

## **Artisanal Mining ecological Effects in Zimbabwe and the Challenges Confronting the State and Ngo`S in its Aversion.**

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**ABSTRACT:** *Globally, nongovernmental organizations (NGOs) since their inception in the early 19th century, have consistently functioned as concierges and adjudicators in issues ranging and varying from human rights, food security, health security and politics as well as environmental security. Offspring`s of deliberations such as the Brundtland Commission of 1987, these very same organizations are as powerful as national governments and command wider access to foreign aid than the respective governments where they operate. Their relevance and legitimacy is well imbedded in their recognition by bodies like United Nations, European Union, African Union, other multinational organizations and powerful governments thus their role and significance in averting various social ills including unsustainable environmental use, can never be underestimated.*

*It is in light of the above fundamental truths, that the study was devoted to clearly reconnoitering, with regards to environmental conservation, the elaborate role of NGOs as integral affiliates to the state in the universal fight against unremittingly sustained environmental degradation and mismanagement. This study maintains that gold panning is poverty driven and thus simply symptomatic and indicative of latent structural challenges in the form of poverty, unemployment and lack of opportunities. Gold panning was found to be immensely contributive to environmental degradation inclusive of but not confined to deforestation, river siltation, soil erosion, water pollution and the destruction of aquatic based food chains, due to the rampant disposal of waste materials and chemicals directly into the water systems.*

**Key terms:** *Environmental degradation, Sustainable development, NGO`s, artisanal mining*

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### **I. INTRODUCTION**

The main focus of the research is to assess the ever present challenge in implementing ecologically conservative programs by NGO`s in their respective communities of operation, juxtaposed with the contradictive political, economic climate, policies and other variables that may embolden or bolster the unsustainable exploitation of the natural environment. Through such an undertaking, the natural resources can be preserved not only as communal but also national birthrights, deserving adequate preservation and conservation.

The study is also cognizant of the challenges to sustainable environmental praxis in Africa, in the form of populist legislation, inconsistencies and irresolute politics by respective governments. This is further compounded by a latent ignorance on sustainable environmental praxis at community level. Such issues are thus seen by this author as a substantial handicap in the effective implementation of environmentally sentient programs by NGO`s. As seen in Mashonaland West (Zimbabwe) and the rest of the nation, where a virtual legalization of an illegal practice has resulted in rampant gold panning, causing irreversible ecological damage, is reflective of the ecological conundrum bedeviling the rest of the African continent. Apart from policy related shortcomings and implementation inconsistencies, in Africa environmental destruction issues have been compounded or worsened by an acute absence of adequate technical skills inculcation on sustainable environmental practices as well as monetary (resource) unavailability to effect ecologically sentient tenets. The consequence has been a quandary for the none-state players who find themselves ever so contradictorily positioned, trying to mitigate the ecologically harmful effects emanating from a conservationist apathy by respective communities as well as populist government policies. Such communities, driven by the need to eke out any form of subsistent living from the naturally available resources, disregard all associated risks involved in practices such as artisanal mining, not only to the environment (long-term and short-term) but to themselves as well.

### **II. BACKGROUND TO THE STUDY**

Gold panning or small-scale mining has been propelled into the world limelight more in recognition of the environmental threat the sector poses, and less as an acknowledgement of its economic potential. Gold panning is an unsustainable practice which the participants partake in out of sheer poverty, thus disregarding not only the individual occupational hazards stemming from the inevitable collapse of the shafts and use of none bio-degradable chemicals, but also the inestimable toll panning has on the environment. Small-scale mining and

gold panning in particular, has been viewed by many people world over as an environmental disaster in the making. The other contributing factor is the prevalence of a large female and child workforce (Sunga, 1998). In Zimbabwe, this is a post-independence phenomenon, fuelled by amongst other factors the harsh economic conditions, unemployment (over 90%), corruption (17<sup>th</sup> on the global corruption index) and poverty (96% prevalence) engulfing the landlocked state. Causes for the concern emanating from panning include soil erosion, formation of sinkholes, loss of biodiversity as well as the contamination of soil, groundwater and surface water from the mercury as well as a host of other chemicals used by the small scale miners such as cyanide and ferrosilicon.

Such aforementioned chemicals, when released into the water bodies kill or harm the aquatic flora and fauna whilst also putting the lives of people at risk. Prominent symptoms in people after eating affected fish from such sources may present as nervous breakdowns, loss of hair and even bereavement. The water Act in Zimbabwe provides for the development and utilization of water resources, including the granting of permits to use water for mining purposes, protection of the environment, control of water pollution and granting of permits to discharge the effluent and toxic work. The Act prohibits any person and industrialists and even mines to discharge any toxic or obstructing matter, radioactive waste or other pollutants or allow any person to dump or discharge such matter into the aquatic environment in contravention of water pollution control standards. However all these have been disregarded by artisanal miners who are a threat to the ecosystem and summarily affect the environment in the following disastrous ways;

- 1. Losses and modification of soil profiles as a result of gold panning;** Mining activities by nature are extractive that is, they involve the removal of the soil from underground on to the surface (Haidobro, 2006). The result is that the natural arrangement of the soil layers (profile) is altered. The soil Extracted from the deep down the earth's crust is not suitable for crop/plant growth
- 2. Ground subsidence as a result of gold panning;** Mining leaves openings both on the surface and underground and as a result, fractures can develop leading to the collapse of the ground. The impact is high during the operation stage especially when blasting and during wet periods (Zimbabwe Environmental Lawyers Association, 2012).
- 3. Ground water abstraction and pollution as a result of gold panning;** Ground water abstractions for both domestic and industrial use can alter the level of the water table and this can lead to ground instability. (Mashonaland West mining Commissioner, 2007).
- 4. Surface water pollution (Cyanide/Mercury);** Water from mining operations has the potential to contaminate surface water because of the cyanide and mercury used in gold extraction. Cyanide and mercury can cause harm to wildlife, aquatic life and human beings.

#### **Justification of the research**

The Braeside area in Mashonaland West Zimbabwe to which the study is delimited is the site of rampant, politically endorsed, ongoing small scale gold panning by the local inhabitants. The Braeside area is also siltation prone given its close proximity to the Musengi and Hunyani watercourse, a situation further exacerbated by the reckless, ongoing panning. Poor governance is seen as a notable factor in the proliferation of unsustainable environmental praxis through poor policy implementation, corruption and nepotism which all ultimately aggravates the state of poverty and disparities in resource distribution. Socio-economic challenges facing Zimbabwe, have driven scores into ecologically destructive livelihoods such as gold panning and sand poaching. The study is also intended to expose in a microcosmic scale the apparent policy incongruences by government ministries in the implementation of ecological laws, all in the interests of political mileage. The study also examines how the unsustainable exploration of natural resources, can have damaging and irreversible deleterious effects on the environs. Furthermore, the study seeks to explore, in light of the highlighted quandaries, possible avenues NGO's can effectively exhaust in the pursuit of environmentally sustainable social practice with particular focus on gold panning and the conservation of the natural resources.

#### **Theoretical Framework**

The paper makes use of two theories, Dependency Theory (A.G. Frank, 1969) states that poverty in Africa (observed by this paper to be the main causative of gold panning) is proliferated by deep seated disparities in the dynamics of world trade. Such is whereby the developing world exports un-processed merchandise to the developed world for close to nothing. Dependency theory says that poor nations provide natural resources for the developed nations, without which the later could not have the standard of living they enjoy today. The theory blames this manipulative relationship for the poverty and subsistent yet ecologically harmful, extrusive mineral resource extraction methods the South has been made to resort to at the benefit of the North. Gold panning is a poverty compelled occupation and thus returns, no matter how low, are preferred to higher revenues that take longer to materialize, effectively perpetuating a culture of deep seated poverty and dependency. In Makonde Province, 70% of artisanal miners earn a gross income less than the average of \$52/week. Most would earn an income best represented by the median value of \$33/week. Most full time

artisanal miners net income falls might be in the order of just over \$1 000 per year, falling short of the U.N. poverty datum line of \$500/month.

The second theory is the Economic theory of environmental degradation (J. Bojo, 1991), it observes land clearance or land reclamation as involving a market failure whereby the market does not value naturally occurring resources in the production process. Nature's "capital" is not assigned a value by the market. The externalities that lead to private individuals destroying the environment arise because some of the biosphere's products, especially environmental protection functions, are neither produced goods nor do they have clearly defined ownership. The interest of the poor, local people in using these lands and water resources is intense, immediate and focused around the inherent need for food, fuel, fodder, crop land, and irrigation water. They will (often unknowingly) incur almost any social cost to permit the immediate exploitation of these environmental resources to sustain their livelihoods. Poor people, as in the case of gold panning in Chinhoyi are therefore responsible for a significant share of the losses because of their pressing current need for fuel, fodder, water and land for cultivation. When the private interests of poor people and the social interests of the broader society diverge, this results in the degeneration of the community/non state player relationship into one where the two seem divergent and almost at variance in interests. The theory is a perfect depiction of the African predicament whereby the pursuit of quick but however meagre monetary profits, is being prioritized at the expense of depleting none renewable and priceless natural resources.

### **The Gold Panning and Environmental sustainability matrix in Zimbabwe**

The history of small-scale mining in Zimbabwe dates back to the period well before colonization in the late 1890s. As late as 1908, over 70% of the country's mines were still classified as small workings (G. Mukwada; 2000). As in other countries, gold mining was the basis for the wealth and power of many empires and kingdoms in Zimbabwe and this fuelled growth of small scale mining on the continent. Given this backdrop, the economically imperative role small scale mining plays in the social fabric of predominantly peri-urban Zimbabwe is apparent. Necessitating therefore, a strong need for the integration of this occupation with much more current and ecologically prudent means of mining. Sustainable development pertains to that form of development that meets the needs of the current generation without jeopardizing the ability of future generations to meet the same (The Brundtland Commission; 1987), balancing the economic requirements with ecological concerns.

Despite legalization of gold panning as a sector, subject to registration and certification with the ministry of mines through the statutory instrument of 1991, panning has not been fully incorporated into formal activities and currently, an estimated 8000 small-scale miners are members of the National Miners Association of Zimbabwe (N.M.A.Z) in a sector with over 800,000 miners. Thus, whatever influence the association could have on the sector is limited mostly to 1% of its potential constituents thus the existence of a vacuum in sensitization that can only be filled by the non-state players. The chief proponents of this philosophy of sustainable development in Zimbabwe, have thus mostly been Non-Governmental Organizations, they have been relatively proactive in the panned areas, effecting elaborate systems to improve environmental stewardship within the sector e.g. the COMIC Relief, which provided capacity building training for the N.M.A.Z, Germany Insiza Project (G.T.Z), the T.D.H and the S.N.V of the Netherlands and Australian Fire Station Medal (A.F.S.M) from Australia, which provided financial and technical assistance initially to artisanal miners (Maponga, 1997).

### **Gold panning and ecological damage as symptoms of negative structural indicators**

Africa is the poorest continent in the world with poverty and structural violence being most prominent. According to the Borgen Project (2014), around 48.5% of the African population is living on less than \$1.25 per day, and 69.9% on less than \$2.00 per day. With a little over 910 million people living in the region, this places around 637 million Africans below the poverty datum line. In 1981, the poor in this region accounted for 50% of the world's poor population. Today, they account for one third of the world's poor population (U.N.D.P, 2014). The majority of poor people as in the case of Zimbabwe live in the rural areas. Due to a decline in agricultural assistance, the rural sectors of sub-Saharan African nations are hence hotbeds of extreme poverty, proliferating a situation whereby there is over reliance and an overburdening of the natural resource base capacity to sustain the ever growing human demands.

Zimbabwe is a low-income, food-deficit country, ranked 156 out of 187 countries according to the UNDP Human Development Index (2013). Currently, 72 percent of the population lives below the national poverty datum line (less than US\$ 1 per day). Around 70 percent of the national population is rural, meanwhile, the rural poverty has increased from 63 percent in 2003 to 76 percent in 2014 due to worsening economic conditions. The rise in poverty in Zimbabwe, in support of this argument, has simultaneously and exponentially grown in relation to the upsurge of illegal mining praxis in the rural and peri-urban parts of the nation and according EMA (2013), over 500 000 Zimbabweans were involved in illegal gold panning as of 2010.

Furthermore, since poverty is a direct correlation of illiteracy, in sub-Saharan Africa, youth literacy rates (ages 15-24) have increased by 6% over the past 20 years, casting light on adult literacy projections. However, youth literacy rates in Sub-Saharan Africa (72%) are the lowest of any region, as is enrollment in secondary school at just 34% (African Library Project; 2013). Such literacy challenges, resulting from the poverty, make it extremely difficult for concepts such as environmental sustainability and natural resource protection, to be inculcated and practiced resulting in rampant ecological damage. In Zimbabwe gold panning has also been notorious, along with sand and wildlife poaching, deforestation etc. This is all in the backdrop of how in 2011, 72.3% of all Zimbabweans were considered poor, whilst 62.6% of the households in Zimbabwe were deemed poor (U.N.D.P; 2012). As in Makonde, the area of case study, poverty is more prevalent in rural areas compared to urban areas with about 76% of the rural households considered poor compared to 38.2% of urban households. Individual poverty prevalence is 84.3% in rural areas compared to 46.5% in urban areas, while extreme poverty is 30.3% in rural areas compared to only 5.6% in urban areas. (UNDP, 2012). It is in fact now estimated that between 100 000 and 320 000 hectares of forest cover, were lost per year between 2000 and 2008, mostly due to varying causes but predominantly due to the clearing of land for the prospecting and unearthing of alluvial minerals (Tsoroti, 2010).

### **Limitations of Legislation governing gold panning in Zimbabwe**

Specific legislation on panning, same with extensive gold panning itself, was never there in Zimbabwe in the past and only surfaced due to economic hardships. The Mines and Minerals Act Chapter 165, which is administered by the Ministry of Mines, Environment and Tourism, provides the main legislative framework for all mining activities in Zimbabwe. While the act did not inhibit the development of small scale mining, it is not seen as promotional either. The act is complemented by 18 pieces of legislation administered by eight other ministries, which cover the usage and management of natural resources, a situation that sometimes lead to conflicts. For example, the Natural Resources Act sets the limit for cultivation on riverbanks at 30m while the Forest Act sets the limit at 100m. The effectiveness of the Ministry of Mines Environment and Tourism in administering the Act is constrained by lack of human and financial resources. Chapter 165 has made it possible for all interested parties to extensively explore the mineral potential of the country. In its application it has eliminated the need for direct negotiations over the minerals rights between landowners and potential miners, as is the case with other countries for example South Africa (Sunga & Marinda, 1998). However the Act is quite eloquent in the protection of the rights of the precedent activity e.g. farming activities and basic infrastructure, state assets and private property. The requirements of the Act involve the registration of a mining concession for the purposes of acquiring mining rights. In doing so the following have to be observed by prospective artisanal miners;

- Acquisition of a prospector's license at a nominal fee
- Appointment of an approved prospector who will perform the pegging and registration of the area
- Notification of Government agencies of the area concerned.
- A sitting or works plan be produced for approval by the authorities in the Ministry of Mines
- An environmental impact assessment (EIA) of the proposed mining project be produced and approved.

To facilitate the administration of the Act, various advisory and regulatory boards including the Mining Commissioners, Geologists Metallurgy and Mining Engineering are integrated into the process. All these departments are accessible to all classes of miners; however lack of human and financial resources is a limiting factor to their effectiveness. There are other supporting regulations enacted to assist the Act and these are The mining Health and Sanitation Regulations (1977), The Mining Management and Safety Regulations (1990) as well as The mining Alluvial gold Public Streams Regulations (1991). Apart from the Mines Act there are other pieces of legislations, which govern the usage, and Management of natural resources and these are; The Natural Resources Act (1975), The Hazardous Substances and Articles Act (1971), The Forestry Act (1982), The Water Act (1976), The Atmospheric Pollution Prevention Act (1975), The Parks and Wildlife Act (1975), The National Museums and Monuments Act (1972), The Pneumoconiosis Act and The Interim EIA Policy (1995).

### **NGO's and the Protection of the environment in Chinhoyi**

In post-Independence Zimbabwe, independent not-for profit organizations have gradually through the years, risen to fill in the development vacuum that has been created by the conventional government's flaws and weaknesses towards effecting a mindset, as well as paradigm shift, around environmental sustainability issues. Their roles therefore do and should include sensitization, mobilization, as well as organization of the grassroots (local communities) towards achieving a common end (Mahlangu, 1992). However in the face of how populist politics perennially contradicts and incapacitates pre-set environmental management policies, ranging from the settlement of people and authorization of construction work in wetlands, woodlands as well as the endorsement

of practices such as gold panning and deforestation in the guise of livelihoods promotion. The capacity of NGO's in effecting positive communal and national ecological change, is evermore being undermined by such.

In the social sciences, it is commonplace to assert that grassroots social movement organizations (N.G.O's) play key roles in catalyzing national policy reforms. The core idea is a bottom-up functionalist one, in which domestic nongovernmental organizations advocate for 'the needs and demands of civil society' such that 'policy reform initiatives' emerge from 'local civil society organizations' and 'social' grassroots movements' (Frank et al, 2011). Environmental concerns therefore cannot be looked at in a vacuum but rather as a fundamental discourse intertwined with the social responsibility aspect of the concerned organizations, giving leverage to the research question on precisely how NGO's can meaningfully contribute in the aversion of environmental degradation. In Zimbabwe, entire communities are causing irreparable damage to the eco system through a callous distraction of natural resources, regardless of the statutory instruments in place to protect such, e.g. Forestry Act Chapter. It is in a similar fashion, the Braeside area in Chinhoyi has seen a persistent felling of trees by artisanal miners, clearing the land for unearthing. According to the Makonde District Office, gold panning is not a solo element in the environmental comatose rampant in the province, but also sand poaching is quite prominent whereby huge volumes of sand are extracted from the Hunyani Riverbanks, causing siltation and leaving the area filled with dongas. This is in contravention of Statutory Instrument No. 7 of 2007 Section 3 which regulates the extraction of sand through licensing and prosecution (fines).

#### **Assuaging the negative effects of gold panning: Recommendations for government**

The government can observe and implement the basic principles of sustainable development in Zimbabwe through demanding environmental accountability as a prerequisite for licensing artisanal miners. For example, sites where a licensed small scale miner has operated in the past, could be inspected officially by the relevant official, for purposes of environmental management accreditation, before his/her application for renewal of license is considered, that is, if the inspection report is positive, otherwise the application must be put on hold or disallowed. The Costs and Benefits of Gold Panning in Zimbabwe (Milne & Marongwe, 1993) says that, natural resource stocks are limited or in economic terms, exhibit scarcity. The concept of resource scarcity can be viewed both from a geophysical and an economic perspective. Gold is a nonrenewable natural resource with a fixed stock of ore deposits. Obviously, gold deposits will become exhausted at some point in the future, depending on the rate of extraction and technology.

In most cases, the reserves that are economic to extract are lower than the total identified mineral reserves (Howe, 1997). In most cases, a comparison of costs and benefits (or a cost benefit analysis) is part of the evaluation. In short, Zimbabwe must maximize the net benefit to society from the extraction and marketing of economically accessible gold reserves. The government should also implement provisions of the United Nations Local Agenda 21 of 1987 explicitly advocating for the Facilitation of Community Participation, Encouraging Cooperation, Co-existence (peace, co-habitation), Equity, Forging Partnerships (with concerned stakeholders such as NGO's), Accountability (demanding such from the artisanal miners and relevant communities), Adaptability, Regeneration as well as Co-ordination.

Different ministries involved in land issues and utilization as well as national economists should come together and draft an operational document governing mining operations. The draft should come up with resolutions and solutions to the problem of gold panning and it should include all interested parties comprising of Ministries of Tourism and Environment, Water resources, Rural Development and local government, Agriculture, Health, Economic development, the Mines Authority as well as the Nongovernmental Organizations. The government through the Environmental Management Agency and the Ministry of Mines should protect the environment and make inroads in ensuring that Chapter 8 as enshrined in the United Nations Local Agenda 21 of 1987 is observed.

#### **Assuaging the negative effects of gold panning: Recommendations for NGO's**

There is need for educationists, environmentalists and other interested stakeholders to have a keen interest in the operations of gold panning so as to address the problems created by such operations. This could be done through the press and project assessments, seminars to alert artisanal miners on the need and importance of protecting the physical environment. The non-state players are encouraged to continue in their efforts as the advocates for the defenseless environment and chief proponents of principles ranging from environmental sustainability to environmental management. The role of partnerships through all this cannot be over emphasized, mainly comprising of integrating traditional leaders, religious institutions, concerned communities, civic society as well as the government institutions. The NGO's in their practice can observe the key tenants of implementing sustainable development as enshrined in the Local Agenda 21, namely encouraging Community participation, inculcating Local ownership of resources, forging Partnerships, joint ventures, multi sectorial approaches as well as local Action Planning.

### III. CONCLUSION

NGOs are indispensable in the current economic dispensation in most African countries of the world and thus the need to integrate them in varied developmental endeavors. The state and community stakeholders need to embark on a paradigm shift course and reassert their commitment to fighting environmental destruction in all its ugly shapes and forms. The state and community stakeholders also need to rejuvenate their goodwill and memorandum of understanding with all fellow stakeholder NGO's, involved in this fundamental battle. Parenthetically forging a tripartite formidable partnership, as should be the norm between the state, communal populace and none state players in the global fight against environmental annihilation.

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