



State intervention in the mineral sector:
*maximising the development impact of
the people's minerals assets*

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STATE INTERVENTION IN THE MINERALS SECTOR

**Maximising the Developmental Impact of the People's Mineral
Assets: State Intervention in the Minerals Sector (SIMS)**

Summary

**of Report Prepared for
the ANC NEC**

Maximising the Developmental Impact of the People's Mineral Assets: State Intervention in the Minerals Sector (SIMS)

SIMS Summary

This summary consists of a Review and Discussion that covers a) the role of minerals sector in our country; b) the critical issues around minerals/mining; and c) what other countries have done to enhance the developmental impact of the extraction of mineral assets. This is followed by proposals for South Africa to increase the developmental impact of mining. The proposals are grouped under Ownership and Control; Governance; Economic Linkages (Fiscal, Backward, Forward, Knowledge and Spatial); and the Regional Dimension.

1 Review and Discussion

- 1) The 2010 meeting of the ANC's National General Council took a resolution on the role of the state in the economy. This resolution was more encompassing than the matter of nationalisation of the mines only. It was this viewpoint that informed delegates to instruct the NEC to carry out an in-depth study on how best to leverage South Africa's mineral wealth (and other natural resources) to achieve the key strategic goal of placing the economy on a new job-creating and more equitable growth path, in the context of the ANC's Polokwane National Congress economic transformation resolution on creating a democratic developmental state that *"...must ensure that our national resource endowments, including land, water, minerals and marine resources are exploited to effectively maximise the growth, development and employment potential embedded in such national assets, and not purely for profit maximisation."*
- 2) This study would enable the ANC to present a scientifically researched overview of the minerals sector in particular, as well as international case studies so that any political decision taken is based on an understanding of the real issues and other country experiences. While the resolution further directs the ANC to look at other sectors, including the energy and financial sectors, this research project was required to focus on the minerals sector. The terms of reference called for a critical analysis of the existing mining sector, including potential and actual upstream and downstream sectors; mineral-related logistics; energy and environmental sustainability challenges and opportunities; existing state assets in the sector; present legislation and regulations including the licensing regulations, and the Mining Charter. The project was also required to review a variety of international approaches to state intervention in the minerals sector, as well as the historical perspective on the evolution of current mineral regimes. This will be achieved through evaluating the forms of state interventions by 'developmental states', including through nationalisation, and evaluating other factors influencing such

interventions in the context of maximising the growth, development and employment potential embedded in mineral assets.

- 3) The project team adopted the following methodology:
 - i. Commissioning studies/research on a number of critical topics – e.g. the South African Minerals-Energy (MEC) complex; international trends in state ownership by the Raw Materials Group (RMG);
 - ii. Undertaking a series of international visits to the following countries:
 - Latin America (Brazil, Chile and Venezuela);
 - Africa (Botswana, Namibia and Zambia);
 - Asia (China and Malaysia);
 - OECD (Norway, Finland, Sweden and Australia)
 - iii. Hosting a series of stakeholder workshops with government; private sector; research institutions; trade unions; and civil society organisations; and
 - iv. Undertaking own research.

- 4) The first point of departure for the study is the ANC's policies & strategies on the people's mineral resources which have their roots in "The Freedom Charter" (1955), the "Ready to Govern" (1992) document, the Reconstruction and Development Programme (RDP, 1994) and the Polokwane Conference (2007) Economic Transformation resolution. In all of these documents the nation's mineral assets are seen as a resource to improve the lives of all of our people.

- 5) The Freedom Charter states clearly that "*The national wealth of our country, the heritage of South Africans, shall be restored to the people. The mineral wealth beneath the soil ... shall be transferred to the ownership of the people as a whole.*" This was done when, under the MPRDA¹, all privately owned mineral resources were transferred to the state. However, when we subsequently concessioned them, via a Mining Right, we failed to ensure that their developmental impact was maximised. This needs to be urgently remedied.

- 6) The ANC's Polokwane Economic Transformation resolution states that "*The developmental state should maintain its strategic role in shaping the key sectors of the economy, including the mineral and energy complex and the national transport and logistics system*" and goes on to say that we must "*...ensure that our national resource endowments, including land, water, minerals and marine resources are exploited to effectively maximise the growth, development and employment potential embedded in such national assets, and not purely for profit maximisation.*" This report attempts to develop policies, strategies and interventions that **maximise the growth, development and employment potential embedded in our mineral resources.**

¹ MPRDA: Minerals & Petroleum Resources Development Act of 2002

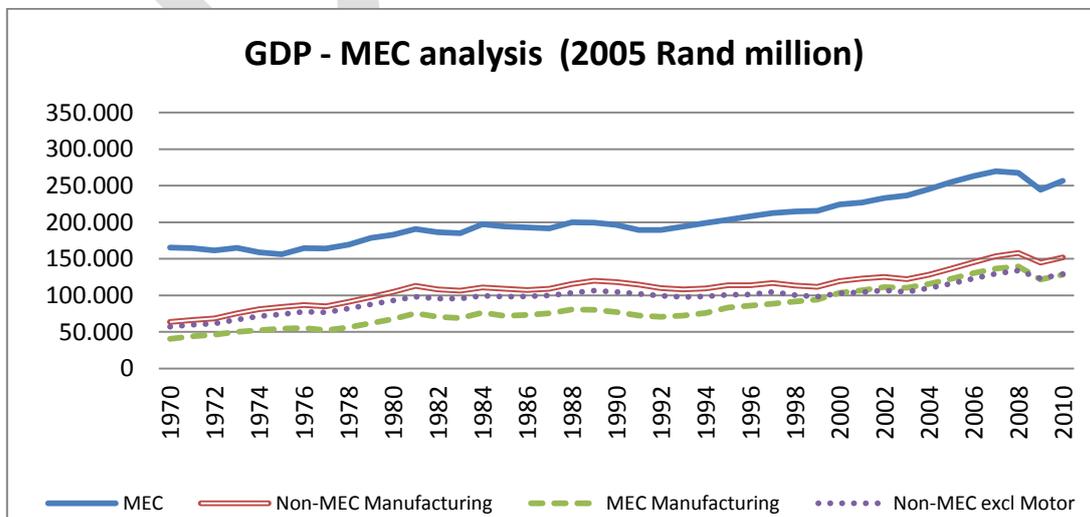
- 7) Our country has a long and innovative history of utilising mineral resources for our people's needs that pre-dates European colonial conquest by thousands of years. In fact it appears that the earliest evidence of mining in the world comes from southern Africa, by the San hunter-gatherers.
- 8) Before the European colonial invasions minerals were generally mined for local uses, such as clays for pottery, iron for hoes, arrow heads and assegais and copper and tin for ornamentation and vessels. However, although gold was mined for local ornamentation, it appears that southern Africa was a significant supplier to the world economy between 600 and 1000 years ago, via the east African island city states (such as Mocambique, Kilwa, and Zanzibar) and Dhow trading boats to the Middle East and on to Asia.
- 9) The colonial "discovery" of our substantial and varied mineral resources led to a ratcheting-up of the influx of Europeans and the destruction of pre-colonial economic systems, due to the massive needs of the new mining companies for abundant cheap labour. The migrant labour system, combined with land appropriation, the reserves/Bantustans, pass laws and rigorous policing provided a cheap supply of labour and huge profits to the mining companies.
- 10) But white Afrikaner capital was not in total alignment with English mining capital, so the apartheid state made many interventions to increase the developmental impact of minerals for its constituency (the "volk") including policies to grow white Afrikaner mining capital (affirmative action, particularly in coal mining), policies to grow the state mineral-based sectors (beneficiation) through State-owned Enterprises (SOEs) such as the Industrial Development Corporation (IDC-phosphates, aluminium, ferro-alloys), Iscor (iron and steel), Sasol and Mossgas (coal/gas to liquid fuels and petro-chemicals), and Eskom (coal to energy) and policies to ensure viable input prices (coal to Eskom). There are many lessons from their interventions that we must assess dispassionately, to see if they could serve our people.
- 11) South Africa is exceptionally well-endowed with mineral resources and has been called the country of "geological superlatives". These include the largest reserves of the platinum group metals (PGMs), gold, chromite, manganese, vanadium and refractory minerals (alumina-silicates). We also have large resources of coal, iron ore, titanium, zirconium, nickel, vermiculite, phosphate and many other minerals (see Table below). At 2009 production rates our reserves for all minerals will last for several hundred years (see Table), if no further resources are delineated, except for gold (terminal decline), lead and zirconium (heavy mineral sands). However, the core issue relates to how we use this exceptional but finite endowment to improve the lives of our people, or how do we *maximise the developmental impact of our substantial mineral assets* whilst still extant!

South Africa's Mineral Reserves, World Ranking, 2009 Production & Nominal Life (assuming no further reserves) at 2009 Extraction Rates

Mineral	Unit	RESERVES			PRODUCTION 2009			LIFE Years
		mass	%World	Rank	Mass	%World	Rank	
Alumino-silicates	Mt	51	*	*	0.265	60.2	1	192
Antimony	kt	350	16.7	3	3	1.6	3	117
Chromium Ore	Mt	5500	72.4	1	6.762	*	1	813
Coal	Mt	30408	7.4	6	250.6	3.6	7	121
Copper	Mt	13	2.4	6	0.089	*	*	146
Fluorspar	Mt	80	17	2	0.18	3.5	5	444
Gold	t	6000	12.7	1	197	7.8	5	30
Iron Ore	Mt	1500	0.8	13	55.4	3.5	6	27
Iron Ore - including BC	Mt	25000	~10	*	55.4	3.5	6	451
Lead	kt	3000	2.1	6	49	1.2	10	61
Manganese Ore	Mt	4000	80	1	4.576	17.1	2	874
Nickel	Mt	3.7	5.2	8	0.0346	2.4	12	107
PGMs	t	70000	87.7	1	271	58.7	1	258
Phosphate Rock	Mt	2500	5.3	4	2.237	1.4	11	1118
Titanium Minerals	Mt	71	9.8	2	1.1	19.2	2	65
Titanium- including BC	Mt	400	65	1	1.1	19.2	2	364
Uranium	kt	435	8	4	0.623	1.3	10	698
Vanadium	kt	12000	32	2	11.6	25.4	1	1034
Vermiculite	Mt	80	40	2	0.1943	35	1	412
Zinc	Mt	15	3.3	8	0.029	0.2	25	517
Zirconium	Mt	14	25	2	0.395	32	2	35

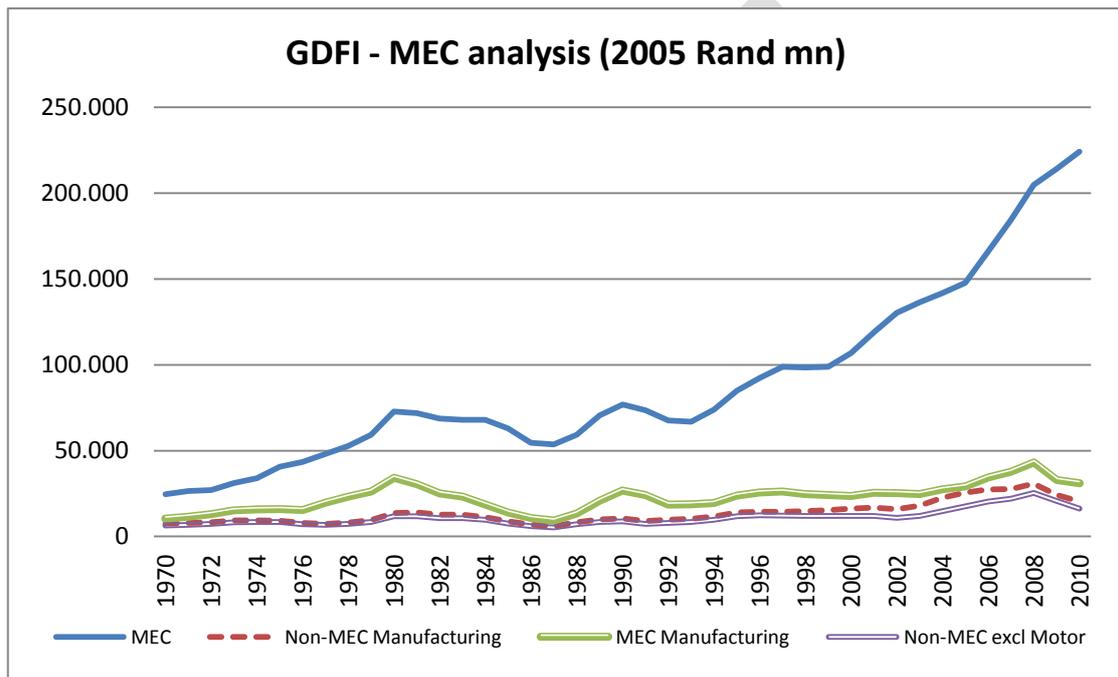
Source: SAMI 2009/2010, DMR 2010; and Wilson & Anhaeusser 1998: "The Mineral Resources of South Africa", CGS Pretoria (for BC- Bushveld Complex)

- 12) From the end of the 19th Century the mining conglomerates (mining houses) developed the core of our economy, the **Minerals Energy Complex** or "MEC". Viewed as a set of economic sub-sectors, the MEC consists of mining, certain sub-sectors of manufacturing which are closely linked to mining and which are particularly energy-intensive, the electricity sector and the transport and storage sector. Since World War II the MEC has dominated our economy and is by far the largest contributor to our GDP, exports, capital formation and employment. Similar resource-based complexes were identified at some point in the development of several of the countries examined in this study, such as Sweden (forestry, minerals and energy), Norway (energy, hydrocarbons), Brazil (minerals, energy), and Finland (minerals and forestry).



Source: Rustomjee 2011 (Quantec data)

- 13) The MEC can also be viewed as a system of accumulation. Due to its economic clout the MEC has had a great influence on all aspects of our society: social, political and economic. It has to some extent shaped where we live, what we do, whether or not we have jobs and what kind of jobs. However, if governed and directed within the context of a Democratic Development State, as proposed by the ANC’s Polokwane National Conference resolution, it can also be the basis for the industrialisation of our country, job creation, poverty eradication, and a significant improvement in the lives of all of our people.



Source: Rustomjee 2011 (Quantec data)

- 14) The case study countries and international surveys clearly indicate that resource-based industrialisation and job creation is dependent on establishing the crucial *mineral economic linkages*: the Fiscal Linkages (resource rent capture and deployment/reinvestment), the Backward Linkages (upstream- mining supplier industries), the Forward Linkages (downstream- mineral beneficiation), the Knowledge Linkages (sidestream- mineral HRD² and R&D³) and the Spatial Linkages (sidestream- collateral use of mineral infrastructure and LED⁴). This is in line with our 1992 Ready to Govern document, that “Policies will be developed to integrate the mining industry with other sectors of the economy by encouraging mineral beneficiation and the creation of a world class mining and mineral processing capital goods industry” and our 2007 Polokwane Economic Transformation Resolution that our mineral “resources are exploited to effectively maximise the growth,

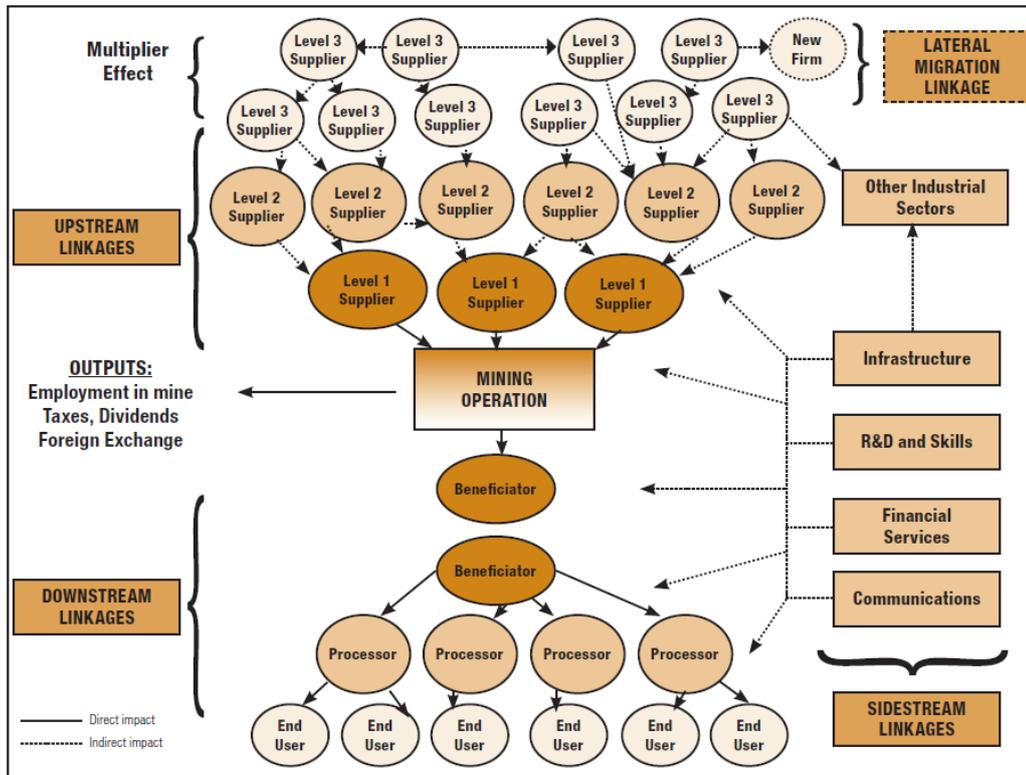
² HRD: Human Resources Development

³ R&D: Research & Development

⁴ LED: Local Economic Development

development and employment potential embedded in such national assets, and not purely for profit maximisation.”

Linkages in the minerals industry and the relationship between firms



Source: Lydall, 2010. Cited in AU 2011 "Minerals and Africa's Development" p103⁵

- 15) The case studies also show that countries that successfully utilised their natural endowment for developmental purposes were successful at technical training (HRD) and technology development (R&D). These are a *pre-requisite* for taking advantage of the other minerals economic linkages opportunities. These countries included Sweden, Finland, China, Malaysia, Australia and, more recently, Chile and Brazil, though the last two are still well behind the Nordics. In order to effectively use our mineral resources as drivers of development we need to have adequate human and technology development. In this area we are failing especially with regard to the production of matriculants who are proficient in maths and science, which then constrains our production of the necessary engineers and technicians, estimated at less than half our current requirements. Likewise, our mining and mineral processing technology development capacity has been shrinking due to the demise of Comro/Miningtek⁶ and the exit of major mining houses that now do their technology development elsewhere (offshore). HRD and R&D are critical to unlocking the developmental potential of mineral resources (especially in the linkage industries) and virtually all the countries that have successfully used their resources to industrialise, invested heavily in technical HRD and R&D. Failure to attend to this will

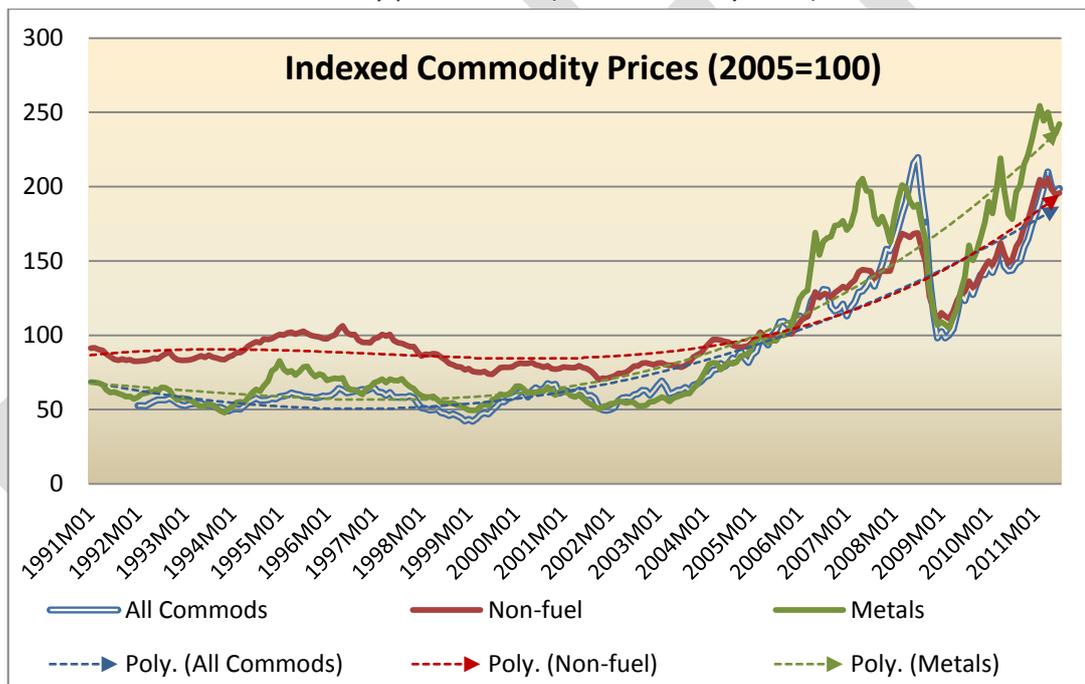
⁵ African Union 2011, "Minerals and Africa's Development", AU/UNECA, Addis Ababa

⁶ Comro: Chamber of Mines Research Organisation, became CSIR: Miningtek in the 1990s, which has virtually disappeared.

severely compromise and constrain all our other resource-based development plans and interventions.

- 16) *Asian Boom:* Since 2002 there has been unprecedented demand for minerals due to the Asian boom, which has resulted in historically high mineral prices. It also appears that this “super-cycle” may continue for another two or three decades, until the minerals intensity of growth stabilises in China, India and other rapidly-growing developing economies. However, due to transport and energy constraints, South Africa has not been able to fully take advantage of the high prices for iron ore, manganese ore, coal and ferro-alloys, stimulated by the boom like other countries, such as Brazil and Australia: we have instead lost export market share. These bottlenecks need to be resolved in order to grow employment. A 30% increase in mineral exports could generate up to 280,000 jobs, according to an HSRC economic model. The robust demand for our resources puts us in a strong position to maximise their developmental impact, especially if put out to public tender against developmental objectives (job creation).

Commodity price indices (Jan. 1990 – July 2011)



Source: Derived from IMF 2011 Primary Commodity Prices⁷

- 17) *African Mining Vision:* In 2009 the African Union (AU) Heads of State adopted the “The African Mining Vision” that contains important strategies for the maximisation of the impact of mineral resources on growth and development. This Vision aims to achieve a “knowledge-driven African mining sector that catalyses and contributes to the broad-based growth & development of, and is fully integrated into, a single African market through:

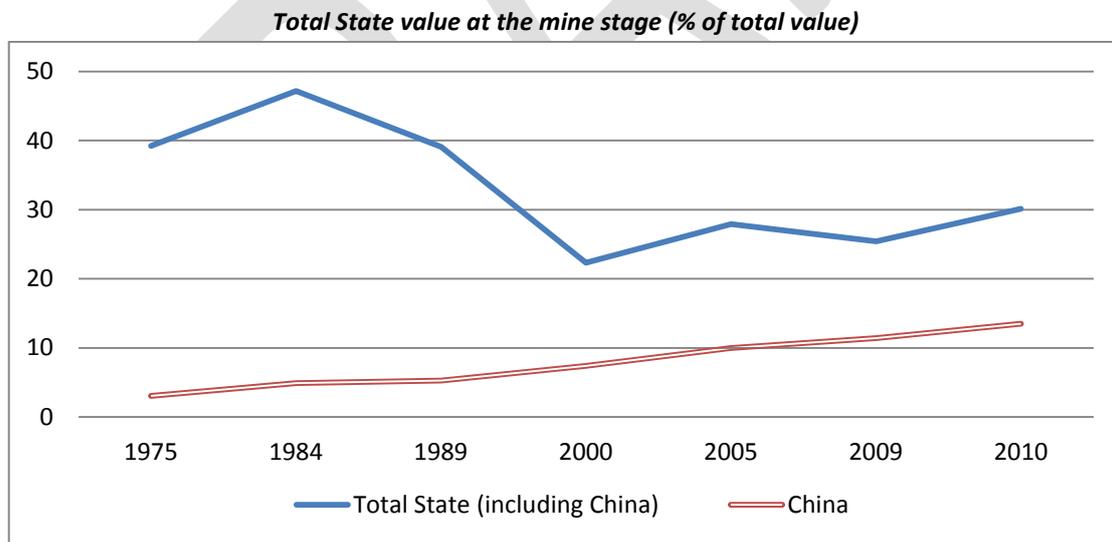
- Down-stream linkages into mineral beneficiation and manufacturing;

⁷ <http://www.imf.org/external/np/res/commod/index.aspx>

- *Up-stream linkages into mining capital goods, consumables & services industries;*
- *Side-stream linkages into infrastructure (power, logistics; communications, water) and skills & technology development (HRD and R&D);*
- *Mutually beneficial partnerships between the state, the private sector, civil society, local communities and other stakeholders; and*
- *A comprehensive knowledge of its mineral endowment”⁸*

The Africa Mining Vision correctly emphasises the need for mining to be integrated into the rest of the economy through developing the crucial mineral linkages sectors and investing in geo-survey.

- 18) *Global Ownership Study*: As part of this study, the ANC commissioned the RMG⁹ in Sweden to undertake a major study of global trends and issues in minerals ownership and control, using their global database (Raw Materials Data -RMD). The RMG study notes that global state minerals ownership is a function of global demand (and prices): From WWII to the late 1970’s, during strong demand/prices, the global trend was towards greater state ownership and share of the rent. This was followed by a period of weak demand and constantly falling prices in the 1980s and 1990s which resulted in widespread privatisation. Since 2002 demand has once again been strong and the trend has reversed towards greater state control and share of rents. The minerals trans-national corporations (TNCs) are deeply concerned about the impact of this so-called “resource nationalism” on their ability to generate global super-profits.



Source: Raw Materials Data 2010.

- 19) *Global “Best Practice”*: The global data on the success/failures of State Mineral Companies (SMCs) shows both widespread failures and successes, though success does appear to correlate with the overall level of economic development of the

⁸ African Union 2009: African Mining Vision (AMV), Addis Ababa, February 2009

⁹ RMG: Raw Materials Group

country. Nevertheless, the following key issues appear to be important for successful state mining companies worldwide:

- *Clear distinction between the state as an owner and a regulator;*
- *Clear communication lines between owner and the company;*
- *The company should not be part of the treasury;*
- *Full transparency;*
- *Clear and transparent developmental goals;*
- *Listing of a state owned company.*

20) *State Control Linked to Mineral Prices:* As stated earlier, with the surge in commodity prices over the past few years, there is renewed enthusiasm particularly in developing countries for increased state participation in this sector. However, the nature of state participation varies considerably by country and mineral.¹⁰

State shares of global metal mine production value (% of total value)

Metal	1975		1989		2000		2005		2009		2010	
	State	Ex-PRC										
Bauxite	1.2	1.2	1.4	1.3	0.8	0.6	0.6	0.4	0.5	0.3	n.a.	n.a.
Copper	8.6	8.3	10.6	9.9	5.5	4.6	5.7	4.7	5.0	3.9	4.7	3.5
Gold	3.1	3.1	6.1	4.9	3.3	1.7	2.5	1	4.0	1.0	3.4	0.8
Iron ore	19.1	17.1	13.5	11.8	7.9	5.7	14.2	8.3	11.3	7.1	18.2	10.8
Lead	1	0.9	1	0.7	0.3	0.1	1.0	0.0	0.7	0.1	0.6	0.0
Manganese	0.9	0.9	0.7	0.5	0.2	0.1	0.9	0.4	0.7	0.2	n.a.	n.a.
Nickel	1.3	1.3	2.2	2	1.5	1.2	1.2	0.9	1.4	1.1	1.5	1.3
Tin	1.2	0.9	0.6	0.4	0.7	0.2	0.5	0.2	0.7	0.2	0.7	0.2
Zinc	2.6	2.4	3.1	2.4	2	0.7	1.3	0.2	1.2	0.1	1.1	0.2
TOTAL	39.2	36.1	39.1	33.8	22.3	14.9	27.9	16.1	25.4	14.0	30.1	16.6

Source: RMG 2011 (RMD database)

21) *State participation* covers the full spectrum from 100% equity participation, through minority or carried equity, to equity participation without any financial obligations (free equity)¹¹. Mining is a sector in which the state often believes it must have a high degree of control over “strategic” minerals (critical feedstocks into the domestic economy, such as iron/steel) or minerals that dominate the national economy (e.g. copper in Chile and Zambia and diamonds in Botswana)¹² and in several countries this has resulted in the state acquiring a majority holding.

22) *Decolonisation:* As Macpherson (2010) describes in some depth, with independence in the 1960s, many mineral-rich African countries went the route of state ownership

¹⁰ Mcpherson, Charles (2010): “State participation in the natural resources sectors – evolution, issues, and outlook”, in Philip Daniel, Michael Keen, and Charles McPherson (eds.) The Taxation of Petroleum and Minerals: Principles, Problems and Practice, Routledge, 263-288.

¹¹ Ibid

¹² Ibid.

of mineral resources and of the resulting revenues. State mineral companies (SMCs) were created, and ownership and direct sector participation were achieved through nationalisation of foreign-owned mining companies or their assets, or through SMC (State Minerals Company) majority partnerships in various forms with the private sector. In Latin America, mining countries with a longer history of independence, also established SMCs and through them sought control over their mining sectors. Zambia, Chile and Venezuela provided high profile examples of these early trends.¹³ This route was more common where the mining sector was dominated by foreign companies (e.g. South America and Africa). Where mining was mainly domestic capital (North America, Oceania) there was little or no nationalisation¹⁴. South Africa’s mineral sector was predominantly owned by domestic capital (albeit “white”) before 1994, but it is now predominantly foreign owned due to the exit (or relisting) of the major mining houses such as Anglo American, De Beers and Gencor.

- 23) *Falling mineral prices:* By the 1980s and early 1990s disenchantment with the SMC¹⁵ experience had set in, in some cases due to poor economic policies in many developing countries and lower mineral prices.¹⁶ Lower state participation became common and greater emphasis was placed on creating investment frameworks attractive to the private sector either investing alone or in joint ventures with the SMC under a variety of new arrangements, resulting in “*a race to the bottom not only in the more static sense of forgone fiscal earnings but also in terms of giving up policy options necessary to organise a more dynamic long term growth path*”.¹⁷ In Africa there have been several major reversals of nationalisation, including in particular Zambia, the DRC, Tanzania and Ghana¹⁸. However, in summary, state participation in mining, through outright ownership or share participation, either on a mandatory basis, or through the exercise of option rights, is still prevalent in many developing countries..

Forms of state participation: Under all forms of state participation, except the “free” equity form, the most common vehicle for state participation is the SMC. In some countries, however, the state has exercised sector participation without the intermediation of a SMC.	
<i>Free equity participation</i>	In this model, the state could either i) go ahead with investments on its own through its SMC, without private sector involvement; or ii) it could invest <i>pari passu</i> (literally on an equal footing or basis) with the private sector from the start of operations by acquiring either a majority or minority interest in an incorporated joint enterprise or a participation share in an unincorporated joint venture (UJV). In the latter case, the state has less than a 100% share but both spend and receive revenue in full proportion to the share each has. The best examples of the first option are found in Middle Eastern oil-rich countries and Mexico. Examples of the second option can be found in both the petroleum and mining sectors, although joint enterprise participation is relatively more common in the mining sector while the UJV route is more typical of oil.
<i>Carried equity participation</i>	Carried equity participation may take several forms. The most frequent case is the “partial carry”, usually in the context of a state/private investor UJV. Under this approach, the private investor “carries” or pays the way of its SMC partner through the early stages of a project – exploration, appraisal, and possibly even development – after which, the SMC spends <i>pari</i>

¹³ Ibid.

¹⁴ Ibid.

¹⁵ SMC: State Minerals Company

¹⁶ Macpherson (2010)

¹⁷ AU 2011, “Minerals and Africa’s Development”, AU/UNECA, Addis Ababa.

¹⁸ Macpherson (2010)

	<i>passu</i> with the private investor, as under full equity participation. The private investor may or may not be compensated for the funds advanced on behalf of the state, and where compensation does occur, it may be with or without interest reflecting the time value of money, and/or “uplift” in recognition of the risks incurred on the state’s behalf- The ‘uplift’ is an agreed multiple of costs. Where recovery of interest on carried costs is explicitly allowed for, the uplift relates only to compensation for risk. Where interest cost recovery is not explicitly provided for, the uplift is expected to cover both interest and risk. A “full carry” occurs where all costs are borne by the private investor and compensation including interest and/or an uplift is paid out of the project itself.
“Free” equity participation	So-called “free” equity participation is a simple grant of an equity interest directly to the state without any financial obligation or compensation to the private investor. Once a feature in mining, where it was sometimes regarded as a payment for the right to exploit the mineral resource, and is still “on the books” in many countries, it is now found only rarely in new agreements (Ghana has it in both its petroleum and mining agreements.).
Free equity participation	In this model, the state could either i) go ahead with investments on its own through its SMC, without private sector involvement; or ii) it could invest <i>pari passu</i> (literally on an equal footing or basis) with the private sector from the start of operations by acquiring either a majority or minority interest in an incorporated joint enterprise or a participation share in an unincorporated joint venture (UJV). In the latter case, the state has less than a 100% share but both spends and receives revenue in full proportion to the share it has. The best examples of the first option are found in Middle Eastern oil-rich countries and Mexico. Examples of the second option can be found in both the petroleum and mining sectors, although joint enterprise participation is relatively more common in the mining sector while the UJV route is more typical of oil.

Source: McPherson, (2010)

24) *State participation regimes*: The table below illustrates the extent of state participation in a range of developing countries:

Extent of state participation in mining in a sample of developing countries

Country	State participation	Country	State participation
Botswana	Diamonds negotiable WI other minerals	Mongolia	10% local/50% Govt.
Chile	100%-Owned SMC in copper	Namibia	Diamonds – negotiable. New SMC
DRC	5% F/negotiated equity shares 15% -51%	Papua New Guinea	30%WI (not all mines)
Ghana	10% F /20% WI	Sierra Leone	10% F/30% WI
Guinea	15% F	South Africa	15% black ownership specified in legislation
Kyrgyz Rep.	Variable WI 15%-66%	Zambia	Minority interests
Liberia	15% F/Mittal only Law specifies 10%		

Source: McPherson, 2010. CI: carried interest; WI: working or paying interest; F: “free” equity.

25) *Reasons for state participation*: . Many reasons have been put forward for state participation including capturing a greater share of the rents, regulation of the private sector, building capacity in the public sector, and addressing development goals outside (but linked) to the mining sector¹⁹, for example the minerals-energy complex in South Africa In particular, objectives relating to rents, employment, infrastructure and regional development are always prominent.

26) *Capturing Rents*: Given that mineral resources are generally viewed as belonging to the nation, there is always a tension around the division of the exploitation spoils between the extractor (concessionaire) and the asset owner. Consequently state participation is often also seen as a route to capturing the resource rents and

¹⁹ Ibid.

generating additional revenues for the state in the form of taxes, profits and dividends.

27) *Challenges:* Experience with state participation in the resource sector “...has identified a number of challenges including the following: *governance* (compare for instance for oil Norway - excellent governance model - and Nigeria - at the other extreme, a very poor governance model); *macroeconomic management*; *financing* (funding of state participation can draw resources away from other urgent budget priorities); achieving *commercial efficiency*; and potential *conflicts of interest* (e.g. state partner with private sector versus its regulator role)”.²⁰ Over the past few years, however, a number of positive policy responses to the specific issues raised by state participation can be identified²¹:

- “A greater *reliance on well structured laws and regulations* (mineral regime) as alternatives to direct participation.
- Increased *clarity on roles and responsibilities* of government ministries and agencies charged with sector oversight. .
- A global movement in support of *greater transparency and accountability* of SMC operations in natural resources sectors in which transparency of SMC operations and finances features prominently.
- An increased effort on the part of private sector investors to provide assurances and *evidence of accountability* (e.g. adherence to EITI²² and Equator Banking principles)
- *A more cautious approach towards the exercise of state participation options* and a trend towards lower levels of maximum participation.
- *Increased sophistication in resource tax design*, and a growing recognition of the advantages of efficient taxation over equity participation as a means of raising revenue.”

²⁰ Ibid.

²¹ Ibid.

²² EITI: Extractive Industries Transparency Initiative

State Participation in the Natural Resources Sector – selected country examples²³	
1. Norway (petroleum sector)	State participation in the petroleum sector has been extensive with the creation of Statoil in 1972, with the state having majority ownership. Features of the Norwegian model of state participation include the following: commitment to commercial efficiency; encouragement of foreign private sector participation to benefit from technology and skills; appropriate institutional mechanisms for excellent governance: e.g. sector ministry responsible for policy; Norwegian Petroleum Directorate responsible for technical and regulatory oversight; Statoil responsible for commercial operations. Partially privatised in 2001 but state still holds 80.8%.
2. Denmark (petroleum)	Current arrangements in Denmark call for the state to hold a mandatory 20% working interest (no carry) in all licences. The state interest is held by the Danish North Sea Fund. Separately, DONG, the national oil company, can hold an interest in any licence, on the same basis as a private investor. DONG itself was scheduled for partial privatisation.
3. Zambia	In the mid-1990s, during depressed copper prices, Zambia moved away from its policy of state-ownership of the mining sector and launched with new legislation for a program of privatisation. Various divisions of its SMC, Zambia Consolidated Copper Mines (ZCCM), were sold to private investors over the period 1997-2000 and ZCCM was converted from an operating company to an investment holding company, ZCCM-IH (87.6% State), with a minority interest in most successor companies, typically in the 10-20% range. This equity interest, which was granted as part of the purchase price for the mines took two forms. The first was a free carried interest, and the second, a carried interest repayable with interest out of ZCCM-IH's income from the equity stake concerned. In addition to the equity interest, Price Participation Agreements (PPAs) were signed which provided ZCCM-IH with a share of revenues earned above an agreed price threshold. Each of these mechanisms had an approximate fiscal equivalent had they been paid to Government rather than ZCCM-IH. The free carried interest equates to a dividend withholding tax and the reimbursable carry resembles a resource rent tax. The PPAs were similar to price-related royalties. The approach represented a classic use of participation to share in rents or windfalls without changing the existing tax regime. Unfortunately, significant price increases in copper notwithstanding, the detailed conditions of these equity participation formulas are such that the government has seen only negligible revenues from them. This is attributable partly to the fact that payments are triggered by the declaration of a dividend by the mining companies, which they have successfully avoided by reinvesting earnings, and partly due to ZCCM-IH's costs and liabilities which have limited any pass-through to government. As a result of the failure of these schemes to deliver an increased revenue share, the government announced its intent to "explore the scope for raising the taxation of mining" and in fact, acted to increase taxes and royalties. However, the subsequent collapse in prices proved these increases to be unsustainable and they were withdrawn.
4. Chile	Chile has a long mining history which was for years dominated by foreign firms mostly from the USA. In the 1950s, the government began to assert more authority over the mines through taxes and the creation of a Copper Department to oversee and participate in mining operations. The process of "Chileanisation" began in earnest in 1966 when legislation was passed to create mixed societies with foreign companies under which the state would own 51% of the deposit and take a direct role in the production and commercialisation of copper. In 1971 a constitutional amendment nationalised all major mines "as demanded by the national interest and in exercise of the sovereign and inalienable rights of the state to freely use its wealth and natural resources". The Corporation Nacional de Cobre de Chile (Codelco) was formed by decree in 1976 to take charge of the state's mining interests. Codelco is the world's largest copper miner and is one of Chile's largest companies accounting for 5% of GDP, 25% of exports and 17% of the national budget. Codelco has benefited from the policies applied in general to Chile's state-owned enterprises. These include limited government interference and a high degree of transparency. Its operational flexibility at times is hindered by the required transfer of close to all of its income to the state in the form of taxes, royalties, and dividends. 10% of its export income is earmarked for Chile's military, which has limited its expansion into other countries. The tight rein on Codelco's revenues facilitates government control. More recently, Codelco's future has become a matter of public debate. Costs are rising, output is falling, and the resources required to make needed investments are substantial. The company is increasingly challenged in global markets by smaller mining companies' mergers and growth. This has led to calls for Codelco's privatisation. So far, the government's response has been draft legislation to improve Codelco's governance and make it more efficient and competitive. Codelco may in many ways be a model in adopting a number

²³ Ibid.

	of the elements of best practice in its own operations and in its relations with Government.
5. Brazil	The Brazilian mining company Vale, the largest in the world, is “officially” not a SMC. It was “privatised” in 1999 but the state retained control through special class preferred shares (the so-called ‘Golden Shares’) and by using a combination of pyramids and ordinary (voting) and preferential shares. State pension funds have an ultimate majority interest in Valepar which holds a majority of the voting shares in Vale. This control has been used to get Vale to use its producer power to encourage customers to locate value-addition plants in Brazil. State control of Vale is at extreme “arms length” and it successfully competes internationally. It represents another “model” of SMC best-practice in state ownership, but the form of ownership gives control without a majority of earnings (dividends), but which are partly captured through fiscal instruments (taxes).
6. Venezuela	Unlike the petroleum sector, where there is a wholly-owned state company, in the mining sector, there is a variety of arrangements, ranging from 100 per cent equity but operations managed by private companies; shared equity arrangements with the private sector; and wholly privately owned and managed mines.
7. Namibia	State participation manifests itself in many forms. In the diamond sector, there are two forms of participation. Through NAMDEB, the state owns a 50% share in diamond mining with De Beers and the Namibia Diamond Trading Company also jointly owned (50:50) with De Beers, with the latter managing the entity. A new SMC, Epangelo, has been established recently. It will be responsible for all future exploration and issuing of licences. The extent to which it will operate as an owner of mines is not clear at this stage. Indications are that it will operate on the basis of partnerships with the private sector.

28) *Fiscal Linkages- resource rents and risks:* In many countries, minerals are often a major component of national foreign exchange (exports) and fiscal revenues (taxes)²⁴. However, “...the fiscal regimes for minerals tend to be different from those found in other sectors because of the presence of so-called ‘resource rents’ and the different set of risks prevailing in this sector”²⁵. Resource rents represent surplus revenues from a deposit after the payment of all exploration, development, and extraction costs, including an investor’s risk-adjusted required return on investment. As Hogan and Goldsworthy (2010) put it, “(S)ince rent is pure surplus, it can be taxed whilst upholding the core taxation principle of neutrality. Furthermore, governments aim to capture the resource rent, not least because minerals are typically owned by the state”²⁶. However, the unusual risks of the mining sector need to be taken into account including long exploration periods, the cost of capital outlays, and unpredictable mineral prices.

29) *Capture of Mineral Rents:* Although other sectors such as agriculture²⁷ also have rents, mineral rents tend to be much larger and more prevalent. Hogan and Goldsworthy (2010) also stress that the unusual nature of the mining sector has “...led to special tax treatment of the sector, using a wide variety of fiscal instruments”²⁸. These instruments include royalties, resource rent taxes, windfall taxes, corporate income taxes and state ownership. They also note that each fiscal instrument “...has its advantages and disadvantages with respect to the impact on investor behaviour, the degree of progressivity (i.e. the extent to which the

²⁴ Hogan and Goldsworthy, 2010.

²⁵ Ibid.

²⁶ Ibid.

²⁷ David Ricardo’s original concept of resource rents came from the realisation that land could embody rents (loamy soil versus average soil)

²⁸ Ibid

“government take” increases as a project’s profitability increases), the sharing of risk between the government and investor, and the administrative and compliance costs”²⁹.

- 30) *Mineral fiscal regimes vary widely* between countries and minerals. For example, the level of taxation is likely to vary with country risk. Also, rent capture instruments are also likely to vary with perceptions of the size of the rent available³⁰. This often explains why high value minerals like diamonds and gold tend to attract a higher royalty rates. Moreover, the mix of fiscal instruments may vary depending on the country’s needs and capabilities. For example, some governments may prefer production-based instruments as they are easier to administer and provide earlier and more stable revenue³¹. However, as this shifts more of the risk onto companies, governments will most likely need to accept a lower overall expected level of taxation³². Hogan and Goldsworthy also point out that some countries “...might therefore prefer a more progressive regime that involves the government assuming more risk but also expecting a higher take from profits”³³. In addition to variation between countries, a number of global trends have recently emerged that have “...shifted the balance of power between mineral producing countries and investors”³⁴. This shift in power is analyzed in the Box below with reference to three countries: Chile, Papua New Guinea, and Zambia.³⁵

²⁹ Ibid.
³⁰ Ibid.
³¹ Ibid.
³² Ibid.
³³ Ibid.
³⁴ Ibid
³⁵ Ibid.

Box: Fiscal Regimes – selected country experiences³⁶**Chile – state participation, private competition, royalty rates**

By the late 1960s, Chile's four principal copper mines were owned by US companies. Frustrated by low revenues, successive governments introduced measures to increase government participation in the mines via Codelco (a state-owned enterprise). The mines were eventually nationalised after Salvador Allende won the 1971 election. After Pinochet's coup in 1973, the nationalised mines remained under Codelco's control but market-oriented reforms paved the way for new foreign investment. Chilean copper production grew rapidly but taxes paid by private companies were comparatively low. In part, this reflected generous fiscal terms designed to attract new investment, including a zero royalty rate. Dissatisfaction over the private companies' contribution to revenue grew in line with rising copper prices. After a failed attempt to introduce a profit-based royalty in 2004, a sliding scale royalty (0-5 percent) based on sales became effective in 2006.

Papua New Guinea – renegotiation, additional profits tax

Bougainville Copper Limited (BCL) commenced commercial production at the Panguna mine in 1972. The mine was highly profitable and in 1974 the government sought to renegotiate terms. A revised agreement, which became effective in December of that year, eliminated tax incentives, and introduced an additional profits tax under which the mine was subject to a marginal rate of 70% after it had earned a 15% rate of return on funds invested. An additional profits tax became an integral part of the fiscal regime for all mines, seen as a means of capturing a large share of any future rents, whilst still attracting investment by ensuring an adequate return to the investor. From the late 1980s successive governments made a number of changes, and in 2002, when real mineral prices were near record lows, the terms were revised once more with a view to making the sector more attractive to investors. Key changes included: abolishing the additional profits tax (which no company other than BCL is understood to have paid); relaxing ring-fencing rules; more attractive accelerated depreciation arrangements; and elimination of loss-carry forward time-limits.

Zambia – state participation, privatisation, renegotiation, windfall tax

After independence in 1964, President Kaunda nationalised the copper industry, and the ZCCM conglomerate was created. The industry flourished, with rising copper prices and the mineral rights now accruing to the state. However, a combination of falling prices and deteriorating mining infrastructure led to declining copper production and large deficits for ZCCM and the government. A market-reform orientated government led by President Chiluba privatised various operating divisions of ZCCM in 1997-2000. The Mines and Minerals Act of 1995, which facilitated the privatisation process, permitted the government to enter into "Development Agreements" under which fiscal terms could be negotiated on a mine-by-mine basis. Typical fiscal terms were generous (e.g. a royalty rate of 0.6% and a company income tax rate of 25 percent) and "locked" in by fiscal stability agreements. While successfully rejuvenating the copper industry, the government take was low and was considered unacceptable when copper prices rose unexpectedly. In 2008, the government controversially scrapped development agreements and introduced a new fiscal regime, which included a higher royalty rate (3 percent), a variable income tax and a windfall tax applied to the value of production with a sliding scale of rates triggered by the copper price. The windfall tax was repealed in 2009.

- 31) *The evolution of fiscal instruments in mining³⁷*: As Hogan and Goldsworthy (2010) show, the typical arrangement prior to World War II (WWII) was for the government to grant concessions to corporations or investors to explore for and extract mineral resources. In return, the government received payments through mechanisms such as initial bonuses, royalties, and land rental fees. Royalties, which provided the bulk of revenues, were levied on production at relatively low rates. In the post-WWII era, "...with increasing independence, the focus shifted on a country's sovereignty over its natural resources. A central element here was a desire on the part of the newly-independent governments to acquire a larger share of resource rents"³⁸. Key developments included the following³⁹:

³⁶ Ibid.

³⁷ Ibid.

³⁸ Ibid.

³⁹ Ibid.

- 32) *State ownership.* Many governments sought to increase state ownership and control over mineral assets through nationalisation, equity participation or joint ventures. Nationalisation began in Bolivia with tin mining in 1952 and later occurred in Chile (copper), Peru (iron ore, copper), Venezuela (iron ore), Zambia (copper), DRC (copper), Ghana (gold), and Jamaica, Guyana and Surinam (bauxite)⁴⁰. In addition to attaining a larger share of rents, a major driving force behind increased state ownership was the belief that greater control over mineral assets would lead to greater beneficial linkages to the rest of the economy⁴¹.
- 33) *Ad valorem Royalties.* Royalties based on production value, and not simply volume, became increasingly common. Hogan and Goldsworthy (2010) point out that several states have recently adopted sliding scales based on price, production, sales and even perceived costs of operation. In industrialised countries with advanced tax administrations, there has been a recent shift toward profit-based royalties (most provinces in Canada, Northern Territory in Australia, and Nevada, USA)⁴². The shift "...from volume-based to value- and profit-based royalties represents an attempt to more accurately target rent"⁴³.
- 34) *Corporate Income Tax (CIT):* In many countries there was a shift from royalty to income tax as the major source of revenue. Investment incentives were incorporated into the income tax regime, "most commonly through accelerated depreciation allowances, loss-carry forward provisions and, for exploration and mining companies, the full expensing of exploration costs"⁴⁴.
- 35) *Other payments:* Most developing countries introduced withholding taxes on dividends, interest and foreign-provided services. Withholding taxes are now commonly used, "both to provide revenue and to counteract tax avoidance and evasion, through for example, use of related party debt and payment of contractors at non-market prices"⁴⁵. Customs and excise duties, sales taxes and more recently, value added taxes were also introduced, although many countries now provide exemptions to encourage investment and to ease the administrative burden from having mining companies in large VAT refund situations due to zero rating on their exports.
- 36) *The Impact of Prices:* In the 1970s, many mineral prices increased sharply alongside oil prices. These developments encouraged mineral producing countries in their efforts to capture a higher share of the rent through taxation and nationalisation⁴⁶. For example, Papua New Guinea introduced special instruments designed to

⁴⁰ Ibid.

⁴¹ Ibid.

⁴² Ibid.

⁴³ Ibid.

⁴⁴ Ibid.

⁴⁵ Ibid.

⁴⁶ Ibid.

increase the government “take” in boom times⁴⁷. The specific form varied by country but most typical was a cash-flow-based tax that increased the marginal rate of income tax for projects that earned more than a specified rate of return (RRT⁴⁸). There was also a growing focus on using the fiscal regime to encourage local processing, such as by imposing export duties on raw minerals (ores, concentrates). In the 1980s and 1990s, mineral prices declined in real terms. Some countries began a process of privatising their mining industry and confined government’s role to one of regulation and investment promotion⁴⁹. Others commercialised state enterprises, lowered the level of state participation and placed greater emphasis on attracting private sector involvement. Countries that made significant changes in this direction included Bolivia, Chile, the DRC, Ghana, Indonesia, Peru, Brazil and Zambia⁵⁰.

37) *Depressed prices* generally discouraged mineral exploration and mine development which resulted in numerous mineral regime overhauls, in the 1980s and 1990s, to make the countries concerned more attractive for investment: the “race to the bottom”, aided and in some cases orchestrated by the Bretton Woods Institutions. “International competition prompted revised fiscal terms in a number of countries that, in general, involved lower rates”⁵¹. Mining corporate rates fell from an average of 50 per cent to 30-40 percent, royalty rates were lowered and reduced to zero in Chile, and in Indonesia, Papua New Guinea and Namibia additional profit taxes were removed⁵². The table below shows the decline in corporate income taxes in a selected sample of countries.

Mining corporate income tax rates (per cent)

Country	1983	1991	2008
Australia	46	39	30
Canada	38	29	22
Chile	50	35	35
Indonesia	45*	35	30
Mexico	42	35	28
Papua New Guinea	36.5*	35*	30
South Africa (1)	46-55#	50-69#	28
USA (2)	46	34	35
Zambia (3)	45	45	30*#

Source: Hogan & Goldsworthy, 2010. Notes: *denotes additional profits/windfall tax also applies; #denotes a variable income tax formula. (1) High rate is maximum payable for gold under variable income tax formula. Low rate is non-gold, non-diamond flat rate. Diamond mining was subject to 52% in 1983 and 56% in 1991. (2) Federal only. (3) In 2008, a flat rate of 30% applied if the windfall tax based on price is payable, otherwise variable income tax applied >30%.

⁴⁷ Ibid.

⁴⁸ RRT: Resource Rent Tax

⁴⁹ Hogan and Goldsworthy, 2010.

⁵⁰ Ibid.

⁵¹ Ibid.

⁵² Ibid.

- 38) *The Asian Boom*: In 2002, mineral prices started to rise dramatically, largely on account of rapid demand growth in China and other emerging economies. This led to governments reassessing whether they were receiving a reasonable share of increased rents. Liberia introduced a resource rent tax, and Mongolia and Zambia introduced windfall taxes triggered by prices⁵³. In Australia, however, the super-profits resource rent tax proposed by the government has had to be watered down because of pressure from the mining industry supported by the conservative opposition.
- 39) *Types of fiscal instruments*: These include rent-based taxes; profit-based taxes and royalties; output-based royalties; and state equity⁵⁴:

Fiscal Instruments	
<i>Rent-based taxes:</i>	The <i>Brown tax</i> (named after the economist Edgar Brown) is levied as a constant percentage of the annual net cash flow (the difference between total revenue and total costs) of a resource project with cash payments made to private investors in years of negative net cash flow. The Brown tax is a useful benchmark against which to assess other policy options, but is not considered to be a feasible policy option for implementation since it involves cash rebates to private investors.
	<i>Resource rent tax (RRT)</i> – rather than providing a cash rebate, negative net cash flows are accumulated at a threshold rate and offset against future profit. When this balance turns positive, it becomes taxable at the rate of the resource rent tax (RRT). The RRT was first proposed by Australian economists Ross Garnaut and Anthony Clunies-Ross in 1975 for natural resource projects in developing countries to enable more of the net economic benefits of these projects to accrue to the domestic economy. The economic rent in an economic activity is the excess profit or supernormal profit and is equal to revenue less costs where costs include normal profit or a “normal” rate of return (NRR) to capital. This NRR, which is the minimum rate of return required to hold capital in the activity, has two components: a risk-free rate of return, and a risk premium that compensates risk adverse private investors for the risks incurred in the activity.
	<i>Costs for Rent-Based Taxes</i> : The economic rationale for mineral taxation in addition to that applied to all industries is based on the scale of resource rent in the minerals industry. The concept of resource rent in the minerals industry applies over the longer term and takes into account the costs of the following activities: a) exploration – the cost of finding new mineral ore deposits; b) new resource developments – the cost of new resource developments based on mineral ore deposits that are known; and c) production – the cost of extracting resources from established mine sites.
	<i>Excess profits tax</i> – the government collects a percentage of a project’s net cash flow when the investment payback ratio (the “R-factor”) exceeds one. The R-factor is the ratio of cumulative receipts over cumulative costs (including the upfront investment). This method differs from the RRT in that it does not take explicit account of the time value of money or the required return of the investor. No excess-profits tax in the R-factor form has been applied in the mining sector.
<i>Profits-based taxes and royalties:</i>	<i>Corporate income tax</i> – typically an important part of the fiscal regime for all countries; a higher tax rate may be applied to mineral companies within the standard corporate income tax regime, and it may be designed to vary with taxable income (e.g. Botswana).
	<i>Profit-based royalty</i> – the government collects a percentage of a project’s profit; typically based on some measure of accounting profit. This differs from the standard income tax in that it is levied on a given project rather than the corporation.
<i>Output-based royalties</i>	<i>Ad valorem royalty (AVR)</i> – the government collects a percentage of a project’s value of production. The AVR is most often applied at a constant rate with the government collecting a constant percentage of the value of production from each resource project. From a government perspective, the main advantages of the ADR are revenue stability – the risk of fiscal loss and revenue delay are reduced compared with rent-based taxes – and lower administration and compliance costs. However, the AVR reduces the expected revenue and hence expected profitability of a resource project. Some resource projects may switch from economic to uneconomic under the AVR.
	<i>Graduated price-based windfall tax</i> – the government collects a percentage of a project’s value of

⁵³ Ibid.

⁵⁴ Ibid.

	production with the tax rate on a sliding scale based on price (that is, a higher tax rate is triggered by a higher commodity price).
	<i>Specific royalty</i> – the government collects a charge per physical unit of production.
State equity:	<i>Paid equity</i> – the government becomes a joint venture partner in the project. Paid equity on commercial terms is analogous to a Brown tax where the tax rate is equal to the share of equity participation.
	<i>Carried interest</i> – the government acquires its equity share in the project from the production proceeds including an interest charge. Carried interest is analogous to a RRT where the tax rate is equal to the equity share and the threshold rate of return is equal to the interest rate on the carry.

40) *Range of Fiscal Instruments:* It is evident that a complex system of mineral taxation agreements currently applies across the world.. Moreover, taxation agreements vary between countries between sub-national governments within countries, and between minerals and projects⁵⁵. Hogan and Goldsworthy (2010) also show that progress has been achieved in several areas, enabling governments to obtain a return to the community from mineral extraction while reducing adverse impacts on the industry. In summary, for coal, metallic minerals and gemstones, output-based royalties and taxes mainly apply, in addition to the standard corporate income tax arrangements. However, profit-based royalties have been adopted in some industrialised countries, including jurisdictions in Canada and a single jurisdiction in Australia (Northern Territory) and the United States (Nevada). Rent or profit-based taxes, have been recently adopted in some developing countries such as Kazakhstan and Liberia. A super-profit RRT is due to be implemented in Australia in 2012. Specific royalties mainly apply to high-volume, low value non-metallic minerals, particularly construction materials⁵⁶.

Taxation instruments – selected countries

Type of instrument	Countries
Royalties	Australia (states); Canada (provinces); USA (states); Botswana; Ghana; Malawi; Mozambique; South Africa; Zambia; China; India; Indonesia; Mongolia; Philippines; Argentina; Bolivia; Brazil; Chile; Peru; Venezuela
Corporate Income Tax	Australia (federal); Canada (federal and/or provincial); USA (federal or state); all developing countries at variable rates
Additional minerals tax	Malawi – 10% RRT when after-tax cumulative cash flows exceed 20%; Mongolia – 68% when copper price exceeds USD 2600 per metric ton and gold exceeds USD 500 troy ounce. Base is value of production
Import duties	Canada (but most minerals are exempt); USA (vary by state and commodity); India; Mongolia; Chile; Peru; Venezuela
Withholding taxes (interest and/or dividends)	Australia; Canada; USA; Botswana; Ghana; Malawi; Mozambique; Namibia; Zambia; China; India; Indonesia; Mongolia; Philippines; Argentina; Bolivia; Brazil; Chile; Peru; Venezuela

41) *Taxation Instruments in South African Mining:*

- Royalties: The rate varies depending on the Earnings before Interest and Taxation (EBIT) and gross sales. For refined minerals the maximum rate is 5% and for unrefined minerals, the rate is 7%.

⁵⁵ Ibid.

⁵⁶ Ibid.

- Corporate Income Tax: A standard corporate tax rate of 28 per cent and a secondary tax on companies (STC) at 10 per cent is levied on mining companies.
 - Withholding taxes (WHT): South Africa does not currently apply a WHT on dividends. However, plans are under way to introduce a WHT at a rate of 10% in 2013 which could replace the STC
 - Capex Expensing: Mining companies are eligible for an upfront deduction of all capital expenditure incurred. However, the deduction can only be claimed when the company reaches production stage and subject to sufficient mining taxable income. Assessed losses may be carried forward indefinitely provided the company carries on a trade.
- 42) *Some other useful fiscal instruments from the country case studies:*
- Brazil: a 25% WHT is levied on payments made to persons resident or domiciled in tax havens. Otherwise, it is 10-15%.
 - China: A resource tax (RT) is applied, whose rate varies according to the type of mineral and is based on sales volume.
 - Russia: A Minerals Resources Extraction Tax (MRET) is levied at the rate ranging between 3.8 and 8.3% (depending on the type of mineral) based on the value of the extracted mineral.
- 43) *Knowledge Linkages:* Education, and the knowledge it generates, is a key factor in development – it is crucial for economic and social progress everywhere. No country has managed to attain a high level of economic and social development without appropriate investments in good quality schooling and post-school education- no resource-based industrialisation has succeeded without developing technical skills and technology! Education impacts on economic development in many ways, through for example, its impact on labour productivity, poverty eradication, technology, and health.
- 44) *Knowledge and Development:* There is a strong correlation between knowledge and economic performance in general, and knowledge and (economic) sectoral performance in particular. Investment in technical skills at both the schooling and post-schooling levels is critical for the optimal performance, for example, of the South African mining sector. However, the current state of education and training in South Africa is not conducive to knowledge generation and the development of the appropriate technical skills necessary for growth in key sectors such as mining. The education and training challenge comprises both quantitative and qualitative dimensions. At the schooling level, significant progress has been made in terms of enrolment at primary and secondary levels. However the quantitative challenges in education are at extreme ends of the system: in pre-primary and early childhood education (identified as key for children’s further development) and in the post-schooling sector, specifically in vocational and technical education. In both these sub-sectors, enrolment levels are relatively low.
- 45) *Efficiency and Quality of Training:* Going beyond these enrolment deficiencies, our biggest systemic challenge in education and training relate to **efficiency** and **quality**.

The former refers to the fact that outputs are not in line with the massive financial investments made in education and training, and are reflected, inter alia, in high repetition and drop-out rates. The latter relates to the poor performance of a large number of students in key subject areas such as reading, mathematics, and science. There is little doubt that improving quality of education provision at all levels represents one of the greatest challenges to policy makers and implementers in South Africa. At the current time, South Africa fares extremely poorly in both international and regional assessments of school performance in reading and mathematics.

- 46) *Spatial Linkages- Infrastructure:* Mining is one of the few economic activities that could have strong spatial (infrastructure) links to both its immediate surroundings and the local, provincial, national and regional economies, if appropriately configured. Like most mature minerals economies, the spatial linkages that the minerals industry has created in South Africa traverse the infrastructural spectrum. It is for this reason that minerals are usually regarded as a catalyst of development in as far as they can provide the basic infrastructure (road, ports ,rail, power and water) that can open up previously isolated areas or enhance existing areas of low economic activity. Mature minerals economies like South Africa will therefore have a history of infrastructural development that has greatly been influenced by the mining industry. This can play an important role in opening up regions for other economic activities with the objective of creating sustainable local economies, post mineral depletion.
- 47) *Mineral infrastructure* was an important catalyst for developing other sectors in all of the countries surveyed. Mining was the principal driver of our current infrastructure network which now underpins jobs in many other sectors. The Table below shows the various ways in which infrastructure and other spatial linkages were developed in the surveyed countries. It can be see that the state played a key role in the development of infrastructure in Sweden, Norway and Finland. In a few successful exceptions such as Australia, the private sector has played a bigger role in infrastructure development. In the African countries surveyed, there is still generally a lot more still to be done in infrastructure development and the state tends to lead in these initiatives with the contribution of the private sector less coordinated and consistent.

Spatial Linkages: country experiences

Country	Spatial development (Rail/road, Ports, Power & ICT, Water, LED)
Finland	The transport, power, water & ICT infrastructure is excellent and was established by the state over the last 50y, with minerals providing important extensions to the grid. Generally run by SOEs, though there have been some privatisations. Most infrastructure is open access. LED & CSR are strong mainly due to the “welfare” state
Sweden	The transport, power, water & ICT infrastructure is excellent and was established by the state over the last century. From 1939-1948 most of the private railway companies were Nationalised, today several private operators have access to the national railway. Infra is generally run by SOEs, though there have been some privatisations LED & CSR are strong mainly due to the “welfare” state
Norway	The state Norwegian National Rail Administration (Norwegian: <i>Jernbaneverket</i>) responsible the Norwegian railway network. Several private operators have agreements to access the national railway. The transport, power, water & ICT infrastructure is

	excellent and was established by the state over the last 50y. Generally run by SOEs, though there have been some privatisations. State energy - HEP LED & CSR are strong mainly due to the “welfare” state
Chile	Poor infrastructure development in some mining areas because of desert and low population but in other areas significant development in terms of housing, ports, and electricity. Severe electricity constraint- rising tariffs impacting on mining
Venezuela	Each mining company is required to pay a percentage of its revenue towards education, health and other social issues relating to the community. Good power generation (HEP)
Brazil	The transport, power, water & ICT infrastructure is patchy but minerals are opening up several isolated areas (Asian boom prices) and are providing important extensions to the grid. Generally run by SOEs, though there have been some privatisations. Most infrastructure is open access, but some ore corridors are closed (company infra). LED & CSR were poor, but have improved with the Workers Party in power
Australia	Development of infrastructure often left to the private sector including rail & electricity. E.g. Rio Tinto and BHP Billiton have created own rail, power and water supplies. Regional Infrastructure Fund planned out of revenues derived from the RRT, especially for indigenous communities. 60% of mines are co-located with indigenous communities. Substantial involvement by private companies in terms of employment, training, and community development – companies often take responsible for producing ‘public goods’ such as education.
Botswana	The transport, power, water & ICT infrastructure is good (population concentrated along eastern border of Kalahari desert). Rail established by minerals (Zimbabwe- BSAC). Transport (road & rail) & Energy state (SOEs). Landlocked- no ports. Access via SA & Namibia. Energy shortages due to SA power crisis. Desert- major water constraint for mining. LED & CSR are moderate
Namibia	Infrastructure support comes essentially from the government
Zambia	Some infrastructure development in Copperbelt. Rail connections to coast established by minerals (Benguela line, Tazara line & Vic Falls line). Major electricity development for mining industry. But most support comes from the government.
China	Infrastructure support comes essentially from the government although there are some PPP models. Rich mineral resources are believed to contribute to the significant inter-provincial forward linkages and intra-provincial backward linkages of raw material sectors observed in some central and western provinces like Shanxi, Henan and Sichuan ⁵⁷
Malaysia	Malaysia has excellent infrastructure across the entire country. Has five major development corridors traversing the country. Government involvement is a key player

48) *Infrastructure constraints* have limited the degree to which South Africa has benefited from the commodities boom since 2002 for minerals depending on rail or energy-intensive processes: iron and manganese ores, coal and ferro-alloys. The main constraints have been transport (rail) and energy infrastructure capacity that have been unable to expand to meet demand, mainly due to funding (balance sheet) constraints. A HSRC model indicated that a 30% increase in mineral exports could possibly create up to 280 thousand jobs across our economy.

49) *Energy*: One of the biggest challenges our country faces with respect to energy relates to the reliance on coal for electricity generation. The problems range from Eskom’s inability to secure sufficient coal, which arises from a conflict between the mining industry’s preference to exploit lucrative international markets to concerns over the quality and price of coal that is supplied to the energy utility. This will greatly have an impact on the utility’s ability to meet its electricity generation targets. Furthermore, these practices have prompted Eskom to seek the introduction of mechanisms, such as price controls, quotas on exports and restrictions on the exports of the types of coal used by Eskom. There have also been calls from some quarters for the Department of Mineral Resources to declare coal as

⁵⁷ Zhang and Shi (Undated)

“strategic mineral” which would allow the DMR Minister to apply certain conditions on the production, storage, pricing and use of coal in South Africa.

- 50) *Mineral Infrastructure- Water:* South Africa's average rainfall is approximately 500mm per annum which is well below the world average of 860mm per annum. South Africa ranks as the twenty ninth driest country in the world. Further, water resources are very unevenly distributed within the country. It is estimated that South Africa will be extremely water scarce by 2025. With the full recognition that water is one of the most critical resources in the world, the Department of Water Affairs and Forestry (DWAF), has initiated a programme on Water Allocations Reform (WAR) meant to redress historical and economic imbalances in the allocation of water in South Africa. Water use in the combined minerals sector is fairly substantial, more than 7%, (although small in individual minerals), hence water is a crucial input into mining.

Water use per industry in selected industries (%)⁵⁸

Water supply	50.59
Catering and accommodation	1.22
Vanadium (ferro-alloy)	0.96
Copper	0.96
Nickel	0.96
Iron Ore	0.96
Chrome	0.95
Manganese	0.95
Mining of other minerals	0.95
Coke & refined petroleum products	0.91
	59.38

Source: Quantec data

- 51) *Water Contamination:* During apartheid, the minerals industry failed to adequately prepare for closure and to dispose of mine water and waste in a manner that is consistent with current international best practice. The government of the day faces conflict caused by the legacy of weak regulation that has exaggerated problems associated with limited natural resources. In particular, cumulative harm to off-mine populations resulting from modified water tables, contaminated ground water sources, acidic mine drainage, and ground instability must be addressed before they lead to even more devastating socioeconomic, political, and environmental damage. It is quite clear that the issue of water is critical to the minerals industry and has critical linkages to the communities that live in close proximity to minerals activities. What is even more important is that both the legislation and the scarcity of water will have constraints on new mines and possibly constrain the expansion of the industry.
- 52) *Local Economic Development (LED):* Mining also has a local impact (mining communities) and an impact on sending communities. South Africa's mining

⁵⁸ Quantec Supply and Use Tables 2006

activities in the last century have left behind a trail of ghost mining towns⁵⁹, and very few have participated in consistent community upliftment programmes. The assessment of the Mining Charter by DMR (2009), found that less than half of the companies participated in the design of Integrated Development Plans (IDP) (although proof only came from 37% of these) and only 14% included IDPs for the labour sending communities. Further, according to the report, there was only minimal local economic development. Apart from underdeveloped communities, mining in South Africa leads to a system of almost inhumane living conditions for mainly the black workers. Such conditions contribute to the spread of diseases, such as HIV/AIDS and to the disintegration of family and social systems as well as drug and alcohol abuse. The results of the DMR (2009) report showed that only a quarter of the mining companies had provided houses to their employees, and a third, 34 percent, had helped their employees to access home ownership schemes (pp 12). The report goes on to observe that the upgrading process in terms of housing is still *'unacceptably low'* (pp 12). In terms of nutrition, only 29% of the mines were implementing nutrition programmes for their employees, and employees generally did not have adequate facilities for preparing their own meals (pp 12). The living out allowances given to employees by most mining companies have led to increased informal settlements which in turn tend to encourage crime, substance abuse and spread of diseases⁶⁰.

⁵⁹ Department of Mineral Resources, 2009 "Mining Charter Impact Assessment Report"

⁶⁰ *ibid* 2009.

1) State Intervention in the Minerals Sector: Proposals

Objectives:

- 1) *Our objective is to maximise the developmental impact of minerals through labour absorbing growth and development, inter alia, to: capture the resource rents and invest in long-term knowledge and physical infrastructure; and industrialise, diversify and create more jobs through maximising the mineral linkages (backward, forward and knowledge).*
- 2) *In order achieve this we need to locate the minerals sector (MEC) at the heart of our National Development Strategy, as it is our strongest comparative advantage and our only natural resource sector that could be regarded as exceptional in global terms⁶¹. The structure of our economy is best understood as a minerals and energy complex (MEC). This must be harnessed in order to build our economic potential domestically, and realise our competitive strengths globally in order to overcome our massive unemployment time-bomb. To do so it is essential that economic policy development and implementation are aligned to the actual structure of the economy. Better coordination between government departments responsible for minerals, energy, industrial development and technology is essential.*
- 3) *In addition, no country has successfully built a mature economy off its minerals base without significant and sustained investment in technical knowledge, research and development. A prerequisite for success is a dramatic enhancement of the quality of our science and maths education and alignment with the needs of an expanded MEC (increased production of engineers and technicians), that is fully integrated into our economy through the realisation of all the economic linkages sectors.*
- 4) *Finally, our aim must be to generate resource rents and capture these for social and economic development. Generating resource rents requires significant investment and risks in a partnership between the public and private sectors. The public sector needs to deploy various instruments to facilitate the development of the sector in order to capture an equitable share of the rents generated. In order to do this we must establish certainty, predictability and transparency with respect to the terms and conditions of the private sector's participation (particularly the regime of property rights that this entails). Hopefully, the proposals that follow will endure and not require further major amendments over the next couple of decades.*

1.1 Proposals on Ownership and Control

- 1) *Nationalisation of Mining Companies: Section 25 of our Constitution allows for nationalisation for a public purpose or in the public interest, subject to compensation. It is estimated that the cost for the state to acquire 100% of listed*

⁶¹ Our tourism potential could also possibly be classified as "exceptional" but is somewhat limited by the long distances to the major markets (high travel costs to get to SA).

mining companies only would be just under one trillion Rand⁶² and including non-listed companies it would be well over R1 trillion (the cost to acquire a 51% controlling share of listed companies would thus be around R500 billion). This exceeds the entire government budget, which is expected to go over R1 trillion rand for the first time in 2012/13⁶³. Consequently, either complete nationalisation or 51% at market value would be totally unaffordable and could put our country into a situation where we lose fiscal sovereignty and have to follow the dictates of the Bretton Woods Institutions under a Structural Adjustment Programme (SAP), which would be untenable.

However, Section 25 (3) states that: *“The amount of the compensation and the time and manner of payment must be just and equitable, reflecting an equitable balance between the public interest and the interests of those affected, having regard to all relevant circumstances, including-*

- (a) the current use of the property;*
- (b) the history of the acquisition and use of the property;*
- (c) the market value of the property;*
- (d) the extent of direct state investment and subsidy in the acquisition and beneficial capital improvement of the property; and*
- (e) the purpose of the expropriation.”*

Consequently, it could be possible that, given *“the history of acquisition of the property”* and that *“the public interest includes the nation's commitment to land reform, and to reforms to bring about equitable access to all South Africa's natural resources”* (Section (4) (a)), that an amount less than market value could comply with the Constitution. Nevertheless, South Africa has entered into trade and investment (protection) agreements with most of the countries of the main shareholders domicile/listing (particularly the UK: Anglo, De Beers, Lonmin, BHPB, etc.) which requires compensation at market value. Thus the trade and investment agreement court is likely to rule that it should be at market value, if challenged.

- 2) *Nationalisation without compensation* would require a Constitutional change and would result in a near collapse of foreign investment and access to finance, as well as widespread litigation by foreign investors domiciled in states that we have trade and investment (protection) agreements with, which would ultimately likely result in the payment of compensation, all the same. This route would clearly be an unmitigated economic disaster for our country and our people. This study proposes that we rather investigate the desired outcomes of state control, in terms of rent share, growth and development, and make targeted interventions to achieve such outcomes.
- 3) *Targeted State Interventions:* Nationalisation is but one instrument that we could use to achieve our developmental objectives. The principal outcomes desired are a

⁶² Gregory White & Gavin Keeton 2010, “Is the Nationalisation of the South African Mining Industry a Good Idea?” Department of Economic History, Rhodes University.

⁶³ Treasury 2011: MTBPS, <http://www.treasury.gov.za/documents/mtbps/2011/mtbps/MTBPS%202011%20Full%20Document.pdf>

much greater share of the resource rents (through the introduction of a 50% Resource Rent Tax – RRT - see below under 2.3.1 Fiscal Linkages), and the development of all the mineral economic linkages (backward, forward, knowledge and spatial, see below) using a variety of instruments, for accelerated job creation. Nationalisation of targeted mineral extraction is always an option, particularly for strategic monopoly-priced mineral feedstocks, if other instruments do not suffice. However, the ANC's 1991 DEP document "Forward to a Democratic Economy" succinctly notes that although "...nationalisation might be an option, it could drain the financial and managerial resources of a new government, and therefore might not be manageable".

- 4) *Nationalisation of Mineral Assets*: This was realised through the MPRDA of 2002, in line with the Freedom Charter (the mineral wealth beneath the soil shall be transferred to the ownership of the people as a whole), through the conversion of "old order" private rights to "new order" state rights. However, there have been challenges to this conversion on the basis that it is in effect a property expropriation under Section 25 of the Constitution. Accordingly, we should find a way to make it absolutely clear that mineral rights are not included in property rights and belong to the people as a whole.
- 5) *State Minerals Company (SMC)*: Almost all the countries surveyed have, or have had, state mining companies. However, there appears to be a clear trend to privatise or corporatize these SOEs as the country becomes fully industrialised and the need for an SOE diminishes (e.g. Nordic States). In South Africa, the apartheid state accelerated the privatisation of the Sasol (coal) and Iscor (iron/steel) SOEs in the 1980s in order to finance the increasing apartheid budget deficit, though this appears to have been premature given their monopoly pricing of several critical industrial feedstocks. Most middle income developing countries such as Brazil, China, Malaysia and Chile, have state mining vehicles, but in general they are mineral specific (state copper mining companies, iron mining companies, etc.). We have already taken the decision to build a State Minerals Company (SMC).
- 6) *SMC Capitalisation and Governance*: This should be done by transferring to the SMC appropriate capacity and state holdings from the IDC (Sasol Mining⁶⁴, AMSA, Heric, Impala, Merafe, Wesiswe, Hillside Aluminium⁶⁵, etc.) and CEF (AEMFC⁶⁶). This should initially be capitalised, resourced and run by the IDC as a subsidiary, until legislation to establish it as a free-standing SOE is in place. Initially its Board would be nominated by the IDC, in consultation with the Ministries of Mineral Resources, of Energy, of Economic Development, of Public Enterprises and of Trade & Industry, whilst its Act is being prepared and passed by Parliament. Once free standing, it should come under the proposed (below) merged super-Ministry of the Economy,

⁶⁴ The conversion of the IDC holding in the parent company to a holding in the mining/refining company should be considered in order to effect the supply of critical mineral feedstocks.

⁶⁵ Ditto

⁶⁶ AEMFC: African Exploration Mining and Finance Corporation

but if such a merger is not undertaken, it should come under the Ministry of Mineral Resources and its Act should make provision for the nomination of Board Members by the Ministries of Economic Development, of Public Enterprises, of Energy and of Trade & Industry to ensure alignment with national economic development, industrial and energy strategies and policies through its annual corporate mandate.

- 7) *The SMC's Mandate* should include the development of "strategic minerals", in partnership with other investors if necessary, in order to supply them into the domestic market at competitive or utility prices. Accordingly, it should hold the exploration rights to these minerals through a first-sight of all new state financed geo-data (through the CGS - Council for Geo-Sciences). It should also be tasked with developing other minerals, with Broad-Based Black Economic Empowerment (BBBEE) enterprises, by taking a minority share and transferring skills. Finally, a major element of its mandate should be to facilitate mineral knowledge linkages through appropriate investments into technical HRD and R&D.
- 8) *SMC Ownership Models:* Several countries use a combination of state and pension schemes to control key mining companies, such as Brazil (Vale and Petrobras) and Finland (Outokumpu Oy). In South Africa, in many instances, a combination of state and Union (pension) holdings already represents a significant holding in many mining companies, but the Union holding is generally managed by private sector fund managers, giving little scope for direct influence by the Unions. The Unions should pool their mineral holdings with the state in a SPV (Special Purpose Vehicle) that would then have a major influence on the mining companies, which could be used to maximise the economic linkages. For strategic minerals, where majority state control might be necessary, this holding could be increased to a controlling holding, but this will require compensation at market value. Such State/Union SPVs could be reinforced with the B-B BEE holding, where appropriate. In this regard the ANC and COSATU should develop a strategy to pool their holdings in order to promote developmental outcomes in the company concerned. A combination of state and pensions is used to implement national priorities in both Brazil and Finland. This system also has the advantage of limiting inappropriate interventions in the running of the company by either the state or the Unions.
- 9) *Align State and B-B BEE Strategies in Mining Companies:* We need to align State and B-B BEE influence in minerals companies to maximize the developmental impact of the enterprise. This could be facilitated by increasing the combined B-B BEE *and* state minimum holding to 30% of voting shares. The state holdings are ultimately owned by the people and arguably constitute the most *Broad Based* BEE holding possible. Accordingly we should amend the Mining Charter to include state holdings (IDC, PIC, SMC, Eskom, etc.) in a new increased B-B BEE equity target of 30%, to assist the BEE companies in realising *comprehensive broad-based* empowerment (job creation) through the maximisation of mineral economic linkages and the creation of job opportunities in and linked to the mining company concerned. Ideally, the BEE, state and Union holdings should be consolidated into a SPV that

would have a greater influence on the company in balancing shareholder returns with developmental goals, as most BEE groups in mining appear to be exclusively focussed on rapid returns.

3.2 Mineral Resources Asset Management Proposals

- 1) *Governance of Mineral Assets:* Most of the states that have managed to realise their mineral resources economic linkages, and consequently industrialised, combined the governance of minerals and industry. Examples are Sweden (Ministry of Enterprise, Energy and Communications), Finland (Ministry of Employment and Economy) and Norway (the Ministry of Trade and Industry, which incorporates the Geological Survey Department and the Directorate of Mines). Mineral resources governance in South Africa is seriously compromised by the lack of coordination and strategy alignment between the Departments of Mineral Resources and of Trade and Industry which has probably been the main reason for the lack of progress in realising the backward and forward linkages and their job creating potential. This disarticulation has resulted in the widespread practice of monopoly pricing of critical mineral feedstocks into our economy with the consequent enormous loss of job opportunities. Many countries have overcome this disarticulation by combining minerals governance with industry governance in order to maximise the national industrial benefits and jobs, arising out of mineral assets.
- 2) *Best Practice- Coherent Minerals Governance:* In order to maximise the resource linkages with the rest of our economy we need much greater alignment in government which could be attained if we merged the Ministries of Trade and Industry, of Mineral Resources, of Energy, of Public Enterprises, of Economic Development and of Science and Technology. The creation of this Super Economic Ministry would be a vital first step in tackling South Africa's enormous unemployment challenge, through ensuring that the developmental impacts of our resources are maximised into upstream and downstream industries, into energy, into knowledge and into economic development. This could be done in two stages: First we should appoint a coordinating Ministry immediately that will lead the cluster and oversee the merger. Stage two would be the operational merged "super-ministry". Failing a super-Ministry, we should at a minimum merge the Ministries of Mineral Resources, of Energy, of Economic Development and of Trade and Industry (as with Norway, Angola, Finland and Sweden) to facilitate coherent governance of the Minerals Energy Complex (MEC). If this can't be done, then a MEC ministerial "cluster" should be configured and the President should designate a cluster Chair with powers to bring the other ministers into line to ensure coherent and integrated strategies.
- 3) *Granting of Mineral Rights:* In most of the countries surveyed hydrocarbon rights are generally granted through public tender, but not generally for solid minerals, except for a) Finland, where the geo-survey department (GTK) prepares promising properties for auction; b) Brazil, where all relinquished exploration rights are auctioned (mineral right auctions have also been mooted for the new Brazilian

National Minerals Agency) and c) the State of Victoria (Australia), where they are tendered against the mine development plan. In order to get the best possible deal for our mineral assets, we should concession all “known” mineral deposits by public tender, as with the disposal of other state assets, to maximise the developmental impact. The bidders could push up the tax rate, linkages (backward & forward), and investments, including knowledge investments. Unfortunately, although the MPRDA transferred ownership of minerals to the nation, the known unexploited deposits were subsequently given away for nothing (ostensibly, on a “first-in-first-assessed” FIFA basis), with no attempt at maximising the developmental impact and job creation. Exploration (prospecting) licenses should only be issued over areas where the Council for Geosciences (CGS) has determined that there are no biddable mineral assets in the license area. Partly known mineralised areas should be reserved for the State Minerals Company and the CGS to develop for public tender or for state mining. The Finnish Geological Survey (GTK) goes beyond geo-mapping by developing mineral prospects for public tender through further resource delineation.

4) *Maximisation of the Developmental Impact of Mineral Rights Concessions:* We need to optimise the developmental impact of all new mineral concessions and the best way to do this is to go to the market through the public tender (“price discovery”) of all known un-concessioned mineral assets against developmental criteria. To implement this, South Africa must be categorised into three types of geological terrains:

- I. Areas with “*Known*” resources- for public tender against developmental outcomes, such as rent share (tax), infrastructure provision, backward and forward value-addition, knowledge (HRD and R&D) formation, and B-B BEE.
- II. Areas of “*Unknown*” mineral potential- allow FIFA⁶⁷ exploration (prospecting) licences, but with a progressive tax (RRT) and “Mining Charter” conditions. The private sector would be permitted to “discover” new assets for the people and qualify for a mining concession (once all other conditions have been met).
- III. Areas with “*Partly Known*” resources where the resource data is insufficient for effective auction (public tender). These areas should become “geo-reserves” for further work by the SMC (State Minerals Company) and the CGS, following which it would be reclassified as “Known” or “Unknown”.

The categorisation results should be put out for public comment for at least two months to ensure that no known national assets are classified as unknown. The Ministry of Mineral Resources should be given a maximum period of six months to produce the classification. In the interim there should be a moratorium on the granting of new prospecting rights. In this regard the Council for Geo-Sciences (CGS) needs to be mandated and adequately resourced to execute this seminal task, as well as to effectively monitor all extant exploration (prospecting) licenses to ensure

⁶⁷ FIFA: First-In-First-Assessed

that the concessionaires abide by their minimum work and investment programmes (under the “use it or lose it” principle).

- 5) *Oversight of Competitive Concessions:* In the case studies, oversight of state auctioning (public tender) processes is either undertaken by a sectoral agency (e.g. the Brazilian National Agency of Petroleum, Natural Gas and Biofuels: ANP) or a generic national (Public-Private Partnership - PPP) agency. We should consider expanding the brief and capacitating the existing PPP Unit in the National Treasury in order to transform it into a dedicated national “Concessions and Compliance Commission” (CCC), to oversee the concessioning of all state assets, not just minerals, under the Ministry of Finance, that would serve as the regulatory and consulting body for concessions carried out by the line departments- in this case the Ministry of Mineral Resources. Like Brazil, mineral concessions should come under the proposed “Minerals Commission” with support from the CCC. The CCC would assist the line department or agency that the asset came under (e.g. the proposed “Minerals Commission” for mineral assets) to prepare the state asset for concession (preparation of bid documents, etc.) and also carry out the ongoing monitoring and evaluation (M&E) of the concession conditions (e.g. local content milestones). In this regard the Ministry of Finance should be tasked with reconfiguring their PPP Unit into a CCC to assist in the concessioning of our natural resources, but in the interim, the current Treasury PPP Unit could be used to support the resources public tender process.
- 6) *Establish a professional “Minerals Commission”:* The granting, monitoring and evaluation of mineral concessions (licenses) has not been carried out in a manner which maximised our development and job-creation objectives. The process needs to be resourced, capacitated and housed in a separate agency to ensure that the exploitation of our minerals serves all the people and not just a select few. In this regard we must consider the creation of a “Minerals Commission” to manage mineral rights under the Ministry of Mineral Resources (or the proposed merged super Ministry of Economy) as a professional agency (along the lines of SARS under the Ministry of Finance). The experience of other regions should inform such an assessment, particularly Brazil⁶⁸, Ghana, Alaska and Botswana (their “Mineral Policy Committee” incorporates some of the functions of a Minerals Commission).
- 7) *Minerals Commission Function and Governance:* The primary function of the Minerals Commission would be to regulate the granting and administration of mineral rights to ensure the maximisation of their developmental impact. The governance of the Commission (Board) should include input from the Ministries of Trade & Industry, of Energy and of Economic Development. The MPRDA could be amended to reconfigure the Mining Development Board into an independent agency. The proposed Minerals Commission would also be tasked with the assessment of which minerals should be designated as “strategic minerals” for final

⁶⁸ New Brazilian National Mining Agency- “to ensure the exploitation of mineral resources is consistent with the national development strategy”, <http://www.mayerbrown.com>

classification as such by the Minister and Cabinet. This assessment must be in terms of both critical feedstocks into our economy and minerals where South Africa has a dominant share of global resources that could be leveraged to facilitate the establishment of backward and forward linkages. The Commission should ensure that “strategic minerals” are exploited in an orderly and optimal manner to satisfy national requirements, demand and pricing. In the interim, whilst the Minerals Commission is being established, the Mining Development Board could be tasked with the Commission’s functions.

- 8) *Amend the MPRDA to Maximise the Developmental Impacts:* The “objectives” of the MPRDA do not currently include the maximisation of the developmental impacts, particularly job creation, through realisation of the linkages to the rest of our economy. We need to urgently rectify this by amending the MPRDA “objectives”. This would permit the state to impose the necessary conditions (backward, forward and knowledge/technology linkages milestones at year 5, 10, 15, 20 of the concession) on all prospecting or mining licenses/rights. We must also amend the MPRDA and regulations to cater for “strategic minerals” (see below) such that it would permit concessions/licenses to have sales/pricing and other conditionality; and, for unexploited deposits, give first option for developing them (prospecting license) to the state (SMC⁶⁹). Proposed short-term amendments to the MPRDA are presented in the appendices.
- 9) *Mineral Rights Conversion:* None of the states surveyed underwent a massive conversion process from “old order rights” (private) to “new order rights” (state), so there is no “best practice” to draw from. However, the old order unexploited properties that were held privately by many apartheid era companies, to keep out competition (e.g. most of the Bushveld PGM⁷⁰ and chromium resources), were in effect “private” exploration rights with well-known resources. In Brazil, exploration rights are auctioned when they are abandoned or lapse (because they now generally contain “known” prospective resources). This was not done when these properties became state new order rights in South Africa. The wholesale handing out of our nation’s known unexploited mineral assets (old order dormant rights), *probably cost South Africa several hundred thousand jobs*. Even under the MPRDA, exploration (prospecting) licenses should have been given on a “first-in-first-assessed” basis (FIFA: “free mining”), but the mineral rights conversion process was fraught with irregularities. In order to reclaim at least some of the people’s mineral assets that were recklessly given away, our President needs to establish a Presidential *Mineral Rights Audit Commission* to carry out a forensic audit on the granting of all New Order Rights, to report to him within six months of establishment. Where such rights were improperly awarded, they should be suspended, but where the concessionaire had nevertheless made significant investments “in good faith”, they should be given a commensurate free-carry right in the consequent auction of the asset and, if a B-B

⁶⁹ SMC: State Minerals Company

⁷⁰ PGMs – Platinum Group Metals (Pt, Pd, Rh, Os, Ru, Ir)

BEE company, be given a first option on acquiring the outstanding portion of the 26% B-B BEE holding;

- 10) *Exploration Right Speculators:* In order to discourage mineral right speculators we must introduce an exploration (prospecting) right transfer capital gains tax of 50%, payable if the right is on-sold or the company changes hands before mining commences. This will encourage genuine mineral property developers rather than speculators (“flippers”). In addition, the MPRDA should be amended to stipulate that the proposed Minerals Commission must approve the transfer of any exploration right. Most of the countries surveyed require state approval for the transfer (sale) of an exploration license or right.
- 11) *Investing in State Geo-knowledge:* In almost all of the countries surveyed, the geological survey departments were well-resourced. Government expenditure in 2007 on geo-survey per capita was roughly USD11 in Finland, USD2.4 in Sweden, USD0.8 in Brazil, USD0.7 in China (including state companies) and only USD0.3 in South Africa. Dramatically increased expenditure is required on basic geological mapping, to uncover the nation’s unknown mineral assets, as well as for the categorisation of the whole country into areas of “known” resources (for competitive concessions), “unknown” (for “first-in-first-assessed” FIFA exploration licenses⁷¹) and partially-known (reserved for further work by the state to be able to categorise into either “known” or “unknown” resource areas).
- 12) *Combat mineral asset “squatting”:* We need to ensure that prospecting right holders are carrying out genuine exploration and not merely holding on to the right in order to cash in on it. We need to impose a tight “Use-it-or-Lose-it” regime by reinforcing the prospecting license regulations to ensure that license holders undertake genuine exploration (and do not “squat” on the people’s mineral assets), with appropriate minimum work and minimum expenditure (per hectare) requirements, as is applied in many other countries. Any default should trigger the suspension of the license. The work done should be monitored and evaluated by the CGS which must be resourced to carry out prospecting license M&E⁷².
- 13) *Mining Health and Safety:* The South African mining sector has a regrettable historical record of mining fatalities. Although fatalities have been declining during the past decade, they remain at unacceptably high levels. More recently, the mining inspectors of the DMR have been following a policy of temporarily closing a mine in the event of any fatality or serious accident. This policy is at least partly responsible for the improvement in the safety record because it puts a high cost on a fatality by stopping production for an average of a week. SIMRAC (Safety in Mines Research Advisory Committee) funding needs to be reinforced and its research areas need to align with building the backward linkages cluster (see below) to supply goods and services to enhance worker health and safety.

⁷¹ Under the MPRDA exploration licenses are termed “prospecting” licenses.

⁷² Monitoring & Evaluation

- 14) *Mining and the Environment- Monitoring and Compliance Agency*: The nature of mining processes creates a potential negative impact on the environment both during the mining operations and for years after the mine is closed. This impact has led to many countries adopting regulations to moderate the negative effects of mining operations. Environmental issues can include erosion, formation of sinkholes, loss of biodiversity, and contamination of soil, groundwater and surface water by chemicals from the mining process. We need codes and regulations that require the necessary steps of environmental impact assessment, development of environmental management plans, mine closure planning, and environmental monitoring during operation and after closure. The Ministries of Mineral Resources and of Environmental Affairs and Tourism should consider the establishment of a joint Minerals Environmental Monitoring and Compliance Agency.
- 15) *Minerals and Environmental Impacts Research*: In South Africa, the issue of environmental damage resulting from mining is particularly serious requiring urgent attention by the government, particularly the Ministries of Mineral Resources, and of the Environment. Two prominent issues in this regard are the potential long term impact of coal mining on fresh-water lakes (Mpumalanga), and acid mine drainage (the release of acidic water). We need to tackle both of these problems through research, technology development and training that reinforces our minerals backward linkages cluster (see below) and mitigates environmental damage to the absolute minimum.

3.3 Proposals for Developing the Mineral Economic Linkages

Best Practice: International experience indicates that the growth, development and employment potential of our mineral assets can only be realised through the maximisation of the mineral economic linkages (e.g. Sweden, Finland, Brazil, China, etc.) as proposed by the Africa Mining Vision. The mineral linkage industries can survive beyond the resource exhaustion and provide the nurseries for more generalised industrialisation and job creation. The five most important mineral economic linkages are:

- 1. Fiscal Linkages**
- 2. Backward Linkages**
- 3. Forward Linkages**
- 4. Knowledge Linkages**
- 5. Spatial Linkages**

1.3.1 Fiscal Linkages Proposals

- 1) *Fiscal mineral linkages- Rent Capture*: We need to make sure that, as the resource owner, the people are getting a fair share of the *resource rents* from their extraction from the mining companies. Resource rent is the *surplus value*, in other words, the difference between the price at which a resource can be sold and its extraction costs,

including *normal* returns⁷³. So they are exceptional profits embodied in the people's mineral asset and consequently should be shared between the people and the mining company. Beyond the capture of our resource rents we need to also ensure that they are reinvested efficiently to maximise long-term development, including future generations. Numerous countries capture resource rents and, in oil & gas extraction, the resource rent tax is generally between 50% and 90% of the excess profits. Australia is in the process of introducing a resource rent tax for hard rock minerals, Botswana captures the surplus value through a formula tax (similar to our gold formula tax), as well as a 50% state holding in Debswana and Chile through a 100% state holding in Codelco. Zambia has been unable to introduce their "windfall" tax due to TNC opposition and to fiscal stability clauses in many of their mining contracts, and instead has opted for increased royalties (but this will inevitably sterilise resources). It is proposed that we introduce a resource rent tax that only triggers in once the investor has made a reasonable return, consequently such a tax would not deter investors, particularly for marginal deposits or deposits with average returns (below).

- 2) *Fiscal Linkages: Capturing the Resource Rents:* Under the current fiscal regime our nation is clearly not getting a fair share of the resource rents generated from its mineral assets. In the 2007/8 tax year the mining industry's return on capex⁷⁴ was 118%, on owner's equity 33% and on carrying value⁷⁵ 29%. However, for iron ore, manganese, HMS⁷⁶ (titanium) and platinum the return on carrying value was 126%, 114%, 120% and 42% respectively. Following the lead of numerous countries we need to introduce progressive tax instruments that capture resource rents. A Resource Rent Tax (RRT) of 50% must be imposed on all mining. It will trigger after a normal return on investment/s has been achieved, thus not impacting on marginal or low grade deposits. A "normal" return⁷⁷ (RRT threshold) should be defined as our Treasury Long Bond Rate plus 7% (about 15% currently). A RRT of 50% would yield about R40 billion per annum at current prices. The RRT proceeds should ideally be kept in an offshore SWF (Sovereign Wealth Fund) to ameliorate the strengthening of our currency during commodity booms (the "Dutch Disease"). We need to standardise the mineral fiscal regime by replacing the current gold mining formula tax with corporate income tax plus the Resource Rent Tax, applicable to all minerals.

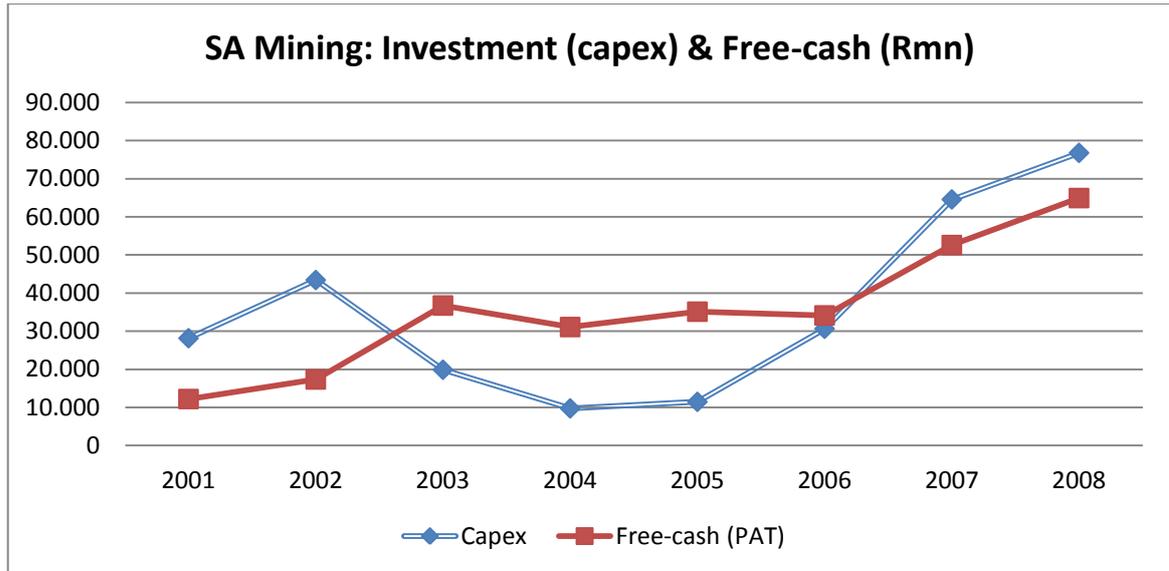
⁷³ Sinner J & Scherzer J 2007: The public interest in resource rent, www.ecologic.org.nz

⁷⁴ Capital expenditure in 2007/8

⁷⁵ Carrying value of property, plant and equipment and intangible assets at the end of the financial year (StatsSA)

⁷⁶ HMS heavy mineral sands (Ti, Zr)

⁷⁷ 'Normal' return means the return to labour and entrepreneurial/management skills that these resources would get elsewhere in the economy, as well as a competitive return on capital.



- 3) *Fiscal Linkages- Mineral Royalties:* Mineral Royalties on production (turnover, revenue or sales) add to costs, increase the cut-off grade and sterilise the people's mineral assets. Once we have imposed a RRT we should reduce mineral royalty rates to 1% of revenue (~R4bn/per annum) to enhance optimal resource extraction. However, the fiscal impact should be neutral by compensating the fiscus with an equivalent amount from the RRT (Fiscal compensation, below). The remaining Royalties should be ring-fenced and used to: (a) fund the Minerals Commission; (b) fund the rehabilitation of ownerless mines and remediation of historical damage (e.g. treatment of acid mine drainage); and (c) invest in local sustainable economic development (both mining and sending communities). These community allocations should be made by a joint board comprised of the Treasury, the Minerals Commission, the Unions (NUM), the State Minerals Company, and local government (municipality) representatives.
- 4) *Fiscal Linkages- Tax Havens:* Many international mining companies invest in Africa via a subsidiary registered in a "tax haven" (e.g. Zug in Switzerland: Xstrata). To encourage direct investment from their primary listing country, we should introduce a "Mineral foreign shareholding withholding tax": If the foreign mining company is held in a "tax haven" (as determined annually by the Minister of Finance), then rate should be 30% and if not, the normal rate of 10% should apply. Brazil has a similar system to discourage investments from tax havens and could assist us in configuring this instrument.
- 5) *Carbon tax:* The putative carbon tax as currently proposed by Treasury could be extremely damaging to our economy and should be put on hold. A carbon tax as currently configured would add to costs, increase the cut-off grade and consequently sterilise mineral resources. It could also potentially render many energy-intensive beneficiation operations unviable. The Carbon Tax should be reconfigured, possibly by having a higher RRT (above 50%) linked to carbon emissions and should also include a realistic basket of supply and demand side measures to reduce national carbon emissions.

- 6) *Fiscal Linkages- Deployment of Resource Rents*: Sovereign Wealth Funds (SWFs) are being used by an increasing number of countries and now collectively hold over USD4 trillion. In the study countries, Norway, Australia, Botswana, China and Chile all have SWFs. The New Growth Path (NGP) proposes the establishment of a SWF which could be financed through a Resource Rent Tax. Keeping resource rents offshore would protect us from the Dutch Disease (currency appreciation during commodity booms) and the negative impact of a strong Rand on manufacturing exports and jobs. The SWF should be funded by ring-fencing the proposed Resource Rent Tax (RRT) to invest in long-term projects and instruments that will ensure economic prosperity beyond the depletion of our mineral resources. Our SWF should have three funding windows:
- *A Fiscal Stabilisation Fund* to reduce revenue instability in times of commodity price falls like the recent US toxic debt crisis. The Chilean stabilisation fund effectively minimised the fiscal shock during the recent global crisis. Over time the stabilisation fund would accumulate into a future fund that would support the fiscus as mineral resources ran out, thereby also contributing to inter-generational equity. It would:
 - Stabilise mineral revenues to the fiscus over periods of dramatic reductions (global crises) above a threshold (~30% of SWF). Chile's experience in this regard could be used in configuring the Fund; and
 - In the longer term, once it has accumulated sufficient funds to cover fiscal stabilisation contingencies, begin to build a *resources future fund* for future generations to access, after resources depletion. Norway's Future Fund could assist in this regard.
 - *A Regional Development Fund* to invest in southern African regional trade infrastructure to facilitate intra-regional trade. In 2010 the SADC region overtook the EU as our largest customer for manufactured exports. However, our access to the booming regional market is severely constrained by poor or non-existent trade infrastructure. The Regional Development Fund would be spent "offshore" (SADC) thereby neutralising the currency appreciation impacts (Dutch Disease) of the RRT take that was previously being expatriated before introduction (~30% of SWF). Its mandate would be:
 - To facilitate inter-regional trade by investing in trade infrastructure. Only SADC companies (construction) would be eligible to tender for the funded projects.
 - To open up regional markets for South African goods and services and for imports from the region;
 - To enhance regional economic and political integration. Mechanisms should be devised to encourage other states to also contribute proceeds from resource rents to the fund.
 - *A Minerals Development Fund* to invest in the discovery and development of new mineral assets, the management of mineral assets, resources value-addition industrial zones as well as medium to long term minerals human resources development and technology development. The Inter-generational Minerals Development Fund (MDF) should have several instruments:

- i. *State Geo-knowledge*: To dramatically increase geo-mapping by the CGS¹ to underpin the replenishment of diminishing mineral assets (2.5% of SWF). The SMC would be given a 3-month exclusivity window on all the new state-funded geo-data.
- ii. *Exploration Facilitation Fund* (negotiable tax certificates) to ameliorate exploration risk and concomitantly greater investment into discovering and developing new mineral assets (5% of SWF).
- iii. *Minerals Human Development Fund*: To dramatically increase technical human resources development (engineers & technicians) particularly maths & science at primary, secondary and tertiary education levels (~10% of SWF).
- iv. *Royalty Compensation Fund*: To the Fiscus to compensate for reduced mineral royalty rates of <1%, see above (~5% of SWF).
- v. *Minerals Technology Fund*: For the expansion and rehabilitation of minerals research and development (R&D), particularly mining technology, together with the private sector (~2.5% of SWF). Total minerals sector R&D should target 3% of mining value-added (around R3bn/an).
- vi. *Minerals Beneficiation Hubs*: For massive job creation through labour safety nets (retrenchment remuneration and reskilling) in “pilot” Resources Value-Addition Special Economic Zones (SEZs) with enhanced labour absorption and flexibility (~15% of SWF).

Deployment of RRT SWF	
Target	% of RRT
Minerals Development Fund	40.0%
Geo-survey	2.5%
Exploration facilitation	5.0%
Royalty compensation	5.0%
Technical HRD	10.0%
Minerals R&D	2.5%
Beneficiation Hubs	15.0%
Regional Development Fund	30.0%
Fiscal Stabilisation Fund	30.0%
Total	100%

1.3.2 Forward Linkages (beneficiation) Proposals

- 1) International experience shows that countries that successfully used their finite mineral asset to industrialise, established effective forward linkages (downstream industries), such as Finland, Sweden, Malaysia, China, Norway and, increasingly, Brazil. We must ensure that we add value to our minerals (beneficiation) to optimise the job creation potential, whilst we still have mineral resources. In this regard we need to concentrate on the feedstocks (mineral inputs) into the most important downstream *job creating* sectors, such as manufacturing, energy, infrastructure and agriculture. Mining provides critical feedstocks into the following labour-absorbing strategic sectors of our economy:
 - *Minerals for Manufacturing*: steel (iron ore), polymers (coal or oil/gas), base metals (copper, zinc, nickel and others);

- *Minerals for Energy:* coal, gas, uranium (also limestone for washing emissions);
 - *Minerals for Agriculture:* NPK- nitrogen (gas), phosphates, potassium, conditioners (sulphur, limestone);
 - *Minerals for Infrastructure:* Steel (iron ore), cement (limestone, coal, gypsum), copper.
 - *Producer Power:* In addition, SA's share of some resources offers possible producer power which could be used to facilitate backward and forward mineral economic linkages: PGMs⁷⁸ and, possibly, chromium, vanadium, manganese, alumina-silicates.
- 2) *Forward Linkages- Strategic Minerals:* Nearly all of these critical mineral feedstocks are supplied into our economy at exploitative (monopoly) prices- *thereby destroying growth, development and jobs.* We need to classify them as “*strategic minerals*” which must be supplied into our economy at cost plus prices (reasonable return) or, at most, export parity (competitive) prices (EPP). In this regard, the Minister of Mineral Resources should be tasked to urgently amend the MPRDA accordingly.
- 3) *Forward Linkages- Harmonised National Resource-Based Development Strategy:* It is clear that a major contributor to job destroying monopoly mineral feedstock pricing has been the lack of articulation between the Ministries responsible for minerals, energy and industry. In order to use our mineral and other resources to leverage industrialisation and jobs we need coordinated and strategic economic governance: Accordingly we should merge the Ministries of Trade & Industry, of Mineral Resources, of Energy, of Economic Development, of Public Enterprises and of Science & Technology to effectively govern and transform the MEC (minerals-energy complex) and to facilitate the mineral economic linkages (backward, forward and knowledge linkages) through the development of integrated cross-sectoral mineral strategies that maximise their developmental impact. In most countries that have successfully used mineral assets to industrialise, minerals governance was part of economic governance (e.g. Sweden – under Ministry of Enterprise or Finland – under Ministry of Employment and Economy).
- 4) *Forward Linkages (beneficiation) – Export Tariffs:* Export restrictions or tariffs are used by many states⁷⁹ (e.g. China, Venezuela, Zambia, Russia, India, Indonesia, Mexico, Mongolia, Canada, Turkey and, historically, most OECD states) to encourage beneficiation on the assumption that the raw mineral producer would be persuaded to transform the product into a higher value added product that would not attract the tariff, or at least offer a discount to a local beneficiator. Unfortunately the 1999 SA-EU trade agreement commits South Africa to not using export tariffs, which limits any potential introduction of such a tax to destinations other than the EU, though this may still be a useful instrument for the bulk of our unbeneficiated minerals which go to the East.

⁷⁸ PGMs – Platinum Group Metals (Pt, Pd, Rh, Os, Ru, Ir)

⁷⁹ Price A, & Nance S. 2009: “Export Barriers and Global Trade in Raw Materials: The Steel Industry Experience” OECD, 2009

- 5) *Infrastructure Tariffs to Realise Competitive Pricing of Mineral Feedstocks:* In general we need to task the Ministry of Public Enterprises with ensuring that the supply of strategic minerals into our economy is at cost plus or Export Parity Pricing (EPP), by instructing Transnet and Eskom to apply rail, port or energy surcharges to all mining and refining (including iron & steel) companies that practice monopoly (Import Parity Pricing -IPP) pricing. Their tariff for these companies should also be at an IPP or alternative price (e.g. a generator for electricity or trucking for rail). The Competition Commission could assist in identifying the culprits.
- 6) *Jobs from Steel:* Steel is by far the most important raw material into manufacturing, which is probably the only sector capable of absorbing our massive number of unemployed. Most of the countries surveyed had competitive domestic steel prices due to their size (Brazil, China) or membership of trading blocs (EU, Mercosur, ASEAN) and most have or have had State Steel Companies (China, Finland, Brazil, Sweden, Norway). We need to ensure that steel is supplied into our economy at competitive (EPP) prices. This could create thousands of downstream jobs. Iron ore should be classified as a “strategic mineral” (see above) and mining licenses should obligate local sales at “cost plus”. Local customers, e.g. AMSA (Arcelor-Mittal), should likewise be obligated to apply EPPs on their products (steel). In addition the State and Unions should form a SPV to use their combined holding to champion developmental outcomes. The cost of increasing the state holding in Kumba from ~13% to >50% would be prohibitive (about R15bn) and may require a constitutional amendment to force Anglo-American to reduce its share to below 50%, “in the public interest”.
- 7) *Facilitation of Competition in Steel Products:* We urgently need to facilitate the establishment of a new steel operator that would sell steel into the local market at EPP (and thereby force AMSA to drop its prices). This would be best done by locating iron resources that could be concessioned against the establishment of such a plant. Both Brazil and India have used access to iron ore to force international customers to locate steel plants in their countries, to beneficiate a proportion (~20%?) of the ore allocated, into steel before export. The Kathu iron ore operations produce a significant fraction of iron ore fines which are currently dumped, estimated at 200 to 400 million tons. After upgrading these could be transported more economically to the coast by slurry pipeline using water in the Gariep Dam currently allocated to the Nelson Mandela Metro (NMM), for a local steel plant and for ore exports as well as water supply to the NMM⁸⁰. Brazil has a major iron ore slurry pipeline (Samarco) that carries ~20 Mtpa over 400km from Germano to the coast where the fines are pelletised before⁸¹. In this regard, the Ministers of Public Enterprises, of Trade and Industry, of Water Affairs, of Economic Development and of Mineral Resources should be tasked with assessing the viability of slurring at least 25Mtpa of fines to

⁸⁰ The quality of the water delivered is likely to be cleaner than through the current Fish-Sundays Rivers delivery system.

⁸¹ Samarco 2011: <http://www.samarco.com>

Ngqura, including persuading the iron ore producers to cede the iron ore fines from the waste dumps and current arisings in exchange for rail export capacity. If viable, the Minister of Trade and Industry should be tasked with concessioning these iron ore fines, through public tender against the establishment of an integrated steel plant of at least 3Mtpa (5Mtpa of fines) to be sold into the domestic market at Export Parity Prices (EPP) in order to introduce competition in the local market for all major steel types (long & flat products). The remaining 20Mtpa would then be available to the concessionaire for export. Both Sweden and Finland used the iron ore resources to underpin state steel producers.

- 8) *Jobs from Scrap-based Industries:* In order to lower the price of scrap-based ferrous (mainly rebar⁸²: Scaw, Dav, CISCO) and non-ferrous (mainly brass and aluminium) industries, all exports of scrap should be banned, but only if the scrap-based producers agree to competitive pricing (EPP) into the local market. Many states have or had restrictions on scrap exports including China, India and Russia. Sweden had restrictions before having to drop them when they joined the EU and many other developed countries used them in the past, whilst developing.
- 9) *Jobs from Polymers (plastics):* The second most important feedstock into manufacturing are polymers (plastics) which are sold by Sasol into the local market at monopoly prices (IPP). Coal must be classified as a “strategic mineral” (see above) and mining licenses should obligate local sales at “cost plus”. Local customers (e.g. Sasol) must likewise be obligated to apply EPPs on their products (polymers). Consideration should be given to extending liquid fuels price regulation (NERSA) to polymers and other CTL/GTL⁸³ co-products (e.g. nitrogen). In addition the State and Unions should form a SPV to use their combined holding in Sasol to promote developmental outcomes. A combination of state (26%) and Fund managers would immediately have a majority holding. The ANC should request its Alliance partner, COSATU, to consider using its influence over their fund managers (Union pension funds) to form a controlling SPV with the state in Sasol.
- 10) *Jobs from Base Metals:* The third most important mineral feedstock into manufacturing is copper. It is also an important feedstock into infrastructure (construction and power). Copper should also be declared a strategic mineral with competitive pricing mining license conditions. The main producer is PMC (Phalaborwa) owned by Rio Tinto and Anglo. The IDC has put in a bid to purchase it and, if successful, the Ministry of Economic Development should instruct the IDC to sell into the local market at a competitive price (EPP). However, our main copper reserves are in the PGM reefs (co-product) of the Bushveld Complex and the PGM mining licences should stipulate sales into the local market at competitive prices.

⁸² Rebar- reinforcing steel bar (for construction)

⁸³ CTL: coal to liquids; GTL: gas to liquids

- 11) *Jobs from Agricultural Minerals:* In several of the countries surveyed the production of agro-minerals were or are state controlled (e.g. Norsk-Hydro and Kemira). Nitrogen (ammonium nitrate) is the most important feedstock into our agricultural sector. It is mainly produced by Sasol from coal and gas and sold at exploitative (monopoly) prices. We must apply the same strategies as for polymers (above) to obtain developmental prices for nitrogenous fertilisers in our market (EPP using international benchmark price basket). Agriculture and agri-processing have substantial job creation potential. Phosphates are also important for fertilisers for agriculture. The Minister of Economic Development must instruct the IDC (Foskor) to sell phosphoric fertilisers and feedstocks into the local market at cost plus or discounted EPP and to obligate local customers (blenders) to also apply cost plus prices to farmers. This discount could also be used to discipline food cartels in consultation with the Competition Commission.
- 12) *Regional Feedstock Supply:* A regional market would also assist in attaining competitive feedstock prices. This is dealt with under Regional Integration Proposals (#2.4) below.
- 13) *Jobs from Producer Power:* The only case study countries that have a predominant global share of mineral resources are China for rare earths, where they have been reserved for local usage (export restrictions), and Botswana which has leveraged its dominant position in gem diamond production to get the customer (De Beers) to shift downstream activities (sorting and some polishing) to their country. South Africa has the bulk of global resources of platinum (80%). Given the relative inelasticity of platinum supply and demand (no viable substitutes) our producer power could be used negotiate supply and local beneficiation with the international PGM customers (beneficiators). Platinum, like gold, has become an international investment instrument (boom in platinum ETFs⁸⁴) and accordingly should be treated like gold in our Exchange Control Regulations. The Minister of Finance should be tasked to amend the Exchange Control Regulations to prohibit the sale of "Precious Metals" without Treasury exemption (currently this clause only applies to gold sales), which will also give the state the right to market platinum, in addition to gold. South Africa also has major global resources of chromium, vanadium, manganese, titanium and alumina-silicates. The Ministers of Mineral Resources and of Trade and Industry should commission an expert study to assess our potential producer power for each by determining the relative supply elasticity (other resources, substitutes, etc.) and demand elasticity (price sensitivity, alternatives, etc.). They should then develop a strategy to maximise the economic linkages, through negotiations on supply and up/downstream investments with the customers, as per PGMs, based on the assessment.

⁸⁴ ETFs: exchange traded funds

14) *Pilot Beneficiation⁸⁵ Hubs*: In order to facilitate the rapid creation of jobs in the backward and forward linkages industries, it is proposed that 2 to 3 **pilot** special economic zones (SEZs), or “Beneficiation Hubs” are created to catalyse resources value-addition (both up- and downstream) and labour absorption. These could be based on existing IDZs as well as new locations close to areas of exceptional unemployment (>60%) and poverty. These “pilot” zones would offer a competitive human and physical infrastructure platform to attract investors and create jobs. They would operate on the principle of *protecting workers rather than jobs*, thereby giving investors a degree of labour flexibility and workers protection. The workers would be protected through a Retrenchment Safety-Net Fund (RSNF), from the RRT revenues, that would pay retrenched workers 90% to 70% of their salary for 3 years and automatically qualify for training during this period, through a Re-Skilling Fund (RSF) that would train eligible retrenched worker in new skills with identified demand. These reskilled workers would then be prioritised for any new job vacancies in the Hub. These zones would be true “pilots” in the sense that they should be reassessed by a team comprised of the Unions and government every 5 years. If they fail to attract investment and create jobs, their dispensation could then be discontinued. The Chinese SEZs were initially also established as pilot zones in the late 1970’s and 80’s, to test the concept. The Pilot Hubs should also develop technology hubs through HRD and R&D consortia with Universities, Colleges, research institutes and companies. The basic configuration of the “Pilot Beneficiation Hubs” takes several elements from the extremely successful Chinese SEZs and would include:

Element	Description	Objective	Funding/an
Location	Adjacent international ports, inland port, airport (as per IDZs)	To facilitate exports and customs procedures (duty free zone)	NA
	Close to areas with extreme unemployment: >60%	To target areas with greatest need for jobs	NA
Products	Beneficiated resource-based products : >50% VA	To ensure real VA and not re-labelling or re-forming	NA
	Resource industry inputs (capital goods & services) >50% VA	To ensure real VA and not re-labelling or minimal re-forming	NA
	Exports: >50% of output exported (exemption for new products)	To discourage the relocation of existing industries	NA
Incentives	50% CIT for 10y. After 10y- full CIT	To ameliorate capex servicing period (PRC SEZs: 30y at ½ CIT)	NA
	Special IDC managed fund for capex: equity (<50%) & debt	Access to capital at concessionary terms	R500mn
	Infrastructure Integration Fund	To connect the investment to power, water, transport, telecoms	R300mn
	Labour flexibility: Exempt from applicable LRA clauses.	To rapidly adjust to changes in demand	NA
	“Safety-Net” for labour under R100k/an: 90% for 1 st year, 80%	To protect retrenched workers from loss of income (36m)	R3000mn

⁸⁵ Beneficiation is the process of adding local value to resources. The total value add before export is the combination of both upstream (local content) and downstream linkages.

	for 2 nd year, 70% for 3 rd year		
	Automatic Re-skilling Scheme for retrenched labour for 3 years	To rapidly re-employ retrenched workers	R1500mn
	Accommodation fund for migrant workers (family units)	To cater for unemployed in remote areas (as per PRC SEZs)	R300mn
	Technology Development Fund- 2:1 for “blue sky” innovation and 1:1 for brown-fields R&D, with the private sector	To develop appropriate new up- & downstream products & production techs, to enhance international competitiveness	R400mn
	TOTAL	(for all 3 designated Pilot Hubs)	R6000mn/an

Notes: VA: value addition; CIT: Corporate Income Tax

The Pilot Beneficiation Hubs would be financed from the Minerals Development Fund, which is one of the three windows for the proposed Resource Rent Tax receipts (SWF). They would be managed on the same lines as the IDZs (under PFMA), but with Union representation on the Boards, and owned jointly by National government, Provincial government and Local/metro government. Consequently, it is proposed that the Tripartite Alliance constitute a team to assess this concept, to adapt it and expand it appropriately.

- 2) *Beneficiation Technology Development*: This is dealt with under the Pilot Beneficiation Hubs (above) and through the Minerals Technology Fund under 2.3.4 Knowledge Linkages, below. The funding will be for both up- and down-stream R&D.

2.3.1 Backward linkages (mining inputs) Proposals

- 1) *Backward linkages (supplier industries)*: The backward linkages cluster, consisting of suppliers of capital goods, consumables and services, is probably the most important mineral linkage opportunity for us to realise. This is because it tends to be knowledge (engineer) intensive (e.g. mineral equipment, plant, technology), can reinvent itself in other sectors through technology “lateral migration” and it can also continue to thrive after the depletion of minerals, through exports. The Nordic countries (especially Sweden and Finland, but also Norway for oil & gas) developed their resources backward linkage industrial clusters, which provided the nurseries for their industrialisation and continue to be robust export sectors. China is rapidly following suit, with the development of their minerals capital goods sector (yellow goods). However the development of this sector is completely dependent on a parallel technical HRD strategy (engineers, scientists and technicians). We must invest in the requisite HRD (see Knowledge Linkages 2.3.4 below) for the backward linkages to be realised to the viable maximum possible.
- 2) *Local Content Requirements*: We must make sure that we develop the important minerals upstream cluster (capital goods, services, consumables) to service the mining industry. International best practice shows that this cluster can provide an important *competitive advantage* for industrialisation. In this regard the MPRDA and regulations should be amended to permit the State to include local content milestones in all mineral concessions/licenses (percentage local value added in total purchases at year 5, 10, 15, 20).

- 3) *BEE Fronting for Imported Mining Inputs:* We must eliminate the destructive B-B BEE practice of fronting for foreign suppliers and thereby destroying local jobs. This can easily be done by basing the BEE purchase requirements in the Mining Charter on the BEE proportion of *local value added* (i.e. local content) in the goods or services supplied, rather than the total value of the goods or services. This will help to enhance the development of the backward mineral linkages. The Ministry of Mineral Resources should be mandated to urgently amend the Mining Charter accordingly.
- 4) *Pilot Beneficiation Hubs:* These would also facilitate the growth of backward linkages (resources upstream clusters) as described under Forward Linkages, above. It is proposed that the Tripartite Alliance constitute a team to assess this concept, to adapt it and expand it appropriately.
- 15) *Development of Mineral Technologies:* We must dramatically increase our investment in the development of mineral technologies, including prototypes, in order to take full advantage of the many upstream mining opportunities. All of the case study countries that managed to develop their upstream clusters invested heavily in R&D and HRD, particularly Finland, Sweden and China. Sweden and Finland generally have the highest global R&D spend as a percentage of GDP. Proposals on technology development and technical training are dealt with below under “Knowledge Linkages”.
- 16) *A Regional Market* for mineral inputs would also assist in attaining economies of scale for many upstream industries. This is dealt with under Regional Integration Proposals (#2.4) below.

2.3.2 Knowledge linkages (HRD and R&D) Proposals

- 1) International surveys show that only the countries that developed their resources knowledge cluster (human and technology development) were able to effectively build the backward and forward linkages and industrialise. This means that we must reinvest a large part of the resource taxes into technical education (engineers, artisans and technicians) and technology development. In the countries surveyed, industrialisation roughly collates with expenditure and success in technical education (particularly engineers). We need to urgently reinforce maths and science teaching at primary and secondary schools and to expand the capacity of tertiary institutions to produce engineering and science graduates, through a special fund financed by a part of the proposed Resource Rent Tax (RRT).
- 2) *Discouraging the Migration of Technical Skills:* In order to curtail the exit of engineering and science graduates we should convert the state tertiary education subsidy (generally 70-80%) into a notional loan that will be written off over 10 years of employment in our country. The “loan” (difference between full costs and fees paid) should be paid off like a bond at prime over 10 years by working in South Africa or for a South African company (domiciled and majority owned by SA residents) in Africa. If

graduates decide to emigrate before 10 years, they will be liable for the full outstanding portion of the loan.

- 3) *Technology Development:* The country surveys also displayed a strong correlation between investment in minerals technology development (R&D) and success in creating the important mineral linkages clusters (backward and forward). R&D as a percentage of GDP in 2007 was 3.6% in Sweden, 3.5% in Finland, 2.0% in Australia, 1.6% in Norway, 1.4% in China, 1.1% in Brazil, 0.7% in Chile, 0.6% in Malaysia, 0.5% in Botswana, 0.3% in Zambia and 0.9% in South Africa. Our minerals technology development capacity is contracting and this needs to be reversed by allocating a proportion of mineral taxes (proposed RRT) to both earth science (geology) research (CGS) as well as mining and mineral processing technology development. We should set a target for mineral R&D of 3% of the sector's value addition. In this regard we need to establish a mining technology Science Council (along the lines of the defunct COMRO/Miningtek) by amending the Mineral Technology Act of 1989 ("Mintek Act") to cover all activities from exploration, through mining and concentration, to smelting and refining. The old COMRO facilities in Auckland Park should be transferred to the new Minerals Technology Science Council that would incorporate Mintek and the remnants of COMRO at the CSIR.
- 4) *Minerals Technology Fund:* It is proposed that the Minerals Development Fund (funded by RRT receipts, above) has a window for minerals R&D (~2.5% of RRT). Part of this Minerals Technology Fund should be deployed to rebuild the proposed Mining Technology Council (above) in terms of "core funding", but the bulk should be used to fund technology development in partnership with mining and mining up- and downstream companies on a 1:1 basis for brownfields R&D (tech development) and 2:1 basis for greenfields R&D (new techs) and should cover prototype or pilot plant costs as well the development of "lateral migration" technologies that adapt mineral technologies for use in other sectors. The Fund could be managed by the IDC along with the DTI's other technology funds (SPII and PII).
- 5) *Investing in the Development of Technical Skills for the MEC:* It is proposed in this report that approximately 12.5% from the proceeds of the resource rent tax be used for investment in the development of technical skills for the mineral and linkages sectors. The specific activities to be funded under this proposal are the following:
 - The training and remuneration of Maths and Science specialists to assist in Maths and Science Education in primary schools across the country where such need is identified. The precise mechanism for implementing this should be worked out in consultation with the Ministries of Basic Education, and Higher Education and Training.
 - Grants/loans for Engineering and Science students to be administered through the National Student Financial Aid Scheme (NSFAS). Tertiary training should be free in critical technical areas.

- Financial support to Engineering Faculties based on the number of undergraduate students graduating and registering with ECSA⁸⁶.
- Financial support to Engineering Faculties for post-graduate studies.
- Grants for Engineering and Technician learnerships through the appropriate Sector Education and Training Authorities (SETAs).

2.3.3 Spatial linkages (infrastructure and LED) Proposals

- 1) *Open Access*: In order for mineral infrastructure to catalyse other sectors it is crucial for it to be accessible to third parties at non-discriminatory prices (cost plus). In this regard, all mining licences should stipulate that the mineral infrastructure be open access and that private infrastructure be over-dimensioned to cater for reasonable third party usage, where appropriate.
- 2) *Major mineral ore railway corridors (iron ore, manganese ore and coal)*: Preliminary economic modelling has indicated that a 30% increase in mineral exports could generate up to 280,000 new jobs. Consideration should be given to creating Joint Ventures (JVs) between Transnet and the users to upgrade the relevant lines where they would fund the expansion and have a shareholders' agreement to protect their rights. The JV would contract Transnet to operate the line. A condition for such a JV would be that the users would have to supply into the domestic market at cost plus (iron/manganese ore and coal) and on-obligate customers likewise. In addition, for coal, they would collectively have to transfer the requisite coal resources to Eskom for its security of supply and, for iron ore, collectively transfer iron ore resources back to the state, sufficient to attract a new integrated steel plant through an ore-for-investment deal (500 to 1000 million tons).

Alternatively, consideration could be given to a "user concession" of the main users with the following possible conditions:

- Pricing of ore/coal to domestic customers at cost plus, with an on-obligation on those customers to supply their coal-based products into the domestic market at cost plus prices;
- Transfer of mineral rights of select requisite resources back to the state;
- Third party access to the concession at non-discriminatory terms;
- The payment of an annual concession fee to Transnet to compensate it for the potential revenue foregone;
- The employment of all affected Transnet railway staff, with a 5 year retrenchment moratorium, and the servicing of all pension, health & other commitments;
- The continued servicing of other users at equivalent rates and conditions;
- Transnet should retain a share of the concession of at least 15% to cater for small scale users;
- The concession should be for the minimum period to give economic viability at internationally benchmarked tariffs (10-15 years?);

⁸⁶ ECSA: Engineering Council of South Africa

- All improvements/expansions will revert to Transnet at the end of the concession.
- 3) *Minerals Infrastructure- Energy:* The most important feedstock into energy is coal (electricity). As proposed above (for polymers), coal should be classified as a strategic mineral and licenses should be made conditional on first satisfying national power needs (Eskom) before sales to other customers (exports). In addition, the Minister of Public Enterprises should instruct Transnet to only allocate export rail/terminal capacity to energy mineral exporters once local power producers have been satisfied at cost plus a reasonable return. A certificate to this effect would have to be obtained from the National Energy Regulator of (NERSA). The brief of NERSA should be expanded to regulate coal prices to power plants at cost plus a reasonable return (Long Bond plus 7%?). The Minister of Mineral Resources must also reserve all unallocated or lapsed coal mineral rights of the appropriate rank for Eskom.
- 4) *Electricity for Jobs:* Electricity constraints have also limited growth in the minerals sector, particularly downstream beneficiation (e.g. ferro-alloys). To overcome this, the following measures should be assessed: Making coal exports dependent on first satisfying the needs of Eskom, through a system of coal export certificates managed by NERSA (see above) and the concessioning of select power plants to consortia of coal producers and electricity consumers (often the same company), with, inter alia, the following conditions:
- Expansion of capacity for supply to Eskom (minimum of 50% in 10 years);
 - The supply of the expanded capacity to Eskom at cost plus 12%;
 - An annual concession fee to Eskom to compensate it for the potential revenue foregone;
 - The employment of all the Eskom power plant staff, with a 5 year retrenchment moratorium, and the servicing of all pension, health and other commitments;
 - The direct supply of third parties, with Eskom agreement, on non-discriminatory (cost plus) terms;
 - The concession should be for the minimum period to give financial viability;
 - All improvements/expansions will revert to Eskom at the end of the concession.
- 5) *Gas-based Power Generation:* Our country reportedly has huge potential shale gas resources in the Karoo, but their extent and exploitation impacts are not confirmed. However, early guesstimates indicate that there could be more than enough gas to replace the bulk of our coal-fired plants with gas (CCGT⁸⁷) with much lower carbon emissions. The Ministers of Mineral Resources, of Energy, of Public Enterprises, of Environmental Affairs and of Trade and Industry should assess the extent of our country's shale gas resources and the viability of extraction. In this regard it is important that the Minister of Mineral Resources reserves the prospective shale gas areas for exploration and evaluation by the state (CGS and the Central Energy Fund) as soon as possible, to feed into the joint ministerial assessment in order to arrive at an

⁸⁷ CCGT: Combined Cycle Gas Turbines

optimal strategy for their exploitation. However, reportedly, large areas have already been allocated to Shell and a few other companies.

- 6) *Limestone for washing plants:* Eskom also needs certain grades of limestone for cleaning its emissions. Deposits of these grades must also be declared as strategic and the mining licenses amended to stipulate cost plus pricing to Eskom. Also, any unallocated deposits of the requisite grade must be reserved for Eskom.
- 7) *Nuclear:* Although South Africa does not currently produce nuclear fuel, The South African Nuclear Energy Corporation (Necsa) is planning to reactivate fuel rod production in the future. Accordingly all nuclear minerals (uranium and thorium) should be declared strategic and mining licenses should contain local security of supply and pricing conditions.
- 8) *LED:* Following the DMR recommendation there should not be a strategy where one uniform plan is made for all communities, but rather one that takes into account the unique specifics of the different communities. Instead a pooling of resources by mining companies in the same vicinity to maximise the development potential on the local communities is recommended. Mining closure plans should also cater for communities by developing sustainable alternative economic activities (not dependent on the mine) that could survive closure. If alternative economic activities are not viable due to an isolated location, or specific climate conditions (e.g. desert), then relocation plans need to be developed.
- 9) *LED- Mining Charter:* Failure to comply with the community and worker conditions of the Charter should trigger a suspension of the mining licence and, if not rectified within a reasonable period, the concession should be cancelled. The MPRDA should be amended to cater for this.

3.4 Proposals to Enhance the Developmental Impact through Regional Integration:

- 1) *Larger markets for Linkages Industries:* Although the South African minerals sector constitutes a relatively large market for mineral inputs industries (backward linkages), the southern African region (SADC) has a rapidly growing minerals inputs market and significant future mineral potential. Most of the countries surveyed with well-developed linkages either have large domestic markets (China, Brazil) or are part of large regional markets such as EU, ASEAN and Mercosur. In this regard the 52nd ANC National Conference resolved to build “*stronger economic linkages across the continent of Africa as a whole as a basis for increasing our market size through deepened economic integration*”⁸⁸. The viability of establishing supplier and beneficiation industries (backward & forward linkages) would be substantially enhanced by regional integration. In this regard industrial linkages potential would be greatly enhanced by larger (regional) markets (economies of scale) and our government should be mandated to progress the extension of membership of the

⁸⁸See Annexure – ANC 52nd Congress Economic Transformation Resolution, 2.12

Southern African Customs Union (SACU), with a reassessment of the relevant import tariff lines (infant industry protection), and the IDC should develop viable linkage industry investments in other member countries to facilitate equitable benefits. This should be pursued together with the proposed Regional Development Fund (trade related infrastructure) to facilitate intra-regional trade in mining inputs and outputs.

- 2) *Regional Development Fund:* Intra-regional trade is significantly constrained by the lack or poor state of regional infrastructure – both “hard” infrastructure (transport, power, etc.) and “soft” infrastructure (customs, trade bureaucracy, tariffs and NTBs⁸⁹). Many countries in the region are displaying robust growth due to the minerals “super-cycle”. The NGP notes that “*South Africa cannot succeed with regional development without strong partnerships with other countries on the continent. [The NGP] proposals centre on a strategy for improving logistics, with clear priorities and timeframes... [including] ...measures to expand regional investment and trade and develop integrated supply-chains and industrial corridors particularly in mining and agro-processing; and reducing regulatory obstacles to trade and travel.*”⁹⁰ “*In this regard a special facility should be created to promote investment in the sub-continent*”⁹¹, through the proposed SWF Regional Development Fund (30% of RRT) to invest in long-term trade infrastructure across the southern African region. The fund could be managed by the DBSA, but its board should be nominated by the Ministries of Trade & Industry, Economic Development, Public Enterprises and International Cooperation.
- 3) *Competitive Mineral Feedstock Prices:* A larger (regional) market could also facilitate competitive pricing of mineral-based intermediate products (and manufacturing jobs) as “*...the small size and relative isolation of our economy leads to monopolies in certain sectors which could be overcome by increasing regional economic integration with Southern Africa and the continent as a whole.*”⁹² Several countries in the region already have nascent manufacturing feedstocks industries (steel, base metals, petrochemicals) and many more have the potential to develop these industries based on their mineral and hydrocarbon resources. In this regard South Africa needs to put regional economic integration firmly back onto the agenda by initially creating a free trade area for steel and petrochemicals (as with the European 1952 Paris Treaty- ECSC⁹³), followed by a customs union for all products. The Ministers of Trade & Industry and of International Cooperation should be tasked with assessing the viability of creating a Southern African Manufacturing Inputs Community (SAMIC).
- 4) *Producer Power:* Linkages development using producer power would clearly be enhanced through a regional approach that would have a greater share of global resources and/or production, especially for PGMs and chromite (Zimbabwe). In this

⁸⁹ NTBs non-tariff barriers

⁹⁰ EDD 2010, NGP, p14.

⁹¹ RDP 2004, op cit, see Annexure, #12.

⁹² RDP, see annexure, 2.11

⁹³ ECSC: European Coal and Steel Community (ECSC) was the foundation of the European Union.

regard, consideration should be given to a joint PGM linkages strategy with Zimbabwe.

- 5) *Regional Power Supply*: It is estimated that the SADC states in the tropics have in excess of 100GW of hydropower potential which could constitute an important carbon-free part of our energy mix. This unique clean energy opportunity/advantage should not be ignored for xenophobic concerns: The Ministers of Energy, of Public Enterprises, of International Cooperation and of Trade and Industry should be tasked with assessing the viability of developing and importing low-cost carbon-free hydropower from the SADC. Likewise, the viability of connecting to the vast natural gas resources on the West Coast (Angola: ~14TCF) and East Coast (Mozambique and Tanzania: ~30TCF) should be assessed. It appears that the lowest cost and most sustainable energy scenarios may lie with deepening regional economic integration.

4) Conclusion

Our rich and diverse mineral resources endowment could underpin growth, development and job creation but this will not happen through “market forces” alone. We need to begin to apply our concept of a Democratic Developmental State to the governance of our mineral assets, to ensure that the development of all the mineral linkage sectors is maximised to stimulate industrialisation and job creation and to capture an equitable share of our resource rents. *The key state intervention to realise the crucial economic linkages is the development of quality technical human resources* (engineers, scientists, technicians), at which we are currently failing badly. An indicative “guesstimate” of the proposed interventions indicates that up to 1 million jobs could be created over 2 to 5 years. In general one mining job creates about one indirect job elsewhere in the economy⁹⁴.

SIMS Indicative JOB CREATION Guesstimates (400k to 1 million)

Intervention/Action (2-5y)	High 1000's	Low 1000's
Remove Mineral Export Constraints:		
10% increase in mineral exports (CGE model)	95	50
20% increase in mineral exports (CGE model)	191	100
30% increase in mineral exports (CGE model)	286	150
• +10% Beneficiation VA	40	20
• +20% Beneficiation VA	70	40
• +10% local content VA	20	10
• +20% local content VA	30	15
• EPP Iron & Steel	90	60
• EPP Polymers	80	50
• EPP Base metals	20	10
• EPP Cement/lmst.	20	10
• EPP Other (NPK)	30	10
Coal @ cost plus (reduce energy costs)	20	10

⁹⁴ CoM: Submission to SIMS

New HRD investment (teachers/bursars)	30	15
New R&D invest (license & SWF) & geo-survey	5	3
3 Pilot Beneficiation Hubs	45	20
Mineral Infrastructure Upgrades	4	2
Mineral Asset Auctions	55	25
SMC	15	5
Greater regional exports/imports	80	40
Regional trade infrastructure	6	3
PGM VA Strategy	14	7
New Mines (& EPP steel project)	100	50
TOTAL (1000's)	1000	400

Source: SIMS Team

In general we *need to transform the core of our economy, the Minerals Energy Complex (MEC), through good governance, into the driver of growth and development through the maximisation of all the MEC linkages (fiscal, backward, forward, knowledge and spatial), rather than merely a vehicle for super-profits, much of which are expatriated. Furthermore, such a resource-based (MEC) growth and development strategy would be greatly enhanced by equitable regional integration (SADC).*

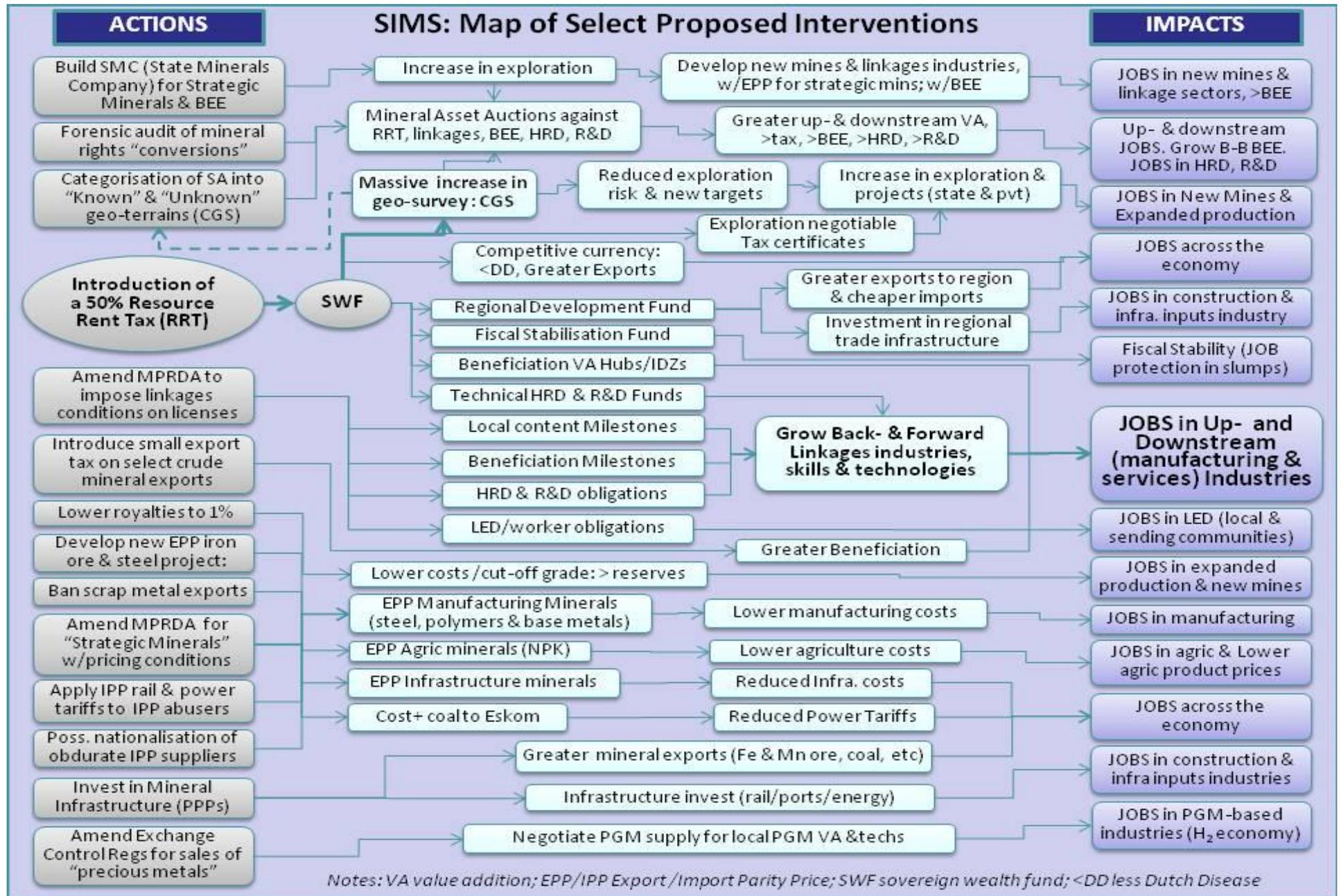
A major challenge is ensuring that a much higher proportion of the super-returns from the extraction of the people's resources is in the hands of the state to invest for the people as a whole, whilst ensuring that the minerals sector continues to grow and prosper. South Africa's taxes are generally *lower* than most other countries. *We need to introduce a Resource Rent Tax and the receipts should go into Sovereign Wealth Fund, part of which should be used to develop infrastructure, skills and geo-knowledge, including to the benefit of the minerals sector.*

Knowing what the people's exploitable resources there are is a crucial starting point. *The state must dramatically increase investment into geo-survey capacity (Council for Geo-Sciences: CGS) and ensure that valuable rights are concessioned with the optimal developmental returns, through public tender ("price discovery") or the SMC.*

Maximising the developmental impacts (linkages) from resources means effective coordination on the part of the state, rather than fragmented decision making. *A super-Ministry of the Economy should be created, or at least the merging of the key MEC Ministries: minerals, energy, trade & industry and economic development.*

It is incumbent on our generation to ensure that the current depletion of our finite mineral assets establishes a competitive industrial platform for the economic prosperity of future generations.

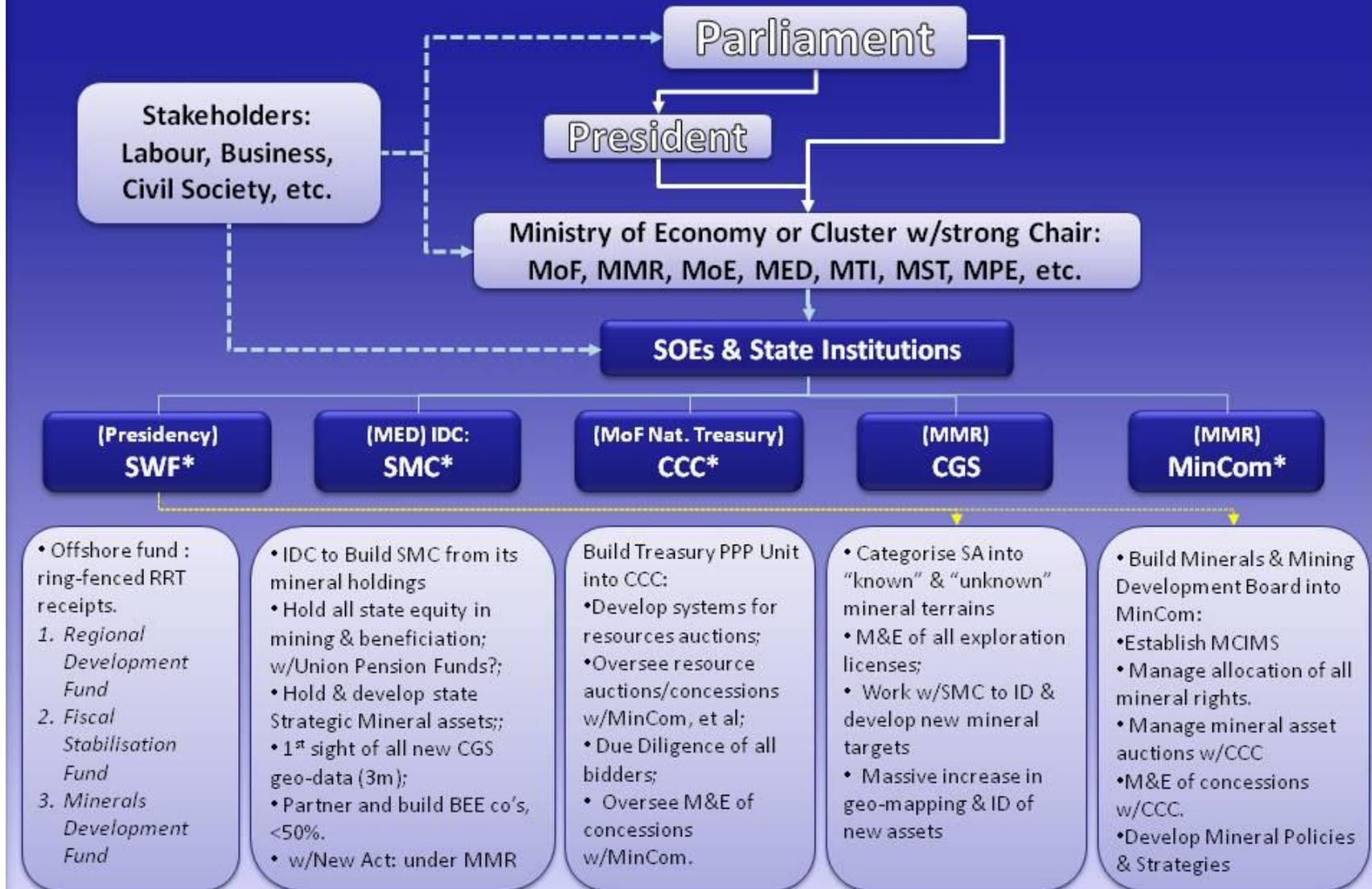
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SIMS Indicative JOB CREATION Guesstimates (400k to 1 million)

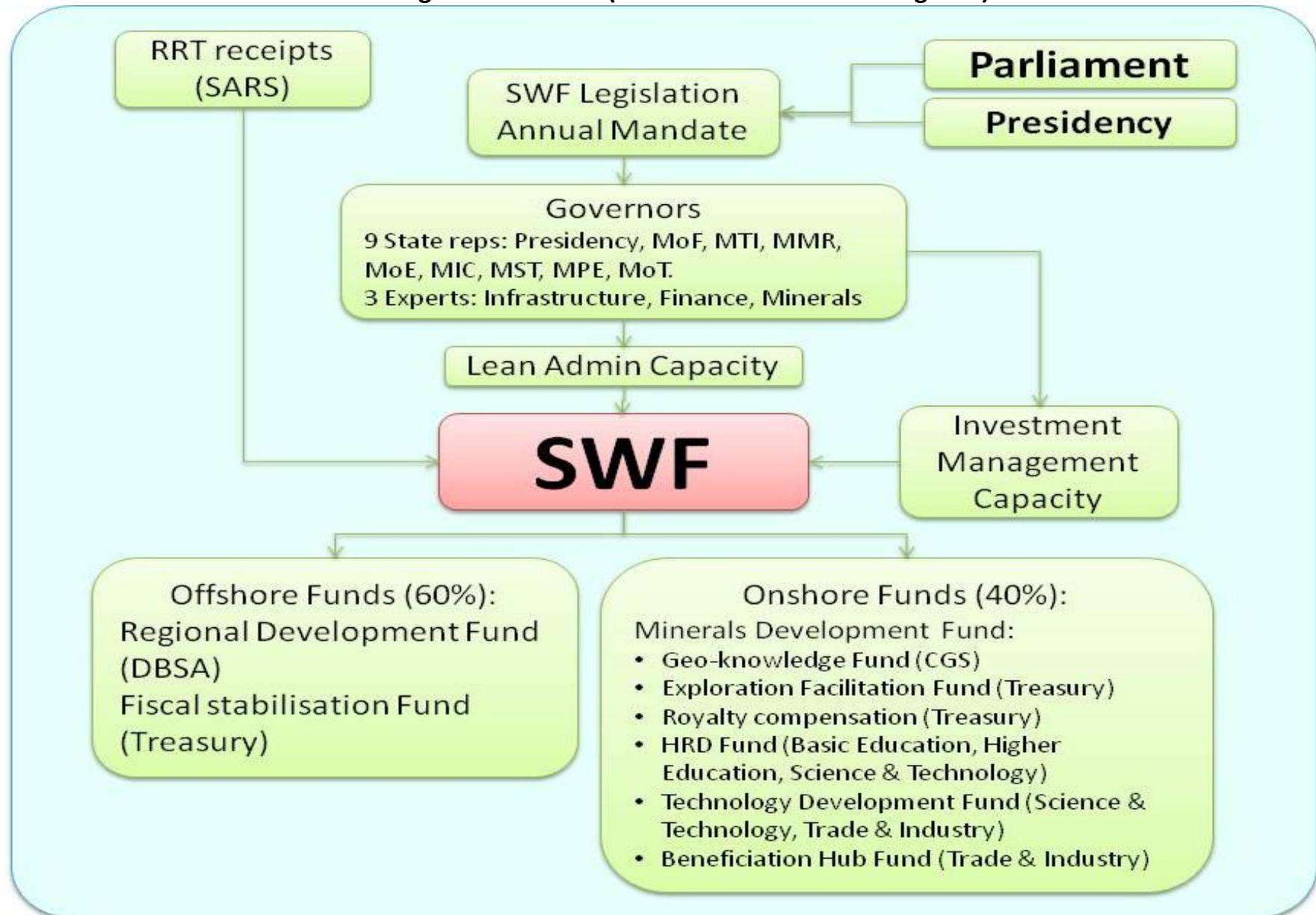
ACTIONS		IMPACTS		Intervention/Action (2-5y)	High 1000's	Low 1000's
Build SMC (State Minerals Company) for Strategic Minerals & BEE	JOB S in new mines & linkage sectors, >BEE			Remove Mineral Export Constraints:		
Categorisation of SA into "Known" & "Unknown" geoterrains (CGS)- (auctions)	Up- & downstream JOBS. Grow B-B BEE. JOBS in HRD, R&D			10% increase in mineral exports (CGE model)	95	50
Introduce a 50% Resource Rent Tax (RRT) - SWF	JOB S in New Mines & Expanded production			20% increase in mineral exports (CGE model)	191	100
Amend MPRDA to impose linkages conditions on licenses	JOB S across the economy			30% increase in mineral exports (CGE model)	286	150
Introduce small export tax on select crude mineral exports	JOB S in construction & infra. inputs industry			+10% Beneficiation VA	40	20
Lower royalties to 1%	Fiscal Stability (JOB protection in slumps)			+20% Beneficiation VA	70	40
Develop new EPP iron ore & steel project:	JOB S in Up- and Downstream (manufacturing & services) Industries			+10% local content VA	20	10
Ban scrap metal exports	JOB S in LED (local & sending communities)			+20% local content VA	30	15
Amend MPRDA for "Strategic Minerals" w/pricing conditions	JOB S in expanded production & new mines			EPP Iron & Steel	90	60
Apply IPP rail & power tariffs to IPP abusers	JOB S in manufacturing			EPP Polymers	80	50
Poss. nationalisation of obdurate IPP suppliers	JOB S in agric & Lower agric product prices			EPP Base metals	20	10
Invest in Mineral Infrastructure (PPPs)	JOB S across the economy			EPP Cement	20	10
Amend Exchange Control Regs for sales of "precious metals"	JOB S in construction & infra inputs industries			EPP Other (NPK)	30	10
	JOB S in PGM-based industries (H ₂ economy)			Coal @ cost plus (reduce energy costs)	20	10
				New HRD investment (teachers/bursars)	30	15
				New R&D invest (license & SWF) & geo-survey	5	3
				3 Pilot Beneficiation Hubs	45	20
				Mineral Infrastructure Upgrades	4	2
				Mineral Asset Auctions	55	25
				SMC	15	5
				Greater regional exports/imports	80	40
				Regional trade infrastructure	6	3
				PGM VA Strategy	14	7
				New Mines (& EPP steel project)	100	50
				TOTAL (1000's)	1000	400

Proposed Minerals Governance Institutions:



* SWF: Sovereign Wealth Fund; SMC: State Minerals Company, CCC: Concessions & Compliance Commission, MinCom: Minerals Commission.

Sovereign Wealth Fund (indicative- still to be configured)





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