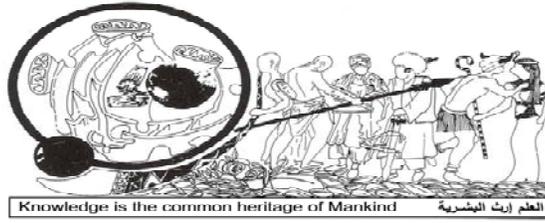




أكاديمية العلوم لجنوب أفريقيا



Sudanese National Academy of Sciences
(SNAS)
الأكاديمية السودانية الوطنية للعلوم



The Network of African Science
Academies (NASAC)
شبكة الأكاديميات الأفريقية للعلوم

Sudanese National Academy of Sciences (SNAS)

&

Academy of Sciences of South Africa (ASSAf)

Workshop on

The Impacts of Artisanal Gold Mining in Sudan

Khartoum,

Date: 2nd - 3rd September, 2014

Venue: Omdurman Hall, Future University,



Future University (FU)
جامعة المستقبل



Sudan Medical Heritage Foundation
(SMHF)
مؤسسة التراث الطبي السودانية

The Impacts of Artisanal Gold Mining in Sudan

Introduction:

Many African countries are going through a phase of difficult economic conditions and a high rate of unemployment and poverty in their communities. Over the years artisanal gold mining has been a source of income generation of many communities.

A recent boom in mining is stirring in different parts of the continent where the prospect of mineral resources has already been announced. This is encouraged by governmental authorities and large mining companies, so as to fill the gap in the economy deficit and involve the unemployed. In some areas people holding essential jobs are leaving, attracted by the gold glitter and wealth.

Although mining, especially gold mining can be a good source of economic income, the malpractice in the process conducted can be damaging to the environment, surface and ground water resources and health of the untrained miners and communities. Careless use of chemicals, especially mercury, and disposal of polluted water, can threaten the available water resources and the food chain.

During the rainy seasons, this polluted water contaminates fresh water sources, mainly rivers and underground sources, and consequently, the socio-economic and health effects can be disastrous. Moreover, destruction of fertile graze lands, where disorganized digging is operated, can be devastating for the fragile agricultural environment.

Objectives:

- To host a workshop on artisanal mining, where experts can engage in the issues and provide recommendations on the way forward.
- To produce a joint statement on artisanal mining, the risks and mitigation factors for dissemination to policy makers and the government.
- To further pursue the critical role of science academies as providers of evidence-based scientific advice through this document.
- To contribute to the continued capacity-building of science academies in the continent.

Venue:

Omdurman Hall, Future University, Khartoum, Sudan.

Date: 2-3/ September/2014.

Organizers:

Sudanese National Academy of Scientists (SNAS) and Future University

Participants:

The presenters were representatives of:

- El Neelein Univesity
- The Academy of Science of South Africa (ASSAF).
- Mintek Mining Corporation, South Africa.
- University of Khartoum
- Sudanese National Academy of Sciences
- Ariab Mining Company (AMC), Sudan.
- The Higher Council of Natural Resources and Environment

In addition, many invited participants from various scientific, academic and non-governmental organizations in Sudan attended the workshop on a personal interest level.

Day 1

Session 1: Status Quo of Artisanal Gold Mining in Sudan: Indigenous gold mining in Sudan

Presenter: *Prof. Badr El Din Khalil*

El Neelein University

Chair: Dr El Tayeb Mustafa, Future University

Main points:

- Definition of indigenous and artisanal gold mining.
- Natural resources distribution in Sudan, the 5 rock regions.
- History of mining, current active companies, and institutes teaching the basics of mining.
- General requirements for safe mining.
- The positive and negative impacts on the environment, economy, and health.
- Examples of professional large-scale mining companies in Sudan.

Discussion points:

- The need for setting strict constitutional regulations by the government to promote proper mining.
- Establishing trade unions for Artisan miners and offering them proper training.
- Directing attention towards rejuvenating other sectors in the area such as agriculture and agronomy.

Session 2: Status Quo of Artisanal Gold Mining in South Africa

Presenter: *Mr. Nirdesh Singh*

Mintek Centre, South Africa

Chair: Dr El Tayeb Mustafa, Future University

Main points:

- Introduction to Mintek Corporation and its operations in mining.
- An overview of the status of the sector in South Africa.
- Size of the Artisanal small-scale mining (ASSM) sector in South Africa.
- Commodity types and location

- Challenges faced by the ASSM sector.
- Mintek's approach.
- Mintek's Interventions to assist ASSM.

Discussion points:

- Evaluating the technology used by Mintek in extracting gold, its efficiency, cost and the purity standard of the extracted product.
- The regulations implemented by the South African government on the mining sector.
- The existing conflicts and impact of ASGM on the South African frontier.
- The role of large-scale mining corporations in promoting training and research and their success.
- The possibilities of implementing the non-hazardous technology used by Mintek in Sudan.

Session 3: Expected Water Pollution and Hazards

Presenter: *Prof. Abd El Halim El Nadi*

Department of Geology, University of Khartoum

Chair: Dr Faisal A. Sinada, Department of Botany, University of Khartoum

Main Points:

- The demographic and social set up of the ASGM area.
- The illegal activities practiced by the miners to extract gold.
- Pollutants arising from the excavation process.
- The dangers arising from the compounds used in the amalgamation process:
 - The adverse effects on the water resources and livestock in the area.
 - The adverse effects on humans resulting from direct contact with the compounds.
- The dire consequences of the toxic waste left by the minors.

Discussion points:

- The other types of microbiological pollution of the water resources arising from the infectious diseases imported by the Artisan migration from other areas in the country.
- The implications for geological and microbiological research in the area to document the changes in the existing life forms.
- The modalities of raising the miners' awareness about the dangers of mercury, cyanide, and arsenic compounds, and the necessity of wearing protective gear.

Session 4: Hazards to Human Health

Presenter: *Prof. Ahmed ElSafi*

Director, Sudan Medical Heritage Foundation, member of SNAS

Main points:

- The significant known health hazards due to mercury and other chemicals used:
 - Cerebral infarctions and strokes.
 - Teratogenicity: Harm to pregnant women and foetuses.
 - Loss of vision.
 - Occupational lung diseases.
 - Blood and oncological diseases resulting from handling toxic compounds.
 - Heat stroke and electrolyte imbalances.
 - Liver, kidney and heart failure.
- The proposed role of Ministry of Health:
 - Extensive profiling of the people living and working in the area.
 - The primary health care network needs to be involved in all its capacity to be able to identify the problems these large numbers of people maybe suffering from.
 - Raising the awareness of the miners and educating them about the importance of wearing protective gear.

Discussion points:

- The importance of eliciting governmental participation and community mobilization.
- Exploring the means to facilitate the conduction of health surveys and research to identify the scope of existing and transmitted diseases in the different mining areas.
- The importance of training and providing health personnel to specifically manage the emerging health problems.

Day 2

Session 1: Regulatory Framework in South Africa

Presenter: *Ms. Pontsho Ledwaba*

Mintek Centre, South Africa

Chair: Prof. Badr El Din Khalil, Al Neelein University

Main points:

- The historical background of mining in South Africa.
- Regulatory framework:
 - The Minerals and Petroleum Resource Development Act (MPRDA), 2002.
 - Other legislations
- Mining license for ASSMs
- Supporting structures and roles in ASSM
- Legislation deficiencies
- Current developments in legislations.

Discussion points:

- The effectiveness of the South African regulatory system in monitoring ASGM.
- The justification behind some of the legislations set by the governing state.
- The obstacles facing ASGM in South Africa in acquiring mining rights.

Session 2: Minamata Convention on Mercury

Presenter: *Mr. Ali M. Ali*

Higher Council of Natural Resources & Environment

Chair: Dr Mutasim B. Nimir, Sudanese Environment Conservation Society

Main Points:

- Mercury:
 - Definition, its role in artisanal small-scale gold mining (ASGM).
 - The adverse effects on the human health, animal life and the environment.
 - The Mercury program Mandate (2007), and the establishment of the global legal binding instrument.
- The Minamata convention (2013):
 - Objectives and obligations.
 - Article 7: identifying the role of ASGM in mercury emission and resulting pollution.
 - Annex C: the endorsed action plan and strategies to regulate ASGM along with banning the use of mercury in it. Proposed methods to control the predicted damage to the populations.

Discussion points:

- The benefits that would come from signing the Minamata convention:
 - Providing support from the international community and regional organizations.
 - Creating strong alliances with expert partners to promote proper mining.
 - Generating funds to help clear the dangers.
 - Banning the acquisition of hazardous compounds by untrained amateur prospectors. Thus, protecting against their release in the environment and eliminating the dangers resulting from them.
- Currently the mercury selling trade is a shabby underground business in the ASGM areas. The means of import of the compound and distribution are unknown. This is partly due to the existing knowledge by the traders and minors that it is illegal. Raising the awareness of the professional mining authorities is a crucial stepping stone to enable the country to join the convention and participate effectively as a partner.
- To illicit the cooperation of the ASGM miners, alternative livelihoods need to be designed for them.

Session 3: Large-scale Mining in Sudan

Presenter: *Dr. Mohamed Abu Fatma*

General Manager, Ariab Mining Company

Main points:

- Hazards associated with the large-scale Gold mining process.
- Introduction to Ariab Mining Company (AMC), its specialization and international partners in mining.
- The geological criteria of the mining areas licensed to Ariab mining company.
- An overview of the current status of the mining operation and the predicted future expansions and profits.
- The current and future projects designed for the area.
- The environmental and health impacts of large-scale mining:
 - Water depletion
 - Soil contamination
 - Air pollution
 - Landscape damage
 - Bioavailability
 - Noise and vibration pollution
- The solutions implemented by AMC to eliminate and minimize these impacts
- Cyanide storing and waste management techniques.
- Problems faced by AMC in the area.
- AMC's achievements in the Area:
 - Community development projects
 - Types of service provided
 - Safety and training
 - Links and policies
- Proposed solutions for solving the ASGM problem

Discussion points:

- The policies that govern AMC operations.
- Areas of conflict with ASGM and modalities of management.
- The responsibility of AMC in sustaining the social structure of the surrounding communities.

Session : Concluding Remarks:

Chair: Prof. Mohamed H. A. Hassan, Member of SNAS

- The participants reached a common understanding of Artisanal Small-scale Gold Mining (ASGM) in Sudan.
- The current situation of (ASGM) in Sudan is alarming. Some very toxic compounds such as Mercury and Cyanide are being used in ASGM without any monitoring. The government is unaware of the dangers and so has not set any proper standardized mechanisms of surveillance or disposal of these compounds.
- The detailed comparison of the current situation of large and small-scale mining between Sudan and South Africa was beneficial in creating a baseline from which Sudan can start strategizing, and an opportunity to periodically measure and evaluate its progress.
- A preliminary framework of action plans to reduce the negative impact of AGM in Sudan is urgently needed, to halt the effects of artisanal mining and eliminate them before they become catastrophic.

Recommendations:

Presented by: Ms Hanan A. Abbas.

As a developing nation, Sudan should take suitable actions against the health, environment, social and economic crises brought about by this emerging lucrative economic activity and convert it into a productive sector by learning from the experience of other countries like South Africa.

The Government, as represented by the Ministries of Health, Social Welfare, Environment, Mining, Internal Affairs (security and customs), Education, Research, Justice and local governments, should take initiatives for ensuring the health and social security of artisanal miners and the Community around and affected by them by:

- Recognizing the need to establish policies to regulate this lucrative sector as a core and integral part of the National Strategy.
- participating and signing internationally recognized conventions related to responsible mining starting with the Minamata Convention on Mercury; women and child labour ..etc. and committing to them.
- Centralizing the issuance of licenses for exploration and refining to one known authority.
- Prohibiting and/or legalizing the use of hazardous chemicals including and not limited to mercury in the refining process of gold ore. Encourage the use of safe alternative materials, methods and equipment.
- Encouraging the youth through responsible financial institutions to invest into this lucrative sector as small and medium size enterprises.
- Protecting artisanal miners from theft, smuggling and other crimes.
- Legalizing operation of these miners by revising The Mineral Resource act (2007) to reflect a detailed definition of Artisanal mining, size of the mine (micro – small – large), the tailings, location of minerals (gemstone , radio actives, ... etc.), Sudanese Mining code ...etc.
- Revisiting the Investment Encouragement Act to reflect proper coverage of Corporate and Social Responsibility; and Environmental and Health Impact Assessment (EHIA).
- Helping the government seek international support from allies like South Africa, in the rehabilitation of deserted mines.
- Revising agreements for mineral exploration, prospection and production and amending them so as to follow International Standards. Benchmarking, of same, can be as per the similar mining prospection – production of African –Canadian – Australian agreements.
- Mapping and creating a data base of detailed information of the sector and archiving the experience.
- Encouraging the healthy collaboration between the different authorities, local communities, NGOs, private sector and research and academic institutions.
- Allocating an encouraging percentage of the income from gold exploration in an area to the local authority and the community.
- Encouraging the creation of Trade Unions for this important sector, there by narrowing the gap between legislation and implementation of the laws concerned with security of artisanal miners and the community.

- Taking measures to create awareness and educate miners, their families and communities regarding the existing hazards and the available alternatives.
- Encouraging the development of an innovative approach to mining.
- Investigating the current damage made and cooperating to construct action plans for solid corrective plans medically and environmentally.
- Providing statistics about artisanal miners.
- Monitoring the implementation of the recommendations.
- The private sector of the Mining related activity should have a significantly recognized role:
 - as a corporate responsible entity in the Sudanese economy to involve itself with awareness, training and the spread of responsible mining practices;
 - To budget a fixed amount every year to support the sustainability issues related to the sector and lead the companies to spread the good practice in the industry.
 - Support the Academic Institutions and Vocational Centres to develop research and training manuals for artisanal miners.
 - Banks and financial institutions should take the liberty as part of their responsible and sustainable business practices to avail financing for safe equipment and materials for this lucrative sector of the economy.
- The Sudanese National Academy of Sciences will provide:
 - All the needed support and guidance to the Government in any issues related to the sustainability in terms of socio-economic, health and the environmental challenges of artisanal mining.
 - The policy frame work including legislations and strategies within the convening power of the academies in lobbying government, private sector and civil society to implement these recommendations.