

lime production unit in Malawi (Sofremines, 1987). The limestone products both serve the local market and for exports.

(c) Precious and Semi-Precious Stones

Precious and semi-precious stones are produced mainly by individual miners who are working pegmatites in Mzimba and other districts. A mine run by Mineral Exploration Private Limited (MINEX) produces rubies and sapphires at Chimwadzulu in Ntcheu. Between 1998 and 1999 the gemstone industry produced 64.85 tonnes of rough stones (precious and semi-precious) valued at MK6,730,635 (145,569 USD).

The level of major road and other construction activities influences stone aggregate production.

Some minerals and mineral products such as coal, cement and gemstones are exported in limited quantities. Table 4 shows quantities and values of minerals and mineral products exported between 1995 and 1999.

Table 4: Mineral Exports

MINERAL/ PRODUCT	1995		1996		1997		1998		COUNTRY OF DESTINATION
	Quantity (Tonnes)	Value (MK)	Quantity (Tonnes)	Value (MK)	Quantity (Tonnes)	Value (MK)	Quantity (Tonnes)	Value (MK)	
Quartz	-	-	100	247,447	21	135,700	-	-	SA, Germany
Kaolinitic and other clays	44	26,747	16	7894	-	-	-	-	Namibia, UK
Limestone	118	118,500	40	53,400	-	-	-	-	Mozambique
Portland cement	1,965	3,129,084	1,798	169,772,591	895	1,763,914	818	2,412,530	Mozambique, Zambia, Netherlands
Coal	1,500	1,678,462	1,500	1,649,505	20,505	39,817,136	-	-	Tanzania
Gemstones (Precious and Semi-Precious)	588(kg)	-	849(kg)	-	43.2	20,000,000	64.8	4,745,803	Europe, USA, Asia

Source: National Statistical Office & Department of Mines

Malawi's mineral exports have been insignificant compared to other members of SADC Region as shown in Table 5.

Table 5: SADC Mineral Exports (1986-1996) in Million Dollars

Country	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Angola	475	155	186	234	243	200	208	26	51	160	267
Botswana	713	1,430	1,430	1,410	1,550	1,589	1,464	1,500	1,555	*	*
Lesotho	1	1	1	1	1	1	1	1	1	1	1
Mauritius	-	-	-	-	-	-	-	-	-	-	-
Mozambique	3	1	1	1	4	4	4	4	4	4	4
Namibia	718		676	800	720	677	690	770	424	464	530
South Africa	8,938	8,691	9,968	10,942	10,950	1,1403	11,020	8,069	8,551	8,812	10,217
Swaziland	19	21	22	20	22	20	21	22	23	18	19
Tanzania	18	16	10	17	29	44	53	42	35	15	26
Zambia	678	839	839	207	634	700	1,047	865	910	984	754
Zimbabwe	557	624	624	550	438	406	403	378	370	368	372
Total	12,120	11,778	13,757	14,182	14,591	15,044	14,912	11,677	11,924	10,826	12,190

Source: SADC Mining Sector five-year Strategy (1997 — 2001)

* Data not available

Table 6 showing the structure of employment between 1989 — 1991 indicates that the mining industry registered no growth in employment levels compared to other sectors and that it holds an insignificant share of the total employment by industry. The mining industry in Malawi employed 3,699 people between the years of 1998 and 1999 (DOM, 1999). This figure on employment still represents dismal improvement in employment levels in the mining industry as it only represented about 0.55% of the total employment by industry.

Table 6: Structure of Employment, 1989 – 1991

	1989		1990		1991		% Change 1991 On 1990
	Employment Level.	Share (%)	Employment Level	Share (%)		Share (%)	
Agriculture/Forestry and Mining	214,109	49.15	207,779	44.51	213,234	43.70	2.63
Mining & Quarrying	218	0.05	239	0.05	223	0.05	-6.99
Manufacturing	55,310	12.70	63,387	13.58	68,472	14.03	8.02
Electricity and Water	4,868	1.18	4,983	1.07	4,917	1.01	-1.32
Building and construction	34,588	7.94	43,607	9.34	50,862	10.42	16.64
Wholesale, Retail Trade, Hotels and Restaurants	25,075	5.76	24,702	5.51	23,119	4.74	-10.05
Transport, storage and communication	20,233	4.64	25,332	5.43	26,301	5.39	3.83
Finance, Insurance and Business Services	14,723	3.38	15,591	3.34	17,216	3.53	10.42
Community and Social Services	66,512	15.27	80,236	17.19	88,441	18.12	10.23
GRAND TOTAL	435,636	100	466,856	100	488,003	100	4.53

Source: National Statistical Office

In 1999, Malawi's GDP was estimated at K13.2 billion. Economic activity is dominated by agriculture, which contributes 37% to GDP. Details of sectoral distribution of GDP in 1997, for example, are illustrated in Figure 11.

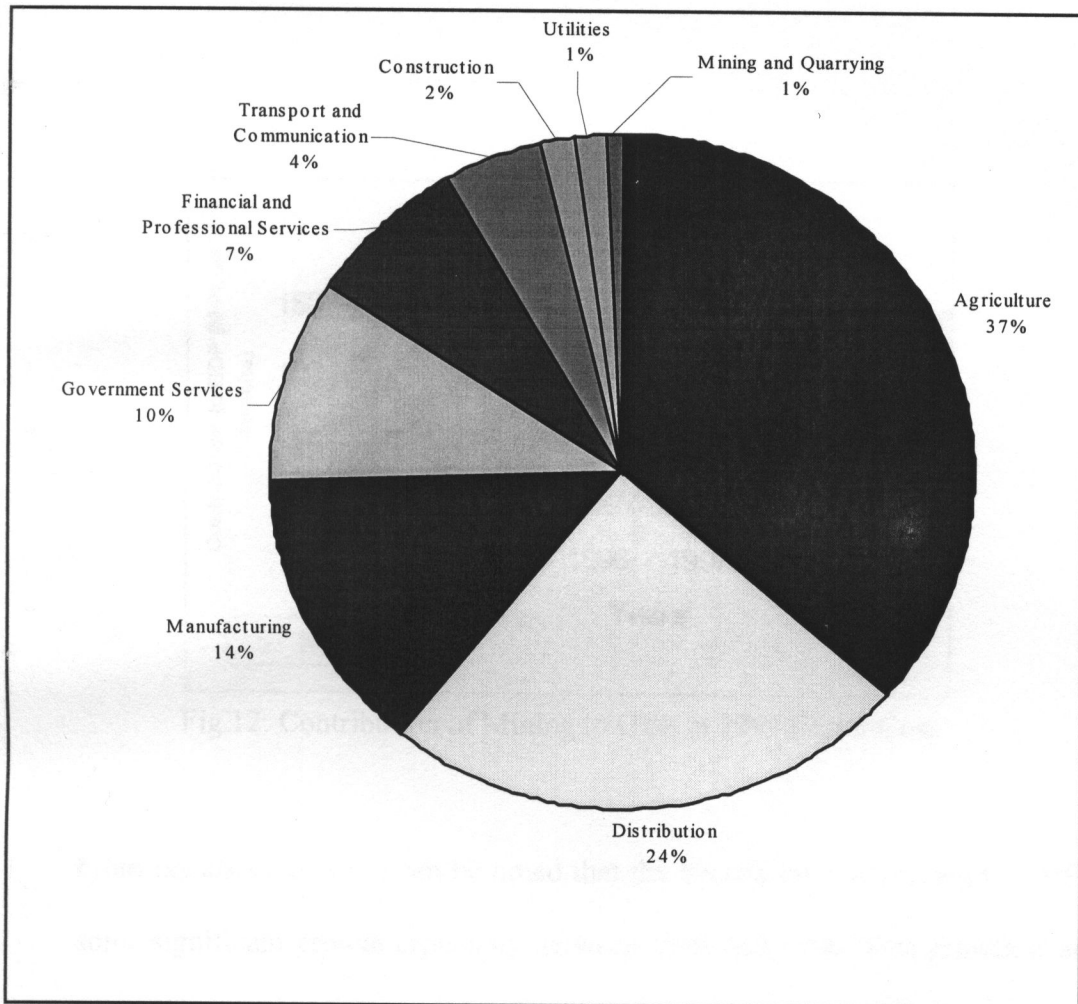


Fig.11: Sectoral Distribution of GDP in 1997

Source: National Economic Council

From Figure 11, it can be seen that mining contributes about 1% towards the GDP. In terms of value, this represents MK0.132 billion (2,933,333 USD). Mining has not

traditionally, and as can be concluded from the above figures, played a significant role in Malawi's economy although it has significant potential.

Figure 12 illustrates the growth of mining as a contribution to GDP.

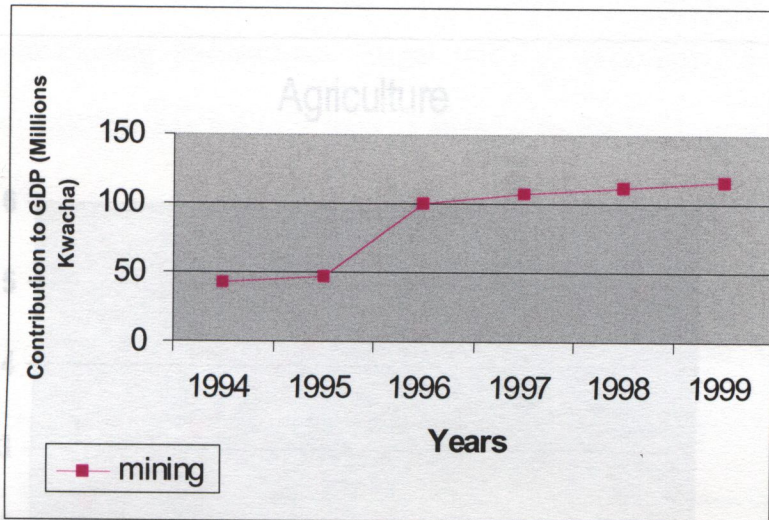


Fig.12: Contribution of Mining to GDP at 1994 Factor Cost

From the above graph it can be noted that the contribution of mining to GDP registered some significant growth especially between 1995 and 1996. This growth is attributed to the opening up of Shayona Cement Factory and improved productivity at Mchenga coal mine. In subsequent years, however, growth has been modest. The growth in the sector can also not be compared to that in agriculture, for example, where GDP is steadily growing as shown in Figure 13. Appendix I shows the GDP by sector of origin at 1994 factor cost between 1994 and 1999.

3.2 Mineral Marketing

Since the overall production of minerals such as gemstones is very low, government considers arrangements such as international auctions or the establishment of a Gemstone Exchange as premature. Malawi therefore, neither has a centralised marketing system for gemstones or any organised marketing for mineral commodities. Due to this lack of

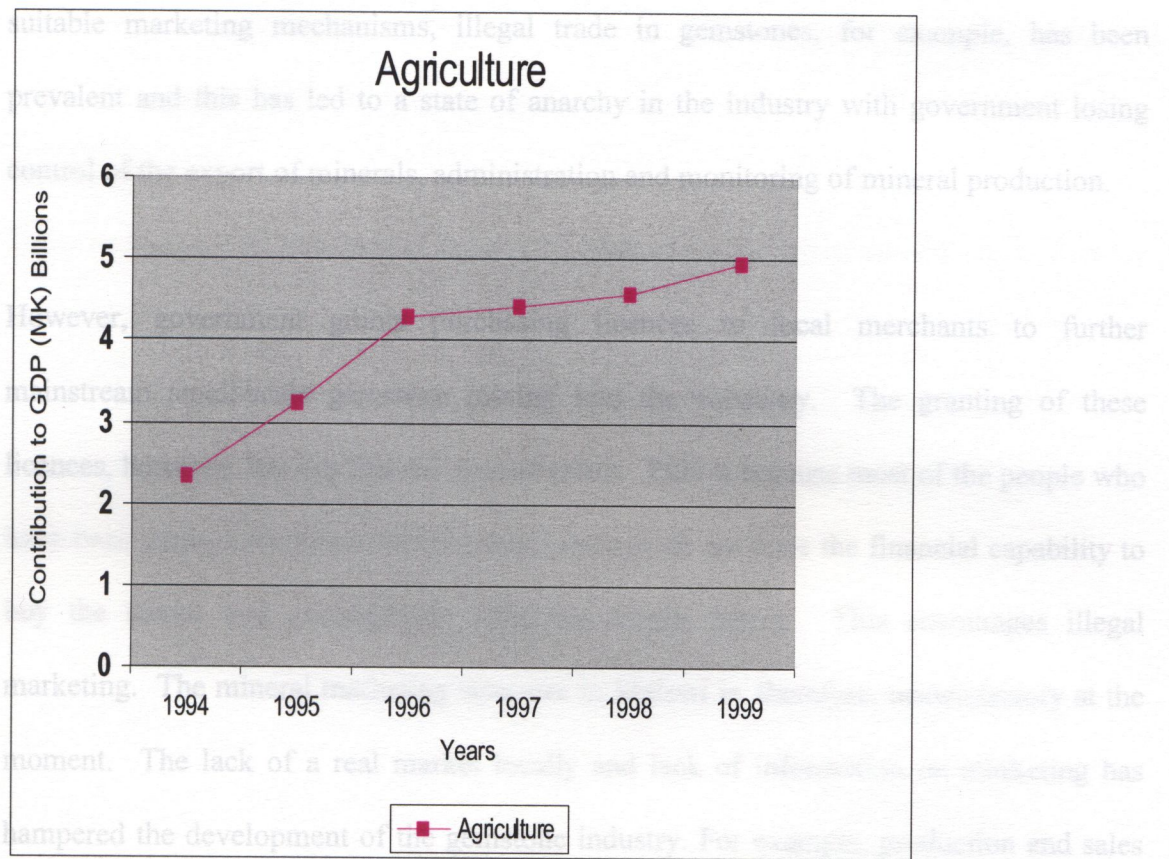


Fig.13: Contribution to GDP by the Agricultural Sector at 1994 Factor Cost.

3.2 Mineral Marketing

Since the overall production of minerals such as gemstones is very low, government considers arrangements such as international auctions or the establishment of a Gemstone Exchange as premature. Malawi therefore, neither has a centralised marketing system for gemstones or any organised marketing for mineral commodities. Due to this lack of suitable marketing mechanisms, illegal trade in gemstones, for example, has been prevalent and this has led to a state of anarchy in the industry with government losing control of the export of minerals, administration and monitoring of mineral production.

However, government grants purchasing licences to local merchants to further mainstream small-scale gemstone mining into the economy. The granting of these licences, however, has not had the desired effect. This is because most of the people who have been granted the Reserved Minerals Licences do not have the financial capability to buy the stones and consequently offer the lowest prices. This encourages illegal marketing. The mineral marketing structure in Malawi is, therefore, unsatisfactory at the moment. The lack of a real market locally and lack of information on marketing has hampered the development of the gemstone industry. For example, production and sales have fluctuated over the years depending on the availability of a credible market outlet (Nkhoma, JES, 1999). The country has no qualified gemmologists and both the miner and government rely on the value declared by the traders. This and the lack of suitable marketing mechanisms have resulted in loss of income to both government and the miner.

Government's role in the foreign market transactions is to inspect the stones before export and ensure that the required royalty fee is paid.

3.3 Mineral Imports

Malawi imports a considerable range of minerals and mineral products. Table 7 gives a summary of minerals imported between 1995 and 1998 and their value and country of origin. Most of the imported items could be produced and processed in Malawi.

These imports are an indicator of the size of demand for industrial minerals as well as the potential for investment in SSM. The quarrying of limestone and manufacture of Portland cement are by far the largest mining and processing operations in the country. However, figures on production and sales, as indicated in Figure 14, show that demand has continued to grow, and has at times surpassed production.

Table 7: Mineral Imports

MINERAL/PRODUCT	1995		1996		1997		1998		COUNTRY OF ORIGIN
	Quantity (Tonnes)	Value (MK)	Quantity (Tonnes)	Value (MK)	Quantity (Tonnes)	Value (MK)	Quantity (Tonnes)	Value (MK)	
Silica Sands and quartz sands	31	112587	79	274382	112	231403	96	422373	Sa, Zimbabwe, UK, China
Kaolinitic clays and other clays	144	540969	92	700826	55	287577	71	515891	India, SA, Zimbabwe
Building stone	2723	12147	16	45846	433	1,348,318	1,083	3,314,052	SA, UK
Calcined dolomite	213	819,763	223	620777	256	729688	96	495325	Zimbabwe
Calcined Gypsum,	1,946	3,566,640	2,651	4,500,531	764	1,422,886	4,029	7,890,670	SA, Zimbabwe
Portland cement	16,943	18,791,229	41,571	73,999,382	92,922	166,066,203	71,711	220,061,894	Zambia, Tanzania, Zimbabwe SA, UK
Coal	131,133	28,915,053	17,989	15,244,941	3,904	8,498,022	6,329	11,574,871	SA, Mozambique Zimbabwe
Chalk	138	712,205	63	428,035	-	-	70	616,452	China, Korea, SA

Source: National Statistical Office

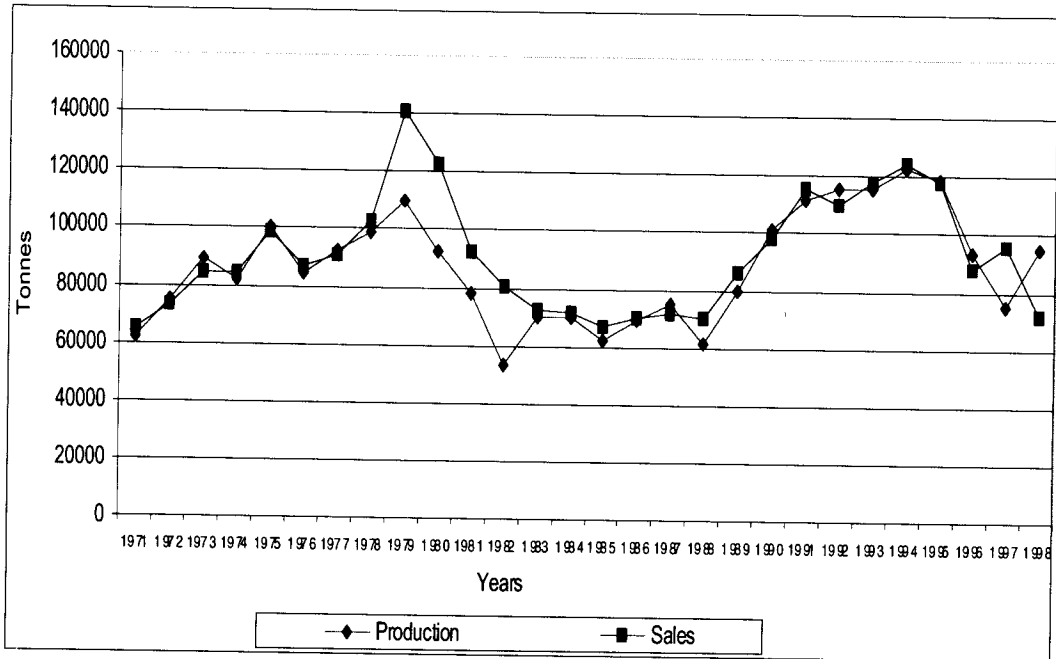


Fig. 14: Cement Production and Sales (1971-1998)

Source: National Statistical Office

Potential exists for Malawi to meet its cement requirements from own vast resources of limestone.

3.2 Institutional Framework Support

The minerals sector in Malawi is the responsibility of the Ministry of Natural Resources and Environment. The minerals sector is administered by the Geological Survey Department (GSD) and Department of Mines (DOM), both departments fall under this Ministry. GSD has three sections namely: Mineral Exploration, Geological Services and Geological Research and Laboratories as shown in Figure 15. These technical sections are supported by another section on Administration.

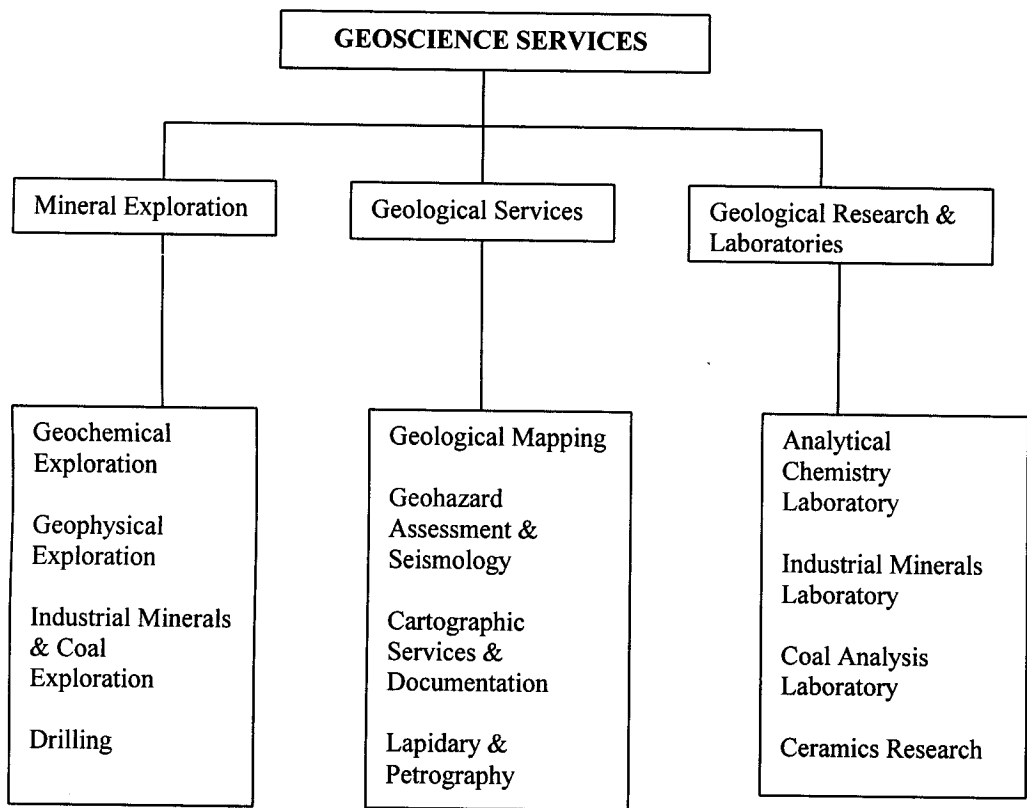


Fig.15: Technical Sections of GSD

GSD is responsible for geological mapping from which it has geological maps covering all of the land area of the country at scales of 1:100,000 and 1:250,000. These maps provide the database for devising exploration programmes and constitute the most invaluable source of geological data. This is in line with the fact that one of the key points in mining development anywhere in the world is, without doubt, the existence of dependable, abundant and easily accessible geoscientific information. Appendix II shows the exploration databases available at GSD. GSD is also the custodian of reports on exploration work carried out by private companies and individuals. This derives from the exploration permit holders' legal obligation to file with government the findings of his prospecting and exploration work. GSD also conducts mineral exploration and mineral reserve assessments and the provision of geological advice to the public and private sectors especially civil engineering works. Other responsibilities include the administration of some of the legislation on minerals and mining and dissemination of geological information to the public. Over the years GSD has carried out various surveys and geoscientific studies to increase the knowledge of the mineral potential of the country. The absence of significant private sector participation in the mining sector has to some extent encouraged GSD to extend the scope of its activities beyond what is normally regarded as government geological work. The evaluation of mineral deposits up to the pre-feasibility stage is considered to be necessary in some cases.

In Malawi, few local investors have the technical and financial resources to engage in risky exploration work, and multinational corporations are not normally interested in low

value minerals such as industrial minerals resources (Chatupa, 1982). With the current negligible contribution to the development of the mining sector by the private sector, there is need for government to minimise uncertainty to interested investors by carrying out the preliminary feasibility, especially in the assessment of industrial minerals. However, lack of professional personnel and budgetary constraints due to insufficient funding from government limits the number of programmes that can be executed.

Figure. 16 shows the organisational chart of Geological Survey Department.

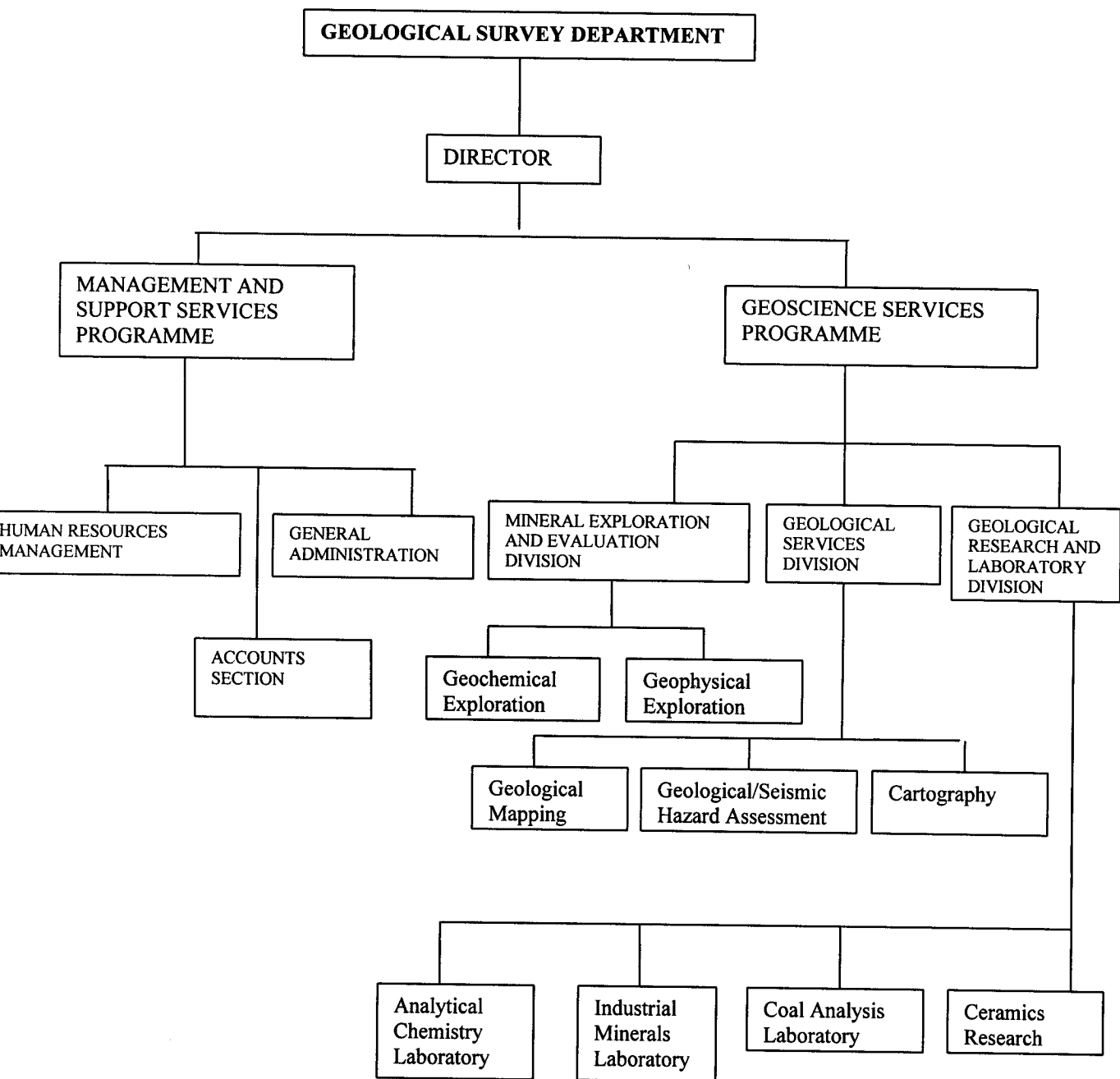


Fig. 16: Organisational Chart of the Geological Survey Department of Malawi

The Department of Mines, established in 1983, is responsible for the administration enforcement of mining regulations including the monitoring and inspection of mining operations and the collection of fees and royalties. It is also responsible for the promotion of small and large-scale mining in the country, the training of mining personnel and the development of appropriate mining and mineral processing technology.

There are four sections in the department namely:

- Mining Advisory and Regulatory Section (Mining Engineering).
- Explosives Inspectorate (proposed).
- Mineral Processing
- Office Administration

Fig. 17 shows the existing organisational chart of the department.

The Mining Advisory and Regulatory Section, also known as the Mining Engineering Section, is responsible for monitoring mining activities and for the administration of licensing. It also gives technical assistance to the miners in such areas as surveying, pegging claims, mining methods and safety. The Explosives Inspectorate when finally put in place will be responsible for regulating and controlling the purchase, use and sell of explosives. The Mineral Processing Section conducts bench scale mineral processing tests on sample materials supplied by miners and from exploration projects.

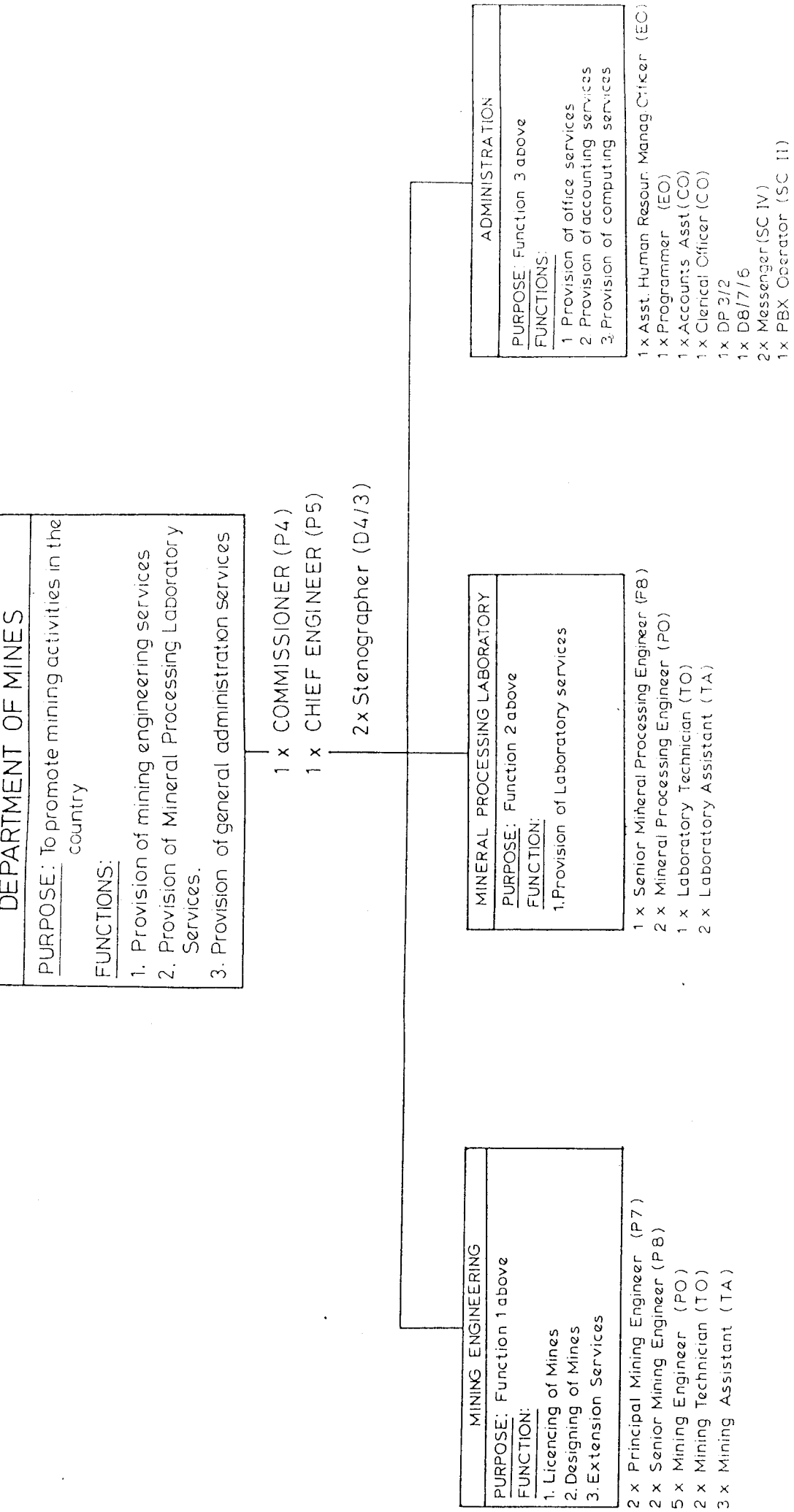


Fig 17 : Organisational Chart of Department of Mines

The Office Administration is responsible for the provision of accounting services and other office services to the department. It is also responsible for the collection of royalties and keeping statistics on mineral production.

Presently the department is grossly undermanned with only about four professional staff. Because of this manpower constraint, the department has not been able to cover its responsibilities adequately. Poor funding levels from Government and uncertainties over the future of the department as evidenced when Government completely stopped funding the department for one whole financial year between 1998 and 1999 compound this problem.

Other key players in minerals sector of Malawi include The Chamber of Mines of Malawi, Malawi Development Corporation (MDC) Gemstone Miners' Association and Small Enterprises Development Corporation of Malawi (SEDOM).

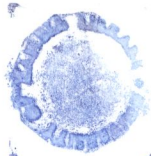
(a) The Chamber of Mines of Malawi

The Chamber of Mines of Malawi is a newly established organisation whose contribution to the minerals sector is yet to be seen. Established in 1998, the Chamber aims at encouraging, protecting and fostering the private sector mining industry. The Chamber has an ambitious set of objectives, some of which are as follows (Chamber of Mines Of Malawi, 1998):

- (a) To advance and protect the private sector mining industry of Malawi.
- (b) To promote, lobby, support or oppose, as may be deemed expedient any proposed legislative or other measures affecting the interests of members and/or the mining industry.
- (c) To promote the interests of members.
- (d) To collect and circulate information relating to the mining industry.
- (e) To promote the interests of apprentices and learners in all branches of the mining industry and to encourage the practical and technical training of such apprentices and learners.
- (f) To encourage the study of matters relating to mines and mining, whether by technical or professional students and for that purpose to provide prizes and other rewards for distinctions.
- (g) To provide for the delivery and holding of lectures, exhibitions, public meetings, classes and conferences calculated directly or indirectly to advance the cause of the private sector mining industry and of education in mining matters, whether general, professional or technical.

(b) The Gemstone Miners' Association

The Gemstone Miners' Association is ideally supposed to represent the interests of gemstone miners and to act as a communication link between the miners and government. Government assists the gemstone miners through the association by organising seminars to increase their knowledge in mineral identification, prospecting, mining methods, mine



safety and environmental management. The Association, on behalf of its members is also supposed to lobby for financial assistance from financial institutions and from donor agencies through government. However, very little success has been achieved by the Association in fulfilling its objectives. This is largely due to a weak administrative structure and financial resource base. The Association has also no capacities to carry out some of its activities and is not able to engage the services of trained and competent staff because of lack of resources. There is also a tendency by the Association to serve the interest of office bearers at the expense of members' interests.

(c) Malawi Development Corporation (MDC)

MDC was established in 1964 by an Act of Parliament and is wholly owned by the Malawian Government, which subscribed the initial capital. MDC was formed to develop, on sound business principles, the agricultural, commerce, industrial and mineral resources sectors. To achieve these objectives MDC performs the following functions:

- Identifying and promoting viable projects.
- Attracting investment capital from local and foreign investors and other financial sources.
- Participating with equity or loans or both in financing new projects or in investing in on-going projects requiring modernisation or expansion.

(d) Small Enterprises Development Corporation of Malawi (SEDOM)

SEDOM was established by government in 1982 through the assistance of the West German Government to support the development of small enterprises including mining.

3.4.1 Financing of Mineral Resources Development

Malawi Development Corporation (MDC) participates in mining projects with equity or loans in order to finance new or on-going projects, whereas priority is given to projects with potential for forex earnings or savings. MDC can take minority share participation in a mining project and provide medium or long-term credits, but is restricted to a maximum exposure of 50% of the single project's total costs. In addition, MDC cannot be engaged in a SSM project with more than 10% of its own issued share capital of MK 2.5 million. Promoters of SSM projects are expected to contribute at least 25% of the project's capital cost. MDC is also mandated to assist in seeking local or foreign funding, and provides loan guarantees in exceptional cases. MDC's interest in mining has, however, so far been modest.

The Small Enterprise Development Corporation of Malawi (SEDOM) is among other things, supposed to support SSM financially by handing out loans to individuals or companies.

Although there are a number of small-scale miners eligible for assistance, serious commitment to the financing of the SSM sector in Malawi from such organisations

cannot be seen. SEDOM is able to give some financial support to SSM but it also admits that the unorganised nature of the sector has been a cause for concern over the security of loans. The corporation accepts security in the form of machinery, vehicles, and houses on leased plots. Usually a potential small-scale miner does not have such collateral.

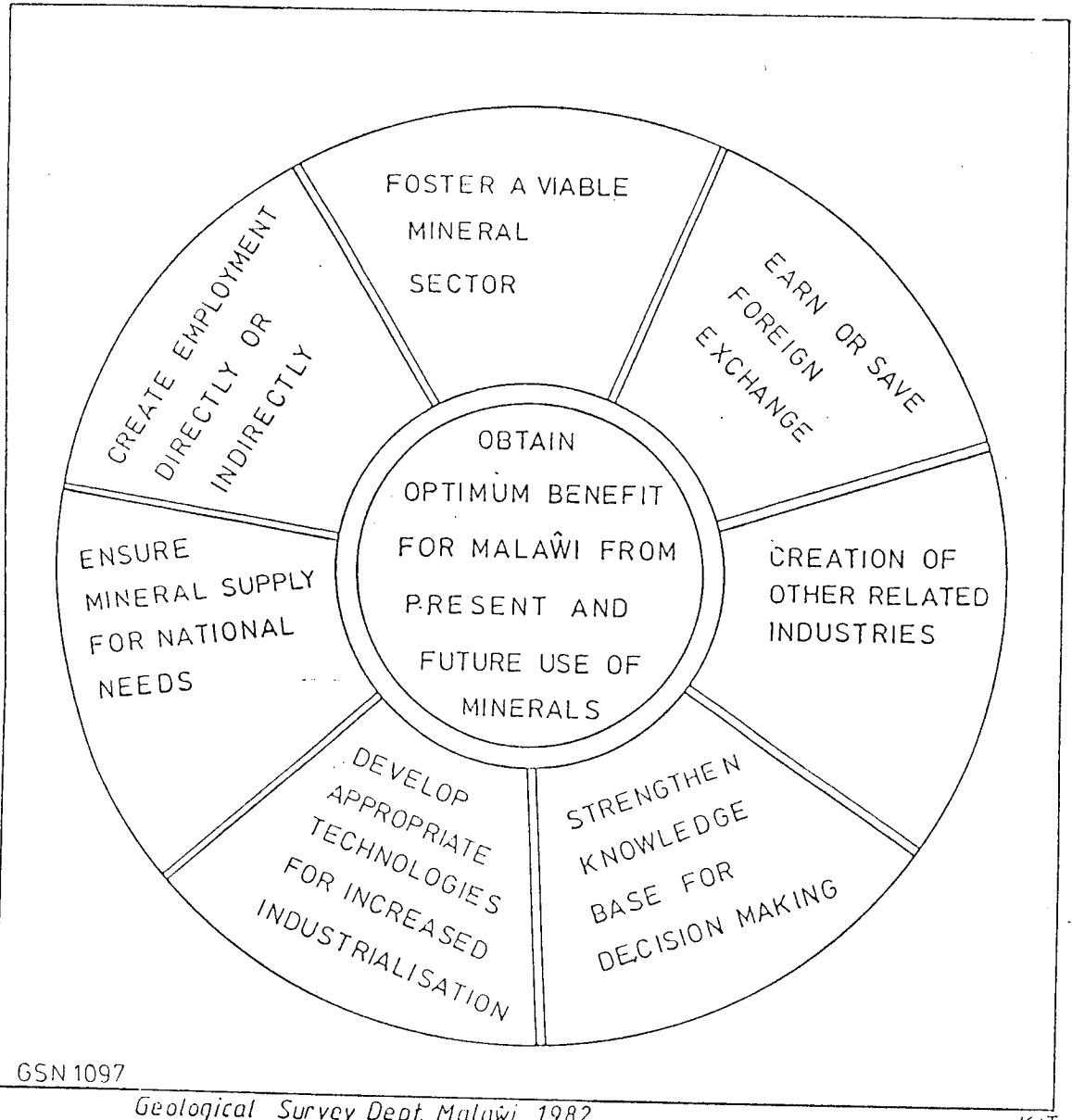
Mining Investment and Development Corporation (MIDCOR) was formed in 1985 (now abolished) as a fully state owned company mandated to undertake mining ventures on its own or in joint ventures. It was also mandated to test, prove and demonstrate to the private sector the technical, economic and financial viability of selected mining opportunities in Malawi especially those leading to the substitution of imported items. On its formation MIDCOR's prime task was the development of coal mining in order to substitute for imported coal especially from Mozambique, a source that was becoming unreliable due to the increasing intensity of civil war. Since its formation MIDCOR developed two small coal mines; initially at Kaziwiziwi and later at Mchenga when Kaziwiziwi mine was depleted. Mchenga coalmine was later successfully sold off to a consortium of MDC – INDEBANK and CDC – MDM.

However, as it can be noted from above, there is lack of sufficient financial institutions in Malawi to finance mining projects.

3.5 Policy and Legal Framework

3.5.1 Government Mineral Policy

The contribution that minerals make to industrial and economic growth is immeasurable in terms of their impact on civilisation. Many advances in science and technology have resulted, directly or indirectly from man's need to exploit mineral resources for food production, health care, education, trade and transport. In any society the development of a mines and minerals policy should therefore constitute one of the goals for overall industrial advancement (Chatupa, 1982). The mineral development objectives of Malawi are illustrated in Figure 18.



Geological Survey Dept. Malawi, 1982

KAT

Fig.18: Mineral Development Objectives

The Statement of Development Policies (1987-1996) stated that the overall policy objective is to maximise the economic benefit to the nation that can be realised from the exploitation of the national mineral resources.

The policy aims at increasing foreign exchange earnings, substituting of domestic for imported materials, reducing excessive rates of depletion of other resources (for example forestry) and encouraging more equitable geographical distribution of industrial activities. The action programme to implement these policies entails:

- Acceleration of mineral exploration and the evaluation of potential projects by encouraging potential domestic and foreign investors.
- Development of selected mining projects directly by the public sector or through joint venture investment especially in mineral projects of strategic importance or where the private sector is unwilling to invest.
- Establishment of a systematic inventory of mineral resources collating this with the forecast pattern of future domestic industrial development and mineral export opportunities.
- Establishment of incentives for foreign investors while recognising the unique nature of mining investment.
- Design and execute packages of financial assistance, training and technical extension services to viable and new SSM ventures.
- Intensification of research and development in exploration, mining, processing and marketing of minerals.

- Increasing the capabilities of the Geological Survey Department and Department of Mines to be better equipped to supervise, organise or undertake the activities mentioned above.

A wide range of other policy measures has been taken by the government to attract both foreign and local investment. Toward this end, the Government of Malawi passed the Investment Promotion Act of 1991, which established the Malawi Investment Promotion Agency (MIPA). The Act clearly defines a range of incentives designed to attract productive investments in Malawi such as (MIPA, 1993):

- Free access to foreign exchange.
- No licence requirements for imports.
- Full remittance of dividends.
- Corporate tax rate of 35 %.
- Generous tax allowances including:
 - (i) 40 % allowance on new buildings and machinery.
 - (ii) Additional 15 % allowance for investments in designated areas.
 - (iii) Up to 20 % allowance for used buildings and machinery.
 - (iv) 50 % allowance for qualifying training costs.
 - (v) 100 % deduction for manufacturing company operating expenses during the first 18 months.
 - (vi) Indefinite loss carry forward, to allow companies to take full advantage of tax allowances.

MIPA's foremost responsibilities are to promote, attract, encourage and facilitate local and foreign investment in Malawi. To accomplish this mandate, MIPA is responsible for:

- Developing a favourable image of Malawi regionally and throughout the world.
- Undertaking investment promotion missions.
- Recommending to the government changes in the statutory and administrative framework relevant to the investment climate.

Investor Services that MIPA is charged with providing include:

- Facilitating all aspects of the investment process in Malawi.
- Providing country services to investors.
- Furnishing information related to investment in Malawi.
- Identifying partners in or outside Malawi for joint venture business opportunities.
- Working with local and international financial institutions for the benefit of investors.
- Encouraging existing investors to expand or start new investments.
- Consulting with private sector organisations so that better informed recommendations concerning the investment climate can be made.

For the mining sector, the Investment Promotion Act 1991 came up with some general conditions as follows:

- a) A fiscal regime which is first of all stable and in which tax levies are profit oriented and related.

- b) An arrangement which guarantees the transferability of part of the earnings to meet all foreign exchange commitments including dividends at market based exchange rates.
- c) Non-interference in decisions affecting operational matters such as production and marketing. However, employment agreement containing training programmes for local personnel and related localisation programmes are very much encouraged.
- d) Guarantees against expropriation of investor's property and other assets.
- e) Automatic right to be granted mining lease if exploration proves successful and viable. This provides a guarantee that explorers can mine their discoveries because any successful mine-finder must be assured of the benefits of the effort.
- f) A definite and fairly long period for a mining lease.

As can be noted from the above, Government has made some strides in creating incentives in trying to promote investment in mining. However, there is no denying the fact that the investment policy is tailored to suit large capital intensive operations mostly carried out by foreign multinational companies. As stated earlier, many of the mineral deposits in Malawi lend themselves to small operations rather than large capital-intensive operations. As such, the policy scope for developing a mining sector must take into account the present status of mineral endowment and the potential financial and technological resources presently available. Accordingly, the government needs to come up with a policy for SSM that is conducive for the transformation and development of the sector.

3.5.2 Mining Act

Mining activities are controlled under the Mines and Minerals Act 1981, which repealed the 1937 Act. The Act sets out the licensing procedures for prospecting and mining and the obligations of investors. A Commissioner for Mines and Minerals within the responsible ministry administers the Act.

All minerals in the country are vested in the President on behalf of the people of Malawi. The Act has two categories of licences, which cater separately for small-scale and medium to large-scale operations. It also classifies minerals into three categories:

- Building and industrial minerals (stone, sand clay, limestone etc)
- Precious and semi-precious minerals (diamond, gold, gemstones)
- Other metallic and non-metallic minerals (coal, uranium etc)

The minerals have been categorised on the basis of the type of licence one is most likely to get when applying for one to exploit the mineral. For example, one intending to quarry stone for building or roadmaking is likely to obtain a Mineral Permit unlike one who applies for a licence to prospect for and mine uranium or diamonds.

The Act also makes provision for payment of royalties and licence fees as well as the negotiation of individual mining agreements with investors and other relevant matters.

3.6 Licensing System

3.6.1 Small-Scale Mining

These licences are issued by the District Administration and the Commissioner for Mines and Minerals. They cover mining activities by individuals or co-operatives undertaken by using little capital and expertise and are labour intensive. These include three types of licences namely: Mineral Permits (MP), Non Exclusive Prospecting Licence (NEPL) and Mining Claims.

Mineral Permits are given for specified quantities of building and other construction materials. They are issued by respective District Administrators. The permits do not allow underground workings.

Non-Exclusive Prospecting Licence (NEPL) is issued by the Commissioner for Mines and Minerals to Malawians or companies or to foreigners who have resided in Malawi for a minimum of four years and it is valid for one year but renewable. It permits the holder to conduct prospecting operations in one or more districts for any mineral specified in the licence. The licence holder is obliged to submit a written report at the end of the year to the Commissioner but should report immediately any mineral discovery and the claim should be pegged. The Commissioner for Mines and Minerals issues a Mining Claim only to a holder of a NEPL. It is granted for one year, renewable only if progress reports are submitted every six months. A Mining Claim Licence is issued for an area not more than two hectares.

3.6.1.1 Application Procedures

Completed application forms are submitted to the Department of Mines. Sketches of the area of interest should accompany the application forms. The completed application forms are then submitted by the Department of Mines to a licensing committee. The Committee is composed of:

- The Commissioner for Mines and Minerals
- A representative from Geological Survey Department
- A representative from Department of Mines
- A representative from Police
- A representative from Customs Department
- A representative from Environmental Affairs
- A representative from Lands Department

Normally applications are not supposed to take more than two months to get approved. Practically this does not happen. In 1999 for example, the committee met only twice.

3.6.2 Large Scale Mining

These licences apply upon the issuance to individuals or companies, both foreign and local, of Mineral Rights by the Minister responsible for mining. In this category, the activities require detailed prospecting feasibility studies, advanced technology and

substantial capital. The licences under Mineral Rights include Reconnaissance Licence (RL), Exclusive Prospecting Licence (EPL) and Mining Licence (ML).

A Reconnaissance Licence (RL) is issued for one year and covers an area not exceeding 100,000 km² and should follow an approved programme. The licence allows the holder to carry out geophysical and geochemical surveys, geological and photogeological investigations and remote sensing. This has to be done without drilling or excavations in the ground.

Exclusive Prospecting Licence (EPL) is granted by the Minister upon submission by the applicant, apart from other information, work and training programmes for Malawians and a minimum expenditure commitment. The licence is specified to minerals applied for and allows for sub-surface investigations including drilling. The licence is granted for a three-year period over a maximum area of 2,500 km². It is renewable twice for periods of two years each but half of the area has to be relinquished upon each renewal. Progress reports are submitted to the Minister at the end of each phase including work programme and cost estimates for the following year.

A Mining Licence is issued to holders of EPL upon submission of a positive feasibility study, which includes a programme for mining and an environmental impact assessment report. Applicants for a mining licence should be financially capable and should have relevant experience and expertise. The licence is granted for a period of 25 years or for

the estimated life of the mine and renewable for a period not exceeding 15 years. The licence can cover a maximum area of 250 square kilometres. Mines inspectors are authorised to visit mining operations without notice to monitor compliance with safety and environmental regulations.

3.6.2.1 Application Procedures

The procedure in this category is that applications for Mineral Rights are submitted to the Minister and then forwarded to the Department of Mines. The applications are then forwarded to the Licensing Committee. The Committee makes some recommendations that are submitted to the Minister for approval. Upon approval of the licence, the applicant approaches Government under the provisions of section 10 of the Mines and Minerals Act 1981 to negotiate fiscal and other terms related to the proposed mining venture. On the part of Government an Interministerial Committee comprising representatives from other relevant Ministries such as Finance conducts negotiations on such fiscal terms and any special incentives requested by an investor.

3.6.3 Other Licences

Export Permits are issued to individuals or companies wishing to export minerals. Export Permit holders are expected to pay royalties on minerals exported. Reserved Minerals Licences are given to dealers or traders who wish to buy and sell gemstones and gold.

Table 8 shows a summarised description of the licensing system in Malawi.

TABLE 8: Summarised Description of the Licensing System

CATEGORY	LICENCE TYPE	APPLIED TO	TENURE (YEARS)	RENEWAL PERIOD	CONDITIONS
Small-Scale Mining	Minerals Permits	District Commissioner	Not Specified		No mining operations underground No use of explosives No use of powered machinery in mining operations.
	Non-Exclusive Prospecting Licence (NEPL)	Commissioner For Mines & Minerals	1 Year	1 Year Periods	Issued to Malawians only or companies or foreigners who have resided in Malawi for four years. Permits surface work only. Submission of reports at end of each year required.
	Mining Claim	Commissioner for Mines & Minerals	1 Year	1 Year periods	Progress reports submitted every six months. Can be cancelled if deposit is deemed appropriate for large-scale mining.
Medium to Large-scale Mining	Reconnaissance Licence (RL)	The Minister	1 Year	Non-renewable	Covers an area not exceeding 100,000 square kilometres. No drilling or excavations in the ground allowed. Accompanied by plan of the area Accompanied by statement of financial and technical resources available and programme of action.
	Exclusive Prospecting Licence (EPL)	The Minister	3 Years	Renewable twice for 2 year periods	Maximum area of 2,500 sq. kilometres Information on work and training programmes Progress reports to be submitted
	Mining Licence	The Minister	25 Years	Not exceeding 15 years	Granted upon submission of a positive feasibility study. Applicants should be financially sound with relevant experience and expertise. Covers a maximum area of 250 square kilometre. Holders must report regularly to the Minister Compliance with safety and environmental regulations.

3.7 Mining Fiscal Regime

The policy objective for this sector is to maximise the economic benefit to the nation that can be realised from the exploitation of the country's mineral resources.

The present fiscal regime needs to be revised by providing appropriate fiscal incentives, which are regionally competitive as illustrated in Table 9 to reduce the present undervaluing of export consignments, and discourage mineral smuggling. The fiscal regime that is in place now does not have elements particularly applying to SSM that will provide incentives for formalisation of the sector. For example in Zambia, mining equipment is duty free and small-scale operations are exempt from tax for the first five years and for the next five one-half of the rate applicable

Table 9: Comparative Fiscal Policies among some SADC countries

Country	Tax Rate (%)		Withholding Tax (%)					Fiscal Incentives on Qualifying Investments
	Corporate	VAT (on sales)	Branch Profits	Dividends	Interest	Management & Professional	Royalty	
Botswana	40		15	15	15	15	3-10	Indefinite loss carry over 100% capital allowances and depreciation of goodwill. Tax rate for small mines is 25% only.
Tanzania	30	20	20	5 Residents 10 Non-residents	0	20	2-5 All minerals 15 Diamonds	Tax concessions for investments over US\$300,000 Indefinite carry forward of losses Duty free importation of exploration and mining equipment and no sales tax
Zambia	35	17.5	N/A	15	15	15	3	Double Tax agreements to use as credit. Wear and tear allowance of 5%. Mining equipment duty free. Small-scale operations exempt from tax first five years and for next five one-half of rate applicable.
Zimbabwe	39	17						Annual inflation allowance 10%. Mining depreciation and depletion allowances. Double Tax agreements
South Africa	35-40	14						
Malawi	35			0		15	5 10 Unprocessed	Capital expenditure allowance 20%. Indefinite loss carry forward 15% corporate tax for investments over US\$10 million.

The other problem is that there is no clear set package of fiscal terms related to mining ventures with most of the terms left to negotiations between an investor and government. There is also need to have an appropriate fiscal regime that encourages exploration and development expenditure and should be supportive of marginal operations.

Some of the fiscal terms on offer including taxation are as follows:

- (i) Corporate Tax is 35% of taxable income (1991)
- (ii) Capital Allowance of 20%

Where a person or company doing mining incurs mining expenditure in any year of assessment the company is entitled to an allowance in that year of assessment and in each of the following four years of assessment equal to 20% of the expenditure.

Mining expenditure in this case means capital expenditure incurred in Malawi during or just prior to commencement of mining operations in the country (Engineering Associates (T) Limited, 1991).

- (iii) Custom Duties and Sales Tax

Duty is charged on all imports with special rates or a complete waiver of duty being negotiable and can be granted by the Minister of Finance. In normal circumstances importation of exploration equipment is duty free.

Duty and sales Tax rates on some selected mining equipment is shown in the table below:

Table 10: Duty and Sales Tax on Equipment

Equipment	Tax Rate
Grading, scraping	20% duty
Excavating, boring	10% sales tax
Processing machinery	on value 10% sales tax
Coal or rock cutters	after duty (equivalent to about 32%)
Explosives and Chemicals	20% duty
Vehicles (4 WD)	10% sales tax
Dump trucks	40% duty, 35% sales tax
Trucks up to 10 tonnes	10% duty, No sales tax
Trucks over 10 tonnes	Duty free and free sales tax

(iv) Royalty

Royalties are paid on the gross revenue of the mineral produced or in the case of exports on the export value of the mineral. At present the royalties are as shown in Table 11.

Table 11: Royalty Rates

Mineral	Royalty Rate
Industrial Minerals	7% unprocessed ,5% processed
Gemstones	10% rough stones, 5% cut, polished
All other Minerals	10% unprocessed,5% processed

(iv) Withholding Tax

Withholding tax of 10% is levied on rent and management fees. This is a tax relief to mining investors for expenditures on management and professional services framed to provide incentives for re-investment and to enhance economic viability of projects. Withholding tax is also levied at the rate of 15% of the gross amount of income of a non-resident derived from a source in Malawi.

CHAPTER FOUR

4.0 Scope For Mining in Malawi

Firstly it has to be pointed out that the history of mining in southern Africa, particularly in those countries richly endowed with high value export minerals has had a tremendous impact on the attitudes of many Malawians (Chatupa, 1982). Several generations of Malawians have, over a period of one century worked in the mines of South Africa, Zimbabwe and Zambia, where gold; diamonds, chromite, platinum, copper, cobalt etc are mined. For example, Appendix III indicates the number of Malawians employed in the mines of South Africa under contract with the Employment Bureau of Africa Ltd.

Secondly, it has to be stated that Malawi does not have a mining history. Although the mining of gemstones at artisanal level has been going on for over half a century, it has never had any significant impact on the economy of the country. There has also not been any serious commitment by government to transform this informal artisanal mining to SSM. These miners have had difficulties in raising funds, for example. This is largely because the government has not formulated a policy on the development of SSM, which would inevitably address the problems of financing the sector. Needs for financing have occurred but their treatment has been on an ad hoc basis.

A very high proportion of the country's population lives in rural areas. As the government's policy is to achieve self-sufficiency in production and to improve the quality of life of the populace, objectives of mineral development should reflect this policy. The government should therefore advocate for the promotion and development of SSM by coming up with appropriate policies in order to contribute to the nations objectives of creating employment in rural areas and reducing Malawi's dependence on imports of basic commodities.

4.1 Minerals with Potential by SSM

A number of factors determine whether a particular mineral should be mined on a large or on a small scale. The two most important factors are demand and mode of occurrence (Klockner Industrie-Anlagen GMBH, 1987). Other reasons for a "small-scale" approach are limited reserves or the inability to prove reserves ahead of mining and lack of technology.

In Malawi the minerals suitable for SSM operations and development are: Coal, limestone, gemstones, phosphate, dimension stone, kaolinitic clays and brick clays, graphite, glass sands, gypsum, vermiculite and kyanite. These minerals also have great potential for import substitution, which is the main reason for their selection.

Appendix IV shows, in general terms, minerals with potential for development in Malawi.

4.1.1 Coal

Malawi has sufficient coal resources to satisfy local demand and with surplus for export to neighboring countries. Until 1985, Malawi used to import all its coal requirements from neighboring countries especially Mozambique. In 1985, mining Investment and Development Corporation (MIDCOR), a parastatal under the Ministry of Energy and Mining opened a small coal mine at Kaziwiziwi in Rumphi District to ease the problems of erratic supply that were being faced at that time due to insurgent activities in Mozambique (see Appendix V). At present, there is only one coal mine at Mchenga in Rumphi District which is operated by Coal Products Limited (see Appendix VI).

Presently, however, Malawi still imports coal (see Table 7) to meet some shortfalls from the local source where production is low due to poor technology and management problems. As can be noted from Figure 8 on the production trend, there are fluctuations in annual production which creates a supply strain when it comes to satisfying the local demand and at the same time meet export obligations.

Although the current level of consumption is small, being limited to manufacturing industries, as outlined in Table 12, there are other potential consumers as follows:

(i) Electric Power Generation

Malawi relies almost wholly on the Shire River for the generation of its electricity. In recent years, electricity supply in the country has been insufficient largely due to low

water levels and siltation problems. At present the demand for electricity in fact outstrips supply (Ministry of Energy and Mining, 1997).

Exploitation of the coal resources in the country offers an important alternative for electricity power generation. The coal from Ngana and North Rukuru coalfields in the north and from Mwabvi coalfield in the south could be used for the generation of electrical power that can be fed into the existing national grid.

Table 12: Main Consumers of Coal in Malawi

NAME OF COMPANY	TONNES PER MONTH	TYPE
AMI	30	PEAS
Carlsberg Breweries	10	PEAS
Chibuku Breweries	105	PEAS
Dimon	250	DUFF
Encor Products	15	PEAS
Ethanol Company	200	PEAS
Impala Farming	166	SIZED ROM
Knitwear	300	PEAS
Lever Brothers	500	PEAS
Napolo Ukana Breweries	85	NUTS
Press Agriculture	1000	SIZED ROM
Toabcco Processors	416	PEAS
Universal Industries	30	PEAS
TOTAL	3107	

(ii) **Domestic Household Use**

At present only 4% of the population has access to electricity and the tariffs charged are also beyond the means of most Malawians. As such the main source of energy for household is biomass in the form of fuelwood and charcoal. This source accounts for about 90% of Malawi's primary energy supply. The continued use of this source of energy has caused serious environmental damage due to deforestation. The use of coal is, therefore, an economic and environmentally friendly substitute for biomass as a source of energy for domestic use.

(iii) **Agro-Industry**

The tea and tobacco industry still continues to use fuelwood for curing tea and tobacco. However, research carried out by the Tobacco Research Institute of Malawi has shown that coal stands out as the least cost fuel that can be used (Ministry of Energy and Mining, 1997).

Tables 13 and 14 give additional details on reserves and the overall potential for coal in the country.

Table 13: Coal Reserves and Resources of Malawi (in million Tonnes)

Deposit	Proven Reserves*	Probable Reserves*	Possible Reserves*
Ngana	15.0	50.0	-
Lufira	0.6	2.0	-
Livingstonia	1.4	5.0	20.0
North Rukuru	-	5.0	150
Nthalire	-	-	15.0
Kibwe	-	3.0	-
Mwankenja	-	1.0	5.0
Mwabvi	5.0	-	10.0
Lengwe	-	-	10.0

Source: Geological Survey Department of Malawi

***Proven Reserves:** Mineralisation intersected by drilling, sampling and information locations are closely spaced to confirm structural and grade continuity. Geological data is reliably known.

***Probable Reserves:** Tested by drilling and other procedures at locations widely spaced but close enough to give reasonable indication of continuity.

***Inferred Reserves:** Estimate inferred from geological information. Sampling still insufficient for reliable estimation.

Table 14: Characteristics of the Main Coal Deposits in Malawi

Deposit	Moisture (%)	Ash (%)	Volatile Matter (%)	Fixed Carbon (%)	Calorific Value (kcal/kg)	Sulphur (%)
Ngana	4.5	30.2	24.9	32.8	4708	2.20
Lufira	6.6	35.0	25.9	31.8	3819	0.77
Livingstonia	3.0	17.0	22.0	50.4	6800	0.50
North Rukuru	4.2	32.4	23.7	40.6	4781	0.6
Mwabvi	-	40.0	6.8	50.5	4173	0.76
Lengwe	1.7	59.2	10.5	30.3	2746	0.51

Source: Geological Survey of Malawi

The Ngana coalfield is located in Karonga District in the northern part of Malawi. The coalfield has been geologically investigated in detail and it occurs in an L-shaped fault bounded trough covering an area of 60 km². The deposit can be mined by both open cast and underground methods.

The Lufira coalfield occupies a small Karroo basin northeast of Karonga Township. The coalfield covers an area of about 6 km² and the sedimentary sequence consists of Basal Beds overlain by coal measures over 20 m thick. There are 4 to 12 seams in the coal measures ranging in thickness from 4 mm to 2.45 m.

The Livingstonia coalfield, where the Mchenga colliery is located, is found in Rumphi District. The sedimentary sequence consists of over 70 m thick of Basal Beds, which lie unconformably on the metamorphic basement. Coal measures ranging in thickness from 30 to 107 m are overlain by a thick sequence of mudstones, siltstones and grits. Coal seams range from 0.3 to 2.7 m in thickness.

The North Rukuru coalfield is the largest in the country, covering an area of 150 km². The succession is regarded to be similar to that at Ngana and Lufira. The inferred resource is placed at 150 million tonnes with a 2.0 m thick coal seam extending over 25 km along strike. Although the coalfield has not been examined in great detail, it is one of the most important coal deposits for small to medium scale mining operations.

The Mwabvi coal basin, which covers an area of 400 km², is located in the southern part of the country in Nsanje District. The general succession consists of coal shales which grade into sandstone, grits, shales and red beds. The coalfield is located close to the main consuming industries in Blantyre. It is only 140 km from Blantyre and 440 km from Lilongwe. Only a very small section of the potential coalfield has been geologically investigated. The quality of the coal can be improved by washing.

There are other coalfields that have been mapped but not examined in detail. These are Nthalire, Mwankenja and Kibwe, all located in the northern region. These coalfields have speculated resources of over 20 million tonnes.

4.1.2 Limestone

The artisanal mining operations producing hydrated lime mainly for building and agricultural purposes are not meeting the country's requirements. Lime is still being imported into the country. This is because at present lime is produced manually with antiquated methods involving little technology. No proper mining goes on. Boulders and loose fractured rocks are broken with picks and crowbars and reduced to small pieces

with hammers. In these lime burning areas, there is no opencast seen anywhere. What you have are only little diggings from which boulders and loose rocks have been mined out.

The traditional Malawian lime burners supply a small part of the local market. Obviously an increase in consumption can be expected if more hydrated lime was readily available. Selective quarrying could enable the production of limestone of qualities corresponding to different specifications e.g. hydrated lime, metallurgical lime and chemical lime (Sofremines, 1987).

Comminution of the limestone will have to be carried out with a crusher to produce more material for burning (see Plate 1). The use of more fuel-efficient kilns other than the traditional kilns will have to be encouraged to reduce the consumption of hardwood (see Plate 2). At the moment it is estimated that 3-4 t of hard wood are burnt to produce 1 tonne of lime. This has consequently led to the depletion of indigenous trees in the vicinity of the kilns.

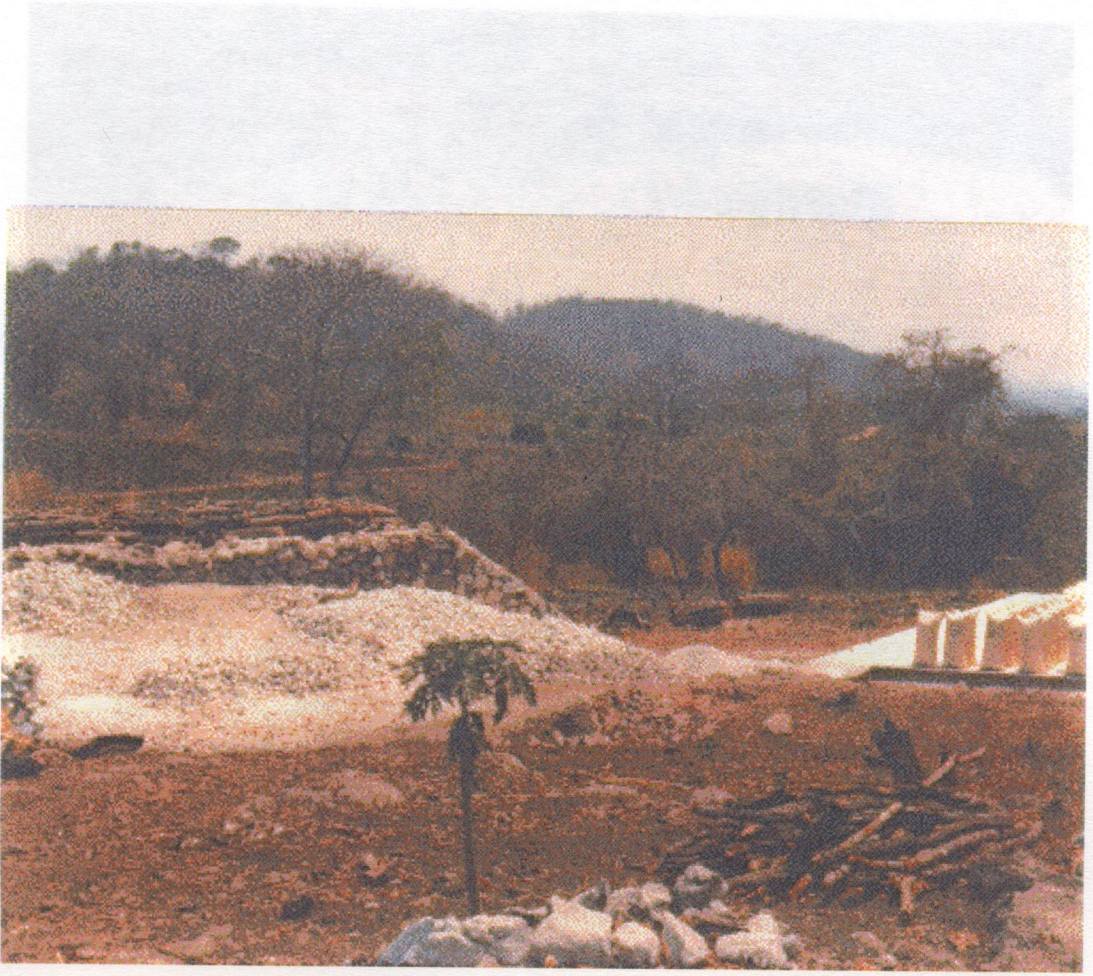


Plate 1: Comminuted limestone and bagged lime ready for sale

The rainy season tends to make lime production seasonal. This need not happen if more permanent operations were planned to meet growing needs. The labour-intensive methods of crushing and treating limestone are slow hence bottlenecks between crushing-hauling - loading - firing - cooling - unloading kiln and slaking are common.

Almost all the lime produced in the country is used in building. Crushed limestone is also limited to the production of scouring powder (Vim), terrazzo, agriculture lime and as an additive to chicken feed. Additional uses of limestone and lime are shown in Figure 19.



Plate 2: Loaded kiln ready for firing. Use of fuelwood leading to deforestation

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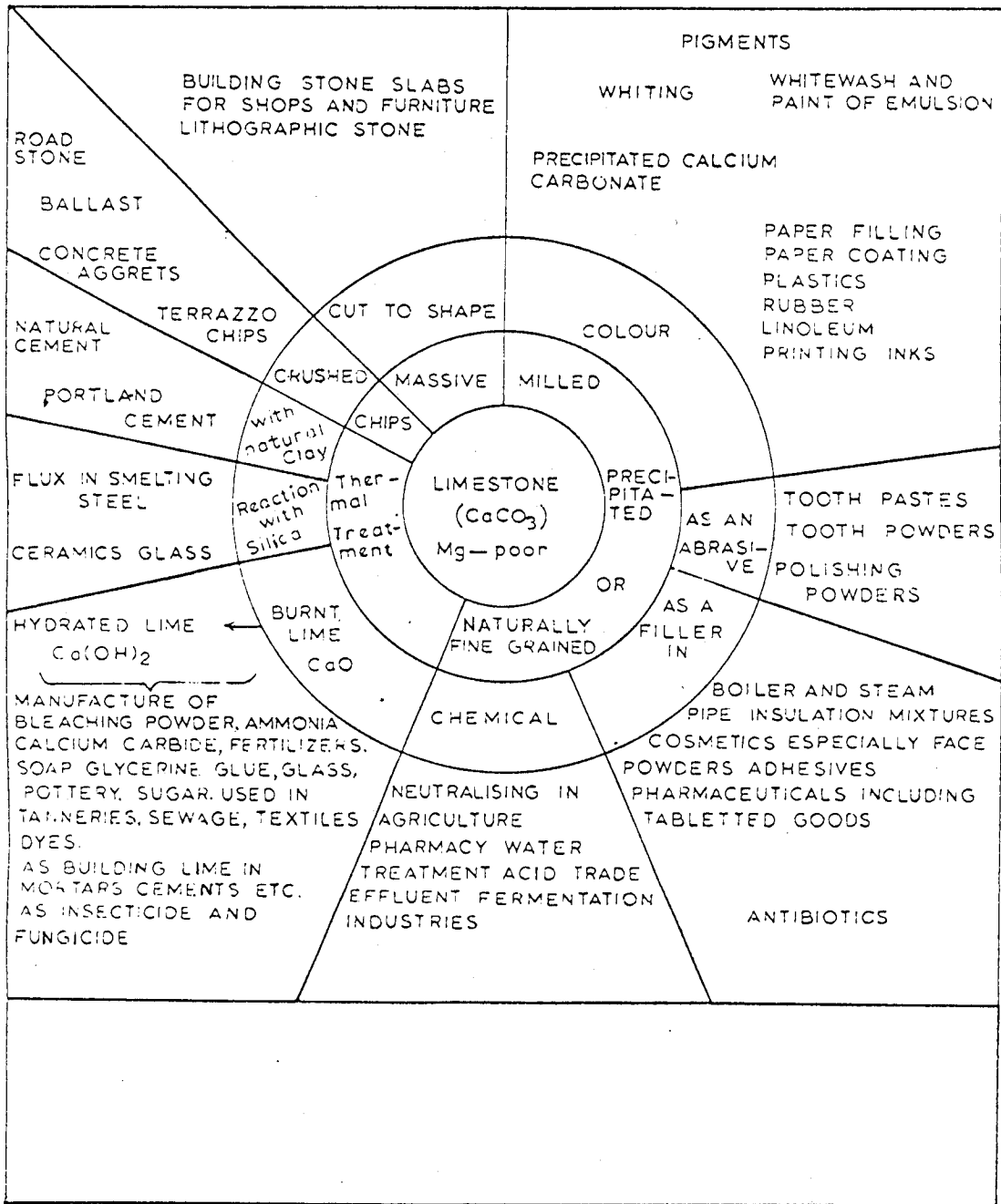


Fig 19: Uses of Limestone
Source : GSD, 1982

Therefore, there is wide scope for an integrated programme to mine and process limestones and use them for the production of many commodities. In fact, there is a local demand for lime of 30,000 tonnes per annum especially in the agro-processing industries particularly in sugar, tobacco, fertiliser and chemical manufacture.

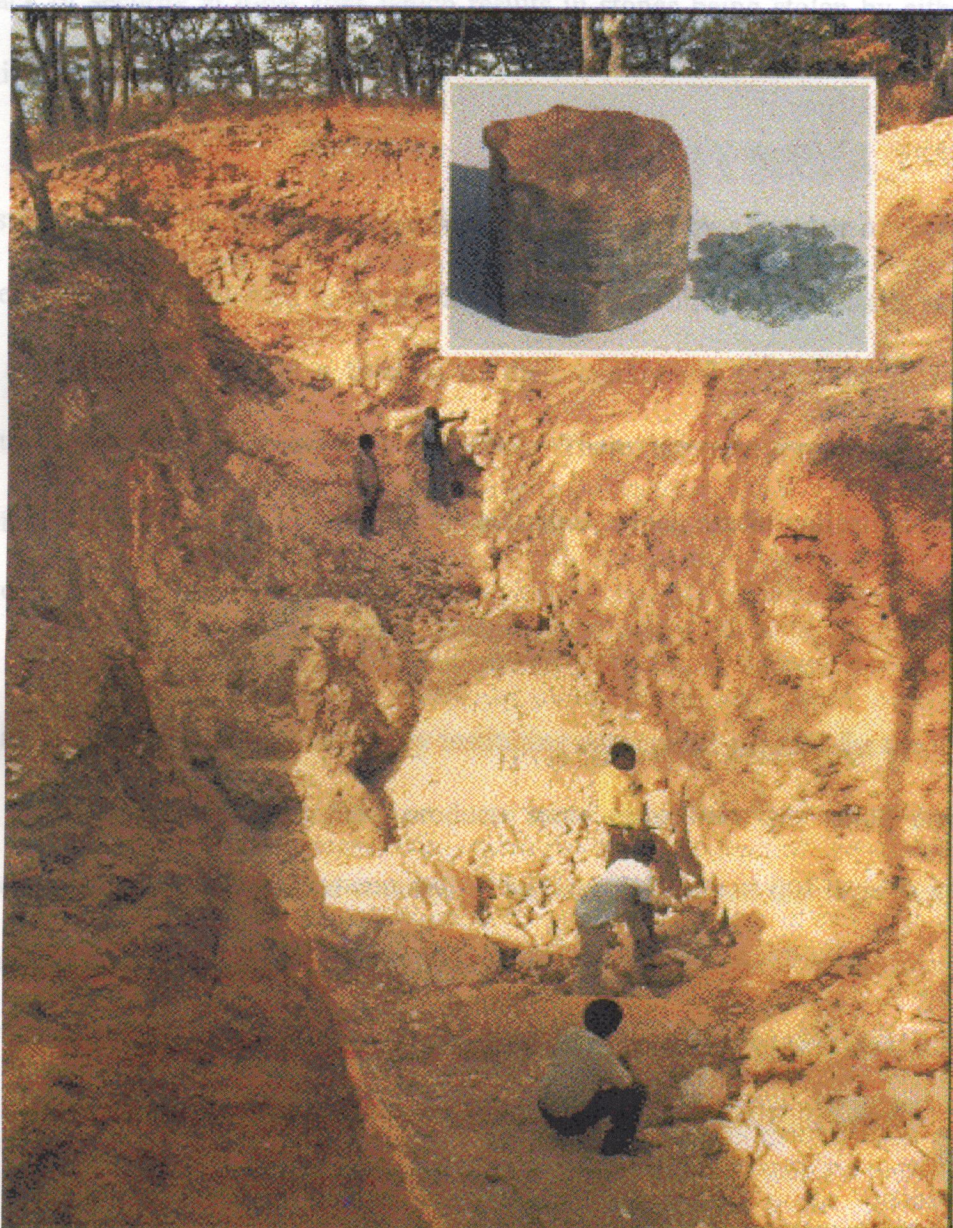
4.1.3 Gemstones

Presently the gemstone potential of Malawi is not fully known. However, the mining of gemstones at artisanal level has been going on for over half a century. Precious and semiprecious stones have been mined in the 14 of the 25 districts in Malawi with the main producing districts being Mzimba (see Plate 3), Rumphi, Chitipa, Ntcheu and Nsanje. Geological mapping has shown that in some parts of the country suitable host rocks are present and if systematic prospecting was conducted more gemstones could be discovered.

Although the mining of gemstones has been going on for over half a century it has never had any impact on the economy. This is attributed to constraints on production and marketing namely:

- (a) Lack of technical knowledge which includes lack of proper prospecting, claim pegging and mining methods, mineral identification, basic gemstone geology and knowledge in gemmology.
- (b) Lack of sufficient funds to run gemstone prospecting and mining operations.

It has been noted among many prospectors that money runs out during mining before selling any stones.



4.1.4.

Phosphate

Plate 3: A prospector's pit, Mzimba District. Insert: Aquamarine Sample

From the pit

- (c) Perceived lack of sufficient market outlets for stones and lack of information on marketing and pricing.
- (d) Lack of security at mine sites which results in stones being stolen by either the miners or other people.

The gemstone industry in Malawi is, therefore, bogged down by a number of problems, which need attention. Marketing is uncoordinated and often illegal. Gemstones are still exported outside the country at a fraction of their market value resulting in loss of revenue to government (Kaphwiyo, C.E, 1995). There are also problems of poor accounting procedures, typical of such mining activities, which render collection of taxes impossible.

If a favourable environment was created by instituting appropriate policies for the miners to mine, beneficiate and market their products more effectively this could create a formidable gemstone industry in the country. It has also been noted that there is a great deal of enthusiasm among the artisanal miners which government can take advantage of to improve the sector. This could eventually lead to an improved contribution by the gemstone industry to government revenue and for export to earn foreign exchange.

4.1.4. Phosphate

Agriculture is the main industry in Malawi and the single largest contributor to the national income. On the other hand the sustenance of high agricultural production

presently relies excessively on imports of chemical fertilisers. Imports for the period 1978 to 1999 are shown in Figure 20.

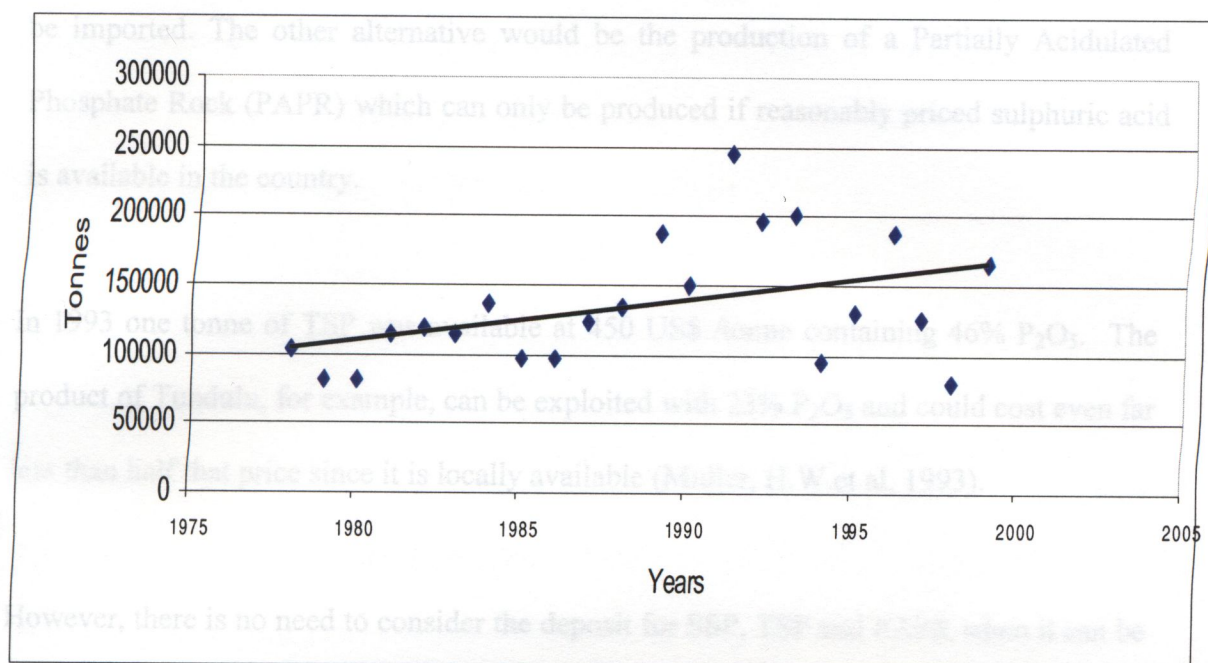


Fig. 20: Fertilizer Imports (1978-1999) and Projected Trend in Growth of Imports

Source: National Statistical Office

Fertiliser imports in the 1990s had reached some 190,000 tonnes and cost the country some 140 million Malawi Kwacha (approximately 53 Million US\$) in foreign currency annually (Westerhof, 1990). From the linear regression performed on the data points, fertilizer consumption is projected to rise in the coming years.

Malawi has fertilizer resources that comprise rocks rich in phosphorous (Tundulu and Chingale phosphate deposits), potassium and sulphur. These can potentially be used as raw materials for an indigenous fertiliser industry. From these, studies have been

conducted on the possibility of producing Single Superphosphate (SSP) and Triple Superphosphate (TSP) fertilisers for which the elemental sulphur feed stock will have to be imported. The other alternative would be the production of a Partially Acidulated Phosphate Rock (PAPR) which can only be produced if reasonably priced sulphuric acid is available in the country.

In 1993 one tonne of TSP was available at 450 US\$ /tonne containing 46% P_2O_5 . The product of Tundulu, for example, can be exploited with 23% P_2O_5 and could cost even far less than half that price since it is locally available (Muller, H.W. et al, 1993).

However, there is no need to consider the deposit for SSP, TSP and PAPR when it can be effectively used for Direct Application (DA). Field trials, with finely ground phosphate Rock (PR) from Tundulu, delivered the highest yields at Meru and Mbawa on phosphorous deficient soils (Muller H.W, 1993). Appendix VII shows a map of phosphorous deficient soils in Malawi where such type of fertilisers could be used. DA of PR has also given good results in tea plantations in Mulanje and Thyolo.

Given Malawi's total dependence on imported fertilisers, the high transport costs associated with importing the commodity and the demonstrated response in yields from the use of PR for DA, this could make an attractive alternative to imported fertilisers. This would hence make the mining of the Tundulu phosphate a potentially viable investment. The DA of PR and other ground natural rock fertiliser products present cheap but agronomically efficient alternatives.

4.1.5 Dimension Stones

In Malawi rock deposits occur that are suitable for cutting into ornamental and dimension stone. Important among these are the coloured granitic rocks of Mchinji, Rumphu and Mangochi and Monkey Bay areas along Lake Malawi. The dolerite rocks of Thyolo and part of Chikwawa also take a good finish when polished.

There is a market for ornamental and dimension stone in the country and throughout the SADC countries. In many important buildings and international hotels in the country expensive face stones, rough and polished are used and in instances thousands of square metres of polished granite floors are used. These are currently imported in their finished form and valuable foreign currency is used.

With little funds, quarrying, cutting and polishing equipment can be obtained. The Geological Survey Department has demonstrated with most of the rocks mentioned above what beautiful finished products can be obtained after polishing.

Deposits of beautiful sodalite occur at Ilomba Hill in Chitipa district. A local company is in the process of developing the prospect to produce stone blocks for export on a small-scale. It would be worthwhile to encourage the company to produce a finished product to add value.

4.1.6 Kaolinitic clays

The Kaolinitic clays at Linthipe in Dedza district can be used for refractory bricks and also for the manufacture of ceramic tableware (Geological Survey Department, 1996).

Refractory bricks are almost entirely imported into Malawi. They are used in furnaces, in cement kilns, dryers in the tobacco and tea industries. Hence there should be some scope for examining the possibility of setting up a refractory brick manufacturing plant for local consumption and also for export.

Tests to demonstrate the possibility of using the Linthipe kaolinitic clays for the manufacture of ceramic tableware have been performed by the Geological Survey. Results have been positive (see Plate 4). The above two can be considered as potential project opportunities for SSM.



Plate 4: Ceramic Research at GSD. Insert: Finished Products

4.1.7 Graphite

There are reserves of graphite in several locations including Katengeza, Lobi and Chimutu. The data on Katengeza indicates that this graphite after beneficiation would be

86% carbon and that it is mainly amorphous. This graphite can be mainly used in foundry.

This is also another potential project with opportunities for the small-scale mining operations.

4.1.8 Glass Sands

The glass sands in Mchinji have low iron content - less than 0.2%, which is the most stringent specification to enable the manufacture of non-coloured glass. The Mchinji glass sands are, therefore, of good quality and suitable for the manufacture of good quality glass.

Currently Malawi imports all its glass and glassware product requirements. A local glass manufacturing industry could therefore, contribute to saving the much-needed foreign exchange by import substitution.

4.1.9 Gypsum

Geological Survey Department has located resources of gypsum in Dowa in the Central Region. Assessment work has been conducted and there is scope for mining.

In Dowa out of eleven dambos, four have been found to have gypsum mineralisation. In one dambo called Livuno which is about 12 km in length and about 400 metres wide results indicate higher values than previously reported. The estimated amount of gypsum

in this dambo is about 600,000 tonnes occurring over an area of approximately 4 km². The gypsum layer is an average one metre thick and the overburden averages 0.6 metres thick.

The gypsum could be used as a retarder in the manufacture of Portland cement and as a soil conditioner. The Department of Geological Survey has also successfully formulated a body composition for chalk using gypsum from Dowa. The chalk produced is of comparable quality to the ones being imported.

As it can be noted in Table 7, Malawi imported 4,029 tonnes of gypsum in 1998 at a cost of MK 7,890,670 (175,348 USD) from South Africa and Zimbabwe. The demand for gypsum is expected to rise following the rehabilitation of the Portland Cement Factory at Changalume in Zomba and the opening of another cement factory, Shayona Cement, in Kasungu.

These gypsum resources in Dowa are a potential target for SSM and a project opportunity, which needs further investigations to define a development strategy.

4.1.10 Kyanite

Kyanite is known to occur in mineable quantities in Malawi. Kyanite is found at Malingunde and Kapiridimba south of Ntcheu. The latter deposit was mined in the early fifties with a production rate of 2500 tonnes per annum. Now mining has since been

discontinued. However a study carried out by Klockner in 1992 identified this kyanite deposit as a potential target for mining investment.

Kyanite in its burnt form-mullite and vitreous silica- is used as a refractory filler and burnt dead and crushed for the manufacture of refractory bricks mainly for use in the glass making industry.

The selective mining of kyanite crystals is a very labour intensive preparation and so is the cleaning of the kyanite aggregates of gangue material like feldspar, schist and mica. This renders kyanite mining and processing an ideally suited commodity for small-scale operations.

As kyanite also occurs in all neighboring countries (Mozambique, Tanzania, Zambia and Zimbabwe), the development of the kyanite deposits in these countries has been suggested (Klockner, 1992). An investigation should be carried out to determine in which country a kyanite-burning kiln and screening facility should be built to convert the raw kyanite into graded mullite grit for export. This could be done as a SADC project. However the technical and economic viability has to be studied.

4.1.11 Vermiculite

The vermiculite at Mwanza is of good quality and as stated earlier, it is comparable to that mined at Parabora in South Africa. It has potential for use in the building industry,

agriculture, the manufacture of paint, thermal insulation and the packaging industry in Malawi and for export.

A private company had a concession over the deposits in the early eighties but had to shelve the project because of the perceived difficulties with transportation through Mozambique to the port of Beira, which was at war that time. However, this is no longer a problem.

4.2 Constraints on Development

4.2.1 Macro-economic Factors

The mining industry, like any other important economic sector, influences and is influenced by macro-economic conditions. In Malawi, the macro-economic picture is generally one of adverse economic conditions characterized by slow GDP growth, declining or virtually stagnant per-capita incomes, balance of payment deficits, sustained inflationary pressures and a relatively high debt burden (Daily Times, 27th May, 2000). The degree and impact of adverse macroeconomic conditions on mining investment will partly depend on whether the investment is carried out by state owned enterprises or by the private sector, either local or foreign. The level of investment will be affected by hefty cuts in government expenditure and foreign exchange scarcity where the responsibility lies with state owned enterprises. The local private sector too will be affected by scarcity of foreign exchange needed to import essential inputs. These problems have put the mining sector under even greater strain. As a result, the growth of the Malawian mineral sector has been constrained by lack of capital, among other things. With the same reasons government has also not been able to direct sufficient resources to institutions charged with the responsibility of developing the sector.

However, there is need for the government to integrate mining into the economy especially SSM because of the socio-economic opportunities associated with it. It has been established that SSM has the potential to stimulate the development of alternative and complementary productive activities such as agricultural production and/or cottage industries and hence contribute significantly to the overall economy.

The vigour of exploration by the private sector is also always closely associated with levels of demand and prices. Targets for exploration by multi-national companies are firstly selected on the basis of the projected value and levels of demand of the chosen mineral, or its competitiveness in terms of adequacy of supply or the unlikelihood of substitution by other minerals and synthetic products. Naturally the sizes of any given deposit; its grade and geographic location in relation to markets will also significantly affect its competitiveness or viability for exploitation. Other considerations are based on the availability of capital and manpower resources. After these considerations resources are then determined to be saleable reserves. Research and development is then carried out to determine how best to mine and process the material for use in the manufacture of end products. This is illustrated in Figure 21.

The constraints on government's role, which often relate to lack of flexibility due to government budgeting, are not the primary cause of negligible investment in the mineral sector. Development can be sustained with limited financial resources provided the goals for growth of the mining sector are clearly indicated. In Malawi, in view of the financial constraints, it is pragmatic that any mineral development should be scaled to meet local demand. Such small-scale ventures would be within the range of local investment capital both from government agencies and the private sector. The rationale being to meet limited demands, build-up appropriate know-how in stages, create some jobs and contribute to industrial growth in such a manner as to avoid unplanned distortion of the structure of the economy.

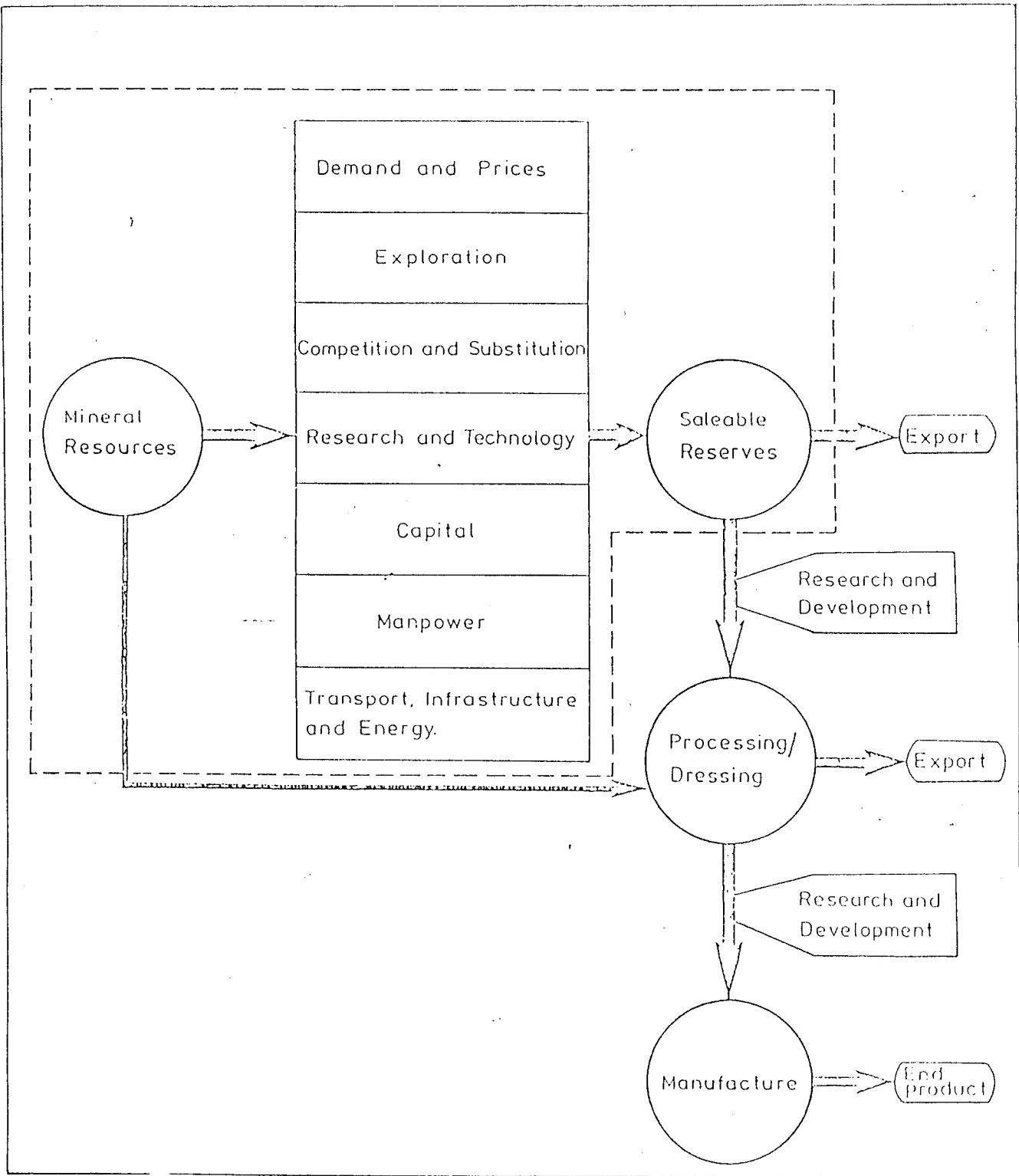


Fig.21: Factors Affecting Development of Mineral Resources

Source: Geological Survey Department

4.2.2 Government Policy

Despite the geological potential in most African countries, policies unfavorable to investment also have had a serious impact on mineral development. Economic problems have forced a large number of countries to reappraise their policies with a view to changing the unfavorable investment they offer (Raj Kumar 1990).

Malawi has the potential for developing SSM and mineral processing industries. However to date the performance of the mineral sector has been below its potential throughout the years. The reasons for poor performance can be traced to past policies, which placed too much emphasis on agriculture. When Malawi attained Independence in 1964, it had no mining industry. Subsistence agriculture and the export of labour to Zambia, Zimbabwe and South Africa dominated the economy. During the evolution of the Development Policy, the view was that Malawi's economic future must relate to agriculture and this was dictated by the country's resource endowment, namely relatively abundant fertile land and a hardworking people. The general policy accorded to productive activity, therefore, gave specific priority to agriculture. At the initial stage this was justifiable, as the country needed to establish an economic base. With time, however, the government needed to look at the development of other sectors such as mining that could contribute to the economic development of the country. Over the years government institutions such as Geological Survey and Department of Mines have been working hard in sensitising government to recognise the role that mining could play in contributing to the economic development of the country. This has led to improved budgetary allocations, shown in Figure 22, to the Geological Survey Department for exploration activities from the 1990s. As it can be noted from Figure 22 there has been a sharp increase in exploration expenditures from

1994. This is due to an influx of international companies. This influx has been made possible due to changes in government's economic policy including liberalisation of the economy, removal of the Forfeiture Act and the introduction of multiparty democracy in 1994.

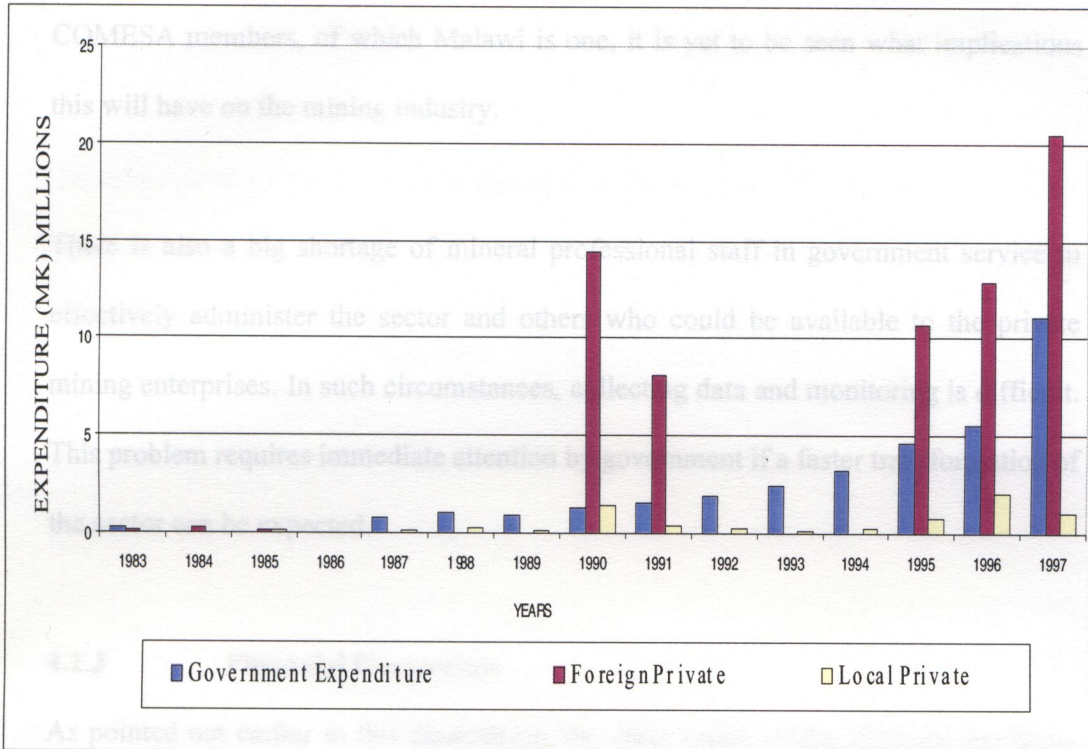


Fig.22: Exploration Expenditures in Malawi Kwacha 1983-1998

Source: Malawi annual Mining Economic Report 1998-1999 vol. 2.No. 1

It has also to be pointed out that one of the main goals of third world countries like Malawi is to find local substitutes to replace imports from other countries. This also should apply to minerals and their products, which derive from the mining industry, and in this particular instance from the SSM industry whose potential in Malawi has

been outlined in section 4.1. However, it has been noted that as long as it was easy to import minerals and their products (even without licences), there was no incentive and pressure for potential local consumers to substitute imports with local products. This situation remained the same over the years because the Malawi Government never attempted to force the pace of import substitution by introducing high levels of protective tariffs. Now with the introduction of the free trading zone among COMESA members, of which Malawi is one, it is yet to be seen what implications this will have on the mining industry.

There is also a big shortage of mineral professional staff in government service to effectively administer the sector and others who could be available to the private mining enterprises. In such circumstances, collecting data and monitoring is difficult. This problem requires immediate attention by government if a faster transformation of the sector can be expected.

4.2.3 Financial Constraints

As pointed out earlier in this dissertation, the other aspect of the financial challenge relates to the inaccessibility of investment capital by small-scale miners, a major constraint affecting the SSM entrepreneur and a major limiting constraint to the growth of the SSM. Generally financing of SSM has to cover the whole range of necessary investments and working capital expenditures. It starts with financing the costs occurring during the initial prospecting stage and is required for setting up the plant that the actual mine will be consisting of (Grundstofftechnik GmbH Preussag Ag Metall, 1992).

Now, commercial banks, local and multi-national have traditional credit requirements and they become stricter in business ventures where they have little or no control. The other problem is that commercial banks, which are in a stronger position to assist the SSM sector, do not have in-house expertise as is the case with the agricultural sector when it comes to banks providing loans. The result of this is that at present in the absence of informed judgement, deserving applicants get their applications routinely rejected.

The other problem for the small-scale miner to access financial resources is that there is no provision for loan guarantees which is the first step to achieve funding SSM ventures since commercial banks lending conditions as to provision of collateral are hard to meet. Small-scale miners usually fail to provide collateral security. To protect their interests, commercial banks insist on security in the form of saleable assets and, therefore, depositing a mineral licence or some other mineral right is not acceptable since the undeveloped mine or even a developed mine is not a readily disposable asset.

4.2.4 Technological Constraints

The other constraint to development of the SSM sector relates to the technological challenge. Technology and mining are inseparable. Technological development is a product of mining while mining development and exploitation, in turn, requires the application of technology. The use of appropriate technology in mining projects is fundamental in meeting the following objectives:

- Achieve high productivity, efficiency and profitability.
- Prevent mine closures through loss of access to the ore body.
- Avoid environmental damage.
- Ensuring safety.

The use of poor technology in SSM operations in the country, therefore, tends to work against the achievement of the above objectives, thereby hampering the overall development of the sector.

4.2.5 Marketing Constraints

Effective marketing is also critical to the success of any SSM venture. Most small-scale miners, especially gemstone miners are confronted with marketing constraints because markets for gemstones are specialised and with the products being ornamental, the value tends to be variable and unpredictable. As such small-scale miners end up being notoriously shortchanged when they sell their products. For gemstone miners the other problem is that of direct access to the markets. As a result they easily become victims of unscrupulous middlemen who grossly underpay them for their products.

For producers of industrial minerals the problem is that of economies of scale. The low margins associated with marketing low value and bulky mineral products impose market limitations. In Malawi, this problem is compounded by the small size of the local market for industrial minerals and products.

4.2.6 The Gender Factor

The gender factor is also a limiting constraint in women participation in SSM. It is encouraging, however, to note that in Malawi for the first time the Malawi Women Miners Association has been formed, launched on 1st August, 2000.

These problems need close attention when developing SSM, particularly in preparing a sectoral plan. Table 15 outlines a summary of some of the findings on SSM in Malawi.

Table 15: Summary of Findings on Small-Scale Mining in Malawi

MINERAL	LOCATIONS	GENERAL TECHNIQUES EMPLOYED	PROBLEMS IDENTIFIED
Gemstones: ruby and sapphire	Chimwadzulu	Shallow pits. Use of simple hand tools. Mechanised screening and washing plant	Lack of security. Poor recovery. Unsystematic mining. Undervaluing of stones
Aguamarine and amethyst	Mzimba	Use of simple hand tools (picks and shovels) washing and sieving done manually	Serious deforestation and encroachment in forestry reserves. Abandoned pits which are an environmental hazard. Lack of knowledge of true market value of stones. Illegal buyers.
Agates	Chikwawa	Alluvial workings Use of simple hand tools	Serous soil runoffs and hence sedimentation in rivers and streams
Building, construction stones and sands	Around all major towns and cities	Mostly mechanised Drill-blasting methods, crusting and screening. Use of simple hand tools for sands	Dust, noise and blast vibration. Beach erosion due to sand dredging from beaches along lake Malawi (Mangochi, Salima and Chipoka)
Limestone	Balaka, Lirangwe	Simple hand tools. Comminution by use of hammers. Use of traditional kilns wood fuel fed	Low productivity. Contribution to deforestation due to dependence on wood fuel
Coal	Rumphi	Drill-blasting methods. Use of wheelbarrows for transportation out of the mine. Mechanical hoist from entrance to loading site	Low productivity due to poor equipment and management. Too many changes in management.

CHAPTER FIVE

5.0 Promotional Strategies

The current Mineral Resource Policy has some weaknesses, which have to be addressed when formulating a new policy. Firstly, the Mineral Resource Policy does not address the SSM sector and its pertaining problems. For example, the policy only refers to SSM when it says that it will aim to design and execute packages of financial assistance, training and technical extension services to viable and new SSM ventures. However, the policy does not define policy strategies to carry this out. The policy also does not define policy directions and strategies that will guide, direct and encourage mineral development and exploitation such as:

- Fiscal regime.
- Legal and regulatory framework.
- Institutional framework support.
- Marketing.
- Environment.

The policy does not also define strategies to encourage mineral processing which is an important factor in adding value to minerals.

After recognising the inadequacy of past policies, the government faces the challenge of initiating reforms and restructuring of the mineral policy to revitalize the mineral sector in a similar approach to its policies on agriculture and forestry. To achieve this, the government needs to come up with a mineral sector development policy to

establish a road map for achieving the sectoral objectives. Where SSM development is concerned the main objectives of the restructuring process should be to:

- regularize and improve SSM by establishing enabling legal, regulatory, institutional, financial and marketing arrangements for the orderly development of this sector;
- ensure that economic benefits accrued from mining supports sustainable economic and social development by developing and strengthening linkages; between mining and the economy; and
- address the adverse social and environmental impacts of mining development such as health, safety and environmental concerns.

In order to achieve these objectives the restructuring process should come up with policies which recognize the following as national challenges:

- to raise significantly the contribution of the mineral sector to the national economy and increase the Gross Domestic Product (GDP);
- to save foreign exchange by substituting imports;
- to increase Government revenues;
- to create gainful employment and provide alternative sources of income particularly for the rural population through the mineral sector and
- to ensure environmental protection and management.

At 0.9% contribution to Gross Domestic Product (GDP), the mineral sector does not take the position it should or could take. Presently the target of the Department of

Mines is to improve the mining sector's contribution to GDP to over 3% (Annual Mining Economic Report, 1998-99). With successful development of the SSM industry in Malawi one can visualize an increase of over 5% contribution to GDP of this sector. To achieve this, great efforts have to be made in all fields associated with this sector.

Based on the objectives outlined above, a development strategy and plan of action should be drawn up. Some recommendations on this are outlined in the sections that follow.

5.1 Financial Constraints

Financing of SSM can be done through increase of share capital, providing of loan facilities or supply of technical know-how and equipment as in plant hire schemes. In case that local lending institutions cannot provide the necessary Forex, the small-scale miner can seek to attract foreign partners which should contribute either through buying the necessary equipment or providing Forex by taking up shares. Partners, as shareholders of SSM ventures could either be a private foreign investor or a development financing institution. Such joint ventures offer a less rigorous instrument for raising investment finance.

In Malawi there already exists a well-established structure of institutions or organisations actively involved in assisting the development of small and medium scale entrepreneurship in Malawi. By the late 1970's it had become clear to government that the large-scale enterprises could only make a limited contribution to

the growing requirement for off farm employment and began to devote more attention to the promotion of small-scale enterprises.

A 1986 survey of 1,400 small-scale enterprises helped define characteristics and identify needs. In response to the need for credit business and technical advisory services the government established a Small-Scale Industry Unit within the Ministry of Trade and Industry together with a number of institutions. These institutions are as follows:

- Investment and Development Fund (INDE-FUND) a soft loan branch of the Investment and Development Bank.
- The Small Enterprise Development Organisation of Malawi (SEDOM) which focuses on smaller loans often supported with some training and advice.
- The Malawi Union of Savings and Credit co-operatives (MUSCO) which overviews a number of individual credit unions.
- The Malawi Entrepreneurs Development Institute (MEDI) which provides training courses for Malawians in enterprenuership and technical skill development.
- The Development of Malawian Traders Trust (DEMATT) which was established as a business advisory service organisation.

Although these organisations have had little contact or experience in financing mining projects, they can easily extend the service to mining if greater emphasis is given to the sector by government than is the case at the moment. These organisations have the advantage of having the infrastructure already in place with most having offices in most of the district centres. Here government could play the important role of an intermediary between the organisations and small-scale miners by providing

professional advice as most of these institutions would not fully appreciate the economic potential of a mining project. Government will also need to undertake an awareness campaign for these institutions to realise the economic potential of the sector.

The other approach would be the improvement of access to loans from formal financial institutions such as banks by the small-scale miners. This is also where government can come in to assist the miners in preparing the data of the miner's project in a presentable way enabling the lenders to evaluate the project. This means that the financing of SSM already starts with financing of feasibility studies. Government can assist in this area as well with technical support by providing equipment-lending facilities such as plant leasing schemes, geological and laboratory services. This type of government technical assistance can substitute certain amounts of investment and working capital. This form of capital substitution contributes to initial work for assessment of reserves and subsequently to prepare feasibility studies for obtaining follow-up financing. Considering that government understandably does not have the resources to implement the suggested measures donor assistance can be sought. This is where funding programmes by the European Union such as the EDF SYSMIN can play an important role. Recently, Namibia and Zambia have benefited from this arrangement.

Competence and expertise on the side of the local financing institutions is equally of high importance for financing SSM. As local commercial banks are often unable to assist with financing due to lack of experience with SSM projects, government could assist with training and information schemes. This can be implemented on the

strength that the Commercial Bank of Malawi, for example, has employed a number of University graduates with Degrees in Agriculture to assist the Bank in providing loans to farmers. One would wonder then why the same kind of arrangement or other alternatives cannot be extended to small-scale miners by the banks?

A Plant Hire Scheme can also be an important part of technical assistance substituting equity and working capital and it is imperative that the scheme hands out a wide range of equipment including heavy-duty machinery. Government needs to facilitate the implementation of the scheme (which already has been under consideration for sometime) to provide plant and equipment hire to small-scale miners. It is noted that the equipment used in mining and processing operations such as in gemstone mining and limestone quarrying is too simple and not conducive to large volumes of production. Financial assistance could be sought from EDF SYSMIN or European Bank to support the scheme, which should be operated on an accommodating commercial basis. The Plant Hire Scheme could give small-scale miners the opportunity of hiring machinery for mining and processing which they cannot afford to buy. Provision could also be made to allow them to buy these items at any point during the hire contract. However, it has to be pointed out here that this scheme has suffered a lot of setbacks in countries where it has been implemented. For example, there have been problems of lost equipment, which cannot be substituted due to a high rate of non-payment for hire charges. At times the funds at hand are not sufficient to maintain equipment that was returned in bad shape. The scheme will, therefore, require a fully equipped stockyard, sufficient skill and capital for maintaining the equipment and a perfect monitoring of hire charge payments and equipment returning duties. To achieve this and to enlarge the capital base of the Plant Hire Scheme, it is

imperative to incorporate the scheme as a private entity and involve different groups already engaged in small-scale mining operations or professionally operating plants. It has to be acknowledged, however, that a Plant Hire Scheme can only cover certain areas of financial demand. The scheme cannot, for example, substitute working capital, which can only be offered by professional financiers.

Indirect as well as direct financing for SSM ventures is also obtainable from International Financing Institutions. Important for acquiring their financial assistance is compliance with the requirements being set out by these institutions. In general terms, in order to obtain financing either from International Financing Institutions or from banks the small-scale miner has to follow certain basic requirements. Appendix VIII gives a list that represents the main topics on which banks or other institutions may need clarification to finance a mining project. From these, it is pretty obvious that it will require professional input for a small-scale miner to come up with such type of information. This then can only be possible if finances are available to pay for the professional services.

Recently the PTA Bank announced that it had extended low interest loans to Malawian businesses. It announced a new loan facility to finance commercially viable projects in the country at below - market interest rates. While bank-lending rates in Malawi are currently hovering around 48%, the PTA Bank loans will attract a 12% interest. The PTA Bank provides financing to projects in the following priority sectors: agri-business, manufacturing, infrastructure (energy, telecomms and transport) tourism and mining. This is an opportunity the small-scale miners in Malawi should utilise.

Another option would be to create a Loan and Cash Grant Scheme like the one in existence in Zimbabwe. The Department of Mines should manage this loan scheme, which will be in charge of the allocation and monitoring of the loan assistance scheme. The initial monetary input can be sought from international organisations e.g. EDF SYSMIN and others and have one local financial institution to be disbursing the funds. The loan assistance could be provided based on the merits of the project. Repayments from the project loans could be ploughed back to the Fund to create a revolving fund thereby creating a sustainable and institutionalised source of funding for mining projects.

5.2 Legal and Regulatory Framework

Although the current legislation in Malawi can be described as “friendly” to small-scale operators, by having separate provisions of licences for SSM, it is not entirely conducive to the operations of small-scale miners. First and foremost there is need to define SSM in mining law and regulations. This will entail a regularisation process which aims to strengthen the legal rights of small-scale miners. This will require preparing a set of mining regulations that will set out the position, the rights and the duties of the small-scale miner. This will in a way contribute to the formalisation process of the sector.

The proposed revision of the Mining Act should, therefore, aim to remove restrictive and unnecessary discretionary provisions affecting the development of small-scale mining. This will mean having special sections in the mining laws and regulations explicitly dealing with and written for the small-scale operator; written using easily understandable terminology. This will entail having a creditable, fair, clear and

unambiguous legislation that will effectively inform and motivate small-scale miners, as they become active investors in a sustainable mining industry.

The new Mining Act should also make provision for the establishment of a Mining Advisory Committee within the Ministry to advise the Minister on formulation of policy relating to the development of the mining industry.

Government should also consider the decentralisation of mining administrative procedures. This could be done by the establishment of zonal mines offices. The licensing procedures should also allow for prompt issuance of licences.

A representative in the zonal offices could issue Non-Exclusive Prospecting Licences (NEPL) and Mining Claims could be issued by the Commissioner for Mines and Minerals without reference to the Licensing Committee or these could be issued by a representative at the zonal offices. This could lead to reduction of bureaucracy and lessening of complexity in application procedures. In many cases investment lags behind because of red tape and procedural delays in the investment approval process.

Past experience has also shown that negotiations for reaching mining agreements take too long to finalize and also that the Licensing Committee does not meet as regularly as it is required. This is largely because the spectrum of representation is too wide. There is need therefore, to reduce the number of departments involved in approving licences and reaching mining agreements. The Ministry responsible for mining should be given greater powers to administer the issuance of licences and to conclude mining agreements. The Mines and Minerals Act 1981 has also some flaws that have

contributed to the under- development in the minerals sector. These flaws will have to be addressed by the proposed new Mines and Minerals Act. For example, in the term and renewal of Non-Exclusive Prospecting Licence the maximum period especially when prospecting for gemstones, should be specified. The high possibility that the holder of a prospecting licence for gemstones may, in the course of carrying out prospecting operations, recover gemstones would allow the prospector to use the prospecting licence for mining by just renewing the licence. A prospecting licence for gemstones should, therefore, only subsist for only one year from the date of grant and should not be subject to renewal as is the case in most countries.

The Mines and Minerals Act 1981 is also silent on what should happen when the holder of a prospecting licence for gemstones recovers gemstones in the course of his prospecting operations. There have been a number of cases in the country whereby holders of Prospecting Licences use the licences to actually mine gemstones.

In Tanzania, a new licence for gemstone prospectors called *Special Mining Licence* has been introduced because of similar reasons. In Zambia, a *Gemstone Mining Licence* is issued. Consideration should, therefore, be made for the possibility of combining the issuance of a prospecting licence for gemstones and mining licence into one licence the way it has been done in Tanzania and Zambia.

There should also be provision in the new Act that a holder of a dealers licence (Reserved Minerals Licences) should keep full and accurate records and accounts of all transactions undertaken by him/her as a dealer. The holder of a dealer's licence who within a specified period fails to disclose receipts for payment and evidence of a

certain amount of minimum turnover should be disqualified from obtaining a renewal of the licence. This measure could possibly improve the marketing of gemstones in the country.

The possibility of introducing a Mineral Deposit Retention Licence should also be considered. This type of licence could resolve problems which arise when a prospector locates a mineral deposit which is uneconomic to develop immediately. It will provide the retention of rights to a discovery without an immediate obligation to mine, giving an element of flexibility in forward planning and may serve as a reward to successful exploration efforts. One could apply for a retention licence on the grounds that:

- (a) one has identified a mineral deposit within the prospecting area which is potentially of commercial significance and
- (b) the mineral deposit cannot be developed immediately by reason of technical constraints, adverse market conditions or other economic factors which are, or may be of a temporary character (Murray,R.1993).

Government will also have to design provisions to overcome problems caused by landlocking practices by some rights holders to release worthwhile prospects for the benefit of active investors. In the same vain government should come up with an effective way of dealing with dormant licences. This can be done by allowing transfer of rights.

5.3 Fiscal Incentives

The fiscal regime accorded to the mining industry should be competitive and attractive to attract investment in the sector. In view of the peculiar risks attached to mining projects it is recommended that a softening of the taxation be considered in the early years of a project. The government should institute fiscal incentives such as low taxes and duties, which will encourage the exploitation of industrial minerals for local industry and to substitute for imports. Fiscal incentives such as lower taxes or tax rebates should also be used to encourage further processing of minerals. Though well intended to encourage local processing of gemstones, a high royalty rate of 10% on unpolished stones exports as the case is now in Malawi encourages smuggling and consideration for its reduction should be made.

A forex retention scheme given to exporters should also be introduced to encourage investment in the sector. Exporters should be allowed to retain their export earnings in forex. Special privileges should also be accorded to investors based on the contribution the project is likely to make to the economy in such areas as foreign exchange earnings or savings, technology transfer, creation of employment, use of local materials and others. To some extent any of these can be traded off with the fiscal regime. The Malawi Investment Promotion Agency (MIPA) could be charged with the responsibility of providing such privileges based on an application made by the potential investor. This could be worked out in collaboration with the Ministry responsible for Mines and Minerals.

Some suggestions made to improve the fiscal regime in Malawi by Engineering Associates (ST) Limited, 1991 were based on financial modeling done applying fiscal

terms existing at that time. The internal rate of return and the Net Present Value (NPV) realized for a typical mineral project (such as a small and medium gold mine), when the fiscal measures existing at that time were applied, suggested a marginal project. The 15% withholding tax on dividends paid by foreign investors had a marked negative effect on the investor's cash flow as illustrated in Figure 23 and when an import duty of 20% was applied a project's attractiveness was substantially diminished as illustrated in Figure 24. A corporate tax rate of 45% also brought the Net Present Value (NPV) of the total equity cash flow too close to zero as illustrated in Figure 25. The results of this analysis should only be taken as an example being mindful of the fact that each project will have its own cashflow characteristics. However, it is an established fact that the level of taxation affects the initial investment decision on any mineral deposit. The present fiscal terms may have reduced some of the above negative effects to some extent but after several years of stagnation an offer of very attractive fiscal incentives is what the country needs to stimulate investment in the mineral sector.

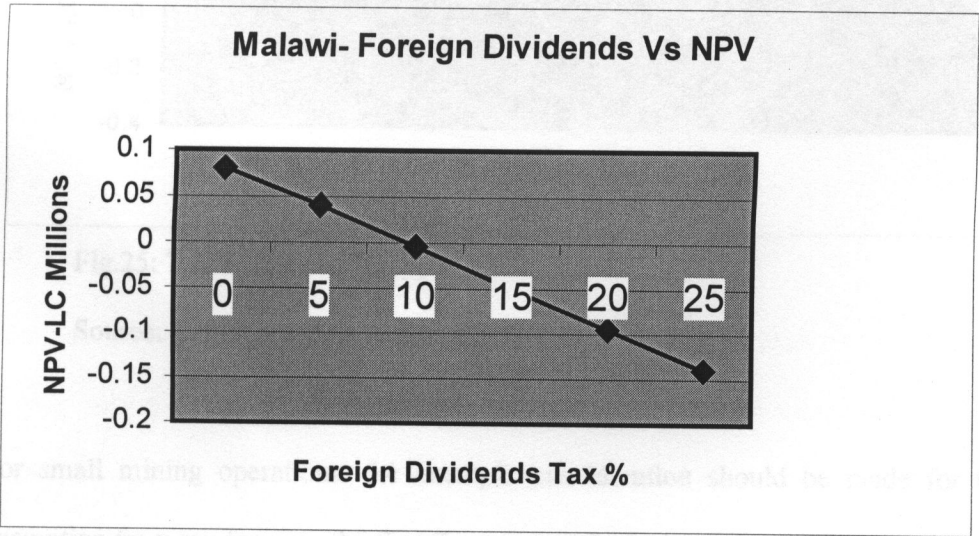


Fig. 23: Foreign Dividends Vs NPV.

Source: Engineering Associates (T) Ltd, 1991

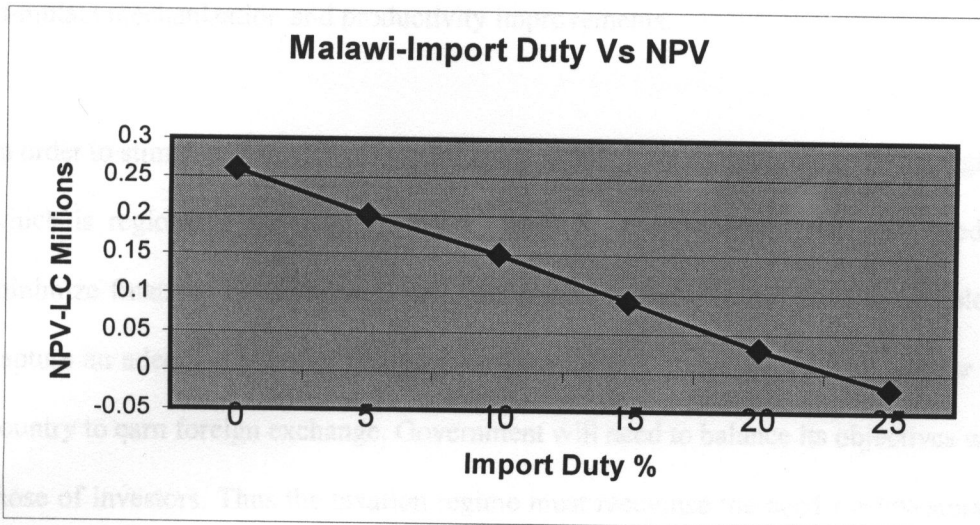


Fig. 24: Import Duty Vs NPV

Source: Engineering Associates (T) Limited, 1991

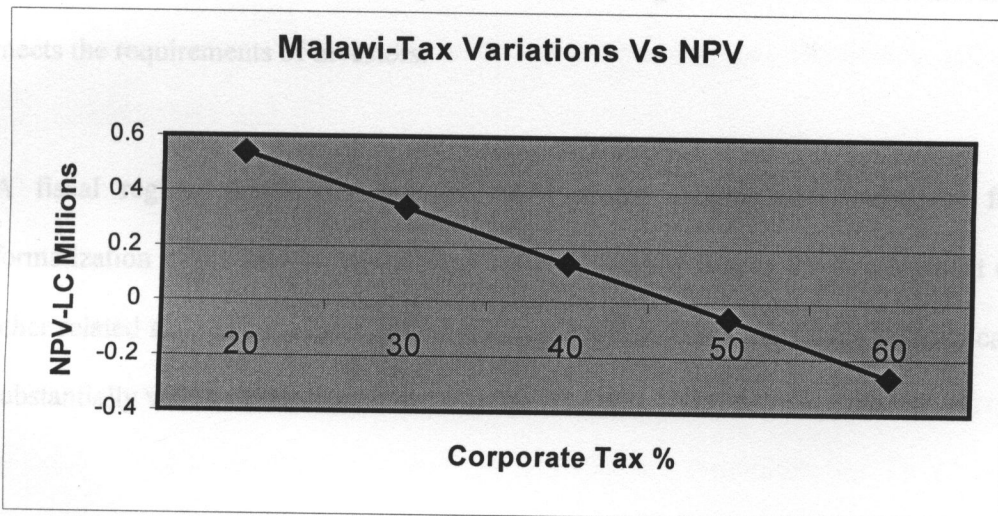


Fig.25: Tax Variations Vs NPV

Source: Engineering Associates (T) Limited, 1991

For small mining operations, for example consideration should be made for the exemption from tax for, say, the first five years and may be at a rate of one-half of the

rate applicable for the next five years. Incentives for import of equipment will also stimulate mechanization and productivity improvements.

In order to stimulate investment in mining by establishing an appropriate fiscal regime which is regionally and internationally competitive, government will still need to minimize financial risks and outlays. The fiscal regime will still have to be able to capture an adequate share of the revenue from mining in the form of tax and for the country to earn foreign exchange. Government will need to balance its objectives with those of investors. Thus the taxation regime must recognise the need for investors to recover their exploration and development expenditures and to meet other financial obligations with creditors and suppliers. In other words, the government should be careful to formulate a fiscal package that assures it high revenue but simultaneously meets the requirements of investors.

A fiscal regime that applies to the SSM sector should have incentives for formalization of the sector. As pointed out earlier, SSM fosters the development of other related support industries, which with appropriate fiscal incentives in place can substantially widen the tax base.

5.4 Institutional Framework Support

Since government is a regulator, promoter, facilitator and services provider to the mining sector, the effective administration of the minerals sector requires a well organised and efficient institutional framework with adequate and competent professional and technical staff, and provision of sufficient resources to effectively carry out the regulatory and promotional efforts of the state. It needs stressing that an

effective institutional framework support is vital for sectoral promotional development strategies. To establish an efficient service oriented mining administration in Government institutions, the following will have to be carried out:

- (a) restructuring of mining institutions to focus their functions in line with their role as government institutions;
- (b) strengthen and motivate the staff of public mining institutions to enable them to properly and effectively administer, monitor, and provide services to the mineral sector;
- (c) establish a formal consultative mechanism between government institutions, private mining companies and the local community;
- (d) strengthen coordination with other interested parties, departments and regional authorities for the effective regulation monitoring and promotion of the sector;
- (e) provide adequate budgetary resources to ensure proper functioning of the institutions; and
- (f) improve service support facilities for the development of the sector.

The government will also need to strengthen the government minerals departments in terms of professional manpower and equipment especially the Department of Mines so that they can more effectively carry out their assigned responsibilities. To achieve this government will have to work out a systematic training program, which will produce a number of minerals graduates on a regular basis. The University could adjust its courses to produce fully-fledged geologists. A greater number of mining and processing engineers should be trained and they could continue to be trained in SADC member State Universities and elsewhere. After training, government should also be able to retain the staff since most leave employment after only working for a

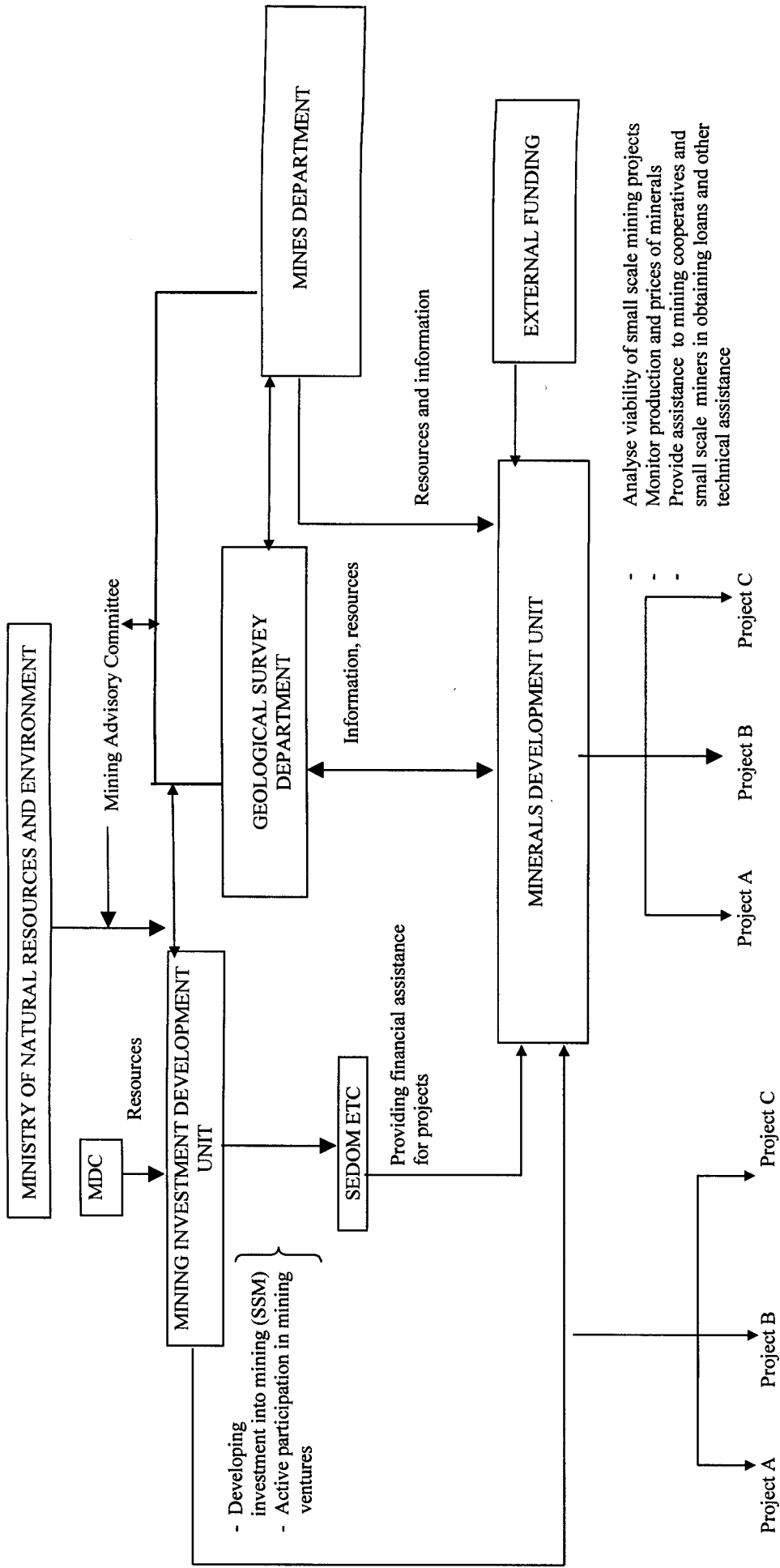
few years due to lack of motivation. To complement the tasks of the Mining Advisory Committee as suggested in section 5.2 above, the government should also establish a multi-disciplinary Minerals Development Unit within the Ministry whose prime task will be to:

- analyze the viability of SSM projects;
- monitor the production and prices of minerals and
- provide assistance to small-scale miners in obtaining loans and other technical assistance.

Apart from government institutions, there is an insignificant number of institutions available for support and services for the mining industry. However these are expected to develop with a growing mining industry. The existing institutions, Malawi Development Corporation (MDC) and SEDOM, which have so far only taken modest interest in mining, should be encouraged to take active participation in the development of the mining industry.

The closing down of MIDCOR was very unfortunate. The coal mine in the north of Malawi, which MIDCOR was instrumental in opening, is a very successful mine up to now. MIDCOR could, therefore, have contributed significantly to the mining industry if it had been given the necessary support and if its activities were more geared to assisting the SSM sector. Government should therefore seriously consider setting up a small but well organised unit to work along similar lines as MIDCOR. This unit could be formed under the management of MDC. Figure 26 shows the institutional relationships of the mineral development departments based on proposals made above.

Fig 26: Institutional Relationships of the Mineral Development Departments



In the area of geological studies and their promotion, it has to be pointed out that the resources base is not the limiting factor; rather it is information or lack of it about the resources base that can be the limiting factor. Once information is available it may be helpful to publicize it to as many companies as possible particularly if the initial assessment shows high potential. Potential investors should be allowed access to geological maps and associated reports. Promotional shows can generate interest. This is evidenced by the first ever-mineral exhibition held in Malawi in September, 2000.

Government could also consider introducing a retention scheme whereby Geological Survey and Department of Mines should be allowed to retain a bigger fraction of the revenue collected from consultancies and licensing fees etc as an incentive and to strengthen their financial capabilities to perform their duties.

The institutional machinery of the mining sector, therefore, requires modernization to respond effectively to the challenges of mining.

5.5 Establishing Formal Marketing Systems

Markets play an important role in the development of the mineral sector. Inadequate market mechanisms and fragmented marketing arrangements are the main cause of smuggling and illegal trading and thus loss of revenue to government. Government should recognise the economic and social benefits that are associated with the existence of formal and stable markets. Their existence plays the vital role of increasing foreign exchange earnings and fiscal revenue. The government should consider the establishment of formal marketing mechanisms in the country.

For the marketing of gemstones, the government should urgently implement the long-standing proposal to set up a gemstone marketing centre where a qualified gemmologist would value and grade stones.

With the gemstone marketing centre offering true market values for the stones, illegal trading would hopefully be minimised. Meanwhile the government should improve the monitoring of gemstone sales and ensure that gemstone dealers maintain up to date records of their purchases and sales. Government should also formulate incentives and regulations to improve the competitive position of the legal exporter over the smuggler. Licensing procedures should also be simplified for traders to encourage formalization of the marketing system.

As an incentive to promote the exportation of processed gemstone products, no royalty should be charged for cut and polished stones and only charge a modest 5% or so for uncut stones. Another incentive would be to allow exporters to keep their export earnings in foreign exchange.

To stimulate the export of minerals through formal channels the government should consider permitting dealers to pay taxes such as royalties after the sale of the minerals. The situation now is that exporters are required to pay the royalties due before exporting the minerals.

5.6 Training and Extension Services

As stated earlier in this report the lack of basic skills in mining and technical know-how is one of the major problems affecting the development of small-scale mining in Malawi. In order to address this problem government will have to strengthen field advisory services to assist miners in geological and mining problems in the mining districts. This of course, calls for the allocation of enough professionals and technicians to zonal offices and the departments in general and the provision of adequate resources. This will also require organising regular short courses and seminars to train miners on basic exploration and mining techniques with emphasis placed on efficient and safe extraction methods, environmental protection, record keeping and basic business management. This could be complemented with field demonstrations, to provide on-site training with the aim of improving productivity thereby maximizing the incomes of the miners. This is because on the technical front, mining methods are presented in a technically academic way which is beyond the grasp and comprehension of the average hands-on miner. This, therefore, calls for training by example since live models of successful small-scale mines offer the best form of training.

In Malawi, development in other sectors such as agriculture and forestry has been accelerated with guidance from government based on incorporated programmes such as extension services for farmers in rural areas. Extension services should, therefore, be adopted in efforts to promote SSM in the country.

The above will call for coordination between the Department of Geological Survey and that of Mines in the provision of the field advisory services. This can work better

by establishing a supervision team comprising geologists and mining engineers, the members of which will frequently visit the mines to see the orderly conduct of the mining and give advice, where appropriate.

The miners will have to be encouraged to form associations to provide a forum for consultations between them and the government in the provision of the training and extension services and also to lobby for favourable legislation.

5.7 Future Plans by the Department of Mines

The Department of Mines has outlined some of their future plans aimed at developing the minerals sector in the country as follows (Malawi Annual Mining Economic Report 2000):

- Analyse the dimension stones resources potential of Malawi.
- Look at possibilities of producing bottles and glass from the silica sands of Mchinji and Lake Chiuta areas.
- Look at ways of commercially producing chalk from Dowa gypsum, sandpaper from Mwanza-Thambani corundum and fertiliser from Tundulu Phosphate.
- Look at possibilities of exploiting the pyrite resources with the view of producing sulphur and/or sulphuric acid.
- Encourage the exploitation of uranium at Kayerekera.
- Study the ceramics/pottery industry to see how it can be improved.
- Conduct awareness campaigns on the mineral potential of Malawi.
- Create a strong institutional framework in the mineral sector.
- Establishing a *National Small-Scale Mining Enhancement Programme*.

If the above outlined plans could be implemented this could inevitably address some of the problems of small-scale miners and significantly contribute to the strategies for developing the SSM sector in Malawi.

CHAPTER SIX

6.0 Role of Various Stakeholders

The key objectives for the development of the minerals sector are to maximize the extraction of economic rent, in terms of government revenue through taxation and generation of foreign exchange, and to use the subsequent economic growth to promote greater economic linkages between the various sectors of the economy. The aim is to reap the full potential of the rent from mining in such a way that the proceeds and outgoings in terms of foreign exchange integrate into the overall macroeconomic policy of the country. To achieve all these promotional strategies proposed above it will call for partnership between all stakeholders in the mining industry. With the government playing the pivotal role of directing policy formulation and its implementation, successes can only be achieved with concerted collaborative efforts of independent agencies, private sector organizations, international organizations, training institutions and non-governmental organizations.

The roles that each one of these can play are described in the sections below.

6.1 Government

To achieve any sustainable growth and development in the minerals sector it first and foremost requires government commitment. The government should be committed to:

- provide clear policy guidelines;

- stimulate and promote the various players in the sector to become active participants in the development process ;
- ensure that the sector's growth and development is in line with the intended objectives and goals and
- create an enabling environment aimed at facilitating the accelerated development and growth of a private-sector driven sustainable SSM sector.

To do this government will have to make sure that:

- it practices sound economic and fiscal policies that will stimulate private sector investment in mining;
- it establishes mechanisms to effectively collect taxes, rental payment and fees from mining activities;
- investors and potential investors abide by the existing mining laws and attendant regulations;
- it facilitates and promotes linkages among the various key players;
- it provides the necessary information on the mineral potential of the country and what opportunities are available for investment;
- it carries out basic geological mapping of the country and maintains a world class data base of its mineral resources potential;
- all forms of support and technical assistance are provided to the SSM sector; and
- realistic and appropriate budgetary allocations are made to the implementing government departments.

The role of government can be complemented by other government-related institutions in implementing the SSM sector development strategy. These include the Malawi Investment Promotion Agency (MIPA), Malawi Development Corporation, Financial Institutions (Commercial Banks etc) and Malawi Revenue Authority. These can play the following roles:

(a) Malawi Investment Promotion Agency (MIPA)

MIPA, established by the Investment Promotion Act 1991, has the responsibility to promote, attract, encourage and facilitate local and foreign investment in Malawi. The functions of this parastatal organisation could be extended to include the promotion of SSM. So far the organisation can only be seen to be mainly focusing on foreign investment for large-scale operations in the mining industry. Amendments to the Act can ensure that the services of MIPA can also cover the SSM sector.

(b) Malawi Development Corporation (MDC)

This is a commercial parastatal set up to invest in agricultural, industrial and commercial projects with local or foreign partners. MDC has participated in mining projects in the past and presently its activities in mining are very insignificant. However, with a background in mining MDC can easily adopt the role of assisting to implement development strategies in the SSM sector. This can be done by forming partnerships with small-scale miners in potentially viable projects that will in the process ease the financial problems faced by the small-scale miner. Other roles that this organisation can play have been outlined in section 5.4 above.

(c) Financial Institutions

These institutions include commercial banks and the Reserve Bank of Malawi, which can participate in the implementation of the promotional strategies by playing the role of encouraging the establishment of specialised banks to deal with financing of SSM. The commercial banks can also be encouraged to build in-house capacity, which will enable them to evaluate SSM projects and deal with the financing aspect of such projects. These banks have successfully assisted farmers in securing loans from the banks. This has been done by using agricultural experts employed by the banks to evaluate loan applications and assist accordingly. As noted previously, the existing financial institutions consider the mining sector especially SSM to be very risky and almost as a rule do not offer loan capital to the sector. The financial institutions could be encouraged to adopt similar approaches as they do for the agricultural sector by providing in-house mining expertise or seeking the same from government institutions to assist in the provision of loans to mining projects.

(d) Malawi Revenue Authority (MRA)

This was established by government to combine the functions of the revenue collection departments in government in an effort to strengthen revenue collection. MRA can be instrumental in ensuring that fiscal incentives provided to investors in SSM are granted and properly administered. It can also play the role of ensuring that all revenue due to government arising from mining operations is collected. However, MRA must also be sensitised to handle the difficult problem of illegal marketing and declaration of gemstones by miners.

6.2 Private-Sector Organisations

The role that private - sector organisations can play as supporting institutions in the implementation process of development strategies is invaluable. These organisations can provide services to the mineral sector that can effectively integrate mining into the economy. In Malawi these organisations include the Gemstone Association of Malawi and the Chamber of Mines of Malawi. These organisations can contribute to the formalisation process of SSM by:

- motivating, guiding and organising miners to form working groups;
- assisting miners to secure mining rights and access credits;
- conducting awareness campaigns about potential health and environmental hazards related to mining;
- assisting authorities to curb illegal trading and smuggling of minerals and
- organising miners to attend training programs.

It is well recognised that miners' associations are an important representative vehicle for small-scale miners. From their intimate knowledge of the activities of their members, they are able to lobby for their interests in respect of legislative weaknesses, security arrangements, financial and other capacity-building needs. Stakeholders such as government institutions, donors etc are likely to give greater weight to the problems of small-scale miners once these are conveyed by strong representative associations than by individual miners. Miners' associations can also be a valuable vehicle for establishing priority needs within the sector because they have a first hand grasp of constraints affecting the sector. Government, which has the major task of creating an enabling environment to reduce the high level of dormant licences,

will require the active support of associations in evolving the necessary administrative and legislative changes. For Government to bring about environmental awareness to the miners it can also effectively use the Miner's associations. The environmental issue is a challenge for mining, particularly SSM where a practical formula has to be found that allows it to flourish without damaging the environment upon which it and the rest of society depend for sustainability.

As a group the organizations can have a strong foundation from which they can influence decision making by government. It is also believed that some of the best ideas for improving the minerals sector from time to time could come from the miners themselves.

The Chamber of Mines of Malawi as an umbrella organization can contribute to the proposed promotional strategies by providing advice on matters related to policy and ensuring that beneficial relationships exist between the various organizations in the mining sector.

The Export Promotional Council, another private sector organisation, can also play the role of encouraging the export of minerals and mineral products by proposing to government incentives that will motivate miners. The Council can also assist in advertising to the outside world on what the country has to offer in terms of minerals.

6.3 International Organizations

In Malawi the institutional infrastructure for monitoring, regulating and controlling the form, which the mineral sector development takes, has deteriorated over the years. The government does not have the financial capability to bring about the necessary structural transformation and reforms in the institutions concerned. As such bilateral assistance from international donor organizations can be the best means of bringing about sustainable development in the sector. These organizations include the World Bank, European Union (EU), African Development Bank (ADB) the PTA Bank and the International Finance Corporation among others. These can play the role of providing finances for sector reforms and initiating targeted programmes to deal with the issues and constraints of SSM. Donor agencies are also well placed to supplement government efforts in uplifting the standard of performance to an acceptable commercial level.

Malawi is also a member of Southern African Development Community (SADC) which has already taken initiatives to boost investment in the mining sector within the region. Malawi can also benefit from such initiatives. SADC as a regional body can work towards reducing mineral imports into the SADC area by substituting local production for imports. This can assist countries like Malawi to have access to a wider market within the region for its minerals especially industrial minerals which may have a small market within Malawi itself. Possibilities can also be investigated of conducting individual mining but have one processing plant within SADC as has been suggested for kyanite in section 4.1.10 above.

6.4 Training Institutions

For the development of the SSM sector to be sustainable it will require a regular supply of a qualified work force. This is where institutions such as the University of Malawi and technical schools can offer courses to upgrade professionalism and develop skills.

6.5 Non-Governmental Organizations (NGOs)

Successes of various developmental projects in rural areas are often attributed to the involvement of NGOs. This is because these NGOs have established a strong working relationship with the rural population at the grass-roots level. These strong attachments have worked to their advantage by being able to organise the people to achieve certain goals. When people are convinced that they own the development process, their commitment to success may become easier to secure. With a strong background and experience in rural based projects, the NGOs can effectively contribute to the SSM promotion strategy by:

- helping to establish grass-roots organization of the miners to form working groups to access loans and technical assistance;
- offering miners training in basic business management and the marketing of minerals;
- setting up credit schemes and
- *promoting policy dialogue between the miners and government.*

CHAPTER SEVEN

7.0 Programme of Action

The implementation of the proposed promotional strategies will have to be conducted in an orderly manner which has to be a process following a logical sequence. The approach should be to implement the strategies in stages based on what can be referred to as immediate requirements, short-term requirements, medium term requirements and long-term requirements. This is intended to achieve a satisfactory pattern of development. This approach however, does not attempt to present a blueprint for action but it does represent an attempt to lay a path forward, which may only be used as a guide. In all this government will be required to have a clear and consistent position on a wide range of policies aimed at stimulating development in the mineral sector and to provide useful guidance to the various players in the sector.

7.1 Stage One: Immediate Requirements

Government policy in relation to the development of the mineral sector, SSM in particular, will first relate to the creation of a general climate that encourages enterprise and investment. This will have a number of facets, some of which should relate to the provision of incentives to undertake investment. The actions to achieve these immediate requirements will include:

- putting in place a competitive fiscal regime with incentives that will stimulate investment into SSM;

- reviewing the legal and regulatory framework and enact laws that specifically deal with SSM and simplifying licensing procedures.
- formalising market arrangements for minerals produced by small-scale miners;
- restructure the institutions in government (GSD and DOM) to effectively regulate, facilitate and promote the development of the mineral sector by improving the manpower requirements of the departments;
- putting in place conditions that will allow the formalization of SSM and
- consultation with other stakeholders on policy changes.

7.2 Stage Two: Short Term Requirements

At this stage the critical elements of the mineral policy and proposed changes in the policy will be translated into actions. This will include:

- establishing the proposed Mining Advisory Committee and the Mineral's Development Unit within the Ministry;
- diversification of MIPA's activities to include promotion of investment in SSM;
- establishing a Mining Investment Development Unit within MDC;
- strengthening the capacity of GSD and DOM to effectively administer the Mines and Minerals Act, promote and provide services to the mineral sector and to carry out exploration activities;
- coordinating with other key players in the sector to implement the proposed *components of the promotional strategies.*

7.3 Stage Three: Medium Term Requirements

After formulating policies that are intended to stimulate the growth and development of the SSM sector and their implementation the next stage will involve dealing with some of the problems facing small-scale miners. These include financial and technical constraints, lack of environmental sensitivity and safety measures. The requirements for this stage will be to:

- initiate training programs and extension services for environmental awareness; safety and productivity. This will include on - site training on prospecting and mining and also conducting seminars;
- facilitate the establishment of hire-purchase schemes for mining equipment and access to appropriate technology;
- formalize access to loans by small-scale miners by encouraging commercial banks to provide loans and accept mining rights as collateral and;
- deal with financial constraints by: establishing a revolving fund for small-scale miners, encouraging other credit schemes and creating incentives for miners to pool resources as cooperatives.

7.4 Stage Four: Long Term Requirements

The overall objective of the promotional strategies is to maximise the economic benefit to the nation that can be realised from the exploitation of the country's mineral resources. This will mean ensuring the economic social and environmental sustainability of SSM development. This will include:

- the appropriate provision of economic infrastructure and ensuring that economic constraints to economic activity are kept to a minimum;

- ensuring that skilled manpower is available;
- broadening the distribution of income which has a spatial aspect concerned with urban-rural and regional disparities;
- discouraging rural-urban migration with a programme of infrastructure investment outside the main cities and towns;
- improvement in transport and communications infrastructure with efforts to improve rural transport and commercial services, including the availability of essential goods in remote areas;
- improvement of rural social infrastructure;
- encouraging the development of mineral processing industries especially lapidary and jewelry industries;
- increasing levels of employment and the involvement of women in SSM activities;
- achieve equitable distribution of economic resources by using mineral revenue to promote the development of new mines and stimulate development of other economic sectors;
- developing local lending institutions and equity markets to finance SSM development and
- putting in place sound and effective environmental management systems.

Some of the aspects in this stage are critical to the development process stemming from the realisation that since profits from mining are derived from a non-renewable resource base, they are essentially unsustainable. Long-lasting benefits can only be ensured if the necessarily time limited income from mining operations can be reinvested into more stable activities with a long-term rate of return. Channeling

mining profits into social services and income producing enterprises such as agriculture and small and medium sized businesses, for example, produces integrated development with ongoing, self-sustaining social and economic benefits. The mining industry can also make significant contributions to national industrial development strategies through support to the establishment of peripheral activities particularly those that follow the extractive process such as cutting or polishing gemstones.

CHAPTER EIGHT

8.0 Discussion

In the preceding chapters, a number of issues have been brought to light. Firstly available information spanning over fifty years of regional geological and exploration work reveals that Malawi has a diverse mineral resource base with high potential for exploitation.

The combined vast resources of coal of the Northern and Southern regions provide sufficient coal resources to satisfy the local demand and at the same time export to neighboring countries. However, presently there is still a shortfall in the supply of coal on the market from the local resources. There are also a number of industrial minerals in the country which could be exploited to substitute for imports. On the exploration front kimberlites have been located in the Livingstonia and Mwanza areas which are potential targets for diamonds. Possibilities of finding gold deposits with commercial value in the Kirk Range and Lisungwe Valley areas, Dwangwa in Nkhotakota, Nkhata Bay and Dzalanyama still exist. Significant deposits of gypsum continue to be located in the dambos in Lilongwe and Dowa districts. The medium to high-grade metamorphic rocks of the Central Region of Malawi are yielding significant graphite resources.

Secondly, most of the known targets are, however, small deposits amenable by SSM. If

these deposits are not mined on a small scale then they will not be mined at all as no large mining houses, with large financial and technical know-how can be interested to exploit them. The need to mine these resources also derives from the fact that Malawi imports a variety of minerals and crude mineral products which can be produced locally to substitute for imports. And in view of the small size of the local market these operations must naturally start small. Indigenous investment capital must be directed to exploit many of the resources in great demand locally. It should be possible to raise local investment to exploit these minerals.

The current stagnation in the mining industry in Malawi has nothing to do with lack of resource potential. It has to do with lack of investment, the absence of advanced technology, modern management and technical skills, inappropriate mining policies and lack of political will. These problems can be overcome by creating an enabling investment climate, which is a critical ingredient to success. To do this political decisions must be taken to form a sound and workable policy to ensure the implementation of programmes aimed at capturing and supporting private investment (Fozzard, P.M, 1990).

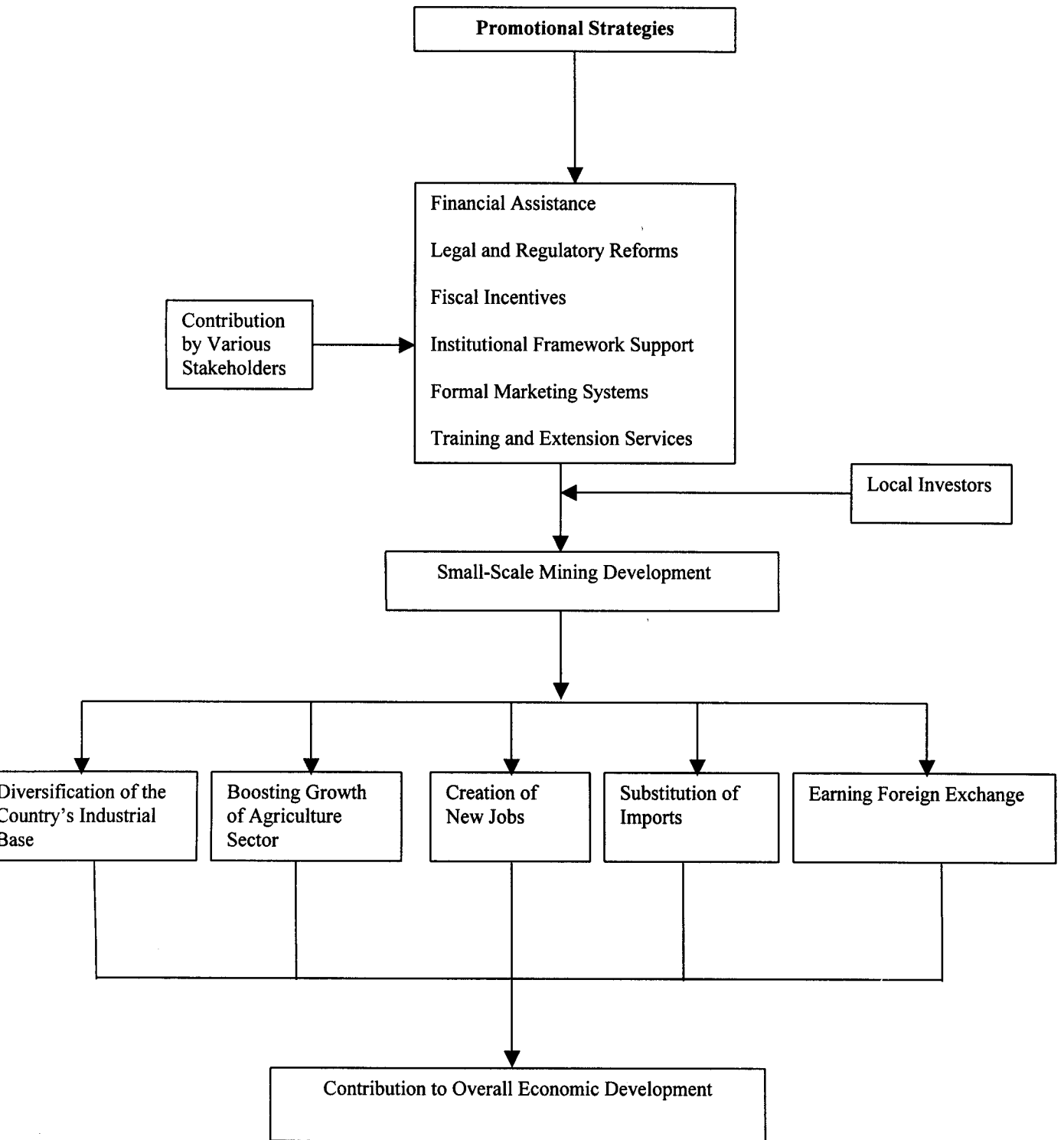
Past policies have been inadequate to place SSM in its right perspective. Accordingly, the performance of the mineral sector has been below its potential. Given changes to the mining legal, regulatory and fiscal regime, movement in the positive direction for the minerals industry will be realised. It is therefore, imperative for government to revise policies that apply to the mining sector with the aim of establishing enabling conditions

for SSM.

It has also emerged from the preceding chapters that to create an enabling environment for the development of SSM specific issues will have to be addressed such as: improving access to credits to small-scale miners, formalising marketing arrangements, and improving institutional framework support. It also emerged in the main text that roles and interactions of various players in the minerals industry are important in directing the transformation and development trend in the sector. It was also pointed out that to achieve a sustainable development process the promotional strategies would have to be implemented in stages.

With the proposed strategies the development of the SSM sector should focus on three separate needs: rural-oriented industries, import substitution and industries to earn foreign exchange. The benefits of exploiting the known mineral resources will, therefore, include diversification of the country's industrial base, boosting growth of the agriculture sector, creating new jobs for the growing labour force, substitution of imports and earning of foreign exchange. The development process model as outlined in the preceding chapters can be summarised in Figure 27.

Fig.27: Summary of Development Model



CHAPTER NINE

9.0 Conclusion and Recommendations

The role of SSM worldwide both in developed and developing countries should not be underestimated. There are over 200,000 people employed in Small Scale Mines in the SADC region which represents more than one third of all employees in mining in the region and more opportunities are envisaged (SKM consulting Associates Ltd, 2000). The recognition of the Socio-political and economic significance of this sector has in fact prompted most SADC countries to initiate programmes aimed at addressing the constraints of poor investment, inadequate skills and expertise associated with the subsector.

Similarly, in Malawi the SSM sector if properly organised and facilitated could sustain significant economic development in rural areas, contributing to the poverty alleviation policy of government with downstream benefits in housing education and health. There is need, therefore for urgent implementation of the proposed promotional strategies as a solution to the predicament of small-scale miners and the overall development of the sector. This is made even more compelling because it is becoming evident that the sector holds the key to the future growth and diversification for the mining sector even at the regional level.

In Malawi, inspite of the country's modest mining history and the present state of affairs within the sector, mining can make a much larger contribution to the country's economy if greater emphasis is given to the sector by government than is the case at the moment. This can be achieved if government declares mining a priority area with concerted effort given to achieving the development objectives of the sector by instituting promotional strategies outlined earlier. Immediate results can be obtained by organising and supporting the gemstone sector. This can be complimented by giving fiscal and other incentives to the gemstone subsector and the industrial minerals subsector to encourage the establishment of industries based on such minerals to substitute for imported materials.

As stated earlier, the large multi-national companies are not likely to take interest in the country's largely small deposits and industrial minerals. However, it is possible that meaningful development of the sector can come from Malawian entrepreneurs and local capital. For this to succeed government will need to introduce an appropriate legal framework, fiscal incentives and other measures that will make mining more attractive to financially able Malawians who will then invest in the country's mineral sector and promote its growth. The country in fact has considerable potential for developing SSM, which if properly harnessed, could compensate for revenue lost from declining tobacco prices.

Some factors that are favourable to the development of a mining industry in Malawi are:

- ◆ The country has been well mapped and the whole country has been covered by airborne geophysical survey.
- ◆ The country has a good geological database obtained through many years of extensive exploration by GSD and other mining companies.
- ◆ Low operational costs in view of low wages.
- ◆ New mining operations could draw on a pool of experienced Malawian miners who have worked in the mines in South Africa.
- ◆ A stable macro-economic policy
- ◆ Minimal requirements for registration of companies.
- ◆ The country has a reasonable road system and a railway line and lake transport system linking the south to the north.
- ◆ Many of the mineral deposits, which are amenable to SSM, are industrial minerals which are of direct value to the populace in many aspects.

As a pre-requisite to the success of the promotional strategies outlined earlier the following recommendations should seriously be considered:

- ◆ Special effort should be directed to the revision of the Mining Act. A committee to deal with this should urgently be formed.
- ◆ Strengthening the government minerals departments in terms of professional manpower, equipment and improved budgetary allocations.

- ◆ Urgently employ the services of a fully qualified gemmologist to handle the problem of valueing gemstones.
- ◆ A comprehensive package of fiscal terms for mining investors should be published.
- ◆ The development of a clear and well-publicised government mining policy and a strategy to implement that policy should be encouraged.
- ◆ Encourage the exploitation of industrial minerals by small-scale miners through technical assistance in providing recovery methods, determining markets or by promoting the establishment of industries that would use industrial minerals.
- ◆ Urgently deal with the problem of financing of SSM projects. From the foregoing chapters it has been established that the overriding constraint that is hindering the development of the sector on the part of the miner is the inaccessibility of both working capital and investment finance. All other negative features such as low productivity and lack of equipment are manifestations of this factor.
- ◆ Ensure effective administration of the enabling legislation, which is as important as the legislation itself.

It also has to be pointed out that mining investments in Malawi have been stagnant for too long, a problem compounded by the lack of a sufficiently developed mining tradition. Special positive measures, therefore, have to be taken to stimulate the interest of investors.

Appendix I: Gross Domestic Product By Sector of Origin At 1994 Factor Cost (MK Millions)

Sector	1994	1995	1996	1997	1998	1999
Agriculture	2,319.4	3,237.7	4,279.7	4,419.8	4,582.8	4,929.2
Small-scale Agriculture	1,674.2	2,331.6	3,386.5	3,314.9	3,609.4	4,094.6
Large-scale Agriculture	695.2	906.0	993.3	1,104.9	973.4	834.6
Mining and Quarrying	43.2	47.2	100.2	106.7	111.9	115.8
Manufacturing	1,597.0	1,684.8	1,661.5	1,672.2	1,659.1	1,679.0
Electricity and Water	149.0	152.0	151.8	160.7	170.5	171.3
Construction	202.3	173.6	218.1	222.3	232.6	241.0
Distribution	2,452.2	2,619.3	2,645.1	2,971.2	3,125.9	3,231.6
Transport & Communication	465.3	492.7	492.8	530.0	529.6	544.0
Financial & Professional Services	760.9	832.1	852.1	917.9	908.4	897.3
Ownership of Dwellings	162.0	166.7	171.5	176.4	181.5	186.7
Private, Social & Community Services	211.2	215.3	236.5	260.1	262.0	263.9
Providers of Government Services	1,113.8	1,197.7	1,167.6	1,200.5	1,220.9	1,248.2
Unallocable Finance Charges	-277.8	-305.1	-312.3	-392.0	-333.1	-328.5
GDP at Factor Cost	9,198.6	10,513.9	11,664.6	12,246.4	12,652.1	13,179.6

Source: National Economic Council, NSO, RBM and Treasury.

Appendix II: Exploration Databases

Geological Maps

Geology of Malawi at 1:1,000,000; 1:250,000; 1:100,000 scales covering more than 80% of the country.

Mineral Resources of Malawi at 1:50,000.

Geological Atlas of Malawi at 1:250,000.

Magnetic Contour Maps

Maps at 1:50,000; 1:100,000; 1:250,000 scales covering the entire country.

Radiometric Contour Maps

Maps at scales of 1:50,000; 1:100,000; 1:250,000 covering the whole country are available for uranium, potassium and thorium.

Electromagnetic Maps

At 1:100,000 scale covering only part of the country

Airborne Geophysical Interpretation Maps

These include Magnetic Susceptibility Colour Plot (MSC), Interpretation Colour Plot (INT) and Radiometric Ternary Colour Plot (TCP) maps at scales of 1:100,000 and 1:250,000 covering the entire country.

Topographic Maps

Maps at a scale of 1:50,000 covering the entire country are available.

Documentation

A comprehensive geological library exists in Zomba at the Department of Geological Survey. The Geological Survey Department has created a mineral resource database with collaboration from the German Geological Survey (BGR).

Other Reports

Geological Bulletins, Memoirs, Records, Unpublished Reports, and Annual Reports of the Geological Survey Department and Department of Mines provide information on geology, exploration history and other relevant geological information.

Claim Areas

The Department of Mines in Lilongwe has detailed information on licence holders, location of claims, area covered by each claim and the status of every claim.

**Appendix III: Malawians Employed In the Mines Of South Africa Under Contract
With The Employment Bureau Of Africa Limited (1969-1981)**

YEAR	NO. OF PERSONS
1969	40,992
1970	61,622
1971	65,951
1972	81,628
1973	76,227
1974	31,650
1975	-
1976	-
1977	18,206
1978	16,431
1979	19,128
1980	16,104
1981	11,921

Source: National Statistical Office

Appendix IV: Minerals with Potential for Development

Economic Subeconomic	LOW IN-PLACE VALUE	Paving and ornamental stone Bauxite Ceramic / Pottery Clays Roadstone Glass sands Brickclays	Lower Costs of Recovery through R & D	Lead minerals Ceramic clays Diatomaceous clays
Economic Subeconomic	STRATEGIC	Phosphate - Sulphur rocks Coal Limestone - for lime etc. Limestone - for cement	Coal, Graphite Phosphate	Hydrocarbons Coal Limestones
Economic Subeconomic	FOREIGN EXCHANGE EARNER	Uranium, Bauxite Rare earths Gemstones Strontianite - Monazite Kyanite Vermiculite	Kyanite Graphite Gold	Kyanite Graphite Base metals Gemstones DISCOVERIES THROUGH EXPLORATION AND R & D

DEMONSTRATED RESERVE / RESOURCES

IDENTIFIED

SPECULATED/HYPOTHETICAL

Increasing feasibility and viability of exploitation

Increasing degree of certainty of existence

Appendix V: Use of wheelbarrows to transport coal. Poor technology leading to low productivity. Kaziwiziwi coal mine, Rumph District.

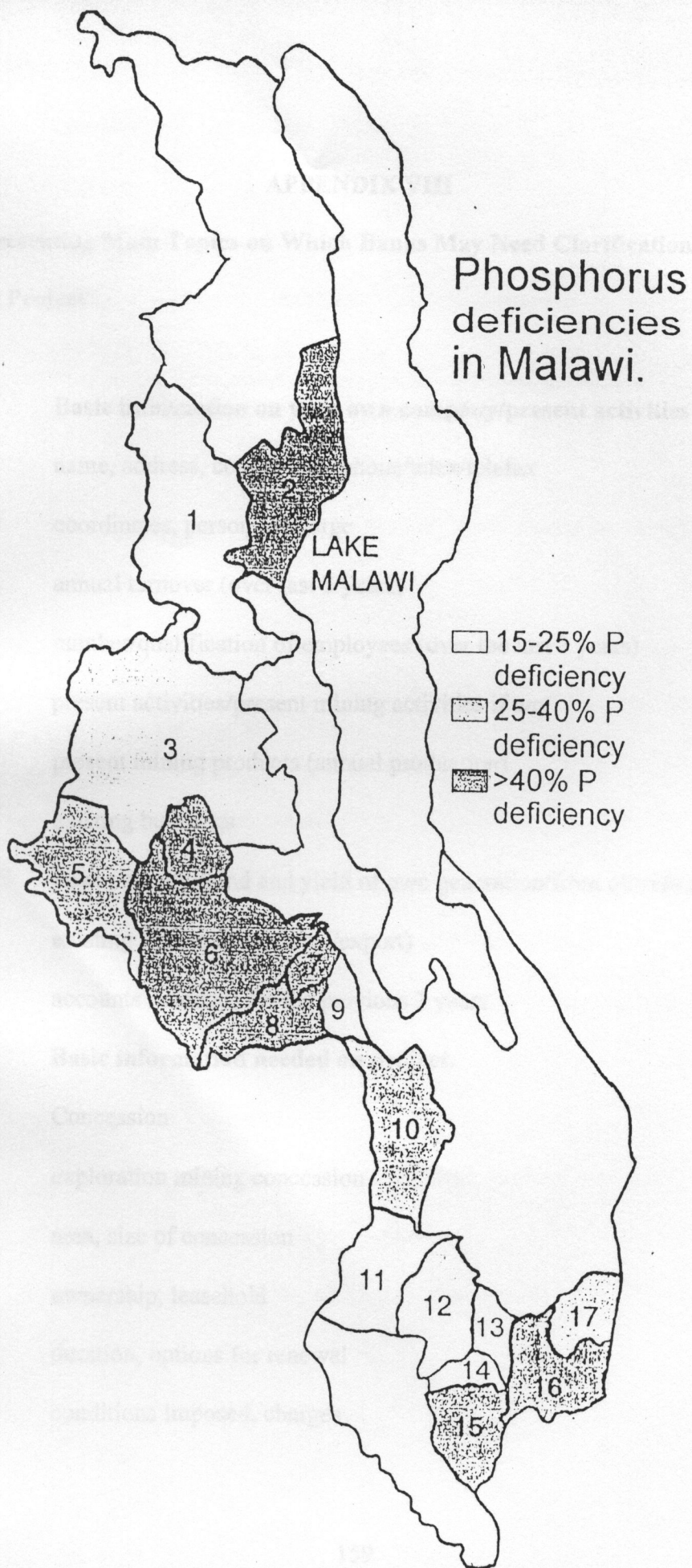


Appendix VI: Entrance to Mchenga coal mine

Phosphorus deficiencies in Malawi.



Appendix VII: Map showing phosphorous Deficient Areas in Malawi
After Mulfer, H. W. 1993



Appendix VII: Map showing phosphorous Deficient Areas in Malawi
After Muller, H. W, 1993

APPENDIX VIII

List Representing Main Topics on Which Banks May Need Clarification to Finance a Mining Project

(a) Basic information on your own company/present activities

- name, address, country, telephone/telex/telefax
- coordinates, person in charge
- annual turnover (over last 3 years)
- number/qualification of employees (over the last 3 years)
- present activities/present mining activities if any
- present mining products (annual production)
- existing buildings
- power supply (kind and yield of own generation/from outside sources)
- existing sales market (local/export)
- accounts (audited) for the previous 3 years

(b) Basic information needed on project.

1. Concession
 - exploration mining concession
 - area, size of concession
 - ownership, leasehold
 - duration, options for renewal
 - conditions imposed, charges

2. Situation and Accessibility

- location
- physiography: mountainous, hilly or flat region
- infrastructure (road conditions; distance to nearest) railway station, harbour)
- amount of rainfall (millimeters per year)
- water-wells (distance, depth, litres per second)
- mining activities the whole year over (if not, during how many and which months)

3. Reserves

- Volume, kind and quality of ore
- List of mineable minerals of deposit
- Details on shape of ore body
- Envisaged method of mining
- Reserves, of which amount proven, probable, possible
- Basis of reserves estimation (drilling, trenching, digging, computer modeling)
- Independent evaluation
- Past mining experience in area (problems: geology, ore distribution, grade control, environment, mining method)
- Old mill dumps (quantity estimated or surveyed)

4. Treatment

- envisaged method of treatment

- technology (proven, new)
 - recovery rates
 - comparison with results of other processes
5. Key Project Data
- 5.1 Technical Data
- total mineable reserves
 - estimated annual ore production
 - stripping ratio
 - average head grade, dilution, recovery ratio
 - estimated annual output
 - output quality
- 5.2 Cost Data
- Production
 - mining costs per unit ore mined
 - hauling costs per unit
 - treatment costs per unit ore treated
 - marketing costs
 - reclamation costs
 - Administration
 - general overhead (management, office, support, consultants, others)
 - fees, taxes royalties
 - insurance, covered risk
 - Total estimated costs per output

5.3 Income Data

- estimated price per output after deduction of transportation costs

5.4 Manpower

- Senior staff, supervisors, labourers, availability

5.5 Sales Market

- export market/local market
- sales prices/turnover
- existing market/expected market

6. Investments (cost)

6.1 Pre-implementation costs

- Studies, evaluations
- exploration costs (sampling, drilling, tests reserve calculation)

6.2 Erection costs

- mining
 - opening, overburden removal
 - infrastructure (e.g. roads, dewatering, ponds, tailings area)
- treatment plant (delivery terms, performance tests, warranties)
- buildings
- others

6.3 Working capital

- minimum cash requirements for day to day operations, spare parts, stockpile, stocks, delivery terms.

6.4 Financing cost, labour costs other items during construction period.

6.5 Time scheduling

7. Envisaged financing

7.1 Structure

- envisaged equity, quasi equity/loans. Due to special risks involved in mining projects a higher than usual ratio of equity /quasi equity (subordinated partner loans) is required to make a project bankable for straight loan financing. The equity/quasi equity portion of total investment costs should in general be less than 50%.
- own contribution through partners
- requested finance from bank

7.2 Securities

- pledges, mortgages, etc
- guarantees by partners/others
- assignment of insurance

8. Other information of interest

- maps
- samples
- photos
- former reports on the deposit and by whom

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