International Journal of Politics and Good Governance
Volume 2, No. 2.4 Quarter IV 2011
ISSN: 0976 – 1195

Gold Panning In Central Mozambique: A Critical Investigation Of The Effects Of Gold Panning In Manica Province

Munyaradzi Mawere
Senior Lecturer, Universidade Pedagogica, Mozambique and PhD candidate at the University of Cape Town, South Africa

Abstract

This paper critically examines the effects of gold panning in the central province of Manica, Mozambique. While illegal gold miners consider gold panning in the area as their key and sole means to survival, the research establishes a number of negative effects that seem to outweigh the merits that the activity brings to society. Having been privileged to witness some of the 'dirty works' that take place in that part of the country, the paper critiques the government for failing to put in place stringent measures to address this mounting problem in the Manica province. The paper also critiques most of the researchers on gold mining in Mozambique (Zacarias and Manuel 2003; Spiegel et al 2006; Shandro et al 2009 and Blacksmith Institute 2005, 2011) for researching exclusively on ways of reducing mercury pollution without devoting significant attention to other serious problems resulting from illegal gold panning in the country. As a matter of consequence, the history of mining in Mozambique makes a sorry reading with its failure to document, by default or otherwise, detailed accounts of other serious effects of gold panning in Manica province. In this view, I advance the argument that gold panning is causing more harm than good to humans, non-humans and the natural environment. As such, the country and Manica province in particular runs the risk of facing catastrophic changes in the physical environment, water sanitation, agriculture, aquatic and terrestrial biodiversity and habitats and, of course, new pressures on human healthy, culture and economy if the government continues relaxing on the situation. Against this background, I recommend that to confront the adverse effects and the jeopardy being perpetrated by gold panners in Manica, the government in conjunction with the Ministries of Mines, Environment, Lands and Agriculture should enter in dialogue with the illegal gold

panners and establish a monitoring committee consisting of scientists and experts from different ministries and other relevant bodies to help arresting this mounting problem.

Key Words: Gold panning, humans, non-humans, environment, pollution, health, degradation, Manica, Mozambique

Introduction

Gold panning, also known as artisanal mining is a poverty driven occupation present in over 70 countries (Telma and Viega 2008). For purposes of this work, the term gold panning shall be used more often than artisanal mining. Gold panning can be legal or illegal. In some cases especially where there are associations, gold panning can be organized, medium or large-scale but in most cases it is a disorganized and small-scale operation. Also, though men are the societal members mostly involved in the activity, gold panning is not a male gendered operation as it directly or indirectly involves women and children alike. In many countries, gold panning lacks government support resulting in lack of education by those involved. This explains one of the reasons why processing techniques used by gold panners in the extraction of gold vary ranging from rudimentary or manual panning to semi-mechanised. Besides, lack of education especially among miners in the developing world explains why gold panning is normally associated with human health and environmental related problems as well as the misuse of hazardous materials (used during extraction) like mercury and cyanide.

That being the case, Mozambique like other developing nations the world over is at the risk of facing catastrophic changes in the physical environment, water sanitation, agriculture, biodiversity and habitats and, of course, new pressures on human healthy and economy. These risks are a result of a myriad of factors ranging from environmental mismanagement, poor exploration of resources, poor agriculture and climate change. In Mozambique, and in particular Manica province, poor exploration of resources and poor agriculture seems to be among the top factors putting the province at risk. The risks are generally manifested in pollution, poor human health, environmental degradation and

dwindling of the agriculture sector. Such risks threaten to worsen the existing levels of poverty and undermining all national development efforts. It is in view of this realization that Mawere (2011) argues that in Mozambique, since about 80% of the population depend directly on land and natural resources, the effects of climate change, environmental damage, water pollution and variability are likely to have a great influence on the communities and in the national economy in general. According to Mozambique's initial Communication to UNFCCC (UNFCCC 2006, Albertina Bambaige 2008), the main sectors likely to be impacted by such anthropogenic causes and climate change include: Agriculture and food security, water resources, costal resources, biodiversity, human health and infrastructure, loss of life, erosion, land degradation, sea level rise, natural disasters, salt intrusion, crops, ecosystems, property, human and animal habitats, outbreaks of pests and diseases, displacement of people, and destruction of infrastructure (communication network, schools, hospitals and houses). This situation is aggravated by the fact that Mozambique is home to at least 60,000 artisanal gold miners (MSSD 2002) and 18,000 of whom are women and children who produce over 90% of the country's gold (Mondlane et al 2002). According to recent studies, "in Manica province more than 20,000 fortune hunters are digging for gold in the mountains of Mozambique. Scores have come across the border from bitterly poor Zimbabwe. But for most, the dream of fabulous treasure ends up in endless toil, disease and death" (Spiegel international 2008). Such great numbers of gold hunters are disturbing as they put the province at an unimaginable socio-economic risks and environmental threats.

While all the above mentioned problems are associated with gold mining in Mozambique, what remains worrisome when it comes to researches on gold mining in the country is the fact that most of them (Zacarias and Manuel 2003; Spiegel et al 2006; Shandro et al 2009 and Blacksmith Institute 2005, 2011) draw more attention on ways of reducing mercury pollution (used in gold amalgamation) without addressing other 'serious' problems being caused by illegal gold panning. The history of mining in Mozambique thus makes a sorry reading with its failure to document, by default or otherwise, detailed accounts of other serious effects of gold panning in the country, especially the gold affluent Manica province. Following this observation, the researcher advances the argument that gold panning is causing more harm than good to humans,

non-humans and the natural environment. Recommendations on what needs to be done on the ground and conclusions are drawn towards the end of the paper.

Background to the problem

Mozambique like other countries in southern Sahara has a long tradition of mining and in particular gold mining. As such, gold panning is not a new and unique problem to Mozambique, but is resonant as in other countries in the region.

In Mozambique, gold mining in general dates back to the pre-colonial era, that is, to the time before the advent of Portuguese. Historical data reveal that gold in Mozambique was mined by Zimbabwean states (1250-1450 AD) and the Mwenemutapas between 1325-1600AD). During the colonial era, some large international companies were authorised by the colonial government to mine the precious mineral. However, in 1888, discoveries of gold were made in Witwatersrand in South Africa, causing a gold rush in Manica. Many of the European companies migrated to South Africa. Manuel et al (1999) note that due to the discovery of gold in Witwatersrand, by year 1900, twenty-three gold mining companies had left the province. According to the same source, between 1900 and 1949, 9,530 kg of gold were extracted in Manica province 63% of which was from alluvial deposits. Due to intensity of the war of liberation in the country, between 1949 and 1975, the production of gold declined significantly. This situation continued into the 1980s as this period was a destabilisation phase characterised by internal instability accentuated by civil war. As a matter of consequence, gold mining in the province practically came to a standstill during the period between 1975 and the last years of the 1980s.

With the return of peace in 1992, mining across the country resumed. The *Aluviões de Manica* (ALMA) company, a joint venture between the Mozambican government and the British's LONHRO, began gold exploration in Ruvue River basin in 1990 and started operations immediate after the civil war. In many other parts of the province, gold panning heightened between 1992 and 1995 due to severe drought that hit across the region. In Munhena mining site in Manica, for example, gold mining started in the pre-colonial era but only resumed in 1999 with the discovery of a gold deposit by a young girl. Other gold deposits scattered in the province like those in Chazuka, Gogoyo and

Mutowe communal areas also have a pre-colonial history, but mining resumed after the civil war.

Currently, there are three big gold mining companies in Manica namely AUSMOZ, JF Mining and *Exploracões Mineiros de Mozambique*. Though mining by these companies is organised and that at Munhena mining community a bit more or less the same as it comprises an association of over 3000 members who work on a 25 year. Government granted 143 ha concession and generates a substantial income (producing over 5 kg of gold per month). However, mining in the province remains the biggest source of water pollution and environmental degradation. Researches have shown that there are high mercury levels in the rivers flowing through Manica, besides sediment concentrations that any sight gifted person can observe. This is aggravated by illegal gold miners across the province that remains disorganised and continues to engage in activities that are perilous to humans, non-humans and the physical environments. Shandro et al (2009), for example, noted that gold associated environmental and health costs are high, as mercury continues to be used and lost to the environment, and cyanide will be introduced soon. This is worrisome as almost all miners in Manica continue using mercury to amalgamate gold. Mercury is a heavy toxic metal with potential to bioaccumulate in the food chain. It is hazardous to aquatic environments (fauna and flora) and humans (miners and people downstream) and intakes can occur via food, water and air. Mercury exposure amongst workers and community members associated with artisanal gold mining is therefore high, and has been well documented (Swain etal 2007). This makes gold panning to remain a potential threat to all forms of life in the province though it is a pivotal source of livelihood for many people. Of concern is that though there are some strides by the government to address the concerns arising from mining in the province, the action is too slow for this mounting problem.

Having shown the background of the problem studied, the next section of the present study shows the location of Manica province.

Geographical location of Manica province, Mozambique

Fig 1 of 1

Source: Adopted from Mozambique-map-admin (accessed June 12, 2010)

The next section of this paper takes a look at research questions and the methodology used in carrying out the study.

Research questions and methodological issues

The present study seeks to address the following questions: 1) What are the effects of gold panning in Manica province besides mercury pollution? 2) What measures could be put in place in order to address the problems in Manica mining areas?

As part of research design, the researcher relied on literature studies, content analysis, observation and in-depth interviews. The research was carried out between June and July 2011 using a randomly selected sampled of 26 people (13 female and 13 male). The sample size of 26 was considered sufficient in providing the general perceptions of the people of Manica, particularly the directly affected individuals.

Using observation data collection procedure the researcher observed the physical environment and the environmental malpractices in the chosen area. The field observation, a method which the researcher adopted from his anthropological studies was used as one of the major collection tools to ascertain the project location and what really happened on the ground. Observation allows the researcher to have access to first hand information that s/he can observe and record in person.

To supplement the field observation information, informal interviews were conducted, particularly with the mostly affected (directly or otherwise) members of the society. This was done in order to obtain more information on the possible effects of gold panning in addition to gotten through observation. More so, the researcher wanted to hear from the affected people –"the real people"- on what they think could be lasting solution to the problems they are encountering. This is important as affected people understand their problems better than anyone else.

The people participated in the study were from different societal classes, ranging from gold panners, farmers, fishermen, students and religious people. The respondents were drawn from different societal classes with the hope for obtaining a balanced research result that could be representative of the whole affected areas. They ranged from 12 to 50 years. This age group was considered appropriate for the study because it is within the range of the active group mostly involved in societal activities to do with natural resources and the environment. Equal number of men and women were sampled for the mere reason that both sexes seem to be equally involved, directly or otherwise, in gold panning. The participants interviewed responded to the questions individually and

participation was voluntary. Participants were assured of the confidentiality of their responses and were asked not to identify themselves by names. Collected data were tabulated to show frequencies before being subjected to evaluative analysis. The Tables 1 and 2 respectively contain details of the people participated in the study and the data that was gathered during the study:

Table 1 of 2: Details of the people who participated in the study

Occupation	**Gender**	
	Male	**Female**
farmer	**3**	**3**
Gold panners/miners	**2**	**3**
Fisherman	**2**	**2**
Religious people	**2**	**3**
Students	**2**	**2**
Village head	**2**	**0**

Source: Survey 2011

Results

Table 2 of 2: Responses to the questions asked

ITEM	**RESPONSES**		
	Strongly agree	**Strongly disagree**	**Uncertain**
1.Gold panning is making water unsafe for drinking	26	0	0
2.Gold panning is destroying aquatic flora and fauna	24	0	2
3.Prostitution and violent related problems are increasing in gold mining sites	19	1	6
4. Irrigation and fishing in rivers near gold mines	22	1	3

have been negatively affected			
5. Disease outbreaks are more prevalent in mining sites than elsewhere in countryside	23	2	1
6. Illegal gold panning is robbing the state of its revenues	14	2	10
7. Gold panning in Manica is only benefiting the minority	20	2	4
8. Gold panning should be stopped in Manica	21	5	0
9. Gold panning should be government controlled i.e done by licensed people	23	3	0
10.Government and humanitarian organisations should offer health and education programs/services to people at mining sites	23	3	0

Source: Survey 2011

Discussion based on observations and interviews

The findings that are presented in this research are based on the data that were collected from the natives of Manica province between June and July 2011. They show both positive and negative perceptions on gold panning. This means there were mixed feelings with regard to the gold mining activity in the province.

The notion that gold panning was making water unsafe for drinking was uncontested as all respondents (100%) agreed. Possibly, the reason for this was that reddish-brown sediments are visible all over the affected rivers which make it difficult to deny that gold panning is polluting the waters. Almost similar results (92.3%) were obtained on whether gold panning is destroying aquatic and fauna biodiversity. One of the respondents revealed that a number of dead fish have been witnessed along Lucite river since last year 2010 with the discovery and intensification of illegal gold panning upstream in the Musanditevera mountains in Mutowe area. More or less the same results (84. 6%) were also obtained on questions whether gold panning is hindering agriculture, fishing and

accentuating prostitution, disease outbreaks and cases of violence in the area. Reasons given varied but the major one was that gold panning in Manica is largely uncontrolled by the government; the law of the jungle prevails in most of the mining sites. This suggests the government should put up measures to control the mining activity in the province.

There was lack of knowledge by respondents on whether illegal gold mining results in loss of government revenue. 38. 4% of the respondents were uncertain if illegal gold panning robes the state of its revenue. It appeared most of these respondents didn't know what government revenues are. The researcher was patient to explain the term to participants. This was done to ensure that responses from informed positions were obtained.

On whether going panning should be stopped, an overwhelming majority (80.7%) of respondents strongly disagree, thus showing support for the mining activity. Gold mining as a means of survival by the locals is so deeply woven into the fabric of traditional culture in Manica that the people have accepted it and even unconsciously. However, most of the respondents (88. 4%) were quick to point that though gold mining is one of their means of survival it should be government controlled and carried out in an environmentally safe manner. This finding concurs with results from a recent study on Mozambique's green revolution program by Mawere (2010) which notes that if no action is urgently taken to control anthropogenic impacts on the natural environment there will be increase in mortality rate, mean air temperature, reduction of annual rainfall and increase in solar radiation. In the light of this grave concern, Mawere calls the Mozambican government to reconsider illegal gold mining in Manica province, to incorporate environmental ethics and respect both humans and non-humans' rights. It should be remarked, however, that the present study showed that there are a minority (11.5%) in favor of the status quo or "business as usual". They are against government intervention on gold panning. Possibly they benefit (directly or otherwise) more than others from the illegal gold mining activities in the area. As such, they are afraid that once measures are put in place to control mining activities in Manica, their gains will come to an end. This is contrary to the reality that our poor, battered, plundered and polluted planet can no longer endure a continuation of 'business as usual' (Mawere

2011). It should be understood, therefore, that the earth and its wilderness though too vast can be damaged by voluntary human choice. In our own time we need to revalidate the symbiotic relationship between humans, non-humans and the environment and nurture the view that natural resources and the environment on which our lives depend should be exploited with care.

Concerning the government and humanitarian organisations' role on environmental management, majority (88.4%) indicated that there was need for provision of health facilities and education services to empower people with knowledge and 'sound' ways of exploiting the gold resource while maintain the environment and themselves health. This finding concurs with results from a recent study by Africa News Network (2008) in the northern provinces of Mozambique which revealed that poor farming (in Majune) could wipe away the scenic beauty of the area even before it can realize its potential as a successful ecotourism product, as evidence of indiscriminate burning of the bush are common and nobody (including the government) seems to care. In Majune, as in Manica, due to lack of government initiative, many people by default or otherwise are reluctant to actively take part in good environmental management during mining, hence making the state an "accomplice" in environmental mismanagement (Mawere, 2010).

Having discussed study results, effects of illegal gold panning in Manica are examined. Recommendations are given and conclusions drawn thereafter.

The effects of gold panning in Manica: A closer look

Pollution and environmental degradation

The world over, about 1,5 million children under the age of five die each from water and sanitation-related diseases. Following this observation, the United Nations declared clean water as a fundamental right (BBC News 28/07/2010). This entails that the right of human beings to healthy and in particular the right to clean water (for drinking and washing by) has become a cause of concern for the global community. Surprisingly, this reality is still a dream to the people in Manica province, particularly those along the rivers affected by sediment deposits by gold panners. The communal areas affected include, among others, Munhena, Mutowe, Mutowe and Mashiri. Red gold-bearing earth

is washed in the rivers, causing them to silt up, drinking water is already becoming scarce in the region. The most affected rivers include: "Pungue, Lucite, Revue, Zambuzi, Nhacuarara and Chimedza" (Diario de Mozambique, 2011) and Mufuya. These rivers which cross the districts of Manica and Sussundega have now taken on the colour of earth (reddish-brown) as due to silt and clay sediments deposited by illegal gold panners. These sediments together with mercury deposited in the water during amalgamation make water in the affected rivers less suitable for drinking, washing and agriculture. It also reduces photosynthesis rates and respiration by aquatic plants and fish respectively resulting death of aquatic flora and fauna.

This kind of pollution also impacts the economy of the country. According to a recent Unicef Report (2011), "water and air pollution is estimated to cost Mozambique up to 4% of Gross Domestic Product (GDP) due to the effect on the environment, health and economy". The cost rose by 1% from the 3% of 2008, perhaps due to increased human and commercially driven pollution in some parts of the country like Manica. The mining of gold in the province thus has become "a threat to aquatic wild life" (Diario de Mozambique 2011), terrestrial biodiversity, human healthy and agriculture in general.

Environmental degradation also remains a cause of concern. The barren, pockmarked landscapes that have developed in Musanditevera Mountains and the eastern parts of Chimanimani Mountains have changed the aesthetic of the natural environment in these areas. Gold panners sometimes dig shafts that are 10 to 20 meters (33 to 66 feet) deep and are connected by an elaborate tunnel system. What makes them even more dangerous is that once exploited they are simply left open. Besides creating mosquito breeding grounds, this leads to recurring mudslides during the rainy season causing even more serious pollution of the nearby rivers.

Anti-social behaviour

In many countries, various additional problems have been associated with gold mining including child labour, gender inequity, severe environmental degradation, and health and social concerns such as HIV/AIDS and prostitution (Viega and Baker 2004). In sub-Saharan Africa, such problems have been reported in countries like Mozambique, South Africa and Zimbabwe where similar activities take place.

In Mozambique, common health concerns include diarrhea, injuries, syphilis and parasitic infections. Mozambique has a national HIV and Aids prevalence for adult (aged 15–49) estimated at 16% in 2005 (Arndt 2006), but in the Manica region, the HIV rate has been described to be one of the highest in the country (19% in 2005) (Health Alliance International 2005). Such alarming rates have been accentuated by the fact that most of the gold fields where gold panning is taking place have become self-contained worlds where the law of the jungle prevails. And, as most of the gold miners (mainly men) left their families behind and lead a nomadic life, they fall prey to prostitutes. Prostitutes from within, others from the neighbouring Zimbabwe are reported to be brought by trucks every Thursday, because mining is prohibited on Fridays (Spielgel international 2008). Also, malaria and cholera as with HIV/AIDS are not diagnosed and/or treated effectively within the community as basic health necessities are absent.

Besides, the government has ignored this lawlessness for as long as possible, resulting in 'escalating' violence prevailing in all illegal gold mining sites in the province. At Mutowe and Munhena, for example, violence escalates almost every evening in the camps of the gold panners. At the latter site, two of the camps have become so notorious for the regularity of their bloody quarrels that they have acquired the sinister nicknames, "Burundi" and "Bagdad" respectively. In Chazuka communal area, destruction of homesteads has also been reported (Vimeo 2011) in cases where gold fields have been discovered at one's homestead. To make matters worse, the governor of Manica province, Raimundo Diomba, has been quoted as resignedly saying "after all, these people have no other source of income, and they have to feed their families" (Spielgel international 2008). Such a statement has made many gold panners to think that gold panning is a legal activity.

Loss of government revenues

From an economic perspective, revenue is "income that a company receives from its normal business activities, usually from its normal business activities such as the sale of goods and services to customers" (Williams et al 2008: 199). Revenues are received by the company from interest, dividends or royalties paid to it by other companies or

customers. In the case of a country, revenue can be obtained from taxes paid by companies or individuals doing business in the country.

In the case of gold panning in Manica, now that a lively business has developed around gold fields in the province, the country has to collect revenues from the miners. Gold panners are reported to sell whatever they find to Mozambican dealers for the equivalent of about $20 (€13) per gram. The buyers in Manica are Lebanese, Israelis and Europeans, taciturn individuals who spend their evenings hanging about the city's dimly lit hotel bars, where they do their business (Spielgel International 2008). The state's failure to make gold panners pay revenue, say in form of taxes, is therefore a total loss to government revenue.

Negotiating the problem: Some recommendations

Gold is a natural resource and the government of Mozambique should not stop people from exploiting the resource. However, in view of the observations and effects noted during the field survey carried out at mining areas in Manica province, this study recommends that the government in conjunction with the Ministries of Mines, Environment, Lands and Agriculture should enter in dialogue with the illegal gold panners and establish a monitoring committee consisting of scientists and experts from different ministries and other relevant bodies to help arresting this mounting problem the province. These authorities should cooperate in the following:

1) In assisting any potential association or company that approaches them to legally carry out mining activities in the province. This would encourage people to legally exploit the resource hence making it easier for the government to control activities taking place at the mining sites in the province.

2) In constructing some settling dams for affected rivers before their confluence with the unaffected rivers. This will prevent contaminated water from passing into other rivers as this would extent the problem to distant areas.

3) In examining aquatic flora and fauna for mercury content before consumption by people. This is important given that mercury is a substance with the potential to bio-accumulate in the food chain.

4) In facilitating human health and environmental health education or education programs in all mining sites across the province. This should be done to promote constructive symbiotic relationship between gold miners and the environment as well as to raise awareness on how the miners could reduce the spreading of different diseases in their respective areas.

Conclusions

In this study it has been argued that the risks faced by Mozambique, and in particular Manica due to gold panning are not new and unique to Mozambique, but are resonant with other countries in the region like Zimbabwe and South Africa. However, the high levels of poverty, illiteracy and therefore the capacity of the country to deal with the effects of illegal mining makes Mozambique more vulnerable. Lack of infrastructures such as roads and shortage of qualified personnels like environmentalists, mining technocrats and health workers to teach and empower gold miners in Manica worsen the situation leading to prolonged problems in health (spread of diseases), food insecurity and environmental degradation among other problems.

More importantly, the paper has argued in the light of the effects of illegal gold mining in Manica that although the government is taking strides to contain the problem, its pace is too slow and insignificant for the damage being caused by the activity. In view of this observation, I have argued for the need by the government of Mozambique to harmonize theory and action- need to expedite implementation of policies, improving the information circulation and movement from emergency actions to preventive plans without delay. To help this materialise, I have recommended that the government in conjunction with the Ministries of Mines, Environment, Lands and Agriculture should enter in dialogue with the illegal gold panners and establish a monitoring committee consisting of scientists and experts from different ministries and other relevant bodies to help arresting this mounting problem. This is in line with the argument elaborated in this study that the gold panners should be made to take into consideration all (humans, non-humans and the environment) those that are negatively affected by their activity.

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