides for the development of responsible ASM, requiring responsibility from the miners as well as from those interacting with them.

ARTISANAL MINING NEEDS TO GAIN ACCESS TO MARKETS

Challenges: Despite the macro- and microeconomic benefits of ASM, financial constraints are one of the foremost concerns of artisanal miners. Access to financial markets and to commodity markets is usually restricted. Financing requirements for mechanization may be much higher than in other small enterprise development; an artisanal tailor can advance with a sewing machine for 500 USD, while mechanization of “digging” needs an excavator worth at least 25,000 USD. Selling commodities at international market prices requires accumulating quantities suitable for export, equivalent to at least 43,000 USD (e.g. 1 kg gold at 2010 prices).

Progress: Gaining access to financial capital is for the majority of artisanal miners almost a “mission impossible”. Formal banks and financial institutions usually consider the risk associated with ASM as too elevated, and even development projects designed for providing credit to artisanal miners (MEDMIN, APEMIN) frequently report excessive uncollected debts. (15)

However, positive examples show that organized and formalized artisanal miners are able to conduct formal commercial operations, even without losing their cultural identity as artisanal miners. The best documented example is the ASM organization SOTRAMI, located in Sta. Filomena (Peru), which managed to grow into a small-scale “mining company” with their own processing plant serving the “community mining” activity. Admittedly, the organization and formalisation process for SOTRAMI began in 1992 and lasted 15 years.



Access to markets other than local gold shops is for artisanal miners almost a “mission impossible”

Access to markets is difficult for artisanal miners, especially as commodity markets are designed for commercial-size lots, which far exceed individual production of a few grams of gold or a single gemstone. But again, positive examples demonstrate the feasibility for organized and formalized groups of artisanal miners to gain access to international markets. The Green Gold® or Oro Verde programme in Colombia is a pioneering initiative,

which demonstrated that organized artisanal miners can even gain access to innovative ethical gold markets. (29)

PUBLIC OPINION HAS TO BECOME AWARE OF ARTISANAL MINING

Challenge: ASM remains largely unknown and misunderstood by public opinion and decision makers. The consequence is that the sector as a whole, and the individuals engaged in it, are politically and socially marginalized and remain a low priority for policymakers and the development community. (30) Compared to other rural sectors like agriculture, international efforts supporting ASM are comparatively non-existent. The assumption is that a person who handles gold must be a rich person. However, the woman from Bolivia who works a week for a gram of gold doesn’t associate gold with wealth.

Progress: Broader based support for artisanal mining, complementary to support from NGO’s and bilateral development agencies, began in the early 2000’s through the multi-donor initiative CASM (Communities and Artisanal Small scale Mining), hosted at the World Bank and supported by DFID and others. Simultaneously, the Johannesburg Earth Summit in 2002 triggered the Mining, Minerals and Sustainable Development (MMSD) initiative through which ASM surfaced as an outstanding development opportunity in both Africa and Latin America (31). ASM earned similar positive appreciation in the Extractive Industries Review (EIR) commissioned by the World Bank Group. (32)

To a certain extent, after the Johannesburg Summit, most global players returned to “business as usual”. New global impulses can be expected for the year 2015, when the international community will be challenged to report on accomplished achievements regarding poverty reduction. Meanwhile, most advocacy work is done on a regional level, as seen with the Yaoundé Declaration for Africa and the Quirama Declaration on Responsible Mining in Latin America. (1)

RESPONSIBLE ARTISANAL AND SMALL-SCALE MINING

VISION FOR RESPONSIBLE ASM

ASM can be a poverty trap or an outstanding opportunity to escape poverty. To overcome the many problems and issues of ASM, clarity on what ASM should be is a necessary prerequisite.

The RESPOMIN Latin American network of the Alliance for Responsible Mining (ARM), has devised a set of collective aims and principles, which serve as a reference point for an ASM that represents a sustainable development opportunity and livelihoods strategy towards poverty eradication. These principles are based on the following “Vision for Responsible ASM” (1):

“ASM is a formalized, organized and profitable activity, that uses efficient technologies and is socially and environmentally responsible; it progressively develops within a framework of good governance, legality, participation and respect for diversity; it increases its contribution to the generation of decent work, local development, poverty reduction and social peace in our nations, stimulated by a growing consumer demand for sustainable minerals and jewellery.”

PRINCIPLES OF RESPONSIBLE ASM

The Vision of Responsible Artisanal and Small-scale Mining, also known as the “Quirama Declaration”, is committed to the Millennium Development Goals and the Johannesburg Declaration on Sustainable Development and to the following specific principles:

HUMAN RIGHTS

The concept of responsible mining is based on the Universal Declaration of Human Rights and on later UN declarations regarding the cultural, social and economic rights of individuals. The rights of artisanal and small-scale miners must be respected, and their violation denounced. Responsible community based ASM organisations must respect these human rights, as well as the social, economic, cultural, and labour rights of each and every person involved as fundamental principles. The rights of women, disadvantaged groups and individuals, including migrant workers, are specifically included.



Gold produced by responsible ASM contributes to decent work, local development, poverty reduction and social peace

DECENT WORK

Responsible ASM is decent work in line with the ILO Conventions. Work in Responsible Artisanal and Small-scale Mining is performed in conditions of freedom, equality, safety, and human dignity, is free of child labour and allows the access of small-scale mineral producers, workers and their families to a decent standard of living.

QUALITY OF LIFE AND SUSTAINABLE HUMAN DEVELOPMENT

Responsible ASM contributes to the sustainable human development of communities and improves the quality of life of men and women miners, their families, and the community that hosts ASM endeavors, respecting the values and priorities of each community.

LEGALITY

Responsible ASM complies with national legal frameworks. Where national legislation does not recognize the legal rights of community-based artisanal and small-scale miners, despite their legitimate efforts towards legalization, ARM will, as far as possible, work with organized ASM and national governments, to lobby for improved public policies for responsible ASM organizations interested in committing to the principles. However, ASM communities involved in armed conflict in any way, including financing conflict or the use of revenue to engage in activities that facilitate the purchase of arms, will not be recognized as legal or responsible ASM.

ENVIRONMENTAL STEWARDSHIP

Responsible ASM actively encourages better preventative and restorative environmental practices and the application of responsible methods of production. Responsible miners abide by the environmental laws in their countries, contribute to environmental protection, human health and ecological restoration in its operations and communities, and mitigate negative impacts. Respecting protected areas, avoiding damaging important biodiversity, minimizing the ecological footprint of mining, and, where possible, restoring, replacing, or compensating for the loss of biodiversity are principles for environmental protection.

GENDER EQUALITY

In the organizations and initiatives of Responsible ASM, women's work is properly valued and rewarded and equality should exist among men and women in all rights, including access to resources, the use of earnings, and participation and impact on decision-making processes. Women are always paid for their contribution to the production process and are empowered in their organizations. The miners' organization ensures equal pay for equal labour regardless of the labourer's gender. In organizations, processes, and activities where there is marginalisation of women, measures and actions shall be taken to improve equality.

MULTICULTURAL NATURE

Artisanal and Small-scale Mining often develops in contexts of ethnic and cultural diversity. Where indigenous peoples or other ethnic groups are owners of the territory and are different from the miners themselves, responsible ASM organizations will undertake discussions, based on the spirit of ILO Convention 169 with respect to local cultural values and practices, in order to reach agreements with the local traditional authority and community, regarding the impacts and benefits of mining operations and trading in that indigenous or ethnic territory.

FAIRTRADE AND FAIRMINED CERTIFICATION FOR ASM

The fair trade approach has gained significant market acceptance by consumers of agricultural products like coffee, chocolate, and over 50 other products. By offering producers favourable market conditions, and a Fair-trade premium in exchange for compliance with social and environmental standards, certification empowers small producers and promotes sustainability. This approach is fully compatible with the entrepreneurial mindset of artisanal miners.

The fair trade approach is gaining acceptance as the demand for “ethical jewellery” rapidly grows among consumers. While the demand for ethical sourcing of minerals encourages even industrial large-scale mines to highlight their CSR compliance, fair trade remains a concept built upon and in support of small producers. Positive experiences with the Green gold® or Oro Verde® programme demonstrated the feasibility of a fair trade approach for gold from ASM communities.

In 2006, the Alliance for Responsible Mining (ARM) began to develop the “Standard Zero” for gold produced by ASM communities. This Standard, based on the Vision of Responsible ASM, requires that gold is not only traded under fair conditions but also mined in a fair and responsible way. Third party certification allows for labelling such gold as Fairmined. By partnering in 2009 with the Fairtrade Labelling Organization (FLO), ARM found a strong partner with marketing experience in consumer countries to bring this opportunity for artisanal and small-scale miners to become certified, and for consumers and ethical jewellers to support responsible ASM gold production.



ARM's Fairmined® certification mark



Fairtrade and Fairmined certification mark for the partnership between ARM and FLO

ADDRESSING THE ISSUES OF ASM

The fair trade approach is based on rights and responsibilities determined through standards for production and trade. The **Standard for Fairtrade and Fairmined gold from artisanal and small scale mining, including associated silver and platinum** (33), adheres to the Vision for Responsible ASM expressed in ARM's Standard Zero and

incorporates the lessons learnt from practical implementation of FLO's Generic Standards for small agricultural producers for over 20 years. The fair trade approach therefore addresses practically all critical ASM issues based on win-win options.

ORGANISATION OF ASM

Organisation of artisanal miners is of vital importance for their development. As any certification system is only feasible at organizational level, participation in the fair trade system becomes a strong incentive for organisational strengthening and capacity building. This refers not only to the formalization of the miners' organization, but even more to its internal functioning and business planning.

LEGALIZATION OF ASM

As only formal organizations can engage in certification and only legally produced gold can be traded, the miners' organization is required to either hold the mining rights of its mining area, or to have a legal and transparent lease agreement with its owner. By being the legal concession possessor, security of mining title provides one of the vital incentives for investment into the improvement of mining and processing facilities, and the responsible development of ASM.

As certified ASM operations are required to comply with all national regulations, these operations demonstrate in practice that formalized and responsible ASM is possible. Positive feedback on national legislation, towards a more favourable legal framework for ASM is expected globally once the certification scheme demonstrates its effectiveness in the market.

SOCIAL PERFORMANCE

Fairtrade and Fairmined Standards are based on Universal Human Rights. Issues like child labour, gender equality, and social safety need to be proactively addressed by the miners' organization in order to be certified. The expected effect is a significant improvement of living conditions in ASM communities, which is considered one of the main benefits of the fair trade approach.

Social performance also comprises prevention of and mitigation of any type of conflicts. To be certified under the Fairtrade and Fairmined Gold Standard, the mining organisations must demonstrate that they have good relationships with the local communities. This will contribute to the improvement of the public image of ASM, gradually convincing even anti-mining organizations to support responsible ASM.

ENVIRONMENTAL PERFORMANCE

Responsible ASM is required to implement measures to drastically reduce the environmental impacts from the use of mercury and cyanide. Whole ore amalgamation, open amalgam burning, discharge of contaminated tailings, uncontrolled leaching and many other unsustainable practices prevent an ASM operation from being certified. As mercury losses are always an indicator for gold losses, costs of measures to improve the environmental performance will be partly offset by higher gold recovery using state-of-the-art processes. Introduction of leaching in order to entirely eliminate mercury use is encouraged, but required to be done in a well-controlled process by trained personnel. The Standard offers a special ecological premium for gold produced using only gravimetric methods, with no use of mercury or cyanide, under strict ecosystem restoration practices. Ecosystem rehabilitation and care for biodiversity are key requirements for responsible mining as addressed by the Standard.

TECHNICAL PERFORMANCE

The improvement of the mining operations in order to comply with environmental and safety standards, increased organization, and combined with security of tenure of investment in mine infrastructure offers an opportunity for ASM. Safety conditions as well as productivity are expected to increase as a result of these efforts.

ECONOMIC BENEFITS

Compliance with the demanding producer standards demands investment in the improvement of production facilities (mine, processing plant), establishment of documentary traceability of all operations in the organisation and supply chain, and generates extra costs.

The fair trade approach implies that in exchange for compliance with the requirements, certified miners' organizations receive at least a fair (guaranteed minimum) price of 95% of the LBMA fix, as well as a "Fairtrade Premium" of 10% on top of that. Fair trade also implies that gold content and weight of delivered gold are determined exactly. For gold produced without mercury and cyanide and under assurance of ecological restoration, an additional 5% "Ecological Premium" partly offsets additional production costs.

Fair trade contracts introduce the option for pre-financing production to the mining organisation. While there is still limited access to financial markets, established and stable long-term trade relations may qualify producers for commercial financial instruments.

With these economic benefits and by gaining access to international commodity markets, miners' organizations are offered a significant incentive to work towards compliance with the Standard and to become responsible ASM operations.

REPUTATIONAL BENEFITS

Mining has a bad public image and the fundamental difference between industrialized mining and community based ASM is frequently not understood by the public and by decision makers. External, independent, and international certification of compliance with social and environmental standards will contribute significantly to improving the reputation of ASM organizations and bring greater support for the transformation of the sector.

EMPOWERMENT OF ASM

The fair trade approach is based on mutual rights and obligations and as such, producers are not considered "beneficiaries" as in conventional development approaches, but contractual partners in commercial operations. The Fairtrade Premium producers receive is not a donation or gift, but a profit earned by complying with the Fairtrade and Fairmined Standards. Subsequently the miners' organisation decides democratically on how to use the profits and the organisation's autonomy is fully respected and not subject to any external development agenda.

CHALLENGES FOR FAIRTRADE AND FAIRMINED CERTIFICATION OF ASM

The fair trade approach has proven its effectiveness and efficiency in a series of agricultural products. Gold is the first product originating from the mining sector.

FINANCIAL CHALLENGES

Fairtrade and Fairmined certified gold from ASM is ready to be launched in 2011. Considerable pre-investment has been made to setup supply chains and support an initial batch of producers to reach standards compliance. Further immediate investment will be needed on the market side, as marketing cannot start until certified gold is available.

The Fairtrade and Fairmined system is designed to be economically self-sustainable. Licence fees for label usage should, in a few years, fund the required logistics, producer support and marketing efforts. License income however is directly proportional to the traded volumes. Therefore expanding supply and the incorporation of new miners' organisations is crucial. External funding is therefore needed until financial sustainability is achieved.

GEOGRAPHICAL SCOPE

In a complex system like the fair trade approach, producer support and traceable supply chains need to be built step by step so the geographical scope of ASM producers is therefore initially limited to the Andean countries of Latin America. The approach however aims for global coverage, as ASM is a development opportunity for 15 million people worldwide. Challenges include not only building the support and supply chain infrastructure but also adapting the approach to different cultural setups and legal frameworks. In some countries ASM is still illegal.

PRODUCER SUPPORT ORGANIZATIONS

Producer support organizations are indispensable to provide the training and capacity building needs of producers that allow them to comply with the demanding Gold Standard. ARM works with a network of support organizations that have helped in the development of the standard in Latin America, to ensure training capacity is built at national level to expand supply of certified Fairtrade and Fairmined Gold.

As ARM widens the geographical scope to Africa and Asia, partnerships with producer support organizations in newly included countries need to be established. Such organizations can be governmental organizations, academic institutions, NGOs or development programmes.

Especially ASM development programmes are expected to join the initiative. Supporting ASM producers in reaching compliance with the Standards allows for objective and internationally comparable indicators of ASM development. The fair trade incentives assure that implemented measures, training and capacity building are efficient and sustainable.

PRODUCER ORGANISATIONS

As demand for Fairtrade and Fairmined certified gold grows, additional ASM producer organisations will need to enter the system. The first organisations to join the system are those that already have a high level of compliance with the requirements and certification is a relatively small step forward. For the next generation of producer organisations, more support will be required for training, capacity building, and up-scaling and will present a challenging task for the producer support organisations to help artisanal miners achieve certification.

COOPERATION WITH THE PRIVATE SECTOR

The fair trade approach builds on dedicated, traceable trading chains and aims at eliminating trade imbalances. As middlemen often intentionally maintain trade imbalances, a certain resistance is expected and conflicts may arise. However, if intermediaries provide an added value to the producers or supply chain and are committed to operating transparently, they may maintain their role and assume the important task of consolidating volumes of gold as certified operators.

GOVERNMENTAL SUPPORT IN PRODUCER COUNTRIES

The fair trade approach is adequate to resolve a series of burning issues governments have with ASM. It is a strong incentive for formalization and promotes voluntary compliance with technical, social, labour and environmental requirements including national regulations and contributes to local and national development. As the approach is new for the minerals sector, government support will initially depend on building extensive awareness, procuring of in-depth information, and lobbying efforts.

MARKET RELATED CHALLENGES

A series of additional challenges is related to jewellery market perception and marketing efforts for Fairtrade and Fairmined Gold. IN the FLO ARM partnership, the FLO national initiatives are leading on marked development, and already there is more demand than supply of certified gold.

EPILOGUE

Emerging from the deep rainforest of the Colombian Chocó, far from the “technified” mining sector, the sole idea of certification of ASGM proposed by Oro Verde® in the year 2000, seemed like madness to everyone working in the mining sector. “Oro Verde® is not mining”. Few saw the opportunity and were ready to take the risk then. Perhaps because it was not born from the mining sector, but from authentic community miners, Oro Verde was allowed to prosper and inspire Fairtrade and Fairmined certification for ASM.

At the time Oro Verde was being born, a network of committed people, including artisanal miners and others from local organizations⁷ involved in international programs such as the GAMA project of SDC in Peru, the ILO IPEC program for the Andean Countries, the Mining Policy Research Initiative of Canadian IDRC, the Science and Technology for Development Program (CYTED), the CASM Initiative, started engaging around the Latin American network known as the ASM Network, the “Red MPE”.

The Red MPE network met in Lima in the aftermath of the Mining, Minerals and Sustainable Development project (MMSD LA) back in 2002. ASM had been identified through the MMSD as one of five priority issues that the mining sector had to address to really contribute to the sustainable development of mineral rich communities. (34) The Global Mining Initiative announced that they were not ready to engage with ASM. For the participants in the Red MPE it was however clear that a joint effort would enable change the ASM sector and tap its full development potential: the first collective vision for what ASM would be 10 years from then, as the Lima Vision.

Shortly after Oro Verde met the Red MPE in Colombia. Converging on the creation of the Alliance for Responsible Mining (ARM) all this critical mass was catalyzed through the innovative element of market access and ethical certification. The “Quirama Vision” and its principles for responsible ASM were born, and are captured in *The Golden Vein*. (35)

After 7 years of hard work by ARM and its global network of global allies, developing the Standard Zero for Fair Trade gold, consulting it globally in 5 languages and testing it with miners and support organizations in Latin America; building a partnership with Fairtrade Labelling Organisations (FLO) and harmonizing Standard Zero with the FLO standards to create the Fairtrade and Fairmined standard: and last but not least guiding miners on their way to become certified and opening up work in Africa and Asia, ARM and the Artisanal and Small Scale Miners have demonstrated that visions can come true!

The first Fairtrade and Fairmined certified gold, from the Cotapata Cooperative in Bolivia, launches to market in London on Valentine’s Day 2011. This opens the path for other pioneer producers like Oro Verde and Sotrami in Peru to sell to ethical jewellers, the gold that represents the most important development breakthrough in the modern history of the jewellery supply chain.

We thank those who believed in this visionary idea, and invite you all to join us in expanding supply and developing a market to drive it!

Alliance for Responsible Mining

⁷ Producer support organizations are at the heart of this initiative, and the basis of creating capacity for local support to miners. Red MPE and all of those involved in the RESPOMIN program that produced *The Golden Vein, a guide to responsible ASM*, too many to mention here, as well as those involved in the development of the standards, specifically: Cumbre del Sajama and Medmin in Bolivia, AMICHOCÓ, the Corporacion Regional de Nariño and the University of Nariño (Colombia), Red Social (Peru) and the Escuela Superior Politécnica del Litoral (Ecuador).

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Artisanal and small-scale gold mining (ASGM) is one of the few economic activities that a poor person without access to education or investment can do to feed their children on a daily basis. As gold prices reach historic highs, millions of people facing economic hardship, displacement, landlessness and vulnerability are turning to ASGM for survival and better incomes. However, the image of ASGM in the public opinion is often blurred, since gold mining also attracts illegal investors and traders, as well as armed groups backed by large capital, who are not only causing destruction of ecosystems and conflict with local communities, but are interested in maintaining ASGM informal. A clear understanding of the ASGM sector is crucial to support the transformation of traditional artisanal mining activities into a sustainable opportunity for communities in mineral rich regions. This publication illustrates what ASGM is, the challenges it faces and the development opportunities that it offers if miners are given access to ethical markets and legal rights.



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