

PAPERS AND PRESENTATIONS

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Opening Session

- Peter van der Veen - CASM: A Force Towards Sustainable Communities
- Honourable Minister of Mines Mrs. Cecilia Bannerman - Address

The Ghana Experience

- Ben Aryee - Overview of Artisanal Mining and its Regularization in Ghana
- B.R. Yakubu - Regularization - Technical Approach and its Shortcomings
- George Asante- The Importance of Marketing in the Regularization Process
- Emanuel Azameti - Regularization - A View from the Bottom
- Joyce Aryee - The Role of Majors in Promoting Good Practices among Small Scale Miners

Biodiversity and Artisanal Mining in Africa

- Serge Rajaobelina - Biodiversity and Small Scale Gold Mining in Madagascar
Diamonds, Conflict and Artisanal Mining in Africa
- Ralph Hazelton - The Kimberley Process and its Meaning for Artisanal Mining in Africa

Interventions and Action in Africa

- Joachim Bayah - Capacity Building for Artisanal Mining in Burkina Faso
- Seth Barnes - The Sanimuso Artisanal Miners Cooperative (English)
- Marcello Veiga - The Global Mercury Project
- Kevin D'Souza - Testing an Integrated Policy and Practice Model at the Country Level
- Antonio Pedro - The Yaounde Conference - Conclusions and Actions to Date
- Richard Noetstaller - Reprofitting Artisanal Mining in Africa - Preliminary Results - A Post-Yaoundé World Bank Project

Workshops

- (1) Incorporating Artisanal Mining into a Country Poverty Reduction Strategy (PRS)
- (2) HIV/AIDS Basics and Planning Effective Interventions for Artisanal Mining Communities
- (3) Learning How to Talk Together: Tools for Miners, Companies Communities, NGOs and Government
- (4) Technologies for Small Scale Mining
- (5) Building a Toolkit for Profiling Artisanal Mining

Sharing Regional and International Experience

- Kathia Romero - Update on Santa Filomena
- Nellie Mutemeri - Minerals Beneficiation for the Alleviation of Poverty - Sustainability for Rural Development
- Geoff Crispin - Small Scale Mining at Kelian Mine, Indonesia Artisanal and Small Scale Mining Technology
- Richard Couture - Reducing Mercury Use in Guyana
- Ludovic Bernaudat - Assistance in Assessing and Reducing Mercury Pollution Emanating from Artisanal Gold Mining in Ghana
- Kevin Woods - Small Scale Gold Plants
- Lars Hylander - 500 years of Mercury Production: A Global Inventory

Reporting Back:

- Marieke Heemskerk - Microeconomics of ASM Workshop
- Namakau Kaingu - African Women in Mining Network

CASM: A force toward Sustainable Communities

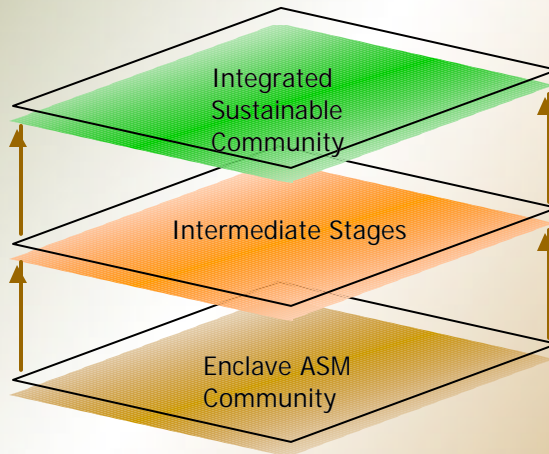


**COMMUNITIES
AND
SMALL-SCALE
MINING**

Peter Van Der Veen
Elmina, Ghana: September 7-10, 2003

The Vision

ASM: from marginal enclaves to sustainable communities



Communities And Small-Scale Mining (CASM)
Annual Meeting - Elmina, 2003

Outline

- From Enclave ASM Activities . . .
- ➔ to Integrated Sustainable Communities
- From the CASM of Today . . .
- ➔ to the CASM of Tomorrow
- CASM Comparative Advantages

Communities And Small-Scale Mining (CASM)
Annual Meeting - Elmina, 2003

From Enclave Small-scale Mining Communities

Opportunistic, self-serving systems of governance

Distorted mono-economies with limited potential

Deforestation

Degraded Environments

Corruption, land seizure

Few community institutions


Social dysfunction

Substance Abuse, Prostitution

Spread of disease

Erratic income, no savings

Inequitable distribution of wealth





Communities And Small-Scale Mining (CASM)
Annual Meeting - Elmina, 2003

Indicators and Tools

<p>Indicators:</p> <ul style="list-style-type: none"> • Diversification of employment • Health and Safety • Access to expertise • Environmental Impact • Education 	<p>Example Tools:</p> <ul style="list-style-type: none"> • Integrated Community Development Plan • Training & Guidelines • Extension Services • Formalization and regulation • Capacity building
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Communities And Small-Scale Mining (CASM) Annual Meeting - Elmina, 2003		
Instruments for Change		
	National	Local
Development Policy	Development policy taking ASM into account	ASM included in Regional Development Plans
Legal	Legalization of ASM	Implementation / administration
Institutional	Cooperation with mining ministries	Regional networks for ASM development
Capacity Building	Technical Assistance (T.A)	Programs with local government and NGO's
Financial	Government resources T.A. funds	Micro-credit providers

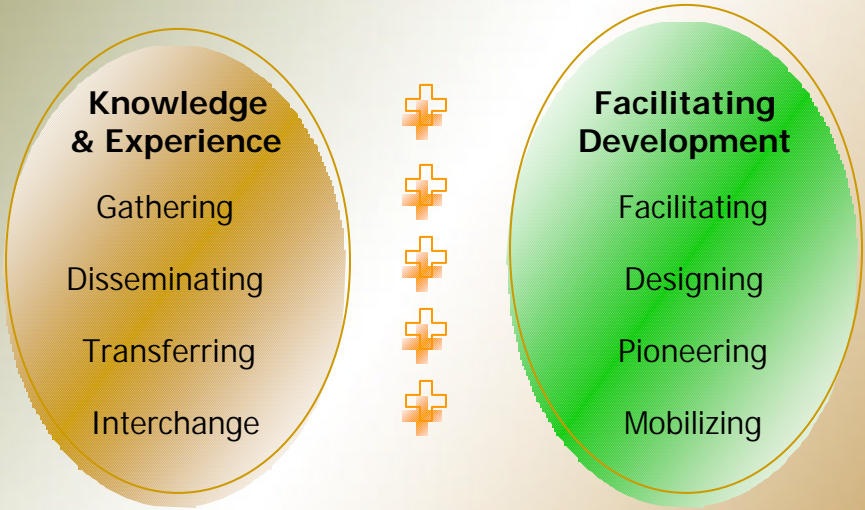
- | Communities And Small-Scale Mining (CASM)
Annual Meeting - Elmina, 2003 | | |
|---|--|--|
| CASM of Today | | |
| <ul style="list-style-type: none"> • CASM as a Knowledge Developer <ul style="list-style-type: none"> – Organizing Learning Events and Meetings – Participating and assisting with other ASM events • CASM as a Knowledge Sharer: <ul style="list-style-type: none"> – Collecting and sharing ASM related contacts, documents, and projects through CASM's web-based Knowledge Center • CASM as a Research Supporter <ul style="list-style-type: none"> – Funding small grants for ASM communities – Funding ASM research | | |

CASM of Tomorrow

In addition to current role:

- **CASM Facilitating the Development of Sustainable Communities**
 - Assisting in the design of pathways to sustainable communities
 - Working with small-scale miners, NGOs, local administrations, national and regional levels of government, industry, and bilateral/multilateral organizations
 - Peer review of and technical support to external/donor assistance projects

Moving toward a dynamic CASM



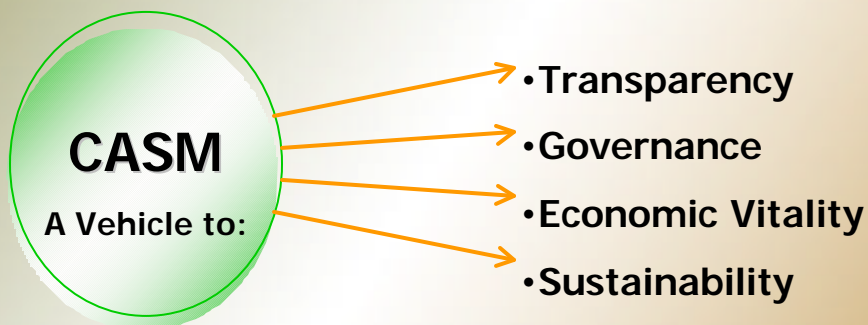


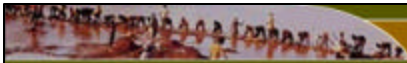
CASM Comparative Advantages

CASM's unique capability to facilitate & convene:

- Source of knowledge, experience and skill within CASM's community
- Neutrality
- Global perspective, local focus
- Global network including Expert Advisory Group

Outcomes





Thank you!



**SPEECH DELIVERED BY THE HON. MINISTER OF MINES AT
THE OPENING OF THE 3RD ANNUAL GENERAL MEETING OF
COMMUNITIES AND SMALL SCALE MINING (CASM),
ELMINA, GHANA, SEPTEMBER 8, 2003**

Mr. Chairman,

Honourable Ministers

Parliamentarians

Your Excellencies

Distinguished Ladies and Gentlemen,

I take the opportunity to welcome you all to this meeting which is designed to address problems associated with artisanal mining, not only in Ghana but worldwide. For the purposes of this meeting, I will extensively use the Ghanaian experience which I believe, may be a reflection of events in other countries.

Mr. Chairman, in Ghana, the small-scale mining of gold was given formal recognition in 1989 when Government promulgated the Small

Scale Mining Law. In that year, Government also promulgated the Precious Minerals Marketing Company Law to expand the functions of the then Diamond Marketing Corporation to include the marketing of gold produced by small-scale gold miners. Small Scale Mining Centres were established and staffed with technical personnel who assist prospective small-scale mines to licence their claims; and also monitor small-scale mining operations thereafter. In 1991, a department, the Small Scale Mining Department was established at the Minerals Commission to oversee activities of small-scale miners. Government also carried out specific interventions at the various stages of the regularization to assist small-scale miners in their operations. One of such interventions was the allotment of designated sites for those small-scale miners to ensure they complied with environmental requirements and current trends in mining.

This policy on Small-scale mining has resulted in an increase in gold and diamond production from small-scale mining. In 1990, gold and diamonds produced from small-scale mining and captured through the formal marketing system comprised 3.2% and 74% respectively

of total production of these minerals. By the year 2002, these proportions have increased to 7.1% and 82.2% respectively.

Recognising the high employment generated by Small-scale mining, the government has adopted a policy to support small scale mining within a legal framework. Hence, there is a concerted effort to licence the small scale miners and encourage them to form Co-operatives. This will enable them to be regulated and be given both technical and financial support to operate in a safe and environmentally sustainable manner and make a good living.

There is however, still a large number of illegal small scale operators who refuse to register. These are in local parlance the "galamsey" operators who work unlawfully on parts of large scale mining concessions as well as other areas that are out of bounds to them. Their activities lead to serious environmental degradation, mercury pollution and other health hazards.

A recent study to evaluate the level of mercury pollution in two small-scale mining communities, Dumasi in the Wassa West and Japa in the Wassa Amenfi Districts indicated that there was mercury contamination in the water, fish and vegetation including some food crops in the areas. What is more, the mercury levels in the blood and hair of people sampled were found to be above acceptable World Health Organisation (WHO) tolerable levels.

The problem of mercury contamination constitutes one of the major challenges of our Ministry of Mines. With the assistance of agencies like UNIDO and UNDP, the Ministry is implementing mitigatory measures like the provision of subsidized mercury retorts as well as the mounting of campaigns to educate illegal miners on the need to regularize their operations and adopt good mining practices. Some measure of success has been achieved and we have examples of erstwhile illegal small-scale miners who have come together and were licenced to operate in a more productive and environmentally friendly manner notably in Konongo and Kadadwen. To address the problem of land acquisition for legal small-scale operators, our

Minerals Commission is working on a programme to carry out exploration, or use secondary information generated by large scale operators to enable it demarcate areas that can be reserved for small scale mining.

Our Ministry is making an effort to reclaim areas already degraded by small scale mining activities. With support from the World Bank, the Ministry has undertaken rehabilitation and reclamation of

- Sixty-five (65) hectares of forests degraded from gold mining in the Neung North Forest Reserve near Tarkwa in the Western Region.
- Ninety-five (95) hectares of land degraded by sand winning within the greenbelt areas at Ablorman near Amasaman in the Greater Accra Region and
- Forty-five (45) hectares of land degraded through diamond mining at Bawdua in the Eastern Region.

The rehabilitated lands were revegetated with indigenous plants such as Edinam (1,000 trees), Mahogany (3,000 trees), Nyankom (4,000 trees), Asanfina (1,000 trees) and Bako (500 trees) as well as citrus and Oil palm plantations.

This scheme was also to demonstrate to communities in the areas of small-scale mining activities that degraded land and can be reclaimed for reuse. To ensure sustainability, these projects were implemented with labour intensive and indigenous community based methods as much as possible. The projects have subsequently been handed over to the local communities and other stakeholders.

Currently, additional degraded areas are being considered for reclamation.

Unlicensed small scale artisanal salt producers in areas such as Elmina, Saltpond, Apam, Nyanyano in the Central Region as well as other coastal areas have been advised to acquire mining licences in order to qualify for government assistance. In fact, this year, the Elmina group which legalized its operations and was able to present a

viable business plan has been assisted with 3.2 billion Cedis to improve the operations of its members. A similar application by Nyanyano is also being considered.

Mr. Chairman, Honourable Ministers, Hon. Members of Parliament, Your Excellencies, Participants, Ladies and Gentlemen,

In the foreseeable future, small scale mining will continue to be a significant source of employment in this country. Government recognizes this and is giving support to organize these small scale miners into co-operative societies to monitor their operations and assist them to improve upon their operations in terms of productivity and the conservation of the environment. The Ministry is encouraging the use of mercury retorts to reduce the misuse of the chemical and its negative health hazards. We are also considering the adoption of some novel non-mercury gold extraction technologies.

My Ministry is also putting premium on Alternative Livelihood Programmes to encourage people in mining communities to engage in the other economically viable and sustainable ventures. This we

expect, will not only reduce illegal mining activities, but will also provide sustainable employment in the communities after mine closures.

Happily, the large scale mining companies are enthusiastic about this special responsibility and are initiating some very creative Local Economic Development projects.

Ladies and Gentlemen, illegal mining is a menace and a health hazard. However, it should, in my opinion, be seen as a poverty engendered social problem which needs to be tackled from that angle.

My Ministry will be promoting a partnership of Government, Large Scale Mining Companies and Non-Governmental Organisations to work together to assist illegal small scale miners to get out their predicament, through education, empowerment and exposure to other alternatives.

Once again, I wish to thank you all for travelling from both far and near to deliberate on small-scale mining so as to come out with

strategies to promote the use of appropriate technologies in small scale mining.

I wish you successful deliberations

Thank you.

RETROSPECTIVE ON THE GHANA EXPERIENCE:

**OVERVIEW OF ARTISINAL MINING AND
ITS REGULATION IN GHANA**

BY

MR. BEN. N.A. ARYEE

**CHIEF EXECUTIVE
MINERALS COMMISSION, GHANA**

**PRESENTATION AT 3RD ANNUAL GENERAL MEETING OF CASM,
ELMINA, SEPT. 8, 2003**

SMALL SCALE MINING IN GHANA

- **MINING BY ANY METHOD NOT
INVOLVING SUBSTANTIAL
EXPENDITURE, WITH GHANAIAN
OWNERSHIP**

.....PNDCL 218 & PNDCL 153

OUTLINE OF PRESENTATION

- HISTORICAL PERSPECTIVE
 - PRECIOUS MINERALS
 - GOLD
 - DIAMONDS
 - OTHER MINERALS
- REGULARIZATION PROCESS
- ACHIEVEMENTS
- DIFFICULTIES/PROBLEMS
- WAY FORWARD

OUTLINE OF PRESENTATION

- HISTORICAL PERSPECTIVE
 - PRECIOUS MINERALS
 - GOLD
 - DIAMONDS
 - REGULARIZATION PROCESS
- OTHER MINERALS
- ACHIEVEMENTS

ACHIEVEMENTS

- OVER 620 MINING LICENCES GRANTED
- CONTRIBUTION TO TOTAL PRODUCTION INCREASED FROM
 - 2% (1989) TO 7% (2002) FOR GOLD
 - 40% (1989) TO 82% (2002) FOR DIAMONDS
- OVER 100,000 PEOPLE EMPLOYED
- INCREASED ALTERNATIVE ECONOMIC ACTIVITIES

OUTLINE OF PRESENTATION

- HISTORICAL PERSPECTIVE
 - PRECIOUS MINERALS
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- REGULARIZATION PROCESS
- ACHIEVEMENTS
- DIFFICULTIES/PROBLEMS

DIFFICULTIES

- LEGAL LIMITATIONS
- LIMITED AVAILABILITY OF SUITABLE LAND FOR SMALL SCALE MINING
- ENVIRONMENTAL CONCERNS

OUTLINE OF PRESENTATION

- HISTORICAL PERSPECTIVE
 - PRECIOUS MINERALS
 - GOLD
 - DIAMONDS
 - OTHER MINERALS
- REGULARIZATION PROCESS
- ACHIEVEMENTS
- DIFFICULTIES/PROBLEMS
- WAY FORWARD

WAY FORWARD

- CONTINUOUS EDUCATION
- DEMARCATING VIABLE LANDS FOR SMALL SCALE MINING
- PROMOTING LOCAL ECONOMIC DEVELOPMENT OR ALTERNATIVE LIVELIHOOD PROJECTS

THANK YOU



COMMUNITIES AND SMALL SCALE MINING (CASM)
3RD. AGM AND LEARNING EVENT. ELMINA, GHANA
SEPTEMBER 7-10, 2003

PRESENTATION BY B. R YAKUBU
DIRECTOR, SMALL SCALE MINING
MINERALS COMMISSION

TOPIC:

REGULARISATION OF SMALL SCALE MINING IN GHANA:
TECHNICAL APPROACH AND ITS SHORTCOMINGS

1.0 BACKGROUND

The regularisation of small-scale mining in Ghana began in 1989 with the setting up of a Small Scale Mining Implementation Committee comprising the Minerals Commission, Geological Survey Department and the Precious Minerals Marketing Corporation. This Committee was to oversee the implementation of a Project known as “The Regularisation of Small Scale Gold and Diamond Mining Project”.

The Committee’s tasks included the demarcation of eight (8) small-scale Districts with their Centres at Tarkwa, Enchi, Bibiani, Akim Oda, Assin Fosu, Dunkwa, Konongo and Kibi. This was followed up with the recruitment of qualified technical personnel (District Officers and Mine Wardens). By August 1989 the eight District Officers had been recruited. The District Centres became operational in September 1989 when the District Officers assumed duty in their respective Centres. Mines Wardens were later employed to assist the District Officers. All Centres were equipped with adequate logistics (motor bikes, 4 x 4 pick-ups and office and field equipment) to enable them carry out the functions set out in the Small Scale Gold Mining Law.

2.0 TECHNICAL APPROACH

2.1 Capacity building

The technical approach to regularisation began with the training of the field Officers. Prior to their departure to their Centres, a workshop on regularisation was held during which the provisions of the Small Scale Gold Mining Law, PNDC Law 218, which legalised small-scale gold mining, were fully discussed. There were discussions on the geology of Ghana and health and safety issues in small-scale mining. This had the aim of ensuring that the officers understood the relevant provisions of the law so as to interpret it correctly to the small scale miners and the general public.

These expositions prepared the Officers for the field. A number of other training packages have been delivered to the Officers while since 1989.

Some of these are:

- A field trip to Zimbabwe in 1991 to expose District Officers and Mine Wardens to experiences in small scale mining operations outside Ghana.
- Workshops and seminars in Project Planning and Monitoring have been held locally for the officers.
- Training manuals have been prepared in these disciplines and now serve as guides for officers.
- Training of Trainers courses have been organised in Environmental Management in Small Scale Mining, Basic Bookkeeping and cost calculations, and Health and Safety Issues in Small Scale Mining.
- Again in 1999, when new officers had been engaged, they also paid a visit to Zimbabwe to acquaint themselves with small scale mining operations there. The training and the two visits to Zimbabwe were facilitated through a grant from the German Government.
- Under the Mining Sector development and Environment Project, District Officers and some Mine Wardens benefited from four weeks' certificate courses in 'Project Planning and Management' in the United States of America in 1999 and 2000.

These training programmes have been undertaken to ensure that Officers are well prepared to deliver targeted technical extension services to small-scale miners.

3.0 TECHNICAL EXTENSION SERVICE DELIVERY AND TRAINING OF MINERS:

The most important task for the Extension Officers on arrival at their stations in September 1989 was the regularisation of the operations of small-scale miners. Incidentally, this also seems to be the most difficult task. Prior to 1989, all efforts had been made by Government to stop illegal gold mining. The use of the security agencies for this task had put the miners on the defensive. The regularisation concept was therefore viewed as a ploy to arrest the illegal miners through the “back door” and District Officers were being used for that purpose.

The fears of the miners were however dispelled due to continuous publicity by Government and the ingenuity of the District Officers who at times had to woo some leaders of the miners to drinking bars to fraternise with them and get the message across. This paved the way for an accelerated licensing of miners.

3.1 Technical services offered:

District Officers assist prospective small scale miners in the preparation of requisite documents (filling application forms, type of site plans) etc.

- They also carry out physical inspection of areas applied for to determine their suitability for small-scale mining and also to check on the conformity of the survey work with demarcations on the ground.

When work starts on a concession, the Officers pay regular visits to discuss the provisions of the Code of Practice, which has specifically been prepared for small-scale gold mining operations. The Code has seven parts relating to:

- The need for the appointment of a Manager to oversee operations if the concession owner cannot do so;

- The duties of the Manager so appointed which include ensuring safe operations on the concession.
- Surface protection;
- Protection of working places;
- Underground protection;
- Procedure in case of accident; and
- Penalty in the case of infringement of any of the above provisions

The Officers also look at the mining and processing methods, and offer advise where necessary.

Training of miners : The officers organised regular training using training manuals that have been prepared for this purpose. All miners so trained were issued with certificates of participation. This has however has been discontinued and preference given to the education on mercury pollution abatement.

ASSISTANCE SCHEMES FOR SMALL SCALE MINERS

Several assistance/support schemes have been implemented during this period of regularisation of small scale mining. However for the sake of this paper, only major ones will be discussed. These schemes were all aimed at improving on the operations of small scale miners thereby increasing their yield and improving on their well being. The idea was that where they were found to be suitable, appropriate they could be adopted for implementation. Some of these schemes include:

3.1 Rent a pump scheme

Following persistent complaints by miners that they had problems with water management in pits particularly in alluvial mining areas, a rent a pump scheme was instituted in 1991 to help them. As part of the German Government's assistance programme, "Promotion of Small Scale Mining in Ghana," through GTZ, ten water pumps (5HP) were purchased and stored at Tarkwa and Assin Fosu to be rented by the miner for use for a small fee. This system did not succeed due to the following reasons:

- The miners operated near rivers and water inflow was therefore very high. To ensure that the pits were without water the following day, they left the pumps working overnight. Since the pumps were too small for that duty, they soon gave way.
- The scheme was supervised by the District officers who could not visit the areas frequently because of their normal assigned duties. The miners, after working for several days, reneged on payment, claiming that the pumps broke down therefore worked for only a few days. The money realised could not purchase a similar equipment.

3.2 The Hire-Purchase Scheme

Following the failure of the renting system, the Minerals Commission contacted the Central Regional Development Commission (CEDECOM), which was implementing a hire-purchase system to fishmongers and small-scale farmers in the Central Region for advice. CEDECOM came out with a proposal that it would run the system for small-scale miners. An agreement was signed between the Minerals Commission and CEDECOM on July 16, 1993 for the implementation of the scheme to commence.

After three years operation, an internal review of the scheme was carried out on May 17, 1996. The miners indicated that they had been helped by the introduction of the scheme. The implementers of the scheme however cited the apparently low recovery rate (33.9%) as a failure of the scheme. A further review by external consultants hired by GTZ in 1997 confirmed the non-sustainability of the scheme. The under listed

reasons however indicated that other unfavourable factors played an important role in the dismal performance of the scheme.

- CEDECOM was actually dealing with fish mongers and small scale farmers, had no experience with mining projects and therefore did not know the risks involved in financing mining projects;
- CEDECOM was managing the scheme from Cape Coast, hundreds of kilometres away from beneficiary miners. This made the cost of operation of the scheme expensive and therefore supervision was ineffective
- The criterion for the grant of the facility was based on past performance of a miner's operations rather than evidence of the viability of the concession as a whole.
- Some of the equipment were found to be inappropriate for the operations.
- Inflation was too high for a financing instrument such as a hire purchase scheme where repayment period is up to one year.

CEDECOM was therefore left in a quagmire of either setting realistic interest rates, which will put the total cost beyond the reach of miners or set low rates and have the capital eroded.

The scheme was stopped and the money invested in other financial instruments to yield profit.

3,3 Pilot Testing of Hammer Mills

A Brazilian made hammer mill was brought to Ghana from Bolivia by BGR in 1998 to test at the Bolgatanga mining district. At the end of the test period, the hammer mill was found to be acceptable except that the frequent wear of the hammers were found to wear frequently making the operation rather expensive.

Chinese—made hammer mills that have been introduced into the country have been accepted and are now widely used.

4.0 MINING SECTOR DEVELOPMENT AND ENVIRONMENT PROJECT.

This was a major project for the mining sector, with a substantial portion going to small scale mining. The project start-up was preceded by a multi-sectoral workshop on Small Scale Mining in Ghana from July 12-13, 1994. It was attended by stakeholders in the mining industry (including 19 small scale miners). The World Bank was represented by Messrs. Leo Maraboli, Robert Nooter, Paul Bermingham and Ms Inju Hewawasam.

Mr. Maraboli, in his intervention, urged participants to reflect on the problems faced by small scale mining in Ghana at the time, and find suitable solutions to them. Brief presentations were made by the other World Bank Mission staff. Discussion at the workshop centred around four thematic issues:

- Technology, equipment and Geology
- Marketing and finance
- Environmental aspects
- Institutional strengthening and legal.

As part of the process of formulating the project, one District Officer and one gold miner were sent to the USA and Zimbabwe to study small scale mining equipment, identify some manufacturers of these equipment and propose those that will be suitable for the Ghana situation. The report of this group formed part of the Project Document.

The project eventually took off in 1996 with the following as the small scale mining component

4.1 Pilot testing of identified modules of small scale mining equipment

Both alluvial and hard rock processing equipment were purchased, installed and tested in two regions. The alluvial plants consist of washing trammels, shaking

tables, knelson concentrators etc. while the hard rock plants consist of crushers, ball mills, knelson concentrators and shaking tables. Some of the equipment are currently being used.

4.2. A programme to make better geological information available to small scale miners

Sixteen sites were selected and limited exploration work carried out. About 47% of the sites investigated were found to be suitable for small scale mining and have since been demarcated. More however need to be explored to ensure wider coverage.

4.3 Reclamation and rehabilitation of priority areas degraded through past Small scale mining activities.

Three degraded sites were selected for reclamation and reclaimed. While fruit trees have been planted at one of the sites at Bawdua, the remaining two have been re-forested. The reclamation was undertaken mostly with labour-intensive method, thus giving jobs to communities at the project areas.

5.0 MERCURY POLLUTION ABATEMENT PROGRAMME.

5.1 Studies Undertaken

Mercury is used by small scale miners to recover free gold from the concentrate. During the regularisation, the Mercury Law was amended to allow small scale gold miners to purchase limited quantities of the chemical necessary for their operations. Gold miners have therefore been using mercury for this purpose.

Cognizant of the dangers of mercury, the Minerals Commission and GTZ introduced metal retorts to small scale gold miners in 1993. The use of the retort was however not accepted by the miners. Some of the complaints were that the metal took too much time to heat. Secondly they did not know what was happening to their gold while in the metal container.

In 1997, Government applied to the United Nations Industrial Development Organisation (UNIDO) for assistance to determine the extent of mercury exposure as a result of its use by small scale miners since the miners had been using the chemical without any protection. The request was granted in 1999, when the French government provided funds. A project, “ Assistance in Assessing and reducing Mercury Pollution Emanating from Artisanal Gold Mining in Ghana” was therefore started at Dumasi, an illegal small scale mining village in the Western Region.

The results of the report of the study indicated that there was a strong evidence of mercury exposure among Dumasi population. Since Dumasi operations were purely for hard rock, it was agreed that a second study be carried out in an alluvial area where small scale miners heat their amalgam in the field.

A second phase of this project was undertaken at Japa also in the Western Region in 2002. The results of this phase have just been released and seem to follow the same trend.

5.2 Education and Training

The education of miners on the dangers of mercury and the need to handle the chemical with care started with the start of the regularisation scheme. Miners have been advised to use hand gloves while handling mercury, and to practice personal hygiene. The education intensified with the results of the studies mentioned earlier. The education now takes the form of durbars where the miners and the whole communities are shown films on the effects of mercury, followed by awareness campaign and a demonstration on how the retort is used. It is hoped that with awareness creation, the communities will resist miners burning amalgams in their houses. The introduction of the glass retort has increased the understanding of miners on the working mechanism of the retort. Of course there are complaints of its cost, fragility, smallness of the heating chamber and that the gold at times gets stuck in the chamber.

6.0 SHORTCOMINGS OF THE TECHNICAL APPROACH

From the litany of interventions enumerated, it is evident, with the exception of the training aspect, that most of them were either pilot schemes or tests that were carried out for specific reasons. Any shortcomings are therefore considered as part of the learning process. The most important aspect should then be what has been learned, and what should be done to ensure that the implementation of future programmes are improved upon

7.0 LESSONS LEARNED

Several lessons have been learned from the implementation of the regularisation of small scale mining in Ghana since 1989. The various interventions by Government have proved useful. The following examples are cited:

7.1.Hire Purchase Scheme.

This scheme was actually introduced as an assistance package CEDECOM could therefore not fix realistic interest rate to ensure sustainability. The evaluation of the scheme was however carried out as if it was a commercial undertaking. Future schemes should therefore make such distinctions.

7.2 Site Selection

A review of past exploration work by exploration companies should be undertaken to select promising sites. This will increase the success rate.

8.0 CONCLUSION

Since the regularisation in 1989, several schemes have been introduced to improve upon the operations of the miners. There have been both successes and failures. The failures have served as learning lessons which have enabled us to review our approach to the introduction of assistance packages to the miners.



COMMUNITIES AND SMALL SCALE MINING (CASM) 3RD AGM AND LEARNING

EVENT-ELMINA, GHANA SEPTEMBER 8th-10th 2003

PRESENTATION BY PRECIOUS MINERALS MARKETING COMPANY LTD

TOPIC: THE IMPORTANCE OF MARKETING IN SMALL SCALE MINING
REGULARIZATION PROCESS IN GHANA



FORMAT OF PRESENTATION

- DEFINITION
- NATURE
- CHARACTERISTICS
- HISTORICAL PERSPECTIVE
 - GOLD
 - DIAMOND
- EARLY DISPOSAL BY WINNERS
 - DIAMOND
 - GOLD
- ROLE OF PMMC
- MARKETING OF SMALL SCALE MINERS' WINNINGS
 - INTRODUCTION
 - DIAMOND
 - GOLD
- CONCLUSION



- **DEFINITION**

Small scale mining

- Is also called artisanal mining
- It involves alluvial mining operations (alluvial gold) from uncertain reserves .
- It is a process where peasant miners pan for gold along the banks and the beds of rivers and streams
- May involve mining deep down to gold bearing rocks (lode gold) and diamondiferous gravels.

NATURE

Small scale mining is:

- Driven by the get rich quick mentality of transient youth.
- Family- oriented analogous to subsistence farming
- Largely poverty driven activity
- Generally labour intensive
- Widespread and prevalent in many of the world's poorest countries in Africa and South America.



CHARACTERISTICS

Small scale mining is characterized by

- The absence or low degree of mechanization, explosives and chemicals.
- Low safety standards
- Poorly trained personnel
- High production waste due to low recovery
- Inadequate capital
- High exposure to risk and health hazards
- Some illegality due to refusal to acquire mining rights and excessive trespassing
- Very little consideration for environmental issues



HISTORICAL PERSPECTIVE

GOLD

- Ghana formerly Gold Coast had been associated with gold several years before arrival of Europeans.
- Gold used as ornaments by Chiefs and the wealthy for barter and as a treasure in ancient kingdoms and pre-colonial Arab trading.
- Before the establishment of Geological Survey Department in 1913 underground mines existed at several parts of the Western Central, Ashanti and Northern regions.
- Available records indicate between 1493 and 1600 Ghana produced over 8m fine ounces of gold representing about 35% of entire world production.

DIAMOND

- First found in 1919 in streams of gravels of the Birim river at Akwatia/Oda and tributaries of the river.
- Also found within Bansa Diamond fields at Tarkwa in 1921.
- Isolated cases of diamonds found in the Volta and Northern regions.
- Commercial production of diamond by Consolidated Africa Selection Trust in 1924.
- Alluvial deposits remain to be prospected and developed but primary sources of Kimberlite pipes yet to be located.



EARLY DISPOSAL BY WINNERS

DIAMOND

- Local miners sold diamonds to illegal buyers mainly Nigerians who smuggled them out to neighbouring countries for sale. With the establishment of the Diamond Marketing Board in January 1963, rough diamonds purchases and sales were channelled through the main stream of the economy to bring in the needed foreign exchange for the country.
- The Diamond Marketing Board which became Diamond Marketing Corporation in 1972, was charged with the marketing of diamonds mined in Ghana by both small scale miners and mechanized mining companies such as GCD, Akim concessions and Cayco (Ghana) Ltd.

GOLD

- Several ounces of gold mined for years in Ghana were sold to smugglers and eventually found their way to neighbouring countries especially Lome, Abidjan Europe and the Far East. There was no official body responsible for the purchase and sale of gold then mined extensively in Ghana. But for Bank of Ghana where confiscated gold was deposited for sale to jewellers people traded in gold freely, everywhere in Ghana.
- With the legalization through promulgation of PNDCL 219 in 1989, Precious Minerals Marketing Corporation was established to take over the role of the Diamond Marketing Corporation (PMMC). The expanded role of the PMMC captured the marketing of gold produced under the small scale mining sectors.



ROLE OF PRECIOUS MINERALS MARKETING COMPANY LTD (PMMC)

Legalization of Small scale mining and expansion of the role of the Precious Minerals Marketing Corporation in 1989 (which became Precious Minerals Marketing Company Ltd in 2000 by Act of Parliament) were:

- Essential steps towards the transforming of the sector into a sustainable activity.
- Necessary to establish and transfer title to discoverers of deposits and miners to ensure their rights .
- To enhance creditworthiness of the mining industry
- Provide regular market, realistic and competitive prices and bring markets to the doorsteps of the small scale miners, in order to minimise smuggling.
- To regulate the mining activity and protect both the environment and the rights of the indigenous miners to channel revenue from activities through main stream economy.



MARKETING OF SMALL SCALE MINERS' WINNINGS


INTRODUCTION

- The major objective of the PMMC from its inception as Diamond Marketing Board in 1963 is to raise as much revenue as possible from the marketing of winnings from the small scale miners. This objective influenced in no small measure management's decision over a decade ago, to produce jewellery as a value-addition process to enhance earnings.
- Minerals are non-renewable resource and revenue from exploitation must be maximized in view of negative land degradation and pollution left in its wake, the social commitment and economic obligation to reclaim the land and put it back into use.
- It behoves on the government and regulating authorities to ensure maximum yield from the exploitation and PMMC is doing just that by instituting appropriate and dynamic marketing strategies.




DIAMOND

- In Ghana Diamond Mining started nearly eighty years ago and from 1924 till 1963, the producing company Consolidated African Selection Trust Ltd (CAST) had total control over the sale of its production from its mine at Akwatia. Records of small scale winners however, date back to about 1953 when there were over 20 Independent Buyers (mainly Nigerians) located at Accra, Akim Oda, Kade and environs. These buyers negotiated directly with the local winners and paid for the diamonds they could purchase. After examination by the Government Valuer, the companies were allowed to export the diamonds purchased overseas.
- Due to several allegations of under invoicing, connivance, and low prices that Ghana was getting from the sale of its diamonds, the Ghana Diamond Marketing Board (DMB) was set up in January 1963 to control the purchases and export of all diamonds produced in Ghana. The Board registered over 25 independent Diamond Buyers to participate in the regular sale conducted at the Accra market which used to be in the old buildings occupied by the National Lotteries.
- In the initial stages of its operations from 1963-1968 the Board operated a buy and sell policy, where the board purchased all the diamonds produced by CAST and the local winners. Various methods were used to sell the diamonds such as:
 - i. Tender sales involving overseas independent Diamond Buyers
 - ii. Retail Assortment sales and
 - iii. Wholesale, sales at its office in Antwerp, Belgium with the assistance of a Consultant.

- 
- Towards the end of 1968 CAST objected to the outright purchase of their diamonds by the Board on account of excessive profit claimed to have been made by the then DMB. Sale by international tender system was instituted with modifications below:
 - Sale of 25% of production by tender at least 4 times a year
 - 25% of production for GCD to carry out market research to confirm the bid price.
 - 25% of production allocated to GCD for sale outside the tender.
 - 12½% for DMC to carry out market research for floor price.
 - 12½ to the winner of the tender

Ghana was producing about 3 million carats of diamonds annually and by 1976 there were only 6 registered Buying Agents. CAST became Ghana Consolidated Diamonds Ltd (GCD) after 1982 when CAST sold its minority 45% shares to the Ghana Government.

Marketing system of diamonds produced by GCD changed frequently until it adopted finally the system used now by PMMC to market local winners production.



Marketing of artisanal diamond mining winnings have actually gone through several process

- Purchased diamonds were shipped to PMMC officer in Antwerp for both wholesale outright sale and retail sorting sales with the assistance of a Consultant. This proved expensive and unprofitable due to taxes, rent and payment of emoluments to staff and Consultant.
- Registered overseas buyers (6 in number) were invited every quarter for tender sales. The system was abrogated due to consistent low prices offered, resulting in near losses and marginal profits on account of collusion between the buyers expected to be independent.
- In operation now is an open market system whereby registered buyers from various countries India, Belgium, South Africa, far East and Israel have been provided with offices to offer competitive prices. Winners are at liberty to show the mixed parcel of diamonds to any of them and take same away if there is deadlock in price negotiation. The local seller decides on whom to sell to after negotiation on price with as many of them as possible.

The latest method have actually increased sales, raised the confidence, transparency and has brought about sustainable healthy competition in the one- stop Diamond



Bourse created at the same floor in the Diamond House Head Office, Accra of PMMC.

- Management ensures the financial strength, integrity and credibility of prospective buyers by conducting Dun & Bradstreet report on their companies prior to commencement of operations. All resident buyers transfer upfront in US Dollars funds through the Central Bank for the purchase of the diamonds. Winners are paid immediately after sale at a Bank at the Diamond House. Diamonds purchased by the registered buyers under lock and key, are kept in custody of PMMC pending shipment to various destinations on request.
- Diamonds for shipment are subjected to PMMC's pre-shipment inspection of the value, weight and 'conflict diamonds' prior to processing of export documents and subsequent shipment.

GOLD

- Marketing of gold produced by the major mining companies such as Ashanti Goldfields Company Ltd (AGC), Goldfields Ghana Ltd, Billion Bogoso Gold Ltd. etc is carried out under various marketing and refining agreements independent of PMMC. Under the provisions of PNDCL 219 gold produced by small scale miners as well as medium sized companies are to be purchased by PMMC.



PMMC price quotations are based upon:

- Weight of the gold normally in pounds (1 pound = 7.775g = ¼ oz)
- Purity of the gold (Assay value) in karats. (24 karat = 100% pure gold) maximum karat in Ghana hardly exceeds 23.
- London Metal Exchange (L.M.E) A.M Quote for the day of sale.

Initial attempt to pay the small scale gold miners full LME less 7% in order to pay 3% towards a Land Reclamation fund rendered PMMC uncompetitive to the illegal buyer. At present prices offered is about 2% below the LME and sometimes winners are given the full LME to price out smugglers in the producing areas.
An amount of 200M was paid to Minerals Commission for land reclamation prior to the revision.

PMMC has succeeded in sending markets to the doorstep of the producer with the:

- Establishment of purchasing offices at Accra and Tarkwa.
- Establishment of agencies at Kumasi, Konongo, Cape Coast, Wassa Akropong, Bolgatanga and Wa.
- Licensing of over 500 local buyers scattered all over the country to purchase the gold from miners and other small dealers in the dust grain or amalgam form for treatment prior to selling at PMMC offices or agencies.



• SALES

Factors taken into consideration when PMMC is considering overseas buyers of our gold include:

- Charges for refining the gold; as quoted international prices are always for fine gold.
- Percentage of gold recovery.
- Percentage of silver recovery
- Freight and insurance charges
- Transportation, assaying and handling costs
- Terms of payment
- Other benefits to be derived e.g training for staff, bonus, hedging facilities, pre-financing prospects etc.

In addition Silver, the major by-product from the refining process is paid for. On the average purity of Ghana gold is 92% with about 7% Silver component and the 1% being metals in traces possibly Copper, Iron, Palladium etc.

All these are aimed at realizing higher earnings for the country from the exploitation of this non-renewable natural resource.

- PMMC however utilizes part of gold purchased for Jewellery production in an adjoining workshop but the major component of purchases are exported overseas for sale to end users such as Refineries at the full LME less charges.



CONCLUSION

- The importance of marketing in small-scale mining cannot be relegated to the background at all. Artisanal gold mining in Ghana is reported to produce more than 250,000 ounces annually valued over \$75M whilst artisanal diamond mining produce 1,000,000 carats annually valued about \$20M dollars.

Over 600,000 ounces of gold valued \$200M and 7.3M carats of diamonds valued \$170M have been realized by PMMC from artisanal mining since legalisation of small scale mining in 1989.

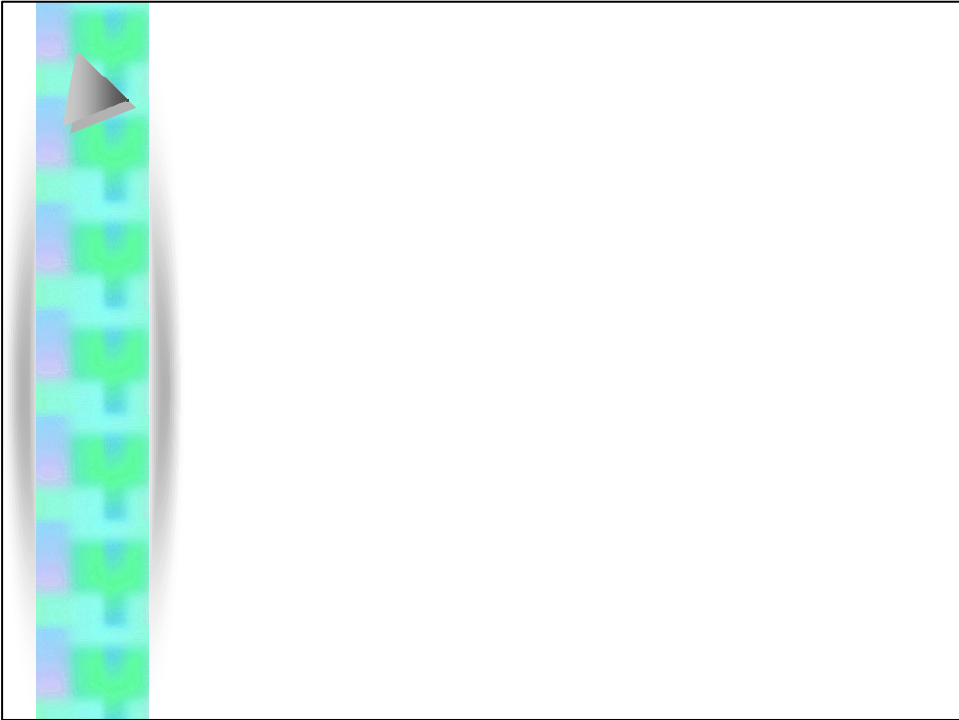
In addition over 80,000 people are employed directly or indirectly under the sector yet small scale miners are hardly assisted by banks and financial institutions probably due to the risk, unregulated and the nomadic nature of players in the industry.

For sustainability and improvement in the sector to realize intended economic benefits to rural communities, the government through its agencies, needs to continue searching for a way to provide true technical assistance for the small scale miners, especially in the areas of exploration, evaluation of mineral deposits, mining and extraction techniques, safety and environmental issues.



In addition it is important to encourage a perfect co-existence of small and large scale miners for the exploitation of pockets of lands not economically feasible to mine mechanically. Sustainable development however entails the building of necessary technical capacity/direction and enhancing greater productivity and job security while minimising the negative impacts on environment.

The artisanal mining sector however, serve as an economic anchor point for stimulating the development of complementary, sustainable and revenue generating activities to be integrated into the local economic structure. This can go a long way to check rural-urban drift by the youth for non-existent jobs and reduce social menace in such communities.



REGULARIZATION OF SMALL SCALE MINING, THE BOTTOM VIEW: A PAPER PRESENTED BY E.A. AZAMETI, PRESIDENT OF THE GHANA NATIONAL ASSOCIATION OF SMALL SCALE GOLD MINERS DURING THE COMMUNITIES AND SMALL SCALE MINING (CASM) 3RD A. G. M AND LEARNING EVENT – ELMINA, GHANA, SEPT. 7 – 10, 2003

Mr. Chairman, Honorable Ministers of State, Distinguished Guests, Fellow Miners, Distinguished Ladies and Gentlemen, the Government of Ghana has put in place a credible process whereby an artisanal Gold Miner could obtain a license to become a Regularized or small scale miner. The Minerals Commission of Ghana which is the Agency that oversees mining in Ghana has benefited from several World Bank Sponsored programmes to improve upon the methods of Small Scale Mining as it was realized that small scale miners wash about 30% of the gold they dip back into the soil because of the use of improper equipment.

I would like to take this opportunity Mr. Chairman on behalf of Small Scale Gold Miners, to register our profound gratitude to the World Bank for her continued support for Ghana Small Scale Miners. I am also extending our gratitude to the Minerals Commission and her partners involved in the quest to improve Small Scale Mining. One unique partner I would like to mention is the Geological Management and Consultancy Limited (GEOMAN CONSULT). They have involved themselves in the search for a more efficient methods of Small Scale Mining for quite a long time now, and we are thankful for that.

Mr. Chairman, Distinguished Ladies and Gentlemen a greater number of our youth miners belong to the group called Galarmsey. They are the illegal miners. They carry out their activities anywhere, anytime anyhow. They become destructive when the Authorities try to be too hard on them. My Association finds it really difficult to get most of these illegal miners to have their activities regularized.

Among the reasons they assign to their unwillingness to regularize are:

THE PROCESS OF REGULARIZATION BEING TOO LONG

Mr. Chairman, Distinguished Ladies and Gentlemen, when a prospective miner identifies a mining potential, he is required to submit a site plan of the area to the District Small Scale Mining Officer. He is given an application form, which he fills and submits, to the District Assemble. The Assembly will put up a notice for twenty-one days. If nobody protests against the notice, the District Chief Executives recommends to the Mineral Commission District Officer to carry on the process of application.

Twelve copies of the map or plan of the area being applied for with reference to a topographical sheet are prepared.

The completed application for and the copies of the map/plan of the area are then sent to district centre i.e. District Officer.

The District Officer conducts Field Inspection to ascertain whether the area on the map conforms to that on the ground.

The Application form and a copy of the map is then forwarded to the District Chief Executive for approval.

The approved application form and ten (10) copies of the site plan are then forwarded to the Minerals Commission in Accra.

An Environmental Permit would also now have to be obtained from the Environmental Protection Agency.

If approved, the Minister for Miners signs an Agreement between the applicant and the Government of Ghana. On the other hand, if not approved he notifies the applicant in writing through the Minerals Commission of his disapproval and no further action will be taken on the application.

The applicant takes the signed Agreement and a covering letter from Minerals Commission to the Chief Inspector of Mines to obtain Operating Permit before, commencement of any work on the land.

The applicant must make to the Minerals Commission for record purposes, a copy of the operating permit obtained from the Chief Inspector of Mines.

On receipt of the signed Agreement, the applicant is required to register it with the Registrar of Land.

The applicant now goes back to his village to wait for the arrival of the license. It takes about three months for the actual license to arrive.

From the time the prospective Miner reports to the District Assembly to the time the license arrives takes about six months. The prospective Miner, within the period, would have made several trips to Accra to check on the status of this application. In some areas the application forms remain at the District Assembly Office for years because some of the District Chief Executives do not cooperate effectively with the Mineral Commission District Officers. In instances like this, Mr. Chairman, the spirits and the enthusiasm of these Miners become dampened. The result is that most Small Scale Miners choose to become galamseers than having their activities regularized. In some instances, before the license comes, the Miners would have completed their mining activities, and the site, which was once exploding with human activities, becomes as dead as a cemetery.

NEGATIVE PRESS REPORTING

Distinguished Ladies and Gentlemen, when people appreciate what you are doing, you are encouraged to do it and do it well. One other factor that is not helping many Galamseers to regularize their activities is, Negative Press Reporting. Galamsey has suffered from a hostile press for far too long. Many Journalists embellish report about Galamsey to sell. The vocabularies that appeal to these Journalists most when they are writing about Galamsey activities are Illegal Mining, Pollution, Environmental Degradation, To some people even when flood waters change the colour of a river, it is galamsey. Even if a lorry gets stuck in the mud near a lorry road and drivers use shovels to dig to get it out, to these, it is galamsey. By this Mr. Chairmen, many decent people who have the capital to go into Small Scale Mining are rather scared away. Even Business and Mining Technology Graduates from Tertiary Institutions who should be encouraged to go into Small Scale Mining in order to broaden the private sector base and enhance employment opportunities are also scared away. There are many prominent people in our society who are also interested in Small Scale Mining, but because everything about it is reported negatively, they lack the courage to come out boldly to identify themselves with us. Thus, for Galamsey Miners to spend a lot of money to go through a long

process to be granted licenses to do what people look down upon, is a waste of time and resources, and they are not prepared for it. We would be really be, grateful, Mr. Chairman, if the media would always endeavour to promote the sector so as to encourage more people to enter it. Small Scale Mining, Ladies and Gentlemen, is not a degraded venture.

UNFAVOURABLE GOVERNMENT POLICY

Mr. Chairman, Distinguished Ladies and Gentleman, one sad situation within the Mining sector is that, the whole land surface of the Nation has been partitioned among several Large Scale Mining Companies. Some of the companies are alive, some are asleep, and the rest are dead. Some Companies have acquired their concessions many years ago without working on them. This situation is no longer tenable. The Minerals Commission finds itself still holding in trust these concessions and continue to turn down Small Scale Miners applications at these areas.

It is really disheartening, Mr. Chairman, for a small scale miner to submit his site plan to the Minerals Commission to be told that his area affects another concession where in actual fact no body has been to the area to express interest in the land for the chief and his people to bear witness. In this instance the galamsey man is only being encouraged to go on to do his galamsey. The Minerals Commission has shaded -off some areas for small-scale miners, but because of the lack of geological information about these areas most Small Scale Miners are unwilling to regularize their activities there. A miner must always look before he leaps.

LACK OF CAPITAL

Mr. Chairman, Distinguished Ladies and Gentlemen, you would agree with me that mining is capital intensive, but, there in no credit facility available to Small Scale Miners. Their Sources of finance are other gold dealers who deal with them on cash for gold basis. When Small Scale Miners begin their operations with financial assistance from these gold dealers and fail in their operations, they find it difficult to hold on, but instead they ran away, and become migrant Miners, Migrating from place to place to escape from their creditors' observation. Such miners would not think of having their activities regularized.

CHIEFTAINCY

Mr. Chairman, ^{Landowners} who have mineral deposits in their stool lands have arrogated too much power and authority to themselves to the extent that they grant permission to the local youth miners to mine with impunity. When these Chief are confronted, they bang on chests to tell you that they own the land and that their children must survive. In situations like this, the miners would never want to have their activities regularized. They become hostile and lawless.

CONCLUSION

Mr. Chairman, Distinguished Ladies and Gentlemen, may I conclude with following suggested recommendations.

1. The process of regularization must be shortened in order to bring it into a closer proximity to Small Scale Miners by delegating the authority to do so to the Mineral Commission at the District Offices.
2. The Media houses must endeavour to remove the **NEGATIVE TAG** that they have put on Small Scale Mining in general.
3. The Minerals Commission must endeavour to cause to be published in the National Dailies, all Mining companies in Good Standing and those whose Reconnaissance Licenses have expired.
4. Government must expedite action on the granting of Mining Lease to avoid undue delay giving galamseys the chance to encroach upon other people's properties.
5. Small Scale Miners should be included in the Poverty Alleviation Fund.
6. We are appealing to the World Bank to set up a plant pool comprising of an Excavator, a Dozer, Payloader, a Dumper, and a Low Loader must be created for the Association. We can hire out these equipment to Miners and pay for the costs. This will help us to enforced responsible environmental management practices so as to maintain an appreciable standard of environmental degradation. (Like was done to the Fish Farmers Association).
7. We are also appealing to the World Bank to allocate one pick-up to us to facilitate our membership drives, and also to monitor illegal mining activities more effectively.
8. We are also advocating for the opening up of a Bank for Mining in general.
9. Land Owner must be educated properly on Mineral Laws to avoid causing embarrassment to themselves. They should insist on their royalties instead of granting verbal licenses,

Mr. Chairman, youth problems are National problems. If we fail to address youth problems as a nation, we would one day as a regret the consequences. Too many of our young people are suffering as a result of unemployment. Small Scale Mining, Legal and illegal has become the single largest employer of unskilled labour, and we must uphold it.

I wish all Miners, Large Scale or Small Scale Success in their endeavours. Long Live Small Scale Mining! Long Live the Youth of Ghana! Long Live the Youth of the World!

GLORY BE TO GOD WHO IN HIS WISDOM HAS ENDOWED HUMANITY WITH SUCH A VALUABLE TREASURE AS GOLD.

Thank you.



The Role of the Majors in promoting good practice in Small-Scale Mining

**Presentation by Ms. Joyce R. Aryee
Chief Executive Officer, Ghana Chamber of Mines**

THE CHAMBER'S MISSION

- The Chamber aims at building a dynamic and proactive private sector Employers' Association, professionally managed to refocus its vision of serving and harmonizing the interests of its Stakeholders.
-

HISTORY

- The West Africa Chamber of Mines, which gave birth to the Ghana Chamber of Mines, was set up in 1903.
 - The Chamber was composed of directors of the Mining Companies in London who, among other functions, sought to promote or oppose any legislative measures or petition government in the colony on many matters, which directly affected mining interests.
-

History (Cont'd)

- On 6th June 1928, the Gold Coast Chamber of Mines was incorporated
 - The Chamber has since remained a voluntary private sector employers' association representing companies and organizations engaged in the minerals and mining industry in Ghana.
 - Programmes and activities of the Chamber are funded entirely by its Member Companies.
-

Land Use Conflict

- There is a great deal of concern about the impact of mining on the environment, but a few facts should help give us a perspective:
- Ghana's total land area is about **240,000 km²**, out of which **31,237 km², or 13%**, has been granted to large scale mines for reconnaissance, prospecting and active mining.
- Only **4,304 km²**, or less than **2%**, is under actual large scale mining operations in the country

Small Scale Mining in Ghana Potential

- Artisanal Mining has been going on in Ghana for over a century
- Currently it is estimated that it employs over 50,000 people
- Income Generation for the local people
- Revenue for the State
- Check Rural – Urban migration

Challenges

- Environmental Impacts – Land, Water etc
- Financial Constraints – lack of credit, improper book-keeping
- Educational Impacts – Children of school Going age
- Health and Safety – Mercury, HIV/AIDS
- Illegal activities – No clear cut difference between legal and illegal miners

Role of Majors

- Help strengthen the Association of Small scale Miners
- Collaboration with PMMC – a member of the Chamber
- Possibility of the Association to join the Chamber
- Support, training and promotion of jewellery manufacturing – Jewellery Villages
- Support for the College of Jewellery – Now a Member of the Chamber

Role of the Majors (Cont'd)

- Mining companies are working with the Minerals Commission, The EPA and Mines Department to identify areas that can be used for small-scale mining.
- Provide support for Seminars and training in the use of Mercury Retorts
- Assist Mines Department, Minerals Commission and EPA to eliminate the illegal activity by educating small-scale miners to form co-operatives to be registered under the small-scale mining regulation

Role of the Majors (Cont'd)

- On the establishment of legal small-scale mining operations, The Chamber will assist in providing environmental education programmes for the Galamsey workers to ensure that they understand the effects of their activities.
- The Mines Department and the EPA should monitor the activities to ensure that they carry out their operations in an environmentally friendly manner.
- Willing to work with the Govt Agencies in charge of Small-Scale mining to improve public perception of mining in general

A portion of the degraded area at Tomento near Abosso Goldfields, Damang.



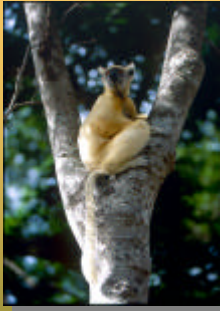
A young boy in Galamsey business at the expense of his future development



One of the many dangerous pits at Galamsey sites.



**Our challenge :
Integrate “best practices” mining
activities in regional
conservation and development
strategy for Daraina**



**Communities and Small Scale Mining (CASM)
September 7-10, Elmina Ghana**

Fanamby: Our mission and sites

FANAMBY, which means challenge in English, is a Malagasy NGO working for conservation and development by teaching communities to manage resources, stop traditional forest destructive livelihoods and facilitating private sector participation.



FANAMBY's two major objectives in our three working sites are :

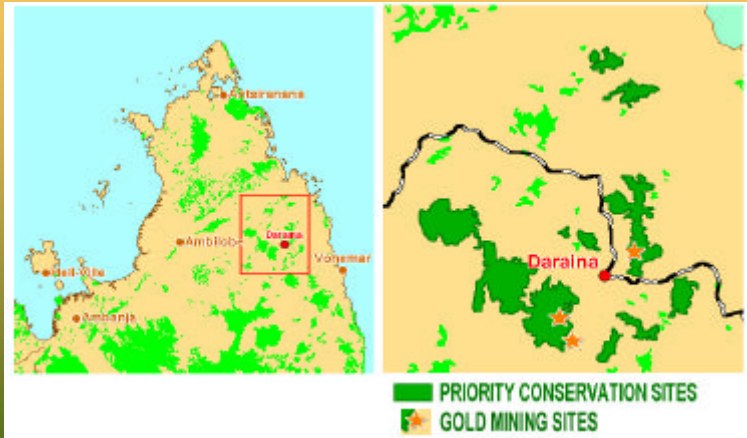
protect biodiversity rich forests that currently have no legal protection statuts;

build the capacity of local authorities and communities to manage their heritage of natural resources.

Conservation and development dynamic

The Daraina region is characterized by unique eco-tones and is home to the golden crowned sifaka, one of the 20 most endangered primates in the world.

Its also one of the islands largest and purest quality gold producers.



The most productive mining sites are situated in forests designated for conservation.

Problem identification in the Daraina region gold mining sector

Gold is produced from surface mines and is labor intensive during all phases of production. Mining holes vary in size from several meters wide and deep to sometimes 10 meters. After mines are dug the potential gold bearing stones are pounded to sand and the gold is extracted through basic filtration.

- This process is inefficient and labor intensive: 05 gr / month /producer
- Current market prices favor the intermediaries rather than the producer relative to work inputs:
 - \$ 9/gram at the producers
 - \$ 15/gram at the intermediaries



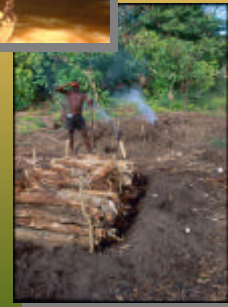
Environmental Impacts

- Land degradation from mines and erosion.
- Forest destruction as a result of mine digging.
- Reduced productivity in surrounding agricultural zones resulting from erosion and situation.

Legal constraints

Legal constraints are reducing the positive results between conservation and development:

- Inconsistency between original mining legislation and the new national forestry policy.
- Gold mining is not recognized regionally or nationally and therefore, legislation to litigate negative environmental impacts has not been developed.
- Efforts need to be made to conciliated conservation and mining priorities. FANAMBY has initiated this through both the mining project and FANAMBY's overall regional strategy.
- Mining codes recently published in government manuals need and best practices accepted by the associations must be enforced.

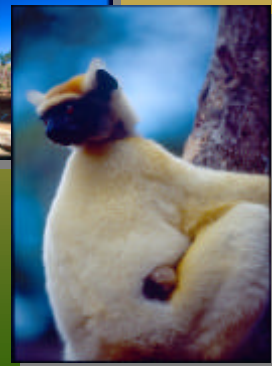
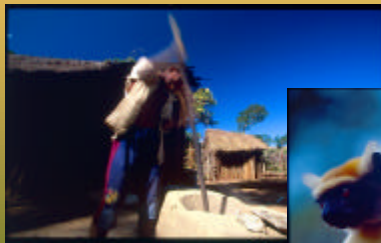


Defining Conservation and development solutions: Mining association development through CASM support

FANAMBY, through the support from CASM, FANAMBY is working with Mining associations to implement best practices and manage mine to respect natural resources.

The projects main objectives are:
Identify strategies and actions to increase productivity while respecting the integrity of the forest;

- Support for the creation and management of an institutional mining structure recognized by local authorities.



FANAMBY's project strategy

Helping miners to:

- Increase productivity while respecting site ecology
- Educate themselves on issues affecting mining communities (Health and sanitation)
- Take responsibility for regional conservation and ecological environmental health.



Field activities include:

- Identification of appropriate best practices technical production
- Eventually transfer the site management responsibilities to associations
- Help the associations to organize gold sales to improve marginal gains.
- Modules on Health and Environmental Education

Identifying “best practices” that respect ecology of the region

Regional best practices developed during the project include:

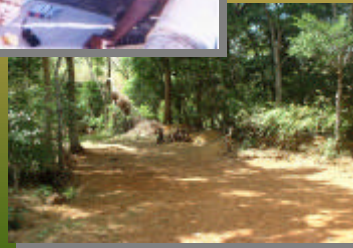
- Maintain production at the family level to avoid large scale land transformation.
- Identify and teach associations a generalized list of production techniques.
- Outlaw all forms of environmentally damaging mining techniques (use of mercury, strip mining, industrial mining land transformation practices)
- Manage post-mining land rehabilitation phase: fill-in abandoned mines, re-vegetation of denuded areas, etc.



Management transfer: a tool to integrate mining and responsible management

Contents of a successful community managed mining contract:

- Fix and stabilize the mining zone and define limited extensions based on regional management plans.
- Ensure that all mining areas will be managed from start to the post management phase.
- Establish contracts (GCF) that bind communities to strict site management.



Income redistribution: organizing associations capture higher margins in the open market

Through the project, FANAMBY is supporting mining associations organizing their sales capacity on the open market to:

- Ensure higher volumes of production, higher prices per gram and consistent customers.
- Higher production volumes will allow the associations to sell directly to regional buyers rather than intermediaries.
- Greater attention to the associations and ecological practices will allow the associations to charge higher prices.



Supporting activities to ensure a holistic approach

Mining communities earn income at different intervals than farming communities and are travel to distant markets on a more regular basis. These population groups are at greater health risks, both locally in the mines and in town.

- FANAMBY has developed health and education programs to teach environmental and ecological issues to communities.
- Health issues focus on hygiene education in the villages and potentially increased STD or HIV/AIDS risks that miners may encounter.



Next step priorities to supporting

Through the project FANAMBY has established three mining associations. The associations function, but need continual support to implement their strategies.

Next steps include:

- Marketing support to ensure greater margins
- Establishing a government accepted system of mining permits and linked to conservation management concepts
- Continued health and environmental education



CASM ANNUAL GENERAL MEETING AND LEARNING EVENT

ATTEMPTS TO BREAK THE MOULD - CONSTRUCTIVE INTERVENTIONS IN AFRICA
Capacity Building for artisanal mining in Burkina Faso

Joachim Bayah
GEOMAN CONSULT LTD.
Ghana

1

BURKINA FASO ASM - HISTORICAL OVERVIEW

- ASM in Burkina Faso dates back to 15 century
- Expanded in 1967 - nugget discovery by a shepherd
- In 1974 activities expanded due to drought in Sahel
- 1980 - increased activity and races for gold
- 1984 - first organized SSM project by government
- 1986 - CBMP set up to buy precious mineral
- 1988 - Filiere Or set up
- 1991 - CEMOB Gold Mines Exploitation
- 1995 - Ministry of Mines set up
- 1995 - Mining declaration with emphasis on SSM
- 2003 - New mining code with consideration for ASM/SSM

2

ASM ACTIVITY IN BURKINA - CHARACTERISTICS

- ESTIMATED NUMBER OF ARTISANS 100,000 - 200,000
- MORE THAN 200 ACTIVE SITES
- ISSUES:
 - INSTITUTIONAL WEAKNESS TO DEAL WITH ASM
 - CONFLICTS - LAND, MIGRANTS & LOCALS, ETC.
 - SOCIO-ECONOMIC PROBLEMS
 - HEALTH, SAFETY & HYGIENE
 - CRIME & INSECURITY
 - PROSTITUTION & DRUG ADDICTION
 - HARD WORKING CONDITIONS AND ACCIDENTS
 - ENVIRONMENTAL PROBLEMS INCLUDING DEGRADATION
 - ORGANIZATIONAL PROBLEMS

3

THE CONDUCT OF MINING AND PROCESSING

- MINING
 - PITTING AND GALLERY DEVELOPMENT TO REACH ORE
 - MANUALLY BREAKING ORE OR BLASTING
 - HAULING ORE IN SACKS WITH ROPE
- TRANSPORTATION
 - DONKEY, BICYCLE, HEADPAN ON FOOT
- PROCESSING
 - MANUALLY CRUSHING
 - HAND SIEVING
 - SLUICE WASHING FOR GOLD RECOVERY
 - WINNOWING DRY MATERIALS

4

METHODE D'EXPLORATION ARTISANALE FINI PUIS ET TRAVAILLES



Site d'exploitation de Akpa derrière de la ville de Doko



Courtoisier Journal de la ville de Doko (Doko, Côte d'Ivoire)

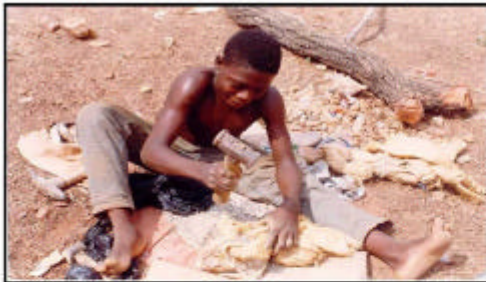


Puits à section carrée en voie de construction



Puits sans escaliers de forme d'attente pour servir de la forêt du site de Doko

TRAITEMENT ARTISANAL DE L'OR



Concassage manuel du minerai



Pilage du minerai concassé



Broyage du minerai pilé

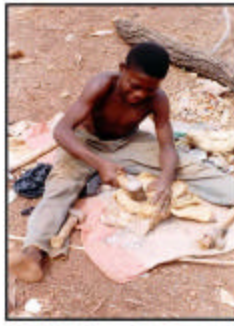


Levage du minerai au sulfate bore artisanal (20% de récupération)

SECURITE DU TRAVAIL



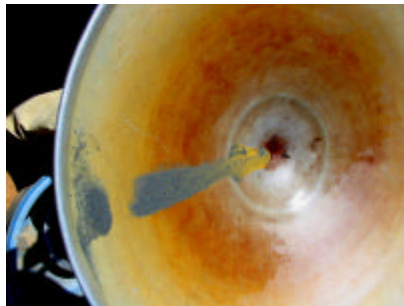
Descendre dans un puits sans casque ni gants



Contremaître sans gants, pas de lunettes ni masque



Terminaux exposés à la poussière



STATISTICS OF LICENCES

YEAR	NUMBER OF LICENCES	
• 1993	01	
• 1994	13	
• 1995	03	
• 1996	05	
• 1997	09	
• 1998	01	
• 1999	03	
• 2000	03	
• 2001	16	
• 2002	21	
• 2003	19	56 DURING 2001-2003
TOTAL	94	59 ARE CURRENTLY VALID

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GOLD PRODUCTION STATISTICS - CBMP

YEAR	ASM GOLD(KG)	OFFICIAL EXPORTS	%ASM
• 1995	945	1896	49.8
• 1996	769	1460	52.7
• 1997	944	1072	88.0
• 1998	951	1097	86.7
• 1999	738	869	84.9
• 2000	515	606	85.0
• 2001	209	212	98.6
• TOTAL	5071	7212	73.3

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RECENT ORGANISATION FOR ASM IN BURKINA

- GOVERNMENT OF BURKINA FASO IS IMPLEMENTING A WORLD BANK PROJECT WITH ONE COMPONENT DEVOTED TO SMALL SCALE MINING - THE SPECIFIC EMPHASIS OF A SUBCOMPONENT IS IMPROVEMENTS IN ARTISANAL MINING.
- PRECAGEME - "PROJET RENFORCEMENT DES CAPACITES NATIONALES DU SECTEUR MINIER ET LA GESTION DE L'ENVIRONNEMENT"

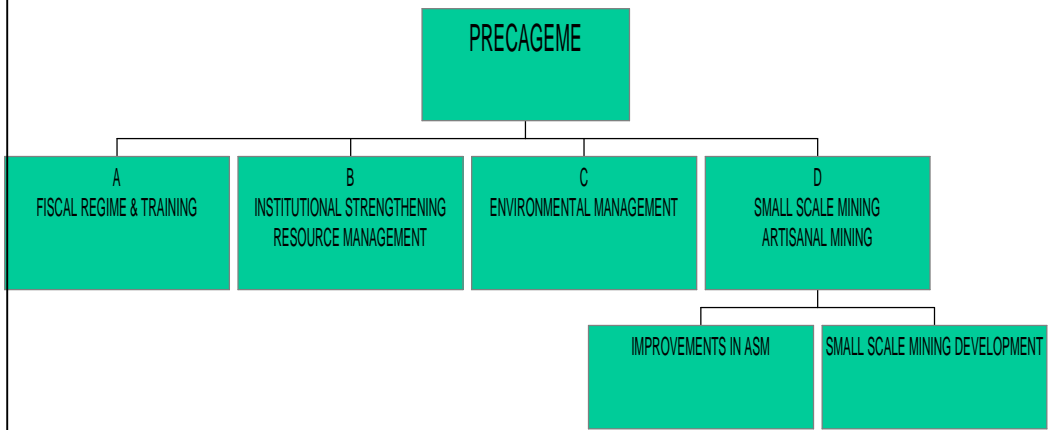
11

OBJECTIVES OF PRECAGEME

- CREATE AN ATTRACTIVE ENVIRONMENT FOR PRIVATE INVESTMENTS AND GUARANTEE A REAL AND SUSTAINABLE DEVELOPMENT
- REINFORCE PUBLIC AND PRIVATE CAPACITY TO MANAGE EFFICIENTLY REGULATIONS AND BUILD NATIONAL CAPACITY FOR ENVIRONMENTAL MANAGEMENT
- IDENTIFY AND ADOPT SUITABLE MECHANISMS TO HELP THE DEVELOPMENT OF ASM, IMPROVE MINERS SOCIO-ECONOMIC, HYGIENE CONDITIONS AND ENVIRONMENTAL MANAGEMENT

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COMPONENTS OF PRECAGEME



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CAPACITY BUILDING

- FOR WHOM?
 - Government
 - ASM Operators
 - Communities
 - Investors
 - NGOs
 - Consultants
- IN WHAT? - technical, financial, environmental, health, safety & hygiene,
- BY WHOM? - all above
- HOW? - various (including field visits, education & sensitization, demonstration, etc.)

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ASM IMPROVEMENT COMPONENTS

- STRENGTHENING OF INSTITUTIONS TASKED WITH PROMOTING SSM
- SOCIO-ECONOMIC, GEOLOGICAL AND ENVIRONMENTAL EVALUATION OF ASM/SSM SITES
- SURVEY AND EVALUATION OF FINANCING MECHANISMS AND CAPACITY TO ASSESS MINING PROJECTS
- ORGANISATION OF A SENSITISATION AND EDUCATION CAMPAIGN IN ENVIRONMENT, HEALTH AND SAFETY
- STUDY AND PILOT TRIALS OF LOCALLY FABRICATED EQUIPMENT

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ASM PROJECT OBJECTIVES

- STRENGTHEN INSTITUTIONS TASKED WITH PROMOTING ASM
- IMPROVE THE ORGANISATION OF ASM OPERATIONS
- PROMOTE THE USE OF APPROPRIATE EQUIPMENT IN THE SECTOR ASSURING ADEQUATE TRAINING TO ASM OPERATORS
- PUSH FOR THE SEARCH OF SOLUTIONS TO THE FINANCING OF ACTIVITIES IN THE ASM SECTOR

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ASM Improvements

STUDIES AT SITES & INSTITUTIONS				
INSTITUTIONAL CAPACITY	SOCIO-ECONOMICS, GEOLOGY, ENVIRONMENT, HEALTH, SAFETY	FINANCING MECHANISM	EDUCATION & SENSITISATION	PILOT TRIALS LOCALLY FABRICATED EQUIPMENT
assess capacity - pub/private assess manpower needs for ASM	geological evaluation improved geology for ASM	collect, analyse and assess data constraints to funding	Content and mode of sensitisations Design package and agent training	Inventory of equipment used materials used to fabricate
prepare assistance package for small scale mining	mining and extraction systems review and assessment	Identify actions required from study to ease funding	Conduct sensitisations Health - Safety & hygiene	Select appropriate equipment Assess use and complexity
propose org. structure to assist SSM/ASM develop	collect, analyse and assess data legal issues	devise training needed for doc prep to secure funding	Conduct sensitisations Environment	Cost equipment fabrication Conduct cost-benefit analysis
organise training for institutions -pub/private to deliver ASM help	health, safety, hygiene, environment	devise training for : mine econ., risk-benefit, cash flow	Conduct sensitisations Socio-economics & finance	Identify local fabricators, promoters
strengthen mines inspection ability to monitor training & inspect	classify test sites - suitability for further tests/improve.	design Tech. Assist to establish microfinance inst. & sensitisation	Conduct sensitisations Linkage of disciplines	design training and support Local fabricators, users

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Institutional Study and strengthening of all public and private structures tasked with the management and promotion of ASM

- Detailed and critical examination of the policy on ASM and the mandates of all institutions dealing with Artisanal and small-scale mining.
- Conduct of a workshop to communicate the findings of this study highlighting the inconsistencies in policy, duplication of effort and resources.
- A proposal of new institutional arrangements has been presented to stakeholders during December 2002 calling for a decentralized approach based on successful experiences from Ghana.
- Inspection guidelines developed for training and field application
- Study tours to Ghana were conducted to study experiences of the Minerals Commission, PMMC and ministry of Mines. Visits to private mining operators and industries that use minerals.

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Geological, mining, processing, socio-economic and environmental and health and safety studies of selected ASM sites:

- Study of selected ASM sites in Burkina Faso covering geology, technology use (mining and processing), environmental awareness and management, health, worker safety and hygiene. Studies also examined in detail the socio-economic conditions at ASM sites.
- There appears to be a gap between the institutions tasked with promoting the conduct of ASM and ASM operators (ASM operators lead and governments tend to chase).
- The study is proposing strategies of creating a more positive working relationship where government policy and action will not only be seen as reactive but rather proactive and helpful.

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Survey of financing mechanisms for ASM and their promotion

- A detailed survey of the available local and external sources of finance for ASM was conducted and a multi-stakeholder workshop held to report the findings and sensitise various actors.
- The availability of financial resources influences the extent of ASM activities, their performance and productivity.
- The issue of local pricing of gold (relative to the World market price) should be examined with a view to propose a fair mechanism that will benefit all parties and minimise fraudulent dealings.
- Several financial institutions are interested in assisting the sector and are in contact with the Ministry and the Consultant on how to proceed. Most require a guarantee.
- The CDE has funded 8 projects following representations from the workshop

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Sensitisation and Education campaigns on geology, mining processing health, safety and environment at selected ASM sites in Burkina Faso

- Pertinent messages were derived from studies for the use in sensitisation and education campaigns:
 - Theatrical presentation in local languages and in French - covering worker safety and hygiene, environment, and organisation.
 - Screening films on worker safety and HIV/AIDS; and
 - Use of local TV programs (a TV documentary is also finalised).
 - Demonstrations of mining, processing and recovery
- The aim of these sensitisations is to create better living conditions for ASM operators and open avenues for communities to seek and solve problems locally.
- Initial feedback from these activities indicate that some improvements have been achieved as a result of the exercises.

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ASM equipment survey and promotion of local equipment fabrication and testing

- Successful promotion of locally fabricated crushers, hammer mills and small trommel mineral processing equipment(pro prospector II) - these are currently being used in Ghana and in Burkina Faso.
- Site visits and demonstrations of appropriate mining and processing.
- On site training of trainers in panning, sluicing and operation of installed equipment
- Safe mining and processing principles are being applied - use of retired underground practical miners from Ghana to help operators develop mine access and plans. Safety training is also included in these exercises.

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EQUIPMENT PERFORMANCE ACHIEVED

DESCRIPTION	OLD SETUP	IMPROVED EQUIP.
NO OF DAYS	1	1
TONNAGE TREATED	0.5	3.5
AVERAGE TREATMENT COST IN US\$/T	175	55
BREAK-EVEN GRADE (USE \$340/OZ)	16	5
GOLD RECOVERY	35%- 45%	70% - 75%

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Other dimensions of improvement

- Alternative Livelihood issues & links
 - mining -agriculture;
 - mining-other income generating activities and
 - mining-agro-industry
- Installation of hygiene facilities at mining sites
- Provision of potable water via borehole development at mine sites
- Children management at ASM sites:
 - At Alga in Burkina Faso provision of a secure BABY/CHILD sitting facility with guardians that monitor children away from dust and other mining activities.
 - Women's groups and all site associations and community groups are managing this exercise. The cooperative is contributing about 60,000 fCFA (\$100) monthly to this exercise.

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ELEMENTS OF IMPROVING CAPACITY

Areas of Concern

- Institutional capacity
- Improved geology
- Environmental management
- Health, safety & hygiene

- Mining techniques
- Processing technology
- Equipment fabrication
- Living conditions
- Work organization
- Permits for ASM

Outcomes recorded/noted

- Proposal to implement
- Seen as essential to success
- Improved awareness
- Awareness increased and good practices noted
- Better tools awareness created
- Improved recovery recorded
- Local capacity being realised
- Noteworthy improvements
- Cooperation enhanced
- Numbers increasing as reported

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MULTIDISCIPLINARY TEAM APPROACH

- GEOMAN has a multidisciplinary team of personnel who have worked on this project. These have been from mining engineering and mineral processing, geology, sociology, environment, community health, communication, micro-finance, legal and the agriculture fields.
- Use of the local knowledge of ASM artisans and their communities is a significant input into the solution of local problems.
- Small and incremental improvements in the ways artisans conduct their work yield solutions that are appreciated and last long - this involves listening to the ASM operators and their community. The process is slow and requires a good deal of patience.

Project Overview:

History and Origins:

THE Sanimuso Rural Gold Producers Co-operative of Kouroussa and its low-budget gold Production and Purchasing Programme dates back to 1996 during the geological and airborne reconnaissance survey conducted jointly within the gold belt of Kouroussa Prefecture by **Mr. Jack ROGOYSKI**, a South African Contract Geologist (then the resident geologist for the Kouroussa-République de Guinée – West Africa – gold exploration operations of an Australian Mining Company) and **Mr. Seth BARNES**, the then Ghanaian Kouroussa-resident Manager for the Australian Principals/Parent Financing-Investment Company.

According to Mr. Rogoyski, a big industrial gold mining company could largely supplement or double its gold production by financing and motivating the local population who work rich artisanal gold fields on village lands to produce gold and sell the metal won artisanally to the Funding Company.

This idea, workable and glaring to the objective mind, triggered and laid the foundations for the present-day **SANIMUSO NGO RURAL GOLD PRODUCERS' CO-OPERATIVE** programme which has become successful, and received the support and membership of almost all the artisanal gold-mining villages in the 12 Districts constituting the Prefecture of Kouroussa. Kouroussa is one of the Administrative Districts of Upper Guinea Region (Haute Guinée) of the Republic of Guinea-Conakry.

Today Sanimuso covers over forty (40) gold-mining villages and can securely boast of a membership of over 5000 artisanal gold miners, a membership that increases daily and will swell to great numbers when exemplary financing for inputs such as motor-pumps, jigs, Medicaid, social amenities such as schools, hospitals and markets, potable drinking water, environmental and soil restoration programmes are initiated jointly by a partnership of funders and the co-operative.

The Co-operative was founded by five persons : four (4) women and one man – all veterans of traditional gold workings. Today they constitute the bastion of Sanimuso and have been instrumental in rallying the local artisanal gold workers to the Sanimuso co-operative spirit.

The Co-operative has received requests from rich gold mining villages within the same geographical and geological region but falling outside the Prefecture of Kouroussa: **SIGUIRI, MANDIANA, FARANAH, DINGUIRAYE**, for adhesion to the Co-operative.

THE KOUROUSSA SMALL-SCALE ARTISANAL GOLD MINING INDUSTRY BEFORE THE ADVENT OF SANIMUSO

The industry as existed could best be described as under exploited: It was characterised by the following features:

- Lack of motivation to mine and produce gold due to under-pricing by traditional gold buyers called *the* “DJATI”(men with weighing scales);
- An unstable price policy geared towards reaping windfall profits by traditional gold buyers to the detriment of the rural village population especially the female miners who represent not less than 70% of the artisanal gold mining population;
- An industry lacking simple and modern mining equipment such as motor-pumps, jigs, spades, wheelbarrows....etc...
- A mining environment in the Sanimuso area of concern that does not favour the poor rural miner. While political power has been decentralised, it is clear that the Central Government authority, fearing an erosion of its authority, keeps its hold on the aspects of governance that would empower the rural populations to control, exploit and benefit from their own environment. Constant harassment from government and municipal tax collectors on the poor rural mining population who prefer to abandon the mines and switch to seasonal agriculture or animal husbandry instead of mining their rich gold-bearing lands to supplement household incomes;
- Anarchic and haphazard mining in small groups instead of an organised umbrella mining organisation that will be able to mutual interact and motive towards increased production through collective interest and objectives;
- Lack of a viable credit system to help the small-scale miner to be able to satisfy his daily needs (food, medical aid, shelter) so as to be strong and healthy enough - mentally and physically – to be motivated to mine and increase production;
- Rich abandoned mines due to inter/intra-family petty squabbles on the use of revenue originating from gold production and commercialisation schedules;
- Mines and miners spread and separated in space and in time : lack of transport and fast reliable means of communication and information thus preventing these miners to co-ordinate and pool efforts and resources;
- Lack of an intellectual coordination and leadership structure (such as SANIMUSO) to lead and organise the randomly spread rural mining population into a strong and effective mining community or unit with shared advantages, production quotas, and shared interests;
- Low fluctuating prices for a gram of gold. The traditional gold buyers before the advent of Sanimuso cheated on these poor illiterate rural gold miners by practising an unfavourable price policy: 8 000GNF today, 6 000GNF tomorrow - an attitude discouraging to the small-scale mining industry. In addition the weighing scales and weights are manipulated in a way affecting the income of the gold miners. The absence of knowledge about the London Metal Exchange gold fixing –am or pm – allowed the DJATI’s a free-reign on price fixing;

- *“The Men with the Weighing Scales”- the “DJATI’s”* constitute a Consortium of Gold Buyers having a free reign and hold on the gold market : fixing the price of gold in advance far below *humane* limits.

THE SANIMUSO NGO STRUCTURE:

The “SANIMUSO” NGO (literally meaning the Golden Ladies – *SANI* for gold and *MUSO* ladies) is a legally constituted and incorporated Non-Governmental Organisation with its headquarters in Komonida, a suburb of Kouroussa in the Republic of Guinea, West Africa.

To the knowing geologist, Kouroussa sits on the “Greenstone Belt” of the Filon Bleu gold reefs that originate as far back as present-day Ghana zigzagging its way through Burkina Faso, La Cote D’Ivoire, Republic of Mali-Bamako, some parts of Guinea Bissau. In the Republic of Guinea our region of interest, this reef is mined industrially by Ashanti Goldfields in the Siguiri Region, SMD in the Dinguiraye region, and the Guinea-Moroccan Mining Company in the Kiniero region of Kouroussa.

All industrial gold mining companies in the Region have always used as indicators for geological research gold reefs and gold stock that were mined in the days of the Ancient Empires and Kingdoms and are mined today by the local population. The key to the survival and greatness of all ancient West African Kingdoms (Mali, Ghana, Songhai, Mandingoes, etc. is the fact that their commercial and political capitals, and their war-making machines were financed by gold worked and commercialised in the area actually covered by SANIMUSO. Then, as now, the local rural population who are in the majority the descendants of these forbears work the gold on the same village lands mined by their ancestors and using key indicators, experience and know-how handed over to them through the ages.

The SANIMUSO Rural Gold Miners’ Co-operative is a body dedicated to modernised small-scale artisanal mining on private community/village-owned lands in Kouroussa in the Republic of Guinea.

The aims and objectives of the NGO are the following:

- Improved and modernised artisanal (small-scale)gold-mining;
- Collaboration and liaison with other small-scale gold miners and mining villages in the Prefecture;
- Protect and stabilise the income of the small-scale gold miner within the local micro-economy, within the framework of the National economy;
- Protect the environment and the ecosystems of the mining villages which form an integral part of the World Environmental Heritage in strict application of the Environmental and Mining Laws of the Republic of Guinea, in line with international recommendations, norms and regulations governing environmental protection;

- Contribute, in a satisfactory manner, to the socio-economic development of the micro-economy of the Prefecture of Kouroussa;
- To train, instruct, through workshops, seminars and conferences, scholarships, audio-visual aids,..etc..., the small-scale artisanal miner for the purposes of uplifting his socio-professional mentality, knowledge in internationally accepted contemporary developmental trends;
- Collaborate with International Organisations such as the World Bank, UNDP, ADB/ADF all sections of the World Mining Industry, private and public entities for the purposes of draining large and quality investment into the Prefecture of Kouroussa that would benefit the rural mining and non-mining population;
- Offer viable business and commercial opportunities to small-scale miners such the creation of a micro-finance institution (MINERS' BANK);
- Offer the mining communities the means to consolidate and reinforce their capacities in civic education and self-management methods that would offer them the tools for revenue generation programmes, employment diversification, employment creation;
- Overall give the mining and non-mining rural population, irrespective of gender the academic, technical, financial, and legal tools enabling them to break away from the cocoon of poverty;
- Raise the NGO to National and International Levels.....
- Liase and consult with the local and prefectural authorities, the traditional Chiefs and Elders, as well as good-will development-oriented partners for the creation of a "FORUM OF MINING INVESTORS" in the Prefecture of Kouroussa which will constitute a platform for the Economic Development of the Prefecture of Kouroussa, etc...

THE VILLAGE SANIMUSO :

The core SANIMUSO artisanal small-scale mining group was formed on the 14th January 2000 by an initial 84 small scale-miners – the majority of whom were women. The legal incorporation of the Co-operative was issued by the Guinean authorities on the 24th of January, 2001 under Registration Number: Décision N°: 017/P/KSSA/2001 authorising the SANIMUSO NGO to operate in line with declared objectives.

Today the number of gold producing members and non-member clients go beyond 1000 small-scale miners for the municipality of Kouroussa alone!!. The Kouroussa Municipality members of the Co-operative work the several mines –well over 20 - that form part of the village and royal lands of the Municipality.

The Kouroussa Municipality from which is administered Governmental authority forms the nucleus group of the Sanimusos NGO Programme. From the outreach campaign

launched by members of the Co-operative with the aid of financing and technical assistance from:

- Limited financial contribution by the co-operative members;
- Funding from the Late Madame Ahlem Bouzain
- Technical Assistance and Coordination by the Project Coordinator
- Technical Assistance from Hydro technical-Engineer Madam Mama Adama SYLLA

the SANIMUSO Project has seen its group membership increase from one village alone to over 40 villages and hamlets. Each mining village group or sub-group adhering to the SANIMUSO programme is self-managed by its members. We have at the moment over 5000 registered members mining on over 60 small-scale mines with a minimum of 50 pits per mine. Some mines have pits producing between 3grams and 75grams of gold per day. Nuggets and large-grained gold dust are common.

It is important to note that the SANIMUSO programme avoids classical industrial mining and evaluation methods. This is because experience teaches us that traditional ways of doing things by most rural populations are sometimes cost- and time-effective than conventional analytical methods would want us believe.

It is also true that industrial mining cannot outdo and undo what populations have been practising and living on for centuries. In the Kouroussa Prefecture, gold production is measured in grams per well and not gms/ton as is used in industrial mining calculations. It is however easy to convert to industrial measuring methods whenever this is necessary.

Suffice to say that much of the gold that the 12th Century *King Kankou Moussa* sent to Mecca in Saudi Arabia came from the Boure Region which forms part of modern day Kouroussa where SANIMUSO NGO owns and controls artisanal gold production.

The Village Group Production Structure

The Organisational Structure of a standard SANIMUSO village mining group is structured as follows:

- An Honorary President, normally in the person of an aged, respected lady or gentleman but usually in the Person of the Royal Chief “**SOTIKHEMO**” or “**DHUTI**” – **the Regent**;
- A President (in the majority of cases a woman since women form the core group and often, the founding members of the village mining group. Within the social context of Kouroussa society, women represent about 70% of the small-scale mining industry. Women constitute the group that actually washes and wins the

gold in calabashes as is seen in the SANIMUSO logo. In addition the African woman is a major-breadwinner of the average African family or household. The income of small-scale female miners goes to supplement that of their husbands who either work in the pits/galleries of the mines. Gallery work is the reserve of the men or husbands while the breaking-up of the gold ore, washing and recovery is the preserve of the women.

- The Vice-President ;
- The Treasurer;
- Mines Operations' Manager (in charge of research, mining) and mostly appointed by the Chiefs and Elders;
- The weighing Manager;
- Public Relations Manager/Secretary to the Group

This structure is supervised and counselled by the Chiefs and Elders of the community.

It should be mentioned that in developing this structure, the cooperative took into consideration the many cultural and social background of the Kouroussa Mandingo rural populations. Much consultations were had at all levels of civil society to create a workable and viable-productive structure.

The Project Coordinator and the members of the cooperative consulted the Chiefs and Elders, listened to the old and young, took part in burial, prayer, christening ceremonies, consulted with the political parties and Leaders of all political shades and leanings, the security services, the judicial services, other private and government-sponsored project co-ordinators in the region, youth organisations and groups(*Sérés*)

The Project coordinator listened most times, paying keen attention to detail, respect for hierarchy. These factors underlie the success of the SANIMUSO Programme which basically was installed to produce gold using traditional structures and the heritage of rural populations without drastically imposing new methods or advocating for drastic change.

Advantages inherent in the SANIMUSO programme are numerous :

- The Sanimuso cooperative structure allows gold to be drained from all sources and branches of the cooperative. The co-operative with the benefit of funding for all its phases of production is estimated to produce initially 112kgs of 22carat gold per month (+3000oz). This production target will be achieved without the usual payroll, bulldozers, geological research budget, experts, heli-borne surveys, high communications costs, industrial mining logistics, imported water, food, vehicles, etc...that remains the norm for industrial mining concerns;

- Certain mines could be adapted to use mechanised jigs to increase the percentage of gold recovery. We have estimated that the Calabash recovery system is able to detect and recover between 30-40% of the gold with 60% going to the tailings. Sanimuso has in mind a *tailings collection programme* where most abandoned tailings would be collected into a heap for recovery using cost-effective mechanised jigs;
- The Cartel of *the “DJATI’s” or the “MASTERS”* in the absence of a constant and sure source for gold supplies have offered to work with the cooperative. The co-operative is studying ways of employing them to man the future Gold Stock Exchange which represents an advanced stage of the Cooperative’s activities;
- The Cooperative through its co-ordinating bureau is able to research for able and willing partners or funders for gold purchases, the supply of equipment and other logistics;
- Sanimuso offers to its members a hope for permanent employment and Social Security in times of old-age or incapacity thus assuring them of a livelihood even in old age;
- Inclusion in all gold purchasing or supply contracts a 10-20% share over the net profit to be given to the cooperative by the buyer. This amount would be given to the Village/Town Development Committees to finance Community Development Programmes such as potable well water, construction of social amenities, health and AIDS/HIV campaigns, reforestation and environmental protection programmes, schools...etc..
- The Structure of the Cooperative allows funders, partners, collaborators to safely enter into long term gold supply contracts with the cooperative at fair prices for all parties;
- A most important factor inherent in the SANIMUSO NGO gold producing and purchasing programme is low overheads and high revenue generation. To be able to understand the dynamics of this assertion one would have to make a comparative analysis with an industrial gold production unit. The SANIMUSO programme does away with industrial mining concession acquisition methods since the gold is produced on private community lands far out of Government control or jurisdiction. In the case of an industrial mining entity the mining company would first have to apply for a mining concession with all the red tape involved. The application for the mining concession, field visits, test boring, geological surveys and core sampling, reconnaissance visits, office renting in the capital for coordination, vehicles, bulldozers, importation of logistics and equipment, employees (temporary and permanent) licenses, authorisations, expert and legal advice will cost a minimum investment budget of about \$US1.5mio while an equivalent amount will constitute a permanent revolving fund for the financing of production and the purchase of gold and reinforcing, above all, SANIMUSO.

The gains of SANIMUSO programme are numerous :

- Creation and consolidation of the first independent, operational, active rural miners' cooperative dedicated to the mutual exploitation of its own resources and environment for the general well being of the rural population;
- Coverage of the whole Prefecture through branches and sub-branches of Sanimuso village Committees;
- Over 5000 (five thousand) registered members of whom 70% are women;
- The establishment of the Cooperative's coordination bureau which acts as the interface between Funders and the Co-operative;
- The establishment of a Savings Union "Tontine" within the cooperative allowing for savings in gold or cash by its members;
- Contribution to National Revenue Collection : The payment of tax and other fees to the Local and Regional Governments by the Co-operative on behalf of all the small-scale miners of the co-operative;
- The undertaking given by the Co-operative to the Environment Ministry to restore all mines and to carry out reforestation and soil protection programmes;
- Contribution to the National Economy or the Guinea Export Programme: all gold purchased by a Funder from the co-operative automatically injects cash into the Guinea Central Bank coffers through export tax on the FOB value the bullion;
- The Co-operative has been able to motivate its membership of small-scale rural miners to increase gold and sell exclusively to the Co-operative without the usual high overheads as experienced by large industrial mining outfits;
- The Co-operative has put in place a small credit scheme for the small-scale miners. This credit scheme is a first among the rural mining population and has motivated people to engage seriously in small-scale mining activities. The credit scheme should allow miners to purchase working tools and other logistics needed for this hard work. **All credit is reimbursed in gold.**
- Sanimuso has been able to study the cross-culture interaction of the mining groups and designed a programme for each mining group adhering to the mining programme for example : "dry" mines with rich gold reefs but which cannot be mined except during the rainy season would be opened through hydro-engineering methods designed to pump excess water from adjacent "wet" mines;
- The Legal Incorporation of the Cooperative as a Rural Development Non-Governmental Organisation;

- Unanimous agreement amongst the six paramount chiefs of Kouroussa in an oath given to SANIMUSO to reserve all gold-rich lands for the exclusive mining activities of their subjects as represented by SANIMUSO cooperative;
- Inculcating the cooperative spirit and breeding an awareness into the mining population in particular and the Kouroussa civil society in general on the riches of the land and its environment.. Adhering to the Sanimuso Programme gives a sense of belongingness to rural population. The members feel obliged to work and produce for the mutual benefit of all members of the cooperative.
- The Programme has received the backing and blessing of the political, municipal and traditional authorities of the Prefecture who see the SANIMUSO programme as one dedicated to the alleviation of poverty among the rural population in line with Government policy and recommendations of key development agencies as the World Bank Group, UNDP. To this end the Prefet who is the Chief Executive and Representative of the Government, the Paramount Chiefs and Elders, the divisional chiefs, the Imams, the Mayor and his staff, the Mines-Geology-Environment Services, Department for Rural Development, the Internal Revenue Services, the Judicial and Security Services, to mention but a few have all recommended the general public and mining villages to the SANIMUSO Co-operative Programme.
- The Co-operative has eliminated for good the **‘Cartel of the men with the weighing scales’** (The DJATI) by putting in place a negotiated gold fixing. This weekly fixing negotiated by the cooperative and all contractual Partners/funders is known as the **SANIMUSO fixing**. All gold transactions in and around Kouroussa are pegged to this fixing which is acknowledged by all to be fair and just.
- Members of the Cooperative are able to mine and sub-contract other revenue generation activities to others or family members. An example would suffice here: in 2002 a group of Sanimuso Co-operative members were able to subcontract planting and farm tending of their farms to unemployed persons in the Prefecture. The revenue generated in the mines were used to pay for the upkeep of the contract farmers.
- The setting up by each village Sanimuso a **VILLAGE/TOWN DEVELOPMENT COMMITTEE (VDC/TDC)**. These committees design village or town development programmes and execute them essentially with financing from their mining activities. The Project coordinator has discovered that one of the factors motivating the rural mining population’s adhesion to the cooperative is the town development factor : certain villages want to build schools, others mosques, some market places, some scholarships for their children, some the local football club,roads, clinics reforestation programmes, agriculture

(riziculture)...the list is endless; It is hoped that supplementary funding would come from future partners. However since this backing is consequent to production the Cooperative's gold supply can be counted upon to keep flowing;

- Employment at Home: There is a large enthusiasm on the part of the youth of Kouroussa to stay and work at home on the mines thus stemming, if only temporarily, the usual exodus towards the Metropolitan areas of Guinea, or the search for a safe haven abroad;
- The Sanimuso Programme responds to criteria of International Development and Financial Communities which recommend that programmes directed towards developing countries should benefit, as much as is feasible, the base rural populations.

Corporate Structure:

SANIMUSO Co-operative is a legally constituted Rural Development Organisation;

Proposed Corporate Partnership and Funding Structure :

The incorporation of a Company or legal entity in which the Co-operative would own shares between 10-20% of stock or would participate in the profits to a certain percentage. The funding agency would have exclusivity to all gold produced by the co-operative. The Co-operative is however open to all suggestions and proposals for assistance or partnerships with able and willing partners.

CLIMATIC AND GEOLOGICAL ADVANTAGES OF THE REGION

The region of the Prefecture of Kouroussa offers climatic and geological advantages that favour gold production all the year round. The Climate does not at all influence negatively gold production. The Climate is Sudano-Sahelian and even the rainy season which is relatively short (4months) in those climes does not in any way affect artisanal gold production for those populations or groups who are permanently engaged in artisanal gold mining.

The Sahelian climate is conducive to artisanal mining since the rainfall is intermittent and permits surface gold workings, diggings, and recovery. The rainy season is a welcome relief for mining the "dry" mines . In a short feasibility study carried out gold production in August across some cooperative mines proved to be much higher than for the preceding dry season. The answer is timing – the rural mining community dig and stock the ore for washing during the rainy season.

Rains and artisanal gold production go together for without rain artisanal gold cannot be recovered. This is also an advantage as compared to industrial production. No chemicals

are used to recover gold so the soil and underground waters are not in any way polluted. Unlike industrial units that use cyanide and other methods for gold recovery, there is absolutely no environmental damage to the mines and their surroundings, neither to the health of the populations, the flora and fauna. *SANIMUSO is environment friendly.*

The Geology offers high productivity that even big industrial groups such as Anglo-American (Ashanti), fully recognise. The Prefecture of Kouroussa which is covered by the SANIMUSO programme lies astride the Greenstone Belt of the Niandian Banie chain (le filon bleu). There are cases where test borings by industrial companies have indications of between 10gms of gold per ton up to 35gms per ton. The Project Coordinator has had the opportunity of assisting in bankable feasibility studies which envisage reserves of over 400 000oz of gold. These studies were carried out on lands lying within the same gold belt operated and covered by SANIMUSO.

Mining Methods :

There are SANIMUSO groups that scoop top soil to recover gold. This is because the reef lies at the surface. Others scrape or work the mountain slopes. Certain groups work large alluvial plains or mines several square kilometres. The position of the gold-bearing reefs have been shaped by tectonic forces and faulting over the years. Each village Sanimuso group operate on their own mines but because of the extended African family system and the co-operative spirit members have access to other Sanimuso mines. In certain SANIMUSO village mining concessions it is possible to find between 200 and 500 wells (2-10meters deep) on mines with a perimeter of 20km x 9km. It is not uncommon for the population to mine and farm simultaneously on these lands.

UNDERGROUND WATER:

As if nature realises that without water gold cannot be recovered artisanally, the Prefecture of Kouroussa is a mix of gold and water. Where the water is abundant the rich gold ore is accessed with difficulty.. To be able to work the galleries and bring to the surface the gold ore, these wells and galleries will have to be emptied of their water.

The Sanimuso programme has discovered that the only way to increase production per mine is to furnish each Sanimuso group with a minimum of motor-pumps with outputs between 5hp and 11hp (diesel or petrol) capable of drawing water of between 500liters/minute and 1300liters/minute. In addition each motor pump will be furnished with 10 meters suction hose and 20 meters evacuation hose and fuel credits. **All credits in equipment or cash is reimbursed in gold.**

The specifications furnished below by the Co-operative's mining engineers are based on studies conducted in pits with maximum 10meters depth/1.5 - 2meters diameter:

- 11HP air-cooled engine
- Centrifugal pump
- Evacuation 2 ½ ” Akron valve
- Suction 2 ½ ”(65mm)
- Manual Starting
- Performance: Max 300GPM(1135lpm)@10PSI(1.0bar)
Min 140GPM(530lpm)@75PSI(5.4bar)
- Suction hose 10 meters
- Evacuation hose 20meters
- Fuel Credits

Financing Methods Proposed by the Co-operative :

1. **Group or Sub-group Financing** : The Coordinator acting as the interface between Funders and the Co-operative will put in place a financing and reimbursement programme to cover the financial and logistics needs of the group or sub-group.
2. **Direct Independent Revenue Generation**: This Programme is usually reserved for the youth and unemployed. The Chiefs and Elders grant large and rich mining concessions to a fifty-man group. The Cooperative/Funders finance the logistics inputs of the programme with reimbursement being made in gold.
3. **Tailings collection and recovery programme**: The traditional system of washing and recovering gold allows only about 30-40% of the ore. The co-operative intends to mount a tailings collection and recovery programme to recover gold from the thousands of tons of tailings abandoned on the mines.
4. **The Motor pump Credit System**: After Careful studies and consultations with the SANIMUSO village gold production groups, we have evolved a formula where the motor pumps are given as credit to the groups. The value of the motor-pumps are reimbursed by the village cooperative in gold and the Coordinating Bureau and Funding Partners have exclusive purchasing rights over the gold production at fair and humane prices.

Example : Value of a Motor-pump : 7 000 000GNF
Value of Accessories : 1 000 000GNF
Fuel Credits : 500 000GNF
Total Value : **8 500 000GNF**
Current Sanimuso Fixing for Gold :25 000GNF
Value of Credit reimbursed in Gold : 340grms/22carats as Reimbursement

The advantage here is clear. Assuming that a mine with over 100 pits produces 5gms of gold per pit per day the increased productivity allows the cost involved to be recovered by the production of only one mine in a few days. We know in practice that certain wells and their individual pits + galleries produce up to 100grams a day even without factoring in big nugget finds. Some nuggets weigh over 100grams.

SANIMUSO COORDINATION BUREAU - OPERATIONAL STRUCTURE

The structure in place is organised along the following parameters:

1. The whole of the Prefecture is divided, currently into 6 zones in line with the Paramountcy zoning of the Chiefs and Elders. Each zone is coordinated by a Sector or Zone Coordinator who is given a powerful motorbike for mobility and for security. In future the zone coordinator will be on a radio link.
2. Each village group is self-managed under the supervision and tight control of the Project Operations Coordinator. The village group opens and operates their mines without interference from the Sanimuso funders. This cushions the funders from the complexities of the day to day operations and running costs involved. Yet the coordinator oversees all aspects of the mines development.
3. The Treasurer and the Mines Manager are responsible for Cash and logistics relative to the gold production. At the end of a determined period usually a week, the gold produced by the village/group/sub-group is brought to the coordinator's office for final weighing and logging. The next phase of cash and logistics is transferred to the village group including any credits required or approved. It is impossible to embezzle the funds since the whole village is aware of the global amount plus logistics advanced to the cooperative for their operations.
4. Each village group will be supplied with a metal security safe and a bicycle or small motor-bike to be able to move from mine to mine within the same village Development Committee or zone.
5. In any gold mining operation, whether industrial or small-scale security and discretion are high on the list of priorities or precautions. Sanimuso partners in concert with the coordination bureau and certain banks will ensure safe movement and custody for all monies and bullion.
6. The Project Coordination Bureau in the suburb of Komonida on the outskirts of Kouroussa acts as the central point for exchange, information, decision-making and interaction between the different village mining groups within the same zone or between zones. It also acts as a gold stock exchange and gold intelligence gathering unit. All requests concerning new groups seeking to adhere to Sanimuso, new mines opened within certain zones, intra-group or inter-group conflicts, new finds of gold deposits or a rare find of gold nuggets...are processed here. The Coordination Bureau acts as a facilitator for

the day to day smooth running and the consolidation of the gains of Sanimuso. The office is equipped with low-cost furniture, a sitting room/conference room, a bedroom for visiting Sanimuso members who have to stay overnight. In future there will be electricity and water piping for the Coordination Bureau.

7. The Project Coordinator has cultivated excellent relations with all the social, traditional, religious, political, administrative structures and above all the civil society of the Prefecture. It is not unlikely to receive a visit from the Prefet (who is the Representative of the Executive of the Nation), or a Paramount Chief, or the Chief Imam, or groups of youth wanting Sanimuso to finance a new mine for them. All important information or intelligence falls within the hands of the Project Coordinator within hours.
8. An added advantage of receiving and processing information, and having good relationship with the civil society of Kouroussa is our ability to protect and consolidate the credibility and gains of the Project.
9. The Political and Local Government of the Prefecture have been very helpful in defending this Community Development Project. They recognise the positive socio-economic impact of the Project on the population and the long term advantages to be gleaned by the Prefecture as a whole.

PROJECTS ENVISAGED FOR THE FUTURE BY SANIMUSO

The Sanimuso Rural Gold Producers' Cooperative of Kouroussa, conscious of the immense revenue to be generated by exploiting the mines and environment of Kouroussa have decided to finance in the future several projects beneficial to the Kouroussa rural population at large.

The Cooperative hopes to finance these projects from their own sources:

- Village/Community Development Tax imposed on each Sanimuso Co-operative member;
- 10-20% participation in the net profit of gold contracts signed with future partners;
- 10-20% stock held in the future Funding or Holding Agency to which Sanimuso Cooperative would be a shareholder;
- Financial contributions and credits from key development partners such as the World Bank, the UNDP as well as other governmental and non-governmental sources;

The Projects envisaged are:

- The Sponsoring of the Kouroussa Prefecture Football Club as the Co-operative's contribution to the development of youth activities;

- Annual scholarships to be given to the best secondary student to study Mining Engineering or Associated disciplines;
- The Bokoro Sanimuso group which hosts over 30 small-scale mines rich in gold, diamonds and carbon will finance village water pumps, rebuild the central market and warehouse;
- Sanimuso Shop: The cooperative envisages opening its own co-operative shop reserved only to registered members and groups where essential commodities as sugar, rice, oil, used clothing, motor-pumps, spare-parts and accessories would be purchased cash or credit. **All credit is reimbursed in gold.**
- Environmental Protection, Reforestation and Soil Restoration Programmes: The Cooperative has signed an undertaken with the Regional Directorate of Mines and Environment to restore and reforest all mines operated by the Cooperative;
- Professional Training and Adult Education Centre: The Cooperative hopes to construct, furnish and equip a Professional Training Institute where Sanimuso cooperative members would learn to repair their own motor-pumps, and learn to read and write. The cooperative members recognise that capacity building is important to the gold industry which is intellectual/academic oriented and will train their members on the use of the internet, data processing, accounting, rudimentary administrative procedures, and general knowledge in most fields. This Institute will also be used to train the under-age school going children that work the mines and have no formal education.
- **The Creation of A Miners' Bank or a Financial Institution that will cater for the Cooperative within Kouroussa. This bank will make advances on gold to the cooperatives. All credit is reimbursed in Gold.**
- Initially a clinic in the Coordination Bureau/Professional Training Centre to offer primary health care and hygiene counselling to the miners. Most of these rural miners shun the Government hospitals because of the high cost of medical aid. This centre will also be used to proffer STD/VIH/SIDA preventive counselling.

Plan of Action for the Future:

- Extend the Sanimuso Co-operative concept beyond Kouroussa to the Prefectures of Mandiana, Sigui, Faranah, Dinguiraye who together account for about 3tonnes of gold per annum (official sources) (6tonnes conservative sources);
- Put in place a coordinating and follow-up/control structure to keep track of all artisanal mining activities within these Prefectures that constitute the **“Golden Octagon”**. It goes without saying that these 5 Prefectures are responsible for financing a large percentage of all private-sector imports into Guinea such as rice, sugar, milk, vehicles, etc....
- Seek a Permanent World Renowned Body such as the World Bank,UNDP,ADB/ADF to back Sanimuso in its Programme Implementation;

- Propose during international forums the adoption of Sanimuso as a Pilot Project adaptable to other Artisanal Mining Communities;
- Propose Training Programmes in Revenue Generation activities especially for women and the youth so as not to make rural artisanal mining communities wholly dependent of mining;
- Propose that the World Bank and its key development partners such as the UNDP seek amendments to the Mining and Investment codes of Guinea and other countries to embody relief and concessions to *well-founded* Co-operatives as on the same concessional terms as accorded to industrial mining companies and members of established chambers of mines. The latter privileged lobbies benefit from concessions such as : tax exemptions, duty-free imports, TVA concessions. In this way the subject of Poverty Alleviation would have been actively tackled:
- Propose that the World Bank and its key development partners request the Central Governments to proceed with more *rural-based* decentralisation-deregulation (political-administrative-fiscal) policies. The State seeks to maintain its monopoly over the working environment of the rural population thereby stifling capabilities and depriving them of their basic livelihoods required for sustained livelihoods. Without full unhindered control over the environment the rural population is doomed to extinction.
- Seek the establishment of a Rural Miners' Bank to fund (Sanimuso) artisanal mining community projects;
- Put in place a Sanimuso Gold Production Structure to cover the 5 Prefectures of the golden polygon whose production would yield a minimum of 500kg of gold per month.
- Seek training and information programmes for Sanimuso on very important questions such as under-age miners, HIV/AIDS and Soil Restoration and Environmental Protection Issues.
- Seek the elaboration and adoption by the International Community of a Uniform International legal framework which would define the field of action of, and protection of artisanal mining communities from Central Government excesses.
- Seek the establishment of a Regional Observatory (ECOWAS, SADCC.....)for Rural Development Artisanal Mining Communities.

Conclusions :

In most rural communities the burden of poverty, which has sharpened to acute levels since the disappearance of the Welfare State – where the state provided most subsistence and guaranteed Social Security and Pensions – are borne essentially by the vulnerable and marginalized: the youth, women, and the aged.

And yet these are populations whose environment is endowed by nature with most exploitable renewable and non-renewable natural resources: rainforests, gold and diamond mines, rivers and waters teeming with fish and other seafood, arable land, deserts which science could transform overnight into granaries, abundant rainfall.....

For Sanimuso, the dynamics of poverty which are intertwined with so many internal and external factors, are represented by: illiteracy within the rural populace, inadequate training and education, difficulty of access of rural women to the factors of production, absence of means of informed information, inaccessibility to basic primary health care because of the cost involved, child mortality, post natal mortality of women, inaccessibility to potable drinking water, absence of revenue generation activities...

But Sanimuso recognises that much of the indicators of poverty as enumerated are man-made: Poverty arises when the rural community have no control over their environment (*habitat – in the strictest sense of the word*),or have no means –financial or technological to exploit their environment- when laws or traditions prevent them from accessing their environment, when Central Governments offer their environment (lands, mines, rivers) to the highest bidder.... In the absence of a livelihood physical capabilities and intellectual efforts come to nought.

It is the studied and learned conviction of Sanimuso that the only sure way of creating sustainable development as a means to enhancing the livelihoods of all rural impoverished communities is the full control and judicious management of their environment.

The Rural Populations acting through NGO's and similar Co-operatives and Associations in their quest for better living standards will need the concerted efforts and support of the International Community, Governments and Local Government Authorities, Private Business Community, and key development partners such as the World Bank, UNDP, ADB/ADF.... to safe-manage the resources of the environment. After all we all are joint custodians of our common heritage : the Environment.

Please address all official correspondence and enquiries to :

The Project Co-ordinator at any of the following e-mails :

© SANIMUSO RURAL GOLD PRODUCERS' CO-OPERATIVE OF
KOUROUSSA – UPPER GUINEA- GUINEA-CONAKRY – WEST AFRICA

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The Global Mercury Project



Marcello M. Veiga
Ludovic Bernaudat
Global Mercury Project
Coordination Unit
Vienna, Austria

Employment in ASM (*ILO, 1999*)

- **Worldwide: 13 million artisanal miners in 55 countries**
- **Gold is the main substance extracted: about 6 million miners extracting between 300 and 500 tonnes Au/year**

<u>Continent</u>	<u>Number of Miners (million)</u>
Asia/Pacific	6.7 - 7.2
Africa	3.0 - 3.7
Latin America	1.4 - 1.6
Developed countries	0.4 - 0.7
<u>Total</u>	<u>11.5 - 13.2</u>

Source: International Labour Organization (1999)

Gold ASM

- **ILO numbers are currently underestimated**
- **Number of miners have increased in Asia and Africa and reduced a bit in Latin America**
- **ASM in Africa and South-eastern Asia is out of control**
- **In China: 3 to 15 million miners ...depending on how ASM is defined (*Gunson & Veiga, 2002*)**
- **Best guess: 20 to 30 Million ASM (50% involved in gold)**
- **Approximately 30% of the world's artisanal miners are women**
- **Thousands of abandoned mine sites are "Hg time bombs"**

Why Mercury is a Problem?

- **Gold price increasing = More people involved**
- **Mercury use is increasing in Gold ASM**
- **Hg is easy to be used & cheap: 1g Au buys 1kg of Hg**
- **UNEP (2002): as much as 800 tonnes/a Hg being released by ASM (almost 50% of the anthropogenic Hg global emission)**
- **Neurological problems found in miners, surrounding communities (inhalation of vapors) and fish-eating people (methylmercury ingestion)**

Why Mercury is a Problem?

- **Mercury (CH₃Hg) in fish is not visible**
- **Not everybody sees the environmental and health effects of mercury**
- **There are so many other diseases generated by poverty that Hg poisoning is overlooked**
- **Just an “elite” is “knowledgeable” about Hg**
- **Lots of people are “happy” with mercury pollution...a COVENIENT VILLAIN**

Mercury a Convenient Villain

“Water is extremely contaminated with mercury.”
(a mineral water supplier)

“Fish are so heavily polluted with mercury that they swim at the bottom of the river.” (a butcher)

“You environmentalist should go to the school...this mercury we use is inoffensive.”
(an ASM leader in Brazil, when he was drinking a glass of metallic Hg in front of the TV cameras)

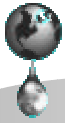


Global Mercury Project

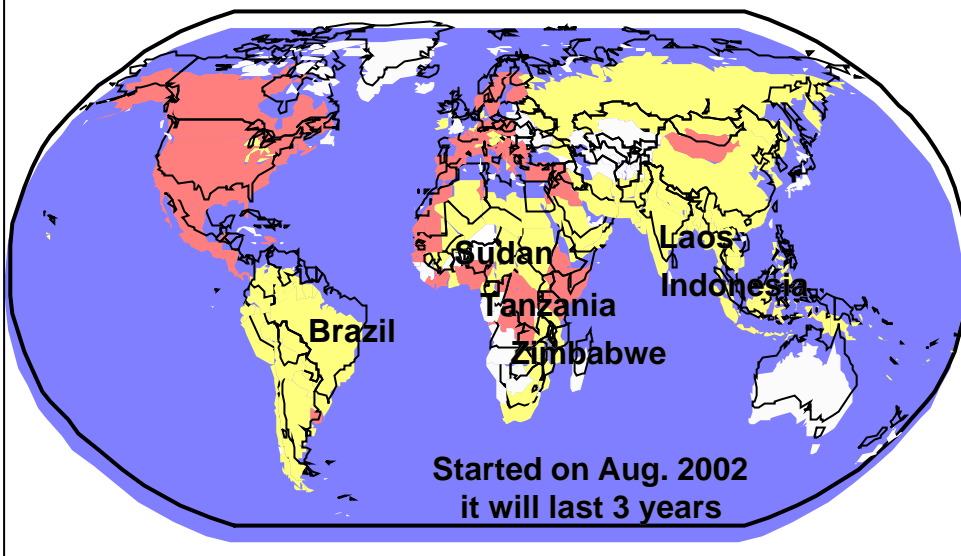


we are here

- ✓ environmental and health assessment;
- ✓ build capacity in local laboratories to assess impact of mercury pollution;
- ✓ reduce mercury pollution caused by artisanal miners on international waters;
- ✓ introduce cleaner technologies for gold extraction and train miners (demonstration sites);
- ✓ develop capacity and regulatory mechanisms within Government that will enable the sector to minimize mercury pollution.



Global Mercury Project



Brazil

- In the 80s and 90s:
1 million gold ASM
- Currently: 200,000 gold miners
- 20 tonnes Au/a
- 20 to 30 tonnes/a Hg released



2000 Artisanal Gold Mining Sites in the Brazilian Amazon

Project site in the Tapajós region where 1000 tonnes Hg were emitted since 80s



Artisanal Gold Mining Areas
186,000 km²
3.7% of the Legal Amazon
(5 million km²)



Tapajós region:
2.9 million ha
(29,000 km²)

Brazil

- **Project sites:**
- **São Chico : 2 tonnes Au produced, 5 tonnes Hg released since end 90s.**
- **Creporizinho: 3 tonnes Au produced, 10-15 tonnes Hg released**
- **Cyanidation of Hg-contaminated tailings**

Brazil (São Chico)



- **Cyanidation: heap leaching**
- **Spread CN and Hg to the rivers**

Indonesia

- Amalgamation of the whole ore followed by cyanidation
- High risk of methylation
- Mercury emitted: 100 times the amount of gold produced
- About 110,000 – 350,000 miners (seasonal)
- >100 tonnes Hg emitted annually



Indonesia



Indonesia

Homemade retorts help reduce Hg exposure



Laos (Lao PDR)

- **Project site: 3000 people in alluvial mining in Mekong River: 10 to 40 g Au/a/person**
- **Agricultural communities: Au is a 2nd source of income**
- **Annual income: US\$ 317 to 533**
- **Mining is mainly conducted by women and children**
- **$Au_{produced} \cdot Hg_{lost} = 2$**



Sudan

- **120,000 miners**
- **~10 tonnes Hg (1987–2002) dumped into the Nile River**
- **25% women and children**



Tanzania

- **300,000 to 600,000 ASM**
- **25% are women**
- **Project site: Lake Victoria: 100,000 miners**
- **3-4 tonnes Hg/a released**

Zimbabwe

- **350,000 ASM**
- **majority are panners**
- **10-20 tonnes Hg/a**
- **Milling centers: good solution?**
- **In Kadoma region: 70 milling centers employing 2000 people**

Zimbabwe

- **Milling centers: miners take the ore to be processed by mill owners**



Zimbabwe

- **Milling centers: 30% Au extracted with amalgamation and 70% with cyanidation...good deal for the millers**



Zimbabwe

More homemade retorts distributed



Where This Mercury is Coming from?

In 2000: Hg produced by recycling:

- **USA = 280 t**
- **Europe = 480 t (it cost US\$ 14-20/kg to dispose Hg in Europe)**
- **Rest of the world = 150 t**

Total recycled = 910 t

Total produced by Hg mines = 1849 t

TOTAL sold in the world = 2759 t

Maxson, 2003, report to the EU

Conclusion

- **Main pathway of Hg to humans in the study areas is likely by inhalation**
- **Lots of miners are still unaware of Hg harmful effects**
- **True information should reach the affected people**
- **Cyanidation of Hg-contaminated tailings: DANGEROUS (it increases Hg solubility)**
- **Projects should focus on training (miners and Govts.)**
- **Projects should be integrated with other actions to reduce poverty: rural development strategy**

Think Globally but Act Locally

Communities & Small Scale Mining

*Annual General Meeting and
Learning Event*

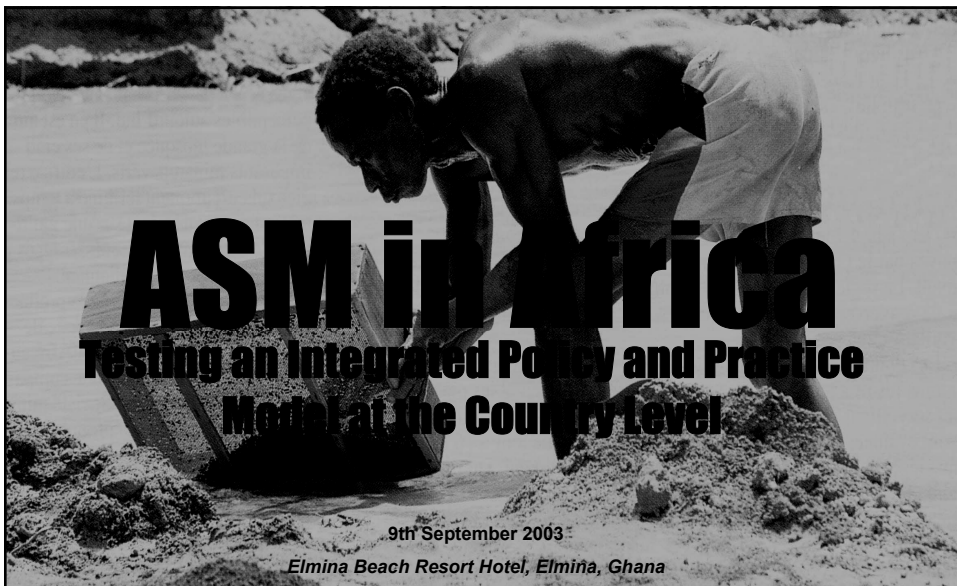
CASM

7th - 10th September 2003

Elmina Beach Resort Hotel, Elmina, Ghana



**Wardell Armstrong
Consulting Group**



ASM in Africa

**Testing an Integrated Policy and Practice
Model at the Country Level**

9th September 2003

Elmina Beach Resort Hotel, Elmina, Ghana



Kevin P C J D'Souza MEng ARSM CEng FIMMM MIEpE MIQ
Principal Consulting Mining Engineer & African Regional Manager
Wardell Armstrong Consulting Group, UK

CASM

CASM



Galamsey mining diamonds in Ghana

Agenda



ASM in Africa

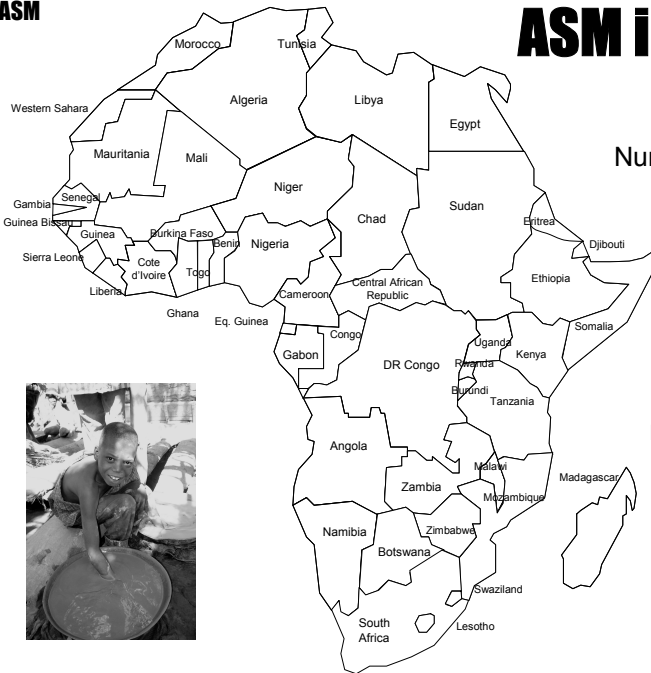
Testing an Integrated Policy and Practice Model at the Country Level

- ASM in Africa
- Poverty
- Economic Impact
- The Way Forward
- Issues & Challenges
- Future Objectives
- Policy Framework
- The DFID Projects

DFID Department for International Development

CASM

ASM in Africa



Numbers of ASM workers

- >100,000
- 50 -100,000
- 10 - 50,000
- <10,000

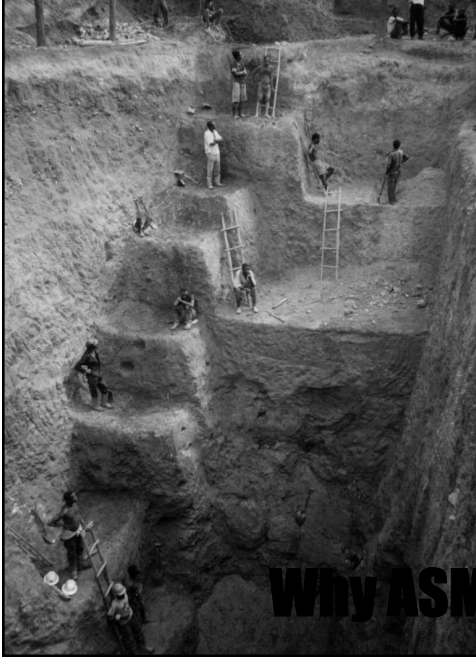
Total: 3.2 - 4.0 million

Predicted to triple by 2012



GASM

Emerald mining in Zambia



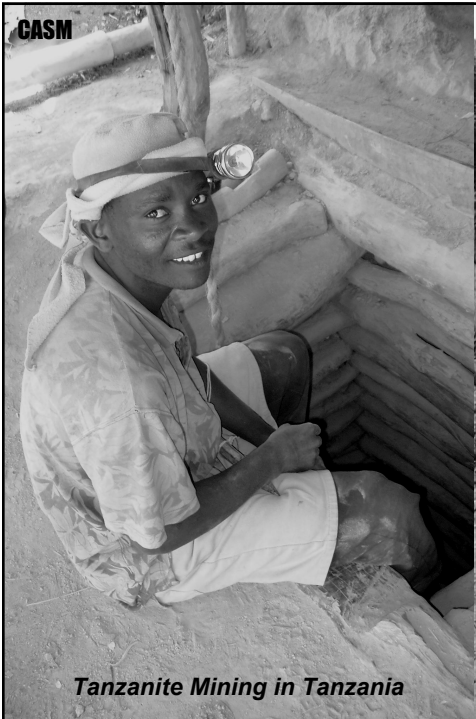
Quartzite mining in Zambia



Why ASM in Africa ... ?

GASM

Gold mining in République Centrafricaine



Tanzanite Mining in Tanzania

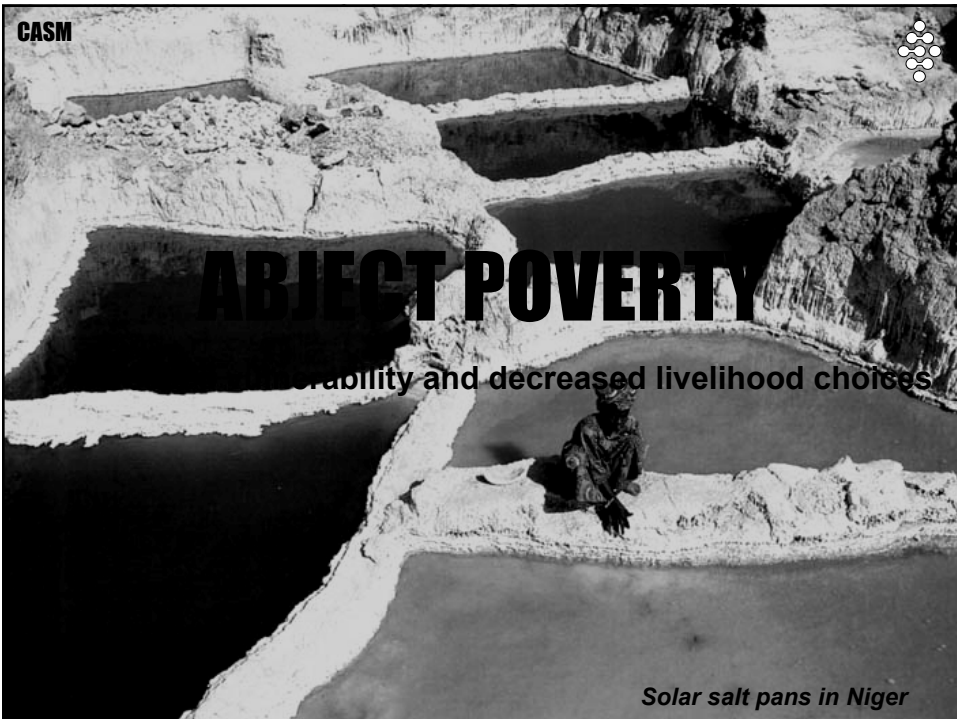


CASM

Traditional lime burning in Zambia



CASM

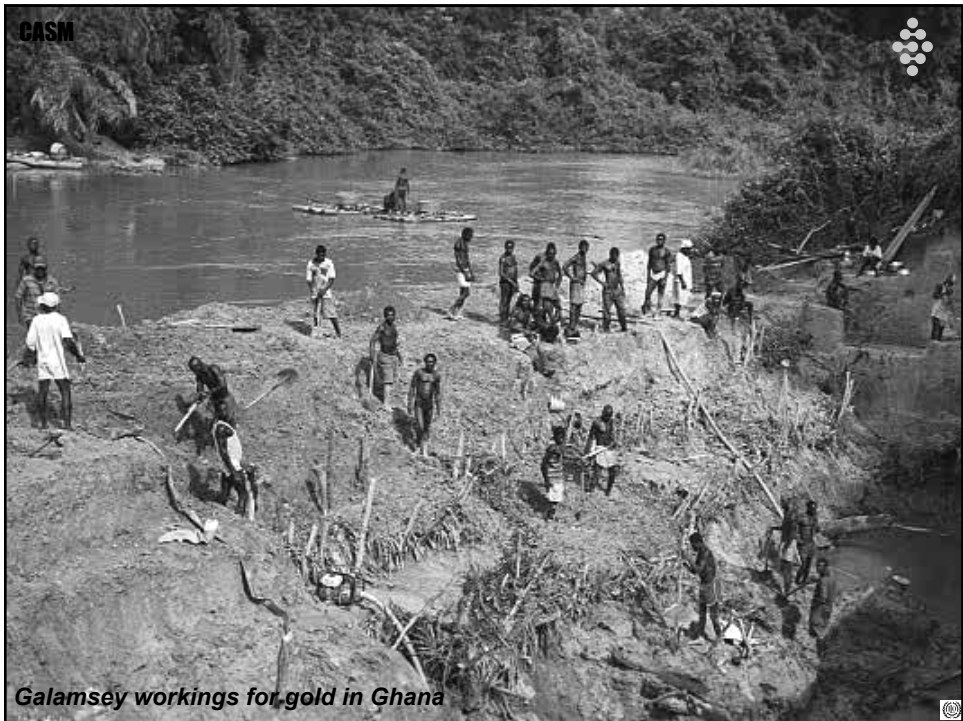


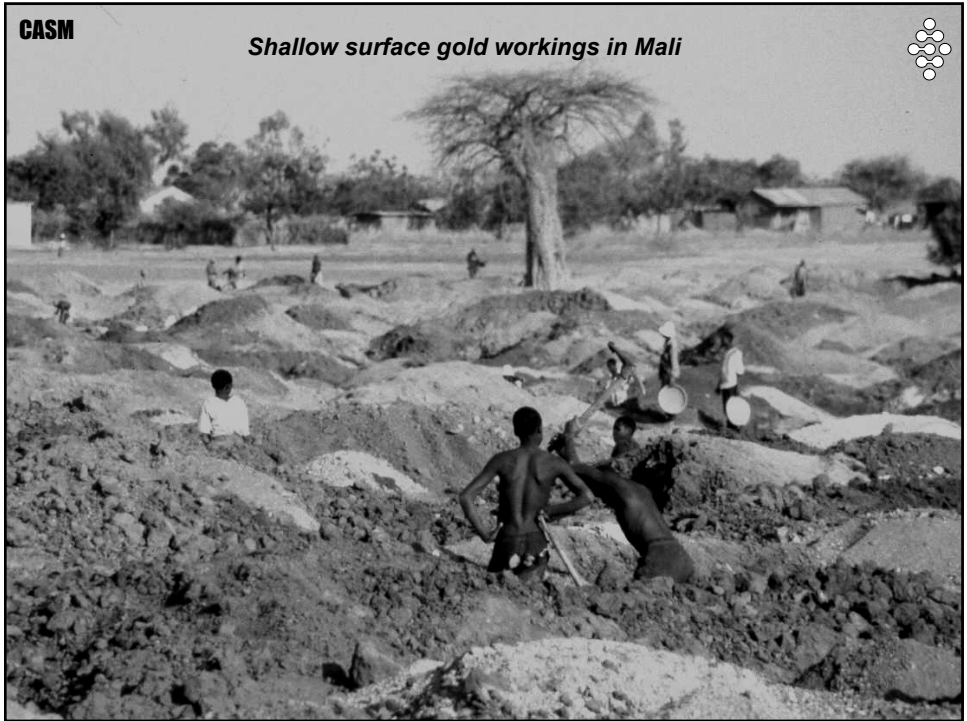
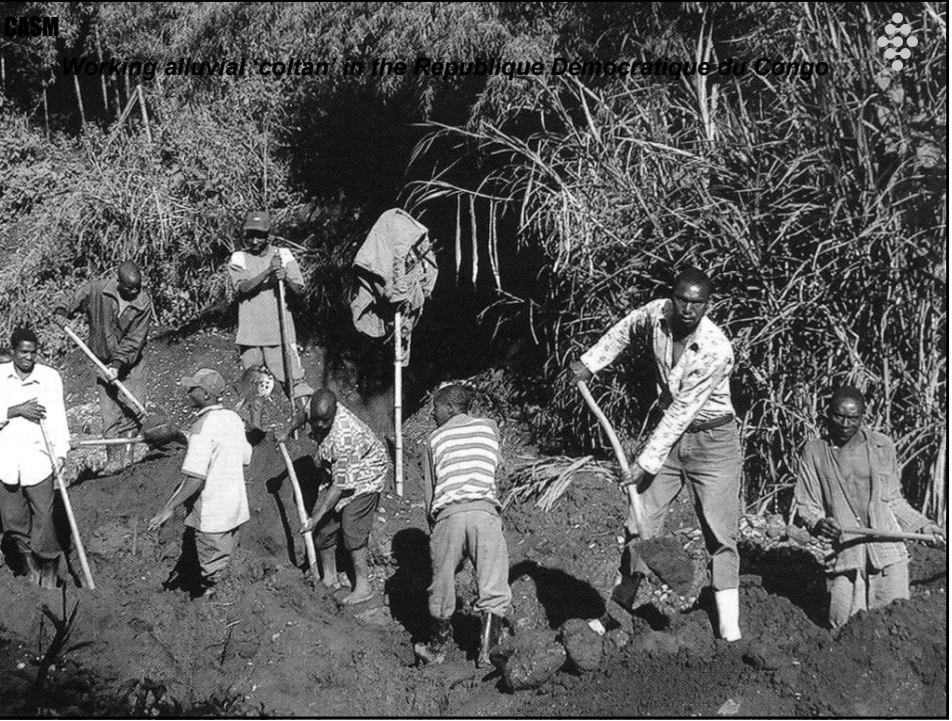
ABJECT POVERTY

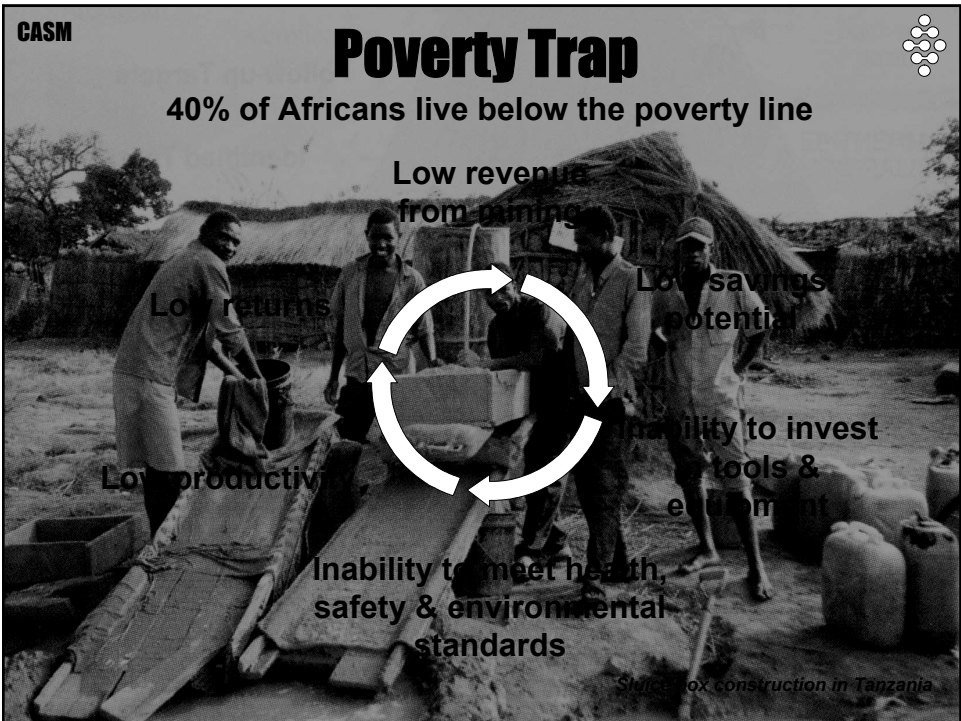
Instability and decreased livelihood choices

Solar salt pans in Niger











Government's View

Many African Governments are unsure of their long-term objectives for their domestic ASM sectors

Short-term economic benefits gained from foreign LSMs vs the realisation of having a formalised, locally owned ASM sector

Some governments consider the sector illegal and prohibit it - others simply neglect the sector

Some governments are convinced or even encouraged by LSMs in assisting and formalising their ASM sectors

Gold mining in Cameroon

CASM

Which Way Forward..?

stark choices for the African ASM sector

- Try to stop ASM and thus eliminate the associated problems
- Manage the sector and attempt to undertake the occasional socio assistance projects
- Undertake a radical reform of the sector by tackling all of the relevant issues

Gemstone Mining in Madagascar

CASM

Legislation

- The informal ASM sector is larger than the formal ASM sector in many countries > 70% are illegal in some countries
- Legislation is a key element to formalising the sector into a sustainable sector
- Poverty reduction objectives need to be incorporated into a formalised sector. Unannounced National Mineral Development Policies
- ASM issues need to be included in national *Reduction Strategy Papers*, *PRSPs*, etc. and donor grants/funds

Tantalite mining in Nigeria

Legislation

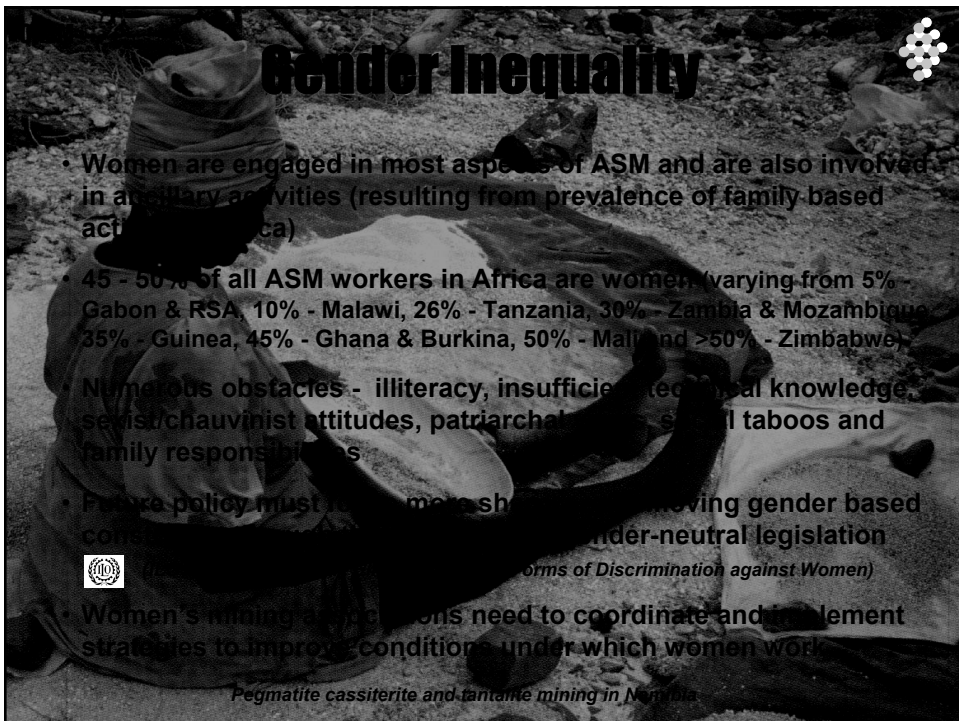


ITDG

Gemstone mining in Zimbabwe

- Provide for the right to exploit a particular deposit by ASM
- Establish an independent licensing registry office (transparent, non-discretionary & non-discriminatory)
- Adopt the 'first come-first served' principle
- Provide full and transferable mining title and security of tenure to enhance liquidity
- Codify the necessary elements for a modern mining cadastre
- Curb the illegal trade in precious minerals
- Encourage the formation of ASM association and co-operatives
- Generate stable employment opportunities in rural areas (in accordance with MDGs)
- Mitigate severe environmental & health & safety effects of uncontrolled ASM
- Encourage the entry of nationals into ASM and eliminate alien worker
- Protect the rights of indigenous peoples

Gender Inequality



- Women are engaged in most aspects of ASM and are also involved in ancillary activities (resulting from prevalence of family based activities in Africa)
- 45 - 50 % of all ASM workers in Africa are women (varying from 5% - Gabon & RSA, 10% - Malawi, 26% - Tanzania, 30% - Zambia & Mozambique, 35% - Guinea, 45% - Ghana & Burkina, 50% - Mali and >50% - Zimbabwe)
- Numerous obstacles - illiteracy, insufficient technical knowledge, sexist/chauvinist attitudes, patriarchal norms, social taboos and family responsibilities
- Future policy must take into account the following gender based considerations:
 - Gender-neutral legislation
 - Gender-neutral forms of Discrimination against Women)
- Women's mining associations need to coordinate and implement strategies to improve conditions under which women work




Pegmatite cassiterite and tantalite mining in Namibia

Child Labour

Child labour is a major problem in ASM and is rooted in poverty. Children work to support families - no alternatives - they need the money to survive and stay together

Child labour is perpetuated due to:

- A lack of opportunities for children to go to school
- No prospects of regular employment
- No coordinated effort to reduce child labour
- A lack of laws or regulations
- A lack of appropriate government services

Increasing awareness, strengthening legislation, enforcement and monitoring  (*International Convention on the Rights of the Child*)

Reducing poverty and increasing income generating opportunities, support services and training, and providing accessible educational opportunities

Child working in a mine

Health & Safety

ASM has a poor reputation and record for occupational health & safety - appalling working conditions

- The health & safety risks and hazards to which ASM workers are exposed to are significantly greater than for Large-scale Mining
- Exposure to mercury, lead and other chemicals
- Effects of noise and vibration
- Effects of poor ventilation
- Effects of over-exertion, inadequate work-rest and inappropriate equipment
- Need to raise awareness of the risks and demonstrate less dangerous alternatives that are appropriate to local circumstances through practical training

Child working in Ethiopia



Community Health

Infant Mortality highest & Life expectancy lowest in the world

- Diarrhoea (Giardiasis & Amoebic Dysentery)
- Hepatitis
- Meningococcal Meningitis
- Bilharzia (Schistosomiasis)
- Cholera
- Typhoid
- Tetanus
- Typhus
- Malaria
- Dengue Fever, Flariasis, Lishmaniasis & Sleeping Sickness
- Yellow Fever
- Tuberculosis
- Malnutrition
- Substance abuse
- STDs



UNAIDS - In Sub-Saharan Africa **29.4 million** infected with HIV/AIDS, **3.5 million** new infections in 2002 (**2.4 million** died since 1992) and the prevalence is highest in southern Africa **+30%**

AIDS awareness sign in a rural area



Environmental Problems

Lack of awareness, information and obvious incentives will contribute to activities that perpetuate environmental degradation

Numerous environmental impacts of ASM including:
 • Pollution - Due to dumping of tailings & effluents
 • Unplanned construction - Dams - River damage
 • Drainage - Land degradation & soil erosion
 • Destruction

Communities often lack the capacity to control their activities

Develop appropriate and enforceable legislation
 International programmes for environmental protection
 combined with suitable practical training

Soil erosion and soil erosion in Mozambique

Large Scale Mining

Small Scale Mining and Large Scale Mining often have different interests and occasionally conflict

- Diplomacy works better than physical security measures
- Numerous companies have started to form partnerships between the ASM sector and large scale mining. Tanzania (TANSCAN & Anglo American Corporation), Mali (EMOS), Zambia (Zimasco & Zimco), DRC (Congo Mining / Anglo American) & Colombia (Cerro Field)
- There should be increased encouragement to ensure ASM associations/co-operatives formed cooperative partnerships with the large scale Mining sector for mutual benefit
- Government should encourage the development of these partnerships as a more inclusive

Large scale mining at the Bouleba gold mine in Mali

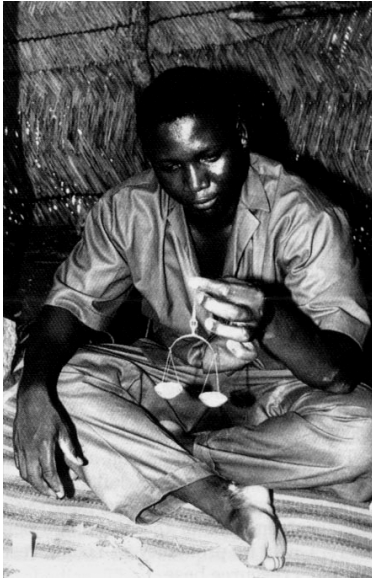
Fair Mining

The anonymity and illegality of the informal sector poses a risk to the miners who will be exposed to international markets

- ASM miners usually sell their products as quickly as they can to ensure a quick cash flow and usually get low prices
- Those who do not sell directly to miners, traders, intermediaries, and manufacturers tend to get higher prices
- There are a number of ways in which the retail prices for mining communities could be increased including:
 - Establish official buying centres where miners receive a fair price
 - A system of licensed buyers who visit mining areas
 - The use of large mining companies who would act as assured buyers (tributor arrangement)
 - Links with the existing 'fair and commodity trade' movement
 - Adding value to mineral commodities by establishing appropriate processing industries

Diamond mining Liberia

Finance & Credit



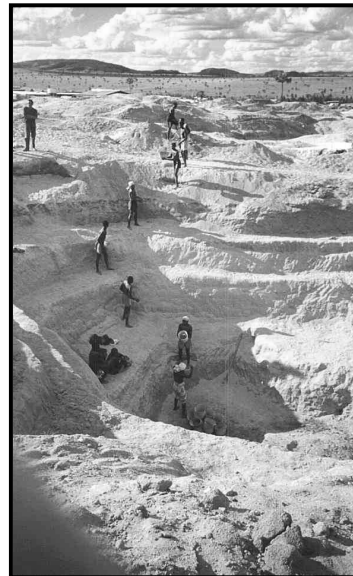
Gold buyer in Burkina Faso

- Few miners are able to gain the necessary capital to increase levels of productivity
- ASM miners lack acceptable forms of collateral - which can be as much as 20% of the requested equity
- Loan guarantees & credit schemes, funds & grants, hire/leasing equipment, selling shares & establishing joint ventures
- Future schemes need to be easy (low cost) to administer and monitor and take into account the special needs of the ASM sector (e.g. interest rates)
- Problems with exchange rate fluctuations and local currency devaluation also need to be considered
- Select the right partners to ensure a high probability of debt servicing for future redistribution - sustainability

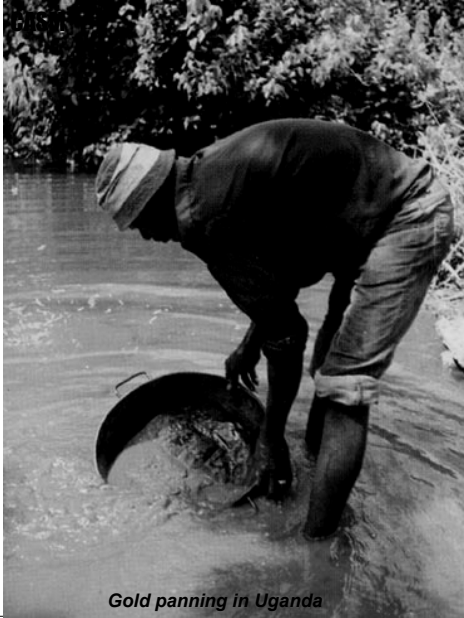
Integrated Policy Framework



- Delineate and define the mineral potential suitable for ASM exploitation
- Establish and resource a Government institution or unit to handle and/or manage the ASM sector
- Formulate an enabling, appropriate and transparent legislative framework and licensing scheme
- Encourage the formation of ASM associations or co-operatives
- Provide outreach services - regional self sustaining technical assistance and training schemes (appropriate technology)
- Provide a viable and sustainable financing scheme for the ASM sector
- Provide a fair and effective marketing system for ASM products
- Define relevant and consistent health & safety standards and practices
- Establish appropriate and realistic environmental protection practices and principles



Surface gold workings in Sénégal



Gold panning in Uganda

The Projects

DFID Department for International Development



UK Government Projects:

- Livelihoods Study
- Policy Framework
- Vulnerability (commodity prices)

Duration: March 2003 - 2006/07

Target Countries: Ghana, Tanzania & Zambia

Partners: Government, NGOs, Mining Companies, ASM associations, Universities, etc

Consultancy Team:

- *Wardell Armstrong*
- *University of Swansea (Centre for Development Studies)*
- *British Geological Survey*
- *University of Dundee (CEPMLP)*
- *Local Consultants*



CASM

Livelihoods Study



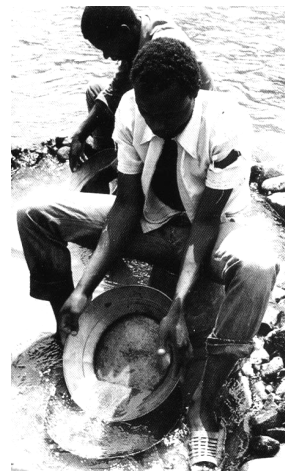
To understand the challenges faced by the ASM communities and then help to devise policy initiatives to increase the security and well being of these people

Questions

- What is the importance/significance of the ASM sector in the wider economy?
- What have been the underlying factors and trends affecting livelihoods in the ASM Sector?
- What are the institutional and regulatory frameworks, relationships and processes governing the ASM sector?
- What are the differential assets, capabilities and livelihood activities of ASM miners? (Impact on individuals/households/communities)
- What are the differential capacities to exercise voice and claim rights and entitlements in the ASM sector?
- What are the potential medium and long-term impacts on livelihood security related to ASM?
- What interventions would increase the security (economic, political, social) of ASM miners?

Expected Outcomes

- Lessons and guidance to improving the livelihoods of ASM Miners and the potential of the sector
- Suggested policies and strategies to reduce the vulnerability of ASM Miners
- Methods for the incorporation and integration of livelihoods information in short, medium and long term government policy processes



Alluvial panning in Burundi

Policy Project



Develop an effective and practical model policy framework into a fully implemented and tested scheme of assistance to the ASM sector



Gold processing in Tanzania

Scope of Work

- Complete a baseline survey to establish the socio-economic, environmental and health & safety standards in the ASM sector
- Evaluate current mining legislation and institutional structures and how they affect the operation of the ASM sector
- Consult with the host government and other stakeholders on the services required and the provision of funds, facilities, and manpower to establish the Regional Training Centres and the Technical Services Unit. Agree a region that will operate a pilot scheme
- Review and identify techniques and processes that will improve the technical, economic and environmental performance of the ASM sector through the use of appropriate technology
- Facilitate the use of workshops and other means to ensure the inclusion of all stakeholders in discussions on the development of a sustainable ASM sector
- Facilitate the provision of suitable credit and marketing facilities for the ASM sector

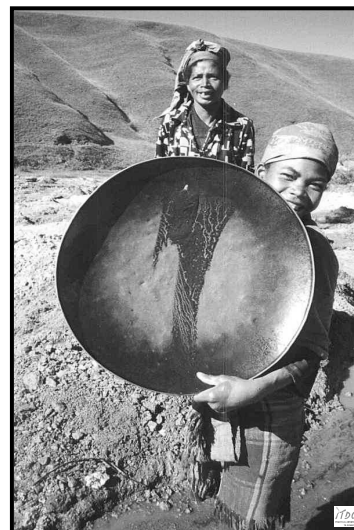
Expected Outcomes

- Complete a baseline survey of all ASM activities
- Carry out a full review of the ASM sector with proposals for changes to institutional structures and legislation
- Create a Technical Services Unit in support of the ASM sector
- Create Regional Training Centres
- Demonstrate appropriate improved technology, environmental protection and mining techniques
- Develop marketing and credit facilities for AS miners

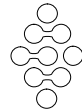
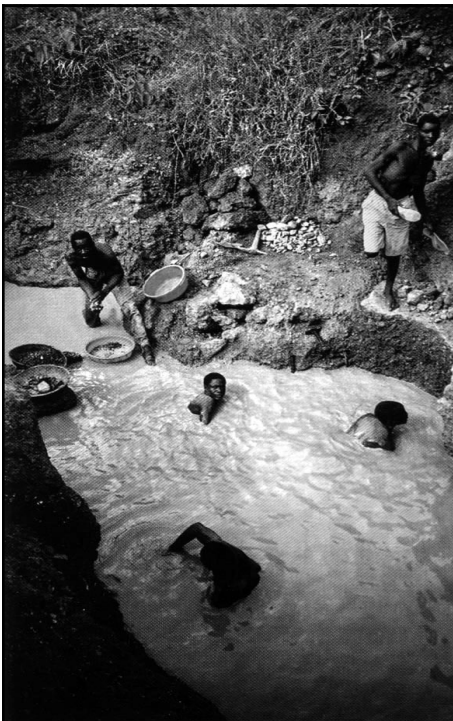
Summary



- Encourage a contribution to poverty alleviation and MDGs by inclusion of ASM into national PRSP's
- Encourage local economic development by ensuring that revenues are invested in ways that bring sustained benefits and lead to alternative and more sustainable livelihoods
- Adopt a gender-sensitive approach that gives particular emphasis to the role of women
- Reduce child labour in mining areas through the provision of viable alternatives
- Avoid or mitigate negative environmental and social impacts as well as impacts on human health
- Encourage equitable markets for mining products
- Increase the ability of individual enterprises and ASM in general to make a better contribution to sustainable development
- Develop the collective capacity of miners to contribute to sustainable development and an upscaling of mining activity (best practice)
- Ensure good relationships between miners and other stakeholders



Gold panning in Madagascar



Wardell Armstrong

*Sustainable Natural Resource
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Communities and Small-scale Mining (CASM)
Annual General Meeting and Learning Event
September 7-10, 2003

The Yaounde Conference: Conclusions and Actions to date

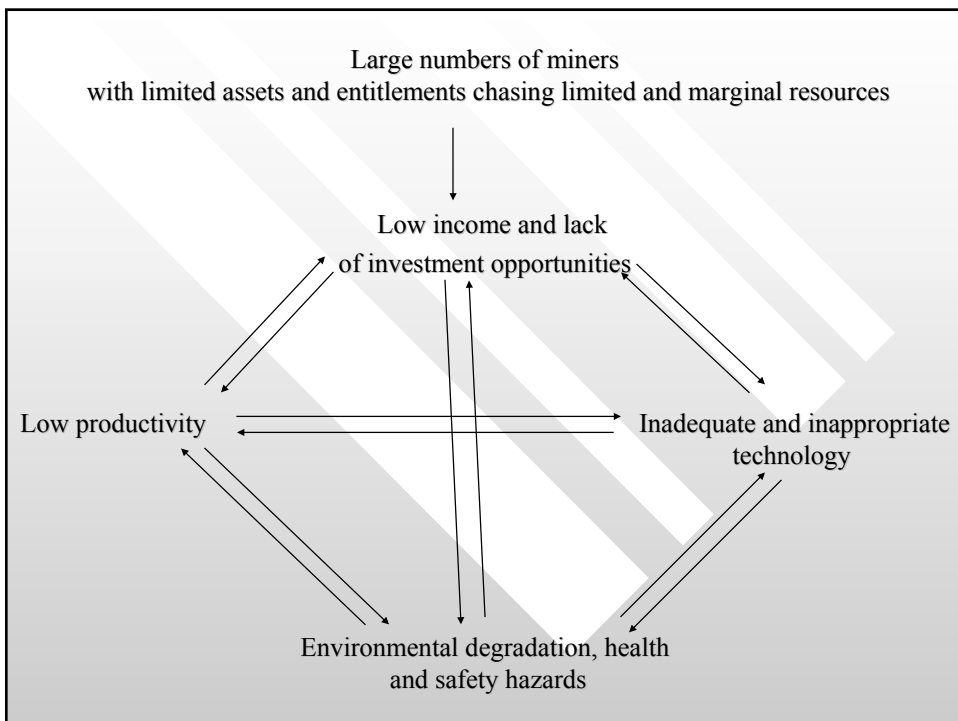
A Progress Report

What has Yaounde decided? 18-22 November 2002

- A Vision: **“Contribute to reduce poverty and improve livelihoods in a sustainable manner in African Artisanal and Small-scale Mining (ASM) communities by the year 2015 in line with the Millennium Development Goals”.**
- To link ASM with poverty reduction efforts: “ASM is a finite and poverty-driven activity facing many challenges and problems, which require novel and multi-pronged approaches to redress them.”

Challenges well understood

- Dwindling rural livelihood choices in marginal and remote regions
- Increasing number of people seeking a livelihood in ASM
- Limited resources and competing needs
- HIV/AIDS/STDs exacerbate increasing poverty
- Increasing pressure on available resources
- Inadequate legal and regulatory framework and low productivity, exacerbated by the application of rudimentary and inappropriate technology: Trapped in a poverty cycle



Target group well identified

- Permanent artisanal and small-scale miners (involved in the activity year round, mining offers higher income than other activities)
- Seasonal artisanal and small-scale miners (Regular, often life-long source of income. Savings from mining can be an important source of income for other businesses)
- Poverty-driven artisanal and small-scale miners (miners trapped in a low revenue earning cycle)
- Gold-rush artisanal and small-scale miners (lured by promises which seldom are realised. Because of lack of a long-term perspective, only few succeed).

Agreement on approaches to follow

- Offer alternative livelihoods (To open more opportunities for those who exit and those remaining)
- Improve legal and regulatory framework (To formalise ASM and to ensure security of tenure)
- Boost network of support services
- Enhance capacity of miners (To empower them)
- Provide affordable and appropriate technology options (To improve productivity and reduce impacts on the environment)

Agreement on goals/strategies

- Acknowledge and reflect the ASM sectorial issues in national legislation, and codes;
- Mainstream poverty reduction strategies into mining policy inclusive of ASM policies;
- Integrate ASM policy into the Poverty Reduction Strategy Paper (PRSP) process with linkages to other rural sectors, and develop a strategic framework for PRSPs;
- Revisit existing thinking on ASM policies and legislation, and undertake necessary reforms of the ASM sector (e.g. traditional land rights, and modern land use legislation nexus); and
- Improve policies, institutions, processes and the ASM stakeholders' livelihood, develop partnerships, and promote sustainable use of natural resources, infrastructure development and land use management.

Who should do it?

- Governments
- IGOs
- NGOs
- CBOs
- Small-scale miners

Tasks for Governments

- Formalise government commitment to ASM
- Reform the ASM sector
- Revisit mining policies in order to assess how mining can contribute to poverty reduction
- Mainstream mining in PRSPs
- Accord higher profile to ASM and mobilise international support for the sector
- Strengthen the ASM sector (technology support, training, etc)

Tasks for International Stakeholders

- Identify and disseminate best/good practices (Pan-Africa/CASM)
- Present the Yaounde recommendations to the EIR meeting in Maputo (UNECA/UNDESA)
- Establish a Yaounde communication network (CASM)
- Identify and allocate more resources for ASM (CASM)
- Review existing baseline studies to assess relevance of Yaounde's vision (CASM and UNDESA)
- CASM AGM and Learning Event (CASM)
- Establish an inter-agency working group on HIV/AIDS in mining

What has been done

- Ministers endorsed the Vision in Cape Town (17 February 2003)
- Stakeholders met (25-27/2/2003) to discuss AMN (A network of networks including those on ASM)
- Yaounde Communication Network (A list serve) established
- Letter written to Dr Salim, Chairman of EIR emphasizing the need to mainstream mining in the PRSPs and that CASM should play a more active role in assisting policy makers to implement the Yaounde vision.
- Interest on ASM galvanised (E.G. Maputo made a strong call for more involvement of the WBG in ASM)

What has been done (Ctd)?

- World Bank launched a “Programme for Improvements to the Profiling of Artisanal and Small-Scale Mining Activities in Africa and the Implementation of Baseline Surveys” as part of the exercise to assess the relevance of existing baseline surveys to realizing the Yaounde vision.
- Gavin Hilson’s book on “The Socioeconomic Impacts of Artisanal and Small-scale Mining in Developing Countries” is a contribution to the body of knowledge on ASM

What has not been done?

- No systematic revision of mining policies at country level to mainstream mining into PRSPs
- No proper inclusion of mining into PRSPs (except Ghana, Mali)
- Costs and benefits of mining not properly addressed in PRSPs
- No visible change in the level of support to ASM
- HIV/AIDS and ASM inter-agency working group not established [ECA-chaired Commission on HIV/AIDS and Governance in Africa (CHGA) represent hope]
- Time-bound and results oriented actions at micro-level lacking (Project URT/03/002/a/08/01“National Dialogue on the Contribution of Mining to Poverty Reduction”, Tanzania, a contribution).

Way forward

- More efforts to integrate mining in PRSPs needed
- Where relevant, revisit completed PRSP and I-PRSP (29 African countries have completed it) to better include mining (World Bank/IMF Joint Staff Assessments should be more incisive)
- Include an HIV/AIDS and ASM working group in the CHGA Research topic on “The impact of HIV/AIDS on household level poverty”
- Integrate mining in the ECA PRSP- African Learning Group
- Prepare a comprehensive report on the implementation of the Yaounde Vision by 2011(WSSD-PoI Implementation Cycles)
- Transmit decisions of Ghana to the AMP and follow-up progress

**Communities and Small Scale Mining (CASM)
Annual General Meeting and Learning Event
September 7-10, 2003 in Elmina, Ghana**

**Workshop "Building a toolkit for
profiling artisanal mining"**

by

R. Noetstaller, B. Drechsler, M. Heemskerk
and F. Hruschka

**Workshop "Toolkit for reprofiling ASM"
Objectives of workshop**

- To generate and test ideas for improving future baseline work through discussions with stakeholders
- Leading to improved policies and programs required to achieve the Yaounde goals, i.e.
 - Sustainable reduction of poverty
 - and improvements in livelihoodsin African ASM communities by the year 2015

Workshop "Toolkit for reprofiling ASM" Structure of workshop

- Presentation of draft "kit" (instruction manual) for carrying out future baseline studies
- Discussion of principal "kit" components
- Summary of ideas and recommendations proposed by workshop participants

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"Reprofiling ASM"

Workshop "Toolkit for reprofiling ASM" Principal components of "kit"

- Checklist of critical issues and information necessary
- Benchmark indicators suitable to measure progress towards Yaounde objectives
- Methodology for baseline studies

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Checklist of critical issues and information necessary

- Checklist should allow ...
 - for a **quick check of past baseline work** in terms of its thoroughness and relevance to current understandings of what is required for transforming artisanal activity into a basis for more sustainable livelihoods and communities, and
 - **carrying out future baseline or profiling studies**, which would reflect the Yaounde objectives

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Checklist of critical issues and information necessary

- **Step 1: Initial Brainstorming Framework:**
 - **characterizing ASM** and its developmental role(s) and impact(s)
 - **macro-policies:** effects on ASM (exchange rates, fiscal and budgetary policies and regulations, land right and titling issues)
 - **flows of resources** across sectors and inter-sectoral economic linkages
 - **complementary / alternative livelihood** opportunities and multiplier effects
 - **cross-cutting themes** (HIV/AIDS, environment, health, gender, child labor, ...)

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Checklist of critical issues and information necessary

Outcomings 1: Comprehensive checklist

- vast and extensive menu for possible investigation
- unmanageable for practical profiling field-work
- emphasis on policy and macro-economic issues
- lacking items reflecting the livelihoods of the miners



- To facilitate efficient political **decision-making at the macro level**, oriented towards poverty reduction, future profiling studies requires a checklist that reflects most accurately the **situation at the micro-level**.

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Checklist of critical issues and information necessary

- Checklist has to focus on **critical issues and information necessary**

- Consensus:

Issues and information are critical and necessary if they can be influenced or need to be considered by decision-makers in order to achieve poverty reduction and livelihood improvement in the short- and mid-term



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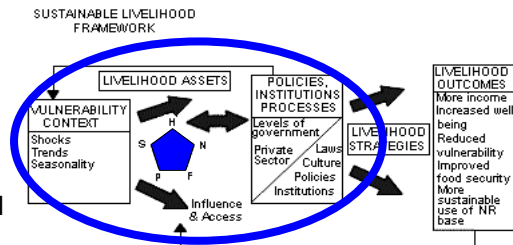
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Checklist of critical issues and information necessary

- **Step 2:** Framework for Priority-based checklist:
 - DFID's **Sustainable Livelihood Framework**, analyzing the "asset pentagon", i.e.

- Human capital
- Social capital
- Natural capital
- Physical capital
- Financial capital



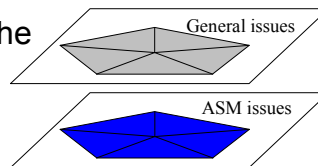
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Checklist of critical issues and information necessary

- **Information necessary on each of the assets can be structured in 2 layers**
 - **General issues:** characterizing the context of the study area
 - **Specific issues:** characterizing ASM within study area, including
 - Assets
 - Vulnerabilities
 - Structures and processes



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Checklist of critical issues and information necessary

Preliminary

Outcomings 2: Priority based checklist:

General issues checklist, characterizing the context of the study area	Specific issues checklist, characterizing Artisanal Small-Scale Mining within the study area	
Natural Capital	Available assets	
	Vulnerabilities	
	Structures	Processes
Social Capital	...	
Human Capital	...	
Financial Capital	...	
Physical Capital	...	

Workshop Task ...

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Checklist workshop

What is most critical to know?

„Setting the right priorities“

- Remember:

Issues and information are critical and necessary **if they can be influenced or need to be considered by decision-makers in order to achieve poverty reduction and livelihood improvement in the short- and mid-term**

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Checklist workshop

Natural capital

What is most critical to know?

Available assets

- Inventory of mineral resources and types of deposits exploited by ASM (including estimates of extension, tonnage and grade)
- Past, actual and projected future mineral production by ASM

Vulnerabilities

- Ownership of resources (formality/informality, ...)
- Knowledge of mineral deposits (extension, tonnage, grade)
- Conflicts of resource usage (between different segments of mining, environmental concerns, land use, ...)
- Requirements for obtaining formal access to resources (mining titles, land rights, etc.)

Structures

- Mining authorities, Geologic services, Environmental authorities
- Large and medium mining companies operating in "ASM-areas"
- NGOs

Processes

- Mining rights, Land rights, Water rights
- Provision of geological services for exploration of ASM mineral deposits
- Titling issues, legal status of ASM

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"Reprofilng ASM"

Checklist workshop

Social capital

What is most critical to know?

Available assets

- Community and family context of ASM, gender roles within and related to ASM
- Typical organizational structures of ASM
- Organizational structures integrating ASM groups within Chamber-type umbrella organizations (ASM associations)
- Public opinion about ASM

Vulnerabilities

- Inventory of existing conflicts (between rivaling ASM-groups, between miners and local communities, between ASM-miners and mining firms, etc)
- Effectiveness of miners associations in representing ASM interests at government level
- Migration issues: Positive effect: Avoiding migration (Providing employment in rural areas); Negative effects: Promoting migration towards "boom towns", disrupting local organization processes

Structures and processes

(considered assets of ASM)

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Workshop
"Reprofilng ASM"

Checklist workshop

Human capital

What is most critical to know?

Available assets

- Population involved in ASM and their idiosyncrasies
- Health conditions and nutrition standards in ASM communities
- Educational opportunities in ASM communities, availability of primary, secondary education
- Access to information: general and ASM-specific information (training materials, com.prices)

Vulnerabilities

- Specific occupational and environmental health risks of ASM
- Possible correlation between incidence of AIDS and ASM specific conditions (percentage of HIV infected people reported higher or lower than in national average?)
- Health, educational and nutritional situation for children
- Child labor: Physiological issues, Health hazards of child labor, Educational issues.

Structures

- Health care facilities in ASM communities (public, private and traditional health care) (quality, quantity, roles, accessibility)
- Educational (schools) and training facilities

Processes

- Personal capacity building and forms of leadership

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Workshop
"Reprofilng ASM"

Checklist workshop

Financial capital

What is most critical to know?

Available assets

- Employment opportunities provided by ASM and economically linked activities
- Income generation from ASM [desegregation as far as possible: at national level (relevance of ASM for foreign export balance and GDP), district -, local and individual level]
- Identification of cross-sector effects and flows of economic resources across sectors
- Estimation of tax income from formal ASM miners vs. informal tax income

Vulnerabilities

- Ownership of production facilities (equipment owner, ...)
- Access to credit and dependencies from private creditors and money lenders
- Arbitrariness of prices for products, lacking marketing information systems
- Linkages with criminal activities: Drug traffic, weapon traffic, money laundering, smuggling

Structures

- Fiscal authorities, Official credit lines for ASM.
- Mineral buyers, buyers organizations, money lenders.

Processes

- Effects, constraints and opportunities of official exchange rates or market regulations on costs, revenues and incomes of miners.
- Linkages between fiscal policies and ASM: Direct taxes, fees and royalties, Indirect taxes

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Workshop
"Reprofilng ASM"

Checklist workshop

Physical capital

What is most critical to know?

Available assets

- Technology used in ASM and degree of mechanization, including assessment of suitability in terms of productivity and mineral recovery
- Average and minimum investment required for a typical production unit to improve productivity and mineral recovery
- Typical housing of miner's families (correlation between quality vs temporary nature of ASM)
- Endowment of ASM communities with public infrastructure

Vulnerabilities

- Continuity or discontinuity of services, vulnerability due to seasonal changes (transport during rainy season, water supply during dry season...)
- Quality of services, responsibilities for maintenance
- Proximity and access to basic services (health, schools, ...)

Structures

- Authorities on national, district and local level, in charge of basic infrastructure
- Existence of investment promotion programs

Processes

- Culture of appropriation of local public infrastructure by local population
- Levels of local governance based on democratic rights and responsibilities; local autonomy of budget

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Benchmark Indicators Criteria for indicator selection

- Indicators provide information/data on the state of a system and its change over time
- Basic requirements of indicators
 - be measurable with reasonable effort
 - provide meaningful, accurate, quantitative data on the system variable measured
 - be relevant for policy and program design
 - be easy to understand and to communicate
 - be limited to avoid information "overload"

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Benchmark Indicators Measuring progress

- Change/progress is measured by comparing identical indicators of consecutive years
- **Types of indicators proposed**
 - National and regional level indicator
 - ASM community level indicators
 - Mining operation level indicators

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Benchmark Indicators What is poverty?

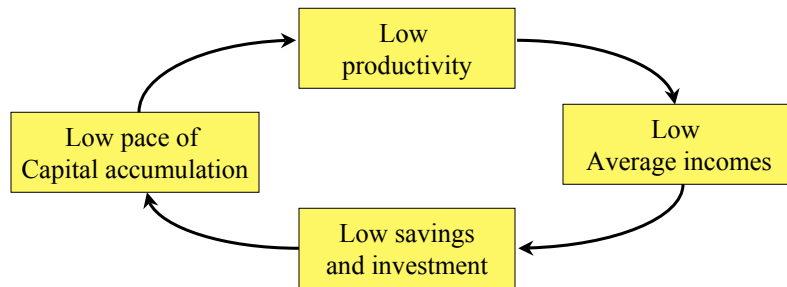
- "Inability to attain a minimal standard of living" (World Bank, 1990)
- "Pronounced deprivation in well-being" (World Bank, 2000/2001), includes:
 - Material deprivation (income, consumption)
 - Low achievements in education and health
 - Vulnerability and exposure to risk
 - Voicelessness and powerlessness

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Benchmark Indicators Poverty drivers



Source: Samuelson, P.A. and W.D. Nordhaus. Economics, 1989.

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Indicator workshop

What are the
best indicators?

National level indicators

- National indicators allow to compare the ASM sub-sector to national averages; many are collected and published by the World Bank annually
- Poverty indicators
 - Population below 1\$/day and 2\$/day [%]
 - Poverty gap at 1\$/day and 2\$/day [%]
 - Country-specific poverty line [\$/year]
 - Population below national poverty line [%]
 - Rural
 - Urban

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Indicator workshop

What are the best indicators?

National and regional level indicators

- Human capital indicators
 - Life expectancy at birth [years]
 - Under-5 mortality rate [per 1,000]
 - Prevalence of child malnutrition [% children <5]
 - Adult illiteracy rate [% of people 15 and above]
 - Children 10-14 in labor force [% of age group]
- Regional level indicators
 - Population in target area [survey year]
 - ASM population in target area
 - Share of ASM population [%]

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Indicator workshop

What are the best indicators?

ASM community level indicators

- Human capital
 - Health
 - Population per physician/nursing person
 - Access to safe water source [%]
 - Lost workdays of ASM due to illness [days/year]
 - Lost workdays of other household member due to own or child illness [days/year]
 - Under 5-mortality rate
 - Education
 - Net primary enrollment ratio [% of age group]
 - Percentage of cohort reaching grade 5 [% male and female]
 - Adult illiteracy rate [% male and female]

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Indicator workshop

What are the best indicators?

ASM community level indicators

- Social capital
 - Percentage of ASM with links to
 - Occupation-based mutual help groups
 - Community-based social assistance groups
 - Informal savings and credit groups
 - Participation in formal safety net
 - ASM having health insurance
 - ASM entitled to unemployment benefits
 - ASM entitled to retirement funds

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Indicator workshop

What are the best indicators?

ASM community level indicators

- Gender and children participation
 - Share of women in ASM
 - Average cash income of from mining women/men
 - Children below 10 in ASM labor force
 - Children 10-15 in ASM labor force

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Indicator workshop

What are the best indicators?

ASM community level indicators

- Natural capital
 - Household ownership land
 - Share of ASM households owning land [%]
 - Average size [hectares/household]
 - Household ownership of livestock
 - Share of ASM households owning livestock [%]
 - Average number by type

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Indicator workshop

What are the best indicators?

ASM community level indicators

- Physical assets
 - Home
 - Share of ASM households owning home [%]
 - Average size [m²]
 - Availability of electricity [%]
 - Availability of piped water [%]
 - Availability of toilet [% of households by type]
 - Transport vehicles
 - Share of ASM households owning motor bikes, boats or cars [%]
 - Share of households owning consumer durables
 - Radio, TV, refrigerator [%]

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Indicator workshop

What are the best indicators?

ASM community level indicators

- Financial assets

Income

- Average net income of miner from mining
- Average income from mining per household
- Estimate of household cash income from non-mining
- Total average household cash income
- Estimate of non-cash income from food production
- Number of persons per household
- Total average income per person

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Indicator workshop

What are the best indicators?

ASM community level indicators

Expenditures [US\$/month or year]

- Average household cash expenditures for food
- Average household cash expenditures for non-food
- Total average household cash expenditures
- Share of cash food budget in household income

Savings

- Share of ASM owning savings in cash assets [%]
- Share of savings as percentage of income [%]

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Indicator workshop

What are the best indicators?

Mining operation level indicators

- Human capital
 - Mine safety
 - Protective equipment [US\$ (book value)/unit]
 - Number of lethal accidents [per year per district]
 - Lost workdays due to mine accidents [days/year/capita]
 - Operational efficiency
 - Labor productivity [unit product/day worked]
 - Mineral recovery [%]

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Indicator workshop

What are the best indicators?

Mining operation level indicators

- Social capital
 - ASM associations
 - ASM with membership in ASM association [%]
- Natural assets
 - Mining rights
 - Share of ASM with mining licence [%]
 - Share of ASM with proven mineral reserves [%]
 - Environmental effects
 - Area affected by ASM [ha]
 - Annual land degradation [ha/year/1,000 ASM]
 - Annual land rehabilitation [ha/year/1,000 ASM]
 - Use of mercury in ASM [tons/year]

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Indicator workshop

What are the best indicators?

Mining operation level indicators

- Physical capital
 - Mine assets owned per production unit [US\$/unit]
 - Number of persons/production unit
 - Mining equipment
 - Processing equipment
 - Transport equipment
- Institutional performance
 - Licensing costs [US\$/licence]
 - Average duration of licensing process [weeks]
 - Number of pending licence applications [number]
 - Mine site inspections [number/year/unit]

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Methods workshop

Methodology

Survey methods used in past work

- Usually one or a combination of
 - Literature reviews, including ASM related legislation and policies
 - Field surveys and on-site observations in ASM communities
 - Stakeholder interviews, including government officials, traditional and community leaders, representatives of miners associations, artisanal miners, mineral traders

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Methods workshop

Methodology for future baseline work Limitations

Barriers to collecting *accurate* and *meaningful* data in ASM communities

- Incomes are uncertain, intermittent, variable
- Informality and illegality
- Population of miners is continuously shifting
- Lack of funding for baseline studies.
- Lack of skilled and experienced people, with experience in the area, to conduct the study.

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Methods workshop

Methodology for future baseline work Limitations

People may give false or incomplete information because:

- Fatigue of researchers and research projects that do not bring change
- Secrecy because of (semi)illegality
- Mistrust; what will happen with the information?
- People may not know the answer (e.g. annual household income)
- Questions are not relevant to daily life experiences.

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Methods workshop

Methodology for future baseline work Improving data collection

In Field work: trust and cultural sensitivity

- Work with local consultants: community leaders, miners, and students.
- Be clear and explicit about the intentions and goals of the consulting team, and about what the community can expect in return
- Endorsement from local authorities

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Methods workshop

Methodology for future baseline work Improving data collection

Secondary data: Quality of national statistics

- There is little that can be done
- Cross-check national statistical data with data and qualitative observations from local Non-Governmental Organizations and international organizations including the World Bank, the International Monetary Fund, and the United Nations.

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Methodology for future baseline work Improving data collection

Village surveys: Control groups.

- Quantitatively or qualitatively assess how ASM communities compare to nearby non-mining communities.
- Work with local consultants

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Methodology for future baseline work

General: Interdisciplinary cooperation

- Baseline studies should be conducted by interdisciplinary teams that contain members from both the social sciences (anthropology, economics) and the natural sciences (ecology, engineering).

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Methods workshop

What are the best methods?

Methodology for future baseline work

What information is most difficult to obtain?

- Household level data
- Income and expenditures
- Household or community dependency on ASM
- Data from migrant communities
- Redistribution of mining income

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What are the best methods?

Methodology for future baseline work

Household level data

- Is it necessary to obtain data at this level? For most purposes, village-level data are sufficient
- Work with and train local people to collect data.
- Count on at least 2 months to design and conduct the survey, and another month enter, clean, and analyze data. Training local data collectors may take another several weeks.

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What are the best methods?

Methodology for future baseline work

Income and expenditures

- Use relevant indicators (household or village level) for annual household income rather than US\$-value estimates of real income
- Obtain general estimates from (at least 3) key informants at the village level

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What are the best methods?

Methodology for future baseline work

Dependency on ASM

Rather than estimating the percentage of income derived from ASM, use indicators, such as:

- Cum. number of months household members spent working in mines over the past year.
- Walk around the village with a key informant, asking for each house whether or not someone in that household works in mining.

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What are the best methods?

Methodology for future baseline work

Migrant communities

- Rapid community level surveys that can be repeated every couple of months
- Registration of small-scale miners by local/national authorities

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What are the best methods?

Methodology for future baseline work

Redistribution of mining income

- Household or individual level surveys
 - Costly in money, time, and skills
 - Require relationships of trust with large number of people
- Money transfer institutions may provide an indication
- Survey of home communities

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Methods workshop

Methodology for future baseline work In reporting

Methodological clarity

- Explicitly discuss the methodology used and list sources of information
- Document problems encountered in data collection.
- Consistently use the metric system for measures and convert local currency values to US dollars values.



ARTISANAL MINING AND POVERTY

ELMINA – SEPTEMBER 2003

INTRODUCTON

- Artisanal mining (Galamsey) is a major source of alternative livelihood
- It is estimated that about 6.2 million people world-wide are employed in Artisanal Mining
 - Africa 1 million
 - Asia – 4.2 million
 - Latin America – 1 million
 - In Ghana about 80,000 are employed mainly in diamonds and gold



Types of Artisanal Mining

- Seasonal Artisanal Mining
- Permanent Artisanal Mining
- Shock-push Artisanal Mining
- “Gold Rush Artisanal Mining”



SEASONAL ARTISANAL MINING

- Movement of migrants into mining areas during off agricultural seasons
 - Alternative source of income for the rest of the year
 - As source of capital for investment in agriculture
 - At times as source of capital for other non-agricultural ventures



PERMANENT ARTISANAL MINING

- Artisanal miners who live in established mining areas usually with large scale commercial mining towns
- Migrants who have permanently settled
 - Realized that incomes from mining far exceed those in agriculture
- People who have no other choice but to be miners and live with its harsh conditions



SHOCK-PUSH ARTISANAL MINING

- Shocks such as droughts in one geographical area forcing people out in search of greener pastures
- Choice of mining over other sources of livelihood because of anticipated high pay-offs from minimal investment
- Result is use of primitive technology and highly toxic methods of extraction



“GOLD RUSH ARTISAN MINING

- Easy –to-mine sites found
- People lured by perception of high winnings and high incomes
- Lured away by this expectation from current income earning job
- Tend to have short term perspective
- Need to maximize incomes to validate perception leads to use of primitive technology and methodology
- Results is serious health hazards and environmental degradation



ARTISANAL MINING AND POVERTY

- Major source of income for increasing wealth and reduce poverty in rural areas
- Opportunity for alternative livelihood
- Incomes can be major source of other investments in agriculture and non-agricultural pursuits in rural communities
- Perceived by rural dwellers as more lucrative than most jobs
- Often false perception can lure people and crowd sector.
- Result is depressed income and wages
- Plunging people into poverty



Artisanal Mining, Environmental Degradation and Health

- Negative effect of Artisanal mining worse in its effect on social dimension of poverty
- **Low cost, Primitive technology exposes miners and others in the area to large proportion of neurotoxins**
- **For every gram of gold 2-5 grams of mercury are released into the atmosphere.**
- **The releases are inhaled directly by miners or bystanders**
- **Large amounts get into the food chain – Fish, Lifestock, and Wildlife**
- **Waters are polluted**
- **Forests are depleted**
- **Soils are eroded and**
- **Rivers are silted**



Other social vices associated with Artisanal Miners

1. Prostitution
2. HIV infections
3. Gambling
4. Other illicit practices are more prevalent in such areas



The Vicious Cycle of Poverty

- Artisanal miners income lowered by large influx
- Large numbers chasing limited resources
- Low incomes lead to use of primitive technology and environmentally less-friendly methodology
- Inappropriate technology degrades environment and provides health hazards
- Negative health leads to low productivity
- Low productivity means low income and the poverty trap begins again
- Alternative agriculture etc. also suffers due to environmental degradation



VICIOUS CYCLE (2)

- Vicious cycle exacerbated by failure of government to recognize and mainstream artisanal mining
- Miners have no ownership rights to the land
- Miners have no stakes in the land
- No incentive to manage resources in sustainable way
- Lack of legal framework and regulation and recognition leads increased social instability
- Lack of ownership rights prevents Banks and credit institution to lend credit
- Hence inability to invest in appropriate technology



Strategies for Breaking Poverty Cycle

- Direct intervention
 - Provide alternative livelihood to reduce numbers and raise income
 - Legalize artisanal mining)
 - Provide credit for technology
 - Education about appropriate methodology
 - Information on disease, sanitation and occupational safety
 - Restricting child labor
 - Encouraging and supporting initiatives for collective and cooperative actions





GHANA POVERTY REDUCTION STRATEGY - POVERTY DIAGNOSTICS AND REDUCTION STRATEGY

● *September 8 2003*



Definition of Poverty

Poverty is a multi-dimensional phenomenon. It is not merely defined by low level of income but includes the absence of medical care, poor sanitation, the absence of good drinking water, illiteracy and in fact the inability to participate effectively in decisions that affect an individual's life directly. It is indeed an unacceptable deprivation of physiological, biological and basic material needs.



I. INCIDENCE OF POVERTY

- **There are 2 levels of Poverty:**
 - **The Upper Level (The Poor)**
 - People with incomes of up to 900,000 Cedis a year, or 75,000 cedis a month or 2,500 cedis a day are considered poor
 - **The Lower Level (The extremely Poor)**
 - People with incomes of below 700,000 Cedis a year or 58,000 cedis a month or 1,900 cedis a day are considered extremely poor



NATIONAL POVERTY TREND

- **Poverty level reduced by 12 percentage points between 1991-92 and 1998-99 (i.e. an average of 2 percentage points a year reduction)**
- **Extreme poverty declined by 9 percentage points over the same period (i.e. an average of 1.5 percentage points a year reduction)**
- **About 40% of Ghanaians currently have incomes below the upper poverty Line**
- **About 27% (more than a quarter) of the population have incomes below the Extreme Poverty Line**



REGIONAL POVERTY TRENDS

- **Poverty incidence is lowest in Greater Accra (5%) and highest in the north (Northern (69%), Upper East (88%) and Upper West (84%))**
- **Many regions in the south (Central (48%), Eastern (44%), Volta (38%) also have high incidence of poverty.**
- **Other Regions Fall between the Greater Accra and the Volta Region Figures.**



RURAL/ URBAN DIFFERENCES

- **The Eastern (12%), Volta (7%) and Northern Regions had significant increases in Urban Poverty between 1992 and 1999.**
- **Upper East (28%) and Upper West (6%) had very large increases in rural poverty.**
- **Substantial falls in rural poverty took place in Brong Ahafo (35%), Volta (25%) and Ashanti (17%) Regions.**
- **Overall urban people have the larger proportion of total income (49%) but are still only a third of the population**



POVERTY TRENDS BY ECONOMIC ACTIVITY

- **Poverty is highest among Food Crop Farmers (59%)**
- **Other categories that are relatively poor include export farmers (39%) and private informal employees (25%)**



II. THE DEPTH OF POVERTY

- **The Average income among the poor is 36% below the poverty line**
- **The average income of the extremely poor is 30% below the lower poverty line.**



Household Size

	Urban	Rural
Extremely Poor	5.55	5.80
Poor	5.34	5.39
Not Poor	3.66	3.80
Ghana	3.91	4.54



***Poverty from the
perspective of lack of
access to basic
services***



Infant mortality is 57 deaths per 1000 live births

About one in nine children born in Ghana dies before their fifth birthday

About one-third of children are not fully immunised before their first birthday

Births supervised in health facilities is still fewer than 50%



Malaria, Acute Respiratory Infections (ARI), diarrhea, malnutrition and measles remain the five main killer diseases of children

26% of children under five are stunted

Maternal mortality is 214-740 per 100,000 even though the nature of the causes is preventable



About one-third of the population still has no access to potable water a constraint to the full eradication of guinea worm

Over 50% of Ghanaians have no access to safe sanitation

HIV/AIDS 200 people are infected daily!!



At the primary level, almost a quarter of school-age children are out of school Dropout rates remain high - at 20% for boys and 30% for girls at the primary level, and 15% for boys and 21% for girls at the junior secondary level

At JSS level, almost 40% of children are not enrolled, and at the SSS level, 60% are not enrolled Female participation in education decreases at each ascending level of education



The number of street children in Accra alone is estimated at 15,000 - 20,000. Rural poverty appears to be the major push factor; with poverty in urban indigenous low-income areas, increasing the phenomenon

The elderly and physically impaired with no family support also constitute other poverty groups usually not captured by policy



Part II A

Component of the GPRS

Outline of Presentation

- PART I
- Ghana Poverty Reduction Strategy
 - Scope,
 - goals,
 - objectives
 - **Targets**
 - **Major Strategies**

PART II

**Monitoring the implementation of the
GPRS**



What is the GPRS?

- The GPRS is the operational National Medium Term Development Framework.



Scope of the GPRS

The GPRS consists of:

- The Policy Framework – Volume 1
 - Containing objectives and targets
 - strategies, and actions for accelerated growth and poverty reduction.
 - Programme areas and interventions
- The Costed Programme – Volume 2
 - Containing costed programmes, projects and activities for realizing the objectives identified in the Policy Framework.



Goal

**TO ACHIEVE SUSTAINABLE
EQUITABLE GROWTH,
ACCELERATED POVERTY
REDUCTION AND THE
PROTECTION OF THE
VULNERABLE AND EXCLUDED
WITHIN A DECENTRALIZED
DEMOCRATIC ENVIRONMENT**



Broad GPRS Objectives

- ENSURE MACRO-ECONOMIC STABILITY
- INCREASE PRODUCTION AND GAINFUL EMPLOYMENT
- FACILITATE DIRECT SUPPORT FOR HUMAN RESOURCE DEVELOPMENT & BASIC SERVICES
- EXPAND SPECIAL PROGRAMMES TO SUPPORT VULNERABLE GROUPS
- ENHANCE GOOD GOVERNANCE



POVERTY REDUCTION TARGETS - 2005

- The national target is to reduce the incidence of poverty from 40% to 32%
- To reduce poverty in the Central (48%), Northern (69%), Upper East (88%) and Upper West (84%) to the current national average of 40%
- The target for the other Regions excluding Greater Accra is to reduce poverty by 8 percentage points by 2005



POVERTY REDUCTION TARGETS - ECONOMIC ACTIVITY

- **Reduce poverty among crop farmers from 59% to 40% (National Average)**
- **Poverty among other economic activity groups to be reduced by 6 percentage points**



TARGET FOR INCOME GAP

- **The target is to increase the average income among the poor from 36% below the poverty line to only 30%.**
- **The target is to increase the average income of the extremely poor from 30% below the lower poverty line to 24%**



TARGETS FOR MORTALITY INDICES BY 2005

- Reduce Under 5 Mortality Rate from 108 per 1,000 to 100 per 1,000
- Reduce Infant Mortality Rate from 57 deaths per 1,000 live births to 52 per 1,000 live births.
- Reduce Maternal Mortality Rate from 214-740 per 100,000 live births to 195-673 per 100,000 live births



TARGETS FOR ACCESS TO HEALTH

- The target of access to ante-natal care (ANC) is to increase from current 87% to 92%,
- Average ante-natal visit to clinic to increase from 2.4 to 4.0



TARGETS FOR ERADICATION OF MAJOR DISEASES

- The target is to reduce the incidence of malaria by at least 50% by 2004
- The target is to eradicate guinea worm by 2005



Major Strategies



Macro-Economic Strategy

- ✓ Reducing and Restructuring domestic Debt
- ✓ Improving Public Expenditure Management
- ✓ Increased resource mobilisation
- ✓ Price and Exchange Rate Stability
- ✓ Deepening of capital markets
- ✓ Export competitiveness
- ✓ Export Diversification



Employment

- ✓ Increasing agricultural yields and production – infrastructure, high yielding varieties, market extension service provision
- ✓ Increasing production & employment in agro-processing
- ✓ Improving productivity in industrial and service sectors
- ✓ Creating the right institutional environment for entrepreneurial development in agriculture



Cont'd

- Increasing the extent and quality of health care, bridging equity gaps, ensuring sustainable financing, increasing efficiency in service delivery
- Increasing access to potable water & sanitation & improving management
- Expanding essential basic services to the vulnerable and excluded



VULNERABILITY & EXCLUSION

- ✓ **Direct State Interventions for the Vulnerable & Excluded**
 - Expanding coverage and effectiveness of essential services to the poorest groups and geographical areas
 - Developing systems that enforce the rights of protection, especially for women and children
- ✓ **Increased partnership with non-governmental organizations**



GOOD GOVERNANCE

- ✓ Deepening effective political involvement in support of growth and poverty reduction
- ✓ Increasing the capacity of the public services
- ✓ Rationalizing and defining structures, roles, and procedures for institutions responsible for poverty reduction, growth and development
- ✓ Instituting land reform



Cont'd

- ✓ Strengthening the leadership and capacity of the District Assemblies
- ✓ Deepening District Assemblies association with civil society
- ✓ Facilitating best practices for all financial and asset control processes
- ✓ Institutionalizing public access to matters of Government



GOVERNMENT'S MEDIUM TERM PRIORITIES (2003 – 2005)

A. Macroeconomic Strategy

**Reducing and restructuring domestic
debt**

**Improving public expenditure
Management**



2. PRODUCTION AND GAINFUL EMPLOYMENT

A. MODERNIZED AGRICULTURE BASED ON RURAL DEVELOPMENT

- Support private sector to add value to
agriculture produce**
- Reform land acquisition laws, regulations
and practices**
- Actively promote production of NTE crops**
- Promote the development of agro-
processing**
- Increase environmental Protection
through re-forestation**



✓ B. Infrastructure

- 3 major highways to open up country, promote West African integration leading to increased job creation
- Linking rural areas to urban markets – one road in each region
- Accelerate access to telecommunications
- Increase energy availability to boost industrial growth & production



3. ENHANCED SOCIAL SERVICES

- ✓ Reform educational system to ensure uninterrupted education from pre-school to age 17 to create opportunity for human development & reduce poverty
- ✓ Develop model senior secondary schools in every district
- ✓ Develop a model health centre in each district
- ✓ Phase out cash & carry system & replace it with a more humane & effective system



4. Vulnerable and the Excluded

- Promoting Women's access to micro credit
- Attainment of social justice, equity and respect for human rights
- Prevention of the spread of HIV and providing care for PLWHA
- Improving the quality of the physically handicapped



5. GOOD GOVERNANCE

- ✓ Support Parliament for better governance
- ✓ Restructure civil service for improved efficiency & effectiveness related to better compensation
- ✓ Strengthen capacity of AG's office & judiciary to ensure rule of law
- ✓ Enhance social order by improving police service
- ✓ Ensure transparency & accountability in resource generation, allocation & mgt





PART II B

GPRS: MONITORING THE FIRST YEAR OF IMPLEMENTATION

THE MONITORING PROCESS

- The process of monitoring the GPRS implementation process began with the identification of 52 indicators
- There were 3 types of indicators
 - Input indicators
 - Output indicators; and
 - Outcome indicators



PROCESS (2)

- The input indicators included disbursements, and resources such as construction materials, and equipment purchases.
- The output indicators include completed or semi-finished products resulting from combining the inputs such as school buildings, maternity wards, and kilo-meter of feeder roads
- The outcome indicators include the impact measurements such as the level of enrolment, access to health care, etc,



PROCESS (3)

- The report to be submitted focuses mainly on input and output indicators
- Outcome indicators tend to have long lags (over 2 years) between implementation and realization. So we could not provide data on outcomes as a result of GPRS implementation
- However we have provided baseline data for a large number of the outcome indicators in the main report
- It is hoped that the on-going CWIQ will capture some of the outcome indicators resulting from GPRS Interventions
- The GLSS(5) to be conducted next year will capture most of the GPRS intervention outcomes



PROCESS (4)

- The primary data for the report was collected by the MDAs and the DCPUs of the District Assemblies
- The NDPC's role was to collate and analyse the data.
- This involved preparation of a format or questionnaire identifying the information required for the MDAs and the DAs to supply the necessary information



The Medium Term Priority Programmes and Projects





I. Macro-Economic Stability

Programs/Projects Status

Reducing and Restructuring the domestic debt

- Applied ₦81.4 billion of HIPC funds to finance interest on domestic debts



Improving Revenue Collection and Expenditure Management

- Established a Budget Development Unit to internalize the MTEF process within the Budget Division
- Introduced an allocation register to track releases made to MDAs
- Established a Public Expenditure Monitoring Unit to collate data on expenditure returns from MDAs
- Established a Non-Tax Revenue Unit to facilitate the collection accounting and reporting of non-tax revenue from MDAs
- Appointed 21 debt collection agencies to assist in the recovery of loans and increase domestic revenue mobilization
 - Recovered loans from SOEs, Parastatals and Private Companies totaling ₦48.4 billion in 2001.



● II. Production & Gainful Employment

Programs/Projects Status

Modernizing Agriculture based on Rural Development

Irrigation Programs:

- Current coverage is 0.04% of arable land
- Target for 2004 is 0.12% of arable land, ie 2590 ha.
- Work on 15 small scale irrigation facilities in progress nationwide. Expected to cover 2077 ha of land.
- Other interventions under VIP and others are also in progress.



MECHANIZATION

- Rehabilitation of 1,000 tractors in progress

Fishing Hatcheries

- About 24 fishponds constructed at Fuu in the Northern Region under the Special Program for Food Security
- A pilot aquaculture center to produce fingerlings for fish farmers in the middle belt (Ashanti, B.A, Eastern & Volta) completed



Export Led Poverty Reduction Projects

- 5,355 farmers in the Northern Ashanti and Brong Ahafo regions assisted to plant 10,000-acre Soya beans for 20,000-ton export order
- Five handicraft villages established and completed in the Ashanti, Eastern, Volta, Northern and Upper East regions
- Achieved 32% increase in non-traditional exports in 2002
- Obtained AGOA visa systems, exported \$8m worth of textile and garments and created about 1,000 jobs
- EDIF fund established and ₵87.9 billion disbursed.
- 31 companies approved to operate under the free zone program and 6,841 jobs created in 2002



Environmental & Natural Resource Management

Reforestation Programs

- Sum of \$55,312 made available by GOG to reforest Akwamu, Krobo Akwapem range and Densu river basin

Forest Plantation Development

- Target: 20,000 ha. of degraded forest to be planted by 2002
- 17,000 has been planted with less than 50% of funding secured to date
- 30,000 km of existing forest boundary maintained
- 25 million plantation seedlings in nurseries raised nationwide.



Enhanced Infrastructure - ROAD Projects

1. Major Highway Construction

Accra-Yamoransa stretch

- Tender procedures on going

Accra – Kumasi stretch:

- total length of 219.4 km divided into 8 sections.
- 2 sections on-going with about 50% completion.
- Funds secured for 3 sections. Work begins in September 2003. Aide Memoire signed for another section between GOG & ADB.

Accra – Aflao stretch

- Total length of 166 km divided into 3 sections.
- Work on-going on one section, two sections yet to start



2. Access to Markets Through Improved Farm/Feeder Roads

- Feeder road maintenance program target for 2002 totaled 19,450 km (13,700 km routine maintenance and 5,750 km periodic maintenance.)
- About 10,459 km (58%) so far completed.

3. Access to Urban Markets

- About 1,092.5km of road to be constructed between 2002-2004
- About 23% of funding secured to date
- About 18,092 km out of planned 23,369 km road covered under routine maintenance and 797 km under periodic maintenance program by the Ghana Highways Authority
- About 2,844 km of urban roads covered under routine maintenance.
- 19 bridges completed by the department of feeder roads.



Enhanced Infrastructure: Reliable Access to Energy

1. West African Gas Pipeline: - Status
 - Concession agreement negotiation completed
 - Gas Purchase and Sale agreement, environmental impact assessment, public education campaign and market demand study all on-going
2. Takoradi Thermal Plant expansion and Bui Dam projects.
 - No activity has been recorded to date.
3. Buipe – Bolga Petroleum Products Pipeline Project
 - Feasibility study and topographical & soil surveys completed
 - Funding secured and loan agreement to be signed by June 2003
 - A Korean consortium selected to undertake project.



4. Kerosene Distribution Improvement Program
 - Project in 3 phase with 1st phases ongoing
 - 700 surface tanks fabricated for distribution to districts. Distribution is on going and 55% completed
5. Residual Fluid Catalytic Cracker Project – Status
 - Project completed commissioned and in use
 - Boiler not functioning at 100% capacity
6. Self Help Electrification Program (SHEP)
 - Phase 1 & 2 of SHEP 3 completed. Phase 3 to serve 650 communities. No fund available for project in 2002
 - Phase 1 of SHEP 4 to serve 190 communities. Currently in survey stage





III. Human ● Development & Basic Services

Programs/Projects Status

ENHANCED SOCIAL SERVICES - Education and Health

- **Establish one model secondary school in each district.**
 - Criteria for selection of schools established.
 - Identification of physical infrastructure and academic requirements completed
 - R48 billion released for upgrading 30 selected senior secondary schools throughout the country.

- ◆ **Phase out cash and carry system and promote health insurance scheme**
 - A policy and legal framework for health insurance developed. A draft Bill on the policy framework awaiting enactment by Parliament.
 - Promotion of the health insurance scheme on-going
 - Implementation of the scheme scheduled for January 2004



SOCIAL SERVICES contd...

- **Establish one model health center for each district.**
 - Construction of 16 Health Centers 90% completed.
 - Work for provision of residential accommodation commences this year



● **IV. GOVERNANCE**

Programs / Projects Status

4. Deepening political involvement for Poverty Reduction and Economic Growth

- Parliamentary Committee on Poverty Reduction established in December 2002

5. Increasing Capacity of Public Service

- National Procurement Bill currently before Finance Committee of Parliament
- Electronic expenditure tracking system being piloted at MOF and C&AGD

6. Accelerate the implementation of Decentralization

- Local Government Service Bill is currently before Parliament



V. Vulnerable & Excluded

Programs / Projects Status

Promoting women access to micro-credit

- **Credit for women's small and micro enterprises:**
 - Total of ₵41.9 billion disbursed to women farmers, agro-processors and traders
- **Technology for small and micro scale enterprises:**
 - Agro-processing machines (gari, shea butter, groundnut oil) distributed to SMEs, sewing machines donated to vocational schools.



Improving the quality of life of the vulnerable and the Excluded

- **Increase Support to institutions caring for Vulnerable & excluded:**
 - Training of street girls on-going at women Training Institute, Madina
 - Street Child Policy Project, a learning project for street children in Kumasi, Accra, Sekondi-Takoradi and Tamale on-going.
- **Adequate security and protection for Women and Children**
 - Program to build capacity for the Police on-going (includes communication equipment, transports and gender training)
 - Program to establish WAJU in every district being implemented
 - Program to increase utilization of Legal Aid Services on-going.
- **Lifeline Pricing for Utilities**
 - Lifeline Pricing for electricity adopted and operational





District Assemblies

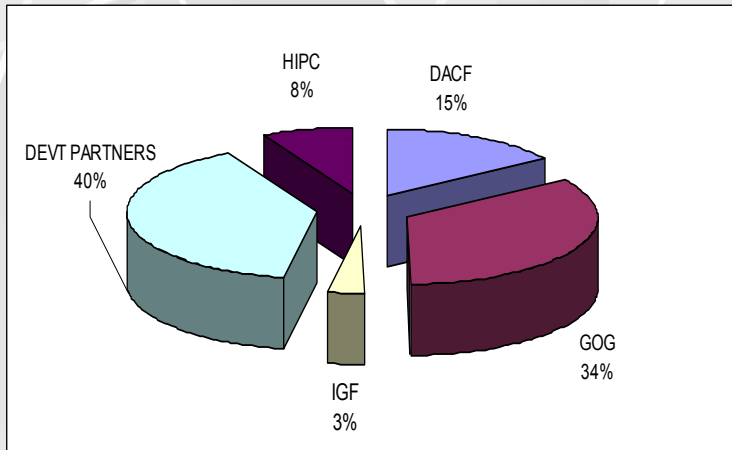
Programs / Projects Status

Funding Sources

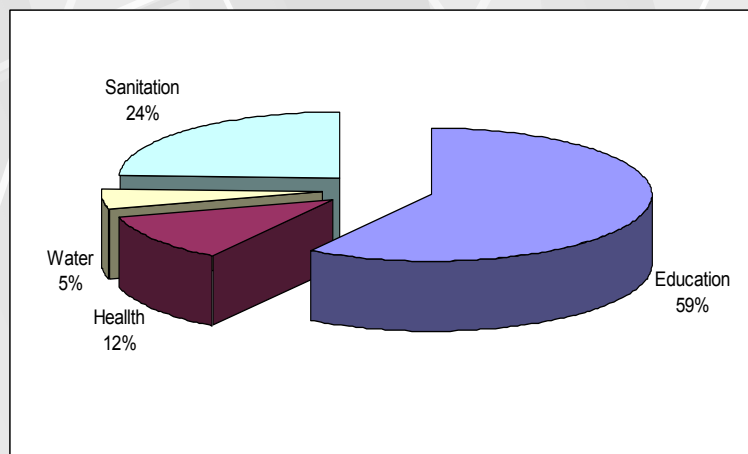
- HIPC relief
- District Assemblies Common Fund (DACF)
- Government Direct Funding (GOG)
- Development Partners
- Internally Generated Funds (IGF)



Proportion of Funding Sources (2002)



Intervention Areas: HIPC Relief



FEEDBACK TO GOVERNMENT

- The report is ready to influence the 2004 Budget process
- It details where much was done and where little was done in 2002.
- This information must be used carefully since there is a one-year lag. Remember it is not what has been achieved in 2003 which we do not know yet.
- However there are lessons that can be used to influence the 2004 budget and in the disbursement of HIPC funds



FEEDBACK TO GOVERNMENT

- For instance, the report has thrown light on the proportion of funds available to the district by all manner of sources.
- It has also indicated the areas that each funds are spent on the average.
- The last chapter of the report provides the Policy implications of the report outcomes
- This will serve as a useful information in resource allocation by the various sources and a tool for programme coordination



Thank You



THE GHANA POVERTY REDUCTION STRATEGY

**POVERTY DIAGNOSTICS AND COMPONENTS OF THE
STRATEGY**

PRESENTED BY

PROFESSOR GEORGE GYAN-BAFFOUR - NDPC

I. Introduction

Poverty is a multi-dimensional and dynamic construct. The dimensions of poverty can be categorized into three main facets: income or consumption dimension, access to social services dimension, and participatory dimension of poverty. The income dimension of poverty implies low levels of income or low levels of consumption that are socially unacceptable. The social services access dimension of poverty includes lack of access to health-care, education, good drinking water, decent housing, and healthy sanitation. The participatory dimension includes lack of voice and political rights. People who lack the ability to participate in decisions that affect their lives directly consider this as a sense of helplessness and a fundamental characteristic of poverty.

Besides the multi-dimensional nature of poverty, it also has a dynamic attribute. Poverty is dynamic in the sense that it changes over time, across space and across individuals. One can be rich or well to do today but can become poor tomorrow. This movement from non-poor state to poor status happens more often as one gets old. Moving from able-bodied to retired and feeble with age can plunge one into poverty. Furthermore, even able-bodied people can move in and out of poverty. These can happen with market fluctuations, seasons, and crises and even with change of governments. The effects of these social, economic, and political shocks on the well being of people show that poverty is not about not having enough but also about being vulnerable to losing even the little that one has with changes in the environment which individuals do not have much control over. This type of poverty is often expressed as a feeling of vulnerability.

2.1 Trends in Income Dimension of Poverty in Ghana

The incidence of poverty is usually assessed at two levels: an Upper Level and Lower or extreme level. The Upper Poverty line in Ghana refers to incomes of up to 900,000 cedis a year, or 75,000 cedis a month or 2,500 cedis a day. The extremely poor are people with incomes below 700,000 Cedis a year or 58,000 cedis a month or 1,900 cedis a day. The latest statistics on poverty estimates that about 40% of the Ghanaian population has incomes below the Upper Poverty Line; while about 27% (slightly more than a quarter) of the population has incomes below the extreme poverty line. While these figures give general indications of the incidence of poverty in the country they mask the uneven distribution of poverty across geographical areas of the country. Five out of the 10 regions in Ghana had more than 40% of their population living in poverty the worst affected being the three northern savannah regions (the Upper East, Upper West and Northern Regions). Nine out of ten people in the Upper East or 88%; eight out of ten in Upper West or 84%; and seven out of ten in Northern Region or 69% of their populations lived below the poverty line. Five out of ten or 48% of the people in Central Region were classified as poor. Eastern region had 44% of the population below the poverty line while other regions fell between the Greater Accra (5%), which has the lowest incidence, and the Volta Region with 38% of the population living below the upper poverty line. Poverty is still predominantly a rural phenomenon with the rural areas accounting for more than 70 % of the poor. In terms of economic activity, poverty is by far highest among food crop farmers with about 59% of them living below the poverty line. Other categories that are relatively poor include export farmers (39%) and private informal employees (25%).

2.2 Trends in Social Dimensions of Poverty

Poverty from the perspective of social dimension relates to access to basic social services such as health care, quality education, potable drinking water, decent housing, and security from crime and violence, and the ability to participate in decisions that affect their own lives.

2.2.1 Health Care:

Use of health care facilities as indicated by the number of individuals seeking modern medical care following an illness or injury is very low and on the decline a feature observed to be closely linked with introduction of increases in health user fees. Births supervised in health facilities are still fewer than 50%. Maternal mortality is 214-740 per 100,000 even though the nature of the causes is preventable.

Social indicators point to mixed progress in the 1990s. Infant and under five mortality rates decreased from 66/1000 and 119/1000 to 56/1000 and 108/1000 respectively from 1993 to 1998, but with deep geographical disparities. On the average about one in nine children born in Ghana dies before fifth birthday. Infant and under five mortality in the three northern regions are generally higher than in the south. In comparison with the Greater Accra Region, they are twice and three times as high respectively. A contributory cause is the fact that over 30% of children in the north are not fully immunized before their first birthday. There is also evidence of high prevalence of diarrhoea in the north registering 31% prevalence compared to the national figure of 18%, a feature that is due to poor sanitation. Malnutrition measured by underweight and stunting among children under five similarly shows adverse conditions prevailing in the north of the country with 34%-38% and 35-40% respectively compared to 25-27% and 26% nationally.

2.2.2 Education:

A similar situation is revealed in respect of education. Gross primary one admission and primary school enrolment ratios have not significantly improved since 1992. Dropout rates remain high at about 20% for boys and 30% for girls at Primary School and 15% for boys and 30% for girls at Junior Secondary School. Gender and location disparities are evident. Low enrolment and gender disparities are most pronounced in the north. In one district in the north, dropout rates for boys and girls were 74% and 83% respectively in the 1990s. The quality of education is alarmingly low further impinging on enrolment and retention.

2.2.3 Water and Sanitation

About one-third of the population still have no access to potable drinking water a constraint to the full eradication of guinea worm. The proportion of rural households with access to safe water is 66%. The level of sanitation in the country is very low. This contributes to the high morbidity rates and environmental pollution. In the urban areas only 7% of homes use flush toilet systems. Over 50% of Ghanaians have no access to safe sanitation. Twenty three percent of the population has no access to any facilities and therefore use open spaces.

Participatory assessments further reveal the depth of social problems, particularly, the phenomenon of street children, *kayayei* and harmful tradition practices. The number of street children in Accra alone is estimated at 15,000 - 20,000. Rural poverty appears to be the major push factor; with poverty in urban indigenous low-income areas, increasing the phenomenon. Furthermore, the threat of HIV/AIDS has intensified at 200 infected persons each day.

2.2.4 Gender Disparities

Poverty in Ghana has important gender dimensions and requires focused attention. Studies have shown that women experience greater poverty, have heavier time burdens, lower rates of utilisation of productive resources and lower literacy rates. Gender disparities exist with respect to access to and control of a range of assets including direct productive assets such as land and credit, human capital assets including education and health, and social capital assets such as participation at various levels, legal rights and protection.

Some socio-cultural factors continue to perpetuate the gender inequities in access to and use of services and also contribute to such situations as the inequitable allocation of food within the household, leading to malnutrition – notably among women and children. Gender-based violence also has important health, economic and political implications. Female gender mutilation *trokosi*, a ritual female bondage or slavery continues to be prevalent.

The different HIV prevalence rate among women and men between the 15-24 age group is also another cause for concern. The risk factors and vulnerability are different for men and women as are the implications for the impact of HIV/AIDS by gender. There are implications for care, treatment and for addressing the needs of AIDS orphans, which falls disproportionately on women.

Gender differences also exist with regard to women's and men's legal status and also in their rights and protection under the law. Women's legal rights with regard to access and control of land differ by the diverse lineage systems. Women are also poorly represented at all levels of decision-making. In Parliament, men constitute 91% of the members, with women forming a paltry 9%. Women's decision-making choices at the community and household levels, especially in rural areas, are constrained by cultural taboos and resistance from men.

2.3 Economic Growth and Poverty

Poverty reduction as a national policy should not be pursued in isolation from strategies for growth. Indeed for an effective national development agenda pursuing poverty reduction and growth are not mutually exclusive pursuits. Empirical evidence suggests that the poverty-reduction elasticity of growth is higher with faster rate of economic growth than with slower growth. That the incidence of poverty diminishes more quickly at higher levels of economic growth.

As per Table 1, the pace of poverty decline in Ghana was found to be very sensitive to the rate of growth in total consumption. A consumption growth rate of 6% per annum would reduce the incidence of urban poverty to 2.6% by 2020 and reduce rural

poverty to just over 15% of the population. Growth in consumption of 4.3% would however produce a much slower decline in incidence of poverty as shown in projection 2. On the other hand as per Projection 3, a 7% growth in consumption will wipe out urban poverty by 2020 and reduce rural poverty to a little above 10%.

Table 1: Poverty Reduction and Growth in Consumption

	1998	2005	2010	2015	2020
<i>(Projection 1: consumption growth of 6 percent per annum)</i>					
<i>Consumption poverty headcount (percent):</i>					
Urban	18.6	13.0	8.7	5.0	2.6
Rural	49.9	38.9	30.7	22.5	15.9
All Ghana	39.5	30.3	23.4	16.6	11.4
<i>Total poor population (million)</i>	7.29	6.70	5.87	4.76	3.72

(Projection 2: consumption growth of 4.3 percent per annum)

<i>Consumption poverty headcount (percent):</i>					
Urban	18.6	15.0	12.4	10.4	8.5
Rural	49.9	43.2	37.9	33.4	29.9
All Ghana	39.5	33.8	29.4	25.7	22.7
<i>Total poor population (million)</i>	7.29	7.45	7.33	7.26	7.26

Projection 3 (consumption growth of 7 percent per annum)

<i>Consumption poverty headcount (percent):</i>					
Urban	18.6	11.9	7.2	3.2	1.1
Rural	49.9	36.7	26.2	17.1	10.5
All Ghana	39.5	28.5	19.9	12.5	7.3
<i>Total poor population (million)</i>	7.29	6.27	4.96	3.52	2.34

It is obvious that higher levels of growth imply bigger pies of resources. Distributing bigger pies rather than small pies practically is easier and allows either more people to have more or that it allows the same people to have more than they would normally have. However, the need for special intervention is necessary because of the possibility that uncontrolled distribution of the outcome of growth can be skewed against the poor and the vulnerable. This is because growth does not trickle down in and of itself and the poor and the vulnerable are more likely to be the losers in an unregulated and uncontrolled environment.

Economic growth has much influence on poverty reduction. Growth alone will however not result in poverty reduction. It must be blended with policies that look at direct interventions for the vulnerable and the excluded and one that seeks to improve the distribution of income and assets. The Ghana Poverty Reduction Strategy

therefore ensures that the economy grows but also lays emphasis on programmes and projects to increase access to basic services and to protect the vulnerable and the excluded.

Introduction to the Components of The Ghana Poverty Reduction Strategy - GPRS

I. The Goal

The main goal of the Ghana Poverty Reduction Strategy is to create wealth by transforming the nature of the economy to achieve sustainable growth, accelerated poverty reduction and the protection of the vulnerable and excluded within a decentralized, democratic environment.

2. The Objectives

The broad objectives for realising the above goal are

- ENSURE MACRO-ECONOMIC STABILITY
- INCREASE PRODUCTION AND GAINFUL EMPLOYMENT
- FACILITATE DIRECT SUPPORT FOR HUMAN RESOURCE DEVELOPMENT & BASIC SERVICES
- EXPAND SPECIAL PROGRAMMES TO SUPPORT VULNERABLE GROUPS
- ENHANCE GOOD GOVERNANCE

3. Strategies for Poverty Reduction

Strategies for poverty reduction based on the above objectives include prudent fiscal and monetary policies; private sector-led industrial production through the application of science and technology; sound and sustainable management of the environment; promotion of commercial agriculture using environmentally friendly technologies; agro-based industrial expansion; export promotion based on diversification and competitive advantages; increased investments in social services; and accelerated decentralisation as the key mechanism for policy implementation. A summary of the strategies pertaining to each of the objectives identified above is presented below.

3.1. Strategies for Ensuring Macroeconomic Stability

The broad strategies under the macro economic stability are Debt Restructuring and Management Expenditure Management, Increased Resource Mobilisation, Price And Exchange Rate Stability, Deepening Of Capital Markets, Export Competitiveness and Export Diversification To achieve macroeconomic stability prudent fiscal, monetary, and international trade policy measures will be adopted. The fiscal measures will focus on conversion of short-term debts into long-term instruments, reduction in fiscal deficits, and more effective revenue mobilization. Monetary policy will focus on effective monetary management to ensure low and competitive interest rates, single digit inflation, stable exchange rates, reasonable spread between lending and savings rates, and the establishment of long-term capital market. International trade measures will focus on mechanisms to diversify exports and enhance productivity to ensure international competitiveness to achieve a sustainable level of foreign reserves.

3.2. Strategies for Increasing Production and Gainful Employment

The strategy for improving production and generating gainful employment is based on the creation of an enabling environment for improved private sector-led agro-based industrial production propelled by the application of science and technology and the promotion of tourism. This will involve improvement in the capacity of the private

sector to adopt an entrepreneurial approach to increase production and generate employment. This will include:

- Easing access to farming inputs such as fertilizers, insecticides, high yielding seed varieties and irrigation-based farming techniques.
- Development of marketing channels for agricultural produce.
- Encouraging the development of non-traditional exports to expand industrial production and gainful employment.
- Accelerated growth of small and medium scale manufacturing industries through among others, the diffusion of appropriate technologies and vibrant training programmes.
- Utilising information and communication technology to further enhance our development efforts.
- Addressing the gender dimensions of production including access to credit.
- Vigorous encouragement of tourism to take advantage of both its foreign exchange earning capability, and its direct and indirect employment creation potential.
- Ensuring the sustainability of resources on which production is based.

The programme on production and employment will seek not only to improve public sector delivery of programmes but also provide sufficient incentives to stimulate private sector activities in increasing and sustaining production of basic staples, production of selected export crops, and vigorously expand employment in sectors such as tourism which can employ and enhance the skills of people in geographical areas where the poor reside most.

3.3 Strategies for Human Development & Provision of Basic Services

The main Strategies for Human Development and Provision of Basic Services are

- Increasing access to education and training Providing skills and entrepreneurial development for the youth
- Preventing and providing quality care for People Living With HIV/AIDS
Increasing effective population management
Increasing the extent and quality of health care, bridging equity gaps, ensuring sustainable financing, increasing efficiency in service delivery
Increasing access to potable water & sanitation & improving management
Expanding essential basic services to the vulnerable and excluded

Significant gaps exist in access to and utilisation of basic services by the poor, particularly with regards to health, HIV/AIDS control, population management, water and sanitation, and education and training.

The rapid spread of HIV/AIDS has received attention from government and its partners. The immediate challenges include the prevention of the spread of HIV/AIDS and the provision of care for persons living with AIDS and their families.

3.4. Strategies for Special Programmes for the Vulnerable and Excluded

The vulnerable and the excluded include basically women, children the disabled. Special programmes for the vulnerable and excluded will establish systems and provide resources to ameliorate conditions of extreme poverty and social deprivation. The focus will be on interventions that have not been mainstreamed including measures to promote gender balance and equity. These interventions will also be aimed at responding rapidly to the needs of those affected by natural and man-made disasters. This will involve expanding coverage of social security scheme, introducing mutual health insurance to cover majority of workers, developing systems that enforce the rights of the vulnerable especially the rights of children and women and preventing disasters and mitigating their impact on the poor.

3.5. Strategies for Good Governance

The broad objectives include

- Deepening effective political involvement in support of growth and poverty reduction
- Increasing the capacity of the public services
- Rationalizing and defining structures, roles, and procedures for institutions responsible for poverty reduction, growth and development
Instituting land reform
Strengthening the leadership and capacity of the District Assemblies
- Deepening District Assemblies association with civil society
- Facilitating best practices for all financial and asset control processes
- Institutionalizing public access to matters of Government

To ensure effective implementation of poverty reduction programmes and projects, steps will be taken to establish and strengthen the leadership and oversight functions of the Executive and Parliament. Communication between civil society, traditional authority and all branches of government will be institutionalised as a means of strengthening public policy management.

A major objective of the GPRS is to ensure that no Ghanaian is excluded from participation in governance, from protection of their civil liberties, from the pursuit of freedom and justice under the banner of the rule of law. To realize these objectives the GPRS will focus on ensuring:

- Timely access to justice for all;
- Transparency of Government decision making;
- Accountability and zero tolerance for corruption in both public and private sectors;
- Public participation in decision making;
- Decentralization of responsibilities;
- Observance of both rights and responsibilities; and
- Discipline and observance of laws, rules, regulations in both public and private sectors of the society.

4. GOVERNMENT'S MEDIUM TERM PRIORITIES (2003 – 2005)

Given the magnitude of funding required to implement the entire programmes and projects of the GPRS, it became necessary to prioritise them to ensure that financing could be secured and good progress made towards meeting the major poverty reducing targets set out in the GPRS.

The priority programmes and projects, which span the five thematic areas, are infrastructure development and modernised agriculture based on rural development to ensure increased production and employment; investments in education, health, and sanitation to enhance delivery of basic social services; upholding the rule of law, respect for human rights and the attainment of social justice and equity to enhance good governance; and private sector development through macro-economic stability and streamlining of public bureaucracy.

4.1. INFRASTRUCTURE

The objective is to open up the country, introduce competition and create an enabling environment for the Private Sector. These priorities are consistent with the location, analysis and are reflected in the sectoral elements of the GPRS. Actions will focus on the following:

- i. Initiate the construction of three major highways: Accra-Yamoransa; Accra-Aflao; and Accra-Kumasi.
- ii. This will open up the country and link it up with the trans-ECOWAS highway project. It will ensure that Ghana is able to take advantage of the opportunities from West African economic integration and will lead to the creation of jobs.
- iii. Select one major road to a productive area in every region that links the rural areas of the region to the urban area for rehabilitation or development to open up the country for investment, productivity expansion and job creation.
- iv. Accelerate the further development of our ports (Tema and Takoradi and inland ports) through private sector participation to make them competitive for global trade.
- v. Re-negotiate existing telecommunications agreements to introduce more competition and accelerate access to telephones, Internet and information technology in general throughout the country.
- vi. Take all steps necessary to increase the availability of energy to boost industrial growth and production. This includes the West Africa Gas Pipeline, the Bui Dam, the expansion of the thermal plant at Takoradi and increased use of solar energy.

4.2. MODERNIZED AGRICULTURE BASED ON RURAL DEVELOPMENT

Government's objective is to develop the country to become an agro-industrial economy by the year 2010. This will require the development of the rural economy. The actions to be taken will include the following:

- i. Reform land acquisition to ensure easier access and more efficient land ownership and title processes.
- ii. Serve as a catalyst to assist the private sector to increase the production of grains such as rice, maize and tubers so that we can achieve food security. This will include extension and research services, irrigation facilities, and affordable credit to support the farmer.
- iii. Encourage the production of cash crops such as cashew.
- iv. Support the private sector to add value to traditional crops such as cocoa.

4.3. ENHANCED SOCIAL SERVICES

The objective is to enhance the delivery of social services to ensure locational equity and quality, particularly with regard to education and health services. This will be done through actions including the following:

- i. Change the educational system to ensure that there is uninterrupted education for all Ghanaians from pre-school to age 17 to reduce poverty and create the opportunity for human development.
- ii. Ensure that we develop model senior secondary schools in every district in the country.
- iii. Ensure that we develop model health centres for every district in the country.
- iv. Phase out the cash and carry system and replace it with a more humane and effective system of financing health care.

4.4. GOOD GOVERNANCE

The objective is to ensure the rule of law, respect for human rights and the attainment of social justice and equity. This is to lead to the strengthening of the three arms of government, the executive, judiciary and the legislature. The actions to be taken include the following:

- i. Support the work of Parliament to enable the institution to play its role for better governance.
- ii. Restructure the civil service to ensure efficiency, effectiveness and related performance-based compensation.
- iii. Strengthen the capacity of the Office of the Attorney General and the judiciary in terms of numbers, technology, training and equipment in order to ensure the appropriate rule of law.
- iv. Enhance social order by improving the police service. Equip them with vehicles, communications, equipment and technology, enhance training and increase their numbers.
- v. Ensure transparency and accountability in resource generation, allocation and management.

4.5. PRIVATE SECTOR DEVELOPMENT

The objective is to strengthen the private sector in an active way to ensure that it is capable of acting effectively as the engine of growth and poverty reduction. This is to lead to the creation of wealth at a faster rate in order to reduce poverty in a sustained manner. The actions to be taken will include the following:

- i. Work with the private sector, both foreign and domestic as an effective development partner.
- ii. Provide active assistance through the divestiture programme, financial support and streamlining government bureaucracy.

5. MONITORING AND EVALUATION OF POVERTY REDUCTION PROGRAMS

A GPRS monitoring and evaluation (M&E) system has been put in place to track expenditure disbursement and the actual implementation of the poverty reduction programs and projects. Results from goods and services produced by the programs and projects will be assessed through household surveys and participatory poverty analysis. To determine any significant success towards poverty reduction targets set in the GPRS, poverty indicators will be monitored and evaluated using data from the GSS Welfare monitoring system. This will be supplemented by specific community surveys to be carried out by the GPRS Monitoring and Evaluation system.

ARTISANAL MINING AND POVERTY

BY

PROFESSOR GEORGE GYAN-BAFFOUR, NDPC

I. Introduction

Artisanal mining is an important source of alternative livelihood in countries endowed with precious minerals. It is estimated that about 6.2 million people worldwide¹ are employed in artisanal mining. One million are employed in Africa, 4.2 million in Asia, and another 1 million employed in Latin America. In Ghana it estimated that about 30,000 people are directly employed in artisanal mining mainly in diamonds and gold mining. Artisanal mining may be seasonal or permanent. It may emerge as people are pushed out of their communities as a result of economic or environmental shock or are pulled into mining areas because of a newly found alluvial mineral.

II. Typology of Artisanal Mining

The type of mining structure determines the extent of its impact on the poor and how to design programs to enhance the livelihoods of people living in the geographical area concerned. Artisanal mining may be classified into four main types: seasonal mining, permanent artisanal mining, shock-push mining, and "Gold Rush" mining.

Seasonal Artisanal Mining

Seasonal artisanal mining involves the movement of people into mining areas during off agricultural seasons. These migrant miners go to mining areas to find alternative sources of income during idle periods to supplement their annual incomes. The resulting incomes generated can be a source for investment in agriculture during the regular seasons or at times they can be a source of capital for other non-agricultural investments such as trading and other businesses.

Permanent Artisanal Mining

This involves people who live in large scale commercial mining towns or who have settled there after realizing that the annual incomes from artisanal mining far exceed that acquired by alternating farming and mining within the year as is done by the seasonal miners. They may then decide to stay in the area and spend the entire year mining for these precious metals. In other cases permanent mining may be the only available and lucrative livelihood in the area and that people have no other choice but to be permanent miners. These are instances where miners have to live with the consequences of mining, which may include harsh working conditions with minimal income and endangering their lives through the use of primitive and highly toxic methods of mineral extraction.

Shock-Push Mining

Shocks such as droughts in one geographical region can force people out in search of greener pastures and artisanal mining tend to be a major source of such a haven. The choice of mining over other sources of livelihood is the result of a perception of minimal investment cost associated with artisanal mining and the anticipated high payoffs. This

¹ World Bank (1992), ILO (1990) and other sources (1990s)

perception influences the types of technologies used by these itinerant miners resulting in the use of primitive methods which exposes themselves and their families to risky health situations and endangering the environment.

"Gold-rush" Mining

This type of mining occurs when new easy-to-mine alluvial mining sites are found. The rush is usually the result of a perception that the expected income in mining in these areas far exceeds the current actual income of the people who are lured into it. This, at times, false promise pulls potential prospectors away from their traditional income generating occupations into mining. These miners also seem to have a short-term perspective and the need to maximize their incomes to validate their perception lead them to use mining methods that cause serious injuries to themselves and damages the environment tremendously.

III. Artisanal Mining and Poverty

Artisanal mining can be a major source of income for increasing the wealth of rural populations and providing opportunities for alternative livelihoods. These incomes can be major sources for other investments in agriculture and non-agricultural pursuits that can support the rural mining community and increase the national product. It is estimated that for every \$1 generated from artisanal mining about \$3 are generated in other non-mining jobs. However, the perceived wage or income differential between mining and non-mining areas may result in movement of people into the mining sector resulting in depressing artisanal mining incomes and plunging a large proportion of artisanal miners into poverty. Thus while mining can be a major source of poverty reduction it may also be a source of increasing the incidence of poverty in mining areas.

The negative effect of artisanal mining becomes even worse when one looks at the social dimensions of poverty especially in terms of health, access to potable drinking water, and environmental degradation.

Because of the use of primitive and low cost technologies by artisanal miners and in their attempt to maximize incomes, they expose themselves and others in the region to a large proportion of neurotoxins. For instance, it is estimated that for every gram of gold produced by artisanal miners, 2-5 grams of mercury are released into the environment. This mercury released metabolizes with organic matter transforming the mercury into methyl mercury, one of the most toxic organic compounds. While the miners and bystanders directly inhale this toxin as they heat the gold-mercury amalgam over open fires, a large amount is released into the immediate environment. The economic benefits from artisanal mining can thus be overshadowed by its negative effect on the health of the poor by exposing them to major health risks.

In addition to individual exposures to these health hazards, artisanal miners pay little or no attention to the environment. Often rivers are polluted and the toxins bioaccumulate in fish and wildlife making the toxins more concentrated and potent as they make their way

up the food chain. Other environmental problems include acid mine drainage, deforestation, soil erosion, and river silting. It is also estimated that the rate of occurrence of fatal accidents in small mining is six times higher than it is in larger operations (UN, 1996). Prostitution among migratory workers is also increasing the prevalence of HIV infections in mining areas.

IV. The Vicious Poverty Cycle

Artisanal miners tend to be caught up in a vicious poverty cycle. First, as explained above artisanal miners' incomes are lowered due to large numbers of miners chasing limited resources. This lowering of incomes encourages the use of inadequate and primitive mining technology. The inappropriate technology leads to environmental degradation, which negatively affects the health of miners and eventually their productivity. The low productivity means low incomes and the poverty trap begins again.

The cycle of poverty is exacerbated by failure of governments to recognize and mainstream artisanal mining activities. First, most artisanal miners have no ownership rights to the land that they mine. This implies that they do not have stakes in the land that they mine and therefore have no incentive for managing the resources in a sustainable manner. Because of the illegal nature of the trade, artisanal mining is characterized by increased social instability. Furthermore, because of the illegality associated with artisanal mining, banks and other credit agencies are unwilling to extend credit to miners and therefore they cannot invest in better technologies. Because of breakdown in law and order in most of these mining areas those who have some savings tend to spend a lot of their savings on alcohol, prostitution, and gambling at the expense of productive investment.

For any Poverty reduction strategy to have a chance of success will require that the poverty cycle is broken.

V. Strategies for Breaking the Poverty Cycle

Reducing poverty in artisanal mining will require direct interventions that would break the vicious cycle in which they find themselves. It will also require governmental action to formalize the activity to reduce the insecurity associated with their operations. First, efforts should be made to reduce the number of artisanal miners in a given area to raise the level of income among those that will be left behind. This will require the provision of attractive alternative livelihood opportunities. Alternative, livelihoods can be developed in areas such as micro enterprises auxiliary to the mining activity including vending and small stores catering to the miners as well as in agriculture. Second, the activities of the miners should be legalized. This will enable miners to acquire proper legal titles to the land they mine. This process will make artisanal miners more responsive to the environmental degradation and the associated health hazards of their activities. The legalized mines and their claims can also be used as collaterals to banks to access credit. This will further enable them to invest in better technologies and methods. Better technologies will reduce the health hazards but will also help in increasing their

scale of operations and increase their incomes. This may be facilitated by information collection on appropriate technology and methods of production and dissemination to miners. Attempts should also be made to overcome illegal trading of the precious metal by ensuring that governments pay fair prices based on the international prices of the products. Other interventions may be put in place depending on the type of artisanal mining and in relation to the local conditions. Generically, the interventions may include the promotion of friendly mining and processing technologies; providing information on communicable diseases including HIV AIDS, sanitation and occupational health and safety; restricting or regulating child labor; and supporting initiatives for collective and cooperative actions.

VI. Conclusion

Artisanal mining may be a major source of alternative livelihood in an economy like ours where a large proportion of the rural dwellers are in subsistence agriculture. It therefore helps reduce pressure on rural agriculture and to increase incomes in the rural areas. However, depending on the type of artisanal mining and the expected wage or income differential between the mining areas and the non-mining areas the sector can be oversubscribed depressing the average level of income of the miners. In some cases a large proportion of the miners may end up with incomes below the poverty line. In addition the low level of income results in the use of primitive technologies with negative consequences on the environment. Soils are eroded. Waters are contaminated with toxic chemicals. Wildlife and fishes are contaminated and are no longer wholesome. The often-illegal nature of artisanal mining brings along a breakdown in law and order. The low level of education and lack of alternative sources of livelihood and institutions for savings miners get involved in illicit gambling with its associated prostitution resulting in high incidence of HIV infections. The artisanal mining process can entangle in a complex web of poverty cycle that requires direct governmental intervention to release the poor out this vicious trap.

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FACT SHEETS ON HIV/AIDS

Fact Sheet #1: Update on the HIV/AIDS epidemic

This section covers:

- The history of the HIV/AIDS epidemic
- The current situation globally and in Africa

As the world enters the third decade of the AIDS epidemic, the evidence of its impact is undeniable. Wherever the epidemic has spread unchecked, it is robbing countries of the resources and capacities on which human security and development depend. In some regions, HIV/AIDS, in combination with other crises, is driving ever-larger parts of nations towards destitution.

UNAIDS; AIDS epidemic update: December 2002 (p3)

Key points

- ⌘ HIV/AIDS is a "new" disease – the first cases were diagnosed in the early 1980's.
- ⌘ In sub-Saharan Africa HIV/AIDS is primarily a heterosexual disease.
- ⌘ In the worst affected countries in Africa, HIV/AIDS is reversing life expectancy gains.
- ⌘ It is a disease that mostly affects younger people. Gender differences are also pronounced, with women at highest risk between the ages of 15 and 20, while the highest incidence in men is some years later.
- ⌘ At the end of 2002, 29.4 million adults and children were living with HIV/AIDS in sub-Saharan Africa.

1.1 Historical, scientific and human rights landmarks

The HIV/AIDS epidemic is a new epidemic and its origins have not been positively identified. Important historical and scientific landmarks mark not only the progress of the epidemic but also the progress in understanding the disease, in recognising the links between human rights abuses and vulnerability and in developing responses including treatments for those who are infected.

- ⌘ In 1981, the Morbidity and Mortality Weekly Report from the Centres of Disease Control (CDC) in the United States reported a sudden increase in the diagnosis of Pneumocystis carinii pneumonia and Kaposi's sarcoma in gay men. Not long after this, health care workers in Central Africa began to notice a new disease characterised by diarrhoea and severe weight loss. They called it 'Slims Disease'.
- ⌘ In 1982, the name Acquired Immune Deficiency Syndrome (AIDS) was given to this new disease.

- ⌘ In 1983, the Human Immunodeficiency Virus (HIV) – the virus that causes AIDS – was discovered by scientists in France and the routes of transmission were confirmed.
- ⌘ In 1985, the first blood tests to identify antibodies to HIV were developed.
- ⌘ In 1987, the World Health Organisation (WHO) set up its Global Programme on AIDS (GPA) and the first antiretroviral drug – AZT – was approved by the US Food and Drug Administration (FDA).
- ⌘ In 1989, the first international consultation on HIV/AIDS and human rights was organised by the then UN Centre for Human Rights in co-operation with GPA. The report of that consultation highlighted the public health rationale for the prevention of HIV-related discrimination and the promotion and protection of human rights in the context of HIV/AIDS.

... recognition of and respect for human rights does not impede prevention and containment of HIV, but actually enhances it

Justice Michael Kirby
High Court of Australia
- ⌘ In 1992, the first clinical trial using combination therapy started to enrol patients and, in 1993, a new classification system used CD4 cell counts in defining AIDS.
- ⌘ On 1 July 1994, the Dakar Declaration was developed and endorsed by the African Network on Ethics, Law and HIV. It sets out ten principles, including non-discrimination, confidentiality and privacy, ethics in research and prohibition of mandatory HIV testing.
- ⌘ In 1996, the Joint United Nations Programme on HIV/AIDS (UNAIDS) and the Office of the High Commissioner for Human Rights convened the Second International Consultation on HIV/AIDS and Human Rights, which produced a set of guidelines on the promotion and protection of human rights in the context of HIV/AIDS (published in 1998). The Guidelines emphasise the critical role of not only Governments but also non-governmental organisations.

... in each society, those people who were marginalised, stigmatised and discriminated against – before HIV/AIDS arrived – have become over time those at highest risk of HIV infection.

Jonathan Mann
1996
- ⌘ In 1996, HAART (Highly Active Antiretroviral Therapy) was shown to be effective in treating HIV disease and limiting morbidity and mortality.
- ⌘ In 1997, the US President issued a challenge to develop an HIV vaccine within a decade.
- ⌘ In June 2001, the United Nations Special Session on HIV/AIDS set in place a framework for national and international accountability with

benchmark targets relating to prevention, care, support and treatment, impact alleviation and children orphaned and made vulnerable by HIV/AIDS.

UNGASS TARGETS

Leadership:

- By 2003, develop and implement multisectoral national strategies and financing plans.

Prevention:

- By 2005, reduce HIV prevalence amongst young men and women aged 15-24 by 25% in most affected countries, and by 25% globally by 2010.
- By 2005 reduce the proportion of infants infected by 20%, and by 50% by 2010.

Care, support and treatment:

- By 2003, ensure national strategies to strengthen health care systems.
- By 2005, develop and make progress in implementing comprehensive care strategies.

HIV/AIDS and human rights:

- Enact, strengthen or enforce legislation, regulations and other measures to eliminate all forms of discrimination.
- By 2005, develop and accelerate the implementation of national strategies that promote the advancement of women.

Reducing vulnerability:

- By 2003, have in place policies and programmes that identify and begin to address factors that make individuals vulnerable.

Children orphaned and made vulnerable by HIV/AIDS:

- By 2005, implement policies and strategies to build and strengthen governmental, family and community capacities to provide a supportive environment for OVC.

Alleviating social and economic impact:

- By 2003, develop multisectoral strategies to address the impact at the individual, family, community and national levels.
- By 2003, develop a legal and policy framework that protects, in the workplace, the rights and dignity of PLWHAs, and those at greatest risk of HIV/AIDS.

Research and development:

- Increase investment in and accelerate research on the development of vaccines.
- By 2003, ensure that all research protocols for the investigation of HIV-related treatment are evaluated by independent committees of ethics.

HIV/AIDS in conflict and disaster-affected regions:

- By 2003, develop and begin to implement comprehensive HIV/AIDS strategies that respond to emergency situations.
- By 2003, have in place strategies to address the spread of HIV among national uniformed services.

Resources:

- By 2002, launch a worldwide fundraising campaign.
- By 2005, reach an overall target of annual expenditure on the epidemic of between US\$7 and 10 billion in low- and middle-income countries.
- Integrate HIV/AIDS actions in development assistance programs and poverty eradication strategies.

Follow-up:

- Conduct national periodic reviews of progress achieved, with full participation.
- By 2003, establish or strengthen effective monitoring systems for the promotion and protection of human rights of PLWHAs.

1.2 A global and African overview

The epidemic continues to spread around the world. Estimates from the Joint United Nations Programme on HIV/AIDS (UNAIDS) track the epidemic in time and in different parts of the world.

UNAIDS estimated at the end of 2002, that 29.4 million adults and children were living with HIV/AIDS in sub-Saharan Africa, representing an 8.8% adult prevalence rate. Of the infected adults, 58% were women. Approximately 3.5 million new infections occurred in sub-Saharan Africa in 2002, while the epidemic claimed the lives of an estimated 2.4 million Africans in the same year. Ten million young people (aged 15–24) and almost 3 million children under 15 were living with HIV/AIDS.

In sub-Saharan Africa the epidemic is primarily a heterosexual epidemic with more women than men infected.

Adult HIV prevalence of over 1% - the point at which the epidemic begins to spread through the general population.

Adult prevalence rate of over 4% - the level at which the epidemic spins out of control.

In the worst affected countries steep drops in life expectancies are beginning to occur, most drastically in sub-Saharan Africa, where four countries, (Botswana, Malawi, Mozambique and Swaziland) now have a life expectancy of less than 40 years.

Though sub-Saharan Africa heads the list as the region with the largest annual number of new infections, there may be a new trend on the horizon – HIV incidence appears to be stabilising. Because the long-standing African epidemics have already reached large numbers of people whose behaviour exposes them to HIV, and because effective prevention measures in some countries have enabled people to reduce their risk of exposure, the annual number of new infections has stabilised or even fallen in many countries. These decreases have now begun to balance out the still-rising infection rates in other parts of Africa, particularly the southern part of the continent.

Fact Sheet #2: Basic facts on HIV/AIDS

This section covers:

- The basic facts about HIV/AIDS
- Related diseases – facts about TB and STIs
- Diagnosis and treatment

Key points

- ⌘ HIV is the virus that causes AIDS – by progressively compromising the immune system.
- ⌘ Anybody who has unprotected sex is at risk – regardless of race, religion or sexual orientation.
- ⌘ There is no risk of HIV transmission from everyday contact with an infected person either at work or socially.
- ⌘ TB is the most common opportunistic infection in people living with HIV/AIDS.
- ⌘ The presence of untreated STIs increases the risk of HIV transmission.
- ⌘ It is a well-established fact that living positively can delay the onset of symptoms and extend the period of wellness in a person who is infected.
- ⌘ Options such as antiretroviral therapy, which are widely used in the developed world to treat people living with HIV/AIDS are not routinely available in workplaces in developing countries.

2.1 Facts about HIV/AIDS

HIV stands for the **H**uman **I**mmunodeficiency **V**irus
AIDS stands for **A**cquired **I**mmune **D**eficiency **S**yndrome

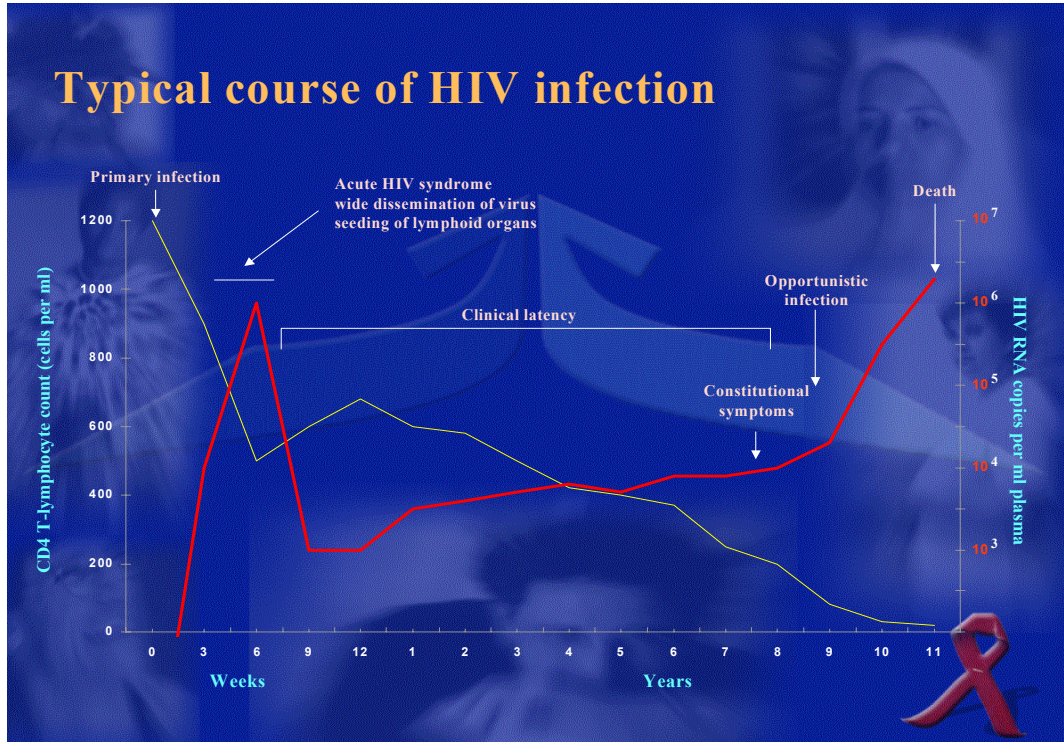
There are two types of HIV:

- ⌘ HIV-1, the most common type
- ⌘ HIV-2, found mostly in West Africa

→ HIV and the immune system

HIV affects the body by affecting the immune system. The immune system is the body's defence against infection by micro-organisms (bacteria and viruses) that cause disease.

Amongst the cells that make up the immune system is one called a CD4 lymphocyte. HIV is able, by attaching to the surface of the CD4 lymphocyte, to enter, infect and eventually destroy the cell. Over time this leads to a progressive and finally a profound impairment of the immune system, resulting in the infected person becoming susceptible to infections and diseases such as cancer.



In **adults**, the typical course from HIV infection to AIDS is as follows:

- ⌘ About 6 weeks to 3 months after becoming infected a person will develop antibodies to HIV. At this time some people will experience a flu-like or glandular fever-like illness.
- ⌘ There is usually thereafter a long 'silent' period – up to 8 years – during which the person may have no symptoms.
- ⌘ Following that, almost all (if not all) infected persons progress to HIV-related disease and AIDS. They may develop skin conditions, chronic diarrhoea, weight loss or they might develop one or more opportunistic infections such as tuberculosis, pneumonia, fungal infections, meningitis and certain cancers.
- ⌘ Death occurs as a result of one or more of these diseases or infections.

➔ **Transmission**

HIV is a weak virus that cannot survive outside the human body. Although present in all body fluids, HIV is only present in sufficient concentrations to cause infection in:

- ⌘ Blood
- ⌘ Sexual fluids (semen and vaginal secretions)
- ⌘ Breast milk

HIV can only be transmitted from an infected person by the following routes:

- ⌘ Sexual intercourse (vaginal, anal or oral). This is the most frequent mode of transmission.
- ⌘ Contact with infected blood, semen, cervical or vaginal fluids – in situations where the infected body fluid is able to enter a person's body.
- ⌘ From an infected mother to her child – during pregnancy or birth, or from breastfeeding.

→ Prevention

Because the major route of HIV transmission is unprotected sex, the safest form of prevention is abstinence. However, in many instances, this is neither realistic nor desirable. Options such as limiting the number of sexual partners and/or using barrier methods can reduce the risk. Barrier methods commonly include the male and female condom.

In the workplace, prevention of HIV transmission in a health care or accident situation requires that universal infection control procedures are followed. Where exposure to infected blood does take place, the administration of post-exposure prophylaxis (PEP) can significantly reduce the risk of actual infection.

2.2 Related diseases – TB and STIs

It is important to understand the close associations between HIV/AIDS and diseases such as TB and infections such as other sexually transmitted infections.

→ Tuberculosis (TB)

TB is a disease caused by a bacillus. TB is a serious public health problem. TB kills more people every year than any other infectious disease – yet it is curable. Correct TB treatment not only cures TB and saves lives but also prevents the spread of infection and the development of drug-resistant TB.

TB is the most common opportunistic infection and the most frequent cause of death in people living with HIV in Africa. In 1997, there were an estimated 2.2 billion people infected with *Mycobacterium tuberculosis* (the germ that causes TB). In 1996, there were an estimated 9.4 million people in the world infected with both HIV and TB. Of those people, 6.58 million (70% of the global total) lived in sub-Saharan Africa. In South Africa, approximately 50% of TB patients are infected with HIV.

HIV and TB interact in the following way. In people with healthy immune systems, only 10% of those who are infected with TB ever become sick from TB. HIV, by destroying the immune system, increases the risk of progression from TB infection to TB disease from 10% per lifetime to 10% per year. This means that over 50% of people who are co-infected with TB and HIV will get sick with TB before they die. TB also accelerates HIV disease. It is important to realise that although HIV increases the risk of developing TB, not all HIV infected people have TB and not all people with TB are HIV infected.

People with TB or HIV face similar problems of stigmatisation, fear and discrimination and have shared needs for counselling, care and support. HIV/AIDS is common in socio-economically-stressed communities, and these same communities are also vulnerable to TB.

The symptoms of TB are the same in HIV-positive and HIV-negative people: cough for more than 3 weeks, loss of appetite and weight loss, night sweats, tiredness, chest pain and coughing blood.

TB is spread through coughing. A person who is sick with TB and is not on appropriate treatment coughs TB germs into the air and another person breathes them into their lungs. TB patients who are on appropriate treatment are not infectious and therefore it is safe to work with them, socialise with them and live near them.

The important fact is that TB can be cured as effectively in HIV-positive as in HIV-negative people using the same drugs for the same amount of time.

The DOTS (Directly Observed Treatment, Short-course) approach is the cornerstone of South Africa's approach to the management of TB. As part of DOTS, it is important that a treatment supporter encourages the patient to complete their TB treatment and observes them taking their treatment. Treatment supporters can be health workers, employers, co-workers, shopkeepers, traditional healers, teachers, and community or family members.

The risk of getting sick with TB can be decreased in people living with HIV/AIDS by taking TB preventive therapy using a TB drug called isoniazid.

→ Sexually transmitted infections (STIs)

STIs are diseases transmitted during unprotected sex with a person who has one or more STIs. They are very common – in Africa as many as 1 in every 10 people will get an STI every year.

The same behaviours that place people at risk for STI infection also place them at risk of HIV infection – both are transmitted during unprotected sex.

STIs can be categorised as curable and incurable. The common curable STIs are gonorrhoea, chlamydial infection, syphilis, trichomoniasis and lymphogranuloma venereum. The STIs that are not curable are the viral STDs such as HIV, human papilloma virus, hepatitis B virus and herpes simplex virus.

Untreated STIs can cause serious health problems in both men and women. Fortunately, however, most STDs can be cured.

The signs and symptoms of STIs may be one or a combination of discharge, lower abdominal pain (in women), scrotal swelling (in men), dysuria, itching, warts, blisters, ulcers, lice and inflammation. Not all clients with STIs will experience symptoms and, in women in particular, STIs are often asymptomatic or 'hidden'.

Following infection with an STI, immune system cells that can be the host cells for HIV are present in large numbers, thus providing an opportunity for HIV infection to become established. Where the STI causes a break in the skin or mucous membrane, this can become an entry point for HIV. Therefore, where STIs are present, it is 5 to 10 times more likely for HIV to be transmitted from one person to another, particularly when there are ulcers present.

The presence of HIV infection in a person with an STI may result in the STI condition being more severe and treatment being less effective.

The best way of treating STIs is known as the 'syndromic approach'. It recognises that groups of STIs produce similar symptoms and that people commonly have multiple infections. The treatment therefore is given for a group of STIs, rather than trying to isolate and then treat the exact STI or STIs.

2.3 Diagnosis of HIV infection and treatment

→ **Diagnosis of HIV infection**

A test, called an HIV test, or HIV antibody test, is the usual way in which a diagnosis of HIV infection is made. The test identifies antibodies to HIV (antibodies are produced in response to infections). Typically it takes about 6 weeks following infection with HIV for a person to develop antibodies. This period is called the window period – the period between infection and the production of antibodies.

Usually HIV antibody testing is done using an ELISA test (Enzyme Linked ImmunoSorbent Assay). The test can be done using a number of body fluids, but is usually done using blood. The ideal testing process involves two tests, if the first is positive. This re-testing, using a different test, allows for the positive test to be confirmed and excludes the possibility that the first test was a false positive.

- ⌘ A positive test result means that HIV antibodies were detected – the person is infected.
- ⌘ A negative test result means that HIV antibodies were not detected – the person is not infected, or may be infected, but be in the window period.

Pre- and post-test counselling are universally regarded as necessary accompaniments to all HIV testing where the person concerned will receive his or her test result. The 3 'C's' are the standards for ethical HIV antibody testing:

- ⌘ **Informed Consent**
- ⌘ **Counselling**
- ⌘ **Confidentiality**

→ **Treatment**

HIV/AIDS treatment and care may be defined within the following framework:

- ⌘ For asymptomatic HIV-positive individuals

- ⌘ For those with early HIV disease
- ⌘ For those with late disease or AIDS
- ⌘ For those with terminal illness

Treatment, care and support needs are very different at different stages and are not restricted only to the infected person. The primary objectives therefore are:

- For the infected person
 - to reduce suffering and improve quality of life
 - to provide appropriate treatment of acute intercurrent infections
- For affected families
 - to render practical support
 - to lend bereavement support

The health interventions for a person who is HIV infected are numerous and may include:

- ⌘ Treatment for STIs and TB
- ⌘ Treatment of opportunistic infections
- ⌘ Prophylaxis for opportunistic infections
- ⌘ Immune boosting therapies
- ⌘ Palliative care
- ⌘ Antiretroviral therapy

Positive living is central to effectively coping with HIV disease. Positive living means an infected person taking control of aspects of his/her life such as:

- ⌘ Eating a good diet whenever possible
- ⌘ Staying as active as possible
- ⌘ Getting sufficient rest and sleep
- ⌘ Reducing stress as far as possible
- ⌘ Staying occupied with meaningful activities
- ⌘ Meeting and talking to friends and family
- ⌘ Seeking medical attention for any health problems

Antiretroviral therapy (ART) means using antiretroviral drugs to treat HIV disease and in some instances to prevent HIV infection. There are different classes of drugs but all act to prevent replication or reduce the rate of replication of the virus and so slow the progression of the disease and prolong the survival of infected persons.

Vaccines are substances that teach the immune system to recognise and protect against a disease caused by an infectious organism or virus. Some experimental HIV/AIDS vaccines are in development, but the widespread availability of an effective vaccine is still many years away.

Fact Sheet #3: The relationship between HIV/AIDS and development

This section covers:

- The links between the HIV/AIDS epidemic, poverty and development
- The impact on individuals, families, communities and society
- The gender dimension of the epidemic

Key points

- ⌘ HIV/AIDS poses a serious threat to human development and social and economic security. In developing countries, HIV/AIDS is already reversing decades of hard-won development gains in improving the quality of people's lives and reducing poverty.
- ⌘ Unlike many infectious diseases, which affect either the very young or elderly, HIV/AIDS has a different impact. While infants account for approximately 10% of cases, young adults aged between 15 and 45 make up the majority of the remaining infections. This results in the massive loss of people in the prime of their lives – when they are the providers and parents.
- ⌘ The impact of HIV/AIDS occurs in all sectors and from the macro to the micro level. The impact at the household level can be devastating, increasing poverty, compromising childrearing and undermining household coping strategies.

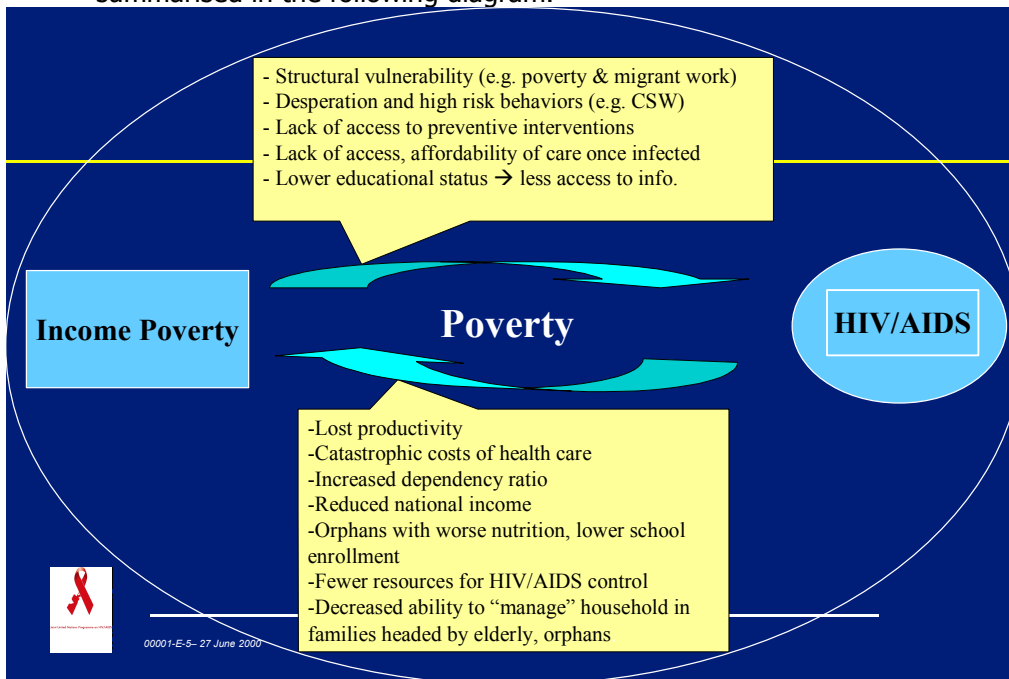
3.1 HIV/AIDS, poverty and development

By killing so many people in the prime of their lives, HIV/AIDS poses a serious threat to development. By reducing growth, weakening governance, destroying human capital, discouraging investment and eroding productivity, AIDS undermines countries' efforts to reduce poverty and improve living standards.

Concepts that are useful in understanding the epidemic

Risk:	The probability that a person may acquire HIV.
Risk behaviour:	Either individual or group behaviour which increases the chance of HIV transmission.
Risk environments:	Those environments in which the chances of HIV transmission are increased as a result of social, economic and/or cultural factors.
Susceptibility:	Those factors determining the rate at which the HIV epidemic is propagated at an individual, group or societal level.
Vulnerability:	The features of a social or economic entity which make it more or less likely that excess morbidity and mortality associated with HIV will have a negative impact upon that unit.

The links between HIV/AIDS and poverty are well established and are summarised in the following diagram.



3.2 Macro and micro impacts

Major channels of HIV/AIDS impact on the economy¹

For firms:

- Insurance/benefits up → affects costs, profits, savings
- Disruption/absenteeism → affects overall productivity
- Worker experience down/morbidity → affects labour productivity

For government:

- AIDS spending up → affects other spending, deficit
- Production structure shifts → affects revenue from VAT, trade taxes
- Household incomes, spending shift → affects income tax receipts, transfers

For households:

- Loss of income/orphans → vulnerable households require transfers
- Caring for HIV/AIDS → changed expenditure patterns, reduced savings, asset sales, lower investment in human capital

For the macro economy:

- Lower physical & human investment → reduced growth trajectory
- Class biased impacts → uneven welfare effects

From studies done in developing countries, the following facts have been established:

¹ Arndt, A & Lewis, JD; The macro implications of HIV/AIDS in South Africa: a preliminary assessment (August 2000) p3

→ Impact on economies and livelihoods

- ⌘ HIV/AIDS has a profound impact on growth, income and poverty. It is estimated that the annual per capita growth in half the countries of sub-Saharan Africa is falling by 0.5-1.2% as a direct result of HIV/AIDS. By 2010, per capita GDP in some of the hardest hit countries may drop by 8% and per capita consumption may fall even farther.
- ⌘ People at all income levels are vulnerable to the economic impact of HIV, but the poor suffer most acutely. HIV/AIDS pushes people deeper into poverty as households lose their breadwinners to HIV/AIDS, livelihoods are compromised, and savings are consumed by the cost of health care and funerals. In some countries, conservative estimates indicate that the number of people living in poverty has already increased by 5% as a result of the epidemic.
- ⌘ With less access to jobs, health care and other services, impoverished people are more likely to resort to survival strategies such as commercial sex, which may put them at risk of HIV infection, thus creating a vicious cycle.

→ Impact on governance

- ⌘ Governments are losing valuable skilled employees and are confronted with mounting expenses for health and orphan care, reduced revenues and lower return on social investment.
- ⌘ Governments in a number of low-income countries depend heavily on a small number of policy-makers and managers whose skills are often scarce in important areas of public management and core social services. In heavily affected countries, the ranks of such personnel are being thinned further as more civil servants fall prey to the epidemic.

→ Impact on the social sectors

- ⌘ AIDS overburdens social systems and hinders health and educational development. The current number of children who have lost their mothers or both parents to the epidemic poses unprecedented social welfare demands for countries already burdened by huge development challenges.
- ⌘ Teachers and students are dying or leaving school, reducing both the quality and efficiency of educational systems. Faltering education services will also diminish human capital in every other sector.
- ⌘ Health care systems in many countries are overstretched as they deal with a growing number of AIDS patients and the loss of health care personnel.

→ Impact on the agricultural sector

The relationship between HIV/AIDS and agriculture is multidirectional.

- ⌘ HIV/AIDS reduces food production, and inadequate nutrition further weakens those who are infected with HIV.
- ⌘ There is loss of labour in the most productive age cohorts, and consequently higher involvement of children and the elderly in agricultural activities. Labour time is further reduced by sickness or the need to care for sick family members.
- ⌘ In sub-Saharan Africa, women and girls are responsible for 50–80% of food production, including the most labour-intensive work, such as planting, fertilizing, irrigating, weeding, harvesting and marketing. Their work also extends to food preparation, as well as nurturing activities. The epidemic upends this division of labour – often with disastrous results.
- ⌘ Assets such as land, equipment and livestock are sold to raise funds for health care. Livestock serve multiple functions in most rural areas including a source of food, traction, fertiliser, income and savings.
- ⌘ Specific impacts include reductions in planted area, yield and diversity of crop and livestock enterprises; shifts towards less labour intensive crops; weeding is neglected, infrastructure (such as fences and irrigation ditches) falls into disrepair, and pest-control becomes too expensive.
- ⌘ As a result of declining crop variety, food supplies are less varied, with a negative impact on the nutritional quality of the diets of affected households.
- ⌘ Post-production, food storage and processing are impaired. Thus, the security of food and other raw materials between harvests are at risk, including the availability of seed for subsequent cropping.
- ⌘ There is loss of agricultural knowledge and farm management skills. In terms of rural development it is clear that many traditional systems of social learning that pass skills and knowledge from generation to generation are no longer functioning because of the increasing mortality of parents in their prime working ages.

→ **Impact on the mining sector**

Mining is a key source of foreign exchange for many African countries, and the impact HIV/AIDS is having on this sector is of major concern.

- ⌘ Miners are particularly at risk for HIV because, like soldiers, police officers, and truckers, miners often live far from population centres, apart from their families, and earn regular wages. This increases their opportunity to have multiple casual sexual partners.
- ⌘ Some employees, such as highly-trained mining engineers, can be very difficult to replace².

² ICG; HIV/AIDS as a security issue (June 2001) (p18)

- ⌘ In South Africa, experts believe that the industry hardest-hit by HIV/AIDS will be mining – one that is of central importance both for employment and revenue. Studies of the sector show HIV infection rates from one-quarter to almost one-half of the country's miners.
- ⌘ Zambia has a similar problem, where copper accounts for 75% of the country's export earnings, and 18% of the copper miners (again, a skilled workforce) are estimated to be HIV positive.
- ⌘ In Botswana, where diamonds account for 80% of export earnings and half of the government's total revenue, a third of the industry's employees are estimated to be HIV-positive.

➔ **Community and household-level impacts**

In a typical community affected by HIV/AIDS:

- ⌘ Economically productive adults leave work due to illness or to attend funerals or to care for sick family members – the financial impact of HIV/AIDS on households is as much as 30% more than when the death is due to other causes.
- ⌘ Children are kept away from school to care for adults or sent to work, exacerbating child labour problems.
- ⌘ There are increasing numbers of orphans – most of whom have less access to education and to adult role models.
- ⌘ Limited family resources are spent on care and funerals. Food production declines, malnutrition increases and poverty increases.
- ⌘ Disruption to family and community life emerges.
- ⌘ People with HIV become stigmatised and face harm and discrimination.

3.3 The gender dimension of the epidemic

Worldwide the risk of HIV infection for women is rising. Where transmission of HIV is predominantly heterosexual, women have a greater incidence of infection than men do. The reasons for this are multiple.

- ⌘ The risk of becoming infected with HIV during unprotected vaginal intercourse is 2-4 times higher for women than for men. In addition, an untreated STD increases the risk of HIV transmission during unprotected sex by up to 10 times, and women with STDs are often unaware of them because the infections are 'invisible'.
- ⌘ Young girls are at even greater biological risk – their physiologically immature reproductive tracts constitute ineffective barriers to HIV and other STDs. Older women also become biologically more vulnerable after menopause.

- ⌘ Many young girls become sexually active earlier than their male counterparts; and, at a young age, they lack the knowledge and power to control their sexual encounters, and also what happens about protection.
- ⌘ The financial dependence of women on men is especially entrenched in the developing world, leaving them with little or no control over how and when they have sex. Traditionally women play the passive role in sexual encounters, which means they are unable to be assertive and negotiate safer sexual practices with their partners. In Africa, simply being married is a major risk factor for women who have little control over abstinence or condom use at home or their husband's sexual activity outside the home.
- ⌘ Condoms are incompatible with pregnancy and fertility is a powerful prerequisite to social acceptance in many societies.
- ⌘ Women have less access to information and prevention measures, which are available and/or distributed at work places, schools and social organisations.
- ⌘ Where their lives have been disrupted by war, migration, divorce or widowhood, or where they have lost their property because of inequitable laws and customs, women, in the absence of other viable alternatives, may be forced to have transactional sex or to turn to commercial sex work, with the attendant risks of infection, in order to survive.
- ⌘ Women are more likely to know their HIV status than men, as women and young girls are often tested for HIV during pregnancy.
- ⌘ Women are often seen as 'carriers' of HIV, and many experience severe forms of stigma and discrimination as a result of some association with HIV/AIDS.
- ⌘ High levels of rape, sexual abuse and domestic violence have been linked to increased risk of HIV infection.
- ⌘ Pregnant women who are infected carry the burden and risk of possibly transmitting HIV to their unborn children.

The demands on women resulting from the epidemic are also significant.

- ⌘ Women are the caregivers – of infected spouses, often whilst being infected themselves, of infected children, and of 'AIDS orphans'.
- ⌘ They are also predominantly the educators and health professionals who have to spearhead and staff AIDS prevention and care programmes.
- ⌘ There is a great burden on elderly women to care for and bring up grandchildren whose parents have died of AIDS.

Fact Sheet #4: The impact of HIV/AIDS on the workplace

This section covers:

- Facts about HIV/AIDS and the workplace
- The impact of HIV/AIDS at an organisational level
- The impact on the informal sector
- Predictions of the future impact of HIV/AIDS on workplaces
- A checklist (of vulnerability and susceptibility) for the informal sector

Key points

- ⌘ A number of factors will influence the susceptibility of organisations, and of classes of employees. These include the location of the place of business, the location of employees' families in relation to the place of business, the travel requirements of employment, the level of knowledge of HIV and individual risk behaviour.
- ⌘ All workplaces will be impacted by HIV/AIDS, though the extent and nature of the impact will differ from workplace to workplace, related to factors such as labour intensity and markets for products produced.
- ⌘ Typically the impact is described in areas such as morbidity, mortality, absenteeism, staff morale, the cost of benefits, products and services and investment. Indirect costs will, in all instances be more significant than direct costs.

Only fifteen years ago, if one had called business, labour, government and non government representatives together to discuss how to deal with the AIDS epidemic, most would not have even more than a fleeting idea of what it was, let alone why they should discuss it. Today, companies have lost top managers, workers have lost colleagues and huge amounts of time, energy and emotion have been spent pre-occupied with issues of illness and loss. Whole families have collapsed, while companies struggling against a background of chronic poverty have taken on deeper burdens of dependency.³

4.1 Facts about HIV/AIDS and the workplace

- ⌘ The epidemic primarily affects working age adults and far exceeds any other threat to the health and well-being of employees.
- ⌘ Certain working situations are associated with vulnerability to HIV infection, especially where workers have to stay away from their homes for long periods or where men are in single-sex accommodation.
- ⌘ Because HIV/AIDS has increased the burden of ill health and mortality in the 15 – 50 year age group two to three fold, according to the ILO,

³ Loewenson, R. 1998. Towards a framework for mobilisation and support of company interventions on HIV/AIDS

an average of 15 years of working life will be lost per employee due to HIV/AIDS.

- ⌘ The vulnerability of businesses to HIV/AIDS will vary, depending on factors such as the type of business and production processes. Businesses may also be susceptible to inadequate responses to HIV/AIDS by key suppliers – eg water and electricity, telecommunications and basic government services suppliers.
- ⌘ Productivity growth may be cut by as much as 50% in hard-hit countries. Combined with the erosion of human capital and loss of skilled and experienced workers, this is likely to result in a mismatch between human resources and labour requirements.
- ⌘ The indirect costs to a workplace of HIV/AIDS are greater than the direct costs. The costs of lost time have been consistently shown to be the most significant costs to organisations. Each HIV infection is likely to cost the organisation between 1 and 6 times the employee's annual salary.
- ⌘ HIV/AIDS will affect the growth of many markets for goods and services.
- ⌘ HIV/AIDS is reducing the ratio of healthy workers to dependants.
- ⌘ HIV infected persons have 5 - 10 years on average of asymptomatic productive working life. This period can be lengthened by health promotion and positive living.
- ⌘ There are specific occupational risks in certain sectors, such as the health and emergency services. Otherwise the transmission of HIV poses little or no risk in most work settings.

4.2 The impact of HIV/AIDS at an organisational level

Organisations will experience the impact of HIV/AIDS in many areas, such as:

- ⌘ **Morbidity**
As infected employees become ill they will take additional sick leave; this will disrupt the operation of the institution for which they work. The disruption will be amplified when the more qualified and experienced employees are absent, as finding a temporary replacement is that much more difficult.
- ⌘ **Mortality or retirement**
The impact of the death or retirement of an infected employee is similar to morbidity, although the problems are permanent. The loss of an employee requires an appropriate replacement to be selected and trained. For highly qualified staff this is often difficult, particularly in developing economies with skill shortages. Training and recruitment are costly and disrupt operations.

- ⌘ Absenteeism
As the HIV/AIDS epidemic advances, increases in deaths will lead to increased absenteeism or compassionate leave, if this is available, as employees attend funerals for family members, friends and colleagues.
- ⌘ Staff morale
The epidemic has a negative impact on morale in the workplace. There is a fear of infection and death, which may lead to increased suspicion of others as well as resistance to shouldering the additional responsibilities for colleagues who are off sick, away from work or newly recruited and not yet fully functional.
- ⌘ Benefits
Employers and employees will feel the impact as the cost of employee benefits increases.
→Death payments, early retirements, funeral payments and pensions paid to families after the contributor's death will all lead to an increase in the cost of group cover. This is partly offset by a reduced demand for normal pensions.
→Medical aids are the most obvious area on which the epidemic will impact. The cost of treating HIV and related illnesses is substantial. Even if the treatment of HIV is excluded, the treatment of the symptoms can still have a significant impact on costs. Such exclusions further encourage non-disclosure, thereby reducing the use of prophylactic treatments - which may in the long run reduce costs.
- ⌘ Products and services
Changing levels of disposable income will affect the markets for luxury items and the profile of customers may also change with the intensifying epidemic. If the organisation provides services the demand for these could increase (eg health and welfare) at the same time as the ability to deliver is affected due to the loss of key personnel.
- ⌘ Investments
All enterprises require investment (from reinvested profits, money raised through financial institutions or stock markets) to maintain or increase capital stocks. Local capital may be reduced as assets are used to meet immediate health needs. Foreign investors may be concerned about the HIV/AIDS situation in a country when contemplating investment.

4.3 The informal sector workplace

Informal enterprise operators and workers are especially vulnerable to the consequences of HIV/AIDS.

- ⌘ HIV/AIDS poses a particularly serious threat to informal enterprises because of their inherent dependence on a small labour base.
- ⌘ Employers and workers in the sector lack access to health facilities

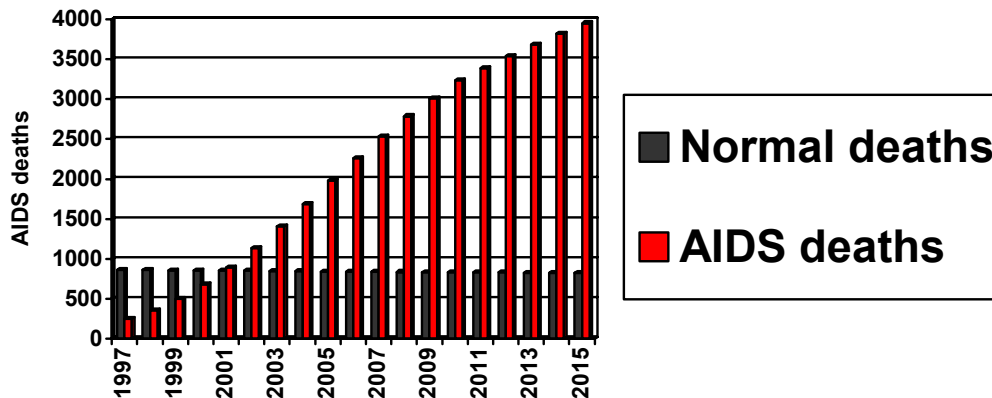
and social protection.

- ⌘ Their activities depend heavily on their own labour and rarely lead to financial security.
- ⌘ Informal workers can easily lose their precarious livelihoods when they are infected or forced to withdraw from work to care for family members.

4.4 Predictions of the future impact of HIV/AIDS on workplaces⁴

The following 2 studies illustrate the potential impact of the HIV/AIDS epidemic on workplaces – in terms of mortality and costs.

Projected AIDS deaths among employees in a South African workforce



Cost as a percentage of salary for a typical scheme

	2000	2005	2010
Lump sum on death	2%	3.8%	5.7%
Spouse's pension	4.7%	6.3%	7.8%
Disability pension	1.8%	2.3%	2.8%
Medical (per month)	R400	R800	R1 200

4.5 Checklist for the informal sector

→ Susceptibility

- ⌘ What is the degree of poverty of enterprise operators and workers?
- ⌘ What is the education level of enterprise operators and workers?
- ⌘ Do women in the sector have low status and limited economic independence?

⁴ Sources: Abt Associates – Impending catastrophe revisited (2001) and Metropolitan Life

- ⌘ Does business involve long-distance travel?
- ⌘ Is risky sexual behaviour common?

→ Vulnerability

- ⌘ What is the health burden of poor working conditions?
- ⌘ What is the health burden associated with alcohol/substance abuse?
- ⌘ How will early onset of illness and death affect the business?
- ⌘ Is the operator's family also employed in enterprise?
- ⌘ What is the effect of enterprise time diverted to care for sick family members?
- ⌘ Will orphans be left in the care of extended family?
- ⌘ Is there any access to social protection schemes?
- ⌘ What is the strength of business associations?
- ⌘ To what extent is there dependence on business networks for resources, joint production and markets?
- ⌘ To what extent is there dependence on family and/or rotating savings and credit associations for finance?
- ⌘ To what extent will consumer spending be reduced by HIV/AIDS?

The costs of inaction are potentially enormous. Policymakers who demonstrate commitment, by working in creative ways with people most severely affected by HIV/AIDS, have a unique opportunity to contain a global epidemic and save millions of lives.

World Bank



THE EXTRACTIVE INDUSTRY AND SUSTAINABLE DEVELOPMENT : KEY ISSUES

- Environmental management.
- The impact of extractive industry - related activities and developments on local livelihoods.
- The impact of extractive industry - related activities and developments on local social capital.
- Participation of, and dialogue with, affected communities and other interested parties.
- Social and environmental accountability.
- Consensus-building amongst key stakeholders on priority social and environmental issues.



THE EXTRACTIVE INDUSTRY AND SUSTAINABLE DEVELOPMENT : KEY CHALLENGES AND LESSONS - 1

I. Key challenges are relational in nature :

- ☞ Major social issues related to extractive industry activities have to do with cultural diversity and decision-making processes.
- ☞ Garnering political support in countries with weak democratic traditions and institutions, poses major challenges for international companies.
- ☞ Building trust and developing consensus-based solutions with key stakeholders, can determine the success of a project.



THE EXTRACTIVE INDUSTRY AND SUSTAINABLE DEVELOPMENT : KEY CHALLENGES AND LESSONS - 2



II. The essence of sustainable development is “respect for life”, which implies:

- ☞ Respect for values, beliefs and traditions that may be radically different from our own.
- ☞ Acceptance of social and cultural imperatives (eg. to maintain harmonious human relationships).
- ☞ Respect for biodiversity and the acceptance of environmental imperatives.
- ☞ Respect for economic diversity.



THE EXTRACTIVE INDUSTRY AND SUSTAINABLE DEVELOPMENT : KEY CHALLENGES AND LESSONS - 3



III. The promotion of SD requires new skills and attitudes :

- ☞ Dialogue, negotiation and consensus - building amongst social actors with different interests and values, can be an enriching learning process for all.
- ☞ An experienced and respected facilitator or broker can play a crucial role in building consensus and developing partnerships amongst key stakeholders.
- ☞ Tri-sector partnerships (governments, private companies and communities) can be a powerful engine for local sustainable development.



BASIC CONCEPTS AND TOOLS

- Sustainable development
- Social capital
- Consensus and its requirements
- Building consensus and developing tri - sector partnerships
- Facilitation: roles and ethics
- Emerging lessons



RESOLUTION OF DIFFERENCES AND DISPUTES

People resolve differences by :

- Imposition (force)
- Conflict (threats, intimidation)
- Avoidance (hiding, running away)
- Dialogue and negotiation



CONSENSUS

“ Awareness on the part of members of a group that they share feelings, traditions, ideas or definitions in relation to a given situation”

(from the Spanish definition in *El Pequeño Larousse Ilustrado* 1999)



CONDITIONS OF CONSENSUS

VALUE / IMPORTANCE OF THE RELATION WITH “OTHER”



IMPORTANCE OF ACHIEVING THE GOAL



TYPES OF NEGOTIATION

ADVERSARIAL

GENERATES :

- Mutual mistrust
- Opposing aims
- Friction
- Wounds, bitterness
- Negative energy
- “I win, you lose ...
if you win, I lose”

CONSENSUAL

PROMOTES :

- Mutual trust
- Common aims
- Harmony
- Positive feelings
- Synergy
- “I win...you win ...
we can all win...”



BUILDING CONSENSUS FOR SUSTAINABLE DEVELOPMENT : ASSUMPTIONS

- Modern societies are complex, with many diverse legitimate actors who have different, widely varying interests.
- To achieve healthy development, societies require that their key actors build basic agreements on fundamental issues of common interest.
- “O nos unimos en el amor o nos unirá el espanto..”
(Either we unite in love, or horror will unite us..)
Jorge Luis Borges



IUCN Conference on Conservation and Development, Ottawa 1986

“Sustainable development attempts to address five main challenges :

- **Integration of conservation and development.**
- **Meeting basic human needs.**
- **The achievement of equity and social justice.**
- **The promotion of social self-determination and cultural diversity.**
- **The maintenance of ecological integrity.”**

Jacobs y Munroe, 1987



World Commission on Development and the Environment (Brundtland Commission), 1987

“ Sustainable development strives to meet present needs and aspirations without sacrificing the capacity to meet those of the future.”



SUSTAINABLE DEVELOPMENT

- **THE ECONOMIC DIMENSION :**

Production / appropriate technology

Job creation, income generation

Growth

- **THE SOCIAL DIMENSION :**

Health

Education

Public services

Quality of life

- **THE ENVIRONMENTAL DIMENSION :**

Rational use of natural resources

Control of pollution and contamination

Conservation of biodiversity



SOCIAL CAPITAL : KEY ASPECTS

- The capacity and willingness of the diverse groups that constitute a community to work together and co-operate to create and maintain public goods, services and institutions.
- Capacity of the different groups that conform a community to share values and goals.
- Capacity of the diverse groups that constitute a community to develop relations of reciprocal trust.



BUILDING CONSENSUS AND DEVELOPING TRI-SECTOR PARTNERSHIPS THROUGH INTEREST- BASED NEGOTIATION

- Origins of the approach
- Underlying assumptions
- Driving forces
- Tri-sector partnerships



BUILDING CONSENSUS THROUGH INTEREST - BASED NEGOTIATION : ORIGINS OF THE APPROACH

- Dispute resolution between corporations, government agencies and indigenous communities (especially in Canada)
- Political and ethnic dispute resolution (in Europe, South Africa and other regions)
- The experience of development projects throughout the world
- Recent experiences of the extractive industries (oil, gas and mining)



TRI-SECTOR PARTNERSHIPS

Voluntary agreements between communities, the private sector and governments, to work together towards shared objectives of sustainable development.



DRIVING FORCES

- Generalised perception that the activities of major corporations have a significant global impact
- Growing awareness of the reduction of the roles of governments and nation states
- Growing, wide spread dissatisfaction with established institutions and prevailing social, economic dynamics.
- Growing demand for increased citizens' participation
- Some private sector actors recognise and begin to address the need to redefine relationships between corporations and society.
- Some political actors are developing new approaches to promote democratic change.



PRINCIPLES (STEPS) IN CONSENSUS - BUILDING

- Build trust
- Share relevant information
- Focus on interests (not positions)
- Think creatively
- Build inclusive agreements
- Carry out and monitor agreements



BUILDING PARTNERSHIPS : FUNCTIONS AND TASKS

EXPLORE

- Evaluation of costs, benefits, risks and opportunities; exploratory dialogues; stakeholder analysis, election of social themes and partners



BUILD

- Develop trust between partners; communicate effectively; agree shared vision, objectives, tasks, responsibilities and actions



MAINTAIN DEVELOP

- Monitor agreed plans; evaluate achievements and impact; adjust; institutionalize; replicate



BUILDING TRUST BETWEEN PARTNERS

WAYS FORWARD :

- Agree a shared vision
- Share relevant information timely
- Agree rules for working together
- Agree to seek consensus
- Respect diversity



COMMUNICATION

- Listen carefully, to understand
- Ask questions to clarify underlying interests
- Express your own interests clearly
- Provide an opportunity for everyone to participate
- Share relevant information, timely
- Respect diversity (opinions and beliefs different from your own)



INTEREST - BASED NEGOTIATION

What are interests ?

UNDERLYING MOTIVATIONS :

needs, aspirations, values, expectations,
fears, love, other feelings.



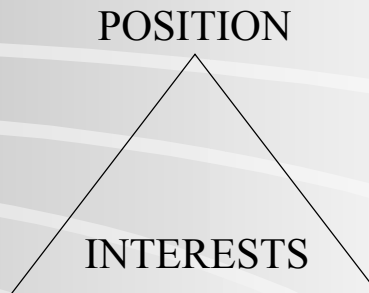
INTEREST - BASED NEGOTIATION

What are positions ?

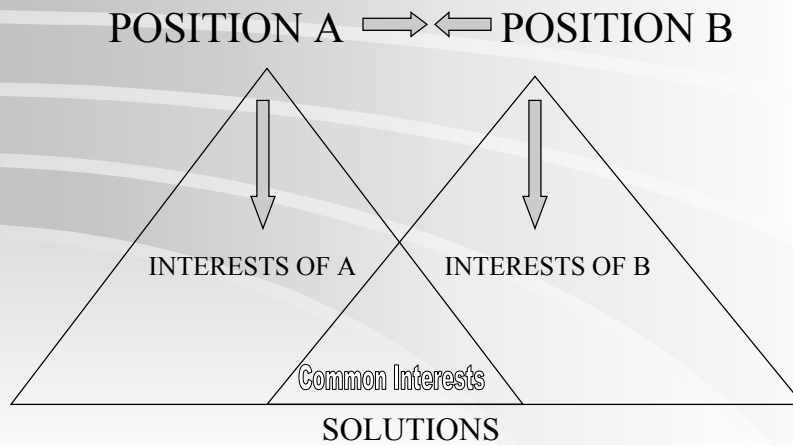
- Pre-formulated solutions
- Designed to satisfy specific sets of interests
- Frequently presented as inflexible “final offers” during negotiation



POSITIONS and INTERESTS



INTERESTS VS POSITIONS





WHAT IS FACILITATION ?

“Facilitation is the support provided by an impartial person to improve the effectiveness and efficiency of group decision - making and problem solving”



ROLES OF THE FACILITATOR

- **MACRO**
 - Analysis of context and situation.
 - Process design.
 - Convene / promote agreement to work together (rules)
 - Management of process (monitor and evaluate, adjust).

- **MICRO**
 - Promote trust and confidence.
 - Ensure positive environment.
 - Ensure effective participation, communication and discussion.
 - Enable decision - making.



THE FACILITATOR : ETHICS AND SKILLS

ETHICS :

- MAINTAIN CONFIDENTIALITY
- REMAIN OUTSIDE THE DEBATE
- ADDRESS POWER INBALANCE
- DEMISTIFY
- BE SENSITIVE TO CULTURAL DIVERSITY
- REMAIN IMPARTIAL

SKILLS :

- GOOD COMMUNICATOR
- CAPACITY TO EVALUATE
- ADEQUATE INTERVENTIONS
- COORDINATOR / MANAGER
- PROMOTOR OF RELATIONS



KEY FEATURES OF EFFECTIVE PARTNERSHIPS

- Voluntary participation of partners
- Added value to what each partner could achieve alone
- Partners agree shared vision and objectives
- Responsibilities, roles and tasks agreed by partners
- Mechanisms agreed by partners for monitoring, reporting and dispute resolution



INITIAL RESULTS

- *It is an intelligent approach to the challenges of corporate social responsibility* - a new modality of strategic partnership based on complementary competencies and resources
- *It entails a crucial role for local governments* - in the decentralised co-ordination of tasks; as mediator; to direct external funds
- *It requires flexibility, adaptability, and new skills* - to evaluate costs, benefits, risks and opportunities; in facilitating stakeholder engagement and consensus-building.



PARTNERSHIPS ARE NOT ALWAYS THE BEST SOLUTION

- Costs and risks may be too great in relation to anticipated benefits.
- A partnership may not be feasible if a firm commitment is lacking from senior management.
- A partnership may not be possible if one of the parties wants results too quickly.
- An existing conflict between potential partners may render a partnership almost impossible.
- The potential partners may not possess the flexibility needed to adapt to a changing environment.



REFLECTION

“The clear lesson from both the fall of the Berlin Wall and the destruction of the Twin Towers is that no one sector of society is equipped to solve the world’s complex problems on its own..... We may have reached a turning point when it is possible to imagine real partnerships bringing together government, the private sector and civil society. We could develop new institutions that facilitate cooperation and collaboration among all of the principal stakeholders in society....”

Klaus Schwab, President World Economic Forum
4 February 2002 (TIME magazine pp 46-47)

CONSENSUS-BUILDING FOR SUSTAINABLE DEVELOPMENT : LEARNING TO TALK TOGETHER

**Introductory Workshop by Edgardo García Larralde :
Basic Concepts, Assumptions and Tools for Building Multi-stakeholder
Consensus and Developing Tri-sector Partnerships
for Sustainable Development
Tuesday 9 September 2003
Elmina, Ghana**

Concepts, assumptions, emerging lessons: an overview

Human societies, even so-called 'simple' ones, are complex systems constituted by many different legitimate actors with varying interests. Globalisation has added to this complexity by bringing together, frequently involuntarily, people and organisations from widely different societies and cultures. A growing body of evidence from projects throughout the world, indicates that the key challenges facing corporations and governments in the implementation of development initiatives, are relational in nature. They are associated with issues of cultural diversity, decision-making processes and stakeholder expectations.

Experience has repeatedly shown that the significance of these 'soft' issues should not be underestimated. When mishandled, they tend to produce effects that impact traditional 'hard' issues (including the security and continuity of industrial operations). An awareness of this reality contributes towards erasing the simple and clear distinction that used to separate 'soft' and 'hard' issues in the minds of corporate directors and managers, especially in the extractive industries (mining, oil and gas).

There is a growing understanding among international corporations and other key stakeholders, that win-win solutions to development challenges are not only possible; they are the only guaranteed path towards sustainability. It is becoming increasingly clear that, in the mid and long terms, win-lose solutions tend to convert to lose-lose situations (witness the consequences of Israel's repeated 'victories' over the Palestinians). Tri-sector partnerships (between governments, corporations and communities) aimed at developing consensus-based win-win solutions to development challenges, are proving to be a powerful tool for managing complex and sensitive social and environmental issues.

Managing these issues requires innovative thinking and new skills, to develop relations of mutual understanding and trust and a shared commitment to achieve common goals, among stakeholders. Training key stakeholders (staff of corporations, government officials and community leaders, among others) in facilitation and consensual negotiation skills, has emerged as a key capacity-building activity of development initiatives. The role of a third party facilitator (or 'honest broker') in building consensus and developing partnerships among key stakeholders, has proven crucial in many successful projects and is increasingly considered a key component of development projects and programmes.

Workshop dynamics and conclusions : a summary

The introductory workshop, held during the afternoon of Tuesday 9th September 2003, congregated 26 participants from several countries. The first part of the workshop commenced with an initial presentation by the facilitator of the basic concepts, assumptions and tools associated with consensus-building and developing tri-sector partnerships. It was followed by a question and answer session, during which the following issues were raised and (in some cases) briefly debated by participants:

- Interest was expressed in examples of successful partnerships. In response, the facilitator briefly described case studies of projects in several parts of the world.
- Several examples of African experiences were brought up.
- In addressing questions raised by participants, and drawing from experiences in different countries, the facilitator mentioned critical success factors in developing consensus-based solutions to development challenges.
- The different roles played by NGOs, were critically debated. Examples of NGOs that promote dialogue and consensus-building amongst stakeholders, were contrasted with cases where NGOs push their own agendas, sometimes without sufficient consideration for the interests of other stakeholders.
- Questions were debated relating to capacity-building among stakeholders, geared to developing consensus-building and consensual negotiation skills.

After the coffee break, the second part of the workshop started with participants breaking out into 4 groups to carry out a short role-play negotiation exercise. After the 4 groups had finished the exercise, they presented the results in plenary. The groups also described what had occurred in the negotiation, and how they had arrived at the results achieved. In plenary, the different results and negotiation processes were analysed and debated by participants.

The final part of the workshop consisted of a presentation and subsequent discussion of the roles, skills and ethics of a third party facilitator, in processes of consensus-building and partnership development. The limits and challenges of partnerships were also debated. In evaluating the workshop, participants made the following observations:

- The concepts, tools and consensus-building approach presented can be very useful to the three stakeholder groups (governments, communities and companies).
- The exercise carried out during the workshop was very useful in pointing out and helping understand how learnt attitudes fuel adversarial dynamics capable of foiling win-win solutions, even when these are objectively possible and clearly superior to other solutions. The exercise provided insights into the participants' own reactions.
- It was widely felt that the workshop should be repeated for other stakeholders, with more time dedicated to practical exercises and discussion of case studies (at least a full day was considered necessary).
- Several participants expressed an interest in organising training activities geared to developing facilitation skills among local actors.

The facilitator informed that each participant would receive a copy of the 33-slide workshop presentation. The workshop commenced at 2:45 pm and ended at 6:30 pm.

Technologies for Small Scale Mining

Examples of traditional and alternative mining and processing methods

Part 1

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Content

- 1 Traditional mining and processing techniques in Small Scale Mining (mainly for gold, tantalite, cassiterite and gemstones)
 - alluvial deposits
 - primary deposits
- 2 Criteria for the evaluation of technical measures
- 3 Examples of appropriate mining and processing techniques for Small Scale Mining
 - 3.1 Crushing and Grinding
 - 3.2 Screening and classifying

- 3.3 Gravity concentration
 - Sluice boxes and strakes
 - Jigs
 - Shaking table
 - Spirals
 - Centrifugal Concentrators

- 3.4 Amalgamation of concentrates

- 3.5 Flotation

- 3.6 Cyanide leaching

- 3.7 Tailings and water management

Mining Techniques in Small Scale Mining

(Examples, mainly gold mining)

Mining techniques in Small Scale (Gold) Mining

Alluvial deposits:

Alluvial mining:

- manually (picks and shovels, wheelbarrows)
- ground sluicing
- monitors/gravel pumps
- dredges (gravel pump/jet pump)
- heavy equipment
(bulldozers, front end loaders, backhoes, trucks)



Ground sluicing



Monitor/gravel pump



Monitor/gravel pump

maximum capacities of
monitor/gravel pump operations:

pump inlet diameter	m ³ /d (16h)	m ³ /h
4"	150	9,4
5"	200	12,5
6"	280	17,5



Monitor/gravel pump



Dredges (gravel pump)



Dredges (gravel pump)

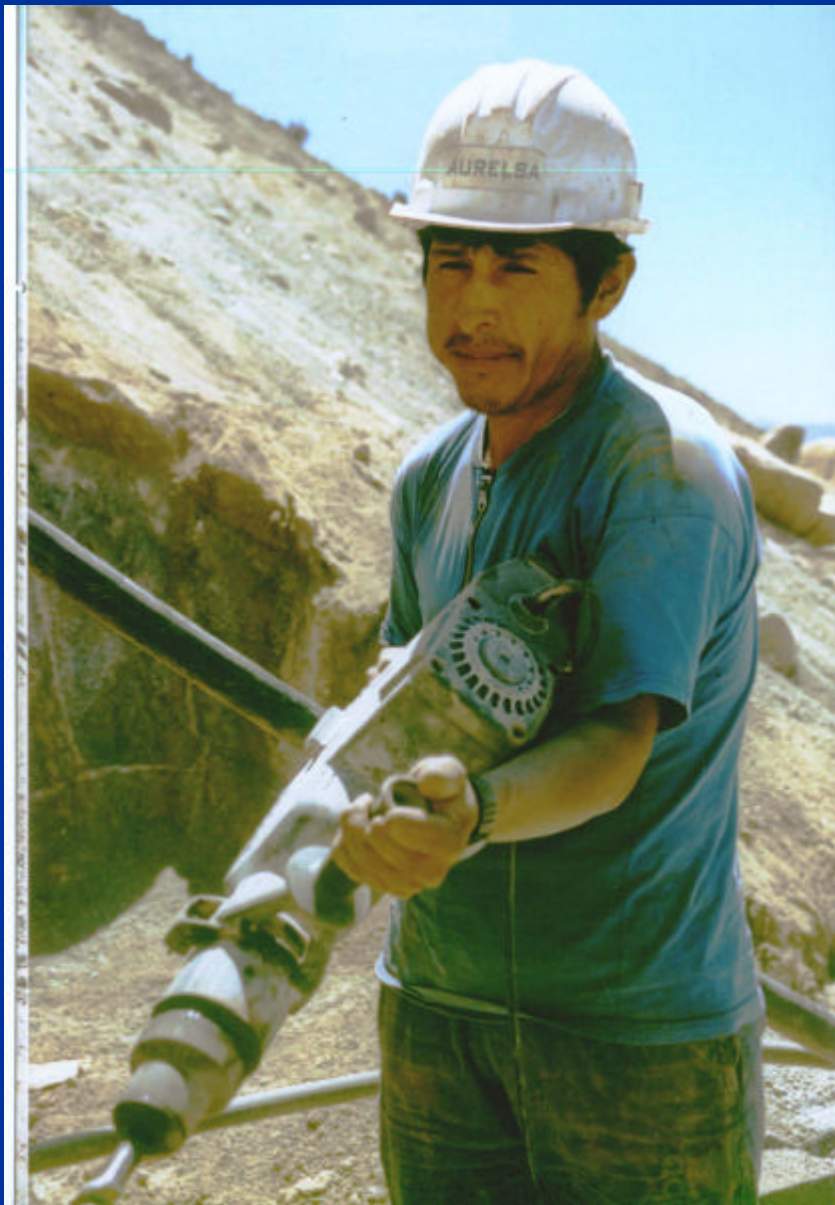


Heavy equipment (bulldozers, front end loaders, backhoes, trucks)

Primary deposits

Primary mining

- manually (hammers and chisels, crow bars)
- manual or mechanized drilling
- use of explosives
- open pit mining
- underground mining



Electrical drilling machine
and small generator



Processing Techniques in Small Scale Mining

(Examples, mainly gold mining)

Processing techniques in small scale mining

great variety of individual methods

- depending on knowledge and financial situation of the small miners
- gap in technology reaches from
 - “**primitive methods**” (gold pans, stone mills) to
 - “**Agricola methods**” (sluice boxes, strakes, stamp mills) to
 - “**modern methods**” (shaking tables, spirals, centrifugal concentrators)

Alluvial ore processing

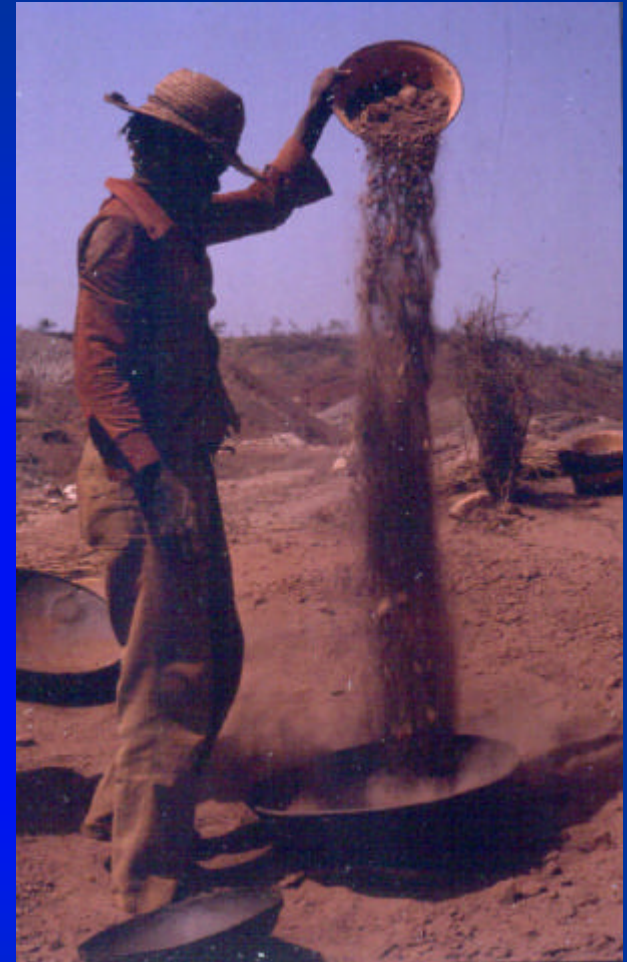
- manually (pan, hand jigging for diamonds or cassiterite)
- sluice boxes and strakes
- mechanical jigs (for gold, diamonds, tantalite and cassiterite)
- direct amalgamation of gold bearing ore (in situ, in sluices)
- amalgamation of free gold concentrates
(manually, in barrels, cones, mixers)
- „burning“ of amalgam
- dry panning and windsorting (for gold, tantalite)

Primary ore processing:

- manually (gold pans, stone mills, rocking crushers, sluices, hand jigs)
- mechanized
 - jaw crusher
 - mills (ball mill, hammer mills, chilean mills, stamp mills)
 - sluices and strakes
 - jigs
 - amalgamating plates
 - centrifuges (home-made, industrial)
 - direct amalgamation of gold bearing ore
 - amalgamation of gold bearing concentrates (manually, in barrels)
 - „burning“ of amalgam
- cyanide leaching
- flotation (rare)

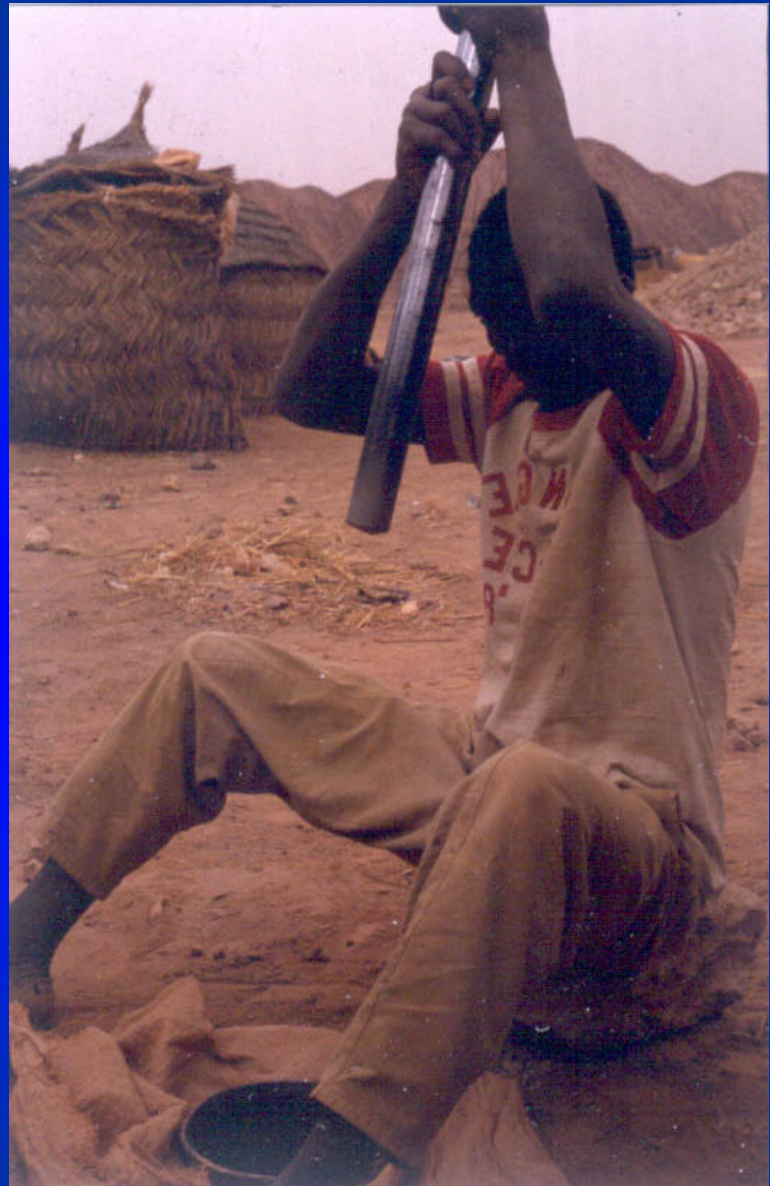


Pans (for gold, tantalite, cassiterite)



Windsorting

Manual milling

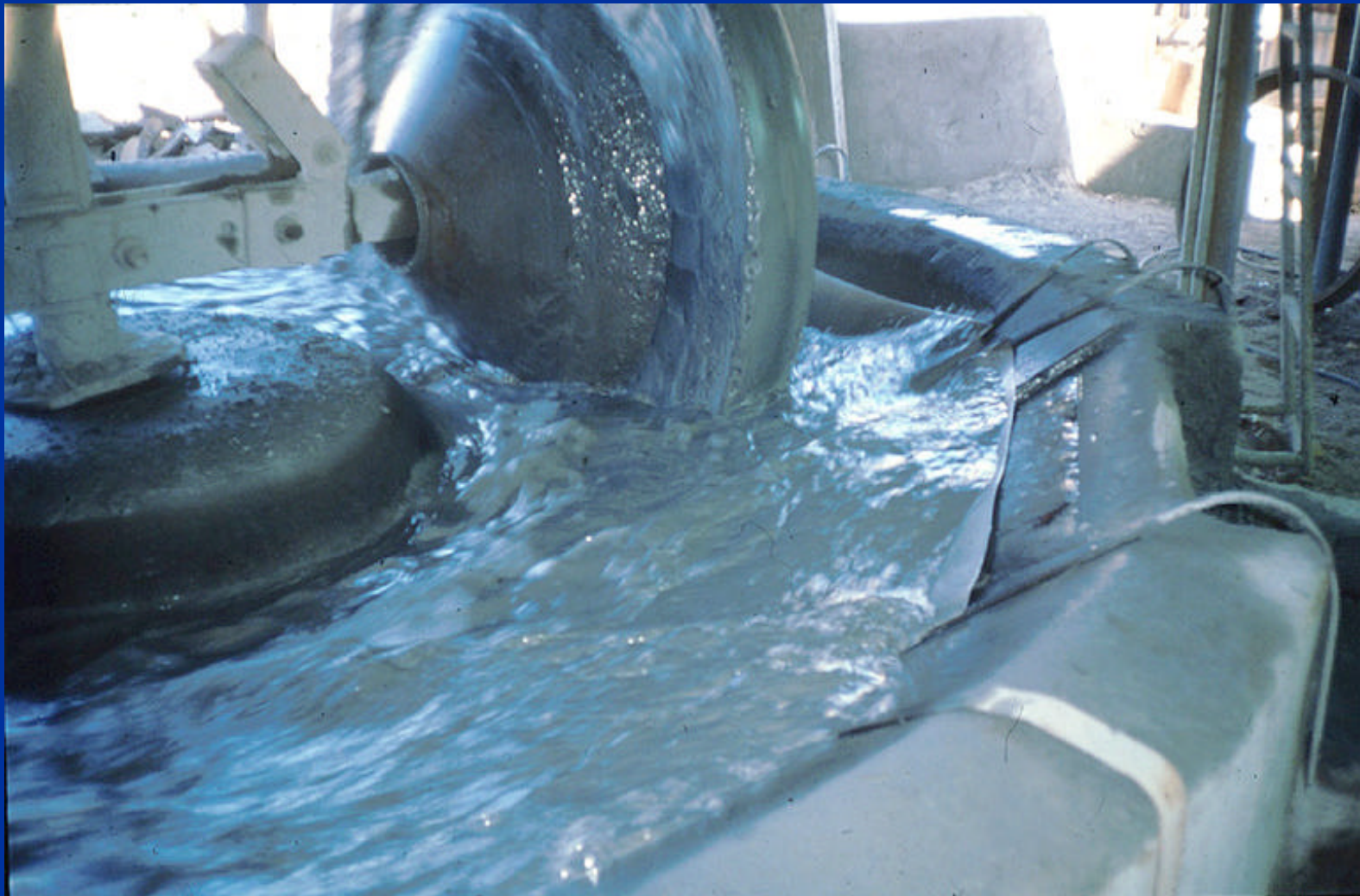




Sluice box (manual)



Stone mill (quimbalete, toloca)



Chilean mill

Amalgamation plate
(primary gold mining)





Sluice box (alluvial gold mining)



Sluice box (alluvial gold mining)

Sluice box /strake
after hammer mill
(primary gold
mining)





Sluice „Palong“ (cassiterite and tantalite mining)



Amalgamation of gold concentrates (manually)



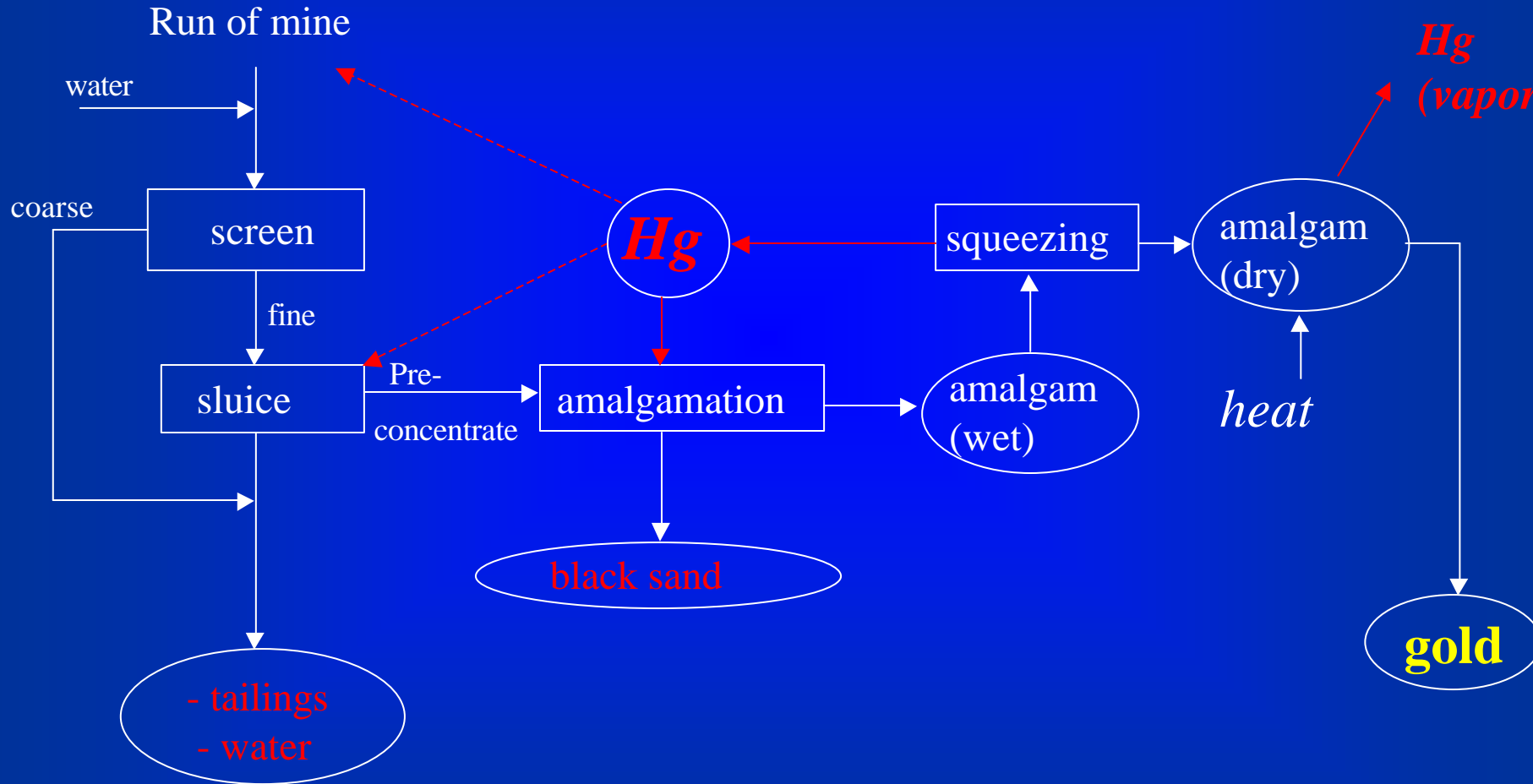
Manual amalgamation of gold bearing concentrates

- in buckets



in the sluice box

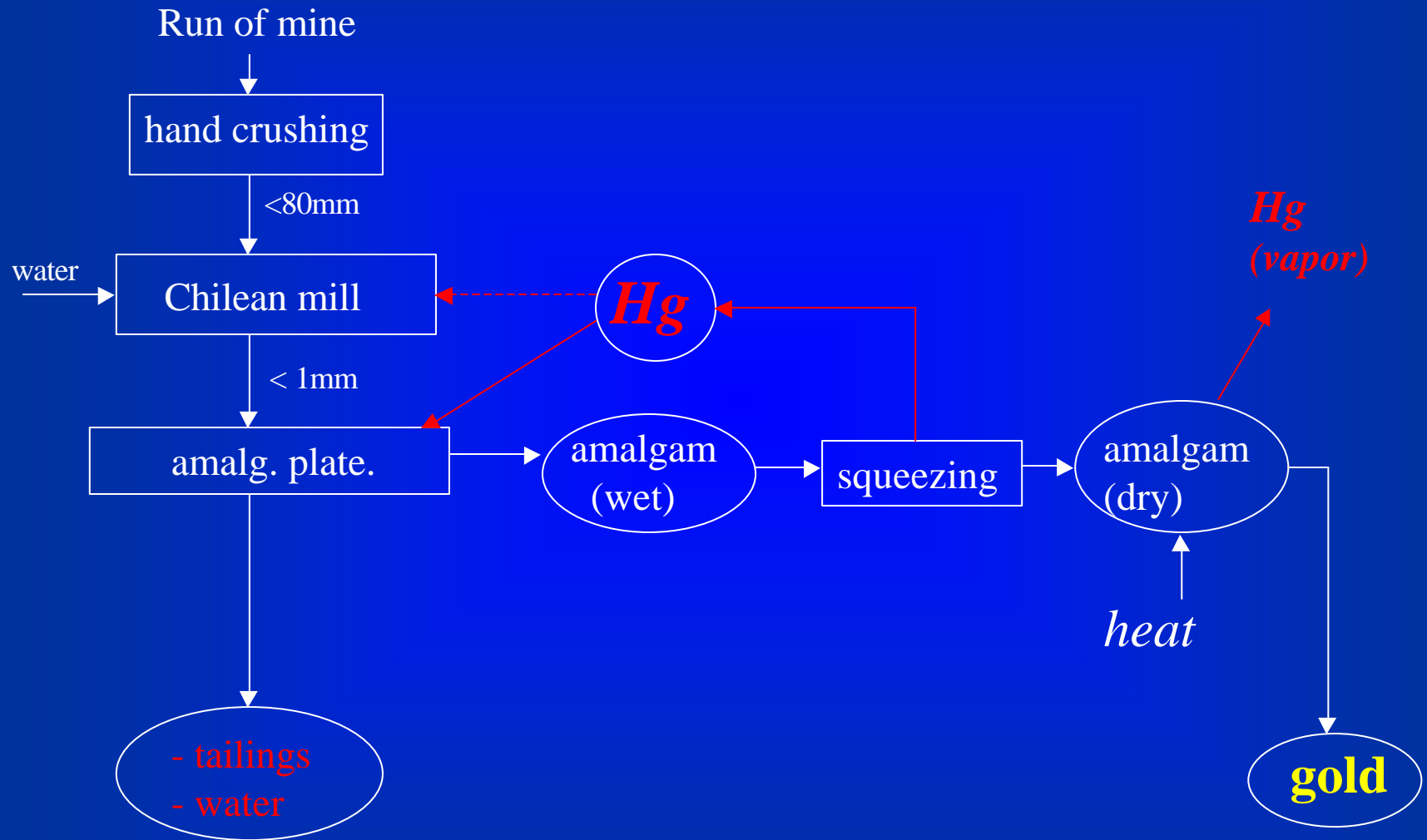
Flow-sheet traditional alluvial gold processing (example)





Cleaning and squeezing of amalgam

Flow-sheet traditional primary gold processing (example)





“Burning” of amalgam

Mercury emission in the traditional processing (1)

- **pre-concentration and concentration in open circuits**
 - use of mercury in the open cut (in situ) (alluvial mining)
 - use of mercury in sluice-boxes (alluvial and primary mining)
 - use of mercury in mills (ball mills, Chilean mills, stone mills)
 - use of amalgam plates
 - use of mercury in centrifugal concentrators

mercury is lost as:

floured mercury, amalgam flocs, fine amalgam, partially amalgamated gold

Mercury emission in the traditional gold ore processing (2)

- **in amalgamation tailings**

(floured mercury, amalgam flocs, fine amalgam, partially amalgamated gold)

- **burning of amalgam**

(vapor)

- **losses through spilling**

(liquid mercury)

Mercury emissions in traditional gold ore processing (typical average values)

emissions through (pre-)concentration in
open circuits

1- 40kg Hg/kg
recovered Au

emissions in amalgamation tailings

0,01-1kg Hg/kg
recovered Au

emissions through separation Au-Hg
(generally burning of amalgam)

0,5 – 2 kg Hg/kg
recovered Au

(values are depending on the used method, the type of ore, the experience of the operators, etc.)

Amalgamation of raw ore means that all tailings are contaminated with mercury. It has to be strictly avoided!

Alternatives for the amalgamation of raw ore/in open circuits

- gravity concentration with direct smelting and amalgamation **or** leaching of the concentrates (not both!)
- flotation
- cyanide leaching of raw ore or concentrates

Deficiencies of traditional methods

- limited capacity (manual mining and processing)
- low recovery (in some cases)
- negative environmental impacts (mostly)
- industrial safety not existent (mostly)
- high demand and costs for mercury and other reagents like cyanide (gold mining)
- hard manual work (mostly)
- limitation to high grade ores (in many cases)
- no recovery of valuable by-products (often)
- processes not really made for the particular deposit but copied from the neighbour

Advantages of traditional methods

- known and accepted processes (sometimes since centuries)
- simple processes (handling and maintenance)
- low-cost, self made or locally produced equipment and machines
- processes are adapted to the local working structure, to the cultural and social environment
- processes are adapted to the existing marketing system
- little mechanization gives work to many uneducated people

It is often better, to improve the traditional methods in a mining area than to introduce new, unknown processes

Critics against small scale mining concentrate generally on the following main factors

- informal activity
- deficient industrial safety
- **environmental impacts**

Main environmental impacts of small scale mining

- mercury emissions
- sulfide emissions
- heavy metals emissions
- emissions of solids (coarse, fine to rivers)
- cyanide emissions
- deficient tailings management
- devastation of land, riverbanks; erosion
- deforestation

Requirements for a clean technology in small scale gold mining (1)

Technical-economical criteria:

- the technology must be technically efficient (more than the traditional methods)
- low in investment and operating costs
- the equipment, if possible, needs to be manufactured locally
- simple and safe handling and maintenance (also by less qualified personnel)
- durable and long life span
- can be integrated into the existing processes
- compatible to existing machines/equipment

Requirements for a clean technology in small scale gold mining (2)

Environmental criteria:

- low actual environmental impact
- no environmental "time bomb"
- better use of non renewable resources
- if possible, win-win-option (environmental improvement + economic advantage)
- use of new process helps to meet environmental standards/regulations
- use of new process helps to reduce conflicts with neighbors (e.g. farmers)
- if possible, integrated solution, no "end-of-pipe"

Requirements for a clean technology in small scale gold mining (3)

Social and cultural criteria

- the new technique approved by and proved together with the miners
- the new method is used elsewhere in the country (helps finding experienced personal)
- appropriate personal is available (quality and quantity)
- the new process does not interfere with religion, habits, superstitions
- the new process does not need substantial changes in the organization of the miners, it fits into existing work schedules and forms
- the new process does not create problems in the marketing of the products
- the new process does not cause problems between miners and other actors (concession owners, gold buyers, equipment and consumable suppliers, etc.)

Examples for processes and equipment appropriate for Small Scale Mining

- Crushing and grinding
- Screening and classifying
- Gravity concentration
 - Sluice boxes and strakes
 - Jigs
 - Shaking tables
 - Spirals
 - Centrifugal Concentrators
- Amalgamation of concentrates
- Flotation
- Cyanide leaching
- Tailings and water management

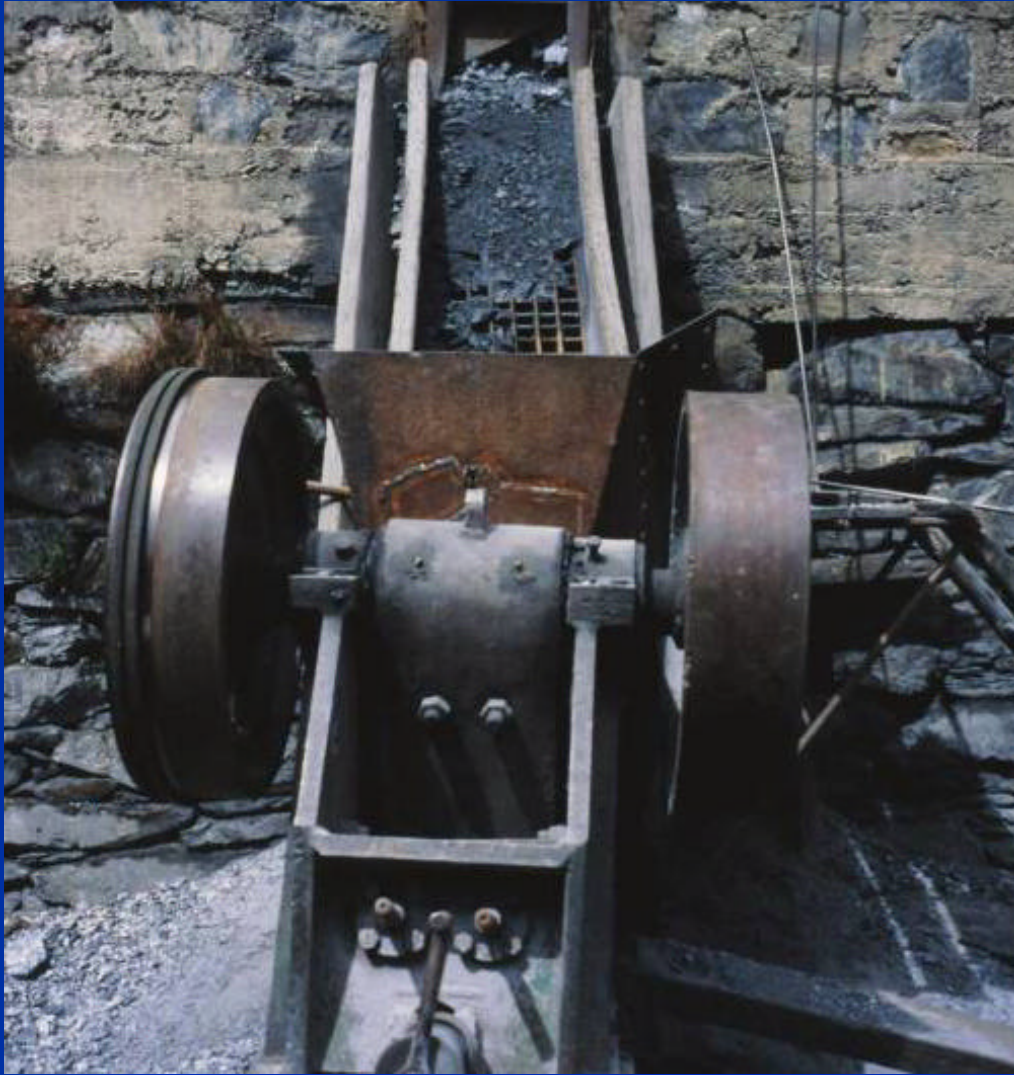
Crushing and Grinding

Jaw Crusher

capacity: 0-1000t/h

Sizes appropriate for SSM: 8'x 12' (20cm x 30cm) or larger

- can be produced locally
- simple operation and maintenance
- is necessary before a ball mill
- improves capacity for other mills



Jaw crusher

Mills (mechanized)

- stamp mill
- Chilean mill
- ball mill
- hammer mill

Stamp Mill

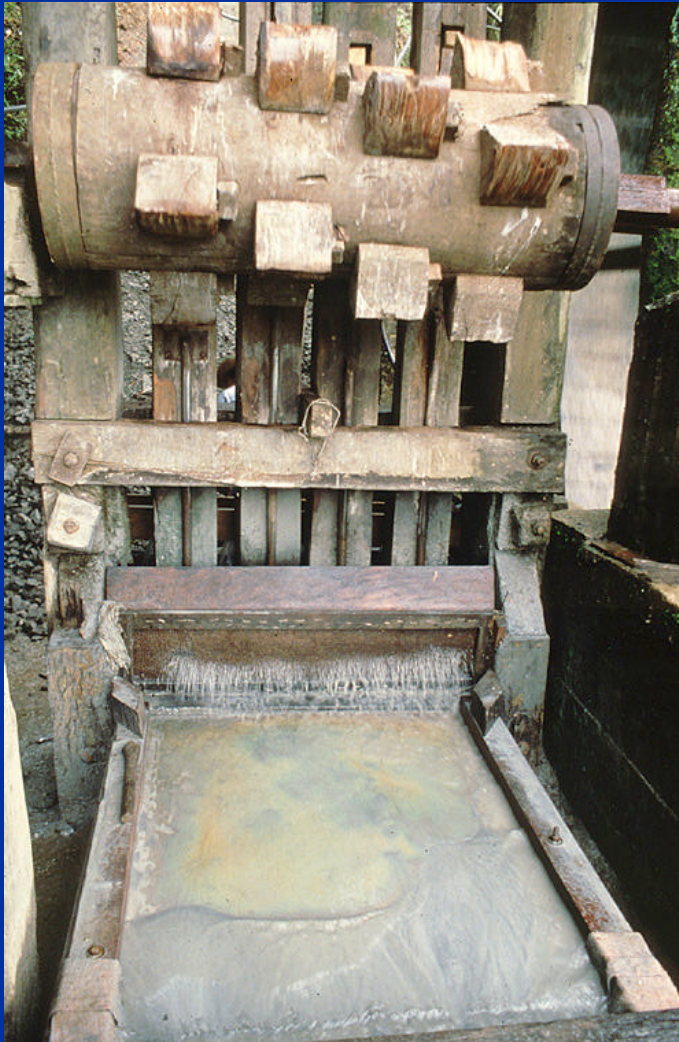
capacity: 50-90kg per hour and stamp (e.g. with 4 stamps ca. 5-9 t / 24h)
(depending on product size, hardness of feed, stamp weight, etc.)

Advantages:

- good for local production (can be made mainly of wood)
- can be driven by water wheel
- feed size up to 100mm (depends on the weight of the stamps)
- can work with hard feed
- good for „batch“ processing

Disadvantages:

- low capacity (especially for fine grinding)
- makes a lot of noise and vibrations
- often used for simultaneous amalgamation



Stamp mill (wooden, driven by water wheel)



Stamp mill (iron, driven by electrical motor)

(both mills with amalgamation plate)

Chilean Mill

capacity: 3 to 25 t / 24h

Advantages:

- can be produced locally (simple forms)
- can be driven by a water wheel
- feed size until 10mm (depends on diameter and weight of the wheels)
- works with hard material
- good for batch processing

Disadvantages:

- for larger mills relatively high investment costs
- often used for simultaneous amalgamation

Chilean mill



(above: in combination with strakes)

Ball mill

capacity: 0-500t/h

Sizes used in SSM: 2" x 3" (60cm x 90cm), ca. 5t/24h
3" x 4" (90cm x 120cm), ca. 15t/24h
(capacity depends on hardness of feed, feed size, product size)

Advantages:

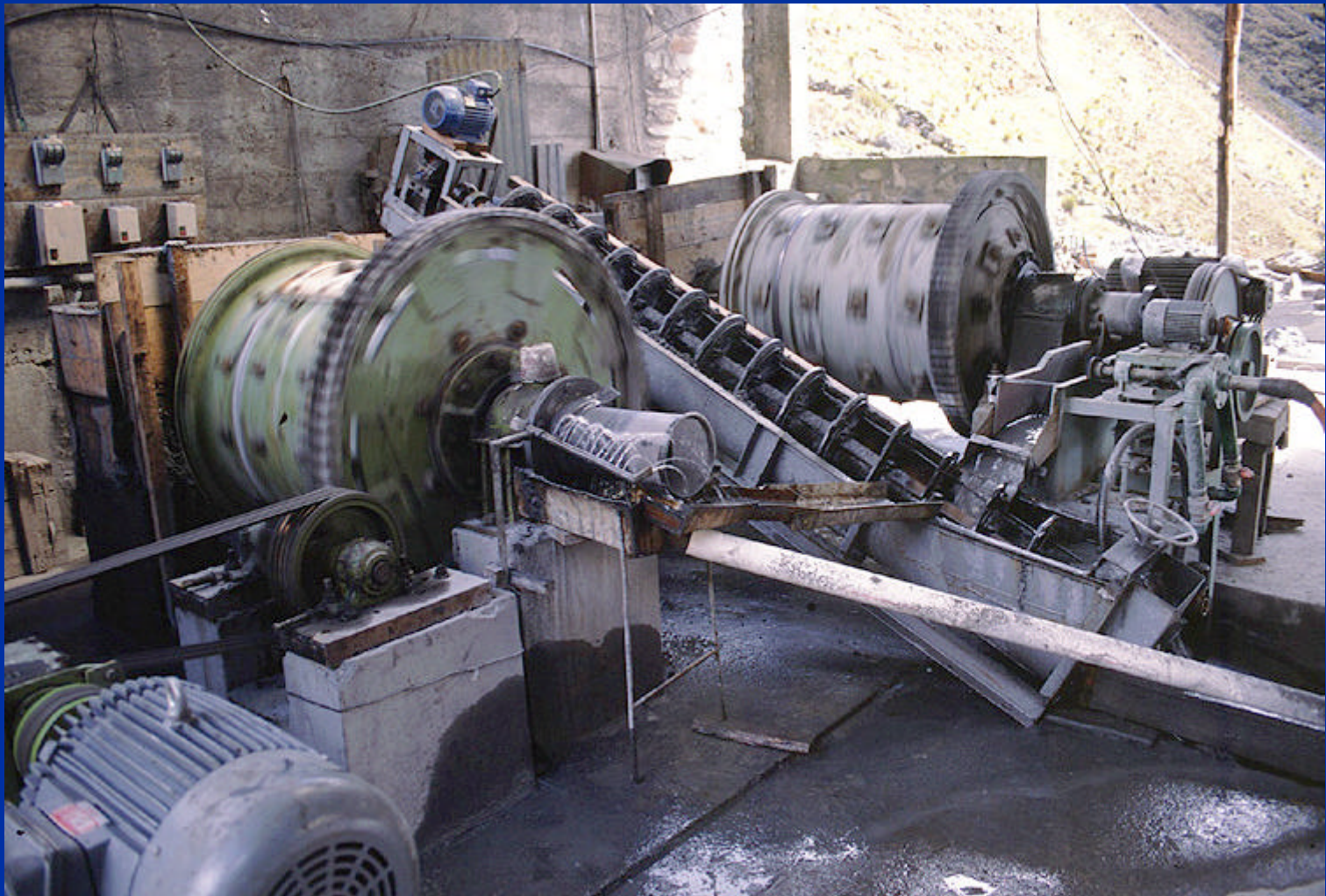
- product size can be very fine (e.g. for flotation, < 150µm)
- works with very hard material
- can be built locally (in experienced workshops)
- saves coarse gold inside

Disadvantages

- feed size <20mm (needs crusher)
- danger of overmilling
- mills gold to very thin flakes, stains the gold with iron
- not good for batch processing
- in non-mining countries, balls difficult to find
- high investment costs compared to capacity



Ball mill (dry batch operated, Peru)



Ball mills (primary and secondary, with spiral classifier and jig)

Hammer mill

capacity (used with water) in SSM: 0,3 to 2,5t/h

normal sizes in South America: „H 33“ , ca. 17 t / 24h or 700kg/h

„H 48“ , ca. 60 t/ 24h or 2,5 t/h

Advantages:

- can be produced locally
- feed size up to 60mm
- good for batch processing
- light weight
- simple operation and maintenance
- low cost compared to capacity

Disadvantages:

- not for very fine product size (usually until p_{80} of about $300\mu\text{m}$)
- not for very hard material (chalcedonic quartz veins)
- not good for brittle valuable minerals (tantalite, cassiterite)
- relatively high operation costs (hammers)



Small hammer mill (700kg/h)



Large hammer mill (2,5t/h)

Screening and Classifying

Grizzlies, non moved screens

examples for use:

- removes fine material before a crusher
- removes coarse barren oversize before a sluice (alluvial mining)



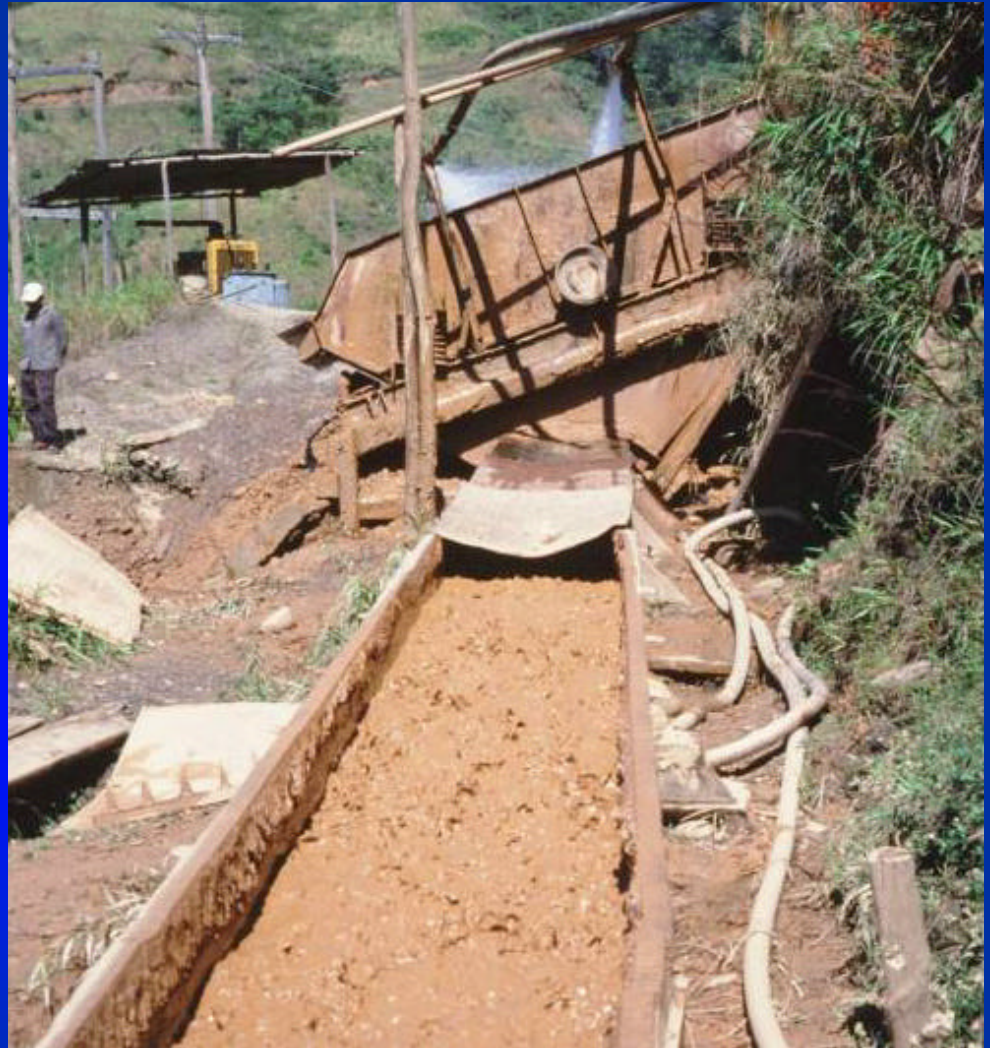


Screen

Vibrating screens

examples for use:

- removes coarse barren oversize before a sluice (alluvial mining)



Trommel screens, revolving screens

examples for use:

- scrubbs and screens alluvial material
- at ball mill discharges



manual trommel screen



Scrubber/trommel screen

Spiral classifier

examples for use:

- in milling circuits,
in combination with
ball mills

- to dewater sand
tailings (for dry
depositing)



Spitzkasten (or Cone)

examples for use:

- classify mill discharge in different sizes as gravity concentration feed
- for desliming, e.g. gravity concentration feed or vat leaching feed
- to classify leaching feed (fine to agitation leaching, coarse to vat leaching)

Hydrocyclon

Examples for use

- for desliming, e.g. gravity concentration feed or vat leaching feed
- to classify leaching feed (fine to agitation leaching, coarse to vat leaching)
- in milling circuits (usually in larger plants)

Copyright:

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Technologies for Small Scale Mining

Examples of traditional and alternative mining and processing methods

Part 2

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Concentration and Separation

Alternatives for the amalgamation of gold bearing concentrates (examples)

- a) direct smelting
- b) cyanide leaching
- c) leaching with other reagents (chlorine, bromine, thiourea, etc.)
- d) gold/oil agglomeration

These processes are difficult to implement in small scale mining, due to their

- need for highly enriched concentrates (a, d)
- technical complexity (c, d, e)
- high costs (c, d)
- health, safety and environmental problems (b, c, d)
- slow processes (b, c)

In some cases, simple methods can replace amalgamation of concentrates:

- panning (especially for coarse gold)
- combination of magnetic separation and panning (if magnetic minerals are present)
- blowing (for small quantities)
- friction-separation on inclined rough surface (for small quantities of flaky gold)

For alluvial gold in more sophisticated operations, a combination of magnetic separation (low-intensity, followed by high intensity) to separate magnetic minerals and dry electrostatic separation to separate the Zircon can be useful

The use of mercury/amalgamation will be in the next future the preferred method in small scale gold mining for the separation of gold from concentrates, due to its

- easy handling
- relative high recovery
- use with no or cheap machinery
- relative low costs

If it is not possible to eliminate the amalgamation in small scale mining, it has to be

- **controlled**
- **optimized** and
- **restricted to the amalgamation of concentrates**

Possibilities to minimize mercury emissions in small scale mining

1. Improve general handling (transport, storage, etc.)
2. Eliminate totally the use for raw ore
3. Optimize amalgamation of concentrates
4. Recover mercury from amalgam
5. Cleaning and appropriate deposition of amalgamation tailings

If the main mercury emissions are occurring either

- through its use in **open concentration circuits** or
- through **burning of amalgam**

these are the **main fields of intervention**

The most effective way to reduce mercury emissions in open concentration circuits is the **improvement of gravity concentration**

Reducing mercury emissions through efficient gravity concentration

Gravity concentration is the **most appropriate method** for small scale gold mining because of

- no reagents are needed
- simple operation (exception: jigs and centrifuges)
- low investment costs (exception: centrifuges, spirals, shaking tables)
- other valuable minerals can be recovered (sulfides, cassiterite, diamonds)
- great variety of types and size of machines available
- process water can be recycled easily after solids removal

Gravity concentration processes and equipment

The most important and appropriate gravity concentration devices for small scale gold mining are

- improved sluice boxes and strakes
- spirals (spiral concentrators)
- shaking tables
- jigs
- centrifugal concentrators (under certain restrictions)

Sluice box (alluvial), Strake or Blanket Table (primary)

Advantages:

- very low cost
- high capacity (alluvial mining)
- local production
- no motor no moving parts
- easy operation
- good recovery even for fine gold (if properly built and operated)
- high enrichment ratio
- good for cleaning of amalgamation tailings



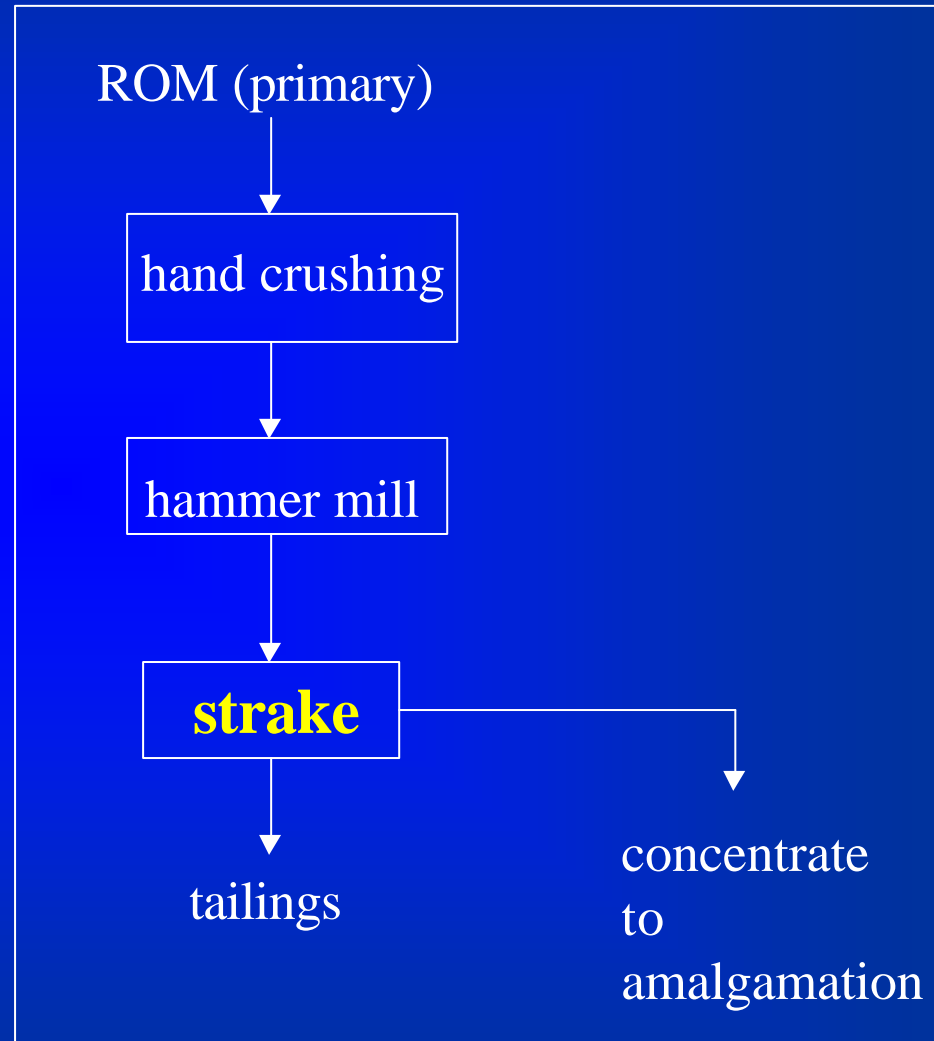
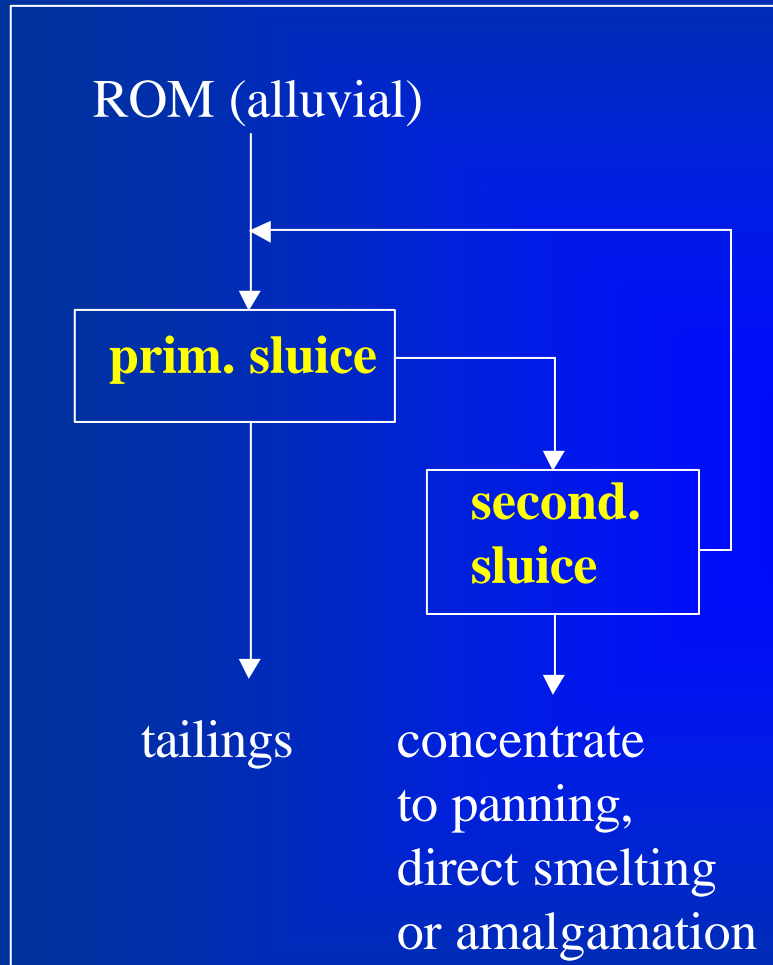
Disadvantages:

- needs much manual work, security problem
- does not completely recover sulfides in primary mining
- discontinuous process



Test Sluice Box (left: turbulent, right: laminar)

Examples for the use of sluice boxes/strakes (1)



Examples for the use of sluice boxes/strakes (2)

ROM (primary)

use: scavenger

jaw crusher

mill

spiral

strake

tailings

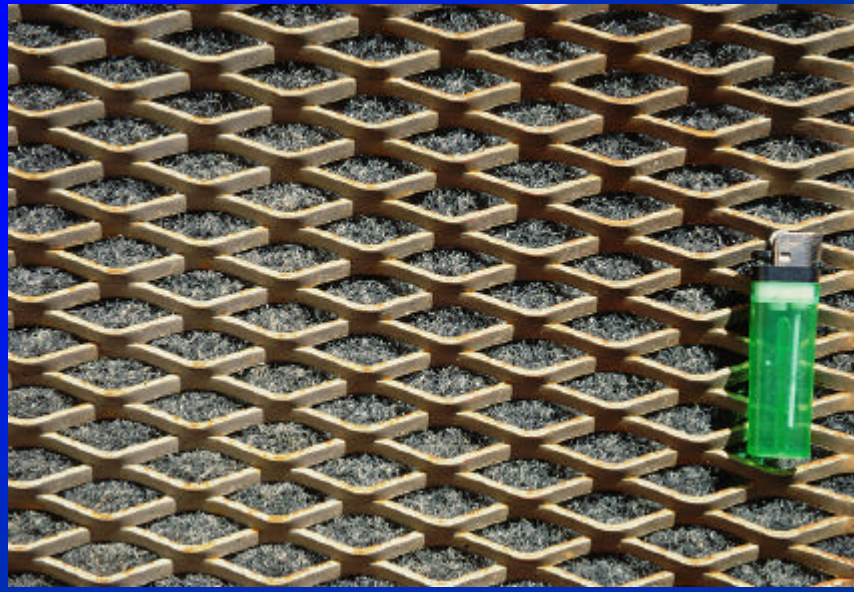
shaking
table

concentrate
to direct smelting or
amalgamation





Riffeled sluice box (for coarse gold)



Various carpets for sluice boxes



“carpet only” -sluice boxes:

- little amount of preconcentrate
- high enrichment
- fast amalgamation
- little amount of amalgamation tailings





„carpet-only“ sluicebox for fine alluvial gold (see re-cleaning sluice left)



Sluicebox for cleaning alluvial pre-concentrate



„carpet-only“ sluicebox for fine alluvial gold



„carpet-only“ sluicebox of a dredge

Typical mass balance for the use of sluiceboxes

Feed: alluvial gold ore: 100m³ or 180t (one day) = 100%

Rougher sluicebox pre-concentrate: 180kg = 0,1%

Cleaner sluicebox concentrate: 18kg = 0,01%

Only the cleaner concentrate or 0,01% of the material is amalgamated!

99,99% of the material is discharged completely free of mercury contamination

Cleaner sluicebox tailings are recycled to feed

Note: similar mass-balances can be achieved using other gravity concentration equipment

Jig (mechanic)

Advantages:

- can be produced locally
- high capacity (in alluvial mining), low cost
- good recovery of heavy minerals, such as gold bearing sulfides in primary mining and diamonds in alluvial mining
- recovers flattened gold after ball mills
- wide size range of feed and products

Disadvantages:

- relatively difficult set-up and operation
- needs motor (not the hydraulic type “Pulsator Jig”)
- needs hutch water



Jig (Type Panamerican) in alluvial diamonds processing



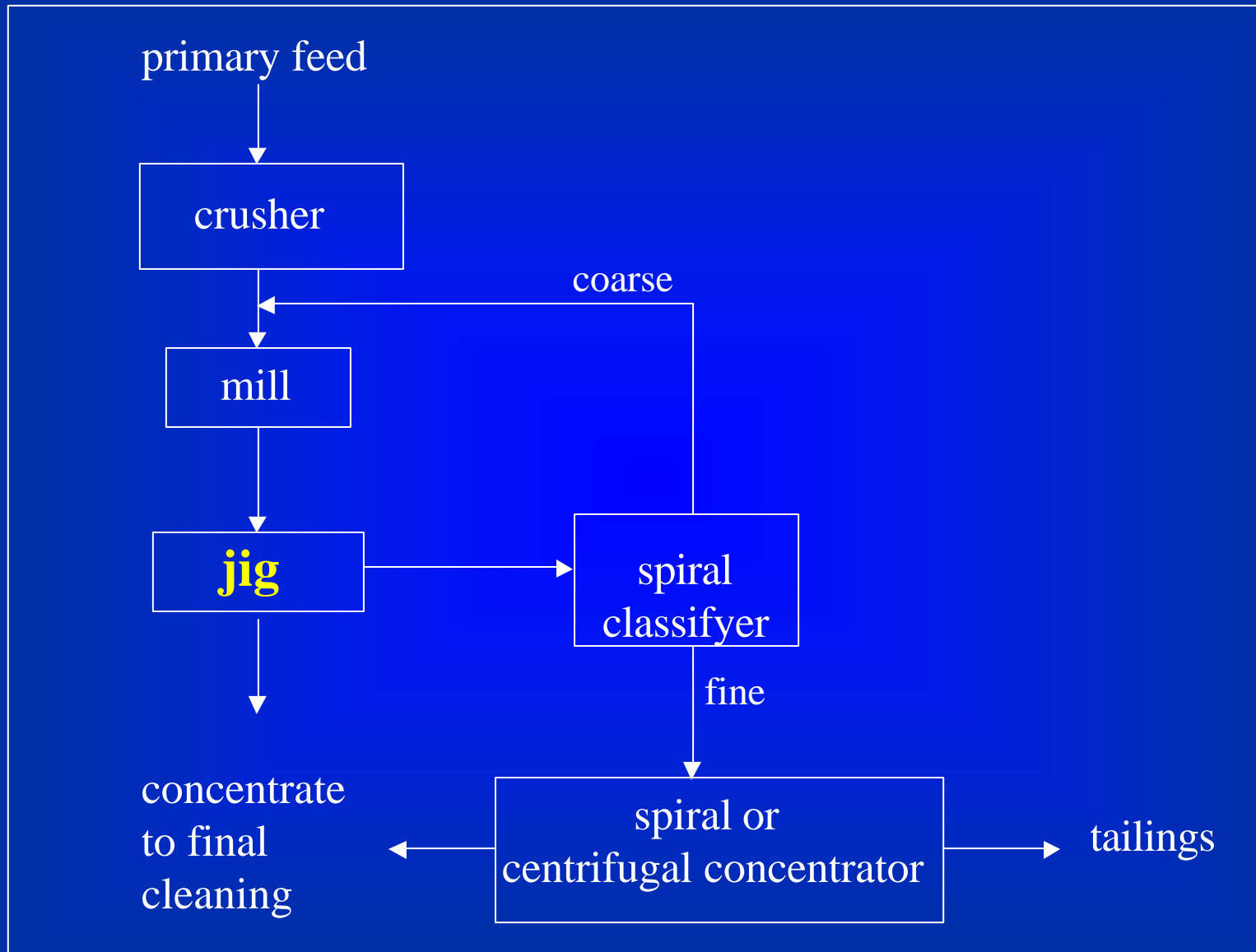
Jig (Ruby mining), combined with scrubber/trommel screen

Jig (cassiterite and tantalite mining)

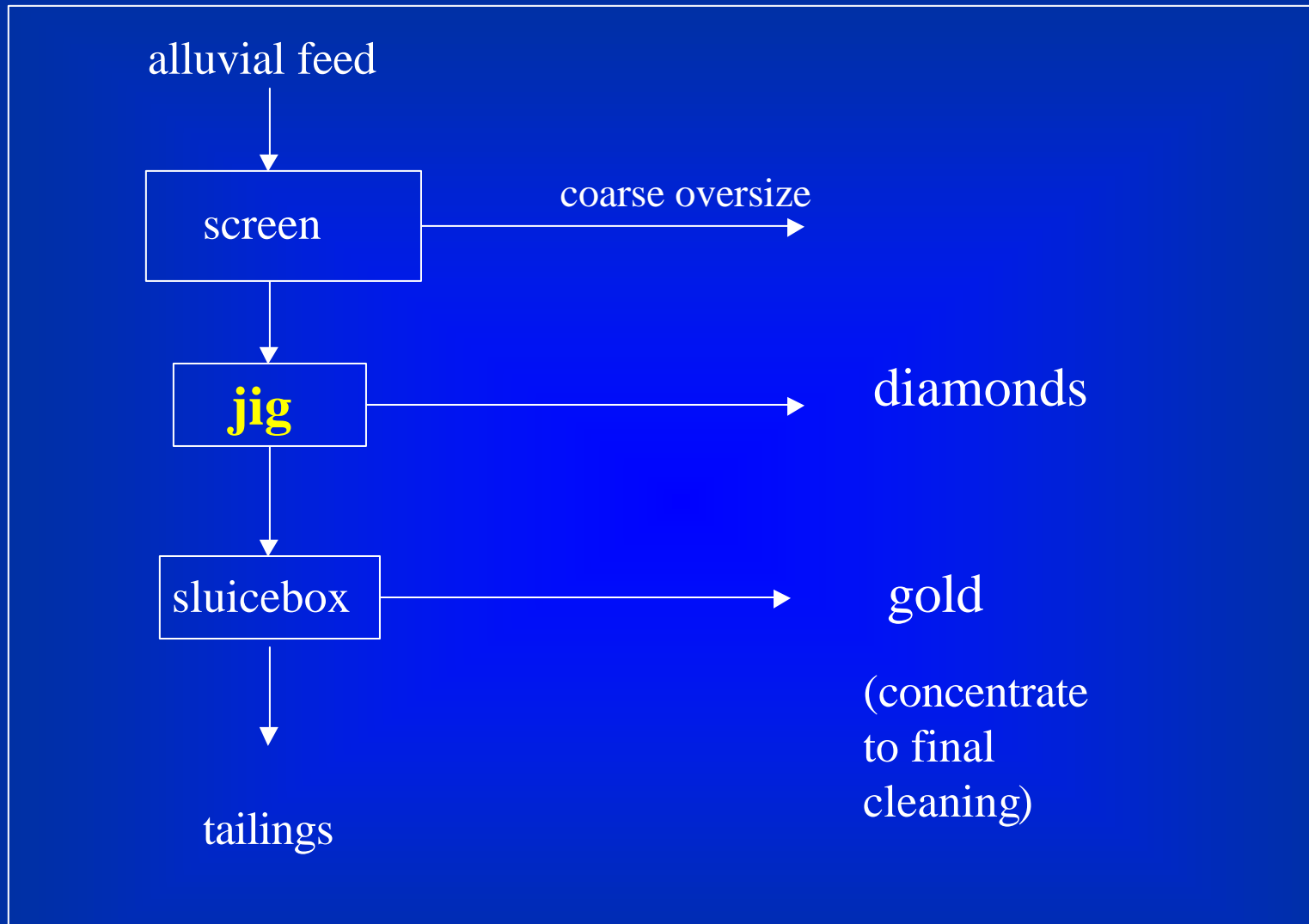


Jig (Type Denver Mineral Jig) in closed milling circuit (gold)

Examples for the use of Jigs (1)



Examples for the use of Jigs (2)



Shaking table

Advantages:

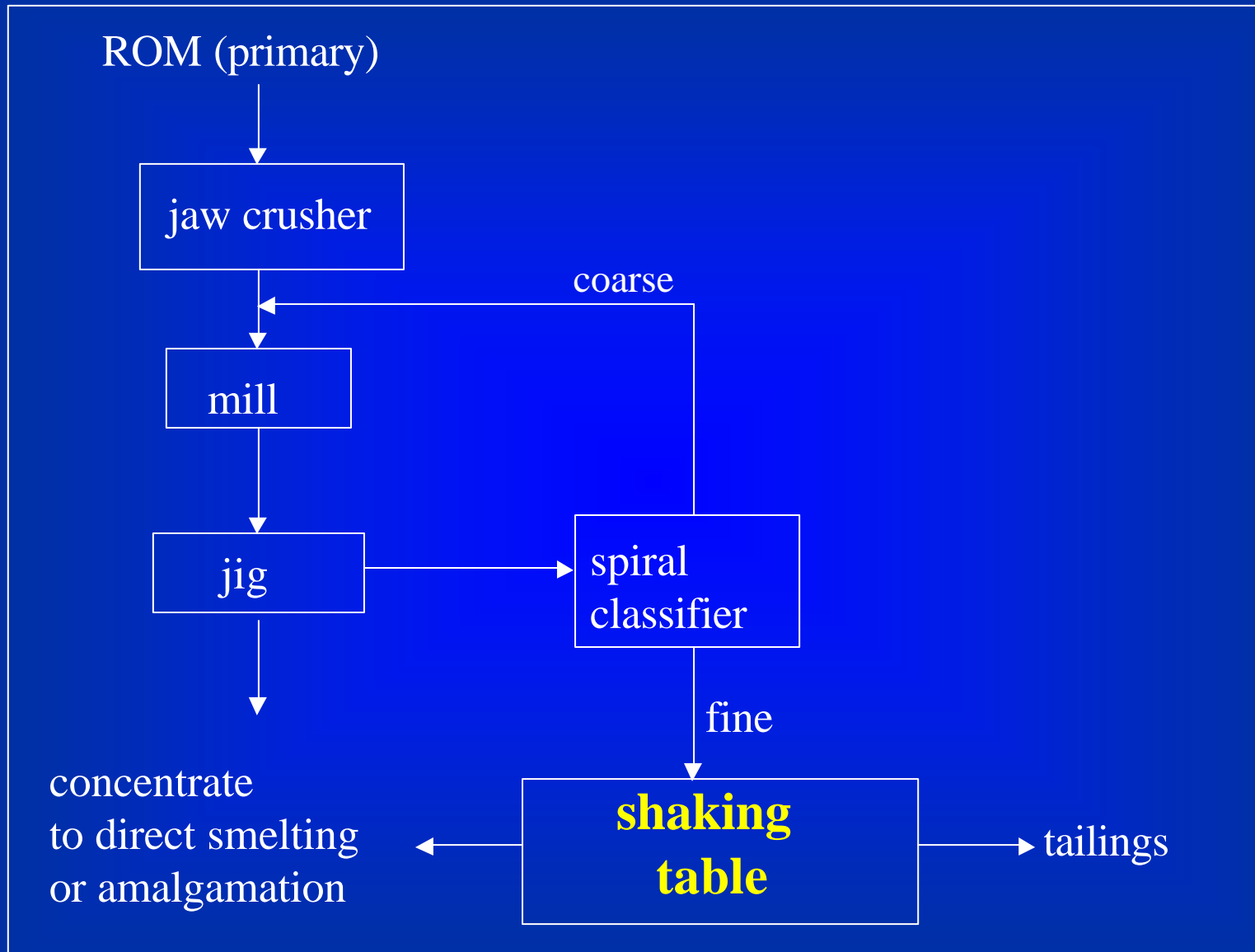
- recovery of various products (concentrate, middlings, tailings)
- visible process, good control
- flexibility
- good gold and sulfide recovery
- relative easy operation
- high enrichment factor
- for cleaning amalgamation tailings
- continuous process
- local production possible



Disadvantages:

- high cost regarding its limited capacity (principal use as secondary enrichment/cleaner step)
- needs very steady feed and constant supervision
- needs motor

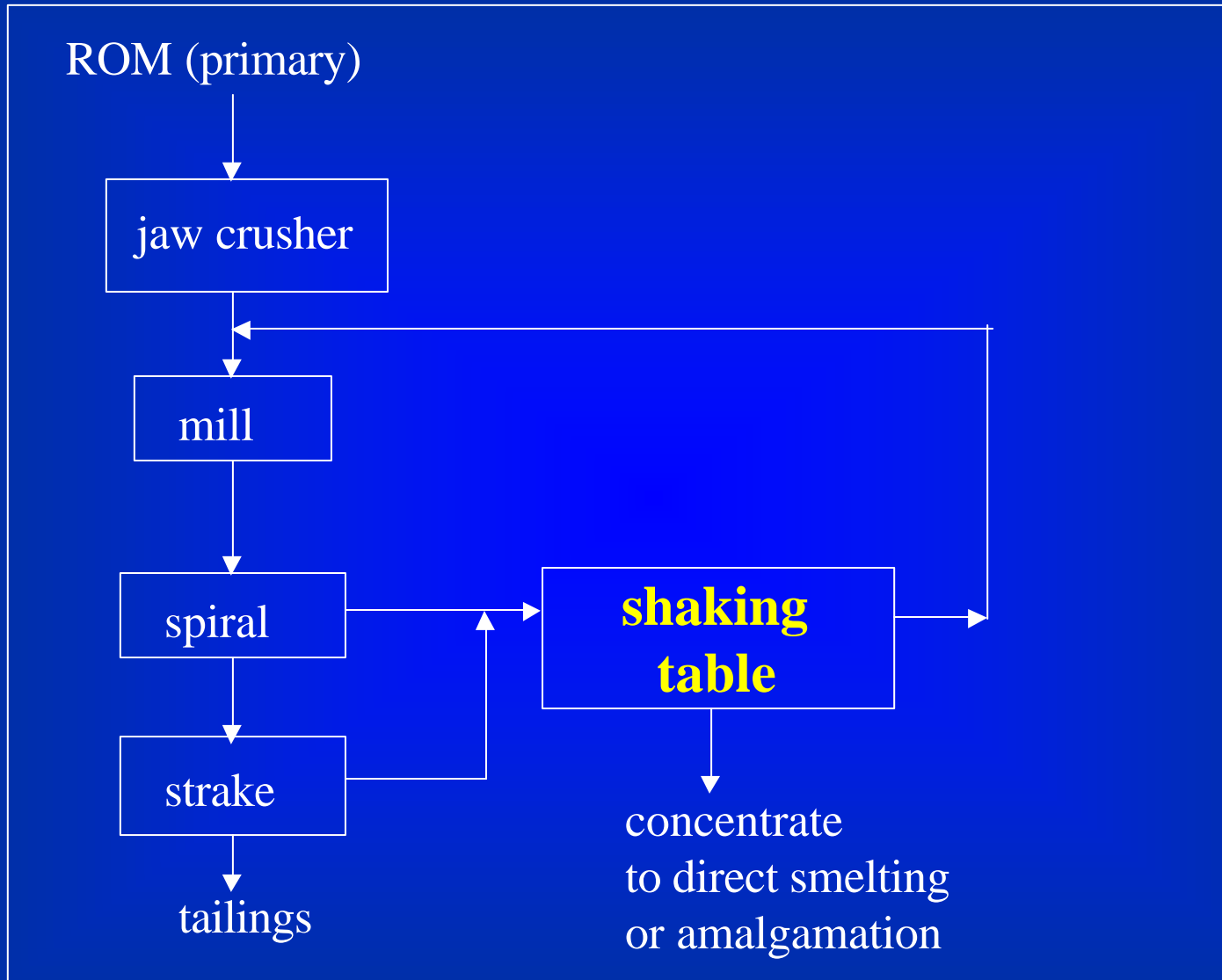
Examples for the use of shaking tables (1)





Gold, heavy minerals and quartz on shaking table (operation stopped)

Examples for the use of shaking tables (2)



Shaking table type „Gemeni“

- produces very clean gold concentrate for direct smelting
- low recovery with fine or very flaky gold
- low throughput, high price



Spiral concentrators (spirals)

Advantages:

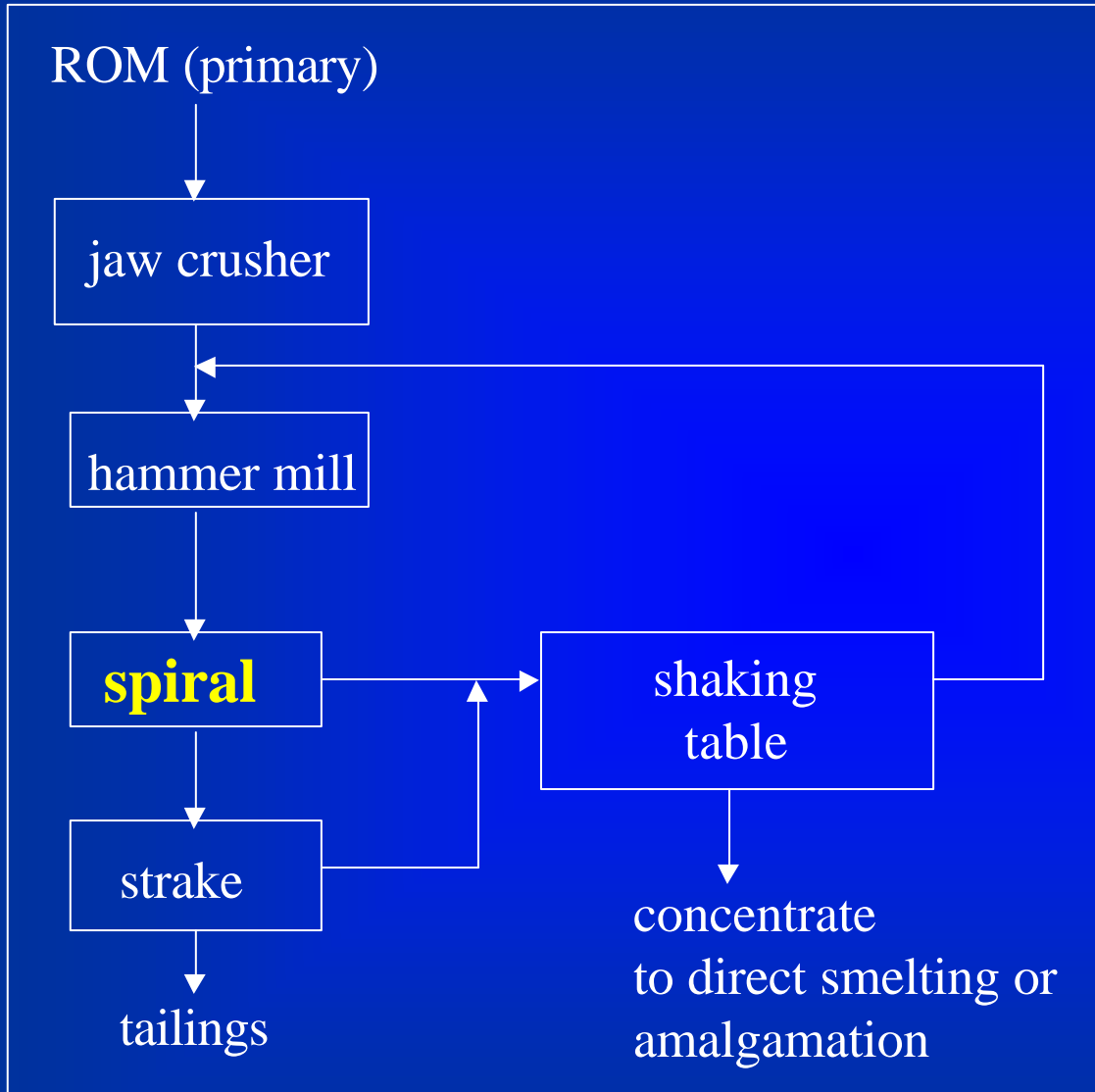
- recovery of various products (concentrate, middlings, tailings)
- material visible during the process
- good recovery of gold and sulfides
- easy operation
- continuous process
- high capacity for small primary gold mining (50t/d for a single start spiral)
- no motor no moving parts

Disadvantages:

- needs material screened to minus 2mm
- low enrichment factor (typical pre-concentration device)
- needs ca. 4 m altitude from feed to discharge (with pump or natural)
- not suitable for local production



Examples for the use of spirals (1)

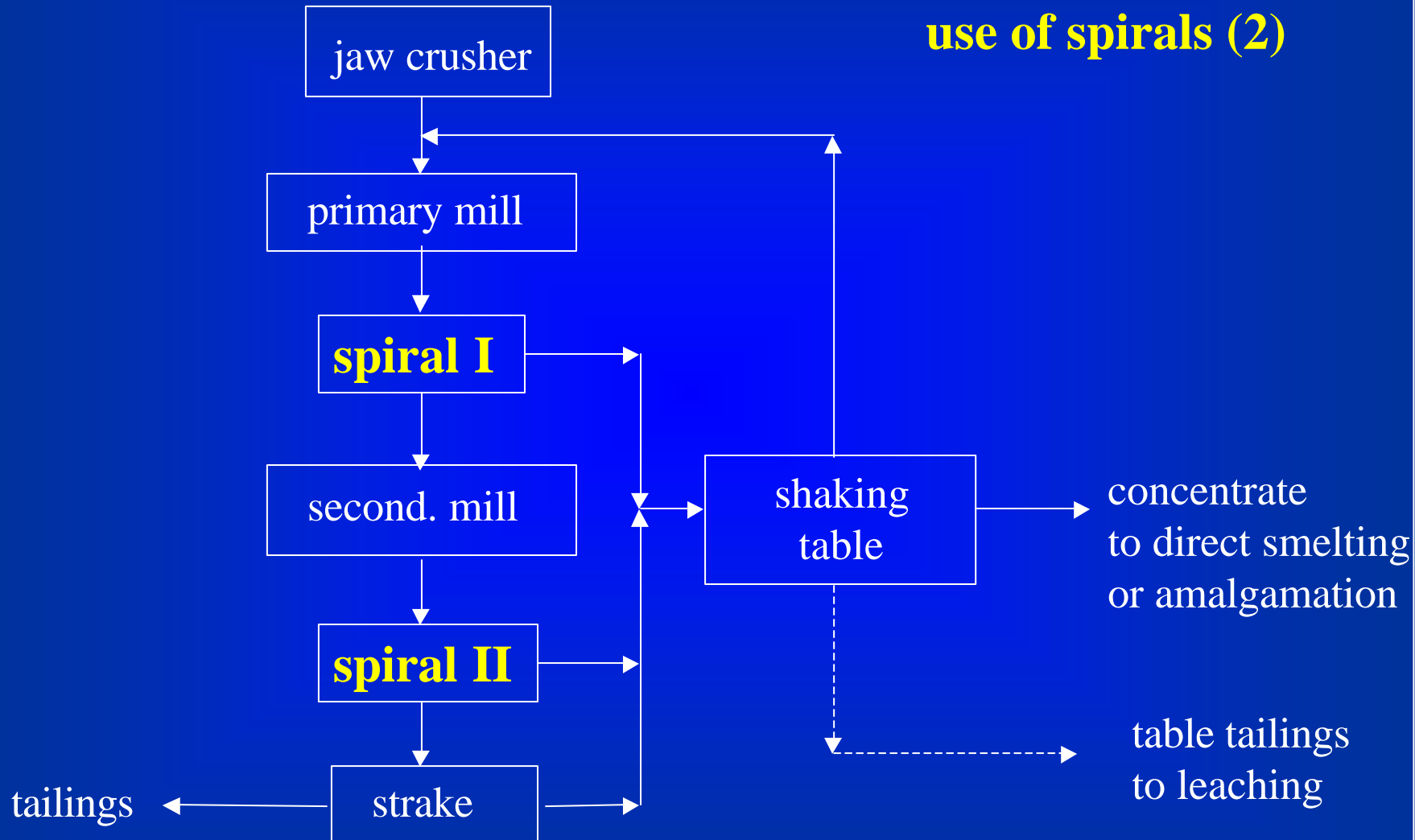




Spiral splitter setting (oxidised primary gold ore)

Examples for the use of spirals (2)

ROM (primary)



Centrifugal Concentrators (Falcon, Knelson), batch type

Advantages:

- size/capacity from small to large
- good recovery (for example, for fine gold $< 30\mu\text{m}$, better than any other equipment)
- very high enrichment factor (can work without secondary upgrading)
- good for cleaning amalgamation tailings
- high security against theft

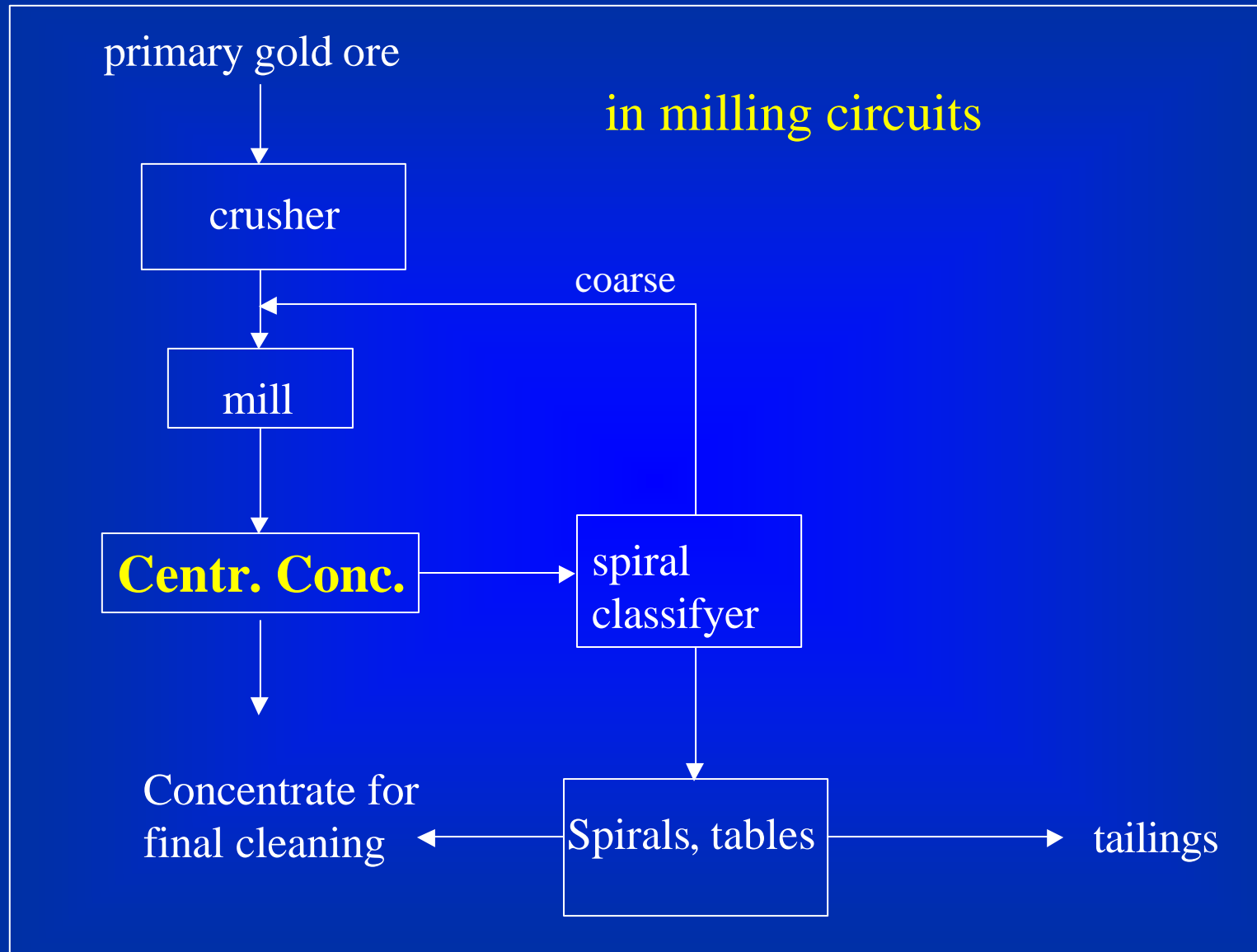
Disadvantages:

- needs clean and pressure water
- limited recovery of sulfides
- difficult handling
- needs electrical motor
- needs narrow classified feed
- local production not possible
- spare-parts and maintenance problem
- high investment costs

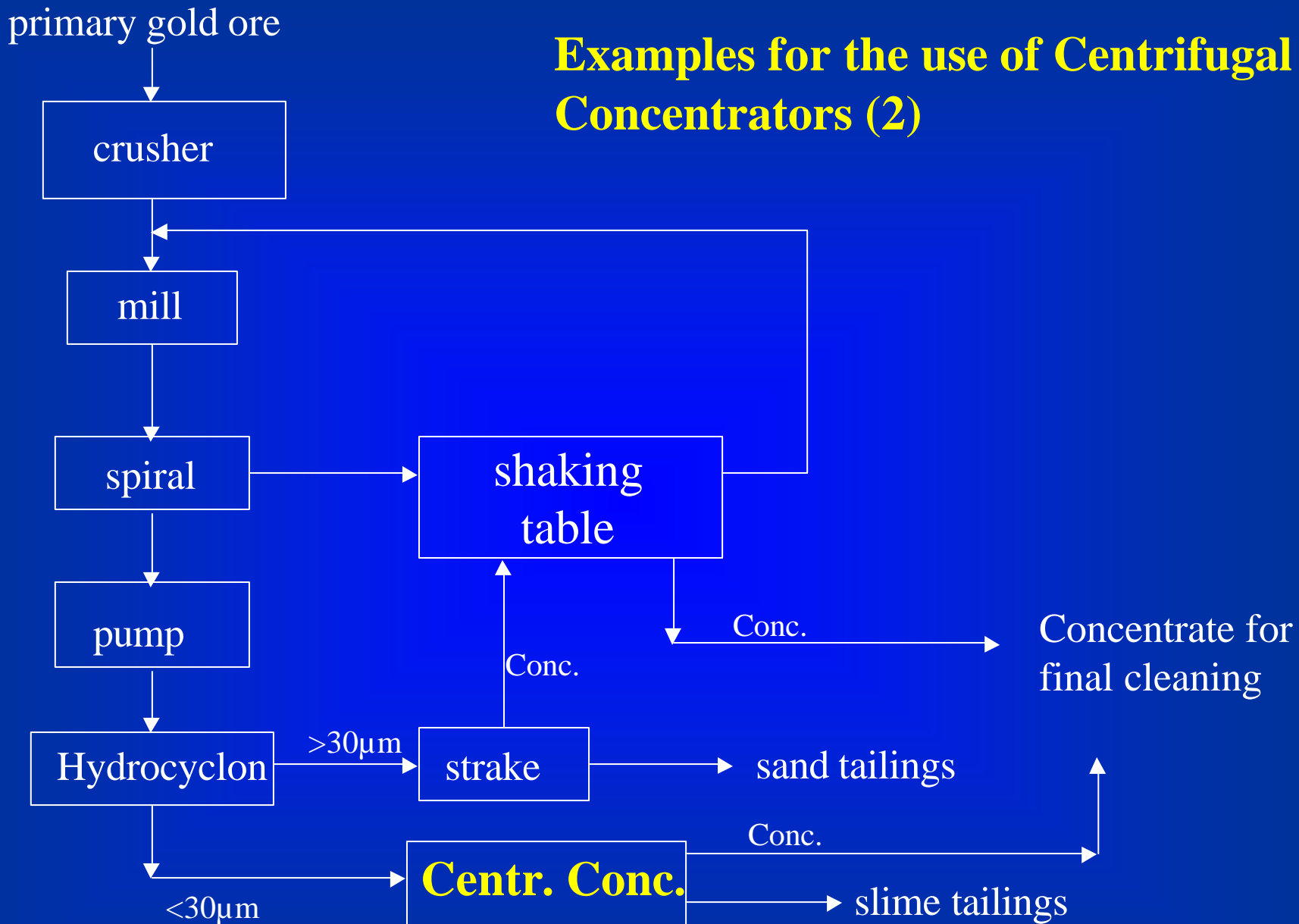


highly effective, but not really a “small scale miners proof “ piece of equipment!

Examples for the use of centrifugal concentrators (1)



Examples for the use of Centrifugal Concentrators (2)



Optimization of the amalgamation of concentrates

objective:

- high recovery
- low production of floured mercury
- low content of gold and mercury in amalgamation tailings

realized through:

- use of appropriate equipment (barrels, cones, mixers)
- appropriate amalgamation time
- use of reagents to improve amalgamation process
- process control

Mechanized Amalgamation



Amalgamation Drum



Amalgamation Mixer

Methods for the separation of gold from amalgam recovering the mercury

- small mobile retorts

- stationary retorts

- (- nitric acid followed by cementation of the mercury by metallic copper)
not recommendable

Small Retorts (mobile retorts)

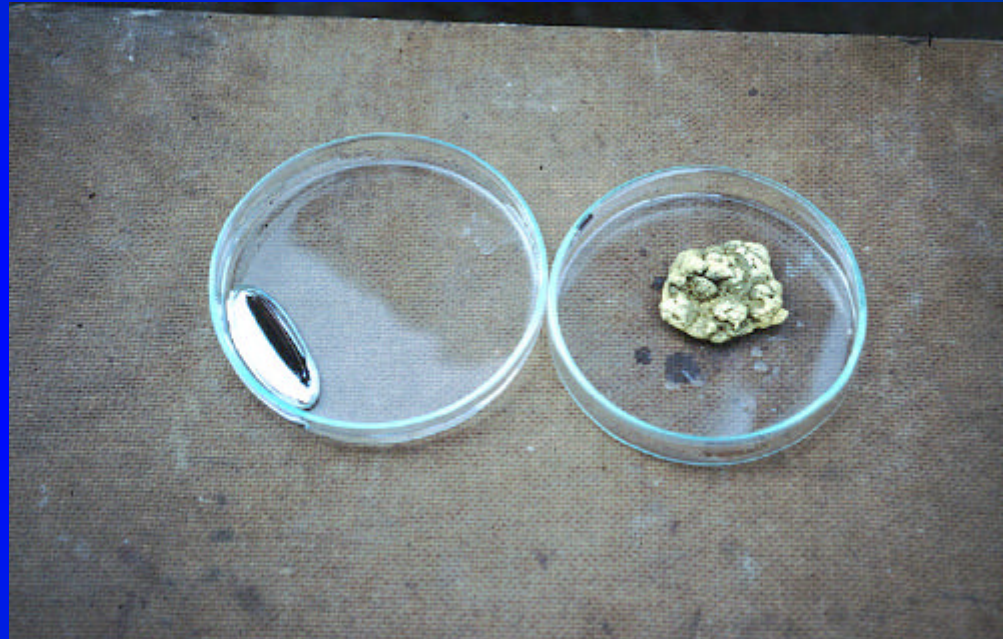
Advantages:

- high mercury recovery (98%) in liquid form
- light and mobile equipment
- relatively easy handling
- local production possible
- old mercury can be cleaned
- low cost (from local production)



Disadvantages small mobile retorts:

- gold is not visible during the process (with exception of glass retorts which break easily in normal operations, but serve as demonstration device)
- needs more time and energy than burning on open air
- gold comes out gray and dull (gold buyers pay less)
- often, no appropriate heat sources available
- poisoning through unsealed retorts occurs
- not very suitable for very small amounts of amalgam



Large retorts (stationary)

Large stationary retorts have a air suction system driven by a ventilator. The burning of the amalgam takes place using torches, the gold is visible during the process

Advantages:

- amalgam and gold visible during the process
- gold comes out clean and shiny
- short process time
- mercury recovered in liquid form
- amount of amalgam does not matter



Disadvantages large stationary retorts:

- heavy, large stationary equipment
- needs electric or gasoline motor for the ventilator
- recovery considerably lower than in small closed retorts (85%)
- relative high investment costs
- maintenance (mainly motor)

Flotation

Advantages:

- for nearly every (fine) mineral
- good for fine gold and sulfides
- can produce a variety of different products

Disadvantages:

- needs very fine grinding
- needs reagents which are partially dangerous in handling and for the environment
- relatively high costs for reagents
- complicated process, needs very well trained operators
- reagents in non mining countries difficult to obtain
- water recycling difficult
- marketing of concentrates difficult (especially small amounts)

Only in special cases good for small scale mining!



Flotation cell floating gold bearing sulfide concentrate

Cyanide leaching

The use of cyanide is an alternative to mercury in small scale gold mining.

- it makes absolutely no sense to combine amalgamation and cyanidation
- cyanide leaching of amalgamated material is producing dissolved mercury
- cyanide is a highly toxic, deadly reagent. Maximum attention has to be given to proper handling and environmental protection

Cyanide leaching is in a process of auto-diffusion in many small gold mining areas. It is most important to start now with education of the miners to guide them from the beginning



Percolation leaching of gold bearing gravity concentration tailings

Cyanide leaching methods used in small scale mining

In small scale mining, mainly two methods are used

- percolation leaching (vat leaching) of sands
- agitation leaching of fines

Advantages:

- good recovery of gold and silver
- usable for gravity concentration tailings
- relatively simple process

Disadvantages:

- mercury and heavy metals in the material are partially dissolved and emitted in water and tailings
- emissions of cyanide and its components
- safety problems
- in small scale mining, rarely correct residue water treatment and tailings deposition are found



Agitation leaching



zinc swarf fresh



zinc swarf loaded with gold

Water and Tailings Management

It is necessary to recover plant tailings to

- avoid siltation and/or contamination of rivers
- avoid problems with neighbours (farmers, fishermen)
- save the material to re-process it in future with better technology
- sell the tailings to leaching plants (primary gold mining)
- clarify and recycle process water
- work according the environmental laws and rules

Residues which require a special sealed deposit are

- amalgamation tailings (contaminated with mercury)
- tailings with sulfide content (can produce acid water)

The deposits for this materials need to have a sealed base (best with plastic and/or clay layer), and finally a sealed surface against rain and wind. Sulfide tailings should be mixed with lime/limestone to buffer acid generation.

Methods to separate solids from tailings streams (pulps)

- sedimentation ponds or vats (in serie)
- tailings dams (upstream raised, downstream raised)
- dry deposition using e.g. a spiral classifier or hydrocyclone to separate the sand from the water. The dewatered sand can be stored dry, the water with the fines has to be cleaned preferably using a thickener with flocculants.

Methods to clarify water

Cleaning process water is necessary to

- recycle it and use it again
- discharge it (e.g. into a river)

Techniques to clarify process water

- sedimentation ponds and tanks (in line)
- thickeners (best for small scale mining: lamella type)
using flocculants

To improve the environmental situation in small scale mining,
by introducing alternative technologies, and /or to improve
productivity

individual and adapted
solutions for each mine/deposit/operation have to be found

„one size fits all“ - solutions do not exist !

General Aspects of the Implementation of Technical and Environmental Measures in Small Scale Mining or “Lessons learned” (1)

- the technical and environmental measures have to be adapted and tested together with the miners and approved by them. The proposed techniques have to be simple, low-cost, easy to operate and maintain
- simple and low-cost processes have much more potential to be used and spread out than complicated and/or expensive processes, therefore:
 - it is usually more efficient to make a massive campaign of a simple technology, which does not solve the problem completely, but is then widespread, than to try to introduce high-tech processes, which have low probability of diffusion
- technical measures have to be accompanied by education and training of the miners, completed by long-term follow-up
- it is easier and more efficient, to optimize existing traditional processes than to import and introduce new processes

Lessons learned (2)

- it is very important, to understand the organization of the miners, as well as the socio-economic relations and dependencies between miners, mine owners, equipment owners, mill owners, mineral buyers, equipment and consumables suppliers, local communities, as well as religion, superstitions, habits and traditions of the miners. Generally, these factors are strong obstacles to changes and are much more difficult to change than technical aspects
- one successful introduced measure- no matter how big- builds confidence and opens doors for more substantial changes.
- it is necessary to think and act in integrated solutions (environmental protection, production health, energy, etc.)

Lessons learned (3)

- Small scale miners are usually very open for co-operation, but will usually not accept to be patronized. Any solution has to be found together with them, not over them
- Working groups should incorporate not only technical staff, but also social experts and small miners, who serve as a link and translators
- It is very difficult to co-operate with an unorganized mass of miners or individuals. First step of a co-operation has to be helping to formalize the organization of the miners (e.g. founding of co-operatives or small enterprises). A clear structure within the miners groups is needed to establish key-persons and responsibilities. Desirable democratic structures within the miners (e.g. co-operatives) can slow down decision processes very much; small enterprises are generally more easy to handle.
- If it is expected from the small miners to install environmental measures or to implement environmentally sound mining and processing processes, there are two options: either the project pays for it or, better, win-win solutions with economical benefit **and** reduced environmental damage are identified, which can be used by the miners

Lessons learned (4)

- A co-operation does not mean to make the small miners dependant, especially financially, on the project. It must be the aim of the co-operation, that the small miners operate their workings in a social, environmental and financial (self)-responsible manner.
- If the small miners are not the only locals in the area, the other groups have to be included in the project or have to have the chance to be included in other special projects (with indigenous people, etc.). If not, confrontations between the preferred miners and the other groups are unavoidable and affect the relation to the project, too.
- In cases of confrontation and/or deep disagreement between project and small miners, it turned out to be positive to make use of external consultants as mediators, which do not belong to either of the groups
- Any decision concerning the project have to be openly discussed in regular meetings with the representatives of the small miners, major issues have to be treated in general assemblies, where all miners take part

Lessons learned (5)

- Responsibilities on both sides (project-miners) have to be assigned clearly. All essential decisions and agreements have to be done in a written form (contract)
- Small miners are not used to accept reports, data and studies. They need to see, touch and try out the new technologies they are expected to use. Finally, small miners are learning by doing. Approach to more complex technology has to be done stepwise
- Mistakes cannot be avoided completely and are necessary in order to learn. Every learning process takes time!
- Small miners tend to over-estimate their capabilities in handling complex equipment, but: see point above!
- Be aware that the opinion of the leaders does not necessarily reflect the opinion of the majority, many small miners are not used to express their thoughts in general assemblies!

Lessons learned (6)

- it is absolutely necessary to guarantee a long-term follow-up of the introduced measures. Short-term engagements do usually not lead to sustainable results
- the proposed measures have to be within the economic range of the average miner in the area
- it is important to leave the level of “pilot operations” and start with massive campaigns to spread out the proven and successful measures. Only one or few pilot mines does not usually mean that they spread out “automatically”
- There are no “one size fits all” solutions!

Conclusions (I) :

It is possible to introduce “cleaner” technologies to small scale miners

Each case is different, there are many possible solutions

Principal factor for acceptance, apart from cultural problems, is the need to combine ecology and economy in the proposed solution

Conclusions (II):

The proposed technologies have to be low-cost, easy to handle and highly effective, they must fit into the social/cultural background

These technologies exist, there is not much need for investigations and/or studies

Massive campaigns to spread out the knowledge and to introduce and implement the cleaner technologies are needed now

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Artisanal Mining Program Santa Filomena – Perú

María Kathia Romero



Acción Solidaria para el Desarrollo

Artisanal mining: A focus on child labour

- Conditions of poverty force children to work in artisanal mines
- At a young age they are introduced to this activity within the context of their families.
- There is a lack of basic services for children and their families: health and education.
- Rural families believe that child labour is a way of preparing their children for the workforce (manual or professional labour)
- There is a very strong belief that leisure time should be used working instead of playing.
- There is not enough information on the consequences of mercury use in artisanal mining.
- There is not enough information on the consequences of labour on the intellectual development of children.

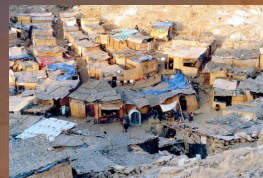
Who are the artisanal miners?

- They have migrated with their families from populated areas in the region.
- These families have many children.
- Family members are often separated.
- They left their communities because of the political violence of the last two decades.
- Some of these miners have worked for big mining companies.



What did we find in Santa Filomena ?

- 450 families
- A third of the population was children
- A high level of child labour in very dangerous conditions
- Lack of services
- High level of organization
- In process of obtaining legal permits



Sustainable Development for artisanal mining communities

Our proposal was to support the development of Santa Filomena through five complementary strategies that focus on the elimination of child labour

Awareness building

Technological Improvements

Income Generation

Improved services

Capacity building

Accion Program in Santa Filomena

Why a focus on local development?

- Child labour must be seen in a broader context.
- Underlining problems must be identified and addressed.
- Complementary strategies are more effective than isolated efforts.
- Development requires the commitment of all actors.



Technological improvements to eliminate child labour

- Artisanal mining is undertaken using very rudimentary techniques that are labour intensive and dangerous
- Our proposal was to improve artisanal mining by providing technical advice and improved methods that correspond to local needs.



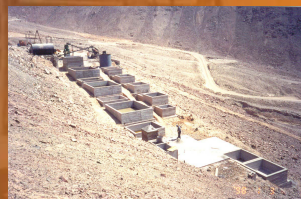
Technological improvements

- Installation of an electric winch.
- Technical studies of existing mineral deposits and exploitation methods.
- Design and Instalation of a gold extraction plant.
- Development of an environmental management plan for the plant.



The gold extraction plant

- Permits local miners to process mineral ore themselves.
- Is designed to accommodate local ore volumes.
- Centralizes chemical extraction avoiding widespread environmental contamination.
- Operates in accordance with national environmental laws.
- Eliminates child labour in gold extraction.



Achievements

- Gradual reduction in the use of mercury in gold extraction
- Elimination of child labour in the mine
- Greater income generation in mining households
- Higher production levels and more efficient gold extraction.

Challenges

- Encourage greater self-confidence in local actors
- Minimize dependence on outside advisors
- Local management of the plant
- Local support for the plant

This is a working document and the process is by no means complete so changes may occur as the situation progresses.

Summary of talk at CASM Ghana September 2003-09-26

SSM and Large Mine Relationships: PT KEM (Kelian Equatorial Mining) Mine Closure

Mining at Kelian, East Kalimantan started in 1991 and the mine is now moving towards mine closure in 2004.

The local population consists of:

1. traditional landowners (Dyaks)
2. migrant populations.
 - a) government transmigration people
 - b) itinerant and voluntary migrants (Bugis, Banjarese, and Javanese).

The number of small scale miners operation in the area is between 2,000 and 4,000. They are mostly located downstream from the minesite along the Kelian river down to the junction with the Mahakam River. According to several sources both written and informal the majority of the miners are Bugis (approximately 60-75%) and the remainder a mixture of Dyaks and other ethnic groups.

The main group carrying out the intensive mining are the Bugis:

1. Having no land ownership are economically oriented
2. Use pumps to generate more throughput in the sluice boxes and so obtain more gold.
3. This generates more environmental damage. What is left behind is just the cobbles which has little use to an agricultural community.
4. One miner when queried about his concern for this damage that may be caused commented "We are not farmers."

The Dyaks have generally, traditionally, a seasonal approach to the work.

1. The traditional Dyak approach is governed by their beliefs that the gold is a gift from God.
2. Mining the gold is a holy activity and when carrying out this activity you should not engage in any behaviour that might be offensive.
3. Gold is removed and when you return to mine in the same place next season the gold has been replaced as a gift of God. This would be explained by the seasonal flooding.
4. This is reinforced by the seasonal nature of the activities.

Economics

1. Panning 1-2 gm per day depending on richness of the ground
2. Using the two pump system 20-100gm per/day depending on ground
3. Income for pumps at 2000 March is based on USD 300/oz and 10,000 Rp to 1 USD. (2003 August Gold 370 USD/oz, 8,400 Rp/USD would increase the figure below).
4. Income would probably be around 20,000 Rp/d for the 2000 figures. This compares with an average for a farm based income (non rubber) of about 15,000 Rp/d (Michael Hopes) which is not always cash based. It can be barter based income or simply subsistence agriculture.

SSM, Mine Closure and Social Sustainability

Mine closure steering committee was constituted with representatives from stakeholders: Government, Customary Law, KEM, Community groups. Alluvial mining groups are represented through these.

Issues relating to the mine closure are worked through and decisions made by the group.

SSM is only one issue out of many.

1. SSM and Mine closure

For long term sustainability of any systems implaced then it must be valid for the community and decisions verified by the community.

- a) Protection of the regeneration works carried out
 - i) removal of alluvial gold from the proposed wetlands site with community verification
 - ii) Wetlands set up to filter low level metals contamination from mine site. (Dr Geraldine Maguire)
- b) Protect the integrity of the tailings dam through community advisory group decision making.(Budi Sulistijo)
 - i) Identification of any gold resource in the tailings dam by local miners
 - ii) Mine out any resource identified by local miners by local miners
- c) Community awareness programs on various issues such as mercury. (Chrusharini Chamid & Ratih Loekito)

2. SSM and social sustainability

Sustainability can only be achieved if the local community is involved in decision making and they own the decisions and carry through the decisions and verify any outcomes.

This means that both Women and children should be involved in all community programs to make sure that all areas in the community have access to awareness programs.

- a) Long term economic survival
Gold recovery will diminish over time as the major source has been removed.
There are still pockets of alluvial gold that have yet to be worked adjacent to and downstream from the minesite.
Some traditional landowners have refused to allow mining on their land but this may change.
- b) Long term environmental sustainability
OH&S programs especially re mercury use and abuse and dangers
Protection forest set upon former CoW to protect forest from loggers,
Maintain the environmental regeneration provide long term use of the area for locals.
Regulation system to allow the community to manage ongoing SSM activities

Risks Summary

1. Areas become targets as gold returns diminish
2. New people move in and try their luck
3. Community regulation diminishes

Risks can be reduced by Community verification program making sure that all sectors/stakeholders are included in decision making and education/awareness programs and a long term commitment to post mining regime.

This is a working document and the process is by no means complete so changes may occur as the situation progresses.

Geoff Crispin

Source of mercury from mining communities of Guyana.

R Couture, JD Lambert²

¹ Natural Resources Canada, ² Fisheries and Oceans Canada

Abstract

CIDA facilitated a small scale mining project in Guyana for alluvial gold and diamond mining activities. One of these activities was to provide a better understanding of the fate of mercury coming from burning amalgam and of its relationship to fish flesh mercury content. The results show that mining communities are more subject to high mercury fish flesh content than those from pristine (non-mining) communities. This is due to the hydraulicking of fine sediments located in the ore overburden.

Analysis

Mercury analysis were conducted on fish flesh, water, riverbed sediments and on land at bank and mine facings. Total mercury and methyl-mercury analysis were performed in order to relate to human toxicity.

Speciation analysis were also conducted in order to provide independent measurements of the source of mercury in the environment.

Results

Whether the samples came from pristine or mining communities, the behavior of mercury in the water column was the same, showing a peak concentration at sub-surface depth.

The sediment samples, selected based on their mineralogical and geochemical compositions, and spatial relationship with antropogenic activities, were analyzed for total mercury and its species by sequential extraction tests. The results indicate that higher Hg concentrations were measured in the fine (<63µm) sediment fractions. There is an overall increase in the mercury concentrations in the silty and clayey river sediments. Mercury variations are correlated with particle size in that as the median particle size is decreased, the total Hg concentrations increase. On land, we found no significant difference in mercury concentration both in pristine and in mining communities. In rivers, mercury was also associated with the mud fraction. Although no mercury enrichment per mud weight was measured in riverbed sediments from mining communities, the mercury containing mud fraction was more abundant downstream from mining creeks than upstream and then in pristine communities. Sequential extraction tests indicate that organo-complexed mercury is the predominant mercury fraction in the samples.

For carnivorous fish, the data indicates a significant level above the recommended level of 0,5µgHg/g fish flesh by the WHO (World Health Organisation). For non-carnivorous fish, mercury was present but below the WHO threshold value of 0,5 µg/g. The difference in mercury fish flesh content between mining and pristine areas is significant for carnivorous fish but not for non-carnivorous fish. The magnitude of the mercury bioaccumulation throughout the trophic level is estimated to 3 to 4 times, which is generally reported in various studies.

Conclusion

The erosion of land sediments from land dredging activity is associated with the abundant mud fraction found on riverbed sediments downstream from mining creeks. Since mercury is present in the land mud fraction, is washed to the rivers by jetting and settles to the riverbed, it is made available to the aquatic biotope and incorporated in the food chain all the way to the carnivorous fish.



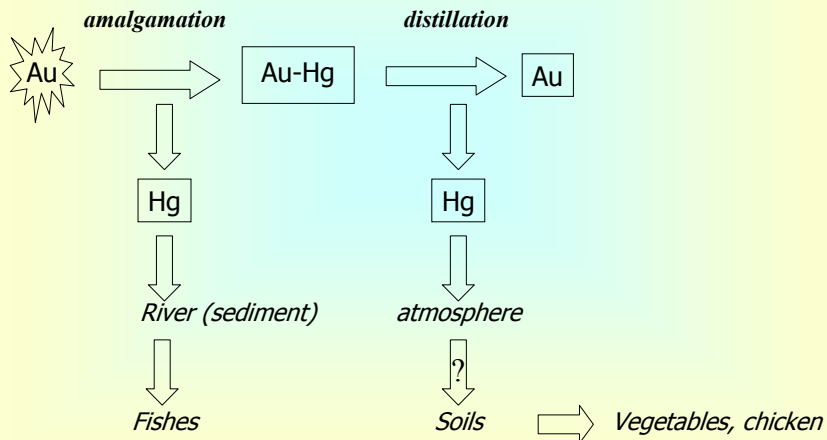
L. Bernaudat / M. Veiga

UNIDO's Strategy for Reducing the Impact of Artisanal Gold Mining on the Health and the Environment

- Study case in Ghana -

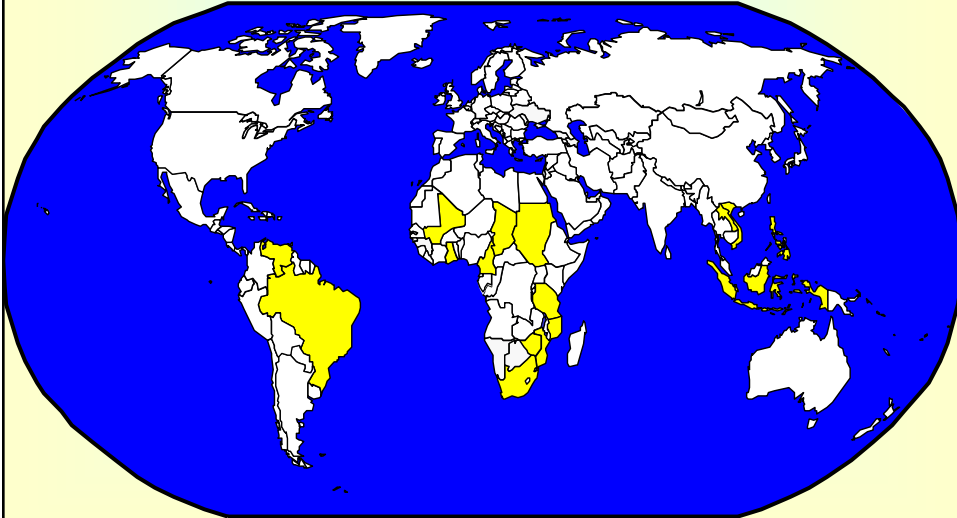


Release of Mercury during Small-Scale Mining Operation





Countries where UNIDO is developing / Implementing Projects



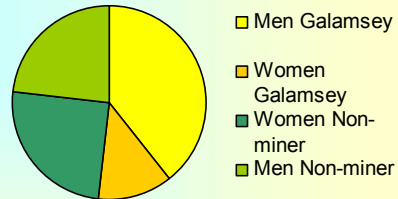
UNIDO's Proposed Actions to Transform Small-Scale Gold Mining into a Clean and Sustainable Activity

- Increase knowledge and raise awareness
- Assessment of the extent of mercury pollution/contamination
- Establishment of a technology databank
- Introduction and demonstration of efficient, affordable and cleaner technologies
- Development of implementable policies and legislation that would lead to enforceable standards
- Dissemination of information/raising funds for future projects



Mercury Contamination Study in Dumasi (Hard Rock Mining)

187 people from the community participated in the survey



Source: A. Rambaud, C. Casellas, University of Montpellier
M. Potin-Gautier, University of Pau
M. Babut, CEMAGREF



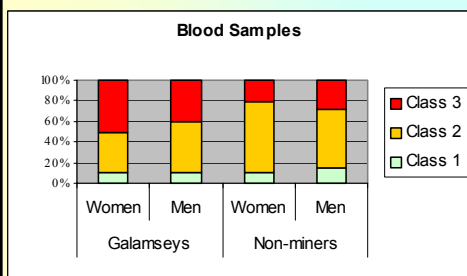
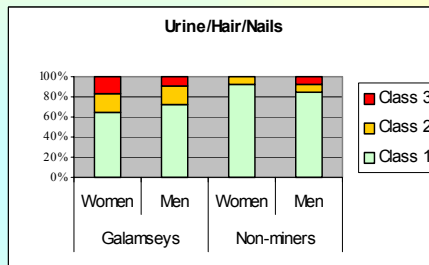
Study in Dumasi (Hard Rock Mining) -Biological samples analyses -

Hg content in	Blood ($\mu\text{g.l}^{-1}$)	Urine ($\mu\text{g.l}^{-1}$)	Urinary Creatinin ($\mu\text{g.g}^{-1}$)	Hair ($\mu\text{g.g}^{-1}$)	Nails ($\mu\text{g.g}^{-1}$)
Mean	24.4	23.85	15.54	3.85	3.99
Maximum	96	252.9	193	44.6	55.7
Minimum	1	1.1	1	0.39	0.66
Stand.deviation	16.9	40.3	25.4	4.67	5.44
Number N	180	102	102	148	161
Reference for non-exposed population	<10		<5	<2	<2
Biological limits	15 (BEI)	100 (BAT)	35 (BEI)	10 (WHO)	10 (WHO)

Source: A. Rambaud, C. Casellas, University of Montpellier
M. Potin-Gautier, University of Pau
M. Babut, CEMAGREF



Study in Dumasi (Hard Rock Mining) - Biological samples analyses -



Source: A. Rambaud, C. Casellas, University of Montpellier
M. Potin-Gautier, University of Pau
M. Babut, CEMAGREF



Study in Dumasi (Hard Rock Mining) - Water and sediment analyses -

Hg content in	Borehole water ($\mu\text{g.l}^{-1}$)	Surface water ($\mu\text{g.l}^{-1}$)	Well water ($\mu\text{g.l}^{-1}$)	Sediments ($\mu\text{g.g}^{-1}$)
Mean	0.165	0.28	0.34	13.47
Maximum	0.27	0.76	0.5	93.1
Minimum	0.12	0.14	0.18	0.64
Stand.deviation	0.05	0.27	0.23	28.1
Number N	8	5	2	10
Threshold level 1	0.07	0.07	0.07	0.13
Threshold level 2	0.7	0.7	0.7	0.7

Source: A. Rambaud, C. Casellas, University of Montpellier
M. Potin-Gautier, University of Pau
M. Babut, CEMAGREF



Study in Dumasi (Hard Rock Mining) - Food samples analyses -

Hg content in	Fish ($\mu\text{g}\cdot\text{g}^{-1}$) ww	Plantain ($\mu\text{g}\cdot\text{g}^{-1}$) ww	Cassava / Sugar cane ($\mu\text{g}\cdot\text{g}^{-1}$) ww	Chicken ($\mu\text{g}\cdot\text{g}^{-1}$) ww
Mean	0.93	0.05	0.011	0.045
Maximum	1.59	0.052	0.018	0.057
Minimum	0.13	0.047	0.002	0.031
<i>Stand.deviation</i>	<i>0.41</i>	<i>0.003</i>	<i>0.008</i>	<i>0.012</i>
<i>Number N</i>	<i>17</i>	<i>2</i>	<i>3</i>	<i>4</i>
<i>WHO limit for dangerous level</i>	<i>0.5</i>	<i>-</i>	<i>-</i>	<i>-</i>

Source: A. Rambaud, C. Casellas, University of Montpellier
M. Potin-Gautier, University of Pau
M. Babut, CEMAGREF



Study in Dumasi (Hard Rock Mining) - Principal results -

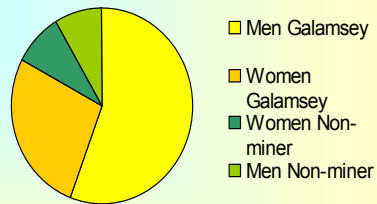
- Water is not contaminated but sediments are
- In all fish sample, the mercury content is higher than the WHO toxicity standards
- The WHO toxicity standards for daily intake are reached for 43g of fish or 240g of poultry
- The whole mining community is affected by mercury intoxication
- 50% of miners and 25% of non-miners are considered as heavily intoxicated

Source: A. Rambaud, C. Casellas, University of Montpellier
M. Potin-Gautier, University of Pau
M. Babut, CEMAGREF



Mercury Contamination Study in Japa (Alluvial Mining)

180 people from the community participated in the survey

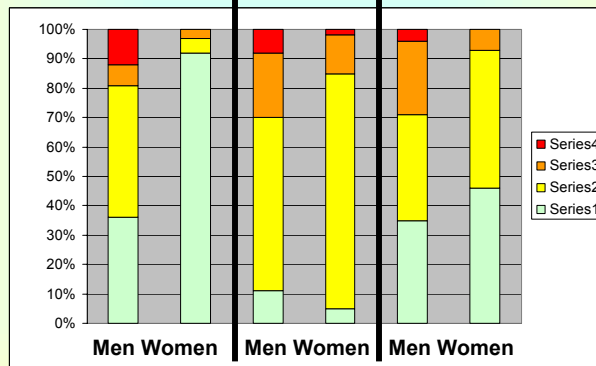


Source: A. Rambaud, C. Casellas, University of Montpellier
M. Potin-Gautier, University of Pau



Study in Japa (Alluvial Mining) - Biological samples analyses -

Hair Blood Urine



Source: A. Rambaud, C. Casellas, University of Montpellier
M. Potin-Gautier, University of Pau



Study in Japa (Alluvial Mining)

- Biological samples analyses -

- Mining community less affected than the one in Dumasi
- 56 individuals are in class 3 or 4 for at least one of the bio indicator
 - 70% are miners for less than 5 years
- 39 individuals showed neurological disorders
 - 38% are miners for less than 5 years
- 33 miners were considered as heavily intoxicated – special training was proposed for them

*Source: A. Rambaud, C. Casellas, University of Montpellier
M. Potin-Gautier, University of Pau*



L. Bernaudat / M. Veiga

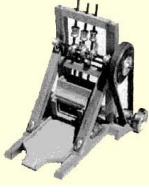
UNIDO

**Programme Development
and Technical Cooperation
Division**

**Cleaner Production and
Environment
Management Branch**

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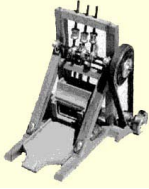
Small Mining Supplies (Pvt) Ltd

Clean, Appropriate Processing Solutions

- Specifically targeting small miners
- Alluvial and hard rock
- Gold and other minerals

- Emphasis upon small, translocatable plant

- SMS is a Zimbabwean company making African solutions for Africa



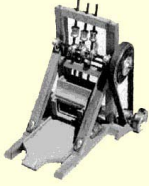
Small Mining Supplies (Pvt) Ltd

A blend of technologies!



High efficiency Knelson operating upon stamp mill product – Zimbabwe

The ore dictates its terms

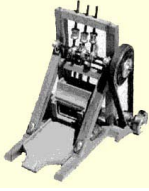


Small Mining Supplies (Pvt) Ltd

Equipment range

- Own manufacture
- Out - sourcing
- Representation

- Technology and testing through association with **Peacocke, Simpson and Associates**



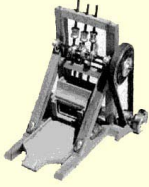
Small Mining Supplies (Pvt) Ltd

Katanka Stamp Mill

- Bolts together –easily shipped
- Easily erected
- Standard parts
- Low energy
- Well proven!

- 0.75 tph, coarse rock

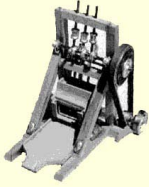




Small Mining Supplies (Pvt) Ltd

Katanka Stamp Mill

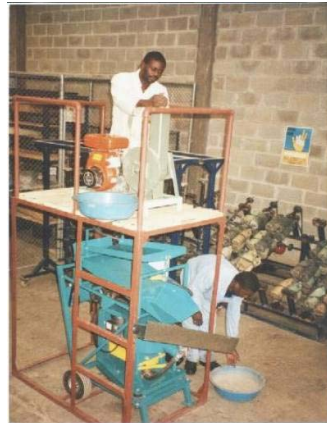
- Available with pre-cast concrete foundations for rapid erection

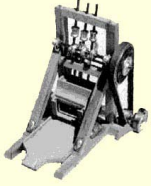


Small Mining Supplies (Pvt) Ltd

Knelson Concentrators

- 7.5" Field exploration 1tph
- CD10 3tph
- CD12 6tph
- Very high efficiency – fine gold recovery



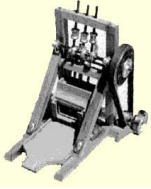


Small Mining Supplies (Pvt) Ltd

Swirler Pan

- Prospecting
- Concentrate cleanup

- Raised dome base and gentle riffle makes for easy and efficient upgrade



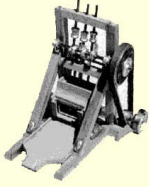
Small Mining Supplies (Pvt) Ltd

Spiracon concentrator

- Small
- Simple
- Inexpensive

- Designed specifically for Katanka Mill – coarse gold recovery

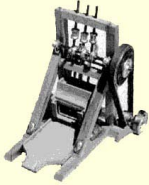




Small Mining Supplies (Pvt) Ltd

PSA Hi-Y Jigs

- Coarse mineral separation
- 6 tph
- Bulk mineral separations
- Used for tantalite, chromite mineral sands, pyrite, etc

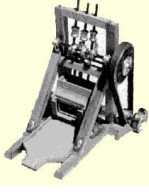


Small Mining Supplies (Pvt) Ltd

RG Scrubbing Plants

- RG60 4-6 tph
- RG150 10-15 tph
- Easily translocatable
- Suitable for sticky clays
- Supplied with Knelson concentrators for a complete solution

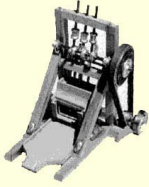




Small Mining Supplies (Pvt) Ltd

Crusher 8 x 4

- Robust
- 75mm rock
- Replaceable wearing parts

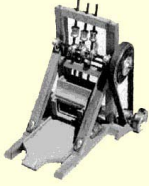


Small Mining Supplies (Pvt) Ltd

Granulator 8 x 12 x 2

- Two stage crusher
- Two machines in one!
- 4 to 6 tph

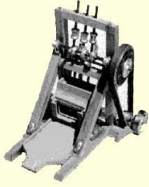




Small Mining Supplies (Pvt) Ltd

Hand Mill

- Small batches
- High grade ore

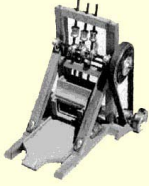


Small Mining Supplies (Pvt) Ltd

Consep Acacia 500

- Intensive cyanidation, but contained and safe
- Complete treatment of gravity concentrates
- Simple, manual operation
- Electrowin finish
- Smaller unit also available for up to 100 kg/batch

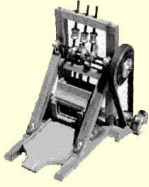




Small Mining Supplies (Pvt) Ltd

Case study – Dericose Mine

- A small scale high grade mine
- Has progressed from artisanal through to more formal stage
- Currently being upgraded to high technology at small scale – no mercury!
- Located in the Mazowe Valley, 40km north of Harare



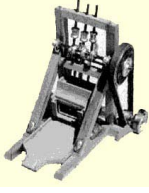
Small Mining Supplies (Pvt) Ltd

Infrastructure

•Even at small scale, 1tph, a properly run mine is able to support reasonable Infrastructure:

•Housing, office, workshop, Store, etc

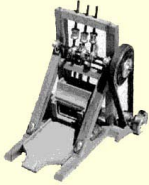




Small Mining Supplies (Pvt) Ltd

Formal underground mining

- Neat, tidy, safe mining
- Note the indigenous tree planted in the foreground –
Aesthetics and concern for the environment

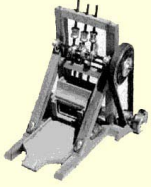


Small Mining Supplies (Pvt) Ltd

Primary milling and gravity recovery

- Currently via stamp mill with crushed ore to a copper plate followed by bowl concentrator and mercury amalgamation – not efficient and environmentally poor.

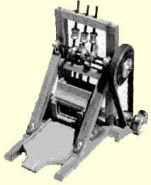




Small Mining Supplies (Pvt) Ltd

Tailings treatment

- Tailings are treated in a
- Vat leach plant, up to eight day cycle due to high grades left in the tailings by inefficient gravity recovery



Small Mining Supplies (Pvt) Ltd

Carbon in Solution and Elution

Gold is won from solution onto carbon and then eluted off using Zadra elution. Carbon regeneration via vertical Kiln – miniature of large scale system





Small Mining Supplies (Pvt) Ltd

The next stage — a world first!

- Crushing
- Ball milling
- Knelson concentrator in closed circuit with ball mill
- Free gold and sulphide concentrates to Consep Acacia Reactor
- Direct electrowinning from solution using EMEW cells.
- Highly efficient and contained processing
- Sophistication in miniature, applied appropriately!

- NO MERCURY!



Small Mining Supplies (Pvt) Ltd

Even the guard dogs are happy!



**Communities and Small Scale Mining (CASM)
Annual General Meeting and Learning Event
September 7-10, 2003 in Elmina, Ghana**

**500 years of mercury production:
global annual inventory by region
until 2000 and associated
emissions**

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Markus.Meili@itm.su.se

Acknowledgements

Gotthard Walser and Jeffrey Davidson
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Centre for Metal Biology, Uppsala

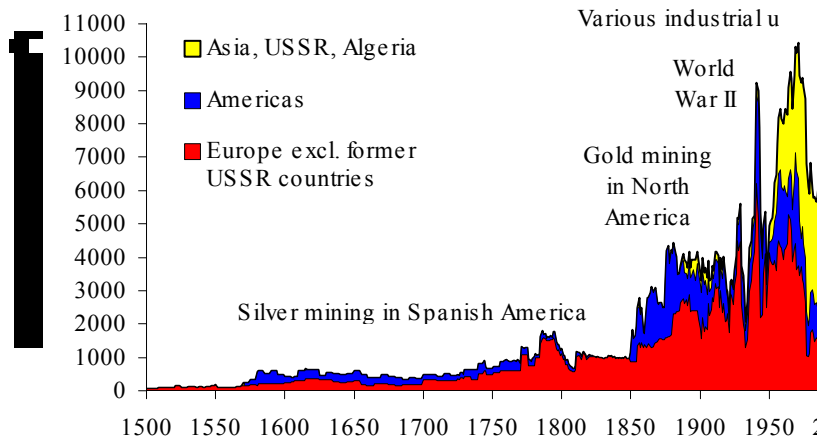


International Atomic Energy Agency
(IAEA)



The Swedish Research Council for
Environment, Agricultural Sciences
and Spatial Planning

Global, historical production of primary Hg

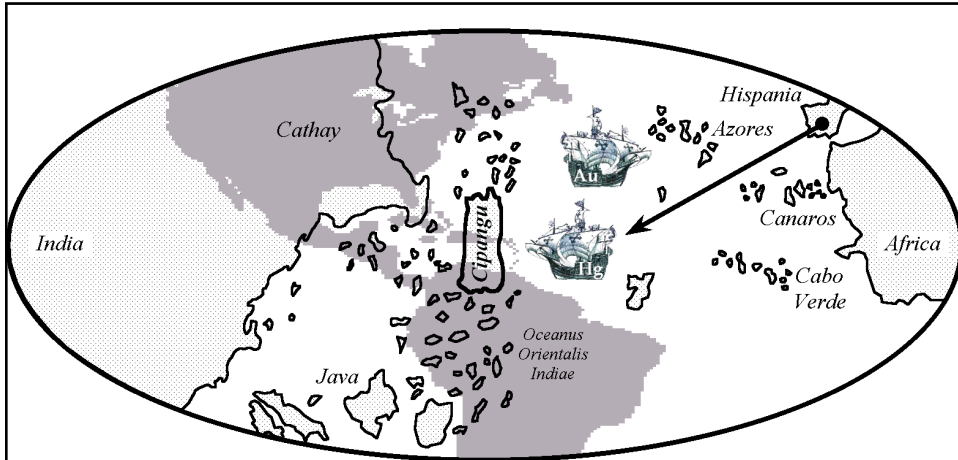


and the European contribution.

(Hylander & Meili, 2003. *Sci. Total Environ.*)

☿
Hg

Columbus' assumptions about the location of east Asia and his venture in 1492 of sailing west to Japan (Cipangu), “the country glimmering in gold” east of China (Cathay)...



resulted in an exchange of Hg for gold and silver from the New World, which entailed that mercury became an early global pollutant.

(Hylander & Meili, 2003. *Sci. Total Environ.*)

Hg
+

The main mining sites in Europe are
Almadén in Spain,
Idrija in present-day Slovenia,
and Monte Amiata in Italy,

Hg + ∞

accounting for 99 % of all primary Hg
historically mined in Europe.

Hg + ∞

Almadén has contributed to one third
of globally mined Hg...

and is still selling Hg to gold miners!
(Minas de Almadén y Arrayanes SA,
MAYASA)

Owned by the Spanish government, the Hg mine has been run at economic losses for more than a decade.

MAYASA has a well organized selling organization for Hg,





with selling offices in Spain, UK,
Peru, India, and the Philippines.

Close to areas where Hg is abused
in **ARTISANAL GOLDMINING**
and industry!

Ex. Hindustan Lever Limited (HLL,
subsidiary of Unilever) thermometer
factory in Kodaikanal, India.



ARTISANAL GOLDMINING

- * now the largest? consumer of mined Hg
 - * taking place in countries with no or poor health and environmental protection
 - * resulting in large emissions of Hg to air, water and soil
- So let's sniffing into it!

Hg

Goldminer in Amazonas



using the amalgamation method by massaging the milled ore into Hg covered sheets with his bare hands.

Hg

Gold amalgam is put on a spade, heated by a gas burner, and Hg evaporates, leaving pure gold behind.





Why is Hg used?

**Technically
easy**

Mix,
stirr,
wash,
and
burn!



**Economically
profitable**

1 g Au buys
about 1 kg Hg

Physically possible

Melting point $-39\text{ }^{\circ}\text{C}$ (cf. Au 1065)

”Dissolving” gold

Boiling point $357\text{ }^{\circ}\text{C}$ (cf. Au 3700)



Options to combat Hg emissions from amalgamation

Develop Hg free, suitable technologies.

Reduce the demand for gold.

Reduce the availability of Hg,
e.g. by restricting international trade.



Hg by-production and related Hg sources

Potential Hg emissions from non ferrous metallurgical industry
20 000 t Hg /year (Mukherje, 1999).

Estimated Hg emissions from mining & metallurgical industry
267 t Hg /year (Pirrone et al., 1996).



Production of Hg as a by-product for sale:

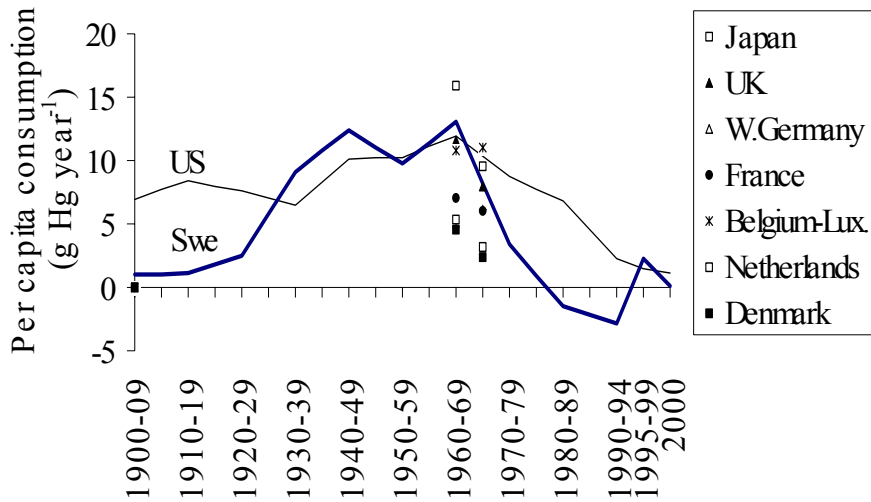
- * Finland (Zn) \approx 50 t Hg /year.
- * USA (Au) \approx 70 t Hg /year + \approx 50 t Hg /year from Peru.

Hg by-production is considered toxic waste in Sweden:

- * Boliden (Cu) \approx 20 t Hg /year

Hg + OC

Per capita consumption of primary Hg peaked in the 1960's.



Hg + OC

The large consumption of Hg has resulted in large stocks of Hg in products still in use.

Examples:

Chemical industry

Teeth

El- industry

(switches, fluorescent tubes, car bulbs, PC:s)

Stocks of Hg (tonnes) used in society

	Sweden		EU + EFTA
Usage	1992	2002	2002
<u>Chlor-alkali factories</u>	400	400	<u>12 000 - 15 000</u>
Teeth	40-60	30-50	1 300 - 2 200 *
Electrical app. & instr.	10-30	3-5	430 - 1 300 *
Thermometers	5-10	2.5-5	215 - 430 *
Dry and button cells	3-5	-	-
Laboratory chemicals	2-4	1	90 - 180 *
Fluorescent tubes	~0.6	1	~60 *
Sum	460-500	438-462	<u>14 095 - 19 170</u>

* If per capita amalgam fillings and use in the other countries are in parity with Sweden before Hg laws were implemented.

Sources: SOU 2001:58; Lindley, 1997; Naturvårdsverket, 1993; Rein and Hylander, 2000; SCB, 2002

Tracker dog



Mercury-tracker dog detects Hg also where logically thinking humans would not have found it.

Hg

Global co-operation necessary

How to include **China** and the former **USSR** countries in global efforts to reduce emissions of Hg?

How to include **Spain**?

Hg

The environmental costs of Hg
are **HIGH**
and are not included in the
raw material price



Cost-benefit analysis at Minamata

Was it profitable to neglect the environment? (1000 US\$/y)

Investments to prevent pollution	Cost of damage	Loss
750	79 000	78 250

Specified costs: -victims' compensation 41 000
-costs to remove contaminated sediment 33 750
-compensation to the fishing industry 4 250

Source: Environment Agency of Japan, 1994.



A shift in paradigm from a resource to refuse.

"The quicksilver industry is in a depressed condition. The production has fallen off largely, but this has not had the effect of stimulating prices." USBM, Present status of the industry. 1885.

Action plan for the future

1. Terminate all primary Hg mining immediately.

- Almadén in Spain (236 t in 2000, mine closed)
- Algeria (240 t)
- Kyrgyzstan (550 t, Exports to China stopped?)
- China (8 big, 50 small Hg mines in 2000. Terminated in 2001?)

2. Separation of Hg in metallurgical smelters should continue!

Reduces atmospheric emissions
by 99.5 %



Present handling of by-product Hg

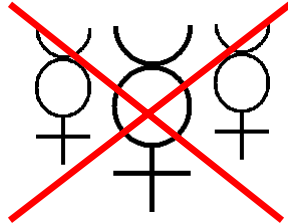
- Sweden. Temporally stored in a concrete silo. Waiting for final deep rock-bed deposition latest from 2015 (Prop 2002/03:117).
- Norway. Earlier sold, now returned into the mine at Odda for final deposition.



- Finland. Sold on the world market. Together with Chinese/Spanish Hg **sold to goldminers** in e.g. Brazil.

Hg + O

3. Inform about that Hg is NOT technically necessary



Replace Hg thermometers by digital or alcohol thermometers.

Replace Hg thermostats by digital or other Hg free ones.

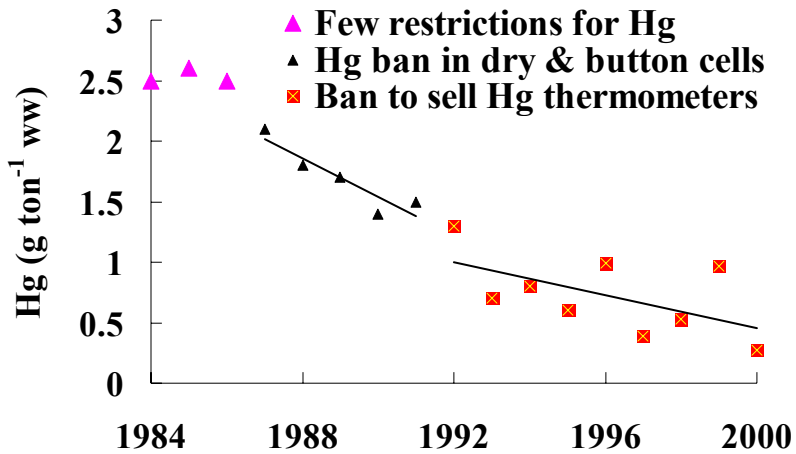
Hg + O

Best Available Technology
for production of chlorine and soda
is Hg free
and uses less energy
than Hg cells do.

Membranes are
BAT

Hg

4. Political actions are necessary



Mercury in waste in Uppsala, Sweden, related to legislation regarding products containing Hg.
(Hylander, et al., 2003. *Sci. Total Environ.*)

Hg

5. Investigate how to handle excess Hg

Best future solution from environmental
and health points of view:

Deep rock-bed deposition!

Turn of millennium,
time to reverse the flow of Hg!



Send it back to Almadén.

Hg
OX

Euro Chlor has already sent back
some 1300 tonnes Hg.

Reselling this Hg must be hindered
for the sake of environment and health.

Hg

How to put Hg back into the mine?

In a safe and responsible way!

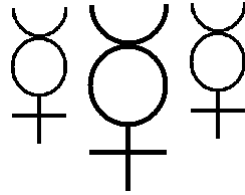
Hg

The end

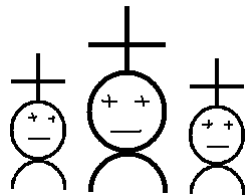
"developments prompted one British mercury dealer in early 1999 to dub Hg a 'dying metal,' adding that most sales were to companies in developing nations with fewer environmental restrictions".

R.F. Manas, AMM News Services

Dead indeed



Still causing deaths
in developing countries



Microeconomics of Artisanal and Small-scale Mining

Objective

Share experiences and information related to the micro economic context of ASM in order to :

- document what is known and what relevant information is lacking &
- identify strategies to improve the collection of micro economic data that is critical to policy interventions aimed at enhancing the contribution of ASM to poverty alleviation

Microeconomics

Income

Microeconomics

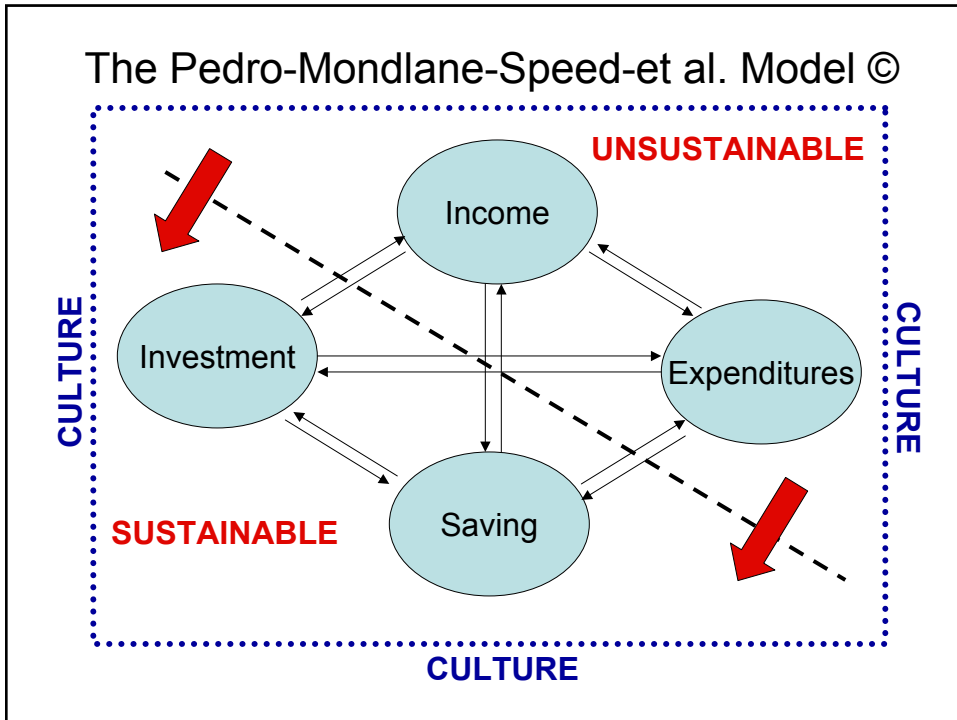
Spending

Microeconomics

Saving

Microeconomics

Investment



Barriers to data collection

1. Reliable economic data
 - Informality and illegality
 - Incomes are uncertain, intermittent, variable
 - Population of miners is continuously shifting
 - Mining communities may be artificial/ made up of short-term migrants.
 - Lack of funding for baseline studies.
 - Lack of local people or people with local experience to conduct the study.
 - Conflicting interests in communities.

Barriers to data collection

2. People may give inaccurate information because
 - Fatigue of projects that do not bring change
 - Secrecy because of (semi)illegality
 - Mistrust in researchers and/or government
 - People may not know the answer (e.g. annual household income)
 - Questions are not relevant to daily life experiences
 - Prevent payment to others (taxes, fees to bosses)
 - Fear of being robbed

Barriers to data collection

3. Data that can be generalized across time/space
 - Many types of miners; migrant, local, gold rush miners, seasonal or permanent.
 - Mining populations are composed of diverse groups, incl. women and children.
 - The microeconomic context of ASM is shaped by local cultural beliefs and practices.
 - Mining cultures are often transient
 - ASM is typically embedded in a range of income-generating activities.
 - What constitutes poverty and wealth is culturally determined.

Data collection will be facilitated by:

Legalization and/or
organization of
miners



Data collection may improve with:

Change in the model of research: Integrating
the community in project development data
collection and monitoring; emphasizing
continuity and follow-up.



Data collection may improve with:

- Endorsement by community leaders/authorities
- Prior knowledge of researchers of target area;
- Clearly defined purpose; the purpose of, and party requesting, data collection are understood by local people.
- For some types of data, qualitative data, can be more accurate than trying to get quantitative estimates.
- Using control (non-mining) villages to compare data

We further talked about:

- Mining experiences in different countries
- Government policies
- Indicators of wealth, income, and dependency on ASM
- ...and more.....



WELCOME REMARKS AND BACKGROUND TO THE LAUNCH OF THE AFRICAN WOMEN IN MINING NETWORK, ACCRA, GHANA 7TH TO 10TH SEPTEMBER, 2003

The formation of the Associations of Women in Mining in different countries of the Southern African Development Communities came about through a catalytic role which was played by the United Nations Development Fund for Women (UNIFEM) through funds which were raised by the SADC Gender Programme from CIDA Canada.

The aim of forming these Associations was to be able to mobilise women from both the formal and informal mining sectors of the mining industry. There was need to get women to participate in decision-making policies and make sure that gender is mainstreamed in the mining industry without discrimination.

VISION

To see a vibrant and transparent mining sector where gender imbalances do not exist and access and control of resources from the mining industry are equally distributed .

2/...

MISSION STATEMENT

To enhance and make visible the participation of women in mining through gender mainstreaming, growth, innovation and increased productivity for the economic empowerment of women, poverty reduction and employment creation for all.

OBJECTIVES

We would like to work together and be able to put the objectives of the Network together as a group.

PARTICIPATION

Women in mining are participating in the industry as Professionals, Miners, Mine Owners, Lapidary owners, Manufactures and Traders.

They are involved in the exploitation of a number of minerals like Gold, Silver, Diamonds, Rubbies, Emeralds, Aquamarines, Tin, Malachite, Cobalt, Copper, Industrial minerals, Talc, Gypsum, Dimension Stones, Granite, Marble, Limestone etc.

They operate at different levels, others are just beginning and others are in the medium scale.

3/...

SADC WOMEN IN MINING TRUST (SADCWIMT)

In November, 1997 the SADCWIMT was formed in Harare and the organisation has been represented in many forums at National, Regional and International Levels.

In 1999 in Arusha, Tanzania the organisation was admitted on to the Committee of SADC Ministers of Mines, Minerals and Energy and is on the organigram or structure of the SADC Committee of Mining Ministers.

In November, 1999 at the six African Women Conference in Addis Ababa, during the Beijing Plus 5 (or review), we held the first African Women in Mining Workshop which was supported by the UNDP and UNECA where more than 15 african countries were represented.

In December, 2000 at a Special Meeting of the African Ministers of Mines, Minerals and Energy which was held in Ouagadougou, Burkina Faso, the Honourable Ministers resolved and recommended that the SADCWIMT expands

to cover the whole of the African continent in order to mobilise and work with all the other women in this industry.

These resolutions were translated both in English and French.

4/.....

In 2002 the Network was registered in Zambia after a lot of difficulties especially to get signatures of all the members from different African countries from SADC, ECOWAS, COMESA and other North African countries.

CASM

In March, 2001, the CASM was created and Ms. Namakau Kaingu was elected after presentation of her CV to the governors to be part of the Expert Advisory Group looking at issues of Small Scale Miners, Women and Child labour.

Therefore the African Women in Mining Network members need to seize this opportunity to work out proposals and present them to CASM for support from the projects small grants.

The African Women in Mining Network has gained recognition and it is up to the women themselves in each country to work out programmes to benefit them.

LAUNCH

Therefore today, we have gathered here to be able to launch and create a permanent structure for the Network and be able to chart the way forward on what we want to do, how

5/.....

we want to network and what means to use to be able to access finance for our projects.

WAYFORWARD

I would like to take this opportunity to urge you all to now take your positions and be able to contribute and chart the way forward for the Network.

On behalf of the Women in Mining I would like to take this opportunity to thank all the men who are here and willing to support and assist the women to come up with proposals both at country level and international.

Prof. Stephen Simukanga has been assisting the Women in Mining from its inception in 1997 to date and he is aware of all the constraints which are faced by women in mining at all levels.

THANK YOU

Our thanks go to the Ashanti Goldfields for have accepted to pay for both food and accommodation for the

participants of this launch and the Worldbank Group for support us through the provision of \$5,000 which has enabled some of us to be at this conference through airtickets provision.

6/.....

We also would like to thank the Minerals Commission and Geoman Consultancy for their assistance to our group and hope that they will continue to assist us.

May the Lord be with you all.

CLOSING SPEECH AT THE LAUNCH OF THE AFRICAN WOMEN IN
MINING NETWORK

ELMINA, GHANA
10TH SEPTEMBER 2003

INTRODUCTION

HIS ROYAL HIGHNESS NANA KWESI TANDE
LADIES AND GENTLEMEN,
DISTINGUISHED PARTICIPANTS

It is an honor and privilege for we the representatives of the African Women in Mining Business to take an active part in this august gathering. It is also a pleasure to have an opportunity of addressing you, partners of mining development in Africa including small scale, and introduce to you our newly registered African Women in Mining Network, that we proudly call AFWIMN.

Let us start by thanking our hosts, in particular the Government of the Republic of Ghana, and all the organizers and sponsors of the 3rd Annual CASM Work Shop, Ashanti, The Minerals Commission of Ghana, The World Bank, The African Development, just to name a few.

At its creation some 2 years ago, CASM had boldly set out the thesis that sustainable socio-economic development and poverty reduction were finally achievable in the mineral sector of developing countries, without the exclusion of Africa through the creation of the CASM initiative. In this context, it is worth recalling that CASM was proposed by traditional institutional finance agencies, such as the World Bank as a means not only to address but also resolve the issue of poverty especially in rural areas and achieve better integration of women into socio-economic and productive roles for the benefit of all.

Ladies and Gentlemen, as we are all aware based on our own daily life's evidence as well as empirical research on gender and related issues, the empowerment of women is paramount to the eradication of poverty. And, if truly we are here to seek and find means and channels as we claim to achieve that purpose especially for the least demune societies, then you would understand the need for the existence of AFWIMN.

AFWIMN has been born here in Ghana. We are happy to inform you of its existence and what we wish from you mostly is your sustained support and kind understanding. Just like CASM, the initiative concerns all of us and hence should involve all of us. It is called African Women in Mining and hence involves miners, company owners, other forms of expertise including that of international institutions experts, academia, NGOs, Governments both African and Non Regional alike, etc. Basically, the issue is true support and willingness to have AFWIMN be all embracing. Hence, support including logistical, technical and financial from all will undoubtedly make this initiative succeed. Also, failure will be attributed to all. So let's not fail.

Over the last few days, we have worked hectically on making AFWIMN work as it should be. The process has been highly interactive, all decisions adopted have reached the consensus of all present and the ^{goal} spirit prevailed throughout the workshop. There were many outcomes. Because of time constraint, we will just present to you our Resolutions. — F. N. K. E.

READ RESOLUTIONS

As stated previously, what we truly need from you is support. The success of CASM is tightly linked to that of AFWIMN.

Thank you for your attention.

GHANA RESOLUTIONS AT THE LAUNCH OF THE AFRICAN WOMEN IN MINING NETWORK (AFWIMN)

ELMINA, GHANA, 8-10TH SEPTEMBER, 2003

Representatives of twelve African countries¹, all involved in mining activities met in Ghana during 8 to 10th September 2003. At this meeting, the participants resolved the following:

- Recognizing that there are many women involved in mining activities in Africa;
- Recognizing that African women involved in mining activities face numerous problems including lack of technical know how and access to finance;
- Recognizing that there is potential for capacity building of the women if experiences are shared within Africa;
- Noting the aspirations of the NEPAD in regional cooperation and sharing of information;
- Noting the recommendations made at a special meeting of African Mining Ministers held in Ouagadougou, Burkina Faso, in December 2000, that the SADC Women in Mining Trust expands and covers the whole continent to form an African Women in mining network to address issues concerning women involved in mining in Africa;
- Noting that the United Nations Economic Commission for Africa (UNECA) has recognized and pledged support for AFWIMN;
- Noting the vast mineral resources that Africa is endowed with;
- Recognizing that empowering women will contribute significantly to the alleviation of poverty;

We the participants of the Ghana meeting of African Women involved in Mining activities **RESOLVE**

to form an “African Women in Mining Network” herein called “AFWIMN”.

¹ Please note that several other continents were also represented at the launch, including America and Latin America .

The goals of the network are:

- (a) To share information, data and experiences on technical, marketing, prices, environmental and related issues of minerals mined by women in Africa through information dissemination, WWW, Newsletter, workshops;
- (b) To mobilise resources to fund all activities related to mining by women in Africa;
- (c) To collaborate and strengthen partnerships with African Governments, CASM, all stakeholders and interested donors, nationally, regionally and internationally;
- (d) To conduct and encourage training, skills acquisition in technical, project development, financial and accounting management;
- (e) To collaborate with gender institutions and serve as a voice and pressure group for all women in mining development in Africa; and
- (f) To contribute towards the reduction of socioeconomic problems in mining communities with special emphasis on women, children, HIV/AIDS and environment.

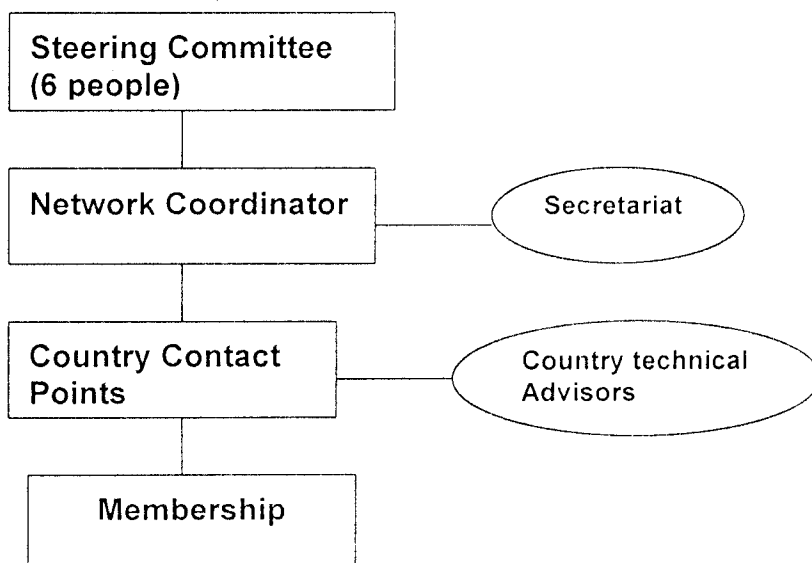
That the mission statement of the Network is:

To enhance and make visible the participation of women in mining to reduce poverty through

- gender mainstreaming,
- socio-economic empowerment,
- capacity building
- improved environmental & health practices
- employment creation
- and increased productivity

That the structure of the network be as follows:

- (a) A Steering Committee of 6 people with representation from the following regions of Africa: Eastern, Southern, Northern, Western and Central as well as the Network Co-ordinator;
- (b) A Network Co-ordinator, with a Secretariat;
- (c) Country contact points of the Network – with Country Technical Advisors; and
- (d) General membership.



Agreed to appoint the following to be on the **Steering Committee**:

- (a) Eastern Africa: (Ms Bahati Kalekwa, Tanzania)
- (b) Southern Africa: (Ms Ida J. Haeirob, Namibia)
- (c) Central Africa: (Ms Martha M. Ngwira, Malawi)
- (d) Western Africa: (Ms Ida Compaore, Burkina Faso)
- (e) Northern Africa: (No representatives yet, to be determined at a later stage)
- (f) AFWIMN Coordinator: (Ms Namakau Kaingu, Zambia)

Agreed to appoint the following country to host **the Secretariat**: **Zambia**

The above resolutions, the steering committee and country contact points were agreed and confirmed by the following present:

	Name	Country	Contact Point	Signature
1.	Mavis S. Mbewe	Zambia		Mbewe
2.	Ruth Chisala	Zambia	Yes	Chisala
3.	Nelly Agyeman	Ghana		Agyeman
4.	Faresi Zulu	Zimbabwe	Yes	Faresi Zulu
5.	Evelyn Leila Choo Tinorgah	Ghana		Choo Tinorgah
6.	Sena Zigah	Ghana		Zigah
7.	Sylla Mama Adama	Guinee Conakry	Yes	Adama
8.	Aida Compaore	Burkina Faso		Compaore Aida
9.	Brigitte Bocoum	Cote d'Ivoire	Yes	Bocoum 9/9/03
10.	Garba Ibrahim Ogechi	Nigeria	Yes	Ogechi 9/9/03
11.	Emma Dadzie-Otabil	Ghana	Yes	Otabil 9/9/03
12.	Germaine Ilboudo	Burkina Faso	Yes	Ilboudo 9/9/03
13.	Oyefunke I. Oworu	Nigeria		Oworu 9/9/03
14.	Viva Adobea	Ghana		Adobea 9/9/03
15.	Janet Esi Kusi	Ghana		Kusi 9/9/03
16.	Martha M. Ngwira	Malawi	Iris Mbewe	Ngwira
17.	Ida J. Haeirob	Namibia	Desse Jimmy	Haeirob
18.	Namakau Kaingu	Zambia		Kaingu
19.	Bahati Kalekwa	Tanzania	Deborah Maimu	Kalekwa
20.	Marie Mao Ngalula	Democratic Republic of Congo	Yes	Ngalula

The representative of Suriname, Ms Rachael Van der Kooye has expressed her wish to become a full-fledged member of AFWIMN. The adequate legal status applying to a such membership remains to be determined and communicated to Ms Rachael in due time.