ALIGNING MINERAL WEALTH WITH SUSTAINABLE DEVELOPMENT: THE SOUTHERN AFRICAN PERSPECTIVE

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CONTENTS

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ABSTRACT

Minerals development is essentially the process of converting non-renewable natural mineral resources into reproducible capital. During this process rents (or wealth) are produced. The rents contained in the economic or wealth pie are for the benefit of the stakeholders in mineral development. Some of these stakeholders have well-established and strong bargaining powers, with strong teeth to secure a large share of the pie, while there are others who will only get a small bite of the enjoyment. There is often another group around this table, who are eagerly awaiting their chances of getting their teeth into the pie, only to find that the pie is finished before they can get a slice. This simple introduction highlights the realities of managing mineral wealth, namely:

- Sometimes there is no pie, because the essential ingredient (mineral rent) is absent, mainly because the cost of mineral development exceeds the revenue received for production.
- If indeed present, the wealth or economic pie is of finite size, meaning that its total size is not always that expected by stakeholders. This results in an expectation gap being created, the size of which depends on how well information is shared between the different stakeholders.
- Not all stakeholders have equal importance, resulting in some of them ending up with a larger slice of the pie.
- There is an inverse relationship between the shares of stakeholders, meaning that the larger the share of one stakeholder, the smaller the share of others.
- If the entire pie is absorbed today, there will be nothing left for future enjoyment.

This report discusses possible rent-sharing ratios and proposes an alternative approach for the management of mineral wealth. Historically, mineral development symbolised conflict between the various stakeholders because of self-interests. ***The sustainable approach allows for early stakeholder identification and consensus on how the benefits must be shared, motivating stakeholders to work together in an attempt to grow the size of the pie. This style of mineral development will firstly, minimize the expectation gap and secondly, maximise stakeholder benefits.***

ALIGNING MINERAL WEALTH WITH SUSTAINABLE DEVELOPMENT

1 MINERAL RENT: THE ESSENTIAL INGREDIENT OF THE WEALTH PIE

Mineral rent is the most fundamental ingredient of the wealth pie. Without rents there will no benefits to distribute among stakeholders. It is therefore appropriate to argue that only those mineral projects that are able to generate true rents should be allowed to continue. True rents are possible when *all* costs are covered, including the costs required for sustainable development

1.1 Introduction to mineral rent

The development of the concept of *'mineral rent'* grew alongside the early concerns about the distribution of returns from the agricultural sector (Robinson, 1989). The debate on mineral rent started when Smith (1776) adopted the classical view that the highest cost farm (mine) would determine the economic rent received by other farms (mines). Mines whose costs equal their mineral revenues would receive no rent while others that mine higher-grade deposits or are located close to their markets, receive rents. Smith's definition closely resembles the current understanding of economic rent. A drastic departure from Smith's way of thinking came when Ricardo (1821) argued that: *"Rent is that portion of produce of the earth which is paid to the landlord for the use of the original and indestructible powers of the soil"*. Ricardo's understanding of rent led to the term *'mineral royalty'*, which is a facility to compensate the owners of mineral assets for resource depletion. Ricardo's interpretation of mineral rent does not entirely match the current understanding of economic rent. Later interpretations of rent emulated these early contributions by Smith and Ricardo, all of which, to some extent, resembled their theories or a combination thereof.

Among the many definitions of economic rent, a number have captured the varying perspectives of the underlying theory. Some of these are as follows:

- The general approach is to define rent as the financial return over and above that required to induce the initial investment.
- Cordes (1998) redefined economic rent as *"the magnitude of revenues that can be taxed without causing the pattern of resource use to be altered"*.

- An expanded definition of economic rent for the minerals industry is*: "the present value of the future stream of net revenues that mineral deposits can generate over time, where net revenues are the difference between total revenues and total costs and costs include a competitive return on investment"* (Cawood, 1999).

1.2 Distribution of mineral rent

Unlike the magnitude of rents that are determined by the unique characteristics of the mineral deposit, the distribution of rents is primarily influenced by three main factors. *Firstly,* the legal system of a host country identifies the recipients of mineral rent. *Secondly,* the host country's fiscal policies, resource owners' expectations and public opinion determine the rates of allocation to each recipient. *Thirdly*, the hierarchy of claim to rents is prescribed principally by the national objectives but can be modified by social pressures. One must appreciate that the hierarchy of claims to mineral rents may differ significantly from project to project and country to country, depending on how government policies allocate relative stakeholder bargaining powers.

The identity of each recipient is distinct, but any combination of recipients is possible. The simplest means of distribution is where the government, on behalf of the public, is entitled to all the rents. Examples of potentially profitable mining operations that have been neglected in centrally planned economies suggest that state intervention in the control and ownership of mineral properties is not sustainable in the long run. The copper mining industry in Zambia is a prime example. An alternative means of distribution is private control of all categories of rights and property, allowing for little or no state intervention. The disadvantage of such a system is that many stakeholders share the rent, thereby reducing each recipient's portion. This is particularly true for South Africa where the mineral rights in some areas were subdivided into undivided shares, resulting in large numbers of mineral right holders over the same mineral deposit (Minnitt and Cawood, 1999).

Section 2 of this report shows that the state, investor, mineral rights owner, environment, indigenous community and the landowner should be the principle beneficiaries of mineral development but, depending on the uniqueness of the situation, there may be more (or less)

stakeholders sharing the wealth. By and large, these other (minority) stakeholders will claim insignificant rents, which may be compared to a few crumbs spilled during the feast.

1.3 A practical approach to quantify mineral rent

No investor or government would deny the existence of rents derived from the exploitation of non-renewable mineral resources, but determining the size and nature of these rents is easier said than done. One might argue that the mineral royalty distinguishes the mining industry from the rest and is therefore the ideal fiscal instrument to equate with mineral rent. Although this simplistic '*Ricardian'* approach has merit, it is not practical because of the huge variances in royalties for the region, especially South Africa with its mixed (highly complex) system of mineral rights ownership.

Perhaps a more appropriate method of quantifying mineral rent is by means of natural resource accounting methods. The United Nations (1993) National Accounting Standards propose a system where resource rents are calculated as the value of output less production costs. Production costs are defined to include mining input costs, labour costs, capital costs and the required return on the investment. Cawood (1999) also followed this approach for determining sharing ratios between host governments and investors, which will be discussed in more detail in Section 4. The net result is that both the return on the investment (i.e. the return above the initial hurdle rate) and government receipts are treated as total rent, because of the inseparable way governments administer taxes and rents.

2 DEFINING RENT SHARING RATIOS FOR DISCUSSION PURPOSES

This section proposes a rent distribution model for discussion (Section 3), and later comparison (Section 4), with government ratios in Botswana, Mozambique, Namibia, South Africa, Tanzania, Zambia and Zimbabwe. The fiscal parameters for the cash flows used in this section were taken from an earlier study by Cawood (1999), who derived a Competitive Investment Framework (CIF) from the policy information of developing countries[1] that attracted significant (foreign) mineral investment into their economies as a direct consequence of changes in policy. These results were then statistically analysed in order to establish a rent-sharing ratio that would be regarded as internationally competitive and attractive to the international investor. The framework's fiscal parameters, meant as a guide for alterations or additions required by other developing countries wishing to attract foreign direct investment, was entered into the cash flow models in order to derive a distribution model for discussion and comparison purposes. Like these *'model'* countries, Southern Africa is well endowed with mineral resources[2] and the region depends heavily on the responsible economic development of these primary assets. The host governments in the region are responsible for policy-making, which policies must provide the fuel for the engine (mining industry) in an effort to generate mineral rents and, consequently, ensuring sustainable economic development.

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1 The selected countries were Chile, Argentina, Indonesia, Peru, Mexico and Ghana.

2 Some examples are gold on the South African Witwatersrand, copper in Zambia, the diamond deposits in South Africa, Namibia, Angola and Botswana, and the minerals associated with the Great Dyke region in Zimbabwe.

2.1 The model and project specifications

The model in the appendix serves as a tool to policy-makers deciding on the ratios of how rent should be shared between the stakeholders in mineral development. The model consists of four components, namely a control page, cash flow, charts and depreciation schedules. The parameter settings and results appear on the control page (page 1 of the model) where the user enters finance, inflation, risk parameters, project specifications and fiscal information into the model. The second component is the cash flow section (page 2 of the model). All the information was processed in the cash flow over the life of the mine. The most important information is then summarised on the control page for the sake of convenience. Part three (also on page 1 of the model) consists of two pie charts summarising the information necessary for discussion and comparison in sections 3 and 4, namely splitting of wealth between the investor and host government and a quick visual assessment on the breakdown of taxes. Part four (bottom of page 2) shows the depreciation schedules of the cash-flow calculation. Five mineral projects were used in this analysis: a large South African Witwatersrand type gold mine; a greenstone type gold mine; a large limestone project; a medium-sized underground coal mine and a copper mine.

2.2 Definitions impacting on rent used in the model

NPV of total state share: The discounted net present value of the total host government receipts (i.e. the sum of the following sources of state revenue: royalty, income tax, VAT, import duties, export tax and withholding or dividend tax). It may also be termed *State share of wealth* i.e. the discounted net present value of the NPV of total state share divided by the sum of investor NPV and the state's share, expressed as a percentage. It is collected through the average effective tax rate i.e. the discounted net present value of all taxes *divided* by the discounted NPV of taxable income, expressed as a percentage.

Investor NPV: The nominal gross revenue *less* total capital costs, value-added tax, import duties, export tax, royalty, nominal operating cost, annual repayment of loan, income tax and withholding or dividend tax, adjusted by the discount rate. It is therefore the discounted net present value of the return on the investment after costs and taxes have been

subtracted or *'Investor share of wealth'* (i.e. the discounted net present value of the investor's share of the wealth (net present value of the project) divided by the sum of the discounted net present values of the project and the state's share of the wealth, expressed as a percentage.

Discount rate The discount rate used in the model is a function of financial, business, and country risks. The *Weighted Average Cost of Capital* model (WACC) as described by Smith (1995) determines the discount rate in the model. The cost of capital is expressed as an interest rate and calculated using the following formula proposed by Sani (1977):

$$r_{WACC} = r_e p_e + r_d p_d + r_p p_p \quad \text{where} \quad r_e = f + R\beta$$

$$\text{Corresponding nominal discount rate} = r_{WACC} + i + C$$

Where: r_{WACC} = Weighted average cost of capital expressed as a percentage;

$r_{e,d,p}$ = Cost of equity capital, debt and preferred stock;

$p_{e,d,p}$ = Proportions of equity capital, debt and preferred stock;

f = Risk-free rate (based on US government bond or treasury rates)

R = Risk premium. Ten per cent was used in all the cash flows.

ß = A beta factor of 1,0 was used for all projects. The Beta Factor for a common stock expresses the variability of the common stock with respect to the variability of the market as a whole.

i = Inflation, as indicated by the US Consumer Price Index (CPI).

C = A standard country risk rate of three per cent for all cash flows.

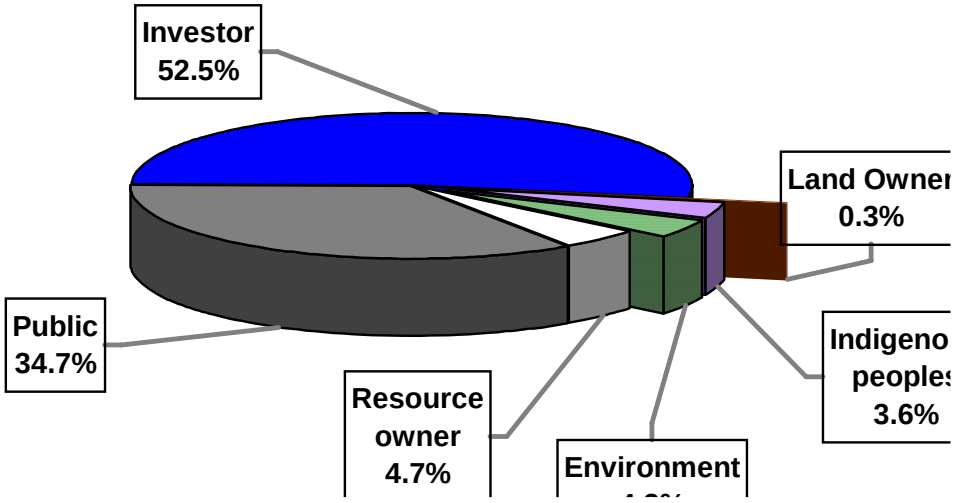
In order to avoid unacceptable variations in the discount rates for the selected countries, a decision was made that a United States loan would finance the debt proportion of the capital.

Models for calculating indigenous NPV. All the fiscal parameters of the CIF were used, except for the mineral royalty, which was replaced by a rate of one per cent of turnover in order to resemble the minimum payment expected by the Royal Bafokeng for platinum mining in their territory.

Rent distribution tables (Final page of the appendix). Summary of 1996 prices for stakeholder shares.

- *Project NPV:* The amount indicated as *'Investor NPV'* from the cash flows using CIF averages;
- *Land owner's rent:* The Stats SA sales value converted to US dollars;
- *Resource owner's rent:* The amount indicated as *'Royalty NPV'* from the cash flows using CIF averages;
- *Environmental rent:* The estimate for environmental expenses converted to US dollars;
- *Indigenous rent:* The amount indicated as *'Royalty NPV'* from the cash flows calculating indigenous NPV;
- *Investor rent:* The project NPV *minus* Land owner's rent; Resource owner's rent, Environmental rent and Indigenous rent.
- *Public rent:* The amount indicated as *'NPV of total State share'* from the cash flows using CIF averages *minus* the royalty NPV.

Figure 1 A discussion pie for the developing world



Source: Appendix (Rent distribution tables)

3 SHARING THE RENT: DISCUSSING THE WEALTH PIE

In the previous section, a rent-sharing model was introduced for discussion purposes. Although great care went into the design of the model in order to obtain a realistic distribution of rents, the reader should not assume that the model is complete. It merely forms a basis for discussion and comparison in an attempt to analyse the split of wealth. One must also consider that these (major) stakeholders often have to share their slices of the wealth pie with other, less important, stakeholders. For example, the national government has to share with lower levels of governments while investors must share with labour (bonus payments) and the local community (contributions to local health and education facilities). Understandably, relationships between different stakeholder (groups) are often poor and greater understanding of stakeholder needs is an essential element of any strategy to share the pie equitably. A good mineral policy not only provides a clear description of the environment investors must operate in - it must also engineer an acceptable distribution model.

Equitable sharing of mineral resource rents between the host country and the investor developing the mineral property, is one of the principle factors in ensuring political stability and the creation of an enabling mining environment in the developing world. The reason investors place their capital in mineral projects is to create wealth for themselves. They therefore require a reasonable return on their investment. The distribution of rent between the country hosting the mineral resource and the investor is therefore of critical concern to them. The recipe for the distribution of rent between the investor and the host country must be equitable to both parties at all times. Cawood (1999) determined an optimal rent sharing model of how total mineral rents should be shared between the investor and an internationally competitive and investment friendly host government. He found that, on average, about forty per cent of the wealth generated should find its way to state coffers while the investor should retain sixty per cent for its effort. There is good correlation between Figure 1 and the 1999 study, in that the sum of public and resource owner's rents in Figure 1 amounts to about forty per cent, as would be the case where the minerals are owned by the state.

3.1 Investor Rent

Investors, who demand blue-sky potential as compensation for risks involved, rely on the host country's good-will as reflected in policy documents, capable management and efficiency in production to maximise their share of the rent. Figure 1 indicates that the investor receives about fifty per cent of the total rent. Although this slice may seem excessive at first, one must appreciate that there are some (cost) variables that are extremely difficult to reflect because of their *'hidden'* nature. Examples are payroll taxes, fuel levies, goodwill contributions to local health and education facilities and employee bonuses during times of high profitability. It is therefore realistic to assume that the investor has to reallocate a percentage to other stakeholders and minority interested and affected parties. The end result is that the investor and the host government will probably retain approximately equal proportions of the mineral rent.

3.1.1 Strategy to optimise investor rents

The investor optimises finance, management and production efficiency to grow the size of the pie. One must appreciate that *optimising* the investor's slice of the pie falls outside the ambits of public policy and is therefore not considered in this discussion. However in order to *maximize* its share of the pie it (the wealth pie) must grow in size, which will be in the interest of all stakeholders. In order to *maximise* its benefits, the investor should consider the following strategy:

- Early identification of all stakeholders, regardless of their respective importance;
- Negotiate fixed wealth sharing ratios with all stakeholders using a participatory, open and consensus approach.
- Negotiate a fixed sharing ratio with the host government through a single all-inclusive tax rate. This different approach may be viewed with scepticism by some governments. However, it is not entirely new considering the use of stabilization agreements in Latin America and recent commitments that the overall effective tax burden will not be above a certain percentage. For example, the Chilean Foreign Investment Law provides for tax stability (up to 10 years) at a rate of 42 per cent as the effective total income tax charge (Warden-Fernandez and Wälde, 2001).
- Treat the workforce as one of the stakeholders when increased profits grow the size

of the pie. This will mean that special bonuses be paid to workers when profitability reaches certain fixed pre-negotiated targets.

3.2 Public rent

Figure 1 suggests that taxes should contribute to about thirty-five per cent of the entire wealth pie. The reader should note that mineral royalties, discussed in the next paragraph under resource owner's rent, must be added to public rent where private ownership of mineral rights is disallowed by the host country. Considering the United Nations' endorsement of State's sovereignty over natural resources, a concept eagerly adopted by most developing countries as a symbol of opposition to colonialism, mineral royalties should resort under public rent. The reason why this study distinguishes between mineral royalties and taxation is because of South Africa's unique system of mixed private and state-owned mineral rights[3], which system is about to change to exclusive state ownership of mineral rights. The unique distribution of mineral rights in South Africa prompted the state to reserve certain *'strategic'* minerals in its favour in an attempt to secure additional public rents[3] from these national assets despite them being privately owned. It started by means of a lease consideration formula that was first introduced in 1910, which concept later replaced the flat (corporate) tax rate following the recommendations of the Corbett Commission of Inquiry in 1936. The end result was that gold mines were *'taxed'* twice on basically the same formula. The salient features of *'formula taxation'* are listed below:

- Government collects more taxes during periods of high profitability, but get less when profit-to-revenue ratios are low.
- If not connected to a minimum rate (as is the case with Botswana and Namibia), the formula may result in a zero tax liability;
- The tax liability can be reduced, and even waived, when profits are reinvested;

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3 For a comprehensive discussion on mineral rights and the evolution of formula tax in South Africa, see Cawood and Minnitt (1998) and Cawood (1999) respectively.

If resource owner's rent is added to that of public rent, it shows that the host government will receive approximately forty per cent of the wealth pie, which supports Cawood's (1999) optimal sharing ratio. Although forty percent appears to be an appropriate benchmark in the developing world, this ratio will vary depending on country specific characteristics and the risks host governments and investors are prepared to tolerate. Equitable sharing between government and the investor, while at the same time optimising the benefits derived from utilising the mineral resource, is no easy task because of the inverse relationship between the respective slices of the pie, which causes conflict in decision-making. Conflict between the two parties also stems from their perceptions of what constitutes a fair split. Because each nation's circumstances, needs and objectives will shape its own unique minerals and taxation policies, no ideal or model for sharing mineral rents is available to policy makers (Cordes, 1998). Rents collected by host governments as custodians of the national patrimony from mining operations are normally distributed as public rents to the population in the form of services and infrastructure. Before investigating possible ways of optimising public rent, one has to understand the composition thereof, which is briefly discussed below.

Corporate tax contribution to public rent

From the information in Section 4, the reader will note that the corporate income tax is the most important contributor to state revenue, with about eighty per cent of all the revenue received by the host governments in the developing world coming from this source over the life of a mineral project. The corporate tax rate is of prime importance to the foreign investor who will use it as the first direct tool for comparing the tax competitiveness of host countries. The result is that host countries set their corporate tax rates below or within the 30 to 35 per cent global average in an attempt to lure investment into the country. However, sometimes states compensate for this *'loss'* by introducing more and higher levels of minor taxes, thus creating a perceived competitive regime. Investors favour a tax regime where the corporate tax system accounts for most (preferably all) taxes because it is easier to estimate the total tax liability over the life of the mine.

Mineral royalty contribution to public rent

A royalty is the second most important minerals tax instrument where mineral rights are publicly owned, and accounts for approximately five per cent of the wealth pie shown in Figure 1. The state, in its role of custodian of the natural resources of the country, expects a royalty payment for the removal of mineral products from within its borders. This payment may take the form of periodic instalments (mineral royalties and/or severance taxes), a lump sum payable in advance (outright sale of the mineral rights and/or auctioning the right to develop) or complex variations and combinations of periodic and lump sum instalments. However, there are international examples of countries that do not charge mineral royalties, such as Chile, Peru and Zimbabwe[4], but such a *'weakness'* in mineral policy will cause shortages in distributable rent if these are not collected under some other guise.

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4 During a recent (July 2001) public announcement in Pretoria at the SADC Committee of Mining Ministers at Southern Africa – Australia Minerals Sector Synergies Symposium, the Zimbabwean Minister of Mines indicated that his government is in the process of introducing mineral royalties. Such royalties will be charged up to a maximum of ten per cent (non tax deductible) of the sales value.

Comment: This is the classic example of a government that are now introducing extreme policy measures through particularly high mineral royalties in response to public (political) pressure because of a history of no mineral royalty payments to the state, during which time natural resources were depleted.

Related to mineral royalty payments are severance taxes and state reservation of *'the right to mine'* minerals. Generally speaking, these are instruments designed to allow for some compensation to the public in the event of mineral rights not being state-owned. South Africa has a long history of reserving the *'right to mine'* certain mineral types to the state (Cawood and Minnitt, 1998) such as precious stones, precious metals and oil. This reservation has been reintroduced as a prominent feature of the new minerals policy. Unlike in the past, where only the right to mine minerals of strategic importance was reserved to the state, the new policy makes provision for the vested right on all mineral types.

Minor tax contribution to public rent

The remainder of public rents is made up of minor taxes, such as minimum taxes (Mexico and Indonesia), additional profits taxes (Mexico and Ghana), capital gains taxes (Indonesia), fuel taxes (most countries), withholding taxes (Indonesia), import/export taxes (Indonesia) and payroll taxes (most countries). Although these taxes are usually charged at low rates, they have *'nuisance'* value and because together they can severely impact on the split of rent between the recipients, these minor taxes should be restricted to a minimum.

Conflicts within government

In an attempt to answer the question, *'Who should get natural resource revenues'* Scott (1978) identified several criteria for the level of government collection and the distributional requirements of natural (mineral) resource rents. In terms of the Southern African situation, Scott's observations on the following issues could be considered:

- The right of lower levels of government to share in the rent through the collection of royalty-like payments. However, Southern African governments generally do not allow the collection of mineral royalties by lower levels of government.
- The importance of distributional grants to promote equity between mineral-rich and mineral-poor provinces. The South African government established a central revenue fund for this purpose (Constitution, 1996).

- The uniqueness of the mineral deposit in terms of commodity, markets, life of the operation (which is related to size), locality and existing infrastructure. Some areas may be more sensitive than others to sudden mine closures and may therefore require a larger proportion of rent, especially for mineral operations with a short lifespan.
- The size, location and demography of the population to whom the benefits should be distributed. This may be especially important where gross geographic product and infrastructure are vastly disparate as is the case with South Africa.

3.2.1 Strategy to optimise public rents

The host government must engineer a public policy that will allow the investor to grow the size of the pie so that the public can share in these benefits through the wealth collected by fiscal instruments. Hence, by optimising public policy, the slice of the government will be maximised, even though the sharing ratio remains the same. Host governments interested in maximising their slice of the pie through optimising public policy could consider the following issues:

- Define the possible contribution of the minerals sector by including the undeveloped mineral assets into the national accounts system, similar to the approach proposed recently for South Africa by Blignaut and Hassan (1991).
- Actively participate, possibly taking a leading role, in the process where the investor will identify stakeholders and negotiate fixed wealth sharing ratios with them.
- Negotiate a fixed ratio with the investor through a single tax rate that will account for all taxes, except for the mineral royalty that should be managed separately.
- Decide on how the public rent mentioned above should be shared among the different levels of government.
- Introduce a uniform mineral royalty nationally as compensation for the loss of a national asset, which should be managed separately from other government revenue along the principles of sustainable development.
- The negative environmental and socio-economic consequences of mine closures are normally borne by local governments. This suggests that there is a case for certain

minerals to be owned and managed by lower levels of government. Low value aggregates and construction materials that are locally exploited and marketed are good examples. However, this will take some motivation, because most of the states in Southern Africa do not make provision for sharing mineral rents with lower levels of government.

3.3 Resource owner's Rent

Because the norm in developing countries is for mineral rights to be publicly owned, resource owner's rent has already been partially included in the discussion of public rent. However, South Africa presently still recognises private ownership of mineral rights, which merits a separate discussion of resource owner's rent. If such private ownership of mineral rights is allowed, the investor is responsible for distributing the royalty to the holder of the mineral rights.

A mineral royalty is, by definition, payment to the holder of the mineral rights as compensation for the extraction and alienation of minerals from the land. Where private ownership of mineral rights is allowed, mineral royalties are payable directly to the holder of the rights as opposed to public ownership, where the host government or its nominee collects the royalties. The magnitude of the royalty payment for mineral resources of comparable value should theoretically be equal, regardless of ownership status. The identity of the owner of mineral rights has a strong influence on the size of rent available for distribution. For example, the self-interest of private individuals on privately-owned mineral rights results in higher compensation for the rights than the state, whose officials, responsible for collecting rents on behalf of the nation must act within the policy framework. Even for similar deposits, the distinction between the royalties payable to the state and that to private entities is necessary because the compensation expected by the two parties may be significantly different. It is the unique characteristics of the resource, such as location, size, shape, depth and grade, that should determine the price of the mineral rights, rather than the identity of the owner.

3.4 Environmental Rent

A valid concern for nature justifies that some portion of the economic rent is distributed towards caring for the greater environment. Historically environmental concerns have not attracted the regard that they are due, but the growing awareness of environmental responsibility has altered the pattern of wealth sharing. These are combined with emotive arguments to change sharing ratios so that environmental costs are likely to continue to grow. This is especially true of developed nations, where environmental compliance costs and contributions to environmental conservation programmes are expected to be much higher than the estimate of four per cent currently indicated in Figure 1. Finance institutions are also playing an increasing role in caring for the environment by pressuring non-compliant mining companies to treat the environment according to its value to society. An example is the World Bank recommended closure of the Ok Tedi copper operation (Mining Journal, 2000).

3.4.1 Strategy to optimise environmental rents

The host government, as custodian of the national patrimony, has the responsibility of ensuring that the greater environment is cared for through its policies. The minimum requirements would be as follows:

- Develop a culture of caring for the environment among the entire population as a national priority.
- Create environmental regulatory structures for mineral development that are able to collect time series data for environmental analysis, set environmental standards and monitor performance relative to these standards.
- Allow for comprehensive base-line studies in order to value environmental compliance costs, alternative (competing) land use applications and mineral rents accurately.
- Enforce environmental standards by penalising violators *(polluter pays principle)* and reward those developers who achieve standards in pollution intensity per unit of output produced.

3.5 Indigenous Rent

The increasing bargaining strength of indigenous rights movements has resulted in local and aboriginal communities receiving additional compensation and contributions towards their socio-economic programs. The legacy of colonial rule left a culture of deep-rooted dissatisfaction in the developing world because of the disregard for indigenous rights through *'forced'* land dispossessions. Failure to recognise these rights has led to severe civil and political disruptions in many developing countries. Zimbabwe, the Democratic Republic of the Congo and Sierra Leone are cases in point. The closure of the Bougainville copper mine as a result of rebel activity in Papua New Guinea is considered to be the most serious national crisis since its independence (Thompson, 1991). The recently resolved Bougainville crisis (1988 – 2001) began when local landowners sought a bigger share of revenues from the large copper mine at Panguna.

There is a broader awareness in industry of the need for community involvement in planning and decision-making and the need for good community relationships. Contributions towards social programmes have resulted in the emergence of fringe recipients, not through legal entitlement, but in the interests of goodwill. Examples include the provision of health and education facilities, job creation programmes and social upliftment programmes. Richards Bay Minerals in Kwazulu-Natal (South Africa) and Western Mining's copper operation in Tampakan (Philippines) are two examples.

Based on the example of the agreement between the royal Bafokeng Nation and Impala Platinum in South Africa, we can assume that indigenous peoples should receive a minimum payment of one per cent on sales revenue. This one percent royalty was built into the simulation models (latter part of Appendix B) in an attempt to quantify indigenous rents, which rents amounted to an average of about four per cent of the total wealth pie (as shown in Figure 1).

There may be wide divergence of views between national governments and local communities, and open conflict over how revenue is shared, how adverse economic and social impacts of mineral development will be mitigated and how the benefits could be

sustained after mine closure.

3.5.1 Strategy to optimise indigenous rents

The host government has yet again a major role to play in ensuring that indigenous communities are considered during mineral development. Some legislation, like for example the draft South African Mineral Development Bill, provide for discretional payment of royalties, or part of the royalties, to local and/or indigenous communities. However, this general and often insensitive approach does not provide for sustainable development of the community and the following issues are worth considering by host governments:

- Develop an official *Negotiation Policy* as is the case with the Chilean *'Compensation Policy'* that defines the rights of all parties and set the framework for compensation using a consensual approach.
- Create a comprehensive geographic information system (GIS) on all aspects of indigenous communities that will assist mine developers with stakeholder involvement. Such a GIS would be critical in deciding on the legitimacy of indigenous stakeholders. The Land Restitution Policy in South Africa may be used as a guide to compile a database of legitimate claimants.
- Actively participate in ensuring that mine developers channel an appropriate share of the wealth pie[5] towards these communities.

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5 These benefits may include any one or combination of a variety of schemes, such as direct contributions to primary health and education facilities, periodic instalments paid into a fund specifically designed to benefit communities, adult skills and literacy programmes, preference to locals when contracting employees, etc.

3.6 Landowner's Rent

When the mining company is not the owner of the surface title, the landowner becomes a legitimate recipient of mineral rent. These owners include private entities (that may include the indigenous community), the host government (at national, provincial or local government level) or environmentalists (national parks). As in the case of mineral rights, the payment to the landowner is affected by his/her identity. The land value in an environmentally sensitive or fertile area is almost certainly higher than that of arid land. The surface title owner may obtain these rents through outright sale or surface rental fees. Coal mining companies in South Africa, after buying the land from the owners, frequently allow them to continue using unaffected and/or rehabilitated areas at a nominal rental fee. In addition, they frequently allow owners the first option to buy the land back at a nominal price when mining operations finally cease. Figure 1 shows that the landowner receives a small and apparently insignificant proportion of total rent.

3.6.1 Strategy to optimise land rents

Although one might argue that government should not interfere with the landowner's rights to (exclusively) develop the land for its own benefit, one must appreciate that governments often own vast tracks of land, in addition to having permitting or administrative powers over privately owned land. There is therefore a legitimate role that governments should play in optimising land rents, over and above the usual land sales price that represents a market-clearing price. Within the framework of sustainable development, governments can consider the following issues:

- Create a comprehensive geographic information system on all land and mineral title that will assist mine developers with stakeholder involvement.
- Promote equitable and appropriate standards for valuing property in order to maximise stakeholder benefits. Valuation standards are especially important in the presence of competing land uses.

4 COLLECTION OF PUBLIC RENT IN SOUTHERN AFRICA

This section will define mineral rents received by Southern African states where after section five will attempt to measure government efficiency in distributing the rents back to the general population. In order to arrive at a realistic estimate of the size of government revenues from mineral projects, and arriving at valid conclusions and making recommendations, the total tax *'package'* must be considered first. This section addresses the issue by calculating effective tax burdens in Southern Africa and then analysing the ratios in which mineral rent is split between the two major recipients. This is achieved by entering country-specific information into the cash-flow model discussed earlier. The analysis in this section is based on calculating tax payments typically incurred by mining projects during their lives in each of the selected countries. The reason why comparison of effective burdens is preferred above that of marginal tax rates is because statutory tax rates could differ substantially from effective tax rates. This is because credits and other economic variables, such as depreciation, inflation, exchange rates and the definition of taxable income have the potential to significantly influence the size of the tax payment. Although most direct taxes were included in the model, only three categories are of concern to this study, namely corporate or income taxes, mineral royalties and minor taxes. Hidden taxes, e.g. payroll taxes and fuel levies were excluded because of the difficulty of quantifying them in a cash-flow model of this nature.

4.1 Analysis of mineral rent collected in Southern Africa

The host government uses fiscal instruments to recover the public's entitlement of mineral rent. These instruments can be classified into three main categories, namely corporate income taxes, mineral royalties and minor taxes, the relative efficiencies for both the competitive model (Cawood, 1999) and Southern African States are shown in Tables 1 and 2.

Table 1 Analysing mineral rent in Southern Africa

Description	Botswana	Mozambique	Namibia	South Africa	Tanzania	Zambia	Zimbabwe	Average
Public rent								
Greenstone gold								
Income tax (%)	40	58	67	85	63	46	70	61
Royalty (%)	21	21	21	12	16	14	0	15
Minor taxes (%)	39	21	12	4	21	39	30	25
Witwatersrand gold								
Income tax (%)	31	45	52	68	49	41	68	51
Royalty (%)	37	36	36	25	28	25	0	27
Minor taxes (%)	32	19	11	7	23	34	32	22
Limestone								
Income tax (%)	45	64	68	61	64	47	71	60
Royalty (%)	12	12	20	17	15	13	0	13
Minor taxes (%)	43	24	12	21	21	40	29	27
Coal								
Income tax (%)	45	68	74	66	70	49	71	63
Royalty (%)	13	8	13	12	10	9	0	9
Minor taxes (%)	42	24	12	22	20	42	29	27
Copper								
Income tax (%)	40	59	59	56	55	68	69	58
Royalty (%)	19	18	29	23	23	13	0	18
Minor taxes (%)	40	23	12	21	22	19	39	24
Public rent								
Averages								
Income tax (%)	**40**	**60**	**64**	**67**	**60**	**50**	**70**	**59**
Royalty (%)	**20**	**19**	**24**	**18**	**18**	**15**	**0**	**16**
Minor taxes (%)	**40**	**21**	**12**	**15**	**22**	**35**	**30**	**25**
Distribution rent								
Greenstone gold								
Public rent (%)	51	52	51	45	40	30	46	45
Investor rent (%)	49	48	49	55	60	70	54	55
Witwatersrand gold								
Public rent (%)	85	90	89	64	67	49	64	73
Investor rent (%)	15	10	11	36	33	51	36	27
Limestone								
Public rent (%)	49	49	51	44	41	30	47	44
Investor rent (%)	51	51	49	56	59	70	53	56
Coal								
Public rent (%)	51	50	50	43	40	30	48	45
Investor rent (%)	49	50	50	57	60	70	52	55
Copper								
Public rent (%)	50	54	60	51	44	47	44	50
Investor rent (%)	50	46	40	49	56	53	56	50
Distribution of rent								
Averages								
Public rent (%)	**57**	**59**	**60**	**49**	**46**	**37**	**50**	**51**
Investor rent (%)	**43**	**41**	**40**	**51**	**54**	**63**	**50**	**49**

Source: Appendix – Raw data from Resource Service Group CD, 1999. www.rsg.com.au

The rent distribution models show clearly that *firstly*, the corporate income tax is by far the most important contributor to state revenue in Southern Africa and secondly, the tendency for these states to identify minor (and hidden) methods of taxation to supplement tax revenue. On average fifty-nine per cent of all the revenue received by Southern African governments over the life of a mineral project comes from corporate taxes. However, the

competitive model (using the tax information of countries that secured significant investment for their mineral sectors) derives more than eighty percent of government revenue from this source. Although the corporate tax rate is the first instrument introduced to the foreign investor, the cash flow results show clearly how misleading this instrument is as a direct comparison tool for determining the tax competitiveness of a country. An interesting observation from the results in Table 1 is that Botswana (only forty per cent of public rent is collected through corporate taxes) and to a lesser extent Zambia (fifty per cent), opted for lower corporate tax rates (twenty-five per cent for Botswana and fifteen to thirty-five per cent for Zambia) in favour of minor taxes charged at higher rates.

The second most important minerals tax instrument is the mineral royalty. On average Southern African States expect sixteen per cent of all their revenue from mineral projects to come from this source. For the time being, Zimbabwe is the only exception to this rule, but is in the process of introducing measures to collect mineral royalties. The strategy of collecting no mineral royalties was used successfully during the early days of mining in the western areas of the United States in an effort to promote (colonial) development on traditional Indian land through mining activity. However, with the maturing of the United States and the development of International Law to the extent that it is now skewed in favour of indigenous (Anaya, 2000) and environmental rights, the federal government is now under tremendous pressure to impose a mineral royalty in order to compensate for these issues. Most countries in the developing world regard mineral resources as part of the national patrimony and the general public expect some compensation when these (national) assets are depleted through mining, especially if the industry turns out bonanza returns. The public, especially communities living in close proximity to mines, expect to share in the wealth of mining and, if they don't experience tangible benefits, the ruling political party can be open to severe criticism, which can ultimately lead to their downfall.

The remainder of public mineral rent in Southern Africa is made up of minor taxes such as free equity (Botswana), value added tax or VAT (all countries except Zambia where mining is exempt from VAT), withholding taxes (all countries) and import taxes

(Tanzania). Although these *'nuisance'* taxes are usually charged at low rates, together they potentially have a severe impact. For this reason investors prefer a simple tax regime where these minor taxes are restricted to a minimum. Table 6 indicates that the sum of these taxes constitute a significantly large proportion of the total tax burden. It seems that Botswana (forty per cent) and to a lesser extent Zambia (thirty-five per cent) have targeted these taxes to raise more income for the government from the mining industry.

Table 2 compares the average ratios of the selected Southern African States with the competitive and investment friendly model derived by Cawood (1999). On the basis of this information, the international competitiveness of the current Southern African regime is questionable, but a discussion thereof falls outside the scope of this study. One area that requires further research is the magnitude and extent of Southern Africa's minor taxes. The impact of these taxes is outside the competitive range for most of the selected countries. Botswana, Mozambique, Namibia, South Africa and Tanzania need to investigate their mineral royalty regimes as these are also above the competitive range.

Table 2 Tax competitiveness of Southern African states

Description	Botswana	Mozambique	Namibia	South Africa	Tanzania	Zambia	Zimbabwe	Average for Southern Africa	Competitive (optimal) range	Competitive (optimal) average
Public rent Averages										
Income tax (%)	40	60	64	67	60	50	70	**59**	**28 – 97**	**77**
Royalty (%)	20	19	24	18	18	15	0	**16**	**0 – 17**	**6**
Minor taxes (%)	40	21	12	15	22	35	30	**25**	**3 - 16**	**8**
Distribution of rent Averages										
Public rent (%)	57	59	60	49	46	37	50	**51**	**32 – 43**	**40**
Investor rent (%)	43	41	40	51	54	63	50	**49**	**43 - 68**	**60**

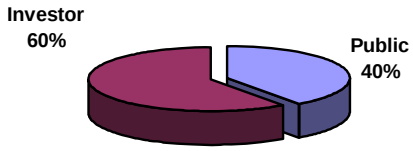
Sources: Table 1 & Cawood (1999)

The competitive model shows clearly that the investor is entitled to a greater share of the

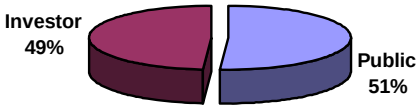
mineral rents derived from mining and, as illustrated in Figure 3a, suggests a split of about 60 to 40 in favour of the investor. Figure 3 clearly reveals the inverse relationship between investor and public rent. The reader must appreciate that the distribution of rents for the Southern African model (Figure 3b) will be severely influenced by the extent of the orebody, quality of the mineral reserves and relative ease of extraction because of the inclination for formula-style taxation (South Africa, Namibia and more recently Botswana) in the region.

Figure 3 Modelled distribution of total rent

(a) Competitive distribution



(b) Southern African distribution



Source: Table 2

The information in this section suggests that, on average, governments in Southern Africa demand about fifty per cent of the wealth, which implies that these states have instituted fiscal policies that will ensure an adequate share from mining. This observation is supported by the 2001 World Development Indicators as published by the World Bank (pp. 286 – 289). It shows that the average tax revenue, as a percentage of GDP for 1999, for the countries selected to compile Figure 3a, is about 15 per cent while that for Southern Africa is generally above twenty per cent (25.6% in South Africa and 26.1% in Zimbabwe).

5 VISIBILITY OF MINERAL RENT IN THE ECONOMIES OF SOUTHERN AFRICA

We have established in Section 4 that the policy and fiscal instruments of Southern African governments are designed to secure sufficient public rents from mineral development. This section will describe the visibility of mineral rents in the economies of the selected countries by answering the following fundamental questions:

- *Is the Southern African mining sector sustainable?*
- *Has the Southern African mineral sector made a positive contribution over time?*
- *Did Southern African governments distribute the wealth collected from their mineral sectors equitably?*

5.1 Broad-based sustainable mineral development

What is broad-based sustainable development? The goal of broad-based sustainable development (BBSD) is that equitable, participatory and environmentally sustainable principles must be aligned with economic growth (Weaver et al, 1997). Sustainable income is understood as the *"level of consumption that can be sustained indefinitely without diminishing the asset stock"*. Blignaut and Hassan (2001) related this concept to the minerals industry by stating that, ***'although natural (mineral) asset stocks cannot be maintained because of their depletable (wasting) nature, their capacity to generate the same stream of income in the future remains intact'***. This approach requires that a portion of the rents be reinvested in order to provide for a sustainable income.

There is a perception that economic growth on its own will solve many of the problems experienced in the region. However, the international experience has shown that economic development often ignores people and it is only if poverty is alleviated that one can say economic growth is successful and sustainable. Government policies should integrate economic growth with people issues through good governance, democracy, providing opportunities for all people to participate in the economy and by protecting the environment. Weaver et al (1997) observed that: *"When growth is pursued at the expense of equity, it dooms large numbers of people to misery. When growth destroys the environment, endangers our health, and threatens our descendants' ability to live on this planet, it is difficult to see this as either sustainable or desirable".*

The vision of a better future for all humanity resulted in identifying the three major components of sustainable development, which are as follows:

- A healthy, growing economy that continuously rewards investment.
- Equitable sharing and wide distribution of the benefits of economic growth. This component impact on the social well-being of the population.
- Respect for and conservation of the environment.

5.2 Measuring the Southern African region's economic performance

Given the components of sustainable development listed above, the next question that needs answering is: *How is the Southern African region doing in terms of sustainable development?*

Before the countries of the Southern African region can move towards a situation where they can sit at the table and enjoy the wealth pie in a sustainable manner, there must *first* be an oven that can sustain a constant heat (components of sustainable development), *second*, ingredients for the pie (mineral rents), and *third*, a recipe according to which the pie must be prepared (government policies).

Component 1: The economy

The tables below give an overview of the historic and present position in Botswana, Mozambique, Namibia, South Africa, Tanzania, Zambia and Zimbabwe and they form the basis for the discussion in this section.

Weaver et al (1997) listed the various methods of valuing the economy in terms of sustainable development. If these were applied in the context of this study, the methods would be growth per capita, stability of inflation, levels of employment, the state of government accounts and sector shares of GDP for agriculture, manufacturing and mining. This information appears in Tables 3, 4 and 5.

Table 3 General state of economies in Southern Africa (1999)

Country	GDP (US$m)	Population (million)	GDP(US$)/Capita	CPI (%)
Botswana	**5 022**	**1.61**	**3 119**	**7**
Mozambique	**3 877**	**17.30**	**224**	**2**
Namibia	**3 272** (1998)	**1.70**	**1 730** (1998)	**9**
South Africa	**130 167**	**43.05**	**3 024**	**5**
Tanzania	**8 066**	**32.79**	**246**	**8**
Zambia	**3 470** (1998)	**10.41**	**344** (1998)	**31** (1998)
Zimbabwe	**5 633**	**13.08**	**431**	**58**
SADC	**157 902** (1998)	**192.41** (1998)	**821** (1998)	**7.7** (1998)
USA	**$8.5Trillion** (1998)		**31 500** (1998)	**1.6** (1998)

Source: Appendix A - Raw data from IMF (2001) & SADC (1999) & www.infoplease.com

Table 4 Nominal growth of economies in Southern Africa

Country	Annual growth: GDP[1] (US$)/ Capita %			Annual Inflation %	Annual growth: Current account[2]/GDP ratio %		
Period	**1970-1980**[3]	**1980-1990**	**1990-1999**	**1991 - 1999**	**1970**	**1980**	**1990-1999**[4]
Botswana	+ 69	+ 13	+ 3	11	n/a	- 10	+ 10
Mozambique	n/a	- 5	+ 12	33	n/a	- 50	- 31
Namibia	n/a	n/a	+ 1	10	n/a	n/a	- 10
South Africa	+ 27	+ 2	- 1	9	- 4	+ 8	+ 3
Tanzania	+ 19	- 4	+ 4	22	- 4	- 13	- 19
Zambia	+ 7	- 5	+ 4	80	+ 18	- 4	- 5
Zimbabwe	+ 17	+ 1	- 4	30	+ 1	- 3	- 2

Note: 1 Nominal GDP converted to US Dollars using the average exchange rate for the year

2 The balance of the current account is the difference between country exports and imports

3 Percentage growth of US Dollars per capita over period divided by ten

4 Arithmetic mean of year on year growth over the period

Source: Appendix A- Raw data from IMF (2001) & SADC (1999)

Table 5 Sector shares of GDP in Southern Africa

Country	Agriculture (% of GDP)		Mining (% of GDP)		Manufacturing (% of GDP)		Employment[1] %
	1990	1998	1990	1998	1990	1998	1998
Botswana (1990 not available)	4 (1995)	3	33 (1995)	38	5 (1995)	5	27
Mozambique	25	28	0	0.3	14	9	Not available
Namibia	9	9	20	13	14	16	Not available
South Africa	5	4	10	8	26	24	20
Tanzania (1990 not available)	47 (1995)	45	1 (1995)	2	7 (1995)	7	Not available
Zambia	16	6	10	7	34	14	9
Zimbabwe	15	17	4	2	21	14	20

Note: 1 The ratio of total employed over population between the ages of 15 and 60

Source: Appendix A- Raw data from IMF (2001) & SADC (1999)

In order to allow for comparison, the Gross Domestic Product (GDP) statistics in the three tables above were standardised in US Dollar using the annual exchange rates as they appear in the IMF (2001) statistical tables. Table 3 shows that South Africa is economically the most active country, accounting for about 80 per cent of the Southern African Development Community[6] (SADC) region's GDP. To put things into perspective, the SADC region's total GDP contribution is less than two per cent of that of the United States. These statistics explain the poverty associated with the Southern African region, which is expressed more explicitly in GDP per capita. It is also an indication of how well economic benefits are distributed in the region. Table 3 shows that Mozambique, Tanzania, Zambia and Zimbabwe are very poor with less than $1US per capita per day. The average for the entire SADC region is just above $2US per capita per day while the corresponding number in the US is about $90US per capita per day. Weaver et al (1997) categorised economies as follows: Low-income economies (less than $700US per capita per year), lower-middle-income economies (US $700 to ± US $3 000), upper-middle-income economies (US $3 000to ± US $10 000) and high-income economies (above $ US 10 000 per capita per year). This classification indicates that Namibia has a lower-middle-income economy while

Botswana and South Africa have advanced to upper-middle-income status.

The next question to be asked is: *How fast is per capita income growing each year?* Table 4 shows spectacular growth in GDP per capita in Southern Africa for the 1970s (on average 28 per cent), followed by twenty years of static, and for most countries, negative growth. The massive growth during the 1970s for Botswana and South Africa was largely due to *firstly*, remarkably stable and strong currencies and *secondly* in the case of Botswana, low population growth during the decade (See Tables in Appendix A for details). The only country that managed persistent positive growth in GDP per capita is Botswana, which did not experience internal conflict (e.g. as experienced in South Africa, Zimbabwe and Mozambique), was not at war with neighbouring countries (e.g. as was the case in South Africa and Namibia) and had not implemented extreme policies as a symbol of opposition to colonialism (e.g. the nationalisation of the Zambian copper mines).

A further component of a healthy economy is stable and relatively low levels of inflation. Table 3 shows that Botswana, Mozambique, Namibia, South Africa and Tanzania managed single digit inflation rates for 1999. Of these countries Botswana, Namibia and South Africa had consistently stable consumer prices for the previous ten years. Zambia and Zimbabwe experienced extreme volatility in their economic indicators, pointing to inappropriate government policies in this regard.

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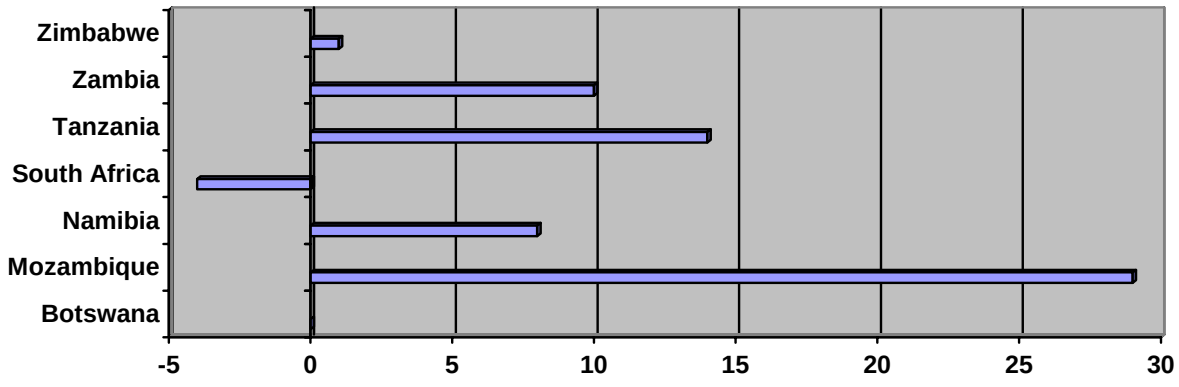
6 Member countries are Angola, Botswana, Democratic Republic of the Congo, Lesotho, Malawi, Mauritius, Mozambique, Namibia, Seychelles, South Africa, Swaziland, Tanzania, Zambia and Zimbabwe.

The next criterion for measuring economic performance, is to investigate national accounts, more specifically the current (capital) account balance (surplus or deficit) as a percentage of GDP. This statistic shows how successful a country balances its import and export dealings with the rest of the world. Table 4 shows that Zambia's current account was in a healthy state during the 1970s, but declined consistently since then. The main reason for this deterioration was extreme (nationalisation) policies shown world-wide to be unsustainable. The best performer is, once again, Botswana, who managed its policies in such a way as to turn a negative account in 1980 into an (positive) average of ten per cent during the 1990s. Although Botswana and South Africa have managed positive growth in their current accounts, one has to question the sustainability thereof. One way to measure sustainability is to compare domestic investment with export earnings, as illustrated in Figure 4. One would hope that most (at least fifty per cent) of the export earnings are reinvested in the domestic economy in order to sustain future exports. However, this is a condition that is clearly absent for the region. The best performer in this regard is Mozambique, who averaged twenty-nine per cent during the 1990s. The worst performer over the same period was South Africa, whose negative average is an indication of the capital flight that took place over the 1990s.

Figure 4 Nominal domestic investment (US$) to export earnings (US$) ratios as a percentage (Average for 1990s)



Source: Appendix A- Raw data from IMF (2001)

In addition to the economic criteria discussed earlier, a healthy economy has relatively full employment. Formal employment rates in Africa are extremely low and the continent is in desperate need of employment opportunities, as the low GDP income per capita in Table 3 and the employment rates in Table 5 clearly indicate. Government policies in the region should aim to increase employment rates to above fifty per cent. This is achievable when policies are aimed at stimulating growth, especially in the small-scale agricultural and mining sectors. The small-scale sector is known for its ability to distribute economic benefits widely. It provides a whole range of economic, social and environmental services because of its potential for rural employment, enterprise development, food security and consequently, alleviation of poverty. Governments in the SADC region would do well to invest in research aimed at developing these sectors. For the interim, governments should focus on land access policies and capacity building programmes through education.

The final criterion for measuring the economic performance of the Southern African region is structural transformation. Such transformation needs to address many issues, such as an increase in agricultural activity, moving from relatively few crops to a diversified industry with many different crops and agricultural products. The importance of agriculture must not be under-estimated, because empirical evidence shows that this is the sector where benefits are distributed the most widely, meaning that agricultural activity is the first solution in dealing with poverty. Table 5 shows that Tanzania, Mozambique and Zimbabwe derive a large portion of GDP from agriculture. Botswana relies too much on its mineral industry and need to introduce policies stimulating its agricultural sector. Zambia needs to investigate all the sectors in its economy, because agriculture, mining and manufacturing showed a decline of activity during the 1990s. It seems that Zambian policy makers acknowledged this shortcoming because since 1999 the government has made a strategic decision to move away from its centrally owned and planned economy. The current South African land reform in terms of the Restitution of Land Rights Act of 22 of 1994 is aimed at returning ancestral land to the heirs of these indigenous communities. Such access is likely to stimulate the agricultural sector because agriculture and the production of basic foodstuffs are likely to be the primary activity of these resettled communities. The land reform policy, followed by an Act of Parliament to support the vision of the policy and the implementation

of a clear process by the Department of Land Affairs in order to achieve a national goal seems to be a responsible approach to redress land access problems. Zimbabwe's militant stance towards white land owners is unlikely to yield a satisfactory outcome, affecting agriculture, mining and manufacturing negatively.

The next important goal is a gradual shift away from a raw materials-based economy through manufacturing to services, without compromising the agricultural sector. The first step towards this is an education issue, meaning a shift away from uneducated and low-productivity workers to an economy characterized by educated and high-productivity workers. South Africa has diversified its economic activity and has advanced to a situation where the manufacturing sector is the largest contributor to GDP. However, this was achieved at the expense of the agricultural sector. Namibia's economy is perhaps the best balanced of the selected countries. Mozambique, Tanzania and Zimbabwe need to introduce policies stimulating further investment into their mining sectors while Botswana already introduced incentives to stimulate its manufacturing and beneficiation sectors.

Component 2: Distribution of benefits

The success of distributing the benefits of growth among the population can be measured by life expectancy, literacy, education and perhaps more importantly, the United Nations' Human Development Index (HDI). Life expectancy measures the effectiveness of governments' basic (primary) health services, literacy indicates how well a government is preparing its citizens to cope in a literate world, education influences worker efficiency and the HDI is a comparative indicator of governments' ability to deliver the range of social services affecting the quality of life in a nation. From a sustainability point of view, the comparison in the index shows how well countries translate their wealth into social benefits. In the HDI rankings, Southern African countries perform poorly, despite their abundant mineral wealth. Table 6 shows that only South Africa and Botswana have indices above the developing world, but still lag behind world averages.

Table 6 Service delivery in selected jurisdictions

Country	Life expectancy (1994)	Adult literacy rate (1994)	HDI (1994)	HDI World ranking
High human development	(years)	(%)	(value)	(rank)
Canada	79	99	0.96	1
USA	76	99	0.94	4
Medium human development	(years)	(%)	(value)	(rank)
South Africa	64	81	0.72	90
Botswana	52	69	0.67	97
Namibia	56	40	0.57	118
Zimbabwe	49	85	0.51	129
Low human development	(years)	(%)	(value)	(rank)
Zambia	43	77	0.37	144
Tanzania	50	67	0.36	149
Mozambique	46	40	0.28	166
All developing countries	***62***	***70***	***0.58***	
Least developing countries	***50***	***48***	***0.34***	
Sub-Saharan Africa	***50***	***56***	***0.38***	
Industrial countries	***74***	***99***	***0.91***	
World	***63***	***77***	***0.76***	

Notes: HDI (Human Development Index)

Source: http://www.undp.org/hdro/hdii.htm

Component 3: Environment

The environment is the source of the materials we require for mining. The mining industry is one of the biggest generators of waste products and has significant potential to impact negatively on the environment. Waste production is likely to increase in the future because low-grade/high-volume-deposits are now favoured by large (international) operators, as

opposed to the past preference for high-grade/low-volume-deposits, which are now actively pursued by the small-scale sector. However, waste production is set to increase over time with the depletion of higher-grade deposits. This in itself poses significant doubt about the sustainability of mining benefits because these benefits will at some stage be outweighed by the negative legacy (if uncontrolled) of these waste concentrations.

One way to forecast whether mining in Southern Africa is environmentally sustainable is to look at the environmental laws pertaining to mining. Internationally, most countries have, since the early 1990s introduced some environmental legislation. This is also the case in Southern Africa, albeit that some are still at draft stage, for example Namibia. Some of these states have advanced to the stage where they require reclamation bonds from mining companies (e.g. South Africa and Tanzania) while others are reviewing their policies with the view to introducing financial provision (e.g. Namibia).

Environmental law is no guarantee that the environment will be cared for. A typical example of how environmental law can fail is post-1992 gold mining in the Randfontein-Krugersdorp area in South Africa. The Minerals Act of 1990 introduced environmental best mining practice in 1992, and, despite this law, environmental degradation continued. A large surface mine was created, the overburden material dumped in various localities without rehabilitating these dumps and simultaneously old tailings dams were stripped of their vegetation cover in an attempt to process the tailings in these old (rehabilitated) dumps. Being a marginal gold project, the profits were insufficient to cover environmental expenses and with the subsequent decline of the gold price, mining activities ceased, leaving behind a degraded environment. The question is, *'What can we learn from examples like these?'*

- *First,* the process of introducing environmental best practice must be ushered in by environmental education to the mining industry, government officials and local communities, who need to play a more participatory role.
- *Second,* government officials need to adopt a rigid approach in ensuring environmental compliance.
- *Third,* mining should not be allowed to continue when revenues cannot cover environmental compliance costs.

- *Fourth,* the tax formula for South Africa rewards marginal producers by waiving their tax liability in favour of job creation. The end result is that the government receives little no mineral rent while the national (mineral) asset is exhausted in the process. The '*reward'* for this failure in tax policy is a polluted area, which burdens the present and very likely, future generations of the local community. Although it is true that formula style of taxation has benefits (e.g. it prevents sudden mine closures, reduces the pay limit, protects short-term employment, etc.), one has to question its appropriateness in the context of sustainable development. Disadvantages of formula taxation are that the system encourages producers operating close to the *'tax tunnel'* of five per cent to become marginal in an effort to avoid taxes, profitable operations have to cross-subsidise marginal operations and the additional supply keep depressing world prices, starting to affect the more profitable operations.

More questions than answers.

In answer to the fundamental questions, the following may be concluded as a result of the information discussed in this section:

- *Is mining sustainable?* The answer to this question is that mining is probably not sustainable, mostly because of its depletable nature. Sustainable mineral development can only be achieved when the depletion rate of the resource does not exceed its replacement rate. One may argue that continued exploration will ensure sustainability but, while it is true that the operation's production may be replaced or sustained, such replacement reserves will seldom be from the same geographic locality as the depleted resource. One way of compensating the local community for their loss is to reinvest the benefits or rents, in consultation and on their behalf, in such a manner that these ***economic* benefits *can be sustained after mining***.

- *Has the mineral sector made a positive contribution over time?* The economics tell us that, using mining's contribution to GDP and especially foreign exchange earnings, mining has indeed made a positive contribution to the national economies of the Southern African region. Statistics South Africa recently compiled a Poverty Map for

South Africa, indicating the poverty areas in the country (StatsSA, 2000). The survey fixed the poverty line at a household expenditure of R800 per month using 1996 prices. An inspection of the map shows that there are two *'rich'* provinces, namely Gauteng and the Western Cape. Gauteng's situation can be interpreted as the initial mining activities in the province having been successfully progressed to manufacturing and service industries. Table 7 correlates the information on the map with some of the traditional mining areas in South Africa. The table shows that mining has indeed impacted positively on poverty, compared to other areas, where little or no mining occurred, like for example in the Eastern Cape, which has an average poverty rate of forty-eight per cent.

Table 7 Poverty in traditional mining districts of South Africa compared with Eastern Cape

District	Mineral	Remarks
Johannesburg	Gold	Less than 20% of population below poverty line
Welkom	Gold	20 - 40% of population below poverty line
Klerksdorp	Gold	20 - 40% of population below poverty line
Witbank	Coal	Less than 20% of population below poverty line
Kimberley	Diamonds	20 - 40% of population below the poverty line
Rustenburg	Platinum	20 - 40% of population below the poverty line
Eastern Cape	No mining	More than 40% of population below poverty line

Source: Statistics SA

- *Did governments distribute the wealth collected from the sector equitably?* This is a very difficult question to answer. The GDP per capita indicators in Table 3, read with the information in Tables 5 and 6, indicate that Botswana, Namibia and South Africa have performed reasonably in this regard while government delivery in Zambia and, to a lesser extent, Zimbabwe, is questionable, despite significant mineral potential and a long history of mining.

To summarise:

- ***Mining on its own is not sustainable, but the benefits are;***
- ***The mining industry has the potential to make a positive contribution; and***
- ***Mineral rents were not optimally distributed in the region.***

6 ALIGNING SOUTHERN AFRICAN POLICIES WITH SUSTAINABLE DEVELOPMENT

The need for foreign minerals investment throughout the developing world has prompted competing countries to design policies that reward the investor with a significant portion of mineral rents. However, these favourable terms may result in a perception at grass roots level that multinationals are enriching themselves at the expense of the natural resource base. The consequence is that host governments are challenged with the immense responsibility of drafting policies that will ensure an acceptable distributional balance among the recipients of mineral rents. Despite a host government's mandate to distribute public rent in the form of services and infrastructure, its own running costs unavoidably absorb a large proportion of rents. The result is that not all the benefits of public rent are passed down to the population when collected at national government level. It is then in the interest of the multinational companies to assume joint responsibility for distributing a portion of the rent to entitled recipients in order to prevent political unrest as a direct consequence of mine development. Apart from sharing the rent with the state, investors can ensure stability by recognising the rights of all legitimate stakeholders. Policy makers will have to investigate optimal sharing ratios with the view to proposing appropriate policy (often fiscal) instruments in order to balance political stability with international competitiveness.

6.1 Implications for Southern African governments

Defining sustainable development is a lot easier than figuring out how to get there. Although markets can be efficient on their own, unregulated markets normally don't lead to social justice and sustainable development. ***Governments have to play a central role in ensuring that revenue from mining results in economic and social benefits for all citizens.*** Section 5 indicated that Southern African states still experience problems with poor management of resources and inequality of access and ownership. Environmental laws are often weak, subject to manipulation and sometimes not implemented.

Historical experience suggests that political stability, whatever the form of government, and the stability of the economic rules of the game, is an important and underrated source of economic growth.

According to Weaver et al (1997), Sub-Saharan Africa is the only low-income region in the world that has not experienced a substantial increase in income per capita since the 1950s. Africa started on its path from colonial exploitation a generation later than other former colonies in Asia and the Middle East, and many generations later than those in Latin America. At the end of the colonial era, most countries were disadvantaged in terms of infrastructure, development institutions and education. Recurrent drought, internal conflict and war, often fuelled as a consequence of mineral wealth, make it increasingly difficult for the region to attract investment from a global investment community sensitive to the risks posed by the region. ***The best way of mitigating these risks is for governments to build capacity for good governance in the region. Good governance by technically competent and accountable officials is therefore the primary consideration.***

Good governance:

The role of central government in creating the physical, legal and social infrastructure that permits markets to function, private firms to operate and community organisations to flourish (Weaver et al, 1997). Anthony Scott, through several of his publications, consistently avers that governments are social creations whose effectiveness is measured by establishing how well they meet the needs of society.

6.2 Development strategy for Southern Africa

Priority 1: Build capacity

1. To increase government's legitimacy is to increase its governance capacity. The advantage of having a legitimate and democratically elected government is that policies can be more easily implemented with less risk of failure. Weaver et al (1997) provided governments with the following criteria to measure effective governance:
   - *Technical competence of government officials*
   - *Organisational effectiveness.*
   - *Accountability of officials.*
   - *Effective rule of law*.
   - *Transparency.*
2. Governments must invest in people, particularly their primary education and health care, which will make them more productive workers.

Priority 2: Focus economic policies on growth

1. Implement a growth strategy and identify key performance management areas for measuring progress in the balance of payments, government spending, international trade, inflation, etc. The IMF (2000) recommended a strategy for growth in Sub-Saharan Africa after analysing the policies of 32 countries and identifying the key determinants for positive growth rates during the 1990s. Countries in the Southern African region will do well by following the approach outlined and discussed in this well-worded document.
2. Stimulate growth by ensuring that income-producing assets (land, labour and capital) are equitably distributed among the population.
3. Increase productivity in the small-scale agricultural sector by paying for agricultural research and for converting new technology to suit local

conditions.

4. Government policies should provide incentives for promoting economic structural reform through guided transformation of raw materials to manufacturing, with the government playing a key role in getting the industry started. One way to achieve this is through protectionism, whereby tariffs and quotas protect domestic *'infant'* industries. However, protectionist policies are not sustainable because they tend to reduce natural competitiveness and result in expensive local prices for such produce. A more sustainable way is for governments to give incentives (e.g. immediate write-off of capital expenditure and other allowances) to gradually transform the economy from raw materials-based into the production of intermediate (processed and refined goods) to ultimately, final consumer goods. There is also a global implication because the developed world should dismantle all forms of intervention that distort world prices, hurting opportunities in Southern Africa and in particular, that of poor rural communities.

Priority 3: Integrate sustainable development in policies

The following issues may serve as a base for aligning the minerals sector with the principles of sustainable development:

- Efficient use of resources
- Raise recycling rates
- Account for social and environmental costs

Strategy:

1. Adopt a people-centred approach with effective stakeholder participation, focusing on capacity development. Sustainability requires (fair and equitable) consensual solutions to conflicts.
2. Limit waste production by reusing waste created in one production process in other production processes. However, only a few sectors of the minerals industry (e.g. aluminium) are vertically integrated and because most mining

companies are commodity producers, it could hinder optimal recycling strategies.

3. Enforce appropriate mine closure planning in order to reduce the environmental, social and economic legacies of mining, despite the difficulty in finding consensus on funding mechanisms.

Priority 4: Align mineral wealth with the principles of sustainable development

Unlike renewable resources, for which optimal resource-use programmes can be designed for sustainable rates of harvesting, wasting assets decline in the absence of new discoveries. Consequently their capacity to generate a constant flow of income and employment is limited (Blignaut and Hassan, 2001). This emphasises the need for effective management of mineral wealth by building the capacity to make the system work. According to Danielson and Lagos (2001), government has to take a central role in assuring that mining *"results in economic progress to the citizenry"*. This may cause tension between federal (national) governments and local structures in rural areas because of *'expectation gaps'* in hopes that the mining project can ensure sustainable development for the region. Over-eagerness by host countries in an attempt to maximise public rent may raise the costs of production to the extent that there is not enough rent remaining to reward the investor, particularly in an environment where real mineral prices for many minerals are continuing to decline.

Strategy:

1. Develop appropriate sharing ratios for distributing mineral wealth, similar to those discussed in Sections 2 and 3 of this report.
2. Compensate future generations for present consumption of mineral wealth by stimulating economic development, such as manufacturing, which is capable of providing the same stream of economic benefits in the future[7].
3. Where appropriate, use the royalty component of mineral rent to compensate the local community and their future generations for the loss in quality of life as a consequence of resource loss and environmental degradation.

4 Mineral resources need to be *'liberated'* and made available to local small-scale (emerging) companies[8].

5 Partner the formal investment community to *'subsidize'* the small-scale sector by allocating resources (financial, expertise and mining rights)[9].

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7 One way to achieve this goal is to create a separate fund in order to ensure an *'orderly injection of rents into the economy'* (Auty and Brown, 1997). This is especially appropriate when mining makes up a high proportion of GDP, as is the case in Botswana.

8 Organised small-scale mining activity is a solution for people living in poverty, who have unequal access to basic necessities. According to Banuri and Spanger-Siegfried (2001), small- and medium-scale development finance has the potential to create large numbers of sustainable livelihoods.

The Brazilian and Namibian Minerals Act are good examples of how to promote small-scale mining, with certain areas of known mineral potential being reserved for such activity. Access to these *'reserved'* areas is streamlined in terms of easy permitting and special compliance rules, the most important obligation being of an environmental nature.

9 Poorer people lack capital and land and as a consequence, are mostly excluded from many financial services. There are several recent examples in South Africa where partnerships between the government and the private (mining) sector assisted small-scale and black empowerment deals, for example Rexile Investments at Osizweni in Kwazulu-Natal. Rexile went into partnership with Corobrik in order to mine clay and manufacture high quality bricks. This is a capacity development project where Corobrik will initially assist with management, marketing and environmental compliance. The role of the state is to arrange for finance (through the IDC), to supply assistance with permitting and environmental compliance (DME) and if necessary,

mobilise its research services (for example Mintek and Miningtek's involvement at Louisville near Barberton in Mpumalanga) to enhance production efficiencies.

The stakeholders in mineral development will do well when realising that a larger wealth pie means more benefits, even when sharing ratios decline. Governments in some of the Latin American countries grasped this winning recipe and were rewarded with unprecedented inflows of capital into their mineral sectors.

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Appendix

(A) Economic indicators for Southern African states

(B) Simulation models for calculating rent

(C) Distribution models