PROJECT REPORT

SUBSISTENCE MINING IN THE BRANDBERG AREA

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EXECUTIVE SUMMARY

Articles appeared in the local newspapers referring to the environmental destruction of the Gobobos Hills immediately west of the Brandberg, localities within the Erongo Mountains and the Neu Schwaben locality by unorganised hordes of small miners.

The project was then proposed as an investigation specifically into the Gobobos Hills in order to determine the real situation on the ground, the degree of environmental destruction, the legality of the operations, the possible alternatives to the small mining and control and/or mitigating measures.

Elements of the problem were reduced to the recognition that for the majority of the small miners this is a last resort effort in order to survive, and they do this by working extremely hard under very poor physical and social conditions. The integrated nature of the social, health and environmental issues in addressing the problem was recognised.

The newly formed Tsisab Conservancy provided a ready-made instrument for local land-use management and control, while the Ministry of Mines and Energy have also launched local practical projects in an attempt to structure informal mining and make it part of organised mining.

The series of participatory workshops held towards developing a Namibia Minerals Policy has identified some key issues relevant to this project and made some very applicable proposals. The Tourism Development Report seems committed to keep mining and tourism separate, while the Mining Sector seems quite ready to be integrated into a workable land use plan that will see the development of all natural resources in an optimal way.

The solution seems to hinge on an integration of mining and tourism that will maximise the rural income and development potential with the Conservancy acting as local controlling and managing agent and the Traditional Authority as the land-owner in terms of the Minerals Prospecting and Mining Act.
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SUBSISTENCE MINING IN THE BRANDBERG AREA

I. INTRODUCTION

During mid-2000 articles appeared in the local newspapers lamenting the environmental degradation of various environmentally fragile locales in north-western Namibia. Since this was done by large varying group of individuals loosely referred to collectively as Informal Miners/Artisanal Miners/Small Miners/Subsistence Miners or colloquially as 'Klip Kappers' in Afrikaans (Eng. Rock Choppers), it was felt that a professional geo-scientist should attempt to address the issue.

Namibia has a mining history that can be traced back to the 1420’s (Kinahan & Vogel) when indigenous peoples mined and smelted copper in the Khomas Hochland. In the Rehoboth area, in the vicinity of the Swartmodder Copper Mine, mining and smelting of copper dated back to the 1600’s (Sandelowski). It can thus be stated with little or no contradiction that farming (including hunting as an organised activity) and mining were amongst the earliest and oldest industries in Namibia.

In addition to being one of the oldest industries in Namibia, mining is also a significant subsistence activity in the project area (and elsewhere in the mostly Nama/Damara speaking environs). It is unfortunate that particularly these areas where subsistence mining is important is also environmentally fragile and amongst the preferred tourist routes and destinations.

The problems associated with Informal or Artisanal Mining (as it will be referred to from here on) has been found to be a word-wide problem, to the extent that the World Bank and several UN Agencies have sponsored and/or conducted seminars, projects and various researches towards a solution. It has been found to be a thorny issue and not easily solved.

The situation in Namibia has been found to be rather similar to the rest of the world pertaining to the Social-, Health- and Environmental (SHE) problems, but since the main areas in Namibia where Artisanal Mining is practised has a low rainfall, limited vegetation cover, no flowing rivers, low population density, low wildlife density, etc. the major environmental problem is that of aesthetics - a visually scarred and disfigured arid landscape that will, because of low rainfall, remain so for a very long time, and is in addition not easily amenable to rehabilitation as this may likely cause as much scarring as the original mining/prospecting activities.

II. DEFINITION

This document will use the Word Bank definition for Artisanal Mining, as given below:

Artisanal Mining is a type of manual, low technology mining conducted on a small scale, predominantly in rural areas of the developing world, and is essentially a type of subsistence activity which requires neither large capital investment nor sophisticated equipment, is integrated into the rural economy and can be ideally suited for private sector development. Artisanal mining is a source of livelihood for millions of unskilled workers including a large number of women, in rural areas. Controlled it can contribute to poverty reduction, but uncontrolled it leads to: environmental degradation; poor social, health and safety conditions; illegal mining and marketing; waste of resources.
III. CORE ISSUE STATEMENT

It is of interest pertaining to the issue in hand to note that the World Bank reports also make the following interesting statement:

The interrelated nature of the social, health and environmental impacts of mining should be recognized, and maximum advantage gained from the complimentary nature of measures aimed at mitigating such impacts.

In managing the ongoing environmental, social and health impacts of private and public sector industrial mining operations, an environmental management system (EMS) approach to systematically manage these aspects is strongly recommended.

The North-Western Region Tourism Master Plan states that ... it should be noted that unemployment leaves in its wake vulnerability and poverty and implies more pressure on the natural resource base as a last resort to survive.

IV. CONTRACTOR’S BIAS

A. The contractor is a professional geo-scientist with a focus on mining and minerals development with the resultant expectation that the viewpoint on the problem will be from that perspective.

B. The project will not be treated as a Mining vs Environment confrontational issue, but rather as a rural development strategy which will attempt to generate an optimal sustainable income from an integrated mining/tourism approach. Such an approach is believed to ensure mitigation of the SHE problems associated with Artisanal or Informal Mining.

C. In general, it is felt very strongly that the local communities and their recognised traditional authorities should be active participants in, and actual beneficiaries of such an integrated approach.

V. PROJECT AREA QUANTIFICATION

A. LOCATION

The project area is located west of the Brandberg, north of Messum Crater and centred on the Gobobos Mountains (-Hills?).

This is within an area defined by the following geographical coordinates:

- Longitudes: 14°E - 14.75°E
- Latitudes: 21°S - 21.5°S

See also attached maps: General Locality Map, Detail Locality Map
B. POPULATION

The project area is, despite a single scarce water source, inhabited by a small group of varying size and ethnic affiliation that lives in makeshift shacks while digging for various types of natural crystals. The majority of the population is however concentrated in the nearby town of Uis some 75 km away by road. Uis itself has quite a sizeable population of which most are unemployed ex-miners left behind when the IMCOR Tin Mine closed in September 1990.

The majority of the population is from the Damara-speaking ethnic group with a smattering of other ethnic affiliations while the original "white mine township" is being repopulated by mostly Afrikaans speaking oldsters, having retired from mainly stock farming inland. The beneficial climate and relative short distance to the coastal angling spots seems to be major attraction for these people.

A rural, mostly subsistence farming community is mainly located to north, north-east and east of Uis in areas of marginally higher rainfall.

See also the attached map: Tribal Distribution
Population Distribution

C. INFRASTRUCTURE

The town of Uis is located equidistant (±120km) from all surrounding towns, Henties Bay to the south-west, Khorixas to the north, Omaruru to the East and Usakos to the South, with the the specific Project Area located some 60km due west of Uis. The project area itself is served by a single road that used to be the main link between Uis and the now defunct Brandberg-West Mine.

The nearby town of Uis, on the other hand however, is quite well served by good quality surfaced road links, an excellent airstrip, a clinic, a primary school, various shops, a service station, a police station, various guest houses and accommodation facilities, decent power supply from the national grid and a good quality water supply from the Omaruru River some 25km to the south.

The National carrier, NamRail also operates a road transport link for both freight and passengers between Henties Bay, Khorixas and Omaruru via Uis.

A small support unit of the Small Miner’s Assistance Centre (SMAC) in collaboration with the Brandberg Small Miners Cooperative Ltd was established at Uis to provide drilling and blasting services to the local small and informal miner groups.

See the following attached maps: General Locality Map
Detail Locality Map
Roads Infrastructure

D. LAND USE

The project area itself is mainly subject to subsistence artisanal mining, with low-volume self-driving, self-catering tourism as a secondary use. Since the tracks
through the project area are not documented or shown on maps, and they are in
general, apart from the main Uis-Brandberg West road, really only passable by 4x4
or other types of off-road vehicles, it is little used even by off-road-capable self-driving
tourists.

Within the project area there are some 19 registered mining claims. These are
held by the following people/organisations:

<table>
<thead>
<tr>
<th>NAME</th>
<th>No of CLAIMS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Eximus Technology Group</td>
<td>6</td>
</tr>
<tr>
<td>Urab, Alfred</td>
<td>4</td>
</tr>
<tr>
<td>Augustus, Gottlieb</td>
<td>3</td>
</tr>
<tr>
<td>Unib, Reinhardt</td>
<td>2</td>
</tr>
<tr>
<td>Molapisi, Laurinda</td>
<td>1</td>
</tr>
<tr>
<td>Koekemoer, Jan</td>
<td>1</td>
</tr>
<tr>
<td>Cloete, Paul</td>
<td>1</td>
</tr>
<tr>
<td>Maletsky, Franco</td>
<td>1 (19)</td>
</tr>
</tbody>
</table>

The broader Uis area however is mainly used for subsistence farming,
subsistence mining and the more financially lucrative tourism activities. The
subsistence farming seems to be an activity that barely holds its own.

The subsistence mining is focused mainly on rare metals (eg. Tantalite/Niobium) and semi-precious stones (mainly Tourmaline, Topaz, Rose Quartz, Aquamarine, Smoky Quartz, Amethyst, etc). The rare metal miners either
barter their produce for food and drink at the various establishments in Uis or sell it
to local Namibian buyers/traders who then sell it to either South Africans or overseas
based buyers/traders like Furisa Mining or to the Brandberg Small Miners Cooperative
Ltd.

The producers of semi-precious stones tend to barter the stones produce for
food and drink as well, but their major market is the tourist in transit via Uis. The
stones are peddled directly to the tourist by hordes of stone sellers which they do in
a really irritating intrusive and insistent manner. Indications are that the tourists are
beginning to be put off by these people to an extent which may negatively affect
tourism throughput, since they are not visiting Namibia to be subjected by high-
pressure stone-sellers.

These stone sellers do of course sell to formal dealers which either buy on-site
during special buying trips or deals are being done at their business premises.

These various land use activities are not confined to identifiable portions of
land, and thus cannot be shown on a map.

See map: Gobbobos Claims

E. CLIMATE

The climate is typically semi-arid and being close to the Atlantic ocean does
not have temperature extremes. Rainfall is typically some 50-100mm per year and the
virtually unceasing west wind blowing off the ocean tends to cool things down considerably over the hottest period of the day.

Although the climate is semi-arid it is surprisingly possible to approximate a sub-tropical climate given enough water, and specifically citrus seems to grow quite well in the Uis area.

See also attaches maps: Vegetation Types Drainage Systems (Rivers) Water Boreholes (Namwater) Evaporation (A-Pan) Average Humidity Average Rainfall Average Monthly Sunlight Hours Typical Maximum Temperatures Typical Minimum Temperatures

F. TOPOGRAPHY

The project area has quite a prominent topography, and due to the horizontal lava flows making up the landscape west of the Brandberg creates typical "table mountains". Of course, the nearby Brandberg granite massive boasts the highest point in Namibia, but apart from this however, the general area is quite flat with occasional sharp hills caused by weathering-resistant dolerite dykes.

Due to the rather rough topography in the specific project area, the damage caused by informal miners is less visible than would otherwise have been the case.

See attached maps: Evaporation (A-Pan) Average Humidity Average Rainfall Average Monthly Sunlight Hours Typical Maximum Temperatures Typical Minimum Temperatures

G. NATURAL RESOURCES

The area boasts tremendous natural resources for both mining and tourism, and in certain areas it may well be suited for agriculture. In fact, some preliminary studies has been done in this regard by the Ministry of Water, Agriculture and Rural Development.

1. Tourism

The wide-open semi-arid plains with sparse grass and occasional herds of oryx, springbok and sometimes zebra, including the herds of elephants moving up and down the Ugab River, are major attractions. Add to this the unique Brandberg with its treasure of prehistoric rock paintings amongst which the famous White Lady is extremely well known in addition to the scenic beauty of the mountain itself.
It is known that a tour through the un-rehabilitated Uis Tin mine has been appreciated by the occasional tourism group with a less rigid schedule, while those that know about it has enjoyed a dip in the pool at the bottom of the open pit at the Brandberg West mine, despite the high salt content of the water. This pool is known by some as the “emerald pool” because of its clear emerald green water.

2. Mining

a. Large/Medium/Small Scale Organised Mining

Larger scale mining will involve a higher level of mechanisation and can thus only focus on the larger deposits. Since the project area lies nearly centrally within the Namibian north-west pegmatite belt, the larger scale mining is possible, like the defunct IMCOR Tin Mine, but has to concentrate on the larger pegmatite bodies. Pegmatite bodies are geologically unpredictable in shape, habit or mineralisation and are therefore amongst the more complicated and risky mining ventures.

Really large scale mining, like on the scale of IMCOR Tin is possible, but unlikely, and the best one can hope for is small to medium scale organised mining.

Going out wider than the project and immediately adjacent Uis area, then the possibility for non-pegmatite base metal mining becomes better. Although no mines have been established as yet, there is quite an interest in the general area by the exploration companies.

b. Informal Mining

The zoned pegmatite bodies, being found in all sizes and shapes, hosting semi-precious stones and rare metals are the ideal target for this type of mining, since it can be done at a very low level of mechanical means. Indeed, using blasting or other forms of mechanised rock breaking and moving tend to break the semi-precious stone crystals or shatter rose quartz into useless shards or lumps.

The Project Area has only one type of mineral deposit, it being crystals of amethyst, smoky quartz, clear quartz with gas bubbles, as well as prehnite, occurring in so-called “pockets” in the lava flows which were originally liquid-filled gas bubbles in the lava, out of which the amethyst and other quartz types crystallised over time.

3. Agriculture

The general project area is bordered to the north by the Ugab River and to the south by the Omaruru River. The Omaruru is a very high quality water source and NamWater are doing their utmost to manage this source as best they can (eg. Omdel Dam). The Ugab River is a water source of much lower quality and flows into the sea with no attempt to extract water from it.

The climate of the project area, given suitable water, is a sub-tropical
approximation without temperature extremes, and especially no frost.

The major concern, in the agricultural sense, is to find suitable soils adequately close to useful water sources.

See attached maps:  
Landscape Forms  
Vegetation Types  
Drainage Systems (Rivers)  
Water Boreholes (Namwater)  
Soil Types

H. GEOLOGICAL ENVIRONMENT

The general project area has a complex and varied geology dominated by older rocks of the Damara Sequence. It is however the comparatively more recent intrusive and extrusive episodes that created the lava sequences of the Etendeka Plateau, the Messum Crater and the Brandberg. One of the earlier intrusive episode created the numerous pegmatite bodies which is the major economic interest in the area, hosting the aquamarine, tourmaline, rose quartz, tin and tantalite, etc, occurrences actively exploited by many. Of secondary economic value is the lava flows of the Etendeka Group which host the "pockets" of amethyst, smokey quartz, prehnite and other crystals.

See also attached maps:  
Geology (Geological Survey)  
Mineral Occurrences

I. ECONOMIC ACTIVITIES

Current economic activities are:
1. Tourism-related activities (accommodation, guiding, handicrafts, etc)
2. Subsistence small stock farming
3. Subsistence mining
4. Subsistence mineral trading
5. Shopkeeping on various scales

VI. INTERVIEWS WITH INTERESTED AND AFFECTED PARTIES

A. Mr. Ramon Tiongco - Chief Mining Engineer, MME

A small scale mining project was started in the Uis area by MME (Mr. Tiongco) with the overall objective of creating opportunities for sustainable employment and to establish a framework for legal, safe, environmentally friendly and democratic ways of small scale mining operations in Uis. In the process the project would also create a core of expertise in mining and environmental rehabilitation. The project selected a core of people from the community, that will go through the formal process of exploring for a specific mineral deposit, doing an initial environmental assessment, prove the mining feasibility, plan an environmental friendly mining and processing operation, actually mine the deposit(s), and in conclusion attempt to rehabilitate the mining site. To this end a Mining Cooperative has been established at Uis. It is an a approach to
structuring informal mining that has had some excellent successes throughout the world where informal mining is a serious problem.

MME has identified two substantial tantalite-bearing pegmatite bodies surrounded by a number of smaller ones. The idea is to focus the mining on the two primary pegmatites while the smaller ones will be worked in a controlled manner on a really small scale, under the auspices and control of the larger group. This will not only maximise employment and product output, but will create a larger group being taught the formal way of going effectively about mining on any scale.

Since one of the major problems is the fragmentary nature of the artisanal/informal mining community with no clear identity, this will create a skilled pool of formal small miners that will stay put as a recognisable group and be subject to the laws of the country. It is also an attempt at proving to the informal mining community that it is economically worthwhile to belong to the formal mining community, and so lure them to do the right thing.

This will be a case study, to be documented as the project progresses, and will be the first step in creating a formal small mining sector through which the informal and artisanal mining community can be organised and structured so as to alleviate the social, health and environmental problems associated with specifically the informal/artisanal mining sector.

Although it is early days yet, and Mr. Tiongco's cooperative would still have to be proved feasible, it does appear that MME is now on the right path and doing everything within their means (resources and funding) to establish a viable small mining sector from amongst the current 'faceless mass' of artisanal and informal miners, not only in the project area, but also for all of (mostly rural) Namibia.

B. Ms. Maxi Louis - Programme Officer, NACOBTA

According to Ms. Louis, the project area is at present not being intensely travelled by tourist groups, since access roads are two-wheel tracks in poor condition and not passable for anything but a 4x4 vehicle.

Her concern (and that of NACOBTA) is however that uncontrolled expansion of illegal mining and prospecting activities by what is in effect an unorganised rabble will (a) expand into the areas that are being travelled by tourists, and (b) that tourism may expand according to the Integrated Tourism Master Plan into areas already ravaged by these people.

She feels that MME should play a more pro-active role in what is being increasingly polarised into the issue of Mining vs Tourism (Environment), and that they should provide more input into the integrated tourism planning.

The traditional/tribal authorities, together with the various conservancies, NGO's, regional ministerial offices are very important role players in this scenario. The local communities should be involved as active participants and not treated as interested outsiders.
The final comment was made that it seems that even with a valid prospecting permit, and valid claims to work on, illegal operations are still flourishing, since the claim-owner does not always work the claim himself, but he typically expects to get something from the people working the claim and he does not care where it comes from or whether it was illegally mined somewhere else.

C. Mr. Pintile Davids - Managing Director, R.I.S.E.

Mr. Davids stressed the integrated nature of their approach to rural upliftment. The various GRN ministries involved in their sphere of activities are Tourism and Environment, Mines and Energy, Land and Resettlement and RISE is of the opinion that there is currently not enough inter-ministerial cooperation. They advocate and attempt to implement a holistic approach to the management of Natural Resources which is currently not easily achieved. The Communal Lands draft bill is expected to make it easier for them in some respects.

It was agreed that whatever plan of action is engaged upon, the rural communities must be actively involved and get some benefit out of the plan of action, instead of being treated as passive bystanders. In addition, it was felt that the purpose of the project can be best achieved if suggested solutions will maximise income (and income potential) to local communities in a sustainable way. It was felt that such an approach will automatically be associated with an environmental friendly way of doing things.

Mr. Davids introduced Ms. Sima Luipert who suggested that a meeting at Uis with Mr. Eric Xaweb of the Tsisab Conservancy will be essential in appreciating the work R.I.S.E. has been doing.

D. Mr. Erasmus Shivolo - Chief Engineer: Minerals Development/SYSMIN

Mr. Shivolo was contacted on a suggestion by Mr. Tiongco, as he was directly involved in the 3rd Eu-ACP Mining Sector Seminar held in Windhoek. The seminar did address Small Mining issues, as well as issues that can have an impact on small mining, and Mr. Shivolo promised that he will obtain the proceedings from Brussels by e-mail and make it available, again by e-mail to this project.

To date, this document has not been forwarded to Mr. Shivolo from Brussels.

E. Danzen Isaks: Control Officer, MME

Mr. Danzen Isaks provided a map showing the position of some 19 claims in the Project Area, together with the names of these claim holders.

F. Eric Xaweb: Control Officer, Tsisab Conservancy

Instead of a meeting with Mr. Xaweb alone, the appointment piggy-backed onto a Tsisab Conservancy meeting and so addressed a wider section of the conservancy community.
The section of the community assembled for the RISE/TSISAB meeting had quite a lot to say about the issue of control over informal/illegal mining especially since it can negatively affect the income generated by the Conservancy.

Two issues were essentially posed, (a) that of the control over the informal mining and (b) should the control result in informal miners not being allowed to mine, what other alternatives the community can suggest.

1. **Control**
The discussion of control over illegal mining or environmental practices was debated quite extensively with essentially two camps emerging, i.e. one in favour of the Conservancy exercising practical control and the other in favour of the tribal authority exercising control.

The Tribal Authority predates the Conservancy, but the Conservancy operates formally with Tribal Authority approval, the Tribal Authority is recognised by the Government and the Conservancy has been so demarcated that its boundaries correspond to Tribal Authority boundaries so that according to this argument the Tribal Authority should be the main controlling body.

On the other hand, the Conservancy is tasked with the protection and sustainable utilisation of the renewable natural resources within its domain, and has a formal constitution and legal existence. Since by its very nature it has been formed to be active and pro-active pertaining to natural resources it is more suited to exercise control in the form of an executing body reporting to the Tribal Authority.

In order for effective control to be in the hands of the Conservancy, its constitution must be changed to include not only renewable natural resources but ALL natural resources and it must have a representative from the Ministry of Mines and Energy giving the necessary input whenever required.

The Conservancy will not take over the function of Mines and Energy in allocating mineral rights, but will essentially be accorded the same rights, privileges and obligations of a commercial farm landowner under the Mining and Prospecting Act of 1992 (now possibly to be amended following country-wide consultative workshops).

2. **Alternatives**
The community could not suggest a single alternative to informal mining. One respondent mentioned that it is not right to remove an individual’s right to earn a living if he/she is desperate and informal mining is the only available option.

At the conclusion of the meeting, a member of the community who evidently has strong ties to the Informal Mining community stood up and suggested that it is grossly unfair to stop the informal mining activities as it is the final option for the desperate and unemployed. He echoed the strong vein of desperation and of "only option" that comes to the fore very strongly in interacting with the informal mining community.
G. Various Informal Miners at Gobobos Hills

On a field trip to the actual project area, it was found that although the area and terrain looks quite forbidding to non-offroad vehicles it was very easily traversed by ordinary road-going vehicles, as long as one stays within the existing tracks and drive slowly at about 10-15 kph.

Some 20 shacks were counted just south and slightly to the east of Tafelkop, which is one of the landmarks in the area. One informal miner suggested that in excess of 50 people stay there on a semi-permanent basis. He maintained that a monthly income of N$2000 per person is “not money” and that it would be closer to assume an income of N$5000 per person per month. It may certainly be in excess of N$500/person/month as two informal miners were met who have jobs in Uis paying N$500/month, and they have taken leave for a month to boost their income. They expect to earn at least N$2000 each for the month. It is extremely hard work though, as all mining is done by chisel and hammer, which is probably the only effective way to mine the fragile crystals which is their main product.

Another informal miner suggests that the majority of informal miners working there are functionally or actually illiterate, and this is the only option to make a living without begging. He indicated that if any other decent jobs were available he would rather do that than mining with a hammer and chisel as it is extremely hard work under very poor conditions. They have no transport or any other social or physical infrastructure or support and they have to pay N$80 for a 200l barrel of water brought from Uis by people specialising in selling water to these people. According to this informal miner, there are some people amongst them with quite a good education who make good money mining and selling stones.

They sell their products to tourists actually driving in to their mining site (and this seems the major market) or by special trips to Windhoek by the more organised and mobile of the small miners. It is uncertain how much of their production is sold by roadside vendors at Uis as they are not really keen to talk about it. These roadside sellers are actually scaring tourists away according to business people in Uis.

It was indicated that they are working on registered claims, but having no prospecting licenses themselves (in fact they seem not to have heard of prospecting licenses). The GPS malfunctioned, but the map seems to indicate that they are working on or near claims belonging to Alfred Uirab (claim # 11), Eximus Technologica Corp (claim nos 12, 13 & 14). Mr. Uirab works his claim himself with some help, but it would seem that the Eximus claims are worked with the consent of the owners since it is too conspicuous an operation to be done illegally.

Some more time would have to be spend in the project area, talking to the informal miners and taking photos of both the existing workings and the abandoned workings. It must be mentioned that the extent of the environmental damage is much less than reported, and that it happens quite out of view of passing tourists.

Meeting with the group of Informal Miners has dispelled the idea of a group of wanton despoilers out to make a quick buck. These people, for the most part, have no
other options open to stay alive, and instead of turning to crime as the last option, they have elected to work extremely hard under very poor conditions to make a living.

A follow-up field visit showed that all current artisanal miners are actually working on legal claims. These claims are either held by one of their group, or by an absentee "landlord".

See also attached maps: Gobobos Claims
Mining Sites Survey

Please also refer to the accompanying video recording.

VII. MINING AND TOURISM INTERACTION

There was a general note of concern from the tourism/environmentally orientated people that they have not been able to involve the right person at the Ministry of Mines and Energy into their own sphere of activities. Since Mr. Ramon Tiongco is directly involved with small mining development, it was decided, with his verbal consent, to suggest to R.I.S.E. and NACOTBA to contact him and set up a formal liaison.

VIII. INVESTIGATION: THE SMALL MINING ASSOCIATION

A. INTRODUCTION

The 1994 study was initiated by a request from the Namibian National Small Miners Association (NNSMA) to the EC SYSMIN Programme effectively to "Buy a plot of land in Windhoek and erect a 'Main Office' complex composed of stores, workshops, offices and classrooms".

The Consultant felt at the time that this was not only pointless, but seemed patently unsupportable without an in-depth evaluation of the small mining industry, its problems, its organisation and its context within the Namibian Mining Sector. To this end then the Consultant suggested a modified Terms of Reference as follows: "An Investigation into the Development Infrastructure for the Small Mining Industry".

This approach as it turned out was essential, as the small mining was found to be completely disorganised with allegations of corruption and poor management. It was also found that the Executive Committee of the NNSMA does not speak for the small miners and in general is not even recognised by the small mining community. In its 11 years of existence it does not seem to have managed a single tangible development activity, despite numerous regional and overseas trips, attendances at workshops, and cash donations by various instances.

The small mining sector does not exist in vacuum, and has to find itself a recognised position within formal mining sector, answerable to the same laws on mining and mineral resources as the rest of the mining fraternity.

The consultant therefore approached the study, within the confines of the modified T.O.R., by specifically recognising the importance of Small Mining with respect
to (a) job creation and employment, (b) sensible development of the National Mineral Resources and (c) as a formal earner of foreign exchange.

During the course of the study small mining communities were visited, and where time allowed, even actual workings. The commitment of the Small Miner, in spite of extreme hardships, to his chosen profession is admirable and it quickly became evident that the typical character traits of the small miner forms the backbone of any small mining development plan. The field visits also evidenced appalling socio-economic conditions, a virtually unorganised Small Mining Community and an urgent need for positive action.

The written documentation contained numerous reports from various consultants without any single positive action in the field. This contributed to a visible lack of expectation from this study and the commonly expressed view of "just another clever man talking a lot". This was countered by actually (a) conducting, where possible small lessons using appropriate samples on rock and mineral identification, and (b) suggesting a bottom-up formal reorganisation of the Small Mining Community.

The suggested complete re-organisation of the NNSMA, together with the appointment of an Executive Management function is expected to be the key elements in making the NNSMA a functional entity.

B. COMMENTS ON THE TERMS OF REFERENCE

1. Commodity Definition
   It is difficult to exclude commodities from the Small Miner's portfolio. They should be allowed to explore for whatever commodity that has a market value. Once they have found deposits of this commodity, then several factors would effect the decision to go ahead, viz:

   a. Does the particular Small Miner have the capability and expertise to mine this commodity with minimal assistance?

   b. Would the Small Miner be able to go into a joint venture with a more able partner?

   c. Does the commodity involve a very risky market (eg. Dimension Stone)?

   The consultant finds it very difficult to specify a specific commodity for small mining. Small Mining has to fit into the development of the National Mineral Resources in order to earn foreign currency, create jobs and improve the quality of life.

C. LOGISTIC SUPPORT TO SMALL MINERS

In view of the fact that the current NNSMA effectively does not represent the Small Miner, they would have no real idea as to what equipment and services to provide. The most workable plan is to get an experienced Executive Manager, and together with this person evaluate all commercially viable propositions for development
and initiate the controlled services development plan. It must also be remembered that
the consultant did not investigate potential or actual small mines, and thus does not
know what is effectively required by whom and for what purpose.

D. PROFILE OF SMALL MINING AND THE SMALL MINER

The literature give various definitions of Small Mining and the Small Miner, but
the Consultant is of the opinion that playing with semantic concepts will not readily
contribute to solving the problems now experienced in the Small Mining Community.
For the record however, a working approach to profiling the Namibian Small Miner is
indicated in its widest possible context as follows:

1. Limited or no capital/cash.
2. Limited or no mining equipment/tools.
3. Limited or no mining/geological expertise.

E. WOMEN IN SMALL MINING

Women play an important and by no means subservient role in the Namibian
Small Mining activities. They are actual claim holders in own right and they physically
mine these claims themselves. Their involvement is made more arduous because it is
combined with their traditional roles of housemaker, childbearing and raising and
looking after the family.

These roles seemed to have instilled a stronger sense of responsibility and
lesser inclination to gamble on wild goose chases. They seemed to easily slip into
informal authority roles and seemed to have strong informal leadership roles in their
respective communities.

F. PREVIOUS INVESTIGATIVE STUDIES

There were a number of previous investigative studies, by the Raw Materials
Group of Sweden, the Geological Survey of Finland/Finnida, Dr. Jiri Sima of ROM
ECO-GEO (Pty) Ltd of Czechoslovakia and possibly others.

These studies are extremely interesting in that it identified all of the symptoms
of a Small Mining Sector in complete disarray, it lamented the fact that there are no
black Namibians in senior (ownership or management) positions in the Namibian
Mining Industry, but it seemed to have completely ignored the root causes for these
symptoms.

These major root causes for the observed symptoms in all of these studies,
including this one, are quite simply two-fold:

1. The Small Mining Community is not organised and does not have a
   representative Executive Committee that is able to speak for its members, and
   essentially is not a creditable body;

2. There is no national or otherwise Geo-sciences/Mining Science training
   facility anywhere in Namibia, despite the (a) fact that the Mining and Minerals
Sector is amongst the four major earners of foreign exchange and (b) the very significant number of Namibians to whom mining is a way of life and who would be able to make a professional career in mining given the training opportunities.

G. THE NAMIBIAN NATIONAL SMALL MINER’S ASSOCIATION

1. HISTORY
   It would seem that the Namibian Small Miners Association was formed in 1983 (1985 was also mentioned). They have thus been in continuous operation for some 11 years now.

2. ACTIVITIES
   The NNSMA have been involved in this period in trips to Zimbabwe, central African states, etc, they have given numerous talks at workshops and seminars and have been involved in numerous studies and fact-finding activities.

   Sadly, none of these activities has resulted in any positive action despite the possibilities available. Ironically, their period of existence (11 years) is also the accepted lead time period for finding and starting a major mine from grassroots exploration activities.

   The activities of the NNSMA seems to have been non-focused and without any strategy or specific plan of action while their members, or at least their potential membership group, were to all intents and purposes unsupported.

3. LACK OF PURPOSE AND INITIATIVE
   A previous study indicated a lack of purpose and initiative on the part of the NNSMA and specifically the Executive Committee as the NNSMA effectively does not exist.

   a. Lack of Organisation
      The NNSMA did not manage to organise themselves in some 11 years of existence - i.e. apart from the Executive Committee nothing else exists except for a (chaotic) membership list. The Uis SMA was formed (in competition to the NNSMA) because they did not receive any support from the NNSMA.

   b. Lack of Purpose
      The NNSMA does not seem to have had a concrete action plan against which to measure achievements and failures, and which could have been a dynamic development blueprint to act as tool in inspiring investor confidence.

   c. Lack of Credibility
      The NNSMA does not seem to have any credibility with investors and funding agencies because of a dubious financial history and a 100% lack of achievement. Despite some mentioned moneys to the amount of some N$600,000 having passed through the NNSMA and despite the
Karibib factory, the NNSMA has nothing to show, no mine, no commercial activity, no social upliftment at all, etc.

4. **Lack of Accountability**

The NNSMA did not seem to be accountable to anybody with respect to their actions, management and financial affairs. The Executive Committee and to a certain extent elements within this body seemed to have a complete autonomous and autocratic hold on the NNSMA as a whole.

This lack of accountability reflects extremely poorly on the competency of the Executive Committee.

**H. Elements of a Workable SMA Development Solution**

The Small Miners does not exist in a vacuum, and within the Namibian national setup the NNSMA may actually or potentially interact with the following organisations/functions:

1. **Government of Namibia**

   The Government by way of the Ministry of Mines and Energy is the major player in creating an enabling environment via legislation and to provide country-wide supportive services via decentralisation.

2. **Large-scale Mining Sector**

   Based on experiences in other parts of the world, including Namibia when Uis Tin Mine was still operational, the Large-scale Mining Sector (including the Chamber of Mines) and the Small Mining Sector can very easily operate together in any number of ways. Specifically, the Large Scale Mining Sector has an established infrastructure, expertise and services and can very easily extend a helping hand to the Small Mining Sector, and play a major role in formalising the Small Mining Sector.

3. **Education**

   The literature seems to indicate that a large measure of success accorded the establishment of a formal Small Mining Sector is due to the provision of graduates, services and support from local universities and polytechnic. In this particular regard, the educational ball can be set rolling with a (2-year) geo-technical course at the polytechnic which will teach students an overall practical geo-sciences curriculum containing:

   - Rock and mineral identification
   - Sampling techniques
   - Elementary surveying/mapping (compass, plane table(??))
   - Geological/Topographical map interpretation
   - Elementary ore deposit formation
   - Mining laws, methods, engineering, safety
   - Business and financial planning
   - Prospecting techniques
   - General principles of geology
   - Orebody evaluation
Ore processing techniques
Interpretation of mine plans

A polytechnic geosciences/mining diploma course can be initiated easily by involving Namibian Resident Geo-sciences professionals in the teaching corps. These professionals may be approached for full CV's and lecturing/practicals rosters drawn up to cover the whole spectrum required. Graduates from this process may find ready employment in Namibia (and elsewhere). The formal Large-scale Mining Sector may also be involved here.

This can be followed in due course by a Department of Geosciences at UNAM. A SADC coordination is advised with regard to University courses however.

4. Private sector
The geo-sciences private sector in Namibia, although small, has extensive experience, facilities and equipment and is quite capable of providing suitable services to the Small Mining Sector. The non-geosciences private sector i.e. legal, commercial, financial, medical, etc, would be in the same position.

5. NGO's
The range of operating NGO's in Namibia is quite extensive and mostly operational in rural development, etc. However, some NGO's notably IMLT (Training, bookkeeping/accounting), and the Legal Assistance Centre can contribute directly.

6. Parastatals
Of the parastatals, only the NDC is of direct consequence.

I. NNSMA MEMBERSHIP AND GEOGRAPHICAL DISTRIBUTION

1. MEMBERSHIP

The membership list of the NNSMA shows some 180 members, some double and even triple registered. The consultant have reasons to believe that the actual numbers are much more. The reasons for the low membership number seems to be two-fold, viz:

a. The non-organisation of the NNSMA.

b. Personality issues. Certain large groups of small miners refuses to join the NNSMA as long as certain individuals dominate the Executive

2. DOMICILIIUM

It is seen from the then Membership List that the then currently registered small miners are domiciled according to the following distribution:
Windhoek
30 Mariental/Gibeon
30 Usakos/Karibib/Omaruru/Uis
17 Keetmanshoop/Tses/Bethanien
10 Otiwarongo/Outjo/Khorixas/Tsumeb
7 Karaburg/Warmbad/Ariamsvlei
The rest are scattered over Namibia and even 3 in RSA. This would already seem to indicate an administrative hierarchy with Windhoek the centre.

However, this figure may be totally distorted, as Uis already has some 80-100 Small Miners, Gibeon which lists only 8 Small Miners showed an attendance of some 40 Small Miners during the consultancy visit, Tses lists only 1 Small Miner, but 19 turned up for the meeting, etc.

3. **MINING ACTIVITIES**

It is seen from the then Membership List that the (mining)activities of the **then currently registered** small miners can be grouped into a loose hierarchy as follows:

50 Miners active within the large area bounded by Khorixas, Outjo, Omaruru, Wilhelmsdal, Usakos, Spitskoppe, Okombahe, Uis.
27 Miners active in the area bounded by Kalkrand, Mariental, Gibeon, Maltahohe.
20 Miners active in Rehoboth
17 Miners active in the area bounded by Berseba, Keetmanshoop, Bethanien.
11 Miners active in the area bounded by Grunau, Karasburg, Warmbad, Noordoewer.
9 Miners active throughout Kaokoland.

This would indicate a operational decentralisation towards at least a Southern and a Northern operations centre.

These figures are certainly completely distorted and the same comment as above pertaining to the distribution applies here.

J. **NNSMA EXECUTIVE MANAGEMENT**

1. **Reason for Executive Manager**

Major constraints in the development of the Small Mining Sector, are:

a. An existing but understaffed Small Mining Unit (SMU) in the Ministry on Mines and Energy,

b. The lack of expertise and inability to organise amongst the current NNSMA Executive and Members.
To circumvent these constraints, and remove interpersonal friction in the NNSMA, it is suggested that an external Executive Manager be appointed to run the NNSMA on a day-to-day basis, and be the major power behind the Small Mining re-organisation.

2. **Executive Manager: Personality Profile**

   The Executive Manager will ideally have the following personality and experience profile;

   a. Academic & experience background in mining/geosciences
   b. Experienced manager

   The person will ideally be a retired mine manager or senior geosciences company manager who will be able to handle this very crucial position.

3. **Executive Manager: Terms of Reference**

   The Executive Manager must amongst others:

   a. Act as company secretary for the NNSMA
   b. Liaise with NNSMA NEC and MME SMU and GRN.
   c. Liaise with potential investors
   d. Liaise with marketing/press organisations
   e. Manage feasibility studies
   f. Plan and manage projects
   g. Manage/Control NNSMA finances
   h. Recruit, appoint and train two understudies
   i. Manage peripheral developments (services, etc)
   j. Manage training issues
   k. Manage consultants and contracts

K. **SMALL MINING SERVICE INFRASTRUCTURE**

   The Small Mining development will require the development of a supportive service industry which will assure maximum job creation and other peripheral beneficial socio-economic effects. This is a complex aspect to discuss and indicate plans of action for.

   The idea is sound, but the execution may have problems a.o. as follows:

   1. Large distances which include any possible road surface from excellent tarmac to trackless and nearly impassable wastes;
   2. Mobile (and really any other) equipment does not respond well to excessive travelling;
   3. Travelling (fuel, wear & tear, time) increases the cost of the service;
4. Some operations may not be able to afford waiting for a travelling/mobile service;

On the other hand:

5. A dedicated service can be done more professionally than otherwise;

6. Responsibility and accountability for (expensive) equipment should be vested with ideally one person whether an actual person or a legal person (company).

7. There are instances of a travelling/mobile service being ideal especially in the exploration and preliminary exploration stages.

8. Certain types of services lend themselves ideally to a service-provider approach, especially those which are more professionally orientated e.g. Land Surveying, Geological Mapping/Evaluation, Mine Planning, Sampling, Core Drilling and larger volume Percussion Drilling, Equipment Service, etc.

The other issues which influence the development and provision of such a service industry are a.o. as follows:

9. The development of Small Mining is a matter of urgency, and the provision of services cannot be indefinitely postponed;

10. The development of the service industry cannot be over-hasty and/or incorrectly started as this may be a recipe for disaster.

11. The Executive Manager should ideally be directly involved with the development of this service industry.

12. There are sure to be unemployed but experienced Namibians that can be used to excellent effect in such a business development.

It is suggested that these conflicting issues be addressed by:

13. Recruit the Executive Manager as a matter of priority;

14. In parallel with this, identify projects which can be developed without an overly complicated mining activity or which requires mainly a professional Geo-sciences expertise input;

15. Postpone, within reason, any other service development activity until the Executive Manager is appointed.

L. FINDINGS AND RECOMMENDATIONS

The findings, recommendations and expected results will be grouped under organisational, training and development.
1. ORGANISATIONAL

FINDING 01: The NNSMA is effectively unorganised, its Executive Committee is not representative and the documented dubious financial wheelings and dealings does not inspire any confidence both from within their own ranks and with investors and donors.

RECOMMENDATION 01: The recommendation consist of a number of sub-components, viz:

1.1 The existing Executive Committee should voluntarily resign as a body and MME in the interim act as custodian for the NNSMA until a new executive body and manager is appointed.
(Note: MME has no Small Mining Unit in its structure but a Mine Services Sub-division operating under the Mine Safety and Services Division of the Directorate of Mines. The Mine Services Sub-division oversee and monitor the development of the small scale mining.)

1.2 The NNSMA must be organised as a bottom-up structure, where local committees are formed, and from the local committee management regional committees are formed, and from the regional committees the truly representative National Executive Committee (NEC) is formed;

1.3 The constitution of the NNSMA should be overhauled in consultation with the Executive Manager, EC, MME and the relevant consultants;

1.4 A set of clear attainable objectives and scheduling should be compiled and NEC members tasked with it;

1.5 The NNSMA should be turned into as formally legal a body as is practical possible, as this body should be admitted membership of the Chamber of Mines;

1.6 The NNSMA should work towards practical incentive schemes to make members want to join them;

1.7 The NNSMA must regularly communicate newsworthy happenings with its members;

1.8 The various management levels in the NNSMA should be fully accountable downwards and with its external links (investors, EC, MME, donors, etc);

1.9 It finally recommended that women are very seriously considered for NEC or any other management or executive positions.
1.10 The majority of the detailed findings and recommendations in the field visit reports should be for the various levels of NNSMA management to address.

EXPECTED RESULT 01: The expected result will be a strongly formal body that will truly represent its members with a strong accountability to attract donors and investors.

FINDING 02: The members of the NNSMA are all full-time employed either in mining or in part-time mining and part-time employment to make ends meet. There are no time and suitable expertise to manage the affairs of the NNSMA effectively.

RECOMMENDATION 02: It is recommended that at least one full-time Executive Manager be appointed to manage the affairs of the NNSMA. This person will ideally be a geo-sciences person with management expertise and will manage in consultation with the National Executive Committee and MME. Cheques will ideally be signed together with the NEC Treasurer and the Director of the MME Directorate of Mines, as will certain other official documentation such as press releases, official functions, etc. Routine internal communications will not require three-way signatures. This position would also expected to function as project manager as and when required.

It is further recommended that this person will not be actively involved in mining activities, nor any other interests or activities that can compromise the integrity of his/her position. The ideal person to initially fill this position would be a retired geosciences/mining manager with a suitable reputation and professional recognition.

Depending on the volume of work (which is expected to be substantial), it is expected that two additional regional managers be appointed to serve as understudies.

The management function (in association with the MME) will:

a. Advise on:
   (1) Safe mining practices
   (2) Pegging
   (3) Mine exploration
   (4) Mining laws
b. Arbitrate disputes
c. Monitor environmental degradation
d. Monitor health and safety
e. Monitor SMA activities
f. Do business administration
g. Do SMA Budgeting and budget control
h. Maintain a database on miners
i. Conduct Mining/Development feasibility studies:
   (1) Order of magnitude stage
   (2) Preliminary stage
Definitive stage
Detailed stage
j. Provide input to training programmes
k. Drafting of pro-forma documentation

EXPECTED RESULT 02: The expected result will be focused management which will enable the NNSMA to open mines, operate subsidiary services and attract funding and investment.

FINDING 03: There is a requirement from the Small Mining Community that the MME decentralise its operations with at least a representative office in the South and one in the North.

RECOMMENDATION 03: It is recommended that the Ministry of Mines and Energy consider opening offices in Keetmanshoop to serve the Far South and in Uis(?) to serve the Far North. These offices should ideally be shared by the junior regional managers of the NNSMA. Both NEC and MME officers would share in supporting some or all of the functions indicated under the Recommendation 02 above.

EXPECTED RESULT 03: The expected result will be a much improved and more visible service to the small (and other) mining communities closer to where it is required.

2. TRAINING

FINDING 04: There is a tremendous short term need for practical training in all aspects of small mining. A similar need exists for medium term professional technical training in mining, geosciences, legal and commercial. A case can be made for professional graduate training in the geosciences to serve as a backbone of the Namibian Mining Sector.

RECOMMENDATION 04: The recommendation here consist of different components as follows:

4.1 Create practical hands-on training and mining extension facilities to support the currently active small miners. For this programme out-of-work or retrenched experienced miners may be used. An immediate focus may be for both owners and workers on:
   (a) Mining laws
   (b) Mine evaluation/Valuation
   (c) Mining methods
   (d) Mining safety and first aid
   (e) Basic geology
   (f) Suitable training to ensure employment in the formal sector should the mining venture not work out
   (g) Rock and mineral identification

4.2 Initiate the development of a geosciences/mining diplomate course together with the Polytechnic, Namibian resident
geosciences/mining professionals, mining houses and the donor community. See Para. 07.03 as well.

4.3 Evaluate the need for a Geosciences Department at UNAM or elsewhere within the SADC environment.

EXPECTED RESULT 04: The expected result will be the creation of truly Namibian mining and geosciences professionals, in an approach which addresses both short, medium and long term needs.

3. DEVELOPMENT

FINDING 05: There seem to be any number of small mines that may be worthy of commercial development. There are also abandoned mines (Uis, Klein Aub, etc) that may be commercially payable on a small mining basis.

RECOMMENDATION 05: All possible workable (virgin) prospects/mines should be evaluated in an order of magnitude appraisal phase, these ranked, and the better ones developed as matter of urgency. The formal structure of the NNSMA will be crucial as it will have to suggest development possibilities for evaluation.

Less urgently, but possibly equally important, all abandoned mines and pilot projects should be evaluated from a small mining feasibility viewpoint.

EXPECTED RESULT 05: The need for a tangible commercial small mining success is quite crucial as it will rehabilitate the investment/donor confidence in the NNSMA. It will also generate much needed jobs and contribute effectively to a sustainable rural development effort.

FINDING 06: The development of the small mining sector is effectively hampered by the virtually complete lack of supporting services such drilling, blasting, assaying, sampling, transport, housing, land and geological surveying, etc.

RECOMMENDATION 06: There are possibly quite a number of competent unemployed miners, mechanics, geological field assistants, etc to be found in Namibia who could be used to create a commercially viable service industry aimed at supporting the small mining industry. This development may take the form of soft loans to suitable individuals/groups to set them up in business to provide a remunerated service to enable them to repay the loan.

EXPECTED RESULT 06: The expected result from this is the creation of sustainable supporting service industry which will enhance the EC SYSMIN multiplier effect and create additional jobs on the periphery of the Mining Industry.
FINDING 07: There is a crucial need for formal/regular markets for products from the small mining sector. This is associated with a element of formal control on such products as illegal dealing adversely affect the market price. The small miners will require quite an amount of education with respect to a formal buying and selling process as they have up to now been left to their own devices in making a living as best they can.

RECOMMENDATION 07: Develop formal markets for produce, possibly as follows:

7.1 Base metal concentrates to Tsumeb, Uis;
7.2 Wollastonite to local consumers;
7.3 Semi-precious stones to:
   7.3.1 a central buying organisation, and/or;
   7.3.2 regular formal gemstone auctions, and/or;
   7.3.3 local processing facilities;
7.4 Markets as can be found.

(Note: Developing formal markets for gold and gold concentrates and diamond is not possible under the current situation in Namibia. The two commodities (gold and diamond) are controlled minerals and govern by separate Acts and Regulations.)

EXPECTED RESULT 07: The expected result is a controlled market where small miners can get market-related prices for their products, and where an element of control can initiated. Convincing small miners not to operate outside of this framework will be easy if they can be assured of constantly the best prices.

FINDING 08: There is quite a substantial request for mining equipment and tools from the small mining community, and the need for blasting services has been specifically mentioned.

RECOMMENDATION 08: The need for equipment, tools and services must be addressed as follows:

8.1 The development of service providers as indicated in Recommendation 06.
8.2 Not all services can be provided in this way, and each requirement must be essentially be evaluated on merit. Eg. a person mining a large pegmatite productively cannot afford to stop production while waiting for an external service provider.
8.3 The issue of blasting is quite a contentious one. A blasting license is required as well as familiarity with explosives. This is therefore not something everybody can do for themselves. In many cases, such as gemstone mining in solid pegmatites, explosives are not the way to break rocks as it tend to shatter crystals. Hydraulic or chemical (eg. Bri-Star) methods work best and has the benefit of safety of use and does not require a permit and special legal requirements.

IX. ARTISANAL MINING AND THE ENVIRONMENT

A. ARTISANAL MINING FROM VARIOUS VIEWPOINTS

1. INSTITUTIONAL

   It is common in developing countries to find a continuing substantial growth of artisanal mining, and since this contributes to rural income generation as well as combating the trend to migrate to the more populous centres in search of work, it is normally tolerated by the governments involved.

   In an attempt at reforming the Artisanal Mining sector into a more organised Small Mining sector, most governments attempt to cater for some sort of support to the artisanal mining environment, either by facilitating interaction between organised mining and artisanal mining or by creating an assistance centre within the ministry that deals with mineral rights and mining regulation. In addition practical support is also sometimes given by way of government sponsored assay offices, central custom mills or extraction facilities, etc.

   The higher the level of organisation, the better the possibility of creating a mining sector with a reduced impact on the environment. Governments must however be very careful to ensure that the delicate balance between control and encouragement is maintained.

   The involvement of international NGO's, funding institutions like the World Bank, regulatory institutions like the International Labour Organisation (ILO) as well as the various relevant UN agencies, has served to increase the institutional capability in governments of developing countries by direct intervention or by funding capacity building.

   However, despite all of the above, most of the artisanal mining remains outside of any formal institutional framework, which may be partly due to the unwillingness to change on the part of the individual miner, as well as Government's inability to practically implement the institutional support.

   Aid agencies have also not been comfortable working in an environment where the mining takes place typically without legal mining right and the products are bartered or sold on the black market. These agencies furthermore became so entangled with trying to define what they are dealing with as well as defining the type of commodity that seems suitable for the type of mining under
consideration that no progress could be make in effectively supporting the conversion from artisanal mining to structured mining.

Effective environmental regulation is critically dependent of enforcement capacity, the availability of injunctive measures to help enforce compliance, the use of such measures where appropriate, and the ability of the mining sector to finance the costs of compliance.

2. LEGAL

The legal aspect surrounding Artisanal Mining has to address not only prospecting and mining issues, but in addition the social, environmental, property rights, etc., must be considered. It would seem that in developing countries, where Artisanal Mining is most prevalent, the rule of law is not always as firmly administered as in developing countries. In countries with a high level of social strife ranging from political friction to open warfare the rule of law is increasingly ignored or less enforced as the level of internal strife increases.

a. Mining Title

Developing countries, where land title or land property rights have not been deemed that important, have consequently been amiss at addressing the issue properly where mining title is concerned. In order to regularise the Artisanal Mining environment, the issue of a clear and secure mining title is very important. It also seems that the codification of mining laws and therefore mineral title in various developing countries varies from virtually non-existent to rather stringent. Developing countries without a history of prospecting and mining is often amiss in addressing the issue of legal mining title.

b. Environmental Legislation

Environmental legislation is often the result of increased pressure from funding agencies or donor countries. Since the focus on environmental protection is a relatively new development, environmental legislation varies from non-existent to stringent.

It goes without saying that without a clear set of laws, efficiently policed and administered, it is virtually impossible to manage and control Artisanal Mining. However, cases have been noted where laws have been implemented, but have resulted in a situation where it was virtually impossible to regularise the Artisanal Mining environment. Even where excellent legal frameworks do exist, the administration of them may be so cumbersome that it does little good where the artisanal miner is concerned.

Artisanal miners are much better at prospecting for and locating deposits, but not much good at developing them. If there are legal or practical obstacles that would prevent them obtaining secure title over these deposits and then sell the mining right to somebody better skilled at developing them, they will be locked into having to inefficiently develop the deposit themselves.
In countries where the mineral right is locked in with the land (surface) right, access to mining title is difficult and therefore encourages illegal mining operations.

3. SOCIAL AND COMMUNITY

The social environment pertaining to Artisanal Mining is an important one. Since most Artisanal Miners are migrants following the latest "strike" or the latest fashionable artisanal mining commodity, there is really no organised social environment.

These artisanal miners typically have no organised labour force and no recognised group leader. In a word, it is "every man for himself" and is typically centred around family units, small group of friends, etc. The situation is characterised by poor working conditions, poor health and safety conditions, increased tendency to trade or barter production on the black or informal market, and increased lack of concern for environmental issues, etc.

This lack of social structure is probably the most difficulty obstacle as it prevents the formation of a cohesive recognisable entity with whom to deal with in seeking remedies.

4. ORGANISATIONAL

Various authors have pointed out the negative effect of the traditional large RSA mining houses on specifically the small mining industry. With all expertise, funding and resources based in-house, a strong junior mining sector did not develop and smaller consulting individuals and groups were a rarity. In addition, one of the resulting effects in Southern Africa seems to be a mistaken perception that mining can only be done by big companies with lots of money.

The concept of mining co-operatives has worked well in certain countries, but it was found that it was only effective where bulky commodities with a relatively low unit cost such as industrial minerals were involved.

Mining groups formed by necessity to increase the labour force of a specific group in order to increase production and output may also be seen as positive development towards the transformation of the informal mining sector into organised mining.

The major benefit to be gained from the higher level of organisation in the artisanal mining environment is that boom-and-bust cycles are evened out and a more significant contribution to the community can be realised. Furthermore, a higher level or organisation allows for more efficient interaction between the artisanal miner and supporting organisations such as Government, NGO's, etc.

5. ECONOMICS AND FINANCE

The aspects of economy as it pertains to Artisanal Mining is interesting.
EMPLOYMENT AND REVENUE GENERATED BY MINES
(CLASSIFIED BY NUMBER OF EMPLOYEES)

<table>
<thead>
<tr>
<th>NUMBER OF EMPLOYEES PER MINE</th>
<th>CONTRIBUTION TO TOTAL INDUSTRY EMPLOYMENT %</th>
<th>CONTRIBUTION TO TOTAL INDUSTRY REVENUE %</th>
<th>RATIO OF TOTAL INDUSTRY REVENUE TO EMPLOYMENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 to 49</td>
<td>1.1%</td>
<td>2.5%</td>
<td>2.3</td>
</tr>
<tr>
<td>50 to 199</td>
<td>1.4%</td>
<td>3.2%</td>
<td>2.3</td>
</tr>
<tr>
<td>200 to 1,499</td>
<td>8.2%</td>
<td>22.1%</td>
<td>2.7</td>
</tr>
<tr>
<td>+1,500</td>
<td>89.1%</td>
<td>72.2%</td>
<td>0.8</td>
</tr>
</tbody>
</table>

The table above shows the contribution to employment and revenue from the mines of varying manpower size in the RSA. It is clear that the big mines in terms of contribution per capita is not as effective as the smaller mines. This table, although it does not actually reflect the reality of Artisanal Mining, does show the importance to the national economy if Artisanal Mining can be somehow converted into small organised mining.

It is pointed out that lack of capital or the inability to obtain development funding is the major problem facing the smaller end of the mining sector which is a primary consequence of the unorganised nature in that part of the mining sector. The Artisanal Mining environment employs very large numbers of people at a very low production per capita and consequently very low income per capita. The tendency to barter products for goods or black-market trading of products reduces the income potential considerably. Income is therefore typically erratic, very low to non-existent and extremely unevenly distributed and typically at the subsistence level.

Artisanal Mining does not only have negative connotations; in Zimbabwe the organised gold mining industry developed out of the efforts of artisanal mining, and in many developing countries the contribution by the artisanal miner to the national economy is quite significant. In addition, the artisanal miner is able to operate in remote areas with little infrastructure, and are thus able to contribute significantly to rural development and job creation.

6. TECHNOLOGY AND EXPERTISE

The Artisanal Mining sector is characterised by relative lack of expertise in mining, geosciences and processing technology, a lack of equipment and consequent high level of manual labour. Equipment typically consists of the most basic tools: shovel, pick, hammer, chisel, panning device, wheelbarrow, etc. Expertise is typically of the ‘copy your neighbour’ variety, and they have typically learnt by trial and error or by copying their fellows or from having previous worked in or exposed to a mining environment.

More often than not, a potentially economically viable small deposit cannot be further or fully developed after the artisanal miner has taken out the high-grade portion and left the rest in a state where the rehabilitation required to mine it effectively has rendered it uneconomical.
7. **COMMODITIES**

The commodities that the Artisanal Miner typically targets are the high value types, such as gold, diamonds, emeralds, semi-precious stones, etc. The commodity, to be an attractive target, should also be advantageously located in terms of the infrastructure. Because of the low productivity, it should ideally be close to the markets.

In short, the artisanal miner typically focuses on the commodities with a low bulk, high unit value occurring on or near the surface.

8. **ENVIRONMENT**

The Artisanal Miner is so concerned with making a living that they do not care about degradation of the environment. Since the Artisanal Miner typically has little cash or funding and working at low levels of technology and expertise, they really do not have the means and disposition to rehabilitate their mining sites.

It is interesting that the literature reports that rural communities understandably are very supportive of artisanal mining, but starts complaining to authorities once the degradation has reached the point where it physically has an impact on them caused by destroyed game, woods, cropland, etc.

The typical environmental ills associated with artisanal mining includes:

a. River and stream siltation and poisoning
b. Deforestation and destruction of vegetation
c. Poaching and wildlife destruction
d. Severe and extensive land degradation: soil erosion, surface disturbance and removal, land rendered unsuitable for crops, extensive temporary roads and tracks, etc
e. Visual degradation of landscapes: spoils dumps, abandoned excavations, trenches and pits, roads and tracks, etc.

f. Health risks:
   - (1) Heavy metal poisoning,
   - (2) Drinking water contaminated by human wastes due to poor sanitation,
   - (3) Malaria due to increased breeding areas for mosquitoes,
   - (4) Injuries caused by poor safety conditions and no personal protection equipment
(5) Contaminated fish and aquatic life

g. Social ills typically in temporary mining camps:
(1) Prostitution and associated STD's
(2) Child labour and neglect
(3) Domestic violence against women and children
(4) Alcoholism
(5) High crime levels

B. REMEDIES SUGGESTED FOR ARTISANAL MINING IN GENERAL

The crux of the proposed set of remedies vis-à-vis the associated environmental issues is to formalise the small- and micro-scale artisanal mining operations, as the basis for managing the environmental issues. However, this process is fraught with a large number of practical difficulties.

It is imperative to ensure that disincentives related to formalisation (such as taxes or mining title fees) do not outweigh perceived benefits. This may require educating informal miners to appreciate the benefits of formalisation, perhaps through grant assisted access to environmentally sound low-cost technologies or guidance on sustainable mining techniques. In practice, there are benefits in ensuring that costs to informal miners are minimal (at least initially), as the hidden costs of environmental degradation, social and health impacts of informal mining are likely to be very high.

The interrelated nature of the social, health and environmental impacts of mining should be recognised, and maximum advantage gained from the complimentary nature of measures aimed at mitigating such impacts. In managing the ongoing environmental, social and health impacts of private and public sector industrial mining operations, an environmental management system (EMS) approach to systematically manage these aspects is strongly recommended. An EMS should encompasses the organisational structure, responsibilities, and procedural controls to ensure sound environmental and safety management.

The employment of a community liaison officer to act as the focal point for community issues and concerns is strongly recommended.
The World Bank proposed an integrated approach toward artisanal mining as follows:

<table>
<thead>
<tr>
<th>KEY ISSUES</th>
<th>INCENTIVES</th>
<th>EXPECTED OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulatory/Legal</td>
<td>Establish Enabling</td>
<td>Legal and Structured Mining</td>
</tr>
<tr>
<td>Technical/Financial</td>
<td>Environment</td>
<td>Improved Productivity</td>
</tr>
<tr>
<td>Environmental/Social</td>
<td>Alleviate Constraints</td>
<td>Environmentally Sustainable</td>
</tr>
<tr>
<td></td>
<td>Improve Living/Working Conditions</td>
<td>Mining</td>
</tr>
</tbody>
</table>

**INFORMAL MINING --------------------------------> FORMAL MINING**

In addition, the World Bank proposes the following formalisation process:

<table>
<thead>
<tr>
<th>KEY ISSUES</th>
<th>POLICY INCENTIVES</th>
<th>EXPECTED OUTCOME</th>
</tr>
</thead>
<tbody>
<tr>
<td>Regulatory/Legal</td>
<td>Access to prospective ground</td>
<td>Improved enabling environment</td>
</tr>
<tr>
<td>Unregulated unstructured mining</td>
<td>Legal title and security of tenure</td>
<td>Tendency toward group formation</td>
</tr>
<tr>
<td>Illegal trading and marketing</td>
<td>Freedom to sell mining rights</td>
<td>Increase in mining title registration</td>
</tr>
<tr>
<td></td>
<td>Freedom to market products</td>
<td>Marked decrease in smuggling</td>
</tr>
<tr>
<td></td>
<td>Access to technical assistance</td>
<td></td>
</tr>
<tr>
<td>Technical/Financial</td>
<td>Access to training &amp; extension facilities</td>
<td>Increased productivity and safety</td>
</tr>
<tr>
<td>Inefficient techniques</td>
<td>Availability of inexpensive equipment</td>
<td>Increased revenues</td>
</tr>
<tr>
<td>and equipment</td>
<td>Legal recognition of group guarantee fund</td>
<td>Greater capacity to save and invest</td>
</tr>
<tr>
<td>Low metal recoveries</td>
<td>Reward system: encourage sound mining</td>
<td>Greater ability to mechanise operations</td>
</tr>
<tr>
<td>Low productivity and revenues</td>
<td>Access to training on best environmental practices</td>
<td>Increased use of environmentally sound mining and processing methods</td>
</tr>
</tbody>
</table>

**INFORMAL MINING --------------------------------> FORMAL MINING**

X. ARTISANAL MINING IN NAMIBIA

1. INTRODUCTION

In Namibia, there is strong artisanal mining activity, spread out widely over the 840000 km² of Namibian countryside but concentrated mainly in the more arid portions of the generally semi-arid country. It is of interest to note that although the artisanal mining "community" comprises all ethnic groups in Namibia, it is mainly found in the parts of the country traditionally inhabited by the predominantly Damara- and Namaspeaking peoples.

It is common to find subsistence mining being practised together with subsistence farming (mainly small stock farming), as the real wealth of a rural man is normally still measured in the size of his livestock herds. It is also of interest to note that the gender issue is a very prominent one in artisanal mining in Namibia. It has
been observed that the artisanal "community" is made up of a very large percentage of women.

In the Brandberg area, the rural communities are made up of mainly Damara speaking peoples, and the nearby town of Uis used to be the site of the Uis Tin Mine where large pegmatite bodies were mined by open-cast methods. It is also located in an area of the Damara Mobile Belt which is uncommonly rich in pegmatite bodies and the very low rainfall and limited surface cover makes prospecting easy. The pegmatites are of two distinct types, i.e. the unzoned pegmatites which are mainly tin-bearing and the zoned pegmatites which bear mainly tantalum and lithium minerals and semi-precious stones such as tourmaline, topaz, aquamarine and the quartzes (rose quartz, amethyst, smoky quartz), etc.

The Karroo-age lavas to the west of the Brandberg (Messum Crater, Gobbobos Mountains), etc, produce beautiful and very sought-after crystals of smoky quartz, amethyst, prehnite, zeolite, etc, which are found in so-called 'pockets' in only certain of the horizontal amygdaloidal lava flows.

Uis Tin Mine (IMCOR TIN) had a very close profitable relationship with the artisanal miners in the area, and they actually had a small unit that use to drill and blast small very high grade tin pegmatites for these miners. Uis Tin Mine also bought the hand-sorted and dry-panned cassiterite concentrates on-site from these people.

The men normally pounds the hand cobbled larger pieces into a finer-sized material, typically to less than 5mm grain size after which the women do the dry-panning to concentrate the tin minerals to highly beneficiated degree. Thus developed a symbiotic artisanal mining culture in which large-scale organised mining actively supported and maintained artisanal mining.

When Uis Tin Mine closed in 1990 there was a large population of artisanal miners who up to then relied on the large mine for drilling and blasting facilities as well as a market for the end-product. Since they were miners first and foremost and only subsistence stock farmers by necessity and tradition, they then turned to the mining of tantalite and semi-precious stones which also occurs abundantly in the area.

There are large quantities of semi-precious stones produced by these artisanal miners, and these are either sold to "rock shops" dealing in mineral samples and curios, as well as to international stone dealers who travel the countryside and buy up stones directly at source. Since these stones are mined in areas attracting numerous tourists (mainly from Europe), the typical tourist routes are lined with small roadside "shops" or temporary stands selling minerals and rock samples.

Shopkeepers and certain cash-flush individuals in Uis have set themselves up as buyers and they are making a financial killing by buying tantalite and sometimes semi-precious stones at very low prices and selling it very dearly to metal traders; or in the case of the shopkeepers, sometimes also just trading it for food and drink.
2. INSTITUTIONAL

The Government of Namibia (GRN) has created a unit attached to the Ministry of Mines and Energy (MME), called the Small Miner's Assistance Centre (SMAC). SMAC is a small unit headed by a Mining Engineer and supported by geologists and economists. They also operate one or more field units consisting of ex-miners with blasting certificates who can provide local drilling and blasting services. However, since they have limited resources, they tend to focus on the more viable projects amenable to organised mining and this necessity tends to leave the artisanal miners in general out in the cold.

Rössing Foundation, initially created and funded by Rio Tinto's Rössing Uranium, has an arts and crafts development unit which creates self-supporting rural units something like a co-operative and teaches (mainly women) handicraft skills in which minerals and stones are also used. These products are sold at curio shops or at semi-formal street markets.

Finally, the Government of Namibia is, specifically pertaining to both land and mineral title management and administration, highly centralised in that everything is based in Windhoek and interacting between GRN and the explorationist/miner is only possible in Windhoek and in person.

3. LEGAL

Namibia is and will be a country with a strong mining culture, and the focus of its legal mining code reflects this. The mineral title is not tied to land title and all mineral rights are vested in the State.

It used to be the norm that prospecting "wildcatters" managed to secure legal mineral title on some piece of land, and then use this for speculative purposes. The result was that huge portions of highly prospective land was in effect sterilised, since the holder of mineral title had in general no intention of physically working the area and was anyway not legally bound to, but instead went around trying get exploration companies interested in his mineral title at a fat fee to himself.

The new mining code enacted in 1992 soon after independence in 1990, therefore reflected this "use it or lose it" spirit to address the identified problem and explicitly ruled out speculation in mineral rights. The legal code is very rigid and allows the following types of mineral title:

1. **Reconnaissance License (RL)**
   The Reconnaissance License has a 6 months (renewable) duration over very large areas of prospecting land, paying relatively low mineral title fees. The intention is to allow companies to secure temporary mineral title over a large area for reconnaissance purposes as a prelude to the Exclusive Prospecting License.

2. **Exclusive Prospecting License (EPL)**
   The Exclusive Prospecting License normally allows a maximum of 100 000 ha for a period of three years, annually renewable. Fees are typically
N$0.10/ha per annum, starting at N$2000 for 20000ha and goes up in increments of N$1000 up the maximum N$10000 for 100000ha. At every renewal 25% of the original area must be written off and excluded from the new application. Renewals beyond three years up to a maximum of five years are allowed, but must be very well motivated. The EPL is intended to lead to a Mining License.

3. **Mining License (ML)**
   The Mining License is granted for a minimum period of 25 years but is renewable after that, upon presentation of suitable proof that sufficient reserves/resources are available for continued mining.

4. **Mineral Deposit Retention License (MDRL)**
   The Mineral Deposit Retention License recognises that mining may have to be temporary put on hold for various reasons, the most common ones being adverse commodity prices and complex metallurgy. This type of mineral title is very grudgingly given and is typically only granted after a reasonably complete feasibility study has been done as a motivation. It is annually reviewed and if the original motivation still holds, it is renewed.

5. **Mining Claim & Non-Exclusive Prospecting License (MC/NEPL)**
   A Namibian claim is a fixed entity of 300m x 600m and one may peg up to 10 claims on one non-exclusive prospecting license. These claims are valid for three years, annually renewable and cost N$50/claim to register and renew. Any individual may apply for an annually renewable non-exclusive prospecting license (at a cost of N$50/license) which gives him the right to prospect for minerals. However, to peg and hold a claim, the owner must be a Namibian Citizen.

   The Mining Commissioner whose office administers very secure mineral title, implicitly regards the Mining Claim/non-exclusive Prospecting License combination as the instrument of choice where Small Mining mineral title is concerned, and the other options are typically regarded as the mineral title instruments for the formal prospecting and mining sector.

   All of these mineral titles require regular reporting at specified intervals as well as comprehensive (progress-) reporting at renewal. Furthermore, all of these mineral titles require that proposed exploration or mining activities commence within a certain time frame; e.g. A Mining Claim must be mined within six months. The more formal mineral titles requires proof of technical and financial competence as well.

   However, none of the mineral titles are transferable and they are only managed in and from Windhoek. The artisanal miner finds it (a) difficult to get to Windhoek to register mineral title, (b) cannot bear the direct and incidental expenses involved, (c) are often illiterate and find the bureaucratic red tape daunting, (c) are not legally allowed to sell his mineral title (and especially not to a non-Namibian investor) with the means to ensure development, etc. The typical artisanal miner therefore follows the path of least resistance and mines illegally. Since the title inspectors from the Mining Commissioner’s office only
physically checks on registered title, the illegal mining happens in a framework where they are not amenable to formal monitoring.

It must be mentioned however, that although the mining laws are very strict, it does allow room for accommodating issues that are not easily accommodated within the law as written, by allowing the Minister of Mines and Energy some leeway at his option.

The Namibia Environmental Legislation is in White Paper stage and proves to be exceedingly strict. However, since the mineral rights are vested in the State, the Mining Commissioner's office grants title conditionally subject to environmental preservation, and explorationists and miners enter into an Environmental Contract with the State pertaining to the preservation of the environment given in their care.

A new law pertaining to dealing in semi-precious stones have been introduced. According to this law all dealings in semi-precious stones must be recorded with a formal certificate of sale issued by the seller. This is an attempt to curb the rampant black-market dealing in semi-precious stones outside of the formal economy.

The artisanal miner, however, remains outside of the formal monitoring and control mechanisms as long as he does not register a mineral title.

The artisanal miner, even though he does not mine on registered title, is highly visible in both operation and product disposal and it is not very difficult for Government to enforce their own laws. Since they do nothing or very little about the problem, it is no wonder that the newspapers condemn Government for double standards in enforcing and applying their own laws.

Newspaper articles had the following to say (translated from "Kleinmyners woel na nuwe fondse"):

"Voices were raised anew over the importance of "ethical mining". In this regard reference is to the Gobobos Hills west on the Brandberg where amethyst diggers dug up the whole area and then just left it like that. This has raised questions as to whether the mining law is only for the formal mining sector.

It is also pointed out that the trade in semi-precious stones is controlled by law with transactions that must be registered in the event that such stones is transported over national boundaries".

And (translated from "Myne vol pyne");

"Double standards in mining and the exploitation of minerals has become one of the problems in the Erongo region. Large mining organisations on the one hand is expected to conduct their business with almost clinical precision. On the other hand the informal sector is allowed to rape and run.

Page 36
There is virtually no middle way.

......

......

Also the possibility of a large uranium mine about 100km east of Walvis Bay is nothing new. Metallurgical surveys has been done over a time period of several years, market trends followed, mining cost determined and environmental studies done to form part of the package on an industry that can start in the Namib-Naukluft Park.

This is not what happens in the informal sector. A tourmaline mine closed on the farm Neu Schaben near Karibib, but unorganised squatters continued with mining. The inability of the Police, Ministry of Transport and the Ministry of Mines to act against these people has been proved in the process.

In the Erongo Mountains up to three hundred people were randomly digging in search of an alleged aquamarine strike and west of the Brandberg the Gobbossos Hills were left as a area of violated earth after the amethyst diggers destroyed it and left. Semi-precious are bartered, pawned, cheated with without anybody any the wiser. Is the law then acquittal for one and doom for another?"

It is difficult to believe that with this sort of reporting none of the relevant Government Ministries are aware of the problem.

4. SOCIAL AND COMMUNITY

In Namibia, certainly, large numbers of people in rural communities exist on a combination of subsistence farming and subsistence mining. They tend to be migratory within a certain region and does not normally wander all over the whole of Namibia following rumours of a strike. There are situations where "mining camps" develop with atrocious social conditions. For example south of Karibib a very productive zoned pegmatite on the farm Neu Schwaben was mined for tourmaline for many years. New owners took over and within a very short time the workings were taken over by artisanal miners that established an informal village within the confines of the servitude of the proclaimed road bordering Neu Schwaben. Roughly at the same time, the nearby mining operations on the Helicon and Rubicon pegmatites ceased and these people also joined the Neu Schwaben crowd.

There seems to be general attitude amongst the artisanal mining "community" that since the post-independence government is "their" government, and it is now really "their" country and "their" minerals, they need not to concern themselves with the relevant laws which is perceived as laws inherited from the previous government and thus not really "their" laws. Implicit also, is the expectation that "their" government will anyway not prosecute them for breaking these laws. In the Gobbossos Mountains a number of legally registered claims were overrun by hordes of informal miners, saying that "this is now our country and nobody will stop us digging out these crystals".
5. ORGANISATIONAL

The artisanal mining environment in Namibia is institutionally well served, with two associations, the first one of which is mainly an association of the more organised and professional small mining operators and a second one, which is mainly an association of the artisanal miners. The latter one is unfortunately poorly organised and fragmented and highly distrustful of the people that styled themselves as the "formal leaders of the Small Miner's Association". However, only a small number of the active artisanal miners is even aware of such an association that purports to represent them.

It was mentioned above how the large Uis Tin Mine had a mutually beneficial symbiotic relationship with the artisanal mining community in their vicinity, which worked extremely well when the mine was still operational.

The Namibian mining scenario was dominated for decades by the same South African mining houses, who followed the same approaches in Namibia as they have followed in the RSA and with much the same effect.

Junior mining houses did not develop and this is despite the fact that Namibia is a country ideally suited to small mining activities if one considers the abundance of small deposits of various commodities and large rural population naturally disposed to mining as an income generating activity.

6. ECONOMICS AND FINANCE

The artisanal miner in Namibia typically mines minerals more commonly occurring in so-called "pockets" in pegmatites or lava flows, and this sort mineral occurrence are notoriously difficult to mine in any professional way. It is not possible to professionally establish a measured reserve or a reliable estimate of the commodity value in the area of mining interest. Professional work has been done in trying to predict whether a given pegmatite body will contain semi-precious stones, but there is no minimally invasive exploration approach such as drilling to quantify a reserve. The only possible way seems to be trial mining, and at the level of the artisanal mining, that is exactly what happens.

As a consequence of the geology of mineral commodity that the typical Namibian artisanal miner focuses on and the typical way of exploiting it does not allow any sort of feasibility studies to be done, and as a result of that, no bankable study can be produced to secure development funding. It is therefore very difficult to transform the artisanal mining environment into a more formal small mining environment.

Like the findings on Artisanal Mining in general, incomes are erratic and low, with products bartered for sustenance, or sold to mineral dealers at a price determined by the dealer, which invariably are as low as he can possible make it and the sale is typically not recorded.

The Lomé IV agreement resulted in the SYSMIN instrument which provided funding on a revolving basis as well as institutional and capacity building support to the Namibian exploration and mining community. A portion of the funding was specially allocated to the Small Mining Sector and resulted in the Small Mining Assistance
Centre. The available money towards the revolving fund was soon exhausted as small mining ventures were given substantial funding (Eg. Namib Lead Mines – N$2.5 million, Rubicon/Helicon – N$2.5 million) and these ventures went bankrupt for various reasons soon after having received the money.

The Swedish Government funded the development of a small scale mining project in the Uis area and in collaboration with the Raw Materials Group a pilot tin processing plant, consisting of a crushing system and a jiggling/James Table system was erected. The facility being a pilot plant however has limited capacity (1.5 - 2.0 tph) and could not accommodate the other small scale miners. When the Swedish funding ended SMAC together with Sysmin and MDF in collaboration with CDI provided bridging finance and technical support to the project so that its operation could continue. The objectives were to carry on with the tantalite resource definition or evaluation and then completion of a viability study to mine and process tantalite in the Uis area. In the course of the project exploration and studies numerous pegmatites mineralized with tantalite have been positively identified and proven. The viability studies for the tantalite project in Uis was completed and now awaiting funding. While awaiting for funding the only current project activities are buying of tin and tantalite from the artisinal/small miners within the area and provision of blasting services.

A new "tantalite rush" is apparently now on in the area and the latest information is that the Uis Tantalite Project of MME is studying the possibility of the plant to be modified and upgraded to process and recover tantalite and tin. Alternately, a new plant to process and recover tantalite and tin is also under consideration.

However, the Namibian situation on funding and income in artisanal mining is to all intents and purposes similar to the general findings.

7. TECHNOLOGY AND EXPERTISE

Namibia is a "mining country" and has an extensive history of exploration and mining. A substantial portion of the rural population has worked on mines in various capacities and functions and can therefore be considered to have some background in mining. As none of the Namibian Mines are really big operations in comparison to the large mines in the RSA, the informal miners that have worked on these mines are quite used to working in smallish labour groups. The people coming from this environment are also used to dealing with explosives, working with industrial equipment, etc.

However, the geological setting of the commodities they tend to focus on does not allow the effective use of their experience, and mining is experimental, trial and error and highly manual. Some groups in the Gobobos Mountains have re-discovered the use of black powder and they have illegally made us of this as blasting agent to break the tough lavas and expose the crystal-bearing cavities.

Rumours of big money following finds of new 'pockets' of tourmaline and aquamarine have attracted large numbers of people to artisanal mining. These newcomers are attracted by the possibility of easy money and having never been in a mining environment they operate by following the lead of their nearest neighbour. They most often have no idea of what is economically viable or valuable and achieves
amazing feats of "hammer and chisel mining" in what is patently barren rock but in the common belief that if "one has not yet find anything, one has not mined deep enough yet". This seems to be a very common perception amongst the artisanal miners in Namibia.

The unfortunate experience is that these people are not prepared to accept professional and/or experienced advice, as they firmly believe that the intention of the advice is to get them to abandon their "find" and to allow the advice-giver to take it over.

The result is that large numbers of people disturb the surface over a large area. It is only to a shallow depth, but it is visually highly unpleasant and in addition may render the area totally useless for any mining operation employing a more experienced and structured approach, as surface geological clues are practically obliterated.

8. **COMMODITIES**

The artisanal miner in Namibia focuses on the high-value semi-precious stones (tourmaline, aquamarine, heliodor, rose-, smoky-quartz, citrine, amethyst), rare metals such as tantalite, etc. Namibia does not, like Zimbabwe, have a small informal gold mining industry, nor a small informal diamond mining industry like Sierra Leone.

Since the country as a whole is semi-arid, there are no alluvial mining possibilities and all minerals are normally mined from solid rock.

A rarity in Namibia is a small but illegal trade in meteorites from the Gibeon Meteorite Swarm, and a likewise small illegal trade in petrified wood from the environment of the Petrified Forest west of Khorixas.

9. **ENVIRONMENT**

Namibia has a very low rainfall, and the typical areas where the artisanal miner is active has an even lower rainfall of maximum 150mm per year. There are few flowing rivers and so no damage to riverine systems is possible. Since the surface is sparsely vegetated, no major damage like deforestation is possible.

The major damage that is being done is by manually disturbing the surface over large areas.

The major environmental damage is visual by destroying the aesthetics of a pristine rocky desert environment with normally very little surface cover. The further problem is that there are very little rehabilitation possibilities as attempts at rehabilitation are likely to cause as much damage as the informal miner originally did.

The particular problem is that the areas where the artisanal miner is active is also environmentally very sensitive and is the preferred destination(s) for international eco- and nature tourism. These people are under the impression that they are about to visit a rocky desert landscape unsullied by human activity but they arrive to find the reality to be quite different.
Occasionally, like in the case of the Neu Schwaben tourmaline mining disaster does one find that a highly visible and thoroughly illegal artisanal mining operation is being conducted from a socially unacceptable informal and illegal roadside village.

10. **SUGGESTED REMEDIES FOR NAMIBIA**

Keeping in mind both the World Bank comments about the tight interrelation of social, health and environmental impacts of mining as well as the fragmented and disorganised nature of the artisanal mining fraternity in Namibia, the obvious major point of attack on the problem is to attempt at creating order in and a structure to the artisanal mining environment.

No amount of laws, policing, etc, will help if the artisanal mining has "no face" in the sense that there is no cohesive entity with nobody within their ranks acting as a spokesman or rallying figure. One cannot talk to each and every informal subsistence miner, simply because one may not know who these people may be: one day he/she may be a subsistence farmer and the next day a subsistence miner.

There are essentially two parties in this issue, the Government and the informal miner.

1. **Government**

   Government, if it is serious about addressing the issue of environmental, social and health issues in artisanal mining must create an positive enabling environment to bring these people into the formal mining framework as far as possible.

   This can be achieved only if the barriers to entry are eased, and the informal miners can perceive a real and immediate interest in being part of the structured mining community.

   Mining and other laws that are extremely strictly enforced only in the formal mining community, entailing cumbersome paperwork and involving having to travel many hundreds of kilometres to complete paperwork and secure mineral title is certainly no incentive to operate within the law. If the artisanal miner can clearly see that operating outside of the law, as they do now, is condoned by not being punished, and they are free to do exactly what they want, then things will certainly not change.

2. **Artisanal miner**

   On the other side of the coin is the artisanal miner, which in Namibia is certainly not a clearly identified person. The irony is that even if GRN does everything to remove the barriers to entry into formal or at least more structured mining, the typical artisanal miner may not want any part of it, because of a stubborn, distrustful and individualistic nature.

   They have become used to an individualistic hand-to-mouth existence, chasing the latest rumour of a "strike" and not being responsible to anybody or for anything.
This situation does not immediately suggest an easy remedy, because it is not easy to change human nature. However, once a personal benefit in belonging to the structured mining community is perceived, changing a recalcitrant artisanal miner’s attitude may be possible.

11. CONCLUSION

The situation pertaining to artisanal mining in Namibia is not much different from elsewhere in the world.

The major difference is that Namibia is a semi-arid country with few flowing rivers, and some of the major environmental problems caused by artisanal miners is just not possible. On the other hand, however, the low rainfall cannot obliterate surface disturbance and artisanal mining activity that would have gone unnoticed in wetter climes, remains an eyesore for a long time.

So too, does one find that the Namibian artisanal miner does not to attempt to mine commodities that require chemicals in the process of beneficiation, with hand-sorting and gravity concentration being the norm.

It has been found that a small minority of the artisanal miners are actually very keen on working more professionally, while others are in it either from necessity having no income or lured by the mostly false tales of quick riches.

The mining and prospecting law in Namibia is quite comprehensive with due consideration for security of title for both small and large-scale operations. However, the very need to have had the mining laws overhauled, resulted in mining title not being transferable, and thus creating a less favourable legal situation in transforming artisanal mining into structured mining according to the World Bank studies and proposals.

In addition the highly centralised administration creates a situation which allows for little flexibility in accommodating the artisanal miner and this is aggravated by inefficient, lax and one-sided enforcement of the relevant laws as suggested by the newspaper articles.

It may therefore be said that the situation as it currently stand, does not contribute to an enabling environment that makes it attractive for the artisanal miner to join the structured mining community.

XI. MINERALS POLICY DEVELOPMENT

1. INTRODUCTION

Mining is a high profile, high-risk activity that has been targeted relentlessly by environmental activists and charged with wanton environmental destruction. While this may have been true in the past, it is no longer so, and in fact mining is less environmentally destructive than large-scale intensive farming or road construction. This negative sentiment, although not expressly pronounced, seems to be present in the North-West Region Tourism Master Plan as well (see Para 7.4.5, page 76).
Since the enactment of the *Namibian Minerals (Prospecting and Mining) Act, 1992*, it has been clear that some issues need to be re-addressed. Various issues were brought in focus, such as empowerment, interaction between mining companies and rural communities, the exclusion of rural communities from the benefits of mineral development activities, small mining issues of very importance to rural communities faced with a lack of development, environmental issues were re-assessed, etc.

In order to re-evaluate the Prospecting and Mining Act a suitable minerals policy had to be adopted, one which satisfied all stakeholders as far as possible. Thus a series of consultative workshops was held with relevant stakeholders in various parts of the country. These workshops focused on a small number of specific issues. Only specifics relevant to this report will be touched on.

1. **PEOPLE ISSUES**
   The guidelines on addressing property rights or land rights should be made clear, and mining companies should be encouraged to make maximal use of available infrastructure and support services. Where possible, local communities should be actively involved in mining ventures and the issue of benefits to the local community should be made clear. Empowerment should be actively addressed and mining stakeholders should be involved in training and development.

2. **MARKETING AND PROMOTION**
   A marketing/manufacturing base should be developed as a downstream value adding activity from any mining development. This will obviously create more jobs and offer entrepreneurial opportunities.

   *Author’s Comment: It seems that a clear case of conflicting requirements exists between the environmental/tourism sector and the mining sector in its endeavours to develop both renewable and non-renewable natural resources for the good of the country and its people. Mining, on a per-hectare basis generates much more revenue and job opportunities than tourism, and equally important provides more job opportunities for lower-skilled people than does tourism. Furthermore, any one mine has a finite lifetime, and will therefore only use the specific small portion of land for a relatively short period.*

   The workshop further suggested that a sustainable development policy based on community and environmental needs be implemented, following a collaborative approach involving SADC, the private sector, Ministry of Environment and Tourism, Ministry of Mines and Energy and the Ministry of Finance.

   The workshop, unlike the tourism master plan, does suggest that tourism and mining should somehow be combined, supported by the Ministry of Works and Transport in opening up remote areas. It also suggested that development should go down as far as possible down the value-chain.

3. **ENVIRONMENT**
   An independent Environmental Agency with clear objectives and responsibilities should be legally created. This agency will be committed to
implementation and enforcement based on internationally accepted best practices. An Environmental Trust Fund should be created to mitigate against the impact of mine closure and ensure that rehabilitation is provided for.

Effective land use and development should be integrated and coordinated, and the use of an EIA process should facilitate this, with the consensus of all stakeholders. The Ministry of Mines and Energy should facilitate the process of legislating a final Environmental Policy on behalf of the mining sector.

4. **SMALL SCALE MINING**
   This was a major topic at all meetings, and various issues were very vocally debated, such as ministerial assistance, higher level of technical support and funding to small miners, less administrative red tape, a more small-mining-friendly mining and prospecting act, etc. The issue of marketing of small mining products and market related product prices were discussed at length. Small miners must clearly adhere to environmental and mining legislation and governmental enforcement capacity is needed in addition to sensitising and educating small miners in the aspects of the relevant legislation.

   At one meeting the issue of local involvement was hotly debated, with Tribal Leaders wanting formal involvement and recognition in mining development in their respective areas. It would seem that the tribal structure in association with the Conservancy where operational, can offer a local means of control and enforcement, both areas of weakness regarding informal mining.

5. **HUMAN RESOURCES**
   Skills transfer, education, training, employee development, skills database and the streamlining of administrative operations were discussed.

6. **RESEARCH, DEVELOPMENT AND TECHNOLOGY**
   Regional links, IT/Communication links, dissemination of geological and technical information, provision of technical services and tax incentives for local beneficiation opportunities were discussed.

7. **MANAGEMENT AND ADMINISTRATION**
   Compensation for the use of land for prospecting and mining was suggested and guidelines on a framework for calculating such a compensation was requested from the Ministry of Mines and Energy, through a participatory process involving all stakeholders.

   It was also suggested that Government streamlines its various procedures and legislations, and that the Ministry of Environment and Tourism enact its environmental legislation to allow the Ministry of Mines and Energy to take ownership of the process where it involves the mining sector.

   Furthermore, Government should promote the minerals industry through appropriate legislation, decentralise personnel and facilities (and services), and most important from the viewpoint of this project, establish regional offices, empower local and regional authorities (including Tribal Authorities and
Conservancies?) to provide support, information and services to local people and entrepreneurs.

8. **REGIONAL INTEGRATION**

Various issues in regional integration (on SADC level) were discussed, none of which really impact on this project.

XII. **TOURISM MASTER PLAN**

1. **INTRODUCTION**

The north-western part of Namibia has been identified as an area worthy of a major tourism development effort. It is however arid, with a fragile ecology and the closer to the coastline, the less able to sustain any kind of high volume tourism. The results of this realisation was the North-West Region Tourism Master Plan. The document dealt with a very large area, but was extremely weak on a possible mining-tourism interaction even though mining is the second largest primary economic sector, and the project area in general is a specific focus for small scale mining industry involved in semi-precious stone and rare metal mining. Historical mining sites and associated mining-induced infrastructure is a specific source of tourist destinations world-wide. Closer to home, examples are the Big Hole at Kimberley and our own Kolmanskop. World-wide examples of successful "mining tourism" abounds.

The report has also indicated that Uis, with a functional infrastructure, is a prominent economic centre in the general project area. It also identified a crucial issue pertaining to the Subsistence Mining investigation, and that is that the very low employment levels are putting pressure on the region’s natural resource base as a consequence of the need ("last resort") to survive.

2. **EXISTING LEGISLATION**

The existing legislation makes provision for conservancies, defined as: A Conservancy consists of a community or group of communities within a defined geographical area who jointly manage, conserve, utilise and benefit from wildlife and other natural resources in the area. It would seem that this is a most useful instrument to enable effective community involvement in the communal lands.

In addition, the Communal Land Reform Act will allow for the allocation of land rights in the communal areas, establish communal land boards and to describe the powers of Chiefs and Traditional Authorities so affected. Tenure rights and sustainable utilisation of renewable natural resources will also be addressed. Various ministries are involved, but it is of some concern that the Ministry of Mines and Energy is left out, given the large economic and environmental impact of the typical Small & Artisanal Mining activities in the specifically the project area.

The report states that the 1994 White Paper on Tourism points out that tourism should generate income and employment and that a high portion of benefits generated should remain in the place where the tourism is taking place. This project proposes that the existing and potential mining activities should be managed with a similar organisational focus.
3. **BIOTIC ENVIRONMENT**

The low rainfall associated with high evaporation rates are mentioned as well as the fact that the high rate of evaporation creates highly saline soils. This would seem to imply that labour-intensive irrigation projects may not be entirely viable.

The high tourism value of elephants and rhino is offset against the rising conflict between them and humans, as both compete essentially for the same natural resources. It is a comparative recent development to create a framework of conservation and tourism that allows rural residents to share in the financial rewards as well as in the conservation responsibility that makes those rewards possible. As visible consequence of this, poaching has been virtually eradicated.

Due mainly to the low rainfall, the natural environment is highly sensitive to human pollution, indiscriminate driving and the disturbing effect on wildlife.

4. **TOURISM PERSPECTIVE**

The general project area offers a unique blend of rough, beautiful landscapes with a diverse blend of wildlife, people, livestock and a diverse flora. In such an environment small scale mining has been identified as one of the (possible?) environmental problems.

The sensitivity of the low rainfall focus area does not allow mass tourism, and offers a potential for hiking and pack animal trails during the cooler parts of the year, with limited controlled off-road routes linking the wilderness camps.

A Greater Brandberg Management Plan may see the general Brandberg area included in a "Peoples Park" together with parts of the West Coast Recreation Area. Limited facilities for day visits are envisaged and a small number of selected sited identified for overnight camping, one of which seems to be located between the project focus areas and the Brandberg.

Tourists are attracted to special locations and facilities and these must be ecologically and socially responsible destinations. New (off-road-) routes are being opened all the time as tourism operators seek to develop new exclusive routes. It is also a fact that the major tourism growth is expected outside of national parks. Uncontrolled, this development can have a serious environmental impact.

5. **EXISTING INSTITUTIONS AND MANAGEMENT STRUCTURES**

The Tsisab Conservancy and the local Traditional Authority is of major importance pertaining to the control and management of the project area. These are of course in addition to the plethora of NGO’s, Community-based Organisations, Local Government Institutions and Line Ministries.

Of concern, however is the somewhat negative reference to the Ministry of Mines and Energy which has to be passively involved to the extent of being "kept informed of tourism development and plans to avoid conflicts in land use zoning" as "mining operations can have negative impacts on tourism". This explicitly assumes a pre-
emptive right to landuse by the environmental and tourism sectors which seems to exclude the utilisation of certain natural resources by local communities as a contribution to job creation and community welfare.

6. GEOLOGY AND FEATURES OF GEOLOGICAL INTEREST

The more relevant issues addressed by the report covers the possibility of geological excursions and trails where old mines and specific locales with geology and mineralogy of interest can be utilised to develop specialist tourism products. Various geological features importance to this project are specifically mentioned: Messum Crater, Etendeka Lava Flows, Brandberg, Uis, etc.

The report suggests that identified trails and tour routes should have descriptive tour/route booklets describing the geology and biota of interest. More important to the focus of this report, is that reference is made to the possibility of integrating small mining and tourism. It is suggested that small miners allow tourists on their "minesite" to dig for minerals at a fee or act as "tour guides" to the small mining sites. The exquisite crystals in the lava gas bubbles (or "pockets" in local parlance) being mined by the informal miners in the focus area is explicitly mentioned in this regard.

It is explicitly stated that due regard with respect to the applicable laws and regulations must be considered in following up these possibilities.

7. LEGISLATIVE, INSTITUTIONAL AND ENVIRONMENTAL FRAMEWORK FOR TOURISM DEVELOPMENT

The general study area is part of what has been recognised as a high potential tourism development area. The preferred instrument for management and control seems to be the Conservancy approach, enacted as the Communal Area Conservancy Legislation in 1996 by the Ministry of Environment and tourism.

It seems to offer a suitable instrument for the control over informal/illegal mining with a view towards minimising the potential environmental impact of such activities, as well as a supportive structure towards better mineral resource management on the level of the informal or artisanal miner. This is an important point to consider, since the educational and skills level are much more exacting in the tourism industry, in contrast to the mining industry which can create more jobs on a lower skills level, thus offering certain benefits to rural development, provided that it can be controlled and managed locally to maximise income opportunities.

The general project area is considered highly sensitive to uncontrolled tourism, and the report suggests low volume, high priced tourism utilising environmentally friendly practices. Off-road driving should not be allowed and walking-based activities are highly recommended.

8. COMMUNICATION AND MANAGEMENT STRUCTURE

The Ministry of Land and Rehabilitation is the line ministry ultimately responsible for land management and relies on the relevant Regional Council for planning a region with view to its social, economic, physical and geographic characteristics.
In this planning activity the various line ministries, NGO's, Conservancies and Tribal Authorities obviously are important role players. In terms of the focus of this project, the Tribal Authority and the local Conservancy are of major importance. They are best placed to perceive visitor satisfaction and environmental pressure. Unfortunately, on the other hand, lack of specialist knowledge and experience required in order to cope with the demands placed on them will require suitable training on both management and operational level.

9. ECONOMIC ANALYSIS

Economic assessment indicates that mid/upmarket lodges/campsites offer the best returns to the community and regional economy than community campsites. On the other hand they require far more capital investment and thus have a significantly higher business risk factor.

Other factors may suggest that a community campsite in a specific locality may be more suitable than an upmarket facility, and essentially any form of structured development is preferred over uncontrolled camping.

10. COST BENEFIT ASSESSMENT

The high cost associated with unplanned tourism development suggests that it should not be considered as an option. From a purely economic point, mid/upmarket facilities offer significantly better financial returns, but in certain instances or under certain economic conditions this is not possible. In this event, a structured development, even if offers significantly less direct economic returns are obviously better than none at all.

11. INITIAL MARKETING STRATEGY

The marketing of a tourism destination or product is done on various levels from Government downwards and all stakeholders share the responsibility for effective marketing. However, an effective marketing strategy does not mean anything if it is not supported and implemented on all levels, which basically means that good customer service must be provided and that the expectations of tourists/visitors must be met.

12. FINANCIAL STRATEGY

Funding in the tourism sector is required to develop plans, plan development, monitor and supply and demand, marketing, develop a support infrastructure, visitor management tools, environmental conservation and training/education of local communities.

Funding may be attracted by public and private sector investment, Donour/Aid money and direct visitor contributions such as levies, entrance fees, etc. The level of business competition and the level of business risk is such that higher than average returns on investment is expected. Private sector investment is enhanced by incentives offered by Government.
It is mainly the role of the central Government to create a favourable investment climate which is done by ensuring a stable political, social and economic environment, providing investor facilitation and assistance and provide a maximum number of direct incentives. Local government may increase the investment climate by lobbying the central government for stronger incentives pertaining to their specific situation.

XIII. ENVIRONMENTAL REHABILITATION

1. NATURE OF THE DAMAGE

The environmental damage (as can be seen from the video recording) consists of shallow pits and trenches and associated heaps of waste rock. From the workings visited, the amount of waste rock is estimated to be between 1500 and 2500 metric tons.

There are a few vehicle tracks since most travel is on foot leaving well defined footpaths from dwellings to workings.

Some evidence of mechanised earthmoving by either bulldozer or front-end-loader is visible, but this must have happened a long time ago, and the current crop of informal miners had nothing to do with this.

2. SUGGESTED APPROACH TO REHABILITATION

The very low rainfall of the focus area (ca. 60mm/annum) makes effective rehabilitation virtually impossible. However, if some measure of rehabilitation is required, it must be effected by the same means that caused the damage; i.e. by human muscle power. Any attempt at employing mechanical means will only aggravate the existing level of environmental damage.

It is therefore suggested that, given a decision to rehabilitate the informal mining sites, a group of less prosperous informal miners be recruited to fill in the excavations using the waste material immediately at hand. However, once this process has started, it will need to be maintained for as long as the informal miners are active in that area. It therefore need to be planned for and such planning incorporated into the environmental management plan.

3. EXPECTED COST OF REHABILITATION

The cost of such environmental rehabilitation is rather low, since it will involve nothing more mechanical than a number of spades and a wheelbarrow or two. The major cost will be in paying the people that does this work. One person can very easily move 2 cubic metres of rock per day by hand which translates to about 2 x 2.65 x 0.6 = 3.18 tons per day. Since there is an estimated 2500 tons of rock to be moved by hand, this can be achieved in 786 man-days or 38 man-months. Assuming that the total cost per person is in the order of N$1500/month and assuming that the estimates are wrong by 50% with additional hidden costs, then the maximum total rehabilitation cost will therefore be in the order of some N$60000 x 2 = N$120 000.00.
XIV. INFORMAL MINING: ALTERNATIVES AND OPTIONS

The crux of the matter as it pertains to alternatives and options to the informal mining situation is the very basic one of functional illiteracy. To somebody who cannot read and write, the possibility of finding gainful employment in any economic sector is rather slim. The obvious answer is education and training, starting from the very basic level of learning how to read and write. However, since most of these are long past schooling age and have to somehow provide for dependants, they must in one way or another earn a living, even if they are in the process of being educated/trained. In order to be trained, the facilities for adult education must also exist. In short then, in order to educate/train illiterate informal miners, they need on-the-job education and training in order to earn a living while being educated.

Once educated/trained they can be more gainfully employed or create employment in the more demanding tourism industry, which seems to only other economic sector in addition to mining that can accommodate job-seekers.

The alternatives are therefore very limited, given the poor level of education and training.

A viable option seems to be that the Ministry of Mines and Energy get involved in this area of informal mining to create some formal structure to this area, and type of informal mining. There seems to be a consistent market for these products and some development may be worthwhile. In this case, close cooperation is required between the mining and tourism sectors and the Tsisab Conservancy must take these mining issues into consideration in their planning activities.

XV. SUMMARY AND CONCLUSIONS

1. The Small Miners (or more accurate Informal Miners) operating in the Gobbobos Hills are an extremely hard-working group of people, doing a physically demanding job under extremely poor conditions. They, as verbally expressed by one of their group, would rather do some other work if such was available, but this is for most of them the last resort, and they would rather work hard like this than having to resort to crime to survive.

2. The amount of environmental damage that the current group can achieve is rather minimal, since they do not have vehicles to drive around indiscriminately they do not cause unsightly vehicle tracks all over the area. Mining is by human muscle power alone and the volume of material being moved is small. However, they cannot mine deep, so they mine to shallow depth over a larger extent of area. Whatever the situation, the present amount of environmental damage is much less that reported in the press. There is a danger though, in that the tourism they do attract in the form of self-drive buyers of mineral and rock sample buyers and collectors may drive around unnessesary.

3. These miners seem to make a reasonable living from their activities, and they are part of a "food chain" of informal mining, where others again are selling/supplying water, transport and foodstuffs as their niche in this situation, so that there is already a multiplier effect.
4. The low level of general literacy amongst these people does not make alternatives easy to find. The tourism sector is too demanding, and somebody who cannot read and write is not readily employable. Agriculture is not an alternative option because the sort of intensive farming that can generate an income similar or better than their current income requires much more input (capital, expertise, ready markets) than is available and is anyway not something which they are familiar with.

5. Severe criticism has been leveled at the Ministry of Mines and Energy (MME) because of a perceived lack of control over the activities of these small miners as well as a lack of interest in regulating the industry. There an element of some truth in that, but the current initiatives spearheaded by the Ministry of Mines and Energy as well as the efforts put into developing a working Mineral Policy does argue for the opposite viewpoint.

6. The concepts being entertained by MME, such as: a higher level decentralisation, combining mining and tourism, actively involving rural communities in mining development projects, focussing on training, education, etc, to create a higher level of expertise in the small mining industry, integrated land use planning, etc, is a highly positive state of events.

7. The positive integrated approach proposed by MME is in sharp contrast with the one-sided viewpoint held by the tourism sector that pre-emptively wants to restrict land-use to tourism only. This is a non-sensical approach that is doomed to failure and that will create more problems that may possible solve. The Tourism Master Plan did however identify the central issue at stake here, paraphrased as follows: the very low employment levels are putting pressure on the region’s natural resource base as a consequence of the need and last resort to survive.

8. The concept that the Traditional Authority in cooperation with the local Conservancy in the area are involved in development activities and exercise some management and regulatory control has been proposed from various informal sources in mining and conservation/tourism and this seem to offer the possibility of local enforcement and control for which the various line Ministries have no real capacity.

9. There is every indication that Informal or Artisanal Mining is a growing phenomenon, not just in Namibia, but elsewhere as well, and there is no indication that any one country has been successful in effectively curbing it. It is therefore not expected that Namibia will be any more successful than other countries. What must be done however, is recognise the relevant issues and look towards a management solution that will incorporate informal mining as one of the elements of rural development that is integrated with conservation, tourism, farming, etc.

10. The core issue in dealing with informal or artisanal mining is to attempt to convert it to structured mining. Enforcing existing and new laws is one small element of such a plan, but it considered that it will be more successful and effective if the informal miners can be enticed rather than enforced to become part of the formal mining community. However, since most of the informal miners are functionally illiterate, such a plan of action has to involve education first and training second. The initiatives now being considered by the Ministry of Mines and Energy is a start towards a general education process.
1. The informal miners operating in the Gobobis Hills are able to earn a decent living through extremely hard work, and their actions attract visitors/tourist to the area that otherwise may not have done so. If these people are stopped from doing this then they would have nowhere else to go and may have to turn to crime (in their own words) to survive. The local community could not offer any alternatives either. The problem therefore reverts to a management one.

2. The issue of management and control was suggested to be in the hands of either the Conservancy or the Traditional Authority. Arguments for and against were even, but is was firmly stated that in the case in point, the Conservancy was demarcated carefully not to cross the boundaries of Traditional Authority, and that the Conservancy is operating with the formal recognition by the relevant Traditional Authority. It is a considered opinion that the Conservancy is best placed to exercise management control over environmentally destructive activities in their area of concern.

3. In order for the Conservancy to be the custodian of the natural resources in their area, their constitution have to be revised to include non-renewable resources as well, and suitable representatives from the Ministry of Mines and Energy should be included in the governing or control board.

4. The Conservancy then should consider ways and means of incorporating the informal miners in the development of their management and operational plans in a way that maximises sustainable rural income and job creation, and in this the concepts of integrated mining/tourism as expressed by the workshops held by the Ministry of Mines and Energy will be valuable.

5. In order for a Conservancy to be acting as the local custodian of the land in respect of all natural resources, their constitution and controlling body has to be modified as shown above. The existing body of laws pertaining to exploration and mining is quite clear in prescribing how to deal with a landowner. The rights and obligations accorded the landowner under the existing body of minerals and mining laws can be utilised as is, given that the Traditional Authority be considered the landowner of the land in question (as tribal lands belong to the state and has the state as the owner), and that the Conservancy act as the executing agent for the Traditional Authority.

6. The danger in this is obviously that human emotions like greed and nepotism, etc, can influence decisions and recommendations by the Traditional Authority (and to a lesser extent by the Conservancy) to make mining investment unattractive in their area. This has, and still is happening in Australia to the extent that even Australian exploration and mining companies are investing outside of Australia. The downside of this can possibly be countered by having these interests represented on the Conservancy control board where these issues are debated and decided.

7. Finally, the issue of education and training without which no action plan will really work has to part of the general development plan managed by the Conservancy. It is therefore important that the relevant training, which has to include a component
provided by the Ministry of Mines and Energy, start with the members of the Conservancy and then extend to the inhabitants where required.
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