



# A Golden Opportunity

**Recasting the Debate on the Economic and Development Benefits  
of Small-Scale and Artisanal Gold Mining**

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Written and Researched by Steve Tibbett

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# A Golden Opportunity

Recasting the Debate on the Economic and Development Benefits of Small-Scale and Artisanal Gold Mining

## Key Findings

- The paper challenges the prevailing thinking on small-scale and artisanal mining, outlining the positive potential of the sector for development while rebalancing the exaggerated orthodox view of large-scale mining's contribution to development.
- ASM is an important economic sector in many developing countries, providing employment and foreign exchange, supporting livelihoods and local economies and promoting community cohesion.
- The international mining industry, dominated by large-scale, mechanised producers, along with allies in international financial institutions and governments, has driven the discourse around the economic and developmental benefits of mining, skewing the debate, policy environment and distribution of mineral resources, making it difficult for ASM to become legal and for legal ASM to access mineral rights.
- The policymaking community, at local national and international level, has largely failed ASM, which is underfunded and lacks an overall and coherent strategy to maximise its contribution to development.
- Large-scale mining has been linked with large environmental degradation, human rights abuses, and with fuelling conflict and corruption, while its benefits in terms of employment, economic growth and technology transfer are often exaggerated.
- There is still insufficient research, data or interest on small-scale and artisanal mining, which is viewed by many with unwarranted scepticism and prejudice.
- Although it is polluting, ASM has many environmental benefits, which could be expanded if the sector gets more investment.
- Donors and NGOs should support governments to re-evaluate institutional, financial and legal frameworks in favour of ASM, including supporting cooperatives and providing credit, and should support appropriate technologies for the sector.
- ASM and LSM can and should work together more to exploit mining deposits, sharing concessions, skills, knowledge and technology.
- New and innovative ways of maximising the development value of ASM, such as Green Gold and Fair Trade, hold great potential and should be supported by policymakers and donors.

## Key Facts

- 3.9 billion people live in today's 56 mining countries, 90% of them in 51 developing and transition countries.
- 100 million people depend directly or indirectly on artisanal and small-scale mining for their livelihoods.
- The formal mining sector employs around 11 million people globally. Of this large-scale mining employment in developing countries totals about two million.
- In Africa alone it is estimated that gold and gemstones worth \$1 billion a year are produced by the ASM sector.
- 15 firms account for around 50% of gold production, with the top five – Newmont, AngloGold Ashanti, Barrick, Gold Fields Limited and Harmony – together producing 33.5% of all gold mined globally.
- From 1990-2002, the World Bank Group's International Finance Corporation provided \$1.2 billion to multinational mining corporations, an average of \$100.8 million a year. The overall figure for small-scale mining was just \$610,100.

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## Preface<sup>1</sup>

This paper is an attempt to challenge the prevailing thinking on small-scale and artisanal mining, helping outline the positive potential of the sector for sustainable development, while attempting to rebalance the orthodox view of large-scale mining's contribution to sustainable development.

- The paper was commissioned by the Cred Foundation, a registered charity, and was supported by Both Ends ([www.bothends.org](http://www.bothends.org)). Most of the information in this paper comes from academic, governmental and, to a lesser extent, non-governmental sources and, wherever possible, original source material has been used.

## The mining discourse

The issues of mining natural resources and international development have become inter-twined. In recent years more and more developing countries have discovered and started to exploit gold and other mineral deposits. International institutions and academic literature have both focussed on the economic potential of mining and the development downsides of the industry. Gold mining in particular has become a focus for passionate debate about how countries develop. Commentators and policymakers have deliberated over the economic value of foreign investment, the environmental, political and social problems associated with digging wealth out of the ground, and also the potential of mining to contribute to growth and development.

The international mining industry, dominated by large-scale, mechanised producers, has traditionally driven much of the discourse around the economic and developmental benefits of mining. Most international policymakers, donors and national governments have agreed that exploiting deposits of minerals such as gold need large-scale investments and capital-intensive operations, and that such activity will lead to growth and poverty reduction.

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“Gold mining in particular has become a focus for passionate debate about how countries develop.”

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But in recent years this accord has started to come apart. Large-scale mining (LSM) has not always delivered the developmental benefits that it promised. Some LSM projects have led to social, political and environmental problems. Researchers and policymakers have started to look more broadly in their quest to help mining contribute more fully to poverty reduction, social stability and environmental sustainability.

In the last decade or so there has been some increased research interest in small-scale and artisanal mining. Small-scale and artisanal mining (ASM) has been under-explored and undervalued in the literature as well as by the international mining community and its policymakers. Its contribution to livelihoods and poverty-alleviation and its intricate relationship with communities and local economies, although complex and sometimes difficult, has increasingly interested researchers and progressive policy-makers.

In the last few years there have also been attempts to rethink, revitalise and renew the small-scale mining

sector, unlocking its potential for more sustainable and durable economic and social gains, better regulating and supporting it, and allowing it to contribute more fully to community development and environmental protection.

## Recasting the debate

This paper attempts to influence and help recast the debate on how to extract development value from mining precious minerals. Whilst exploiting their natural resources via large-scale or small-scale mining is rarely, if ever, an ‘either or’ policy choice for poor countries, I argue here that the overall debate, policy architecture and donor funding model, urgently need rebalancing.

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“This paper attempts to influence and help recast the debate on how to extract development value from mining precious minerals.”

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Policy-formulators, influencers and decision-makers need to be able to make informed choices about the right balance of legislation, regulation and support to accommodate different mining sectors and models<sup>2</sup>. This should include supporting better ways to harness the natural complementarity of large-scale miners and small-scale miners and helping miners with credit, technology, infrastructure and institutional support.

This paper questions both the evidence and assumptions of the discourse that has dominated mining and development, by focussing on gold production

in particular. The aim is to spark a debate that looks more positively at the contribution that a mixed mining economy can have, where the proceeds are more fairly shared and the miners, their families, their communities and their local economies can break out of a cycle of poverty and use mining as a solid platform for sustainable development.

## A golden opportunity

Gold (which is the focus commodity in this paper) has also always been considered glamorous and valuable. Perhaps the most widely accepted form of currency in the world, it is held by central banks and others as a form of insurance and protection from economic shocks and trading insecurities.

A staggering 3.9 billion people live in today’s 56 mining countries, 90% of them in 51 developing and transition countries. Among the 3.5 billion people in these poorer countries, about 1.5 billion live on less than \$2 a day, making up nearly two thirds of the world’s poorest population<sup>3</sup>.



*Diamond Mining in Sierra Leone : Photo Credit - Greg Valerio*

Gold deposits have been found in many developing countries and often among the poorest communities. Developing countries now account for the bulk of gold output, and their share is increasing. Taken together low, middle and upper-middle income countries account for some 70% of global gold production<sup>4</sup>.

In recent years gold exploitation has been associated with unsustainable and unethical business practices, and stands accused of causing a variety of economic distortions, environmental damage, having poor labour practices and aiding the destruction of communities. But mining – and particularly gold mining – is also a lifeline. As many as 100 million people depend directly or indirectly on ASM for their livelihoods<sup>5</sup>. Mining, and again especially gold mining, is often the only realistic choice for income generation in many poor countries for a range of marginalised groups from unemployed civil servants to displaced farmers.

To make small-scale mining work for development, the international development community, donors, business and national governments need to come together, rebalance their approach and redouble their efforts in terms of research, technical assistance and the wider policy framework.

## **Mining and gold historically**

Gold mining has a chequered past. In some countries, mining has been historically linked with slavery, indentured labour and in the case of South Africa, currently the world's largest gold producer, with the Apartheid system.

Mining as we know it today has its roots in the industrial revolution and the surge in demand for minerals as inputs for industry, particularly for iron and coal. Until the post-war period when production began to move to poorer countries, gold mining had not spread much beyond a few core producing countries.

By 1970 South Africa accounted for some two-thirds of global gold production<sup>6</sup>. Some growth in production occurred in the 1970's, but it wasn't until the 1980's that gold mining spread more widely and rapidly in the developing world, and by the 1990's into other parts of sub-Saharan Africa.

Today, just over half of the gold produced globally is used for jewellery, but it is also used widely in electronics manufacturing<sup>7</sup>, as well as in space and aeronautics, medicine, nanotechnology, dentistry, engineering, and even in food & drink and beauty products<sup>8</sup>.

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**“Mining, and again especially gold mining, is often the only realistic choice for income generation in many poor countries.”**

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In recent decades, gold and other mineral mining has increasingly become associated in the developing world with environmental degradation, community turmoil, conflict and rent-seeking behaviour amongst ruling and local elites. Mineral rich states in Africa and Latin America, as well as in some parts of Asia, have been accused of approaching the use of their natural resources naively and improperly, not getting the best terms for their concessions, particularly from large mining companies.



## The global mining industry

During the last decade the metals mining industry has become centralised and concentrated<sup>9</sup>. The concentration of the industry is expected to continue and the gold mining industry has seen many mergers and acquisitions in recent years. 15 firms account for around 50% of production, with the top five – Newmont, AngloGold Ashanti, Barrick, Gold Fields Limited and Harmony – together producing 33.5% of all gold mined globally<sup>10</sup>. Both together and separately, these companies have been involved in expanding the concept of ‘gold mining for development’, arguing that large-scale mining is an important driver of poverty reduction and development<sup>11</sup>.

Companies mining gold and other precious minerals have not always been regarded as the most socially responsible actors, but in recent years large mining companies have attempted to clean up their tarnished image. They have set up a number of schemes and processes, such as the Responsible Jewellery Council (RJC) which aims to improve the reputation of gold mining, as well as other retailed minerals, such as diamonds and the Global Mining Initiative, which brought together the major mining companies to respond to the UN World Summit on Sustainable Development and prepare for the Mineral’s Mining and Sustainable Development process. The board of the metals industry’s representative organisation, the International Council on Metals and the Environ-

### Box 1 : The historical role of the World Bank Group in Mining

*In the 1980’s the World Bank identified mining, including gold mining, as a key sector for development. The Bank argued that, by increasing inward investment into extractive industries in developing countries, huge revenue streams could be opened up which would help fuel economic growth – a prerequisite for poverty reduction, as well as producing important spin-offs such as providing jobs, skills, infrastructure and technology transfer.*

*The World Bank Group, in particular its related agencies the International Finance Corporation (IFC) and Multilateral Investment Guarantee Agency (MIGA), have subsidised, promoted and underwritten the push for LSM, especially since the 1990s, when other parts of the World Bank Group, notably the International Bank for Reconstruction and Development (IBRD) and the International Development Association (IDA) began to focus more on other areas<sup>15</sup>. From 1993 the IFC financed 33 mining projects investing \$681 million, while during a similar period MIGA provided guarantees for 31 projects in extractive industries mostly in the mining sector<sup>16</sup>.*

*Although overall the World Bank Group investments are falling as an overall proportion of its investments, it remains a key investor, with countries and companies able to use the Bank’s endorsement to attract further and far larger private sector investment.*

*In a landmark study, a large, externally-operated review of World Bank operations in the extractives industries was commissioned by the Bank’s Oil, Gas, Mining and Chemicals division, together with the IFC, in response to growing concerns about its role in the industry. The review, called the Extractive Industries Review (EIR)*



ment (ICME) broadened the group's mandate and transformed it into the International Council on Mining and Metals (ICMM).

The industry has helped set up and run the 'Kimberley Process', a certification scheme to stem the flow of diamonds from conflict regions. The gold mining industry itself comes together in the form of the World Gold Council, which has published a number of influential reports on the importance of gold to developing countries, arguing that large-scale gold mining is a key path to poverty reduction.

## Mining code reforms, royalties and tax

Over the last few decades, but especially in the 1990s, many developing countries adapted and reformed their mining codes, often with the assistance and backing of the World Bank (see below). The main aim of these reforms was to increase foreign direct investment in the mining sector and thus, usually, to reduce the role of the state in the sector.

Campbell et al (2003) argued that although the renewed emphasis on governance is welcome in the World Bank's current advice to African countries<sup>12</sup>,

*attempted to 'strike a better balance' in terms of the way the bank intervened in the sector, so as to maximise benefits for sustainable development.*

*The review was quite critical of the Bank's role in the industry. The authors found that although overall foreign direct investment in mining increased rapidly, partly due to Bank-sponsored mining code and tax system reforms, the impacts on development were not always measured and did not always materialise in the expected manner.*

*For instance, EIR-supported research on Peru, Tanzania, and Indonesia found that revenue was not transferred to affected communities, there was increased antagonism and social conflict, as well as increased macroeconomic instability. "Under structural reform programs, new extractive industry investments were initiated; the environmental and poverty alleviation outcomes were not as positive," said the review<sup>17</sup>*

*The review also said that the Bank favoured large-scale mining projects over small-scale ones. From 1990-2002, the IFC provided \$1.2 billion to multinational mining corporations, an average of \$100.8 million a year. Although it is difficult to find exact figures, the report says, it "appears" the figure for small-scale mining was just \$610,100. The authors describe the way the Bank has preferred large-scale projects as "seriously imbalanced"<sup>18</sup>. There is some evidence that since the review has been finalised the banks and other donors have taken ASM more seriously, funding, for instance, the CASM initiative<sup>19</sup>.*

the main effect of reform of mining codes in 1980's and 1990's was to make it easier for foreign companies to invest in mining, rather than to put development at the centre of the equation. A major result, or at least side effect, of these reforms was a fundamental alteration of the role of the state in these countries so that they "appear to fall very short of permitting sustainable development strategies and the introduction of norms and standards whether with regard to the protection of the environment, social impacts or labour, conducive to such strategies."<sup>13</sup> The authors warn that these changes have been under-explored, undervalued and are, in fact, profound and unprecedented.

In addition to financial and technical help, as well as political backing from multilateral development agencies (see box 1), large mining projects have tended to benefit from large tax incentives at the national level. Many countries put inexperienced representatives

into negotiations with highly-skilled company agents, who struck often very favourable deals for the companies themselves. Royalty and tax rates were drastically reduced in many developing countries.

Ghana, for example, one of the countries identified by donors as suitable for reform and expansion of foreign investment in mining in 1980's, underwent a 'text-book' IMF structural adjustment reform process, rapidly liberalising its economy. For mining this meant changes in mining sector legislation to make the sector more attractive to foreign investment, increasing fiscal liberalisation of the mining sector, strengthening and reorienting government support institutions for the mining sector, the privatisation of state mining assets, the enactment of environmental laws and other mining sector legislative changes<sup>14</sup>.

## **Box 2 : The 'resource curse'**

*In groundbreaking work during the 1990s, a number of studies found that natural resource exploitation and export leads to low economic growth. The most notable studies include those by economists Jeffrey Sachs and Andrew Warner, who mapped 97 developing countries and found a strong and robust negative correlation between natural resource exports and economic growth<sup>22</sup>. Many studies have confirmed the theory including work by Thorvaldur Gylfason<sup>23</sup>, Indra de Soysa<sup>24</sup> and Carlos Leite and Jens Weidmann<sup>25</sup>.*

*For instance, a recent World Bank study of three different types of mining countries where mining is 'dominant', 'critical' or 'relevant' found that per capita gross domestic product was negative for all three types and also that growth rates were inversely associated with dependence on mineral exports<sup>26</sup>.*

*Berkley economist Jean-Philippe Stijns found no negative relationship between natural resource production and economic growth, however, if nations primarily export their natural resources - rather than use them internally to support their citizens and manufacturing, as is more likely the case with small-scale and artisanal mining - there is a significant negative impact*

## Costs and benefits of large-scale mining

The potential economic benefits from large-scale mining are well documented. The large companies themselves, the World Bank and others have produced and funded studies that claim great economic yields from mining. But overall, in the literature the evidence is, at best, mixed. Many countries that have attracted foreign investment for large mining projects have experienced more poverty and slower growth than those that have not, though there have been one or two notable exceptions<sup>20</sup>.

The usual arguments put by proponents of large scale mining for developing countries follow the general pattern of arguments for Foreign Direct Investment (FDI), but with the added incentive that natural resource extraction represents a relatively straightfor-

ward avenue (in terms of return on investment) for attracting FDI in countries that are often seen by investors as a 'bad bet' for many business opportunities. Mineral extraction is essentially pulling wealth out of the ground and mining is seen in this scenario as particularly attractive for economists as it is essentially matching up those with the know-how and capital (the mining companies) with those with the potential (the host countries).

Among the arguments generally put forward in favour of large-scale mining include increased employment (both direct and indirect), increased capacity for foreign exchange earnings, substantial tax and royalty revenue, and technology and skills transfer along with other spin-offs for the host economy, including physical, financial, legal and human infrastructure<sup>21</sup>.

Undoubtedly most of these arguments hold a measure

on growth<sup>27</sup>.

*Most recent work has built on and sought to understand, not undermine, the theory. A recent United Nations Food and Agriculture Organisation (FAO) study<sup>28</sup> found no link between natural resource abundance and development, when certain standards of institutional quality are present. Hence the policy implications they outline include giving small producers (they give examples in agriculture but the same could apply to mining) more control and support. The FAO study follows a wealth of literature about the relationship between governance and corruption and the resource curse.*

*Most also agree however that the curse is not inevitable and that through various means: better regulation, making the right sorts of investments from the proceeds of mining and spreading its benefits, good governance and the correct institutional arrangements, and adequate diversification in the economy, the curse can be avoided or at least mitigated. This is something that is returned to below, when I look at how balancing out the dependence on large-scale mining, spreading the benefits and setting up better fiscal, institutional, policy and regulatory arrangements for mining, in particular gold mining, can help natural resources contribute more to development.*

of truth. At the very least, and not insignificantly, mining natural resources like gold can bring substantial foreign exchange to countries that often desperately need it. Tax and other revenues do also flow into government coffers, but not always in the predicted volume, and there are employment benefits and spin-offs (although again these are often surprisingly small and at times inappropriate). Overall, though, proponents have tended not to look at the wider development picture.



Mine shaft in Guinea : Photo credit - Patrick Schein

While in recent years there has been some recognition of the immediate and obvious externalities such as environmental damage and community displacement, not much practical recognition (in terms of action by donors and policymakers for instance) has been given to the wider suite of

problems and difficulties that follow in the wake of large-scale mining. The issue most frequently referred to in the literature are economic problems that are associated with an over-reliance on natural resources in an economy, especially low economic growth. This is part of the 'resource curse' argument (see box 2).

The other side to this debate is the potential economic benefits from small-scale and artisanal mining that is explored below, including the longer-term sustainability of such mining, community cohesion, and better local absorption of profits and revenue.

### Employment effects

Large-scale mining of natural resources like gold has been touted as an important large-scale employer. While this may be true where large mines also create substantial employment indirectly through forward and backward linkages in the economy, in general they tend to be capital and not labour intensive businesses, and actually offer surprisingly little direct employment.

According to the International Labour Organisation (ILO), mining is not a major employer. The industry as a whole employs about 0.5% of the world's workforce and the formal mining sector employs around 11 million people globally<sup>29</sup>. Of this large-scale mining employment in developing countries, according to the World Bank, totals about two million<sup>30</sup>.

As noted above, mining can create quality jobs in various supply and support industries that may have grown up around a mine, a phenomenon more likely in recent years as companies seeking ISO certification have been required to source locally where possible. But this must be set against the degree to which a mine displaces existing local jobs and livelihoods, especially small-scale and artisanal miners, but also farmers and other mainly rural jobs.

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“A recent study on the effects of mergers and consolidation in the South African gold mining industry found a significant negative impact on employment.”

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Large mining companies often also favour expatriate staff over locals. This may reflect the nature of the jobs available, which after the initial construction of the mine, tends to be more qualified and high-skilled, than manual and low-skilled work<sup>31</sup>. An ILO-published study by researchers at the University of Ghana found that despite large increases in foreign direct investment in mining total direct employment in the gold, diamond, manganese and bauxite mines decreased from 22.5 thousand in 1995 to 14.3 thousand in 2002. The average annual growth in employment of Ghanaian senior and junior staff also decreased by 2.95% and 4.67% respectively, while employment of expatriate staff increased by 1.33%.<sup>32</sup> A recent study on the effects of mergers and consolidation in the South African gold mining industry, a reflection of a general trend across the world in the large and medium scale mining sectors, found a significant negative impact on employment.<sup>33</sup>

### *Social costs and benefits of LSM*

It is difficult to separate the economic and social analysis of the effects of large-scale mining as the two are intimately interlinked, but it is clear that some economic benefits may also have social costs. For instance, the localised economic 'boom' that can take place around a mine, through increased wages and business opportunities for some, can result in social tensions and an increased cost of living for others. Many of these tensions can be traced to the increased inequality that springs almost inevitably from the rapid exploitation of a valuable, localised resource.<sup>34</sup>

In many areas, while the local populations that have legal deeds or land titles, or are indigenous to the

concession, can be well compensated by large mining firms, those that are just outside the delineated area often feel especially aggrieved.<sup>35</sup> Frequently the compensation itself is considered inadequate and those rehoused by the mining companies sometimes complain that the reality of what is offered does not match their expectations or allow them to live as well as they once did.<sup>36</sup> Moreover many affected locals complain that they are under-consulted.

Frequently, small-scale miners themselves are displaced by large-scale mining concessions. The small-scale miners sometimes allege that mining companies tie up large tracts of land in unnecessary speculative concessions.

One study in Ghana points to a trend amongst some mining companies: they lay claim to land that they have no intention of mining but react strongly to any incursions onto such land by 'galamsay' (a Ghanaian term for illegal, informal, small-scale miners). This tension has caused ongoing conflict in Prestea, Ghana as well as other places.<sup>37</sup>

There is also the related problem of social disruption created when an influx of labour enter a mining area, either looking for paid work, or more often in search of informal employment or illegal mining activity.<sup>38</sup>

Mining on a large scale can bring serious social disruption to indigenous peoples around the world, affecting livelihoods of the poorest who lose access to traditional resources (firewood, water, cultivable soil, forest resources). The United Nations Conference on Trade and Development's (UNCTAD) recent survey of transnational mining companies' effects on development

has outlined the types of problems that can be caused, and is illustrated by several examples. UNCTAD says that large-scale mining concessions are often found on land occupied by indigenous peoples, whose social, cultural and spiritual identity is closely related to the land they occupy. In addition, loss of land upsets the delicate ecological balance that they rely on. Among others, they give the example of the Ok Tedi gold and copper mine in Papua New Guinea, where tailings and waste rock have severely affected indigenous peoples, causing serious illness including skin diseases.<sup>39</sup>

UNCTAD also notes that other complex social consequences have been associated with large-scale mining, whose uneven developmental consequences can result in social pathologies including an increased prevalence of HIV & Aids, gambling, violence, prostitution, lawlessness and alcoholism.<sup>40</sup>

### *Conflict*

In seminal work on the link between natural resources and conflict Paul Collier, along with Anke Hoeffler, argued that civil wars are often about the control of natural resources and conflict is more likely in countries that depend on natural resources.<sup>41</sup> Although obviously many conflicts pre-dated the entry of mining companies not all did so, and many have been exacerbated by their entry. Mining companies, while securing concessions and exploiting natural resources, are sometimes perceived to be favouring one social or ethnic group over another. Displacement of local populations and bringing in outside labour can also cause and exacerbate a whole range of conflicts and tensions.

“Mining companies, while securing concessions and exploiting natural resources, are sometimes perceived to be favouring one social or ethnic group over another.”

Research on large-scale mining in Tanzania, Indonesia and Peru, commissioned by the World Bank Group commissioned Extractive Industries Review, found increased social antagonism and conflict, “significant social unrest is associated with many of the extractive industry investment activities initiated under the structural reform programs. Furthermore, this social unrest has had direct negative impacts on the investment climate in all three countries.”<sup>42</sup>

### *Environmental damage*

The environmental damage caused by mining is fairly well documented, although much debate still rages about the extent of damage caused, whose responsibility it is and its mitigation. However most agree that mining, especially certain types of mining such as gold mining, is a dirty business, and some pollution and other environmental damage is inevitable. Also, it is important to recognise that this issue applies to small-scale as well as large-scale mining (see below). However, there is evidence to suggest that the aggregate effect of large-scale mining often is very damaging indeed to the environment and, while progress has been made by many of the large mining companies to reduce mining’s environmental impact, well-regulated and modern-method small-scale mining could drastically reduce some of the large-scale environmental problems.

According to an independent research body, the Worldwatch Institute, which uses available official statistics, mining metals alone contributes 7-10% of all energy use, with the commensurate effect on climate change, pollution and energy stocks.<sup>43</sup> Another estimate for global minerals and mining industry energy use is outlined in a study for the MMSD<sup>44</sup> which found that the industry probably used between 4 and 7% of global energy use but this study was very guarded about the veracity of the estimate because of the multiple variables in measuring it.<sup>45</sup> Either way, the energy-heavy large-scale mining sector accounts for the vast majority of the figure, which even at the low end of available estimates is a significant contributor to climate change, a phenomenon which itself affects developing countries disproportionately.<sup>46</sup>

Another serious but more localised environmental problem from large-scale mining is the so called 'large-volume' waste that it produces, and its effect on land, ecosystems and water. Here the problem is deciding what to do with the huge quantities of waste and chemicals produced and also limiting the damage that they can cause.

Often, large-scale mines have led to near-permanent pollution caused by the chemical instability of the waste materials they produce.<sup>47</sup> The chemicals used include dangerous poisons and heavy metals such as mercury, cyanide, sulphuric acid and arsenic (see box 3). This kind of pollution is also originated by acid mine drainage, which comes from exposing large surfaces of fragmented rock liberating sulphides and heavy metals to the environment.<sup>48</sup>

Large-scale mines can, and increasingly - with large-scale surface mining on the increase - often do, take up large amount of land in and of themselves.<sup>51</sup> This land might be farmland, wildlife habitat, a water source or other environmentally or socially useful land. If the mine is not managed correctly the disruption to the land can go on for many years or decades or even longer.<sup>52</sup>

### *Governance, transparency, democracy and human rights*

Many studies and surveys have found close connections between mining companies and human rights violations, although, in recent years, recognition of

### **Box 3 : Gold mining using cyanide**<sup>49 50</sup>

*Gold is commonly extracted in large operations through a technique called "heap leaching." The ore containing the gold is crushed, piled into heaps, and sprayed with cyanide, which trickles down through the ore, bonding with the gold. The resulting gold-cyanide solution is collected at the base of the heap and pumped to a mill, where the gold and cyanide are chemically separated. The cyanide is then stored in artificial ponds for reuse. Each bout of leaching takes a few months, after which the heaps receive a layer of fresh ore. Given the scale and duration of these operations (usually decades), contamination of the surrounding environment with cyanide is almost inevitable. A rice-grain sized dose of cyanide can be fatal to humans; cyanide concentrations of 1 microgram (one-millionth of a gram) per litre of water can be fatal to fish.*



these problems has led to voluntary action by most of the larger mining multinationals. In common with many of the other studies on the link between natural resources and development, the literature also points



*198 ct rough ruby. Illegally confiscated from indigenous small-scale miner by Danish Police in Greenland. Photo credit: William Rothert*

strongly to a link between the nature of resource capture and the role of the state.

Perhaps one of the most damning recent reports looking at human rights and business, including extractives industries, was the 2006 interim report of Professor John Ruggie, the Special Representative of the UN Secretary-General on the Human Rights and Transnational Corporations. Ruggie, whose mandate is to strengthen the promotion and protection of human rights in relation to transnational corporations, found that “the extractive sector – oil, gas, and mining – utterly dominates this sample of reported abuses, with two-thirds of the total.” Ruggie goes on to say that the “extractive industries also account for most allegations of the worst abuses, up to and including complicity in crimes against humanity, typically for acts committed by public and private security forces protecting company assets and property; large-scale corruption;

violations of labour rights; and a broad array of abuses in relation to local communities, especially indigenous people.”<sup>53</sup>

Coming out of the ongoing debate about the resource curse, but also increasingly a focus of international NGOs and human rights organisations, the link between mining, particularly large-scale mining, and state corruption, poor democratic standards and poor governance in general, is increasingly well defined.

In particular, it is the ability of elites to capture revenues and wealth from natural resources, and use these rents to fund consumption, repression and corruption that poses huge problems. In studies on democracy and natural resources, it is generally found that natural resource dependence has a negative effect on democratic accountability and governance in general.<sup>54</sup> Arguably, it follows that a more diffuse ownership and control pattern in mining that would be provided by strengthening small-scale and artisanal mining, would protect against this kind of elite capture, although such patterns can promote localised rentiers and elites.

## **Large-scale mining and development**

So far this paper has shown that the overall contribution to the development of poor countries by large-scale mining in minerals such as gold is patchy and inconclusive. Mining companies, along with international institutions and donors, have talked up the potential of large-scale exploitation of natural resources through foreign direct investment, but the benefits have not accrued in the way that economic theory has suggested.

## Characteristics of small-scale and artisanal mining

Many people living in poor countries that have opened up to large mining companies and those in poor communities located near large mines are still waiting for the gold rush to turn into real benefits for them and their families. Researchers and policy-makers are beginning to ask if there is a better way of benefiting from mineral wealth, spread the benefits more widely and minimising disruption and conflict.

Small-scale and artisanal mining can play a big part in reshaping the industry, helping to galvanise developmental benefits and poverty reduction. Large companies, as we shall see below, are also starting to recognise the potential of working with and not against small-scale miners, coexisting and sharing capital, expertise and deposits, where there is complementarity. The best companies and the most visionary governments and donors are beginning to initiate the types of projects and policies that, if widely and sympathetically adopted and applied, will start to make mining a sector that adds value to poor countries' development rather than hinders their path to progress.

*Table I*  
*Characteristics of Small-Scale Mining*  
*(According to ECLAC)*

Intensive use of manpower	Precarious safety and health conditions	Takes places worldwide
Low level of technological development	Social and legal conflicts	Generates local productions chains
Supplying local markets	Low production costs	Encourages geopolitical development
Wide range of products	Many stakeholders involved	Explores new deposits
Environmental damage	Variable volume and size according to the mineral and the region	Widespread geographical distribution
An employment option in poor areas	Stimulates local economies	Encourages larger projects

Small-scale and artisanal mining (ASM) is a hugely complex and multifaceted industry. The type of mining described as ASM can range from quite sophisticated, relatively high-tech, small-scale producers, to individuals with rudimentary tools and knowledge, operating informally and sometimes on a part-time basis. Most, however, are at the low-tech end of the spectrum and, in the literature, although there is no widely agreed

definition<sup>55</sup>, single-operators employing manual, low-technology methods, are generally considered 'artisanal'. Many of these are unlicensed and quite a large proportion is considered 'illegal', although this depends very much on the national context.

The type of mining, legal and regulatory position and state support that miners get varies greatly from country to country and continent to continent. In Africa in particular, but also in some parts of Latin America and Asia, small-scale and artisanal miners were, and

sometimes still are, considered a social and economic 'problem', seen as incompatible with large-scale mining projects that have been favoured by governments operating largely to the advice of international financial institutions and donors.

Although it has been around for many centuries<sup>56</sup>, artisanal mining has seen a large increase in recent decades, mainly as a livelihoods strategy for those pushed into poverty or unemployment, or as additional source of income to those who are struggling to make ends meet. The industry is therefore mainly poverty-driven but its occurrence also stems from specific geological factors, allowing relatively easy and low-tech extraction of surface or near-surface deposits of minerals.

## Output of the ASM sector

Small-scale miners are important players in terms of mineral output. In particular, valuable minerals such as gold (see table 1) and diamonds dominate small-scale mining in many countries and make up a significant proportion of national and global production.

A 1993 United Nations study, found that 15-20% of global non-fuel mineral production comes from ASM-type mining.<sup>57</sup> In Africa alone it is estimated that gold and gemstones worth \$1 billion a year are produced by the ASM sector.<sup>58</sup>

In some countries, the majority of minerals are produced by the ASM sector. In Guinea, for example, the share of artisanal and small-scale mining in gold production rose from 66% in 1990 to almost 100% in 1993, and in the Central African Republic, where diamonds and gold account for nearly 100% of national mineral exports, 90% of diamond and 100% of gold production is carried out by artisanal and small-scale miners.<sup>59</sup>

## Existing Research on ASM

Historically there is relatively little research on small-scale mining and artisanal mining. What literature and data on small-scale there is, is generally less well developed than

that on large-scale, mechanised mining or compared with, say, that on agriculture.

*Table 2*  
*Artisanal gold production, 2005 (Tons)*

Country	Artisanal production	Total production
Argentina	0.2	27
Bolivia	3.5	9
Brazil	6.1	35
Colombia	21.6	37
Dem Rep of Congo	2.0	5
Ecuador	3.0	4
Ghana	6.9	65
Kyrgyzstan	1.4	17
Mali	1.8	46
Mexico	7.4	32
Niger	0.5	4
Papua New Guinea	3.2	69
Philippines	1.2	6
Tanzania	5.0	49

In much of the literature, especially on development, there is an in-built assumption that large-scale mining projects are dominant and more important for development, or that small-scale mining is anti-developmental. In some of the literature small-scale mining is conveniently ignored. More often it is acknowledged but under-explored because too little is known about it, or because it fails to fit neatly within a particular theory or paradigm. In particular, little in-depth work has explored livelihoods in the ASM sector, especially in sub-Saharan Africa. There are some exceptions to this notably Gavin Hilson's work in Ghana, Eleanor Fisher's research on Tanzania and Partnership Africa Canada's work on diamonds in Sierra Leone, plus one or two others.

Some of the literature on ASM tends to view it as inherently dangerous, illegal and problematic. While it is true that many small-scale miners suffer terrible conditions, often pollute the land they work, and operate illicitly, the general approach and assumptions behind it is not always helpful in understanding the potential benefits of ASM, its role in the local community and economy, and the various trade-offs and connections with LSM.

Some NGOs and academics tend to view artisanal miners as 'adventurers' in search of riches, without much of idea of the risks involved or the wider effects of their actions. These types of stereotypes are unhelpful and generally untrue, as miners tend to have realistic expectations about their prospects, in terms of health and safety, as well as their potential for financial reward.<sup>60</sup>

It is important to remember that small-scale and artisanal miners often pre-date the large-scale mines in a given area, and they may consider such operations intruders onto their land, digging up their gold or diamonds. Often, as described above, firms will hold onto search and exploration titles, therefore making artisanal mining illegal in those areas, often without just cause. Also, smaller-scale miners are usually in-



Rutile Quartz Mine, Brazil : Photo Credit - Brian Cook

involved in mining different types of deposits than their large-scale counterparts, a fact often ignored in the literature, and which can lead to an unnecessary demonisation of such miners who are viewed as a threat to companies operating in a particular region.<sup>61</sup>

In general, the approach of much of the literature overall lacks imagination about the possibilities and potential of ASM, which can contribute to development significantly in terms of livelihoods, community cohesion, long term government revenues and sustainable economic growth.

It is not until very recently that much thought has gone into practical ideas and schemes to make this happen, but a number of key initiatives and research projects are now underway that make it possible to sketch out the possibilities and realities to help redress the balance.

In recent years, work by the United Nations Economic Commission for Africa (ECA), International Labour Organisation (ILO), the World Bank-based and UK Department for International Development-chaired Communities and Small-Scale Mining (CASM) initiative and the Association of Responsible Mining (ARM), key donors such as Swiss Agency for Development and Cooperation, along with individual researchers and NGOs which have prioritised small-scale miners, has helped push a moderate expansion in information about ASM, offering a range of practical solutions and policy proposals. Together they have offered small-scale miners some hope for the future, focussing more on livelihoods, and working more from the point of view of the miners themselves.

to help protect the environment and add more value to the miner and his or her community. So-called

‘Green Gold’ where miners operate under strict environmental standards, and the Fair Trade model, where miners receive an added premium for their work, light the way in terms of imagining a better future for mining communities and increasing their contribution to poverty reduction and development (see below).

It is important to note, however, that the quality of data on small-scale and artisanal mining is still very poor. Despite some recent improvements, there is still no systematic reporting on the sector, no overall body responsible for it and insufficient funds going into research and data collection, supporting technical knowledge and skills and providing the necessary infrastructure and financing.

*Table 3  
Focus of ASM Debate and Intervention*

Period	ASM Focus
1970's	Definitional issues
1980's	Technical issues
Early 1990's	Towards integration of technical, environmental, legal, social and economic issues
1990's	Special attention on legalisation of ASM sectors
Mid to late 1990's	Relation between large mining companies and ASM; Gender and child labour issues – clean technologies – regulatory issues
2000's	Community related issues and sustainable livelihoods
Mid to late 2000's	Community related issues and sustainable livelihoods – the Quirama Vision and principles for responsible ASM in Latin America – certification as a market incentive for change

Currently, some of the debate has moved towards tackling the issue of whether ASM can be improved

## Existing benefits of ASM

Artisanal mining is an important source of livelihoods to individuals, families, and communities. The fact that ASM is so important for livelihoods is often under-estimated in macroeconomic studies that find it difficult to measure and incorporate the value of this crucial socio-economic ‘glue’ into econometric modelling. The difficulty in measuring this type of benefit has led to a paucity of information on how small-scale mining actually affects people lives.<sup>62</sup>

In local economies the presence of small-scale miners often increases demand for locally-sourced inputs such as tools, equipment, housing etc.<sup>63</sup> Research for the MMSD project in Ecuador found that 80% of income from small-scale gold mining activities is re-invested in the country, a much higher percentage



Gold mine, Guinea : Photo Credit - Patrick Schein

than is generally the case with large-scale mining companies, who tend to import many of their inputs and services.<sup>64</sup> The same study found that 25,000 persons are involved directly in activities such as the sale of foodstuffs, provisions, canned goods, cleaning products, catering, dormitories, bathroom rental, clothes washing,

storage, construction, homes, storage, sale of tools, equipment, transport and fuel, civil works for production and so on. ASM can also aid the creating of small

and medium-sized enterprises through self-sustaining, localised, specialised economic clusters.<sup>65</sup>

Small-scale mining often plays an important role in community cohesion, therefore helping to stem rural-urban migration and slum creation<sup>66</sup>, including youth migration<sup>67</sup>, which has been recognised as a major economic and social problem and barrier to development.<sup>68</sup>

Shen and Gunson found that employment provided by ASM in China has helped lower crime and suicide rates in rural areas, assisted in raising living standards, and minimised rural urban migration. They also found evidence that “ASM greatly contributed to the provision of financial support to local agriculture, the construction of bridges and roads, education, and rural collective welfare projects, among many others”.<sup>69</sup>

Artisanal miners can play a crucial role in finding and starting to exploit new deposits of minerals, in particular gold and diamonds. These deposits sometimes turn out to be ‘world class’, such as the Bulyanhulu gold field in Tanzania which, once discovered by farmers and then exploited by artisanal miners, has now-proven reserves of more than 12 million ounces (although this was not necessarily a positive experience for the 40,000 small-scale miners who were later evicted from the land).<sup>70 71</sup> ASM also exploits deposits of minerals that are considered uneconomic for larger mining companies to exploit (see below).

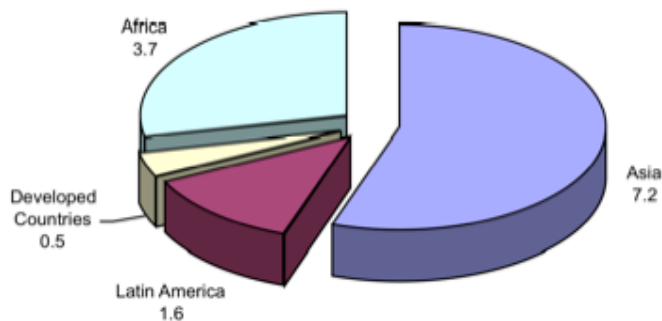
### *Employment and ASM*

According to the International Labour Organisation (ILO), in 1999 small-scale mining accounted for the employment of around 13 million people and involved



the livelihoods of between 80 and 100 million.<sup>72</sup> (This compares with around 2-3 million directly employed in the formal mining sector.<sup>73</sup>) Of those employed, Asia and Africa dominate the picture (see figure 1<sup>74</sup>). It has been argued that the numbers dependent on and working in the ASM sector is even higher than the ILO estimates, due to the notoriously difficult nature of capturing a true picture of what is a somewhat hidden industry.<sup>75</sup> The rising prices of mineral commodities which have attracted an increasing number of miners to the sector, people displaced by conflict, by the impact of climatic change on the productivity of agricultural, forest and herding communities, and economic changes brought about by the move to market economies in Asia and Eastern Europe (for example, Mongolia) may well have increased these statistics.

**Figure 1: Employment in small-scale mining**  
(Millions, Source: ILO)



Another significant and often overlooked aspect of artisanal mining is that as an employment strategy it has low barriers to entry and is relatively well protected from the economic cycle.<sup>76</sup> This makes it the livelihood employment of choice for many marginalised and sometimes desperate people in need of extra

income. Investment costs per job are also appealing - typically only 10-12% of those costs associated with large-scale mining<sup>77</sup> (although this may rise if the sector starts to get the support it needs to help it become more environmentally and economically sustainable).

### *Foreign Exchange and ASM*

ASM is a valuable and sometimes crucial source of foreign exchange, which is vitally important for economic stability, especially in the poorest countries. In sub-Saharan Africa, for instance, gold and gemstones worth about \$1 billion annually are mined and marketed by small-scale producers, according to figures from 1995.<sup>78</sup>



*Children and mercury: Photo Credit - Greg Valerio*

In Ghana over US\$300 million in gold has been collected from small-scale miners since legalisation of the industry in 1989.<sup>79</sup> In Indonesia, the small-scale gold mining sector made up of 77,000 separate operations generates a combined US\$58 million in earnings annually.<sup>80</sup> Mining in Zimbabwe, which is overwhelmingly small-scale in nature, is the number one foreign currency earner, according to a recent study.<sup>81</sup>



## *Environmental costs and benefits of ASM*

It is important not to pretend that ASM is an environmental panacea or an antidote to the environmental effects of large-scale mining. The sector has a poor reputation - especially in terms of localised soil and water pollution - and often deservedly so.

Cleaning up the ASM sector will clearly require a lot of effort, but it is possible, say most experts looking at the sector.<sup>82</sup> The support systems need to be driven and designed by the communities themselves, properly funded and supported by government and donors.

The technical assistance needed is most often not available to the miners themselves, who are driven to use less sustainable methods, including using mercury (see below) and cyanide.

Arguably, there are marked differences in the overall effect and type of environmental problems that different types of mining can cause, and the scale and longevity of the disruption caused. For instance, Andrew Scott, a researcher associated with the Intermediate Technology Development Group consultancy group looked at small-scale gold mining in Zimbabwe found that, in common with some other small-scale industries, there was significant local pollution but “in national terms these impacts do not present a major environmental problem for Zimbabwe.”<sup>83</sup> Another study in Ecuador found that it is medium-scale, and not single-operator artisanal miners, that are the worst offenders in terms of environmental pollution.<sup>84</sup>

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“Much of the pollution caused by small-scale mining of gold comes from the widespread use of mercury by miners.”

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Much of the pollution caused by small-scale mining of gold comes from the widespread use of mercury by miners. Although it is a serious environmental issue, some authors such as UNIDO’s Marcello Veiga, have argued that the effects of ASM mercury pollution, in Latin America for instance, are exaggerated. This is partly because miners are now recycling more mercury due to its spiralling expense and partly because of misinformation spread by other economic groups who have something to gain from the demise of small-scale mining. The effect of this (latter) campaign is to push small-scale miners into the informal and unregulated sector, making education about mercury use less likely.<sup>85</sup>

The use of mercury is, however, a serious health hazard, but its use can be drastically reduced through education, low-technology solutions and the right infrastructural and agency support. For instance, a pilot project among artisanal gold miners in Mozambique ascertained the feasibility of reducing mercury use and emissions by promoting control measures and utilising local resources.<sup>86</sup>

## *Women and Small-Scale Mining*

Unlike in large-scale mining, where women are hardly present, women play a significant role in ASM activities. In Bolivia, for example women account for about 40% of the sector workforce, while in Madagascar, Mali and Zimbabwe it is around 50%. In Guinea and parts of Burkina Faso women’s role is predominant.<sup>87</sup>

Although these and other women face a host of challenges in terms of prejudice, official disapproval, legal impediments and sometimes violence, many studies have shown that there are developmental advantages

## Box 4 : Successful ASM projects: Shamva Mining Centre, Zimbabwe<sup>93</sup>

*Among the successful ASM projects in the literature is the Shamva Mining Centre, established in 1989 as a joint initiative between the Ministry of Mines, an NGO, the Small-scale Miners Association of Zimbabwe (SSMAZ) and donors which aimed to provide a commercially viable and sustainable custom milling facility, improve incomes, create jobs, train miners in health, safety and sustainable mining methods; and share and disseminate lessons and experiences on the project locally and internationally. At its inception, the centre was expected to serve about 43 miners within a 50km radius of the centre. By 1995 however, the services provided at the centre had proved so effective and popular that more than 150 miners were using the centre. The catchment area of the centre had extended to a radius of 200km.*

*The lessons and experiences of the centre were widely shared and disseminated. This led to the replication of the model in other African countries with support from donors and international agencies like the World Bank. Similar centres have been created in other parts of Zimbabwe, Burkina Faso, Mali and Tanzania. Training was provided (and continues to be provided) to small-scale miners to improve their skills in mining methods, geology, mine pegging, environmental management, health and safety, business planning and management.*

in having women directly involved in income-generating activities, especially given the right credit arrangements and institutional support. They are, for instance, more likely to spend their income on education and clothing than men, who are more inclined to spend it on alcohol, prostitutes or gambling.<sup>88</sup>

## Labour standards

Most authors agree that health and safety and child labour are major challenges in the ASM sector. The fact that the sector is not heavily regulated, often informal, and poverty-driven means that standards are generally low and workers are vulnerable. The ILO has suggested that as combination of awareness-raising, income-generation choices, the provision of support services, legislation and education could help address problems of child labour in the industry. A similar list of interventions would help improve health and safety standards.<sup>89</sup>

## Positive case studies and examples of ASM

Where little research has been published on the overall importance of ASM to development and poverty reduction, there are quite a number of individual case studies that can help to build up a picture of the potential and realised socio-economic and environmental benefits of the small-scale end of the industry, as well as their downsides. Most of the literature emphasises the necessary role of the state and other actors such as donors or NGO's in regulating and supporting ASM and qualify the positive aspects of ASM with such caveats.

The already-mentioned study by Shen and Gunson of small-scale mining in China established that ASM contributes significantly to the supply of natural resources for local industry, increases market competi-

tion in the resource sector, reduces transportation bottlenecks and has led to rural socio-economic and, to some degree, ecological improvements. They concluded that the small-scale mining sector is “an important supplementary source of coal and minerals to China’s economy ... has contributed significantly to the development of the economy” and in the medium-term at least ... “will continue to play a crucial role in China’s mining industry”.<sup>90</sup>

A paper published in 2006 by Ghose and Roy looked at the impact of the small-scale mining sector in India, its employment effects (they report that it employs over half-a-million people) and suggested action to improve its contribution to the Indian economy which they describe as “significant”.<sup>91</sup> Another study on Indian small-scale mining emphasised the recent growing importance of the sector to mineral production and employment which in recent years ranged from “appreciable” to “phenomenal” depending on the sub-sector. This is despite the apparent lack of interest from government agencies, which have neglected the sector in policy and funding terms.<sup>92</sup>

Dreschler (2001) carried out research commissioned by MMSD studied artisanal mining in Tanzania. He found that there has been an increase in the country’s foreign exchange earnings, government revenues and employment in the mineral sector and that ASM has provided alternative sources of income particularly for rural people. The small-scale mining activities in the Kahama area has led to the discovery of large ore bodies like the Kahama Mining Corp’s Bulyanhulu Mine, which is one of the biggest gold deposits in East Africa, and is now under development. Foreign companies have also entered into agreements with small-

scale miners after re-licensing agreements. He gives the example of the Tembo Mine located in the Geita district, where a foreign company has entered into an agreement with a small-scale miner to participate fully in mining, ore processing and marketing of products.<sup>94</sup>

Dreschler also says that most gold-mining centres in the Lake Victoria area practice health and environmentally-friendly mining methods including the use of retorts during vaporization of mercury/gold amalgam, the use of special amalgamation ponds of which process water does not contaminate domestic or ground water, and the use of protective gear: gloves, masks, ear plugs, helmets and boots.<sup>95</sup>

“mining has the potential to become one of the most direct and effective tools for generating processes of peace with equity and social justice”.

In a wide-ranging review of small and medium-scale mining, the United Nations Economic Commission for Latin America (ECLAC) found a new ‘entrepreneurial class’ of miners had emerged in the region, and with a more active involvement of the state, such miners could be actively beneficial to development and social stability. Looking at the enormous negative impact of violence and conflict on development in the region, ECLAC says that although informal mining practices have been associated with violent conflict, such mining has the potential to become one of the “most direct and effective tools for generating processes of peace with equity and social justice”.<sup>96</sup>

A comprehensive analysis commissioned by the UK

Government's Department for International Development on the role of ASM in poverty reduction in Tanzania found that, although there were serious existing problems with such activity in the country, ASM provided the prospect of a better life for the communities which depend on it. "ASM has considerable potential to reduce poverty and in comparison to national level statistics, ASM communities fare better in terms of poverty levels than other communities. In addition to being a source of wealth creation, asset accumulation and investment, ASM has potential to increase people's livelihood security, contributing to vulnerability reduction," said the report.<sup>97</sup>

The World Bank-commissioned Extractive Industries Review gives the example of Papua New Guinea (PNG), where small-scale mining rights are enshrined in law, is well-regulated and has significantly contributed to poverty reduction. Mining closure, an important legacy and sustainability issue with all types of mining, is also well planned. The Review estimates that PNG has 50,000 small-scale miners who benefit approximately 400,000 people and produce up to 145,000 ounces of gold per year, equivalent to \$45 million. The average income per miner is \$900, compared PNG average income of \$250.

Overall, and especially where there have been serious and sustained attempts by governments, NGOs, donors and progressive large mining companies, to help improve the potential of small-scale and artisanal miners, the evidence is that such mining can and does play a useful, important and sometimes crucial role in development. The sector suffers from a partly-deserved image problem, but also, and perhaps partly as a consequence of this image, from a lack of funding and focus from the major development actors.

## **The potential benefits of ASM for development**

There are many potential benefits of small-scale and artisanal mining. Many of these benefits can also be seen as the flipside, or reverse of, the problems of large-scale mining including: community cohesion, less large-scale environmental disruption, a longer-term revenue stream and less uneven development.

The Yaounde Vision, agreed by two United Nations agencies<sup>98</sup> in Cameroon in 2002, recognises ASM as a poverty-driven activity and recommends that ASM should be integrated in the Poverty Reduction Strategy Papers (PRSPs) of African governments. It further urges that the mining policies and laws of the member states should be reviewed with a view to incorporating a poverty reduction dimension in ASM strategies.

**"small-scale and artisanal miners often exploit deposits that are not viable for large mining companies to excavate."**

According to the research for landmark MMSD report, the extent to which ASM will reduce poverty "depends on the nature of the mining. Initiatives aimed at supporting the sector must be seen in the context of the whole community. If exploitation is sudden and short-lived, particular effort should be made in attempts to stabilise the local community. In the case of remote, seasonal operations, the main issue is how to integrate the ASM sector into the local community and encourage profits to be invested in

other forms of economic activity and services.” The report continues “given the great importance of the workforce of ASM in the rural context, the potential for a beneficial contribution of ASM to sustainable development is very high”. The report is quite critical of the existing mainstream views of industry, governments and donors who together have undervalued the contribution of ASM and over-emphasised large-scale, foreign investment-oriented, mining.<sup>99</sup>

Crucially, small-scale and artisanal miners often exploit deposits that are not viable for large mining companies to excavate. This under-utilised complementarity is widely regarded by ASM specialists as a key institutional and policy weakness. All too often governments and agencies do not recognise or support



*Ruby Rights March : Photo Credit - Niels Madsen*

the potential gains to be made from allowing small-scale miners onto large-scale concessions and do not encourage large scale mining firms to allow small-scale miners onto concessions (see below).

The World Bank’s Extractive Industries Review also found developmental potential in small-scale mining

but said that it had been seriously undervalued and marginalised by donors. “A regulated ASM sector can play an important developmental role through boosting employment, supporting communities, and alleviating poverty. Negative social, environmental, and health impacts associated with ASM can be mitigated through effective education campaigns, such as on HIV awareness, and through access to clean technologies and skills.”<sup>100</sup>

Most local or country studies of small-scale mining, critical or otherwise, propose similar measures to improve the environmental and economic sustainability of the practice in whatever area they look at. There is a fair degree of agreement in such texts. Most talk about better institutional arrangements, more practical support for miners in the form of technical assistance and training, better access to markets and credit and more research into what works and what miners need. In this sense, mining is no different from other sectors and it cannot be ignored in the hope that it will somehow sort itself out or simply go away. Intervention, support and innovation from business, donors, NGOs and governments is urgently needed if small-scale mining is to reach its potential for poverty reduction and environmental sustainability.

### *Sharing concessions, capital and expertise*

As has been recognised earlier in this paper, the choice between small-scale and artisanal mining on the one hand, and large-scale mining on the other, is in many ways a false one. While this analysis has focussed on what can be seen as the over-emphasis in the current discourse on LSM and then on the potential benefits of ASM, the reality is that these types of

mining seek to mine mostly different type of deposits. LSM tends to focus on sub-surface mining, often where deposits can be richer but are usually difficult to get at, while artisanal miners concentrate on surface or near-surface mining, often where deposits are more marginal and not necessarily economic for large-scale, mechanised exploitation.

An important first hurdle to overcome in this relationship is the tendency for small and large-scale miners to mistrust each other. Large mine operators often see artisanal mining as unwanted and illegal, or even as a menace or security threat. Small-scale and artisanal miners accuse large companies of capturing large areas



*Confiscated Rubies : Photo Credit - William Rothert*

of land in mineral rights acquisitions, using what they see as the fig leaf of potential deposits for future exploitation to deny them access to mining land.

There is reference above to the potential complementarity of small and large-scale mining working together. This can best be facilitated with the formal assistance of the government, operating under an equitable regu-

latory framework. The government and other agencies should provide technical assistance and finance, and mining companies could share land, equipment and expertise. The players in the sectors themselves have a role to play. Miners, large and small, need to recognise the potential to work together, especially where they are not directly competing for resources, competition which is quite rare and involves only around 10% of mining resources.<sup>101</sup>

The UN's Economic Commission for Africa has documented two relative success stories on sharing mining concessions in the region. AngloGold operating in Sadiola, Mali has helped facilitate a co-operative of some 300 artisanal gold miners as well as help with community development and other revenue-generating techniques. The company has helped the miners with technical assistance on extraction techniques, security, maintenance of equipment and mine rehabilitation.

The Ingwe Coal Mining Company in South Africa has rented an area unsuitable for large-scale exploitation to a group of ex-workers, who pay a royalty back to the mining company. The company provided a bridging loan to help finance the project.

Another example of genuine and fruitful coexistence between company and artisanal miners is Placer Dome's Las Cristinas Project in Venezuela. Movement of miners to lands owned by Placer Dome stimulated support for a partnership with local miners, including development of a semi-mechanised, environmentally sound mine. The company, which entered into a partnership with the state-run mining company recognised the socio-economic importance of the miners in the region and created a mechanism to help them access

better technology.<sup>102 103</sup> But according to Hinton et al (2003), “this type of partnership should be promoted but it is important that large companies are well prepared to understand the complexity of the ASM world.”<sup>104</sup>

In some interesting cases, informal or ad hoc arrangements between large and small miners have sprung up. The Kias gold mine in the Philippines is operated by an association of artisanal and small-scale miners, in a country where at least 58% of gold mined is produced by the ASM sector.<sup>105</sup> Many miners now working at Kias were previously employed at other big mines, which mainly through middlemen often purchased mill tailings from miners at Kias. The miners also used the assaying facilities of large mines, a service which is mainly arranged through informal contacts. In addition to these informal relationships, the ILO recommends that mining companies could assist small-scale miners by sharing geological information, through training and technical advice, assisting sourcing and hiring out tools and equipment, providing emergency assistance, and so on.<sup>106</sup>

Another project that involves large and small-scale miners working together but that is in its relatively early stages of operation is that of the Mwadui Community Diamond Partnership (MCDP) project in Tanzania. Williamson Diamonds Limited (WDL) operates an open-pit diamond mine at Mwadui in a joint venture between the De Beers Group (75%) and the Government of Tanzania (25%). The objective of the partnership is to formalise, transform and support artisanal and small-scale mining communities and to promote sustainable economic development in the areas surrounding the mine. Central to this is an at-

tempt to secure fair prices for the diamonds, introduce technology that improves transparency in the payments system and reduce reliance on intermediaries.<sup>107</sup>

In Bolivia, another organisation of small-scale miners has been fruitfully co-operating with a major mining company. Excalibur Holdings S. A., an exploration company operating on behalf of several concession holders in the San Simon region, negotiated an agreement with a society of informal miners which, in addition to coordinating legal and organisational arrangements, has granted small-scale miners the rights to mineral exploitation and processing in certain areas.<sup>108</sup>

In South Africa, a diamond tailings re-treatment project owned by a trust run by ex-De Beers workers makes deliberate use of labour-intensive mining techniques. De Beers pays the trust for each ton removed and allow it to operate within its claims. Every member of the trust gets paid a salary of R2000 a month and at the end of the year profits are shared out.<sup>109</sup>

### *Technology and training*

The degree to which small-scale mining can achieve its developmental potential and minimise its environmental impacts is strongly linked to its ability to utilise appropriate technologies, such as extraction methods, improved processing techniques, equipment, tools and the requisite training to support them.

In agriculture it is widely recognised that technology, knowledge and training are crucial for farmers to understand and implement better farming methods, respond to the changing environment and increase yields, and most countries have a reasonably sophisti-



## Box 5 : MMSD recommendations for policy changes to support small-scale and artisanal miners<sup>122</sup>

*More comprehensive baseline socio-economic data on the sector is required to raise awareness of the importance of the sector and to provide better focus for assistance projects.*

*Any assistance to the sector should have the development of the community as the goal (both mining communities and local communities if they are different).*

*The partnership approach, involving extensive participation of miners and local communities, between the donor(s) and community is imperative if assistance projects are to be culturally relevant and have any real impact.*

*Projects should be based on an integrated approach that considers organisational, social, economic, legal, technical and environmental issues together.*

*Donor agencies should view the artisanal and small-scale mining sector as a potential vehicle for poverty alleviation. It should be seen as a key part of rural development programmes and accorded greater priority in spending.*

*ASM assistance projects need to be included in regional and local development programmes.*

*International projects that aim to coordinate assistance to the sector, such as the CASM initiative, should be supported by donors, governments and large mining companies.*

*Large mining companies should acknowledge the important role that ASM plays in the mining sector and provide support where possible, particularly through fostering partnership approaches.*

*Enabling legislative and regulatory frameworks should be put in place in all countries in which small-scale mining activities occur.*

*Governments need to create objective, consistent, transparent and non-discriminatory regulatory mechanisms which offer easy access to mining titles and legal production channels.*

cated outreach programme for farmers - known as agricultural extension. Such interventions are boosted by additional support to the sector from NGOs, scientific research institutes and aid donors. (Such infrastructure in the agricultural sector also includes wider elements of support for farmers such as cheap credit and help with accessing markets and market information.) This is not at all the case in the ASM sector. Shockingly for a sector that supports the livelihoods of so many and has a good deal of development potential, such support is underfunded, patchy, ill thought-out and, more often than not, non-existent. Fortunately, some models do exist and these include

the following African programmes as documented by the UN's ECA: UNIDO's Mercury Abatement programme in Ghana and Tanzania, ITDG's promotion of mercury saving programme in Zimbabwe, lab and processing facilities at the Tarkwa Mining Centre, set up by the Minerals Commission in Ghana, government assay and testing facilities in Zimbabwe, various training facilities and programmes in South Africa, Zimbabwe and Tanzania funded by various donors and so on.<sup>110</sup> Such projects can be enormously helpful to small-scale miners who, as a result, are usually either cleaner or more efficient in their production. Such projects can still suffer from a lack of resources

*Fair-trade initiatives for giving small-scale producers in developing countries the opportunity to trade their products under better selling terms and conditions should be developed wherever possible.*

*Encouragement and support for the formation of cooperatives, associations or enterprises to support communication, cooperation and coordination between miners should also be provided as opportunities for networking between miners to share information and coordinate activities are often productive.*

*In order to increase the value retained in the local region, the development of small industries based on products from local mines should be encouraged.*

*Governments can help by promoting investment and training and providing fiscal incentives for new enterprises.*

*The financing of ASM projects needs to be tailor-made non-traditional forms of financing such as own capital resources, joint ventures, risk capital, equity partnerships and the leasing of equipment should be considered.*

*Assistance projects should ensure that women receive a fair share of benefits for their efforts, and that their key roles in community development are reflected.*

*Outreach programmes that try to reduce the involvement of children in mining through broader community development strategies should be pursued.*

*Environmental and health and safety interventions should focus on incentives and training rather than on traditional monitoring and enforcement systems.*

*Solutions have a better chance of success if they can be implemented with readily available material that is familiar to the cultural environment of the miners.*

*Adapting and optimising existing technology is preferable to introducing new and sophisticated equipment.*

*Change is most effectively disseminated through pilot operations that are implemented successfully and that serve as models for duplication.*

due to shifting priorities amongst donors and patchy long-term government commitments.

### *Institutional, financial and legal arrangements*

It is widely recognised that it is crucially important for small-scale and artisanal miners to be supported by the right legal, financial and institutional frameworks if they are to contribute fully to poverty reduction and economic development.

In particular, and this paper has outlined, the demonisation of ASM as a sector in some national contexts

has been detrimental to the ability of the authorities to regulate such activity but has also meant that miners have been persecuted and imprisoned for their activities. (Sudan, for instance, has no single legislation for mining, pushing most small-scale miners into operating illegally.<sup>111</sup>) More often such miners are under-valued and ignored by state apparatus, often with terrible consequences.<sup>112</sup> According to Materials World magazine based on interviews with staff members from the ILO and Wardell Armstrong up to 75% of artisanal miners are illegal in Uganda, Cameroon and Nigeria, and are “at the mercy of unscrupulous dealers, who act as middle men between the miners

and the western buyers and can control prices”.

Mining legislation can actively inhibit small-scale mining in many ways. The ECA points to Cote d’Ivoire which requires small-scale miners to declare discoveries of large deposits to the Minister of Mines, and obstructs miners in obtaining mining titles.<sup>113</sup>

Access to cheap and easily available credit is an important catalyst for almost any small-scale industry and mining is no exception. The artisanal sector is a particularly difficult sector for private sector creditors as miners’ incomes can be unstable and such miners lack collateral and sometimes move location, making them unreliable borrowers. These factors, allied to low levels of literacy and high levels of vulnerability often means that the types of private sector credit available are expensive, often predatory or non-existent.

The ILO has identified access to cheap credit as a key factor in making the sector successful.<sup>114</sup> Loan and buyer credit-based schemes and other forms of financing have been initiated by a number of countries across Southern Africa.<sup>115</sup> Fiscal regimes as described above, often favour foreign direct investment but could better favour small-scale and artisanal miners in many circumstances. Finance must be bespoke to the sector as mining of different minerals has different financial timelines and turnovers rates.

Having the right institutional arrangements that nurture rather than hinder ASM is important too. The ILO (1999), MMSD (2002) and ECA (2002) have all made suggestions and captured best practice in this area. ASM should be supported by a strong mining policy framework that balances and synergises the small and large-scale sectors, with the unambiguous

aim of sustainable development and poverty reduction.

Some countries have the wrong mix of local, regional and national institutional arrangements. In Tanzania, for instance, the central government handles ASM issues so, although districts having mineral resources recognise that the mining sector can be a potential stimulant for local development, they realise that their hands are tied, whereas decision-making for other livelihood sectors has been decentralised to the district level.<sup>116</sup>

Tanzania also provides an example of where the artisanal and small-scale mining sectors are treated by government as one and the same when they do, in fact, have very different needs and require discrete types of legislation and support.<sup>117</sup>

As recognised above, some countries push small-scale miners into illegality by having no or little relevant legislation or by having legislation that specifically makes such activity illegal or informal. Miners are usually keen to be formalised, although they may well expect support from the state in return, in the form of access to credit, infrastructure development, management training and so on.<sup>118</sup>

Some of the practical work that has been undertaken by NGOs and some governments and donors has pushed the idea of mining co-operatives, associations or collectives that enable miners to find better access to markets and credit and share technologies and tools. Some of these examples are listed above but generally these types of arrangement have not been encouraged, certainly not to the same degree that they have in the agriculture sector, and in some ways re-

main out of fashion with many donors, international institutions and governments.

Overall, and particularly in sub-Saharan Africa, governments have not had a plan for how to deal with a sector that most would probably rather not have, and were enticed by the multinational route. As the experienced mining consultant Kevin d'Souza says “many African governments were unsure as to what their long-term goals were for the ASM sector”. D'Souza posits that this is partly because of the perception that the sector was and is not a powerful voice.<sup>119</sup>

### *Local economic diversification*

Some have suggested that ASM mining could be a catalyst for other local related and complimentary economic activities such as agriculture and jewellery.<sup>120</sup>

This is an important component in any sustainable strategy for mining communities, whether the deposits

favour large or small-scale mining. By definition mining is a finite activity and eventually (and sometimes very quickly) economically viable deposits will deplete. Communities and governments must have a strategy for what happens after mining ends and during the transitional phase. For instance some have suggested that the profits from mining be invested in income generation activities in such a way that enables this transition and builds for future income.<sup>121</sup>

## **Box 6 : Certification Criteria, Green Gold Corporation, Colombia<sup>124</sup>**

1. *There should be no massive ecological destruction. This state being defined by changes to an ecosystem that places it beyond a possibility of recovery.*
2. *There should be no toxic chemicals used in the extraction process.*
3. *The mined areas should gain ecological stability within three years.*
4. *Top soil removed from the site should be replaced during the exploitation process.*
5. *Tailings and poolings must not exceed the local ecosystem capacity for rehabilitation.*
6. *The silt load into stream river or lake system will be controlled in quantity and frequency so that the native aquatic ecosystem is not disrupted.*
7. *The mining operations must be conducted with the agreement of the local community council.*
8. *The origin of gold and platinum (for royalty purposes) must be declared in favour of the respective municipality.*
9. *In forested areas mining activities must not exceed 10% of a hectare during rational periods of two years.*
10. *Local, regional and national regulations must be followed.*

*Biodiversity indicators will be established during the process in the intervened ecosystem.*

## Box 7 : Pilot Testing Standard Zero: Objectives and Criteria<sup>129</sup>

### Main Objectives

- *Produce the first independently certified fair trade artisanal gold for the ethical jewellery market and develop partnerships with committed jewelers*
- *Ground test the requirements proposed by Standard Zero with producer and support organisations in Bolivia, Colombia, Ecuador and Peru and collectively develop the inspection indicators with miners to propose to FLO Certification.*
- *Use the pilot projects to train and plan with producer organisations through learning by doing how to improve ASM mining operations*
- *Test and improve ARM's self learning and evaluation toolkits with the miners to be later used by new organisations entering the FT scheme*
- *Identify gaps in the standards as well as training, technology, credit and financial needs for miners to comply with the requirements*
- *Identify feasible percentages for the Fair Trade Premium and for pre-financing arrangements between traders/retailers and producer organisations for precious metals in LAC*
- *Contribute to the organisational processes of ASM producers*
- *Producer organisations to develop strategic development plans*
- *Strengthen and consolidate a network of local ASM support organisations*
- *Identify key issues, structure and cost of ASM support programs*

### Producer and Country Selection Criteria

- *Be legally organised and demonstrated trajectory as a producer organisation towards social and environmental responsibility*
- *Interest and commitment of the organisation to be a leader and to multiply the process among other producers*
- *Existence of a partnership between a miner's organisation and a support organisation to undertake the pilot project building on ongoing local processes*
- *To have legal title to concessions with mineral potential*
- *That the national legislation has transparent mechanisms for private precious metal exporters*
- *That producer organisations commit to improving levels of gender equity within their organisations and in the decision processes regarding use of FT premium.*
- *At least one pilot project should have as point of entry the whole of a mining community where the diversity in evolution of different organisations, can stimulate the formalisations of small family groups and individuals at the bottom of the pyramid.*

## Fair Trade models and ‘Green Gold’ models

### *Green Gold*

A fairly well established certification programme that produces gold under standards that do not significantly harm the environment is run by the Green Gold Corporation, or Corporacion Oro Verde. The project, based in Colombia, was set up with the help of the Institution of Environmental Research for the Pacific and several international NGO’s. The Corporation’s membership is made up of local NGOs and communi-



Oro Verde Green Gold Mine’ photo Credit Ronald de Hommel

ty councils, which have specific roles in terms of monitoring, management, research and marketing. The scheme has its own set of certification standards (see box). But Green Gold aims to be more than just an environmentally-friendly certification scheme. Apart from ensuring that revenues stay with the community, the programme uses traditional knowledge and local information to build a bottom-up approach that benefits the local population in a variety of ways. Green Gold’s approach also includes integrated income-generating schemes and links miners with private sector jewellery sellers and designers.

According to the Association of Responsible Mining, which sprang from the project, the successes of the

Green Gold programme have been wide-ranging. It reports that over 600 people have protected their land, increased their food security and diversified their livelihoods from mining, to include forestry and agriculture, and that over 3000 hectares tropical rainforest has been protected, that the programme strengthened community organisations, increased food security and overall improved livelihoods for mining communities. The communities also sold certified metals in Colombia, United States, Holland, United Kingdom and Germany.<sup>123</sup>

### *Fair Trade and ‘Gold Standard Zero’*

Inspired by the successful Green Gold project, and led by the Association of Responsible Mining (ARM), there is currently an attempt to define and roll out a Fair Trade<sup>125</sup> certification scheme for small-scale and artisanal gold miners.

ARM has formed a relationship with other organisations that work in ASM and Fair Trade, principally with The Fair Trade Labelling Organisations International (FLO), and others such as the ILO and its Elimination of Child Labour Programme (IPEC), the Global Mercury Project (GMP), CASM, the regional Association of Artisanal Miners of Latin America and the Caribbean, the Green-Gold Corporation itself, Projekt Consult, and selected jewellers, traders and individuals.

ARM has developed a technical committee of experts in different areas of mining and Fair Trade which drafted a set of standards and principles for Fair Trade gold. This standard, known as the Standard Zero for Fair Trade Gold and Associated Silver and Platinum,

is based on a collectively-built model known as the Vision of Quirama . ‘Standard Zero’, as it is known, attempts to place ASM in a human rights-based development context, where small-scale and artisanal miners can be helped to act socially and environmentally responsibly in their work but also can actively contribute poverty eradication and sustainable development. This Standard Zero has been harmonised with the FLO Generic standards in recent months (October 2009) to form ‘The Fairtrade and Fairmined Standard for Gold and associated precious metals’. The attempt is to bring such producers better and more privileged access to markets, particularly in developed countries, with the aim of increasing the value in the supply-chain, capturing by the miner. The Fairtrade and Fairmined standard is currently being piloted in Colombia, Bolivia, Ecuador and Peru and will also be piloted in some African contexts. The standard is aiming to be adapted for use early 2010 .

Some authors have expressed scepticism of attempts to bring the Fair Trade model to small-scale mining, particularly in Africa. Gavin Hilson has argued that, aside from a host of social and political challenges, the concept of Fair Trade gold as it currently stands requires a rethink if it is to work in Sub-Saharan Africa. As small-scale miners often sell their gold to governments rather than into the jewellery supply-chain, especially in sub-Saharan Africa, he says that the Fair Trade model (based as it is on interactions between producer and retail consumer) is not yet fully transferable to the ASM context.<sup>130</sup> Gold Standard Zero, however, has not yet fully articulated how the marketing and fair trade premiums will work, as working out these mechanisms is part of the piloting process currently being undertaken.<sup>131</sup>

## Conclusions

Currently, large-scale mining dominates the discourse around the economic benefits of mining. Most large mining companies have a long history of working with African, Asian and or Latin American governments and have, over the years, marshalled their arguments to ensure that their case is well-documented and understood. At the same time small-scale mining often has a poor reputation in many parts of the developing world because it is often seen as unregulated, dangerous and not seen as environmentally or economically beneficial.

Yet, as this paper has shown, many benefits of small-scale mining exist, although they are not well-documented. ASM provides employment and income for millions of people, and is often crucial to survival, especially in marginal regions. ASM can provide a more sustainable, long-term income stream. Properly regulated, it can be environmentally prudent and can help provide social and community cohesion. It also helps to ensure that much of the value of the minerals stays within a region, benefiting local communities and economies, rather than flowing out of the country to foreign-owned multinational firms.

The history and reputation of large-scale mining in the developing world is patchy and unimpressive and many have lost faith in the model. Large-scale mining can be disruptive - displacing communities, affecting water sources and damaging valuable land. It has been linked to human rights abuses, poor governance, conflict and corruption. It also does not always deliver long-term, sustainable growth and is poor at transferring skills and technology to poor communities.



Although many mining companies are trying hard to reassess their role in the communities they work in and make a positive impact, tangible examples of working with small scale miners are still few and far between.

But it doesn't have to be like this. As this paper has shown, tangible benefits lie in a reformed and regulated small-scale and artisanal mining sector, working together with large multinationals where appropriate. The potential of small-scale and artisanal mining to work with large-scale mines, share concessions, knowledge and equipment can hold substantial payback for both sets of miners, but more importantly the wider community can benefit. Schemes to improve smaller-scale mining techniques, technologies and training, as well as better institutional and financial arrangements, through a more robust policy environment, have proved fruitful in terms of gaining more for development from the small-scale end of the mining industry.

Small-scale and artisanal mining can add further value by innovating new ways of working within communities, with the environment, and within markets. Fair Trade gold mining for one, offers hope that small-scale and artisanal mining can further and more actively contribute to poverty reduction and sustainable development, but such schemes require some creativity, vision and resourcefulness among the policy, donor, academic, NGO and business communities. These aptitudes have been in somewhat short supply in what has been a skewed and sometimes polarised discourse, and an ill-thought-out and unbalanced overall strategy for enabling mining to fully contribute to development. It is high time that mining companies, policymakers, donor agencies and civil society groups reconsidered their approach, recast the debate, rebalance resources and renew their policies in favour of small-scale miners and their communities.

## Endnotes

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125 This report is not policy-oriented but I thought it reasonable to include some policy suggestions here gathered from Hentschel et al, 2003, *op cit*.

126 Association of Responsible Mining Website

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128 According to internationally-recognised Fair Trade Labelling Organisations International – FLO, 'Fair Trade' is "a trading partnership, based on dialogue, transparency and respect, that seeks greater equity in international trade. It contributes to sustainable development by offering better trading conditions to, and securing their rights of, disadvantaged producers and workers – especially in the South. Fair Trade organizations (backed by consumers) are actively engaged in supporting producers in awareness raising and in campaigning for changes in the rules and practices of conventional international trade."

129 Published by ARM and downloadable from its website.

130 The Vision of Quirama states that "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." [www.communitymining.org/standar\\_setting.html#pilot](http://www.communitymining.org/standar_setting.html#pilot)

131 [http://www.communitymining.org/standar\\_setting.html#pilot](http://www.communitymining.org/standar_setting.html#pilot)"

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“It is in men as in soils where sometimes there is a vein of gold which the owner knows not of, and in your nature, there lies hidden rich mines of thought and purpose awaiting your development”

- Jonathan Swift.