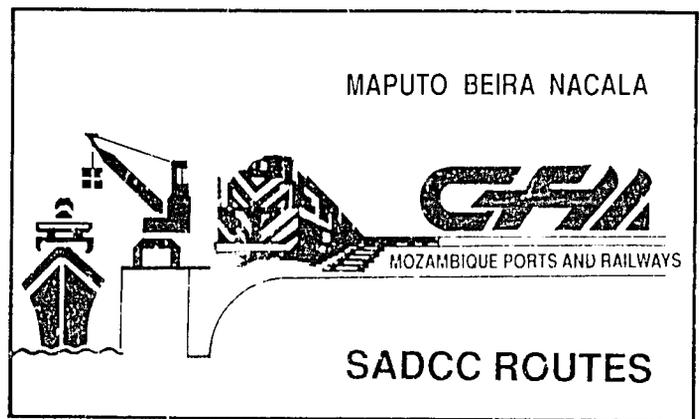


PR ABC 773

MINING

SOUTHERN AFRICAN DEVELOPMENT COORDINATION CONFERENCE



Maputo, Republic of Mozambique
29th — 31st January 1992

MINING

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PROJECT NUMBERING SYSTEM

Projects are identified using an alphanumeric numbering system:

The first three letters indicate the member State:

AAA	-	Regional
ANG	-	Angola
BOT	-	Botswana
LES	-	Lesotho
MAL	-	Malawi
MOZ	-	Mozambique
NAM	-	Namibia
SWA	-	Swaziland
TAN	-	Tanzania
ZAM	-	Zambia
ZIM	-	Zimbabwe

The first digit defines the Sector:

0	-	General
1	-	Precious Metals and Minerals
2	-	Energy Minerals
3	-	Metallic Minerals
4	-	Non-Metallic Minerals
5	-	Water
6	-	Manpower
7	-	Mining Equipment and Consumables

The second digit is a serial number.

ABBREVIATIONS

ADB	= African Development Bank
AGIP Spa	= AGIP Spa
AIDAB	= Australian International Development Aid Bureau
ANG	= Angola
AUS	= Australia
AUST	= Austria
BADEA	= Arab Bank for Economic Development in Africa
BEL	= Belgium
BOT	= Botswana
BRA	= Brazil
CAN	= Canada
CBI	= Confederation of British Industries
CFTC	= Commonwealth Fund for Technical Cooperation
CHI	= Peoples Republic of China
CITES	= Convention on International Trade in Endangered Species
DEN	= Denmark
EEC	= Commission of the European Communities
FAO	= Food and Agriculture Organisation of the United Nations
FIN	= Finland
FRA	= France
FRG	= Federal Republic of Germany
IBRD	= International Bank for Reconstruction and Development
ICAO	= International Civil Aviation Organisation
ICE	= Iceland
IDA	= International Development Association
IDRC	= International Development Research Centre
IDU	= Industrial Development Unit of the Commonwealth Secretariat
IFAD	= International Fund for Agricultural Development
ILO	= International Labour Organisation
IMPOD	= Import Promotion Office for Products From Developing Countries
IRE	= Ireland
ISNAR	= International Service for National Agricultural Research
ITA	= Italy
ITB	= International Tourism Board
ITU	= International Telecommunications Union
JAP	= Japan
KUW	= Kuwait Fund
LES	= Lesotho
MAL	= Malawi
MOZ	= Mozambique
NAM	= Namibia
NET	= Netherlands
NOR	= Norway
NORDICS	= Nordic countries
OPEC	= Organisation of Petroleum Exporting Countries
PTA	= Preferential Trade Area for Eastern and Southern Africa
POR	= Portugal
SADCC	= Southern African Development Coordination Conference
SAFTTA	= Southern African Federation of Travel and Tour Associations
SAREC	= Swedish Agency for Research Cooperation With Developing Countries
SATEP	= ILO Southern African Team for Employment Promotion
SPA	= Spain
SWA	= Swaziland
SWE	= Sweden
SWI	= Switzerland
TAN	= Tanzania
TAZARA	= Tanzania Zambia Railway Authority
UAPTA	= Unit of Account of the Preferential Trade Area
UK	= United Kingdom
UNDP	= United Nations Development Programme
UNIDO	= United Nations Industrial Development Organisation
USSPEC'd	= Unspecified
USA	= United States of America

USSR = Union of Soviet Socialist Republics
WE = World Bank
ZAM = Zambia
ZIM = Zimbabwe

1. **EXECUTIVE SUMMARY**

- 1.1 The Mining Sector continued to pursue its objectives of implementing the Sector Programme of Action and assisting member States in their mineral development efforts.
- 1.2 The SADCC Mining Sector Programme is composed of sixty projects costing US\$83.72 million of which fourteen are completed and thirteen are currently under implementation. About 42% of the financial resources required for programme implementation have been secured, mostly from external sources. The projects in the programme are at various stages of implementation. The funding status of the programme is shown at Annex 2.
- 1.3 A strategy to guide the sector for the period 1991-95 is being developed. In the main, the regional situation has remained almost the same. The sector does not, therefore, expect a major shift in emphasis from the previous strategy. Hence, over the next five years, the Sector will focus on mining industry resource systems, intra-regional trade, manpower training, promotion and development of small scale mining and investment promotion.
- 1.4 As in previous years, consultations with various cooperating partners were undertaken to mobilise resources for programme implementation. These included negotiations with the EC for a Manpower expert and the launching of an Investment Forum for mineral resources in the region, negotiations with CFTC resulting in commitment of funds to four projects, and consultations with the World Bank to organise an Investment Workshop, as a follow-up to the study of Investment in Small and Medium Scale Mining. In addition, negotiations have been initiated with the Nordic countries to secure financial support to examine the environmental aspects of mining activities in the SADCC region.
- 1.5 Cooperation with other SADCC Sectors and the Preferential Trade Area (PTA) continued in order to coordinate efforts in various areas. In particular, consultations with the Manpower Sector with regard to recruitment of a Mining Sector Human Resources Development/Liaison Officer, consultations with the Industry and Trade Sector to follow-up projects transferred to that Sector and consultations with PTA on Iron and Steel programmes and the Metallurgical Research Centre based in Harare.
- 1.6 Workshops and Seminars were organised in the SADCC region. The Sector organised a workshop on Small Scale Mining Technology held in February, 1991 in Livingstone and a workshop on Geochemical Data Interpretation both attended by participants from all SADCC member States. External workshops and seminars were also attended by the Mining Sector. These included, a workshop on the Enhancement of

the Contribution of the Non-Fuel Mineral Sector to Africa's Economic Development held in Harare in August, 1990 under the auspices of the ECA Conference on African Mining organised by the Institution of Mining and Metallurgy held in June, 1991 in Harare and the 5th Regional Conference on the Development and utilisation of Mineral Resources in Africa held in March, 1991 in Ougadougou, Burkina Faso. These were meant to increase expertise in effectively managing and improving the sector's performance.

2. REVIEW OF THE REGIONAL SITUATION

- 2.1 The SADCC region is endowed with a wide variety of minerals that have various applications and/or end uses. These products have potential for both export to earn foreign exchange and utilisation in local industries. However, the potential for increased contribution of minerals to SADCC economies is widely recognised by member States and cooperating partners.
- 2.2 The contribution of the minerals sector to regional GDP is second only to that of agriculture. However, the principal role of the sector in the region is that of a foreign exchange earner. Events in the world towards the end of the year had an impact on mineral prices in 1990. For instance, the Gulf war led to significant increases in oil prices with the resultant decline in growth in major economies. These events led to a decrease in mineral prices as the year came to a close. Despite these developments, the value of SADCC's mineral production in 1990 was estimated at US\$4.5 billion. This was 25% up on the 1989 level of US\$3.6 billion.
- 2.3 There has been significant attention given to the investment climate which is changing rapidly throughout the region. This is a key area and it is expected that the investment study for Small and Medium Scale Mining will go a long way in attracting private sector investment in the mining sector. The sector should pursue a regional approach, in addition to national efforts, to promote investment and derive maximum benefits.
- 2.4 Other priority areas include dissemination of information, research and development, human resources development and marketing, all of which limit extensive mineral production activities. Concerns over the environmental impact of mining have also been noted, and efforts are underway to integrate environmental issues in the overall framework of sector.
- 2.5 The mining sector development strategy covering the period 1986 to 1990 adopted in 1985, has ended at an opportune time. The new strategy to cover the next five years will be able to define areas of focus and programmes intended to address various concerns, taking into account the changing

national, regional and international social, political and economic climate.

- 2.6 During 1990, there was a significant amount of mineral activity in the region. Exploration efforts were undertaken in energy minerals, industrial minerals, base metals, diamonds and more so in gold. For example, Malawi continued to explore for coal and vermiculite and gold exploration continued in Namibia, Mozambique, Tanzania and Zambia. A number of mine developments have also come on stream. De Beers opened a diamond mine in Southern Namibia. This has resulted in added capacity and reserves promising increased output from the region during the next five years.
- 2.7 Mineral data for 1990 have not been consolidated, but preliminary production figures for some major minerals are as follows:

2.7.1 Diamonds

Diamond production has increased by 12.8% over 1989, from 17.2 million carats to 19.4 million. This is mainly due to increased output from both Botswana and Angola. Production is expected to increase in 1991 because of planned increased capacity in Swaziland and Angola.

2.7.2 Copper

Copper production decreased by 6% from 526,677 tonnes in 1989 to 495,280 in 1990. All major producers have recorded low output due to decreasing grades or operating bottlenecks. Regional output is expected to remain at around 500,000 tonnes for some time.

2.7.3 Gold

Gold output increased substantially from 16.7 tonnes in 1989 to 22 tonnes in 1990, due to production increase from Mozambique, Namibia and purchasing re-organisation in Tanzania. There is a lot of activity in gold in most member States that should be able to take advantage of a price that has averaged US\$383 per troy ounce for the last two years.

2.7.4 Nickel

Nickel output stood at approximately 30,379 tonnes slightly lower than 31,389 tonnes of 1989. The decline in production was due to operational problems and declining ore grades in Botswana and Zimbabwe, the major producers. Nickel prices have been fairly strong in 1990 and the outlook

for 1991 is bright, given increased demand in United States and Japan.

2.7.5 Coal

Coal production increased by nearly 1 million tonnes to 6.93 million in 1990 from 6.0 million in 1989. The increase was mainly due to commissioning of a thermal power plant at Wankie in Zimbabwe, commissioning of Sua Pan Soda Ash project in Botswana and Tanzania and Malawi opened small coal mines. The region is endowed with vast resources of coal and hence potential for self sufficiency in this energy resource, as well as for export exists.

2.7.6 Asbestos

Production shows a decrease of 7.9% from 234,391 tonnes in 1989 to 215,938 tonnes in 1990. 83% was produced in Zimbabwe while 17% was produced in Swaziland. Production is expected to decline further in the future due to a decrease in international demand as a result of environmental and health considerations.

2.7.7 Cobalt

Production in 1990 was estimated at 4,738 tonnes, down from 4,815 tonnes in 1989, mainly due to operational problems in Zambia, which accounts for 92% of the total production in the region.

2.7.8 Gemstones

Gemstone production and sales through official channels for 1990 is recorded at 55.8 tonnes. This includes all types (amethyst, aquamarine, tourmaline, emerald, etc). This reflects potential for further development. However, the official sales figures are gross under-estimates as there is substantial trading in gemstones on the illegal market.

Several countries in the region are carrying out measures to discourage selling on the black market. These include, reorganisation of marketing structures and procedures, introduction of auction systems organised in collaboration with gemstone miners, foreign exchange retention schemes for gemstone exports and down payment of a significant percentage of the value of gemstones upon delivery to marketing organisations.

2.7.9 Chromite

Chromite production is estimated at 567,100 tonnes in 1990. This shows a decline from the 1989 production of 627,000 tonnes.

- 2.8 The development of mineral resources in the region has historically been dictated by demand in the industrialised countries. This phenomenon, has resulted in a mining industry geared towards producing raw materials for export. Due to the concentration on large-scale development of export-oriented minerals, very little attention has been given either to the smaller deposits or to the equally important low value minerals that provide a base for the industrial and manufacturing sectors of a national economy. In this regard, a new strategy is being developed to guide the Mining Sector in the development of the Mining Sector Programme of Action for the 1990s and beyond.

3. REVIEW OF THE PROGRAMME

The SADCC Mining Sector programme is subdivided into the following categories:

3.1 Projects of General Concern

This category includes projects of general support to the mining industry (small-scale mining, data bank and geology of minerals, remote sensing, exploration facilities, map compilation, geochronology laboratory).

3.2 Precious Metals and Marketing

Support for small-scale mining, and the development of processing facilities and marketing structures in the region.

3.3 Energy Minerals

The Sector intends to define a strategy for improving the coal development in the region. In this regard, a general study on the coal resources in the region has been undertaken, while emphasis has been given to support member States to increase coal production (Malawi, Mozambique, Swaziland). Swaziland is currently working on a programme to modify its burning installations in a number of industries so as to replace South African coal with Swazi coal.

3.4 Metallic Minerals

Emphasis has been given to the development and optimisation of processing and utilisation capabilities of base metals industries (steel, copper, aluminium, titanium) and related downstream operations. In addition, support is being given to exploration projects in order to discover new deposits.

3.5 Non-Metallic Minerals

Emphasis is being given to the development of fertilizer raw materials (phosphate, potash and lime), and of mineral inputs necessary to the local industry (refractory minerals, gypsum, bentonite, ceramic raw materials and kaolin). The importance of non-metallic industrial minerals is clearly demonstrated by the large number of projects in this sub-sector.

3.6 Water

The Mining Sector is concerned with the harnessing of underground water resources. Potential development in this sub-sector will only be known after the conclusion of the assessment of the water resources of the region, currently being jointly undertaken with the SADCC Soil and Water Conservation and Land Utilisation Sector.

3.7 Mining Equipment and Consumables

The Sector has recognised the need to develop the local production of inputs to the mining industry. Emphasis has been given to the collection of data on mining equipment and spares, and mining chemicals and explosives. Regular contacts are being maintained with the regional industry to overcome the constraints in the development of the production of mining inputs.

3.8 Manpower

Recognising the need to develop indigenous manpower, the Mining Sector identified and formulated projects aimed at reducing the region's dependence on foreign manpower. In this regard, a Human Resources Development/Liaison Officer will be seconded to the Mining Sector Coordinating Unit and will work closely with the Regional Training Council (RTC) in implementing manpower projects for the Mining Sector.

3.9 New Projects

Four new projects have been added to the programme. These are:

- (a) ANG.4.2 Quihita Kaolin Project;
- (b) TAN.0.1 Establishment of a Gemological Institute;

- (c) TAN.4.2 Feasibility Study on Compaction and Granulation of Minjingu Phosphate; and
- (d) ZIM.0.2 Establishment of a Coal Research Centre.

4. CURRENT STATUS OF PROJECTS

The following is a summary of the status of individual projects including activities undertaken during the year under review.

Project AAA.0.0: Support to the Mining Sector Coordinating Unit

This is an ongoing project and involves provision of personnel and technical support to strengthen the capacity and capability of the Sector Coordinating Unit.

The project entails the engagement of five experts in the fields of Mining, Geology, Mineral Processing, Economics and Manpower Planning. To each of these experts, a Zambian counterpart is provided. The project is estimated to cost US\$3.08 million. Out of this figure, US\$0.533 million has been secured from France and US\$1.400 million from the Nordic countries, US\$0.78 from the EEC and US\$0.560 from Zambia.

Project AAA.0.3: Sharing of Mineral Processing Facilities

The aim of this project is to review the existing and planned mineral processing facilities in the region, and to assess how best these facilities might be utilised to benefit all the member States. The consultant is required to make recommendations on how best to rationalise the utilisation of existing plants; and recommend, if necessary, the establishment of new metallurgical plants. The project is estimated to cost US\$0.13 million.

A Nordic technical advisor has been provided to the Coordinating Unit, and the project is under implementation.

Project AAA.0.4: Remote Sensing Survey Using Satellite Technology

The objective of this project is to assess and evaluate the present national programmes of the SADCC member States and other SADCC States on the use of satellite remote sensing techniques for among others, recording stereoscopic pairs of images to prepare a photo-geological interpretation of selected mineral provinces in SADCC member States, with a view to enhancing mineral resources exploration. The survey will also examine the feasibility of establishing a SADCC tracking station and interpretation centre. The project is estimated to cost US\$0.49 million.

Funding was secured from France and the project is completed (June, 1991). The recommendations, which include the establishment of a regional remote sensing station, have been accepted by other SADCC sectors which are users of satellite imagery data. Details of the follow-up action are being considered by the Food Security Sector, which will gradually take responsibility of coordinating the implementation of this project.

Project AAA.0.5: Regional Seismic Network and Data Centre Feasibility Study

The objective of this project is to study the feasibility of establishing, at the national and the regional levels, a SADCC Seismological Network to detect earth movements.

Phase I of the project has been implemented with funding (US\$0.081 million) from the Nordic countries. The study has recommended that a network of National Seismic Stations be set up in each member State and a Regional Seismic Centre, to be located in Lusaka, be set up. These recommendations are being formulated into a project document, before seeking funds for implementation.

Project AAA.0.6: Small-Scale Mining and Minerals Beneficiation

The objectives of the project are:

- (a) selecting potential high-value mineral deposits in the region, which are amenable to small-scale mining and processing;
- (b) identifying appropriate methods for production and marketing of products and financing arrangements;
- (c) determining appropriate mining and processing equipment to be used; and
- (d) selecting, within the region, areas for pilot projects for small-scale operations.

To achieve these objectives, a programme of activities was defined through a workshop held in September, 1989, attended by Sectoral Contact Points. The project is progressing well with several activities being undertaken in member States. The results of some activities were presented in the SADCC Small Scale Mining technology workshop held in February, 1991 in Livingstone. The Coordinating Unit has requested the German Government through the German Agency for Technical Cooperation (GTZ) for an extension of the project in order to complete ongoing activities.

A technical advisor has been appointed to the Coordinating Unit, who is executing the project and is supported by a counterpart officer.

Project AAA.0.7: Regional/National Geological Minerals and Mining Bibliographic Data Banks

The objectives of the project are to:

- (a) select a number of institutions in the region which have facilities to constitute regional and national data banks;
- (b) define the work programmes and needs of the data banks;
- (c) secure and install additional needs of data banks;
- (d) establish a standard format for data and information compilation;
- (e) to prepare a regional bibliography; and
- (f) to train local staff to operate the data banks.

The project is estimated to cost US\$1.2 million. Funding is being sought.

Project AAA.0.8: Analysis of the Investment Climate in the SADC Mining Sector

The objective of the study is to review the regulatory and incentive framework for mining development in each of the SADC member States, and make specific recommendations on action to improve this framework. The project is under implementation with the support of the World Bank, at an estimated cost of US\$0.29 million.

A prototype study was done for Zimbabwe in 1989. Studies in other member States have been completed in 1991 and the final regional summary report is under preparation by the consultant.

Project AAA.0.9: Exploration of the Kalahari Sands

The objective of this project is to devise a method for exploring the geology of the Kalahari Sands and use this method to explore for minerals under the sands. This project will be implemented in two Phases. Funding is being sought for Phase I: method selection, development and testing (US\$0.10 million). Implementation of Phase II will depend on the results of Phase I.

**Project MOZ.5.1: Regional Geophysical and Geochemical
Map Compilation Facility**

The objective of the project is to establish, within the region, a geophysical and geochemical map compilation facility. This facility is expected to serve as the regional centre for the development and production of geophysical and geochemical maps and the exchange of mineral information.

The project proposes that the existing Mozambique facility in Empress Nacional de Hidrocarbonetos be expanded to serve as a regional centre.

This work will be performed with the participation of the Eastern and Southern African Mineral Resources Development Centre (ESAMRDC) in the collection of geochemical and geophysical data. The project cost is US\$0.89 million. Funding is being sought.

**Project TAN.0.1: Establishment of a Gemological
Institute (Tanzania)**

The project aims at establishing an Institute of Gemology to be located in Arusha. The Institute will train gemologists from SADCC Countries. The project will be implemented in two Phases:

Phase I - undertake feasibility study on the curriculum and staff development, institutional framework and equipment needed to train gemologists.

Phase II - Actual establishment of the Institute.

The estimated cost for Phase I is US\$0.2 million. Funding is being sought.

**Project ZIM.0.1: Central Isotope Geochronology
Laboratory**

This is an on-going project whose facilities are located in Zimbabwe. The facilities are being used by member States. US\$0.23 million has been secured from EEC to meet the running costs of the centre (analysis to be done for member States and training of regional staff) for three years. For the moment the use of the Facility by other member States is free. However, when the support of the EEC is exhausted in two-and-a-half years time, member States using the Facility will pay basic fees to cover the cost of services rendered. The Project estimated cost is US\$0.23 million.

Project SIM.0.2: Establishment of a Coal Research Centre (Zimbabwe)

The project aims at establishing a regional centre at the Institute of Mining Research to promote the development of Coal Mining, Coal processing and coal usage in the industries of SADCC member States. The centre will comprise a coal information centre, a training centre for coal laboratories, and a coal standards facility for specialised types of coal analyses.

The estimated cost of the project is US\$0.495 million. This is a new project, for which funding is being sought.

Project AAA.1.1: SADCC Gemstone Buying, Processing and Marketing

During Phase I of the project, work will focus on the examination of the international demand/supply market for gemstones. The feasibility of establishing a regional marketing mechanism for rough and processed gemstones, as well as a regional jewellery industry based on gemstones, will be assessed.

Phase II of the project will be the actual implementation of the project arising from Phase I. Phase II costs will depend on results of Phase I. Phase I is estimated to cost US\$0.136 million.

Project AAA.1.2: Diamond Exploration in SADCC Region

The main purpose of this project is to define the diamond provinces of the SADCC region. The objectives of the project are:

- (a) to undertake a broad-based search for diamonds, and establish the concept of a diamond belt extending from Namibia in the Southwest, through Botswana into Western Zambia and to Tanzania in the North East as well as into Angola to the North West; and,
- (b) to study, in some depth, the Satellite imagery of known occurrences of diamond, and seek similar signatures within Namibia, Zambia, Tanzania and Angola since some of the occurrences are tectonic controlled and the regional tectonisms can be traced covering all these countries.

This project will be executed in conjunction with Geological Survey Departments of member States. This project is a follow-up to Project AAA.0.1 "Small-Scale Mining, Processing and Marketing". The project is estimated to cost US\$0.10 million. Funding is sought.

Project AAA.2.1: Exploitation of Coal Resources in the SADCC Region

The objective of this project is to review the known coal resources of the region; in order to make an assessment of the possibilities of development, in terms of potential local consumption and export markets.

The project was implemented with the support of the Commonwealth Fund for Technical Cooperation through the Industrial Development Unit (IDU), at a cost of US\$0.15 million. The recommendations of the study regarding a study on the improvement of productivity in coal mines, and the promotion of the use of coal, as well as coal exploration, are being followed up by the Coordinating Unit under Project AAA.0.6.

Project MAL.2.1: Coal Exploration and Evaluation in Malawi

The objective of this project, which is underway, is to investigate and assess the economic potential of known coal occurrences in Malawi, and to train Malawi nationals in coal exploration, evaluation and production, as well as inventory report writing.

A drilling programme funded by France (US\$0.83 million) and Malawi (US\$0.58 million) was carried out during 1989 and 1990. There are plans to carry out further drilling so as to prove the reserves and conduct a trial pit. The government of Malawi is seeking USD 1.2 million for these plans.

Project MAL.2.2: Mining Development Trial at Livingstonia, Malawi

The objective of the project is to develop commercial coal mining in Malawi, thus furthering the objective of national self-sufficiency. Funds (US\$0.39 million) were secured from France and a small-scale coal mine is successfully being operated by the Mining Investment and Development Corporation (MIDCOR). Total cost of the project is US\$0.39 million. Coal production from the mine in 1990 stood at 41,200 tonnes.

Project MAL.2.3: Coal Analysis Laboratory in Malawi

The objective of the project is to support the present coal exploration projects in Malawi to avoid sending samples abroad for testing. The laboratory is fully operational and is at the disposal of SADCC member States. The cost of services will be met by the users. So far only samples of coal from Lesotho and Malawi have been analysed at the Laboratory. Other Member States seem not to be aware of the existence and capacity of the laboratory.

Project MOZ.2.1: Manufacture of Coke at Moatize Colliery (Mozambique)

The objective of this project is to establish coking facilities at Moatize Colliery in order to increase the value of the Moatize product, and reduce regional dependence on outside coke suppliers.

The feasibility study (Phase I) is expected to take three months to complete. Phase II, the establishment of coking facilities, will depend on Phase I. Phase I is estimated to cost US\$0.08 million. Funding has been secured from France and modalities for implementation are under discussion between the Government of Mozambique and the donor.

Project MOZ.2.2: Management Assistance for Coal Development in Mozambique

The purpose of this project is to support a management assistance programme for the National Coal Board of Mozambique.

The main objective of the programme is to build an efficient technical structure within the Coal Board to enable it to implement, coordinate and direct the coal development programmes at all stages from the preliminary, feasibility to the launching of the projects, as well as their supervision and management. A technical assistance programme, consisting of the secondment of 5 experts to the National Coal Board is under implementation with the support of Brazil and France (US\$1.8 million).

Project NAM.2.1: Evaluation and Development of Namibian Coal Deposits

This project seeks to achieve the following objectives:

- (a) to develop a coal mine to meet the local demand in energy and in mineral smelting;
- (b) to replace imported coal and save the much needed foreign exchange; and
- (c) to create employment.

The project will be implemented in 4 phases starting from the review of data through the prospecting of target areas, pre-feasibility study to the development phase.

Funding (US\$0.02 million) is sought for Phase I (review of data and target selection).

Project SWA.2.1: Assessment of Increasing Uses of Indigenous Coal in Swaziland

The objective of the project is to assess the technical problems related to Swaziland using local coal in her industries rather than importing industrial coal from South Africa. The study evaluated both economic and financial problems involved in switching to local coal at the producer and consumer levels. US\$0.041 million was secured from France, and the project has been completed.

The study recommended that the increased use of indigenous coal in Swaziland is feasible through gradual replacement of the existing boiler installations. These recommendations are being followed up by the Kingdom of Swaziland.

Project ZAM.2.1: Maamba Rehabilitation Phase II

This project aims at maintaining the production capacity of around 750 000t per annum of washed coal by rehabilitating major mining and plant equipment at Maamba Collieries (Zambia). This project is estimated to cost US\$10.4 million. Funding is being sought.

Project AAA.3.4: Integrated Alumina/Aluminium/Calcination Industry in the SADCC Region

This project is a feasibility and market study aimed at determining the viability of establishing an integrated alumina/aluminium/calcination industry in the region, based on the known bauxite deposits in Malawi, Mozambique and Tanzania. The project, which was completed with UNDP funding of US\$0.25 million, concluded that a detailed feasibility study be carried out to produce a bankable document for the establishment of an aluminium smelter based on exploitation of the Mulanje bauxite. Funding (US\$0.5 million) is being sought for this follow-up action.

Project AAA.3.5: Bauxite Exploration in the SADCC Region

Phase I of this project will look into basic geological mapping, scout sampling and detailed sampling (1:5 000). The main aim of the project in Phase II is to establish concretely, the size of the bauxite reserves that exist in Mozambique, Tanzania and Zimbabwe, and in Phase III to assess whether the reserves can form the raw material base for a regional aluminium industry. The estimated Project cost is US\$1.53 million. Funding is being sought for Phase I.

Project AAA.3.6: Assessment of Heavy Mineral Sand Deposits and Feasibility of a Titanium Oxide Plant

The Project is conceived in two phases. Phase I comprises the assessment of current reserves of heavy mineral sand deposits in Malawi, Mozambique and Tanzania. During this phase, an assessment of the regional and international market for heavy sands and titanium dioxide will be carried out. The cost estimate for Phase I is US\$0.132 million. Funding is sought for Phase I.

Project AAA.3.7: Assessment of Iron Ore Deposits

The project aims to carry out a study in Angola and Swaziland, to establish the iron ore reserves in these two countries.

In addition, the study will assess the possibilities of establishing both regional and international markets for iron ore products. The study will take into account the findings of Project AAA.3.2.

The project is costed at US\$0.06 million. Funding is being sought.

Project ZAM.3.1: Exploration for Lead/Zinc Prospects - Zambia

The objective of the project is to reassess all existing data on the lead/zinc deposits in the Kabwe area, with a view to establishing the quantities of ore contained in the reserves. It will also be necessary to augment the data gaps by carrying out geophysical surveys throughout the area, and drilling trials as part of the effort to determine the reserves.

Phase I of the project (reassessment of the existing geochemical data) was implemented with French support at a cost of US\$0.06 million. Phase II (drilling programme on anomaly A) has been completed with funding (US\$2.64 million) from Japan. Analysis of drill cores has also been completed. A final report has been submitted. 800,000 tonnes of zinc with an average grade of 11.6% have been delineated. A similar amount of funds is sought to drill on anomaly B.

Project AAA.4.1: Sua Pan (Botswana) and Lake Natron (Tanzania) - Market Study

The objective of this study was to assess the demand for common salt, soda ash, potash among the SADCC member States; and to determine the possibility of the region providing a secure market, which would allow the exploitation of the salt deposits at Sua Pan in Botswana and Lake Natron in Tanzania.

The project has been completed. The study has shown that a market exists in the region for products from Sua Pan, and that small-scale operations at Lake Natron would be profitable.

The reports were made available to Botswana and Tanzania for follow up action. Production is currently under way at Sua Pan and full production is expected to be reached in January, 1992.

Project AAA.4.3: Establishment of a Refractory Industry

The objective of this project was to determine the viability of establishing a refractory industry in the region; and, if found viable, to make recommendations on how this might best be achieved. The project has been completed with UNDP funding (US\$0.17 million). Zimbabwe is establishing a refractory production facility which should satisfy the requirements of the region.

Project AAA.4.4: Processing of Lime

The purpose of this project was to undertake a region-wide demand study for lime and lime based products, in the various industries; in order to determine the viability of establishing processing plants. The project has been completed with funding from UNDP. A number of recommendations were made for each member State and most member States are mining lime for local use.

Project AAA.4.5: Development of Non-Metallic/Industrial Minerals

The aim of this project is to make an assessment of known potential of non-metallic minerals in the region and to propose concrete projects for their development. A preliminary study was completed and was reviewed by the Sector Coordinating Unit. The final report of the First Phase was approved in May, 1988. Phase II, the market survey, has been completed (cost US\$0.175 million). The Mining Coordinating Unit is finalising work on the market survey of industrial minerals, as the consultant's work was incomplete.

Project AAA.4.6: Assessment of Vermiculite Production in the SADCC Region

The project is divided into two phases. Phase I aims at evaluating the present reserves of vermiculite in the region through surveys in Malawi and Zimbabwe. This study will also establish the regional and international demand for vermiculite products.

Phase II, which comprises exploration, will depend on the results of Phase I, which has already been completed (1991). The government of Malawi is considering the reports and recommendations.

Project AAA.4.7: Assessment of the SADCC Hotel and Household Whiteware Industry

The objective of the project is first to determine, through a study, the constraints to the development of a SADCC Hotel and Household Whiteware Industry, and to assess available prospects for the industry. The study will then recommend measures that need to be taken to promote the development of these industries, as well as the projects that can be coordinated regionally. Funding (US\$0.076 million) is being sought.

Project AAA.4.8: Market Survey for SADCC Ornamental Stones

The project aims at assessing the strength of the existing regional and international market for ornamental stones produced from the SADCC region; and to propose new projects in this area. Financing (US\$0.075 million) is being sought.

Project AAA.4.9: Gypsum Production in the SADCC Region

The objective of this project is to assess the current market for gypsum in the SADCC region and to propose strategies for developing the regional production of gypsum. In addition the project will assess the size of gypsum reserves in Angola, Tanzania and Zambia, including the availability of artificial gypsum in these countries and map out a strategy for their development.

Funding (US\$0.10 million) has been secured from the Commonwealth Fund for Technical Cooperation (CFTC) and project implementation will commence soon.

Project AAA.4.10: Metallurgy of Ores from Alkaline Complexes

The objectives of this project are to:

- (a) produce the agro-minerals phosphate and agricultural lime, which are essential to improve agriculture but not available;
- (b) produce saleable concentrates of niobium, rare earths, thorium-uranium, zircon, strontium, fluorite, etc, for sale on world markets; and
- (c) create employment opportunities for the local population.

To achieve the objectives, a study will be carried out on existing data on geology and resources of the region. A comprehensive review, and the selection of more promising areas will be undertaken to assess metallurgical ore properties for possible processing technologies. A programme of research will be designed, followed by laboratory tests in order to make a preliminary plant design and produce a pre-feasibility report. Funding (US\$0.47 million) is being sought.

Project ANG.4.1: Production of Fertilizers from Phosphates - Angola

The objective of this project is to exploit the extensive deposits of phosphates in the Zaire Province of Angola in order to help meet the agricultural needs of the region for phosphate-based fertilizers; and, thereby, contribute to SADCC self-sufficiency in fertilizer production. US\$0.143 million is being sought for Phase I (feasibility study).

Project ANG.4.2: Quihita Kaolin Project

The objective of this project is to exploit the extensive Kaolin deposit in Huila Province of Angola. A feasibility study will be undertaken to review previous investigations on the deposit, analyse samples, assess reserves and to assess the market of Kaolin on local and regional markets. This will be followed by actual mining and processing of Kaolin.

Funding is being sought for Phase I, which is estimated to cost US\$0.253 million.

Project MOZ.4.1: Development of Boane Bentonite Mine - Mozambique

Phase I of the project will focus on the rehabilitation of the Boane Mine, Maputo. Phases II and III will initiate the upgrading of the mine, and on the basis of the success of this exercise, proceed to produce bentonite.

Availability of markets will be a crucial factor in determining whether the mine should go into additional investment to increase production.

Phase I of this project (Assessment of Rehabilitation and Market Survey) has been completed with support from the Commonwealth Fund for Technical Cooperation, CFTC (US\$0.037 million). Part funding (US\$0.028 million) for Phase II has been secured from CFTC for the implementation of part of the Rehabilitation Programme. Part of this rehabilitation work has been undertaken.

A financial gap of US\$0.212 million is still required to complete the rehabilitation programme. Report of Phase I has now been distributed to member States for consideration.

Project SWA.4.1: Exploration of Ceramic and Chemical Industry Raw Materials - Swaziland

The project aims at carrying out an exploration of the talc, prophyllite silica and kaolin deposits of South-West Swaziland. A feasibility study will be carried out to determine how these deposits can be developed for the domestic market, as well as for the region's ceramic and chemical industries. Funding (US\$0.54 million) is being sought.

Project TAN.4.1: Pugu Kaolin Project (Tanzania)

The objective of this project is to establish an open-cast mine, and treatment plant, to exploit Tanzania's kaolin resources, in order to meet the demand of the SADCC region; and to export to other countries. This project requires an equity partner and investment financing of up to US\$12.0 million. A pilot plant has been installed with the support of Austria.

A market survey was carried out by the State Mining Corporation of Tanzania (STAMICO). However, the market has not been adequately identified. A complete reappraisal of this project, including a further market survey, is being undertaken with support from Canada. A report is awaited from the government of Tanzania.

Project TAN.4.2: Feasibility Study on compaction and Granulation of Minjingu Phosphate (Tanzania)

The objective of the project is to ascertain the feasibility of compacting Minjingu soft rock phosphate concentrate into granular form, for direct application and market promotion.

The project is in two Phases:

- Phase I
 - characterization of Minjingu hard phosphate rock; and
 - Technoeconomic study i.e. compaction, granulation of Minjingu phosphate rock concentrate.
- Phase II
 - a feasibility study which will depend on the results of Phase I.

This is a new project, for which funding is being sought for Phase I (US\$0.02 million).

Project ZAM.4.1: Mining of Fluorspar (Zambia)

The objective of this project is to open a new fluorspar mine in the Sianyoola area, in Zambia, in order to supply the SADCC market; and to export the product on the international market, and thus generate foreign exchange. Agip SpA is willing to proceed with this investment, once funding for the necessary infrastructure has been secured. About US\$13 million is, therefore, being sought for the general infrastructure development. This project is being followed up on a bilateral basis with ADB.

Project AAA.5.1: Hydro-Geological Investigation

This project seeks to determine how best to organise the collection of hydro-geological data, and identify areas within the region where availability of water is most likely to benefit future development in the agricultural, industrial and mining sectors.

The project was implemented jointly with the Regional Hydrological Assessment Project AAA.7.2 of the Soil and Water Conservation and Land Utilisation Sector, and was supported by the World Bank. The project is completed. The recommendations from this project are still being considered by the Soil, Land and Water Conservation Sector.

Project AAA.7.1: Manufacture of Diamond Tools in Lesotho

The objective of this project is to launch a market study on the demand for diamond tools in the SADCC region with a view to making recommendations on the possibilities of establishing a diamond tools manufacturing facility in Lesotho. The project has attracted funding from CTFC. Negotiations are under way to implement the project. The project is estimated to cost US\$0.08 million.

Project AAA.7.2: Production of Mining Chemicals and Explosives

The objective of this project is to provide data on existing facilities for the production of mining chemicals and explosives; and make proposals for further expansion taking into consideration supply, demand and availability of raw materials. The study financed by the CTFC at a cost of US\$0.08 million, has been completed and the report has been reviewed by member States. The recommendations are being followed by Kafironda Explosives Limited in Zambia and Nitro Nobel of Zimbabwe.

Project AAA.7.3: Study on the Manufacture of Electrodes

The objective of this project is to determine the viability of establishing a regional industry for the production of electrodes. Funds (US\$0.07 million) have been secured from CFTC and work will commence soon.

Project AAA.7.4: Central Data Bank for Mining Equipment and Spares Manufacture

The objective of the project is to establish a Central Data Bank of mining equipment and spares manufactured in the SADCC region and used by various mining industries. US\$0.59 million has been secured from the Nordic countries, and two experts seconded to the Coordinating Unit are overseeing the implementation of this project.

Project AAA.7.5: Rationalisation of Rock Drill Steel Manufacturing Industries

The objective of the project is to investigate ways of improving the industries which manufacture hand-held rock drills, rock drills steel and spares in the SADCC region. US\$0.08 million has been secured from the Nordic countries, and the project is under implementation.

**Project AAA.7.6: Rationalisation of the Manufacture of
Wear Resistant Liners and Rail Track
and Fittings**

The objective of the project is to investigate ways of improving the operations of the industries producing wear resistant liners, rail track and fittings within the SADCC region. US\$0.08 million has been secured from the Nordic countries and the project is under implementation.

**Project AAA.7.7: Manufacture of Activated Carbon From
Coconut Shells**

The objective of Phase I of the project is to assess, through a survey, the existence of a regional market for activated carbon, and to survey the coconut charring and activating methods in the region. The project will also assess the availability of coconut resources, and the feasibility of installing an activating plant in the region. Phase II of the project is the actual installation of the plant. US\$0.07 million has been secured for Phase I from the Commonwealth Fund for Technical Cooperation. Implementation is expected to start soon.

Project Descriptions

**AAA.0.7 REGIONAL/NATIONAL GEOLOGICAL, MINERALS AND MINING
BIBLIOGRAPHIC DATA BANKS**

Estimated Costs

Total: US\$1.20m
Foreign: US\$1.20m
Local: -

Funding Secured

Foreign: -
Local: -

Financing Gap: US\$1.20m

Executing Agency:

Sector Coordinating Unit

Start: As soon as funding is secured.

Duration: 5 Years

Objectives: The objectives of the project are, firstly, to set up a regional bibliographic data bank on Geology and Mining, and, secondly, to set up national geological, minerals and mining data banks, based on Regionally standardized data forms, software and hardware, in each SADCC member countries.

The existence of these compatible national data banks will permit, when necessary, to easily compile regional data on a particular subject.

Description: The main tasks to be undertaken are:

- * to select Institutions/Departments in member countries which have facilities to handle the data bases, and to define the exact scope of the work of these units, and allocate personnel;
- * to purchase and install the equipment;
- * to finalise Minerals and Mining Industry standardized forms, control the filling of these forms, and compile them;
- * to compile a regional bibliography, and incorporate it into a global bibliographic data system;
- * to install a minerals and mining inventory software, and the corresponding security procedures respecting the confidentiality of data; and,
- * to train local staff in the operation of the data banks to ensure continuity.

Status: Funding is being sought.

AAA.0.9 EXPLORATION OF THE KALAHARI SANDS

Estimated Costs

Total: Phase I: US\$0.10m
Phase II: -
Foreign: US\$0.10m
Local: -

Financing Gap: US\$0.10m

Executing Agency:

Sector Coordinating Unit

Funding Secured

Foreign: Nil
Local: -

Start: As soon as funding is secured.

Duration:

Phase I: 24 months
Phase II: to be determined by Phase I.

Objectives: The objectives of the project is to discover new ore deposits under the Kalahari Sands.

Description: The project will devise suitable methods to "look" through the Kalahari Sand cover and to do exploration for potential mineral deposits.

The Kalahari Sands covers a large part of Southern Africa, and in Namibia it is estimated to be up to 250 meters thick in places. Because of this sand cover, and the relative aridity of the area the Kalahari basin is not well explored for the mineral potential of the solid rock underneath the sand.

On the Namibian side the rock formations, which disappear eastwards under the sand cover, are known to carry minerable ore deposits of e.g. coal, copper, lead, zinc, manganese and vanadium. In addition, diamonds may be found in the north-eastern part of Namibia where kimberlites have already been located in an earlier exploration programme.

Status: Funding being sought.

MOZ.0.1 REGIONAL GEOPHYSICAL AND GEOCHEMICAL MAP COMPILATION FACILITY

Estimated Costs

Total: US\$0.89m

Foreign: US\$0.89m

Local: -

Financing Gap: US\$0.89m

Executing Agency:

Sector Coordinating Unit
ESAMRDC; and Government of
Mozambique

Funding Secured

Foreign: -

Local: -

Start: As soon as funding
is secured.

Duration: 5 Years

Objectives: The objective of the project is to establish, within the region, a geophysical and geochemical map compilation facility. This facility is expected to serve as the focal point for the development and production of new maps and the exchange of mineral information.

Description: The project aims at expanding an existing facility, designed for the production of seismic section (oil exploration) at the Empresa Nationale de Hidrocarbonetos (ENH) (State oil Company) in Maputo, so as to transform it into a regional geophysical, geochemical, and other geoscientific data.

The creation of the facility will proceed jointly with the collection of regional geophysical and geochemical data, so as to produce initial regional thematic maps. The collection of data will be done in cooperation with Eastern and Southern Mineral Resource Development Centre (ESAMRDC).

The main tasks to be undertaken are:

- * identification, procurement and installation of the equipment necessary for the expansion of existing facilities;
- * survey of all existing geophysical data available in each member State, and conversion of such data to a format compatible with ENH equipment;

- * compilation of relevant regional maps and regional interpretation of the data, and identification of gaps and areas that need to be resurveyed;
- * creation of a regional geoscience archive; and
- * development of local expertise in the centre, to provide further services to subregional institutions in the same field.

Status: Funding is being sought.

TAN.0.1 ESTABLISHMENT OF A GEMOLOGICAL INSTITUTE (TANZANIA)

Estimated Costs

Total: Phase I: US\$0.20m

Foreign: US\$0.20m

Local: -

Financing Gap: US\$0.20m

Executing Agency:

Sector Coordinating Unit in conjunction with the Geological Survey of Tanzania.

Funding Secured

Foreign: Nil

Local: -

Start: As soon as possible.

Duration: 18 months

Objectives: The main objectives of the project is to train gemologists from SADCC countries with a view to:

- a) stimulating gemstone industry in the region;
- b) promoting lapidary and jewellery activities; and
- c) generating foreign exchange through sales of value added products

Description: The project will be executed in two phases.

Phase I - Feasibility Study on curriculum and staff institutional framework and equipment needed to train gemologist.

Phase II - Establishment of the institute.

The gemstone industry in Tanzania has been developing fast due to involvement of many people in gemstone prospecting and mining.

Tanzania is endowed with vast gemstone resources found in proterozoic rocks of Usagaran and Ubendian systems. Similar gemrock rocks form a wide belt which extends from Kenya in the north, to Zimbabwe in the south, through Tanzania, Malawi, Mozambique and Zambia.

The recent discovery of Tanzanite (a gem form clinozoisite) which is unique in East, Central and Southern Africa has opened a new chapter for the possibilities of rediscovering more gemstone potential within the SADCC region. Furthermore, Tanzania is one of the countries in the SADCC region which possess a wide variety of gemstones, such as garnets, sapphire, chrysoprase, amethyst, moonstone, zircon emeralds, aquamarine, tourmaline, etc., all of which have been exploited through small scale mining with inadequate exploration and mining techniques.

Gemstone industry in the SADCC region contributes to foreign exchange earnings by exporting rough and processed stones.

Tanzania Gemstones Limited (TGL) has been acting as a nucleus for coordinating all gemstone activities in the country, but without properly trained gemologists. The same problem has been faced by individuals, private companies who are involved in gemstone mining ventures. Hence, there is a need to establish a gemological institute in Tanzania, which will aim at promoting the industry and artisanal mining activities.

Status: Funding is being sought.

ZIM.0.2 ESTABLISHMENT OF A COAL RESEARCH CENTRE (ZIMBABWE)

Estimated Costs

Total: US\$0.495m
Foreign: US\$0.236m
Local: US\$0.259m

Financing Gap: US\$0.236m

Executing Agency:

Institute of Mining Research

Funding Secured

Foreign: Nil
Local: US\$0.259m (ZIM)

Start: As soon as possible.

Duration:
5 years (initially)

- Objectives:**
- a) The foremost, long-term, objective of this project is to facilitate the rational and orderly development of SADCC's vast coal resources for the benefit of the people of the region.
 - b) The second, immediate, objective will be to promote regional coal research in the fields of coal geology, exploration, extraction, beneficiation and utilisation.
 - c) An auxiliary objective will be to improve the standard of coal analytical facilities in the region by, where necessary, training and by providing regional standards, both in terms of an analytical reference facility and the implementation of a regional coal standard.
 - d) The establishment of facilities to cater for analyses and tests presently undertaken outside the region is an important objective, both in terms of increasing the regional capacity for coal research, and the reduction of technological dependence on external facilities.
 - e) Finally, an important objective of this project will be to promote inter-regional cooperation and collaboration by providing a regional coal information centre for the exchange of research and practical experience in coal development. The Centre will also provide a forum for coal researchers and experts.

Description: To establish a regional research centre at the Institute of Mining Research in order to promote the development of coal mining, processing and usage industries in the SADCC region. This centre will comprise a coal information centre, a training centre for coal laboratories, and a coal standards facility for specialised types of coal analysis.

Status: Project transferred from the Energy Sector. Funding is being sought.

AAA.1.1 SADCC GEMSTONE BUYING, PROCESSING AND MARKETING - PHASE I

Estimated Costs

Total: US\$0.14m

Foreign: US\$0.14m

Local: -

Funding Secured

Foreign: US\$22.00m (AGIP)

Local: -

Financing Gap: US\$0.14m

Executing Agency:

Sector Coordinating Unit

Start: As soon as funds are secured.

Duration: 6 months

Objectives: The objectives of the project are: to involve a SADCC strategy for buying cutting, polishing and selling of gemstones, to eliminate illegal mining and illicit trading in gemstone; and to enhance employment generation in the gemstone industry and foreign exchange earnings from the export of rough and cut gemstones, within the SADCC region.

Description: The countries of SADCC are endowed with many precious and semi-precious minerals such as emeralds, tanzanite, rubies, amethyst, aquamarine, agates, several semi-precious stones, etc. The present situation is such that each SADCC country operates its gemstone industry independent of other SADCC countries. This practice has resulted in illicit trading of rough gemstones. Accordingly, several SADCC countries are losing millions of dollars every year in potential foreign exchange earnings from rough gemstones and semi-precious stones smuggled out of their border. On the other hand, improvements

and the expansion of cutting and polishing facilities could enhance employment opportunities and the value of gemstones produced in the countries.

During phase I of the project, work will focus on the examination of the international demand/supply market for gemstones. The feasibility of establishing a regional marketing mechanism for rough and processed gemstones, as well as a regional jewellery industry based on gemstones, will be assessed. Phase II of the project will be the actual implementation of project arising from the first phase.

AAA.1.2 DIAMOND EXPLORATION IN THE SADCC REGION

Estimated Costs

Total: US\$0.10m
Foreign: US\$0.10m
Local: -

Financing Gap: US\$0.10m

Executing Agency:

Sector Coordinating Unit
in conjunction with
Geological Survey
Departments of SADCC member
States

Funding Secured

Foreign: Nil
Local: -

Start: As soon as possible

Duration: Phase I: 2 Years

Objectives: The main purpose initially is to define the diamond provenance of the SADCC region:

- The project will undertake a broad-based search for diamond and establish the concept of a diamond belt extending from Namibia in the south west, through Botswana into Western Zambia and to Tanzania in the north east, as well as into Angola to the north east.
- Study in some depth the satellite imagery of known occurrences in Botswana and Lesotho and seek similar signatures within Namibia, Zambia, Tanzania and Angola since some of

the occurrences are tectonic controlled and the regional tectonism can be traced covering all these countries.

Description: The project aims at discovering diamonds in SADCC member States through a systematic geological exploration of all favourable diamond bearing areas in SADCC region.

The main tasks to be undertaken are:

- satellite imagery study of all known productive and unproductive kimberlites in the SADCC region;
- a similar study of the diamond yielding alluvial of the region; and
- a careful analysis of drainage of the productive pipe complex in respect of known placer deposits, also a search for paleo rivers draining the pipe areas using imagery of good resolution.

Status: Funding is being sought.

NAM.2.1 EVALUATION AND DEVELOPMENT OF NAMIBIA COAL DEPOSITS

Estimated Costs

Total: US\$0.02m

Foreign: US\$0.02m

Local: -

Funding Secured

Foreign: Nil

Local: -

Financing Gap: US\$0.02m

Executing Agency:

Sector Coordinating Unit

Start: As soon as funding is secured.

Duration: Phase I: 6 Years

Objectives: The objectives of this project are to:

- develop a coal mine to meet the local demand in energy and mineral smelting;
- replace imported coal and save the much needed foreign exchange; and,
- create employment.

Description: The project will involve the evaluation and development of Namibian coal deposits.

Coal is known to exist in the Aranos basin in the South east; Toscanini on the west coast approximately 300 km north of Walvis Bay; and Etosha basin. Rocks similar to the coal bearing sequence are also expected to occur in the general Kavango-Caprivi region in the Zambezi basin. In the latter basin the rocks are covered by Kalahari sands which would require geophysical or other remote sensing inputs.

Status: Funding is being sought.

ZAM.2.1 MAAMBA REHABILITATION PHASE II

Estimated Costs

Total: US\$10.4m

Foreign: US\$10.4m

Local: -

Funding Secured

Foreign: Nil

Local: -

Financing Gap: US\$10.4m

Executing Agency:

Sector Coordinating Unit

Start: As soon as possible

Duration:

Phase I: 8 months

Objectives:

- To overhaul major components of the 20 year old 1260W BE Dragline in order to elongate its economic working life from the stipulated 25 years to 35 - 40 years. This will obviate the necessity of procuring a replacement dragline at a cost of not less than US\$ 20 million.
- To rehabilitate other mining and plant equipment in order to maintain a production capacity of around 750 000 t/annum of washed coal.
- To maintain constant supplies of washed coal to other SADCC member States.

Description: The project aims to maintain production capacity of around 7 500 000 t per annum of washed coal at Maamba Collieries (Zambia). This can only be achieved through rehabilitation of major mining ie. dragline and plant equipment.

Status: Funding is being sought.

AAA.3.5 BAUXITE EXPLORATION IN THE SADCC REGION

Estimated Costs

Total: US\$1.53m

Foreign: US\$1.53m

Local: -

Funding Secured

Foreign: Nil

Local: -

Financing Gap: US\$1.53m

Executing Agency:

Sector Coordinating Unit

Start: As soon as funding is secured.

Duration: Phase I: 1 Year

Objectives: The objectives of the project are to establish mineable bauxite resources along the Mozambique - Zimbabwe border, to serve as a basis for the establishment of an aluminum industry in the SADCC region. Such an industry using the abundant energy resources of the SADCC region would reduce or eliminate the dependence of the SADCC countries on imported aluminum metal; enhance regional self-reliance on aluminum products, and promote and sustain regional economic integration.

Description: There is no primary aluminum production in the entire SADCC region and all aluminum currently consumed is imported. Bauxite resources from which aluminum are produced are known to exist in a number of countries including Malawi, Mozambique, Tanzania and Zimbabwe.

Some previous work has been done in some of the bauxite localities to establish reserves but more work is needed in the remaining areas to delineate sufficient reserves for the establishment of a SADCC aluminum production industry. Accordingly, the present project intends to evaluate and establish bauxite reserves along the Mozambique - Zimbabwe border and Tanzania.

It will be developed in two exploration stages with a third phase feasibility study of selected deposits:

- * Phase I will look into basic geological mapping (1 500 000), scout sampling, and detailed mapping (15 000) (519 000 US\$);
- * Phase 2 involves detailed survey of selected deposits (12 000); detailed and systematic sampling by pitting and auguring; comprehensive chemical and mineralogical analyses (616 000 US\$) in Mozambique, Zimbabwe and Tanzania;
- * Phase 3 involves a representative bold sampling programme, economic evaluation of the deposit, and feasibility study (394 000 US\$) to determine whether existing reserves can form the raw material base for a regional aluminum industry.

Decision on proceeding from Phase I to other phases will depend on technical results of phase I (existence of valuable occurrences), and on results of study AAA.3.4.

Status: Funding is being sought.

AAA.3.6 ASSESSMENT OF HEAVY MINERAL SAND DEPOSITS AND FEASIBILITY OF A TITANIUM OXIDE PLANT

Estimated Costs

Total: US\$0.13m

Foreign: US\$0.13m

Local: -

Funding secured

Foreign: Nil

Local: -

Financing Gap: US\$0.13m

Executing Agency:

Sector Coordinating Unit

Start: As soon as funding is secured.

Duration:

Phase I: 4 months

Objectives: The objective of this project is to promote the orderly development of the SADCC heavy mineral sand deposits (Malawi, Mozambique, Tanzania), and to contribute to SADCC self sufficiency by substituting imports of titanium oxide for paints, etc., with local production. Excess production will be exported.

Description: The heavy minerals sands in Malawi, Mozambique and Tanzania have been investigated, first for thorium minerals and later for titanium and other minerals, since the early '50s. Following various periodic investigations which failed to result in any mining investment, interest in these deposits, particularly those of Mozambique, has reawakened in recent years. There is every reason to believe that these deposits can now be exploited profitably.

The project will be developed in 2 phases:

The main tasks to be undertaken during phase I will be to:

- study current knowledge of the heavy mineral sand deposits of Malawi, Mozambique and Tanzania, the proved reserves, indicated reserves and grades of the economic minerals;
- determine the international and regional market for the heavy minerals in the sands and their price;

- determine the international and regional market for titanium oxide and advise whether a detailed feasibility study on a titanium oxide plant is justified; and,
- assess the viability of the deposits and specify the work required prior to a feasibility study for each deposit and the sequence in which the deposits should be investigated.

Phase II of the project will be to determine whether sufficient reserves exist to justify exploitation.

Status: Financing is being sought.

AAA.3.7 ASSESSMENT OF IRON ORE DEPOSITS IN ANGOLA AND SWAZILAND

Estimated Costs

Total: US\$0.06m
 Foreign: US\$0.06m
 Local: -

Financing Gap: US\$0.06m

Executing Agency:

Sector Coordinating Unit

Funding Secured

Foreign: Nil
 Local: -

Start: As soon as funding is secured.

Duration:

Phase I: 5 months

Objectives: The objective of this study is to determine if Angola and Swaziland Iron Ores could be included in the regional Iron and Steel Industry Development Strategy.

Description: The study will review and assess in the framework of the PTA/SADCC Iron and Steel development strategy, the potentialities of the development of iron ore deposits in Angola and Swaziland. Specifically, the study will:

- appraise and assess the known iron ore resources in Angola and Swaziland with the objective of establishing a viable iron ore industry;

- identify the markets that would be available, possibly, within the SADCC/PTA region for upgraded iron ore, and establish the most suitable transport routes to such markets;
- determine the metallurgical processes that would be suitable for producing a shipping product (e.g pellets, sponge iron or other upgraded material) and identify resource inputs required for such processes; and,
- determine the potential profitability of the venture using alternative assumptions concerning capital investment, operating costs, prices and output levels.

Status: Funding is being sought. The study is a complement to the PTA/SADCC Project on Iron and Steel.

ZAM.3.9 EXPLOITATION OF MUNALI NICKEL DEPOSIT (ZAMBIA)

Estimated Costs

Total: US\$1.2m
 Foreign: US\$1.2m
 Local: -

Financing Gap: US\$1.2m

Executing Agency:

Sector Coordinating Unit
 and Government of Zambia

Funding Secured

Foreign: Nil
 Local: -

Start: As soon as possible

Duration:

Objectives: The main objective of the project is to ensure an optimum and coordinated development of the nickel resources of the SADCC region by:

- undertaking a detailed feasibility study to assess the viability of the Munali Nickel in the production of nickel concentrate; and
- optimise the excess capacity of nickel smelter facility in Zimbabwe by processing the Munali nickel.

Description: The project aims at exploiting the Munali nickel deposit by undertaking a full detailed feasibility study. The work will entail an additional exploration programme, as well as the preparation of mine plans and flow sheet for concentrating the ore.

The nickel matte (concentrate) will be transported to Zimbabwe where additional mineral processing capacities do exist for final processing into nickel metal.

The specific activities to be undertaken in the context of this project are:

- i) undertake a detailed feasibility study and support the work programme of the current licence holder - Messrs Appolo. This entails additional drill holes and full analysis of material;
- ii) prepare a mine plan and flow sheet for concentrating the ore;
- iii) identify donor support for the detailed Feasibility Study; and,
- iv) promote investment in the project.

Status: Financing is being sought.

ZIM.3.1 STUDY OF THE FEASIBILITY OF AN INCREASED PRODUCTION OF KAMATIVI TIN MINES (ZIMBABWE)

Estimated Costs

Financing Gap: US\$0.13m

Total: Phase I: US\$0.13m
Phase II: to be determined
by Phase I

Executing Agency:

Foreign: US\$0.13m
Local: -

Sector Coordinating Unit

Funding Secured

Start: As soon as possible

Foreign: Nil
Local: -

Duration:
Phase I: 8 months
Phase II: to be determined
by Phase I.

- Objectives:**
- To mine the very large resources of low grade tin-tantalite ores with increased output of 150 000 - 200 000 tpa equal to about 1 500 t of tin metal per annum in order to ensure the survival of Kamativi Tin Mine and its smelter as economic entity for an extended period.
 - To avoid the loss of tin production in SADCC region.
 - To avoid closing of the Kamativi Tin Smelter, which is required to convert into metal concentrates, produced by numerous existing and future small scale tin mines in the SADCC Region (Zambia, Zimbabwe, Namibia).
 - To avoid the redundancy of several hundred employees and negative influence on the economic well-being of the remote Zambezi Valley area.

Description: The project seeks to determine the feasibility of an increased production at Kamativi (Zimbabwe). Mining in the Kamativi Tin Fields started in a small scale about 70 years ago. The present Kamativi Mines commenced production in the mid-fifties, mining and milling about 360 000 tonnes of ore per annum, and producing 600 tonnes of tin per annum, in the adjacent smelter.

Production was increased to 600 000 tpa of ore and 1 200 tpa tin in the seventies and 960 000 - 10,800 000 tonnes of ore and 1000 tpa of tin, at present; by improving and making additions to the original plant, to counter falling ore grade. Richer ores are exhausted, and the medium grade Changahari Section is soon coming to an end. About half of the ore comes from underground and half from open cast workings with very low grade ore. Especially after the drop of tin prices, production was not profitable and substantial State subsidies had to be granted.

Because of much of the mining equipment is old, almost obsolete and the milling plant which is the core unit is almost 40 years old and hopelessly overloaded, there is not much chance of improving the situation.

During the last decades, low grade, easily minable resources were demonstrated and additional potential indicated. A mining and milling rate of 1,800 - 2,400 tonnes per annum could be maintained for - at least 50 years.

However, this would require a modern, low-cost, high-capacity mine, and an efficient concentrator plant. This would return Kamativi Mine to profitability.

Furthermore, the project seeks to investigate how the smelter at Kamativi could be adapted to accept the tin concentrate from tin mines in Namibia, Zambia and Zimbabwe.

Status:

Funding is being sought.

AAA.4.7 ASSESSMENT OF SADCC HOTEL AND HOUSEHOLD WHITEWARE INDUSTRY

Estimated Costs

Total: US\$0.08m

Foreign: US\$0.08m

Local: -

Funding Secured

Foreign: Nil

Local: -

Financing Gap: US\$0.08m

Executing Agency:

Sector Coordinating Unit

Start: As soon as funding is secured.

Duration: 7 months

Objectives: The objectives of this project are to reduce dependence of SADCC region on imports of hotel and household whiteware; promote intra-SADCC trade and overseas exports of these products; and promote the development of regional industrial minerals.

Description: Many of the SADCC countries are importing a large share of their requirements of hotel and household whiteware and sanitaryware. The project will first determine, through a study, the constraints to the development of a SADCC Hotel and Household Whiteware Industry, and to assess available prospects for the industry. The study will then recommend measures that need to be taken to promote the development of these industries, as well as the projects that can be coordinated regionally.

The main tasks to be undertaken are to:

- * visit existing SADCC hotel and household whiteware industries, so as to determine constraints and perspectives of development, and present production level;
- * assess ongoing and planned projects;
- * assess existing and potential regional and export market, together with present imports; and,
- * recommend measures to promote development of hotel and household whiteware industry, and the use of local raw material as input to this industry

Status: Funding is being sought.

AAA.4.8 MARKET SURVEY FOR SADCC ORNAMENTAL STONE PROJECTS

Estimated Costs

Total: US\$0.08m

Foreign: US\$0.08m

Local: -

Funding Secured

Foreign: Nil

Local: -

Financing Gap: US\$0.08m

Executing Agency:

Sector Coordinating Unit

Start: As soon as funding is secured.

Duration: 7 months

Objectives: The objective of this project is to permit a coordinated development of ornamental stone industry in the SADCC region.

Description: Developments are being considered in the ornamental stone industry in Zambia and Mozambique, where marble projects are being implemented.

However, Angola has got operation facilities for black granite and marble, and Zimbabwe is operating a black granite quarry.

All these projects, apart from furnishing small local markets, can deal with overseas export markets.

The project will review the type and quantity of products expected from the regional ornamental stone projects, and analyze the regional and overseas market for these products. A strategy of development will be recommended.

Status: Financing is being sought.

AAA.4.9 DEVELOPMENT OF GYPSUM PRODUCTION IN THE SADCC REGION

Estimated Costs

Total: US\$0.01m

Foreign: US\$0.01m

Local: -

Funding Secured

Foreign: Nil

Local: -

Financing Gap: US\$0.01m

Executing Agency:

Sector Coordinating Unit

Start: As soon as funding is secured.

Duration: 7 months

Objectives: The main objective of this project is to satisfy the requirements of gypsum and gypsum-based products in the SADCC region through a coordinated development of existing deposits and thereby reduce dependence on imported products, particularly in construction materials.

Description: There is a requirement in many of the SADCC countries for different gypsum-based products for the cement industry, agriculture and construction.

Present production is low and cannot meet the demand, thus requiring imports of raw materials or semi-finished products based on gypsum.

However prospects exist for regional production:

- * in Angola, where potential reserves have been identified in the area of Sumbe between Porto Amboim and Sombe;
- * in Tanzania where gypsum resources are known since the beginning of the century in Kilwa district; and,
- * in Zambia where gypsum is produced as a by-product of copper - and gypsum resources at Lochnivar are known.

The study will assess the current market for gypsum products in the SADCC region and to propose strategies for developing the existing known resources in Angola, Tanzania and Zambia. Reserves and probable cost of mining, processing and transportation of the gypsum from the deposits will also be assessed.

Status: Funding is being sought.

**AAA.4.10 METALLURGY OF ORES FROM ALKALINE COMPLEXES
(CARBONITITES ETC)**

Estimated Costs

Total: US\$0.47m

Foreign: US\$0.47m

Local: -

Funding Secured

Foreign: Nil

Local: -

Financing Gap: US\$0.47m

Executing Agency:

Sector Coordinating Unit

Start: As soon as possible

Duration: 18 months

- Objectives:**
- To produce the agro-minerals phosphate and agricultural lime, which are either imported or not available, but essential to improve local agriculture.
 - To produce saleable concentrates of niobium, rare earths, thorium-uranium, zircon, strontium, fluorite, etc., for sale on the world market.
 - To create employment opportunities for the local population.

Description: The project aims at optimizing the use of existing metallurgical technology for the treatment of ores of alkaline complexes/carbonitites.

Malawi, Namibia, Tanzania, Zambia and Zimbabwe have many magmatic alkali complexes, which often contain carbonatite. About 20 of these complexes are well known and partially explored.

These alkaline complexes carry many economic minerals such as: phosphates, like apatite and isokite; niobium, in pyrochlore and niobite; rare earths and thorium, in monazite, bastnaesite and many other rare minerals; zirconium; fluorite, barite, strontianite; vermiculite; calcite - dolomite; and iron ore.

The percentage and relative abundance of these minerals vary from complex to complex, and also within a complex. Some are predominantly phosphate deposits, and others are niobium or rare earths minerals or vermiculite.

There are also residual, weathering deposits at the surface where the carbonites were dissolved and replaced by a clay - iron oxide matrix.

However, the recovery of all valuable minerals in saleable concentrates has been found to be rather difficult in most cases. Fine intergrowth with iron ores, negative response to froth flotation of some phosphates, etc., have been encountered. As these problems are common to many of the alkaline complex ores, the project will investigate all known complexes, and select a few in each member State for indepth studies with the aim to develop metallurgical technologies which allow an efficient extraction of all saleable minerals. The possibilities of making agricultural lime from the calcite-dolomite component will also be investigated.

Status: Funding is being sought.

ANG.4.1 PRODUCTION OF FERTILIZERS FROM THE ZAIRE PROVINCE (ANGOLA)

Estimated Costs

Total: US\$0.14m

Foreign: US\$0.14m

Local: -

Funding Secured

Foreign: Nil

Local: -

Financing Gap: US\$0.14m

Executing Agency:

Sector Coordinating Unit

Start: As soon as funding is secured.

Duration: 4 months

Objectives: The objective of this project is to exploit the extensive deposits of phosphates in the Zaire province of Angola in order:

- to help meet the agricultural needs of the region for phosphate-based fertilizer; and
- contribute to SADCC self-sufficiency in fertilizer production.

Description: Pilot exploitation of these phosphate resources was carried out in the early 1980's. The project involves a feasibility study to assess the investments required followed by the design of an implementation programme.

The first phase involves a review and assessment of the current knowledge of the phosphate deposits in Zaire province; and an analysis of the work previously undertaken - including the establishment of the pilot plant. Samples will be collected and analysed, and an assessment of the proven reserves undertaken. A market study, for the domestic and export markets will be launched. The second phase of the project will cover the mobilisation of resources for the implementation of the programme.

Status: Funding is being sought.

ANG.4.2 QUIHITA KAOLIN PROJECT (ANGOLA)

Estimated Costs

Total: US\$0.253m
Foreign: US\$0.253m
Local: -

Financing Gap: US\$0.253m

Executing Agency:

Sector Coordinating Unit
and Government of Angola

Funding Secured

Foreign: Nil
Local: -

Start: As soon as possible

Duration: 16 months

Objectives: The objective of this project is to open a new kaolin open-cast mine in order to supply the SADCC countries, generate foreign exchange, and create employment opportunities for the local population.

Description: Considerable potential for kaolin occurrences is known in Angola mainly in Dance pegmatite province (Bengo Province), about 80 km north-east of Luanda, in Huila Province. Kaolin is found near Mevaeila "Quihite", about 80 km south-east of the town of Lubango.

Based on the geological observation and consideration, Angola represents an interesting exploration target for kaolin and other clay mineral deposits. Geological studies have revealed that Quihita as the initial point for production could be viable at both the national and regional levels.

There was a small-scale kaolin operation by the Angolan ceramic company in the pre-independence period designed to produce sanitarian ware. The Angola ceramic company has currently exploited small quantities of kaolin to produce tiles and other products.

Status: Funding is being sought.

SWA.4.1 EXPLORATION FOR CERAMIC AND CHEMICAL INDUSTRY RAW MATERIALS IN SWAZILAND

Estimated Costs

Total: US\$0.54m

Foreign: US\$0.54m

Local: -

Funding Secured

Foreign: Nil

Local: -

Financing Gap: US\$0.54m

Executing Agency:

Sector Coordinating Unit

Start: As soon as funding is secured.

Duration: 14 months

Objectives: The objectives of the project are to evaluate four industrial mineral occurrences (kaolin, silica, pyrophyllite and talc), which are located at close proximity to each other in the South West of Swaziland; to determine their viability for development in order to substitute for currently imported table ware, paint, pesticide, cosmetics and other related products.

Description: Swaziland imports about US\$1.75 million worth of various ceramic ware. Projects for developing ceramic industry in the country were seriously discussed but left pending subject to proven availability of cheap and easily accessible raw materials. The most promising deposits are all located in one geographic area. With limited additional work, it will be possible to determine the reserves and minerability of the deposits.

The industrial minerals deposits under consideration (kaolin at Mahlangatsha; silica at Madinda; talc at Handkop and pyrophyllite at Magubheleni) have either been previously surveyed or briefly mined in the past. However, additional investigations are needed to prove the reserves and quality of material at a confidence level necessary to plan further industrial development. Accordingly, detailed geological surveys, evaluation and the determination of the feasibility of mining the deposits to supply raw materials for ceramic, paint, chemical and cosmetic industries in the region are necessary.

Status: Funding is being sought.

TAN.4.1 PUGU KAOLIN PROJECT (TANZANIA)

Estimated Costs

Total: US\$15.0m

Foreign: US\$12.0m

Local: US\$3.0m

Funding Secured

Foreign: Nil

Local: US\$3.0m (TAN)

Financing Gap: US\$12.0m

Executing Agency:

Government of Tanzania

Start: As soon as full funding is secured.

Duration: 30 months

Objectives: The objective of this project is to establish an open-cast mine, and treatment plant, to exploit Tanzania's kaolin resources, in order to meet the demand from SADCC region, and to export to PTA and other countries.

Description: Kaolin is used as a raw material in many minerals based manufacturing industries, such as paper, rubber, ceramics, paints, pesticides, etc. The Pugu Hills, in Tanzania, contains huge and high quality proven deposits of kaolin; which are suitably located in relation to railway, road and port facilities. The exploitation of these resources for the use of local industries, and for export, will have a national and regional impact.

The purpose of the project is to mobilise equity investment funds for the development of these deposits in order to supply kaolin to SADCC member States. A preliminary feasibility and engineering study has already been completed. The study proposes the development of an open cast mine and the construction of a treatment plant to produce 36 000 tonnes per year of refined kaolin both of filler and coating grades.

The specific activities to be undertaken in the context of this project are:

- * to identify and confirm potential sources of financing;
- * to identify and contract a consulting engineer to carry out a detailed design and engineering work plant; and,
- * to contract a firm to supply machinery and equipment in order to construct and commission to mine and plant; and undertake management and training for five year period.

Status: The existing pilot plant is being rehabilitated with Austrian aid. Present installed capacity is 8000 t/y.

A market survey will be commissioned soon so as to determine the feasibility of expanding capacity up to 36 000 t/y of kaolin for the local and regional market. Results of the market survey will determine follow-up action on the project.

TAN.4.2 FEASIBILITY STUDY ON COMPACTION AND GRANULATION OF MINJINGU PHOSPHATE (TANZANIA)

Estimated Costs

Total: Phase I: US\$0.02m
Phase II: US\$0.08m
Foreign: US\$0.08m
Local: -

Financing Gap: US\$0.08m

Executing Agency:

SADCC Mining Sector and
International Fertilizer
Development Centre (IFDC)

Funding Secured

Foreign: Nil
Local: -

Start: January, 1992

Duration:

Phase I: Completed
Phase II: 6 months

Objectives: The objectives of the project are:

- a) to Pelletize the phosphate concentrate into granular form so as to reduce the health risks pertaining to dust;
- b) to produce the product which meets the international market requirements;
- c) to increase efficiency in transportation, distribution and marketing over long distances; and,
- d) to improve fertilizer application efficiency.

Description: Minjingu Phosphate Company has an existing mineral processing facility to upgrade the raw rock phosphate content into the final concentrate. Currently, the Company produces the concentrate in powder form. To reduce material handling problem and to conform to the international market standards, the concentrate produced has to be in granular form. Therefore, this project aims at the feasibility of incorporating the granulation facility within the existing mineral processing plant.

Also, apart from environment protection, granulated phosphate will reduce both health risks pertaining to dust and loss of the concentrate during transportation and handling over long distances to markets.

Status: Funding is being sought for Phase II.

ZAM.4.1 MINING OF FLUORSPAR IN THE SIANYOOLU AREA (MAZABUKA) - ZAMBIA

Estimated Costs

Total: US\$35.00m
Foreign: US\$35.00m
Local: -

Financing Gap: US\$13.00m

Executing Agency:

Government of Zambia

Funding Secured

Foreign: US\$22.00m (AGIP)
Local: -

Start: As soon as funding for the infrastructure is secured.

Duration:

Investment Phase: 2 Years
Mining Phase: 40 Years

Objectives: The objective of this project is to open a new fluorspar mine in Zambia in order to supply the SADCC market; and to export the product on the international market, and thus generate foreign exchange.

Description: Fluorspar is a fluxing agent used in the metallurgical industry, and also in the photographic and glass industries. At present small quantities of fluorspar are mined in Zimbabwe, and the project will supplement this supply; and will allow Zambia to export internationally.

Agip SpA holds a prospecting licence in Gwembe Valley, in Zambia, for base and industrial minerals. During exploration Agip discovered and delineated, in the basement formation, a series of veins of fluorspar of very good quality and thickness. The grade is generally above 70% and the minerable reserves are estimated at 2 000 000 tonnes, which could be easily be increased to 4 000 000 tonnes, for the production of acid grade fluorspar. The annual forecast production is 120 000 tonnes. After supplying the SADCC member States the excess can easily be exported, providing foreign exchange to Zambia (US\$20 million annually), as well as increase traffic to the railways, create employment and development of a rural area in the very depressed Gwembe Valley, 80 km east of Mazabuka.

The project, therefore, entails the provision of infrastructure, which includes roads, power supply, housing, water supply, school and health facilities.

Status: A prefeasibility study was completed in January, 1988. Agip SpA is willing to proceed with investment, once funding for the necessary infrastructure has been secured. Funding is being sought for the general infrastructure.

AAA.7.3 STUDY ON THE MANUFACTURE OF ELECTRODES

<u>Estimated Costs</u>	<u>Financing Gap:</u> US\$0.08m
Total: US\$0.08m	
Foreign: US\$0.08m	<u>Executing Agency:</u>
Local: -	Sector Coordinating Unit
<u>Funding Secured</u>	<u>Start:</u> To be determined
Foreign: Nil	
Local: -	<u>Duration:</u> 6 months

Objectives: The objective of this project is to determine the viability of establishing a regional industry for the production of electrodes.

Description: Roughly 7 500 tonnes of electrodes paste is consumed annually in the region, in the process of electric smelting of chromite, copper and nickel. All of this is at present imported, mainly from South Africa. This paste is normally made from anthracite coal as the binder and a principal objective of the study is to identify a suitable anthracite deposit, or a suitable alternative.

The project is divided into two phases. During the first phase a compressive market survey will be undertaken of the current and future demand for electrodes of the region. The study will assess the requirements for both graphite electrodes and Soderberg electrode paste, and seek to identify the principal current suppliers and advise on the reliability of future supply. Alternative suppliers and their cost will also be assessed.

An appraisal will be undertaken of the various methods of electrode manufacturing within the region, together with a survey of the availability of the necessary raw materials within the region.

On the basis of this information, an assessment of the economic viability of the project, the consultants will be requested to recommend the most appropriate method of electrode manufacture and the possible location of the prospective plant.

The second phase of the project involves the extensive testing of the manufacturing method recommended in phase one, as part of a definitive feasibility study of the production of electrodes in the region.

Status: Funding is being sought.

LES.7.1 MANUFACTURING OF DIAMOND TOOLS IN LESOTHO

Estimated Costs

Total: US\$0.08m

Foreign: US\$0.08m

Local: -

Funding Secured

Foreign: -

Local: -

Financing Gap: US\$0.08m

Executing Agency:

Sector Coordinating Unit

Start:

Duration: 8 months

Objectives: The objective of this project is to launch a market study on the demand for diamond tools in the SADCC region, and to make recommendations on the possibilities of establishing a diamond tools manufacturing facility in Lesotho.

Description: The SADCC region is well endowed with diamond of both jewellery and industrial quality; Botswana, Angola and Tanzania being the most important producers. In other member States small scale miners are involved in diamond mining, of industrial quality.

The Mining Sector in the SADCC region uses a large quantity of diamond tools, drill bits, turning tools, saws, etc, most of which are imported.

Lesotho has, over many years, developed skills in the diamond industry. For instance, the Machace Diamond Cutting Workshop employs some sixty workers who cut and polish stones from 0.1 carat.

The dependence of the SADCC region on imported diamond tools should be reduced by establishing manufacturing facilities for diamond tools. It is proposed to take advantage of Lesotho's diamond production and the presence of skills to develop a manufacturing industry which is not capital intensive.

Status:

Funding is being sought. The terms of reference and a revised project description, including new costing, have been approved.

Annex 11

Funding Status of Projects

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Project	Project Title	Estimated Lost		Funding Secured		Funding Under Negotiation	Funding Gap	Comments/Status
		Total US\$ Million	Foreign US\$ Million	Local US\$ Million	US\$ Million			
MINING								
OVERALL COORDINATION								
AAA.0.0	Support to the Mining Sector Coordinating Unit	3.08	2.71	0.37	0.53 (FRA) 1.40 (NORDICs) 0.37 (ZAM)	-	0.78	Strengthening of the Unit is underway with the secondment of Nordic Experts.
AAA.0.1	Small Scale Mining, Processing and Marketing	0.1	0.1	-	0.1 (EEC)	-	-	Study completed. Follow-up actions with projects AAA.0.6 and AAA.1.1 secondment of a permanent advisor.
AAA.0.2	Inventory on Geology, Minerals, and Mining	0.1	0.1	-	0.1 (EEC)	-	-	Study completed. Follow-up action with project AAA.0.7
AAA.0.3	Sharing of Mineral Processing Facilities	0.13	0.13	-	0.13 (NORDICs)	-	-	Study under implementation by an advisor to the SADCC Mining Coordinating Unit
AAA.0.4	Remote Sensing Survey Using the Spot Satellite	0.49	0.49	-	0.49 (FRA)	-	-	Survey completed June, 1991 and recommendations accepted by all Sectors concerned. Details of next phase are being considered by Food Security Sector.
AAA.0.5	Regional Seismic Network and Data Centre-Feasibility Study	0.08	0.08	-	0.08 (FIN)	-	-	Feasibility study (phase 1) completed March, 1991 recommendation being considered.
AAA.0.6	Small Scale Mining and Minerals Beneficiation	0.24	0.24	-	0.24 (FRG)	-	-	Project is under implementation.
AAA.0.7	Regional/National Geological Minerals and Mining Bibliographic Data Banks	1.20	1.20	-	-	-	1.20	Follow-up of project AAA.0.2 Funds being sought
AAA.0.8	Analysis of the Investment Climate in the SADCC Mining Sector	0.29	0.29	-	0.29 (WB)	-	-	Study underway
AAA.0.9	Exploration of the Kalahari Sands	0.10	0.10	-	-	-	0.10	Funding being sought.
MOZ.0.1	Regional Geophysical and Geochemical Map Compilation Facility	0.89	0.89	-	-	-	0.89	Funding being sought.
TAN.0.1	Establishment of a Geological Institute	0.2	0.2	-	-	-	0.2	New project. Funding being sought.
ZIA.0.1	Central Isotope Geochronology Laboratory	0.23	0.23	-	0.23 (EEC)	-	-	Laboratory completed and operational. Funding secured for operational costs.
ZIM.0.2	Establishment of a Coal Research Centre	0.5	0.24	0.26	0.26 (ZIM)	-	0.24	New project. Funding being sought.
Sub-total		7.63	7.00	0.63	4.22	0.00	3.41	

PRECIOUS METALS AND MINERALS

AAA.1.1	SADCC Gemstone Buying, Processing and Marketing	0.14	0.14	-	-	-	0.14	Funds being sought for Phase I.
AAA.1.2	Diamond Exploration in SADCC region	0.1	0.1	-	-	-	0.1	New project. Funding being sought.
Sub-total		0.24	0.24	0.00	0.00	0.00	0.24	

ENERGY MINERALS

AAA.2.1	Exploitation of Coal Resources in the SADCC Region	-	-	-	-	-	-	Project completed. Recommendations being followed by Sector Coordinating Unit.
MAL.2.1	Coal Exploration and Evaluation in Malawi	2.61	2.03	0.58	0.53 (FRA) 0.58 (MAL)	1.20	-	Project underway.
MAL.2.2	Coal Mining Development Trial at Livingstonia, Malawi	0.39	0.39	-	0.39 (FRA)	-	-	Project funded and operational.
MAL.2.3	Development of Coal Analysis Laboratory in Malawi	0.24	0.21	0.03	0.21 (FRA) 0.03	-	-	Project completed and facilities are available for use by member States.
MOZ.2.1	Manufacture of Coke at Moatize Colliery (Mozambique)	0.08	0.08	-	0.08 (FRA)	-	-	Project underway.
MOZ.2.2	Management Assistance for Coal Development in Mozambique	1.76	1.76	-	1.76 (Various)	-	-	Under implementation.
NAM.2.1	Evaluation and Development of Namibian Coal Deposits	0.02	0.02	-	-	-	0.02	New project. Funds sought for for Phase I (Evaluation of Data)
SWA.2.1	Assessment of Increasing Uses of Indigenous Coal in Swaziland	0.04	0.04	-	0.04 (FRA)	-	-	Project completed, March, 1991. Recommendations being considered by Swaziland.
ZAM.2.1	Maamba Rehabilitation Phase II	10.4	10.4	-	-	-	10.4	Funding being sought.
Sub-total		15.54	14.93	0.61	3.92	1.20	10.42	

METALIC MINERALS

AAA.3.1	Foundry Fabrication and Machinery Facilities	-	-	-	-	-	-	Study completed, recommendations being followed up by SADCC Industry Sector
AAA.3.2	Development of Iron and Steel Industry	-	-	-	-	-	-	Study completed, recommendations being followed up in coordination with PTA and SADCC Industry Sector
AAA.3.3	Market Study for Copper Products	-	-	-	-	-	-	Study completed, recommendations transferred to Industry Sector
AAA.3.4	Integrated Alumina/Aluminium/Calcination Industry	0.50	0.50	-	-	-	0.50	Project completed. Funding being sought for follow-up action.
AAA.3.5	Bauxite Exploration in the SADCC Region	1.53	1.53	-	-	-	1.53	Follow-up project to United Nations Revolving Fund for Natural Resources

Project	Project Title	Estimated Cost US\$ Million		Funding Secured & Source US\$ Million		Funding under Negotiation US\$ Million	Financing Gap US\$ Million	Comments/Status	
		Total	Foreign	Local					
AAA.3.6	Assessment of Heavy Mineral Sand Deposits and Feasibility of a Titanium Oxide Plant	0.13	0.13	-	-	-	0.13	Follow-up project to United Nations Revolving Fund for Natural Resources Exploration (UNRFNRE) preliminary evaluation. Funds being sought for Phase I (market survey and evaluation)	
AAA.3.7	Assessment of Iron Ore Deposits	0.06	0.06	-	-	-	0.06	Funding being sought	
ZAM.3.1	Exploration of Lead/Zinc Kabwe District (Zambia)	2.64	2.64	-	-	-	2.64	Phase I and II completed. Exploration results are being considered by Zambia.	
ZAM.3.2	Exploitation of Munali Nickel Deposit	1.2	1.2	-	-	-	1.2	Funding being sought.	
ZIM.3.1	Study on the feasibility of an increased production of Kamativi Tin Mines (Zimbabwe)	0.13	0.13	-	-	-	0.13	Funding being sought for Phase I. (Feasibility Study).	
Sub-total		6.19	6.19	0.00	0.00	0.00	6.19		
NON-METALIC MINERALS									
IS	AAA.4.1	Development of Fertilizer Mineral Raw Materials	-	-	-	-	-	Study completed and recommendations being followed by member States.	
	AAA.4.2	Sua Pan (Botswana) and Lake Natron (Tanzania) Project	-	-	-	-	-	Study completed. Production at Sua Pan has commenced and recommendations are being used.	
	AAA.4.3	Establishment of a Refractory Industry	-	-	-	-	-	Study completed. Member States are following recommendations.	
	AAA.4.4	Processing of Lime	-	-	-	-	-	Study completed. Follow-up actions being assessed by member States.	
	AAA.4.5	Non-Metallic/Industrial Minerals	0.18	0.18	-	0.18 (FRA)	-	-	Market Survey underway.
	AAA.4.6	Assessment of Vermiculite Production in the SADCC Region	0.08	0.08	-	0.08 (FRA)	-	-	Project underway in Malawi. Component for Zimbabwe not funded.
	AAA.4.7	Assessment of SADCC Hotel and Household Whiteware Industry	0.08	0.08	-	-	-	0.08	Funding being sought.
	AAA.4.8	Market Survey for SADCC Ornamental Stone	0.08	0.08	-	-	-	0.08	This project is also a follow-up to project AAA.4.5. Funding being sought.
	AAA.4.9	Development of Gypsum Production in the SADCC Region	0.10	0.10	-	0.10 (CFTC)	-	-	Project funded and work to commence soon.
	AAA.4.10	Metallurgy of Ores from Alkaline Complexes	0.47	0.47	-	-	-	0.47	New project. Funding being sought.
ANG.4.1	Production of Fertilizer from the Zaire Province (Angola)	0.14	0.14	-	-	-	0.14	Funding being sought for phase 1 (feasibility study)	

Project	Project Title	Estimated Lost US\$ Million		Local	Funding Secured & Source US\$ Million	Funding under Negotiation US\$ Million	Financing Gap US\$ Million	Comments/Status
		Total	Foreign					
ANG.4.2	Quihita Kaolin in Project (Angola)	0.25	0.25	-	-	-	0.25	New project. Funding being sought.
MOZ.4.1	Development of Boane Bentonite Mine - Mozambique	0.24	0.24	-	0.07 (CFTC/IDU)	-	0.18	This project is a follow-up to project AAA.4.5. Phase 1 completed. Work on Phase 2 (Rehabilitation) to commence soon.
SWA.4.1	Exploration for Ceramic and Chemical Industry Raw Materials in Swaziland	0.54	0.54	-	-	-	0.54	This project is a follow-up to UN Revolving Fund for Natural Resources Exploration evaluation and phase 1 of project AAA.4.5. Funding being sought.
TAN.4.1	Pugu Kaolin Project (Tanzania)	15.00	12.00	3.00	3.00 (TAN)	-	12.00	Costing of the project being reviewed.
TAN.4.2	Feasibility Study on Compaction and Granulation of Minjingu Phosphate (Tanzania)	0.02	0.02	-	-	-	0.02	New Project. Funding being sought.
ZAM.4.1	Mining of Fluorspar in the Sianyolo Area (Zambia)	35.00	35.00	-	22.00 (AGIP/SPa)	-	13.00	Funds are being sought for infrastructure.
Sub-total		52.18	49.18	3.00	25.43	0.00	26.76	
WATER								
AAA.5.1	Hydro-Geological Investigations	1.00	1.00	-	1.00 (WB)	-	-	Study completed and recommendations are being considered
Sub-total		1.00	1.00	0.00	1.00	0.00	0.00	
MANPOWER								
AAA.6.1	Regional Skilled Manpower Survey	-	-	-	-	-	-	Funding being sought.
AAA.6.2	Appointment of a SADC Sector Human Resources Liaison Development Officer and Support Staff	0.50	0.50	-	-	-	0.50	Funding being sought.
AAA.6.3	Setting up of a Mining Sector Industrial Training and Development Advisory Unit	-	-	-	-	-	-	Funding being sought
AAA.6.4	Redesign and development of SADC Mining Technician Courses Facilities	-	-	-	-	-	-	Funding being sought.
AAA.6.5	Requirements for strengthening of regional Mining Sector educational Units	-	-	-	-	-	-	Funding being sought.
Sub-total		0.50	0.50	0.00	0.00	0.00	0.50	

Project	Project Title	Total	Foreign	Local	US\$ Million	US\$ Million	US\$ Million	Comments/Status
MINING EQUIPMENT AND CONSUMABLES								
AAA.7.1	Mining Equipment, Manufacturing, Repairing and Reconditioning Facilities	-	-	-	-	-	-	Study completed and recommendations are being followed up.
AAA.7.2	Production of Mining Chemicals and Explosives	-	-	-	-	-	-	Study completed, recommendations being followed up.
AAA.7.3	Study on the Manufacture of Electrodes	0.07	0.07	-	0.07 (CFTC)	-	-	Project funded and work to commence soon.
AAA.7.4	Central Data Bank for Mining Equipment and Spares Manufactured in the SADCC Region	0.06	0.06	-	0.06 (NORDICs)	-	-	Project under implementation
AAA.7.5	Rationalization of Rock Drill Steel Manufacturing Industries in the SADCC Region	0.08	0.08	-	0.08 (NORDICs)	-	-	Project under implementation
AAA.7.6	Rationalisation of the Manufacture of Wear Resistant Liners and Rail Track and Fittings in the SADCC Region	0.08	0.08	-	0.08 (NORDICs)	-	-	Project under implementation
AAA.7.7	Manufacture of Activated Carbon from Coconut Shells in the SADCC Region	0.07	0.07	-	0.07 (CFTC)	-	-	Project funded and work to commence soon.
LES.7.1	Manufacturing of Diamond Tools in Lesotho	0.08	0.08	-	0.08 (CFTC)	-	-	Project funded and work to commence soon.
Subtotal		0.44	0.44	0.00	0.44	0.00	0.00	
GRAND TOTAL		83.72	79.48	4.24	35.01	1.20	47.52	