

Maximising the developmental impact of the people's mineral assets:

STATE INTERVENTION IN THE MINERALS SECTOR

Report prepared for the ANC Policy Institute

Contents

STATE INTERVENTION IN THE MINERALS SECTOR.....	1
DRAFT TERMS OF REFERENCE:.....	11
Introduction.....	11
About the Project	11
Key Activities of the Project.....	12
Project Team.....	13
History of Mining in South Africa	14
FROM FREEDOM CHARTER TO POLOKWANE AND BEYOND:	21
ANC POLICY DEVELOPMENT AND STATE POLICIES IN MINING IN THE POST-APARTHEID ERA	21
ANC Minerals Policy Development.....	21
The Freedom Charter (1955).....	21
Ready to Govern (1992).....	21
Reconstruction and Development Programme (1993)	21
Polokwane Resolution on the Economy: December 2007.....	23
Debate within the ANC.....	24
Government Policy on Minerals Development post-1994.....	25
Department of Minerals and Energy, Green and White Papers, 1998: A Minerals and Mining Policy for South Africa, 1998.....	25
Important Legislation.....	30
The Mineral and Petroleum Resources Development Act, 2002	30
The Mineral and Petroleum Resources Royalty Act, 2008,.....	32
The Mining Charter.....	32
Department of Mineral Resources: Amendment of the Broad-Based Socio-Economic Empowerment Charter for the South African Mining and Minerals Industry, 2010.....	35
State Intervention in the Minerals Sector Before 1994	37

Historical state intervention in the minerals sector.....	37
Background.....	39
Government Intervention	41
Taxation	41
Intervention in the labour market	42
Controlling the sales of mining output.....	43
Price Control.....	43
Intervening to pursue government political interests.....	43
Intervention to support mining operations	44
Other forms of intervention.....	44
THE ROLE OF SOEs IN MINERALS PRE-94	45
Introduction.....	45
Origins of Afrikaner Capital	45
2.1 Promotion of Afrikaner Capital.....	46
2.2 The Focus on Large-Scale	46
3. Interest Groups	47
4. Government Policy in MEC Industries in Relation to English and Afrikaner Capital..	47
4.1 Financing of MEC and Related Operations.....	50
State Corporations	51
Birth of Specific SOEs in SA.....	51
ISCOR and ESKOM.....	51
Alexkor.....	52
Central Energy Fund (CEF).....	53
The CEF Group.....	53
Transportation Network (Transnet)	54
Conclusion	54
South Africa’s Mineral Resources	54

The Role of Mining and the Minerals-Energy Complex (MEC) in the South African Economy.....	60
The Minerals-Energy-Complex.....	60
Investment	64
Trade.....	65
Employment	69
The MEC: Origins, Restructuring and Trends	73
Gold and uranium.....	73
Gold mining restructuring 1948-2010	73
Evolution of conglomerate structure	74
Anglo American unbundling and reversing offshore	75
Anglogold	76
Harmony	79
Gold Fields of South Africa (GFSA)	84
Gencor	85
Anglovaal unbundling and demise.....	89
JCI Limited	91
Rand Gold and Exploration – Rand Mines	93
Gold and uranium – conclusions.....	94
Platinum	97
Platinum production history	97
Anglo American Platinum – (Amplats).....	97
Impala Platinum - Gencor	103
From Lonrho to Lonmin	108
Northam Platinum.....	109
Royal Bafokeng Holdings.....	112
Platinum in South Africa and its role in the MEC.....	113
Conclusions and peculiarities of platinum mineral rights.....	116

Platinum - conclusions.....	118
Coal, Electricity and the MEC.....	120
Coal 1950 - 1989	122
From Trans-Natal Coal to BHP Billiton - Ingwe.....	124
Anglo American Coal	125
Anglo American – Eyesizwe Coal	127
Anglo American – Inyosi JV	127
Exxaro	129
Optimum Coal.....	129
Glencore	130
Xstrata.....	131
ARM Coal.....	133
Shanduka Coal	134
Coal ports and exports.....	134
Coal, electricity and the MEC - conclusions	135
Iron ore - steel.....	137
From Iscor to Kumba	137
Assmang.....	139
Columbus Stainless steel – Middelburg Steel and Alloys	140
Highveld Steel and Vanadium.....	140
Iron ore - steel conclusions	140
Manganese	141
Samancor Manganese	141
Assore – Assmang -ARM	143
Ntisimbintle Manganese.....	143
Kalagadi Resources.....	144
African Rainbow Minerals (ARM).....	145

Manganese - conclusions.....	148
Chromite and Ferrochrome.....	151
Xstrata.....	152
Merafe Resources.....	153
Samancor Chrome.....	156
Assmang Chrome.....	157
Other producers.....	157
Ferrochrome - conclusions.....	157
Diamonds.....	158
De Beers.....	158
Trans-Hex and other diamond miners.....	161
The MEC as a system of accumulation	162
Ownership changes in MEC sectors.....	162
The dismembering of corporate conglomerates (“Mining Houses”) and the growth of black domestic capitalist interests in the minerals sector.....	163
The increased entry in the RSA economy of large and small transnational mining and mineral processing firms.....	168
Mining.....	168
Mining technology.....	169
Mineral processing.....	169
Future likely trends in the ownership & control of the MEC.....	170
Mineral supply/demand- the Asian boom and prospects for optimising mineral assets.....	174
Africa Mining Vision	179
Corporate Governance:.....	186
Global Trends in Minerals Ownership and Control	189
Trends 2011.....	189
Introduction.....	189
Africa.....	189

Asia & Oceania.....	194
Executive Summary	194
Historic trends.....	195
Early 2000s	197
Methodology.....	199
State-owned Mining Enterprises Analysis.....	200
Mining Industry.....	200
Refining.....	200
Metals.....	200
Countries.....	201
Topics for further discussion	216
Introduction.....	216
Why are some metals more likely to be under state control?.....	216
Lessons from previous periods of state ownership	217
What can be done to avoid future mistakes?	219
The future.....	220
Mineral Resource Asset Management	223
Mineral Resources Governance	223
Mineral concession system: FIFA v/s Fair Value	223
The allocation of mineral concessions (rights)	224
Maximising the developmental impact of mineral concessions.....	225
Categorisation of mineral resource terrains	226
Forensic Audit of Mineral Right Conversions	228
Building the People’s Geological Survey Capacity.....	229
State Mineral Resources Development Company	229
State Participation in the Minerals Sector	231
Forms of state participation.....	232

Objectives of state participation.....	233
Issues arising from state participation	233
Some positive policy responses.....	234
State Participation in the Natural Resources Sector – selected country examples.....	234
State Participation: Pitfalls:.....	237
Mining Health and Safety	239
Mineral Economic Linkages	241
Discussion	241
Fiscal Linkages.....	246
Introduction.....	246
Backward Linkages	263
International best practice	264
Economies of scale:.....	267
State intervention to grow the Upstream (backward) linkages:.....	267
Forward Linkages.....	268
Introduction.....	268
Mineral Feedstocks	269
Strategic Minerals demand sectors.....	270
Minerals for Energy.....	278
Minerals for Infrastructure.....	281
Minerals for Agriculture (NPK)	282
Resources Dominance	283
Job Creating Beneficiation Hubs	284
Knowledge Linkages.....	287
Introduction.....	287
Quality of Education.....	287
Maths and Science Education.....	291

Training	292
Financing Education and Skills Development in South Africa	292
The National Skills Development Strategy	292
Post-school education	294
Graduate holding strategies	298
Investing in the Development of Technical Skills for the MEC.....	299
Research and Development	299
Investing in the Development of Minerals R&D	300
Mineral Spatial Linkages.....	302
Collateral infrastructure impact/optimisation.....	302
Transport (rail, road, ports, terminals, pipelines).....	303
Rail and Road Transport.....	303
Regional Mineral Activities and Infrastructural Needs.....	308
Mineral Based Manufacturing and Transport Infrastructure.....	310
Ports/Terminals.....	314
Energy	316
Electricity.....	317
Coal supply to Eskom.....	319
Recommendation.....	320
Water	321
Acid Mine Drainage (AMD)	323
LED and Corporate Social Responsibility/Investment (CSR/CSI).....	323
Post-mining economic activity.....	325
Review, Proposals & Conclusions.....	327
1) Review and Discussion.....	Error! Bookmark not defined.
2) State Intervention in the Minerals Sector: Proposals....	Error! Bookmark not defined.
Appendices	327

DRAFT

DRAFT TERMS OF REFERENCE:

Introduction

The 2010 NGC took a resolution on the role of the state in the economy. This resolution is more encompassing than the matter of nationalisation of the mines. It is this principled viewpoint that informed delegates to instruct the NEC to carry out an in-depth study on how best to leverage our mineral wealth (and other natural resources) to achieve our key strategic goal of placing our economy on to a new job-creating and more equitable growth path, in the context of the Polokwane National Congress 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 maximization."*¹ This study would enable the ANC to present a scientifically researched overview of our minerals sector in particular, as well as international case studies so that any decision taken is based on an understanding of the real issues. While the resolution further directs the ANC to look at other sectors, including the energy and financial sectors, the present research project should focus on the minerals sector.

The 2012 Policy Conference should be presented with a clear framework to inform decision-making at the National Conference in December 2010. Prior to this, the outcome of the research should be packaged for discussion in ANC constitutional structures to allow for a rational debate on this important issue.

Below are the Terms of Reference for the Research Project on state intervention in the minerals sector to place our economy onto a new growth path.

About the Project

This is a 12-month project which will critically analyse our 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 should also study 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

Concurrently, the benefits and costs of state interventions, political and economic factors that influence these benefits and costs of intervention will be assessed.

This will be complemented by an identification and critical evaluation of current and previous experiences (case studies) and options for the likely future development of instruments of state intervention in selected countries in:

Latin America (Brazil, Chile and Venezuela);
Africa (Botswana, Namibia and Zambia);
Asia (China and Malaysia);
OECD (Norway; Finland, Sweden and Australia)

Assessment of options for forms of state intervention will particularly focus on their actual and/or potential socio economic development impact, as well as their feasibility and sustainability given the attitudes and preferences of key social forces involved.

It is envisaged that this research will take into account the on-going work on developing the new growth path for South Africa, as well as any work that will have been done by the National Planning Commission (NPC) and where necessary make comments on such work. In terms of our African context the study should take into consideration the African Union's (AU) "Africa Mining Vision" (AMV) adopted at the AU Summit in 2009 (see appendices) and likewise comment on it.

Finally, the project will develop policies and strategy recommendations on various forms of state intervention that will most appropriately address the identified issues affecting apartheid property relations.

Key Activities of the Project

Current Situation: A detailed overview of the existing components of the structure of the economy, including the MEC², ownership patterns, the forms of state interventions and key issues relating to the factors influencing state intervention.

Case studies (best practice): 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.

Maximising the Developmental Impact of Mineral Assets: An identification of medium- and long-term policies and strategies, in terms of the attainment of the society the ANC seeks to create, (alignment with ANC & government policies)

Impact of state interventions: An evaluation of the social and economic impact of state interventions and related factors that also influence the impact of such interventions.

Documenting the views of key actors on the components of the structure of production, including ownership and control (linked to activity 1), and eliciting preferences around the objectives of future state interventions in the economy.

² MEC: Mineral-Energy-Complex

A critical evaluation of the likely impact of various options for state interventions and the identification of those options regarded as most acceptable to key actors and hence most likely to be successfully implemented. Analysis of risks associated with each intervention.

The development of policy and strategy recommendations on forms of interventions that will most appropriately address the identified key economic challenges and put the economy on new developmental growth path.

Project Team

The project will be coordinated by the ETC Reference Group and supported by the following:

Project Co-ordinator, with adequate project management background to run the day-to-day activities of the project.

Two (2) or more Senior Researchers: with mineral economics and development economics/social science background.

Two (2) Research assistants: to provide technical support to the project

One Secretarial Support staff, to provide administrative and secretarial support to the project.

A Steering Committee consisting of Reference Group appointed by the ETC as directed by NEC.

Duration: The project is expected to take at least 12 months, but with intermediary outputs, and is planned to commence in January-February next year.

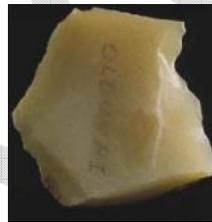
History of Mining in South Africa

South Africa is one of the only areas on earth that contains a complete history of mining, going back to pre *Homo sapiens*, and continuing with the first human workings through to the first underground mines, on to iron age mining and finally colonial commercial mining.

It contains evidence of some of the very earliest use of minerals in the form of stone tools by pre-humans, *Homo habilis*, at for example Sterkfontein and Kromdraai (1.7 - 2 million years BP)



Also, in Tanzania we have Oldowan chopper cores and flake tools in the Olduvai Gorge



These are arguably represent the earliest recorded “quarrying” by hominids

The first use of minerals by Homo Sapiens is probably the recent discovery at Pinnacle Point (Mossel Bay) of the heat treatment of rock (silcrete) to harden it for the making of microlith (flake) tools (80 -150 000 years BP) constituting the first human heat treatment.

An engraved plaque of ochre (hematite) was found at Blombos Cave (near George), dated at 75 000 years BP and is the first evidence of human art or possibly writing, though the meaning of the striations is unknown.



The first known underground mine is at Lion Cavern (Ngwenya) in Swaziland (20 000 - 43 000 years BP) where the ancestors of the San people mine iron oxides for ochre for rock painting. This deposit was later mined commercially by Anglo American in the 60s and 70s (Ngwenya Mine) and the iron ore was exported from Maputo on the Goba railway line.

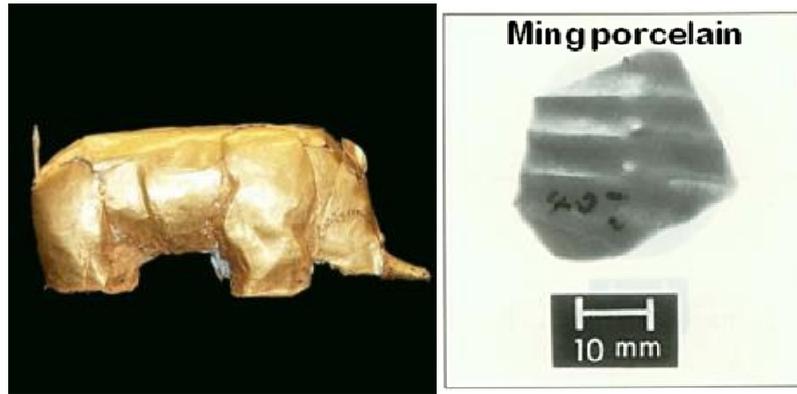


Iron and copper mining and smelting appears from c. 200 AD and there are thousands of iron smelting sites across southern Africa!



The photo depicts a Venda-type iron smelting furnace in 1888. The manufacture of traditional iron products (axe heads, hoes, arrow heads, assegais, etc) continued up till the 1950's. The numerous Hwedza hill iron furnaces in Zimbabwe were described by early colonists as the "Sheffield of Africa".

Gold trade via the eastern seaboard to the Middle East and Asia well- established by c. 900 AD and gold was an important commodity in the Mapungubwe state (c. 1220 -1270) where numerous gold artefacts have been found.



The Mapungubwe site also contains Asian trade goods and it is thought that gold and ivory were traded with the east via the Dhow trade up the east coast of southern Africa to the Middle East and beyond. Items of Ming Dynasty ceramics have been found at Mapungubwe. The Mapungubwe state was followed by the Zimbabwe (Munhumutapa) state with extensive gold mining. There are over 4000 ancient gold mines and workings in southern Africa.

Copper was mined at Phalaborwa and Mussina and “the earliest South African example of a shaft, gallery, or adit was found at Lolwe Hill, Phalaborwa, where ancient miners sought malachite and azurite (the site is now the location of a large open pit mine). A shaft 6 metres in depth with a 10 metres horizontal gallery was dated at AD 770”³.

The Rooiberg tin mines (Limpopo Province) operated from the 15th to the 17th Century and the Mussina copper deposits were probably mined from the 10th Century, but unfortunately the early workings were destroyed by the European miners at the start of the 20th Century⁴

The invasion of the Cape by the Dutch East India Company (VOC) in 1652 heralded the start of the systematic dispossession of indigenous South Africans of their land, minerals and liberty. However, in the hinterland, “...by the time the European settler community arrived in the region almost every gold-bearing quartz outcrop had already been worked, nearly every viable outcrop of copper-bearing rock had been exploited, and hardly a tin lode of any importance was left untouched” by the indigenous miners.⁵

³ Hammel, A. et al “Pre-colonial mining in southern Africa”, Journal of the SAIMM, Jan/Feb 2000, p52

⁴ Herbert, E.W., “Red gold of Africa: copper in precolonial history and culture”. Univ of Wisconsin Press, 2003, p27

⁵ Hammel, et al “Pre-colonial mining in southern Africa”, Journal of the SAIMM, Jan/Feb 2000, p54

Select Ancient Gold Workings in the ex-Transvaal

GOLD WORKINGS IN IRON AGE TRANSVAAL						
Site	Position	Type of rock	Assay value	Type of working	Dimensions	Notes on working
Cyferkuil	32 km N. of Brits, W.Tvl		29 dwt/t (in 1 sample)			'Gold found in old working'
Ruigtepoort (Goudkopji)	66 km N. of Brits, W.Tvl					
Honingkloof 112	16 km S. of Roossenekal, E. Tvl	Outcrop of quartz reef	Visible gold in places, values erratic	Trench	Trench 15 m downwards, several hundred metres long	'rich sections worked out'
Weltevreden 215	Near Waterval-Onder, E. Tvl	Outcrop of huge vertical reef	Good values in quartz rubble alongside trench	Sections of reef trenched out	Depth 3 m, length \approx 900 m along outcrop	
Doornpoort	20 km W. of Roossenekal, E. Tvl	Schist-like outcrop	18 dwt/t	Horizontal tunnel	Tunnel about 12 m long; 6 m below surface, 1,2 m high, 0,6 m wide	'narrow pillar of ore rock left to support roof of tunnel'
Elandsfontein 167	N. of Pilgrims Rest, E. Tvl	Reef carrying gold and copper				'considerable ancient workings'
Pilgrims Rest area	E. Tvl	Theta Reef bedded veins				'large old workings', rich finds of alluvial gold in area

Source: Friede, H.M. (1980) SAJMM Journal, May 1980, p156

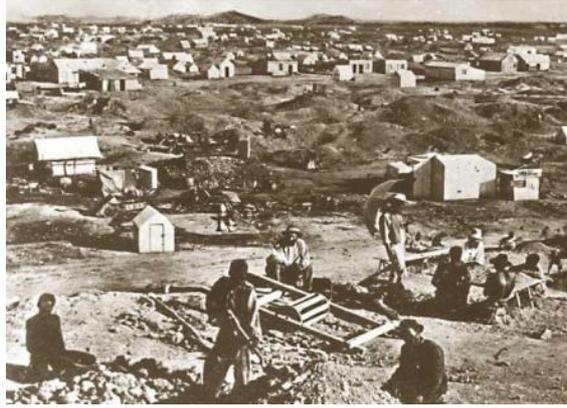
“European colonization was the ultimate constraint on these indigenous operations as “imported goods rapidly undermined the value of traditionally produced goods”⁶ and local mining declined dramatically. Although much of the evidence of pre-colonial mining has since been destroyed by modern mining operations, recent research has started to balance the colonial-oriented version of history with information regarding the achievements of indigenous miners and smelters—from whom, it seems, there is a lot to learn”⁷

The European “discovery” of diamonds in Griqualand in the 1860s led to the first diamond “rush” by Europeans from all over the globe, but the local inhabitants were denied diamond claims and relegated to the role of labourers for the invaders. This was repeated for gold in the Barberton Mountain Lands and Sabie (Pilgrims Rest) in the 1870s and later, when the world’s largest gold formation (the reefs of Witwatersrand System), was exploited by the European invaders.

From the turn of the 19th century mining became the backbone of the European settler economy and with the formation of the Union of South Africa in 1910 the indigenous people were increasingly stripped of their rights and controlled through the migrant labour system (Wenela, later Teba) and the Pass Laws (“Domboek”). After World War II the apartheid system further entrenched the discriminatory system including the exclusion of black South Africans from all skilled work categories (job reservation).

⁶ Miller, D. “2000 years of indigenous mining and metallurgy in southern Africa—a review. South African Journal of Geology, vol. 98, 1995, pp. 232–238, cited in Hamel A. Et al 2000.

⁷ Hammel, et al “Pre-colonial mining in southern Africa”, Journal of the SAJMM, Jan/Feb 2000, p54



Early Diamond diggings

The European “discovery” of the Wits main reef gold conglomerate on Langlaagte Farm (near Johannesburg) in 1886 did not precipitate the usual “gold rush” of European diggers, like Sabie and Barberton, due to the requirement for substantial capital to develop deep underground gold mines.

The discovery of diamonds at Kimberley in 1871 had already generated substantial capital from British and European banks to finance the new diamond mining houses started by Cecil Rhodes, Alfred Beit and Barney Barnato and others, who eventually came together to form De Beers. Diamond capital was consequently available to mine the Wits gold. Cecil Rhodes, an unscrupulous British imperialist, founded Gold Fields of South Africa (GFSa) in 1887. Rand Mines, Johannesburg Consolidated Investments, General Mining and Union Corporation were also established to exploit the bonanza, all backed by diamond capital. Anglo American was established in 1917 by Ernest Oppenheimer and AngloVaal was founded in 1933. These seven “mining houses” dominated the South African minerals sector and the economy (see section on “The MEC: Origins, Restructuring and Trends”) until most of them fled (moved their listings overseas) after the advent of democracy. Their need for cheap coerced labour coincided with the Boer need to subjugate and control the black population and a complex system of migrant labour, pass laws and policing was established to this end.

Colonial Mining History: Main events

- 1652** Dutch trading & slaving company (VOC) expropriates land from the Koi around Cape Town, to set up a shipping supply station. Later subjugated the locals in several wars - Further expropriation of land and cattle.
- 1685** Simon Van der Stel (VOC Governor) is taken to copper workings near O'okiep and sinks a shaft which recovers copper.
- 1727** "Koi" communities living on the Cape of Good Hope reported to be working and smelting iron and copper by the Dutch.
- 1852** Mining of the copper deposits of Namaqualand starts at the Blue mine on the outskirts of Springbok.
- Welch geologist John Henry Davis finds gold on the farm Paardekraal (Krugersdorp) but the discovery was kept secret by Transvaal Government and Davis was deported from the Boer Republic.
- 1853** Pieter Marais, a German born prospector, discovered alluvial gold in the Jukskei River (Johannesburg). He was allowed to continue with his search by the Boer Government but threatened with death if he revealed the discovery. His discoveries soon ran dry.
- 1859** First anecdotal reports of the discovery of a diamond on the Orange River, Griqualand West made by an American traveller.
- 1860** Discovery of coal deposits on Cyphergat Farm (Molteno) in the Eastern Cape.
- 1864** Sinking of Penschaw Colliery at Molteno in the Eastern Cape Province.
- 1866** The discovery of the first major diamond, the "Eureka Diamond", in river gravels from the Orange River near Hopetown
- 1869** The first systematic diggings for diamonds commences on the Vaal River close to Barkly West led by a Captain Rolleston.
- 1870** The discovery of a large diamond on the Jagersfontein Farm in the Boer republic of the Orange Free State. This started a European "diamond rush" which led to the sinking of Jagersfontein mine, on a kimberlite pipe.
- 1872** Alluvial diamonds discovered at Christiana in the south-east of the Transvaal Republic.
- 1873** Alluvial gold "discovered" near Sabie, and later that year at nearby Pilgrims Rest (areas of ancient workings). The Pilgrim's Rest Goldfield was proclaimed in September. The discovery of this goldfield initiated the first European "gold rush".
- 1874** The Struben brothers started the first gold mine on the Rand (Roodepoort), but the gold ran out in a year.
- 1878** Coal discovered close to Vereeniging on the bank of the Vaal River. The sinking of several collieries soon followed.
- 1882** Siegmund Hammerschlag erected the first gold ore-crusher, a two-stamp battery, on the Witwatersrand on his farm Tweefontein (Krugersdorp) to process the gold bearing rocks. However, it proved not to be payable.
- 1883** "French Bob" Auguste Roberts "discovers" gold in the Barberton area of ancient workings
- 1884** The Barber brothers find a gold reef in Barberton area. Starts of "gold rush" with two stock exchanges.
- 1885** Alluvial gold discovered in Jubilee Creek at Millwood in the Eastern Cape sparking a "gold rush" into the area.
- 1886** Discovery of the Witwatersrand main gold reef by prospector George Harrison on the farm, "Langlaagte", The immediate area proclaimed a public digging by Boer President Kruger, starting the Wits gold rush.
- Reef gold also discovered in the Millwood area of the Eastern Cape.
- 1887** Millwood diggings (Eastern Cape) proclaimed as an official Goldfield by the Cape Colonial Government.
- Coal discovered in the area of "The Springs" on the eastern fringes of the Witwatersrand in the Transvaal.
- 1891** Alluvial diamonds discovered at Bloemhof in the South-eastern Transvaal Republic.
- 1893** Sinking of the first colliery in the Springs district on the eastern fringes of the Witwatersrand, Transvaal.
- 1896** Systematic mining at Witbank commenced in 1896 when Samuel Stanford, together with the Neumann Group, established "Witbank Colliery Limited", and sink the first shaft on the farm Witbank, Eastern Transvaal.
- 1902** The Premier (Transvaal) Diamond Mining Company Ltd. formed by Thomas Cullinan to prospect and mine for diamonds east of Pretoria. Production at the company's Premier Mine commenced the following year.
- 1904** In May of this year the first 10,000 imported Chinese labourers arrived to work on-the Witwatersrand gold mines.
- 1906** Coal discovered at Delmas during the construction of a railway link between Apex and Witbank.
- 1907** White miners on parts of the Rand go on strike against use of Chinese mine labourers which threatened their jobs and pay.
- 1908** Discovery of a diamond in a railway siding near Lüderitz marks the beginnings of a "diamond rush" into the immediate area and into a costal corridor extending as far south as the Orange River border with South Africa.
- The last group of indentured Chinese mine labourers arrive in South Africa. Total number reached almost 80,000
- 1909** The Delmas Estate & Colliery Company start mining for coal close to Delmas.
- 1910** The final group of contracted Chinese mine workers leave South Africa as part of their mass repatriation back to China
- 1913** Penschaw Colliery, the last operating pit in the Cyphergat/Molteno region of the Eastern Cape finally closes.
- 1919** The Cape Copper Company ceases its operations around O'okiep due to the economic slump at the end of WWI.
- 1921** The Rand Refinery, the largest in the world, starts operations to refine all of South Africa's gold and silver output.
- 1926** Diamonds discovered at Alexander Bay in the furthest north-west area of the Cape Province just south of the Orange River
- The first "diamond rush" starts in the Lichtenburg region (North-east Transvaal)
- 1941** Gold discovered on the Far West Rand. Deep-level mining begins in the Klerksdorp area.
- 1946** An exploration core - with a grade of more than 800 grams/ton - is extracted from 1.2 kilometres below surface near Ondaalsrus, heralds the start of the Free State goldfields.

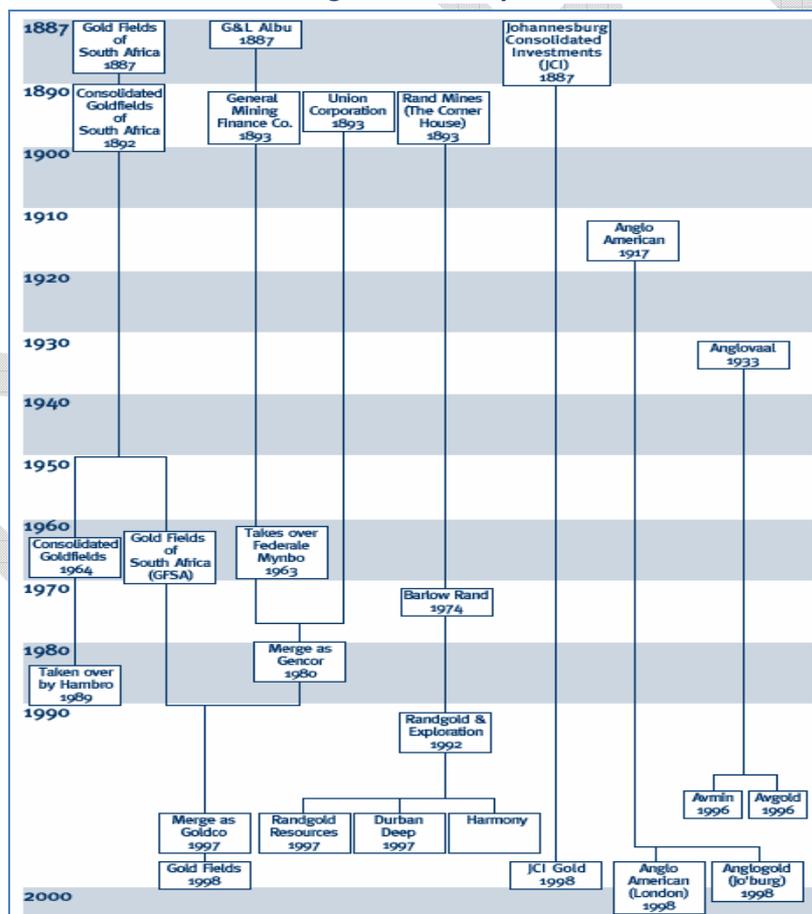
Source: Adapted from Mark Smith 2006, <http://on-the-rand.co.uk/Index.htm>

The mercury amalgam process had been the method for recovering gold from crushed ore, but it was expensive and gold recovery was low, which made the Wits gold marginal, despite good in situ grades. However in 1887 the the MacArthur-Forrest cyanidation process became available, which had higher recoveries and underpinned the viability of the enormous Wits gold resources. Nearly 120t were produced by 1898, on the eve of the Anglo-Boer war, which was substantially over control of the resource and access to cheap labour to exploit it. After the Boer War gold production rose to 280t by 1913, shortly after the formation of the European colonist Union of South Africa from the two Boer

republics and two British colonies. Gold was to dominate the South African landscape for the rest of the century.

In the following decades major new extensions to the Wits gold reefs were discovered, including the 'West Wits Line' by Gold Fields in the 1930s, the Orange Free State field by Anglo American in 1946 and Evander by Union Corporation from the late 1950s. By 1970 production peaked at over 1000t representing about 70% of global output. From the 70s, despite high grades (13g/t), the Wits gold became increasingly difficult to exploit due to the high costs of development and labour, which was becoming organised demanding a decent wage. The cost of developing a new deep shaft had reached USD2 billion over 7-10 years whilst the open pit mining heap-leaching of gold resources elsewhere (e.g. Australia) was cheaper and quicker to develop, causing South Africa to steadily lose market share through the 80s and 90s⁸. Production had fallen to 600t tonnes by 1990, when the apartheid regime finally unbanned the ANC and started negotiating the transition to democracy. But over the previous century 30,000t of gold had financed the European settler governments' repressive machinery and regional military escapades.

South African Mining House Family Tree: 1887 to 2000



Source: http://info.goldavenue.com/info_site/in_mine/in_min_familytree.htm

⁸ Gold Avenue: <http://info.goldavenue.com/>

FROM FREEDOM CHARTER TO POLOKWANE AND BEYOND:

ANC POLICY DEVELOPMENT AND STATE POLICIES IN MINING IN THE POST-APARTHEID ERA

This section documents the developments in the ANC and in government in mineral policy development in the post-apartheid era⁹.

ANC Minerals Policy Development

The ANC's policies & strategies on mineral resources has its roots in "The Freedom Charter" (1955), the "Ready to Govern" (1992) document, the Reconstruction and Development Programme (RDP,1994), and the Polokwane (2007) Economic Transformation resolution.

The Freedom Charter (1955)

The Freedom Charter states the following:

"The national wealth of our country, the heritage of South Africans, shall be restored to the people. The mineral wealth beneath the soil, the banks and monopoly industry shall be transferred to the ownership of the people as a whole. All other industry and trade shall be controlled to assist the wellbeing of the people. All people shall have equal rights to trade where they choose, to manufacture and to enter all trades, crafts and professions."

Ready to Govern (1992)

The position on ownership and utilisation of minerals enunciated in the Freedom Charter was amplified at the ANC's "Ready to Govern" Conference in 1992 which stated: *"The mineral wealth beneath the soil is the national heritage of all South Africans, including future generations. As a diminishing resource it should be used with due regard to socio-economic needs and environmental conservation. The ANC will, in consultation with unions and employers, introduce a mining strategy which will involve the introduction of a new system of taxation, financing, mineral rights and leasing. The strategy will require the normalization of miners' living and working conditions, with full trade union rights and an end to private security forces on the mines. In addition, the strategy will, where appropriate, involve public ownership and joint ventures. 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."*

Reconstruction and Development Programme (1993)

⁹ This section draws from the following documents: 1) African National Congress, 1993: The Reconstruction and Development Programme; 2) Department of Minerals and Energy: A Minerals and Mining Policy for South Africa, Green and White Papers, February 1998; 3) The Mineral and Petroleum Resources Development Act, 2002; 4) Mining Charter Impact Assessment Report, October 2009; 5) Department of Mineral Resources: Amendment of the Broad-Based Socio-Economic Empowerment Charter for the South African Mining and Minerals Industry, September 2010; 6) ANC's Polokwane Resolution on the Economy; 7) ANC Youth League (2010) Nationalisation of the Mines, A discussion paper. *Umrabulo*, No. 33, Jourdan, P.P. (2010) The Optimisation of the Developmental Impact of South Africa's Mineral Assets for Building a Democratic Developmental State, 2010

Paragraph 4.5.1.2 of the RDP (p.99) reaffirms that ownership of minerals was vested in the people of South Africa:

“The minerals in the ground belong to all South Africans, including future generations. Moreover, the current system of mineral rights prevents the optimal development of mining and the appropriate use of urban land. We must seek the return of private mineral rights to the democratic government in line with the rest of the world. This must be done in full consultation with all stakeholders.”

Paragraph 4.5.1.3 goes on to say:

“Our principal objective is to transform mining and mineral-processing industries to serve all of our people. We can achieve this goal through a variety of government interventions, incentives and disincentives. Estimates suggest that the establishment of government minerals marketing auditors’ office and the national marketing of certain minerals would enable South Africa to realise greater foreign-exchange earnings. The management and marketing of our mineral exports must be examined together employers, unions and the government to ensure maximum benefits for our country.”

In addition, paragraphs 4.5.1.4 and 4.5.1.7 (pp.99-100) refer to the economic potential of the mining sector:

“Minerals and mineral products are our most important source of foreign exchange and the success of our RDP will in part depend on the ability of this sector to expand exports to avoid balance of payments constraints in the short to medium term.

Mining and minerals products contribute three-quarters of our exports and the industry employs three-quarters of a million workers, but this could be much higher if our raw materials were processed into intermediate and finished products before export. Our RDP must attempt to increase the level of mineral beneficiation through appropriate incentives and disincentives in order to increase employment and add more value to our natural resources before export. Moreover, this policy should provide more appropriate inputs for manufacturing in South Africa.”

The RDP reinforces the positions stated in both the Freedom Charter and the ‘Ready to Govern’ document by stating that *“specific (RDP) policies aim to expand the competitive advantage already enjoyed by the mining and capital and energy-intensive mineral processing and chemical industries that lie at the core of the economy and which provide the bulk of the country's foreign exchange”* (RDP 4.4.2.4). In addition *“RDP must strengthen and broaden upstream and downstream linkages between the burgeoning mineral-based industries and other sub-sectors of industry. A broad range of instruments will be deployed, including closer scrutiny of pricing policies for intermediate inputs. Where conglomerate control impedes the objectives, anti-trust policies will be invoked”* (RDP 4.4.2.6) and that *“Policies must aim to reduce the gap between conglomerate control of a wide range of activities within the financial, mining and manufacturing sectors and sub-sectors, on the one hand, and the difficulties faced by small and micro enterprises in entering those sectors on the other.”* (RDP 4.4.2.7).

In summary, the RDP section on mining and minerals (4.5.1) set out more detailed and comprehensive guidelines for the First Democratic Government that seemingly cover many elements of a Democratic Developmental State's (DDS) minerals strategy, including:

1. National ownership of all minerals in the ground;
2. State minerals marketing;
3. An equitable state share of all mineral rents;
4. Downstream mineral beneficiation and the competitive pricing of mineral inputs into manufacturing;
5. Workplace (mines) democratisation;
6. The proactive use of worker (pension schemes) and state holdings in mining companies for developmental goals;
7. Anti-trust legislation to ensure competitive pricing along the minerals supply chains;
8. Orderly downscaling of resource-limited mines to minimise social dislocation, including re-skilling of retrenched workers;
9. Decent work and worker accommodation as well as health & safety standards to ameliorate the hazardous nature of mining;
10. A special financial facility to assist countries in the region to develop their mineral endowments;
11. Strategies to develop and mainstream the artisanal and small-scale mining sector, including access to mineral rights.

It is apparent that this document (which was meant to have mandated the new democratic government) contained many of the interventions that would comprise a minerals strategy for a Democratic Developmental State, including national ownership of all mineral assets, state minerals marketing, resource rents acquisition, downstream pricing, mineral linkages, regional mineral funds, etc., but most were never actualised.

Polokwane Resolution on the Economy: December 2007

Sections 1.5, 1.6, 2.3 and 2.7 of the resolution are relevant to our study:

1.5 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. Whilst the forms of state interventions would differ, the overriding objective would be to intervene strategically in these sectors to drive the growth, development and transformation of the structure of our economy.

1.6 A developmental state must ensure that our natural 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.

2.3 Transforming the structures of production and ownership: Many of our monopolies are based on the nation's natural resources and we must find ways and means to intervene, including through state custody of these resources on behalf of the people and regulation to ensure competitive pricing of inputs for our downstream manufacturing sector. Furthermore, 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.

2.10 The use of natural resources of which the state is the custodian on behalf of the people, including our minerals, water, and marine resources in a manner that promotes the sustainability and development of local communities and also realises the economic and social needs of the whole nation. In this regard, we must continue to strengthen the implementation of the Mineral and Petroleum Resources Development Act (MPRDA), which seeks to realise some of these goals. Our programme must also **deepen the linkages of the mineral sector to the national economy through beneficiation of these resources and creating supplier and service industries around the minerals sector.**

The Polokwane Congress also changed the context within which a minerals policy should be realised by introducing the concept of a *Democratic Developmental State* (DDS) which became a critical element of ANC's economic strategy through the Economic Transformation Resolution which states that *"...our understanding of a developmental state is that it is located at the centre of a mixed economy. It is a state which leads and guides that economy and which intervenes in the interest of the people as a whole. A South African developmental state, whilst learning from the experiences of others, must be built on the solid foundation of South African realities. Whilst engaging private capital strategically, our government must be rooted amongst the people and buttressed by a mass-based democratic liberation movement. Whilst determining a clear and consistent path forward, it must also seek to build consensus on a democratic basis that builds national unity. Whilst acting effectively to promote growth, efficiency and productivity, it must be equally effective in addressing the social conditions of the masses of our people and realising economic progress for the poor."*

The Polokwane resolution further resolved *"To build the strategic, organisational and technical capacities of government with a view to a democratic developmental state, through"*, inter-alia, *"A strengthened role for the central organs of state, including through the creation of an institutional centre for government-wide economic planning with the necessary resources and authority to prepare and implement long and medium term economic and development planning"* and 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. Whilst the forms of state interventions would differ, the over-riding objective would be to intervene strategically in these sectors to drive the growth, development and transformation of the structure of our economy"* as well as *"...ensure that our national resource endowments, including land, water, minerals and marine resources are exploited to effectively maximise the 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 maximization."* (author's emphases).

Debate within the ANC

A recent ANC Youth League paper (ANC, 2010) strongly advocates nationalisation of South Africa's mines. It suggests that "nationalisationcan assume various forms: it can be 100%

public ownership, or 51% or more owned by the state, or established through partnership arrangements with the private sector in which the state assumes greater control”.

The league sets down the following reasons for nationalisation of the mines (pp.16-21):

- To increase the state’s fiscal capacity and ensure better working conditions;
- To industrialise and create more jobs;
- To safeguard sovereignty;
- To transform the accumulation path in the SA economy; and
- To transform unequal spatial development patterns.

The following actions are suggested:

- Establishment of a state mining company to: own and control South Africa’s mineral resources; maximise the nation’s economic gain from minerals; contribute to social and economic development; develop and maintain strong environmental and safety standards; and develop mineral resources in a careful and deliberate manner (p.21).
- Develop an appropriate Expropriation Model; and
- Amendment of the MPRDA so that all applicants for mining rights have to be in partnership with the state-owned mining company.

Government Policy on Minerals Development post-1994

Department of Minerals and Energy, Green and White Papers, 1998: A Minerals and Mining Policy for South Africa, 1998

Section 1.3 outlines the evolution of mineral rights in SA. The Section on ‘Mineral Rights and Prospecting Information’ states the following:

“The South African system of mineral rights has developed over many years to its present state under a dual system in which some mineral rights are owned by the state and some by private holders. The State controls the exercise of prospecting and mining rights under the administrative system of prospecting permits and mining authorisations.” (p.9)

Ownership of mineral rights (pp.10-11).

The two main categories of owners of mineral rights are the State and private holders.

Statistics kept by the Department of Minerals and Energy since 1993 indicate that “...the mineral rights in respect of which prospecting permits and mining authorisations have been issued are divided in the proportion 1/3 state-owned and 2/3 privately owned. (This illustrates that the private sector is a substantial holder of mineral rights. A distinguishing feature of the South African mining industry at present is that almost all privately-owned mineral rights are in white hands (pp.9-10).

South Africa and the USA are two of the major mining countries which have a dual system of public and private ownership of mineral rights. In most other countries the right to minerals is vested in the State. However, in some countries, of which Chile and Australia are good examples, the state system is such as to allow a mining company *de facto* permanent title to such rights.

In jurisdictions, where mineral rights are publicly owned, a system of licensing is usually applied which provides security of tenure sufficient to attract exploration and mining. Many countries, notably in South America, but increasingly elsewhere, which employ licensing systems for publicly-owned mineral rights, have successfully attracted large and continuing investment in exploration and mining.

The intent of government is enunciated as follows (p.11):

Government will:

- i) promote exploration and investment leading to increased mining output and employment;
- ii) ensure security of tenure of mining rights;
- iii) prevent hoarding or sterilisation of mineral rights;
- iv) address past racial inequities by assisting those previously excluded from participating in the mining industry to gain access to mineral rights; and
- v) take reasonable legislative and other measures, to foster conditions conducive to mining which will enable entrepreneurs to gain access to mineral rights on an equitable basis.

The Green and White Papers also present the views for and against the system that existed in the mid-1990s:

Many differing views have been expressed in support of or against the current arrangements in respect of mineral rights and prospecting information.

1.3.3.1 Private ownership

i. Proponents of private ownership maintain that:

a) It has been and remains ideally suited to effective utilization of South Africa's distinctive ore bodies, for example, by providing the absolute security of tenure necessary in the development of very deep gold mining along the West Wits line. The capacity to retain mineral rights securely for the development of new mining ventures when these become possible is a positive feature of private ownership.

b) Holding of mineral rights is a critical parameter in the valuation of a mining company by international investors. The company is valued according to its future potential which depends on an ongoing flow of new projects derived from such mineral holdings.

c) Private ownership of mineral rights based in the law of property is preferable to a pure licensing system of rights based in administrative law and involving administrative discretion.

Private ownership affords the absolute long-term security of tenure that attracts investment in exploration, mining and marketing.

d) South Africa has the ability to produce at a level far exceeding the world's ability to consume several commodities such as manganese, chrome, platinum and vanadium. Mineral rights in such commodities are held as part of long-term mining plans. Owners have a record of having expanded production in line with growth in demand and have also invested substantial funds in new product development and other forms of promotion to foster market growth.

e) Private ownership is consistent with a market economy and with an international trend towards reducing the direct role of Government in the mining industry.

f) Private ownership encourages trade in and utilisation of mineral rights.

ii. Critics of private ownership of mineral rights argue that:

a) Minerals are part of the nation's endowment so that the State is the rightful custodian of this endowment.

b) South Africa is out of step with other major mining countries, where public ownership of mineral rights has led to successful exploration and mining industries.

c) Private ownership of mineral rights suppresses exploration activity as well as the opportunity for alternative views to be taken of the economics of mining an unexploited are body.

d) It allows hoarding of mineral rights. As such, the system is a barrier to entry against potential investors.

e) Complex and fragmented mineral right holdings and the multiplicity of owners in South Africa militate against new investment by prospective new entrants who encounter difficulty and cost in identifying holders of mineral rights and obtaining mineral rights.

f) The system is inaccessible to small-scale miners, and inhibits the development of a vibrant junior mining sector.

g) Private ownership of mineral rights limits equal and equitable access to mineral rights and resources.

1.3.3.2 State ownership

i) Those in support of the transfer of privately-held mineral rights to the State contend that:

a. Transfer of mineral rights to the State will release mineral terrains for new entrants, which will stimulate private sector activity.

b. State control of mineral rights will remove difficulties in cost and delays surrounding fragmented mineral right holdings.

c. A system of state-owned mineral rights would enable the State to enforce the submission and release of exploration information, thereby avoiding duplication of exploration activities.

d. State ownership of mineral rights is more prevalent in the world than is private ownership.

e. State ownership will prevent the hoarding of mineral rights and allow equal and equitable access to potential investors, in particular small-scale miners.

ii) Contentions raised against a transfer of mineral rights to the State are that:

a. Transfer of mineral rights to the State will require the payment of compensation, which would be an inappropriate use of the State's limited financial resources.

b. The blanket transfer of mineral rights to the State could easily lead to administrative difficulties in a system not geared to the management of mineral rights, extensive delays and hence a loss of investor confidence that could seriously damage the South African mining industry.

c. There is no indication that the transfer of mineral rights to the State will automatically result in more successful exploration and mining. It is argued that in South Africa there is evidence to the contrary in that state ownership of mineral rights has made these rights subject to policies that have impeded rather than promoted mineral development. Management of deposits that will be brought account in the future requires a long term perspective attuned to changes in technology and markets that is more likely to be found in the private sector.

d. State ownership based in a system of administrative law offers less security than a system of private ownership based in the law of property, and is susceptible to inefficiency and corruption.

e. A bias towards state ownership would run counter to the Government's philosophy and policy on competition and privatisation.

f. Prospecting information and mineral rights are separate forms of property. Ownership of the latter does not automatically confer title to the former.

The following policy proposals were put forward (pp. 14-15):

1.3.6.1 Ownership of mineral rights

i) Government recognises the inherent constitutional constraints of changing the current mineral rights system, but it does not accept South Africa's system of dual state and private ownership of mineral rights.

ii) Government's long term objective is for all mineral rights to vest in the State.

iii) State-owned mineral rights will not be alienated.

iv) Government will promote minerals development by applying the “use it or lose it” principle.

v) Government will take transfer of mineral rights in cases where a holder of mineral rights cannot readily be traced or where mineral rights have not been taken cession of and are still registered in the name of a deceased.

1.3.6.2 A new system for granting access to mineral rights

As a transitional arrangement in pursuance of the objective stated in section 1.3.6.1 above, the following new system for granting access to mineral rights will apply:

- i) The right to prospect and to mine for minerals will vest in the State.
- ii) Government will develop detailed legislative proposals for the introduction of the new system of access to all mineral rights. In developing such proposals provision will be made for:
 - a. prospecting and mining rights to be made to the first qualifying applicant and in cases of competing applications such rights will be granted on merit;
 - b. security of tenure by granting prospecting and mining rights for specified periods which are capable of cancellation or revocation only for material breach of the terms and conditions of the right;
 - c. registerable prospecting and mining rights which will be transferable with the consent of the State;
 - d. the holder of a prospecting right to be entitled to progress to a mining right on compliance with prescribed criteria and work commitments;
 - e. annual minimum work and investment requirement to discourage the unproductive holding of prospecting and mining rights;
 - f. a retention licence which may, upon written application, be granted to the holder of a prospecting right in cases where the holder, having explored the area and established the existence of an ore reserve which is, at the time of completion of the exploration programme, considered to be uneconomical due to prevailing commodity prices (market conditions) or where the exploitation thereof might lead to market disruption not in the national interest. Such licence will enable the holder thereof to retain the reserve without the commitment to minimum work and investment requirements. The licence will be granted for a limited period in respect of the property concerned.
 - g. precluding the issue of a prospecting or mining right over an area in respect of which a currently valid prospecting or mining right is held for the same mineral;
 - h. predetermined standard terms and conditions, for all prospecting and mining rights;
 - i. the reduction as far as possible, of discretionary powers by applying standard requirements or objective criteria;

j. payment of compensation by the holder of the mining right to the registered holder of mineral rights. Such compensation will be payable in the form of royalties as determined by the State. No distinction will be made between royalties payable to the State and those payable to private holders of mineral rights. The quantum of royalties will be internationally competitive and will not inhibit the initiation of new projects;

k. payment of a surface rental, determined by the State, by the holder of a prospecting or mining right to the registered land owner; and

l. the approval of an Environmental Management Programme prior to the issue of a prospecting or mining right.

iii) Persons, including their successors in title. Or assigns or nominees, who could lay claim, under section 43 of the Minerals Act, 1991, to the exclusive right to prospect for a mineral to which the right was reserved to the State, shall after the lapsing of the period that ended on 31 December 1996, or the approved longer period, no longer be deemed to be the sole holder of such rights.

In summary, South Africa is one of the few countries that has a system of dual state and private ownership of mineral rights. The DME is the primary government institution responsible for formulating and implementing policy. It reports to and advises the Minister of Minerals, who, in consultation with the Cabinet, takes final responsibility for policy.

The White Paper on Minerals and Mining Policy was released in October 1998. The policy enables the effective and sustainable development of mineral resources to the benefit of all South Africans, at the same time containing the impact of prospecting and mining on the environment. The policy addresses past inequities, opens up new opportunities for local and foreign investors, and promotes South Africa's global competitiveness. Although the Government intends to prevent the hoarding of mineral rights and the sterilisation of mineral resources, security of tenure will be guaranteed.

The Government's long term objective is for all mineral rights to vest in the State, but, as a transitional measure, a new system for granting access to mineral rights will apply. The 'use and keep it' principle will be introduced to discourage unproductive holding of rights and ensure tenure retention where exploitation might not be economical or might disrupt markets.

Important Legislation

The Mineral and Petroleum Resources Development Act, 2002

The systematic marginalisation of the majority of South Africans, facilitated by the exclusionary policies of the apartheid regime, prevented historically disadvantaged South Africans from owning the means of production and from meaningful participation in the mainstream economy. To redress these historic inequalities, and thus give effect to section 9 (equality clause) of the Constitution of the Republic of South Africa Act 108 of 1996 (Constitution), the democratic government has enacted, inter alia, the Mineral and Petroleum Resources Development Act 28 of 2002 (MPRDA).

The objective of the MPRDA is to facilitate meaningful participation of HDSAs in the mining and minerals industry. In particular, section 100 (2) (a) of the MPRDA provides for the development of the Mining Charter as an instrument to effect transformation with specific targets. Embedded in the Mining Charter of 2002 is the provision to review the progress and determine what further steps, if any, need to be made to achieve its objectives.

The MPRDA legislates the official policy concerning the exploitation of the country's minerals. The Act addresses many issues including the following:

- Transformation of the minerals and mining industry;
- Promotion of equitable access to South Africa's mineral resources;
- Promotion of investment in exploration, mining and mineral beneficiation;
- Socio-economic development of South Africa; and
- Environmental sustainability of the mining industry.

Previously South African mineral rights were owned either by the state or the private sector. The dual ownership system represented an entry barrier to potential new investors. The current government's objective is for all mineral rights to be vested in the State, with due regard to constitutional ownership rights and security of tenure.

Objects of the Act

2. The objects of this Act are to:

- (a) recognise the internationally accepted right of the State to exercise sovereignty over all the mineral and petroleum resources within the Republic;
- (b) give effect to the principle of the State's custodianship of the nation's mineral and petroleum resources;
- (c) promote equitable access to the nation's mineral and petroleum resources to all the people of South Africa;
- (d) substantially and meaningfully expand opportunities for historically disadvantaged persons, including women, to enter the mineral and petroleum industries and to benefit from the exploitation of the nation's mineral and petroleum resources;
- (e) promote economic growth and mineral and petroleum resources development in the Republic;
- (f) promote employment and advance the social and economic welfare of all South Africans;
- (g) provide for security of tenure in respect of prospecting, exploration, mining and production operations;
- (h) give effect to section 24 of the Constitution by ensuring that the nation's mineral and petroleum resources are developed in an orderly and ecologically sustainable manner while promoting justifiable social and economic development; and
- (i) ensure that holders of mining and production rights contribute towards the socio-economic development of the areas in which they are operating.

Custodianship of nation's mineral and petroleum resources

3 (1) Mineral and petroleum resources are the common heritage of all the people of South Africa and the State is the custodian thereof for the benefit of all South Africans.

(2) As the custodian of the nation's mineral and petroleum resources, the State, acting through the Minister, may –

(a) grant, issue, refuse, control, administer and manage any reconnaissance permission, prospecting right, permission to remove, mining right, mining permit, retention permit, technical cooperation permit, reconnaissance permit, exploration right and production right; and

(b) in consultation with the Minister of Finance, determine and levy, any fee or consideration payable in terms of any relevant Act of Parliament.

(3) The Minister must ensure the sustainable development of South Africa's mineral and petroleum resources within a framework of national development policy, norms and standards while promoting economic and social development.

The Mineral and Petroleum Resources Royalty Act, 2008,

This sets out the royalty payments by license holders to the State for exploiting the mineral resources.

The Mining Charter

Upon the adoption of the Mining Charter (in October 2002), stakeholders made the following undertaking: "The industry agreed to assist HDSA companies in securing finance to fund participation in an amount of R100 billion within the first five years. Participants agreed that beyond R100 billion – industry commitment in pursuance of the 26 percent target, on a willing seller-willing buyer basis, at fair market value, where the mining companies are not at risk, HDSA participation will be increased".

Objectives of the Charter

The Broad Based Socio Economic Empowerment Charter for the South African industry, hereafter referred to as "the Mining Charter", is a government instrument designed to effect sustainable growth and meaningful transformation of the mining industry. The MC seeks to achieve the following objectives:

(a) to promote equitable access to the nation's mineral resources to all the people of South Africa;

(b) to substantially and meaningfully expand opportunities for HDSA to enter the mining and minerals industry and to benefit from the exploitation of the nation's mineral resources;

(c) to utilise and expand the existing skills base for the empowerment of HDSA and to serve the community;

(d) to promote employment and advance the social and economic welfare of mine communities and major labour sending areas;

(e) to promote beneficiation of South Africa's mineral commodities; and

(f) promote sustainable development and growth of the mining industry.

Elements of the Mining Charter

Ownership

Effective ownership is a requisite instrument to effect meaningful integration of HDSA into the mainstream economy. In order to achieve a substantial change in racial and gender disparities prevalent in ownership of mining assets, and thus pave the way for meaningful participation of HDSA for attainment of sustainable growth of the mining industry, stakeholders commit to:

- Achieve a minimum target of 26% ownership to enable meaningful economic participation of HDSA by 2014;
- The only offsetting permissible under the ownership element is against the value of beneficiation, as provided for by Section 26 of the MPRDA and elaborated in the mineral beneficiation framework.

The continuing consequences of all previous deals concluded prior to the promulgation of the MPRDA would be included in calculating such credits/offsets in terms of market share as measured by attributable units of production.

Procurement and Enterprise Development

The Charter makes the following provisions to ensure that the mining industry must procure from BEE entities in accordance with the following criteria, subject to the provisions of clause 2.9:

- Procure a minimum of 40% of capital goods from BEE entities by 2014;
- Ensure that multinational suppliers of capital goods annually contribute a minimum of 0.5% of annual income generated from local mining companies towards socio-economic development of local communities into a social development fund from 2010;
- Procure 70% of services and 50% of consumer goods from BEE entities by 2014.

The targets above are exclusive of non-discretionary procurement expenditure.

Beneficiation

With regard to beneficiation, mining companies must facilitate local beneficiation of mineral commodities by adhering to the provision of Section 26 of the MPRDA and the mineral beneficiation strategy:

- Mining companies may offset the value of the level of beneficiation achieved by the company against a portion of its HDSA ownership requirements not exceeding 11 percent.

Mining Charter Impact Assessment Report, 2009

Key question: Has the mining company achieved HDSA participation in terms of ownership for equity or attributable units of production of 15 percent in HDSA hands within 5 years and 26 percent in 10 years.

The assessment revealed that the current net asset value of the South African mining industry averages R2 trillion, indicating that the 15 percent HDSA ownership threshold requires no less than R300 billion to accomplish (in 2009 terms). The industry's stated commitment of R100 billion to facilitate HDSA ownership represents 5 percent of the current net asset value of the mining industry, which falls far short of the agreed 15 percent empowerment target envisaged within 5 years. However, the assessment further recognises the limitations of the absolute value of commitment as well as the compounded annual growth of the industry's net value, which ought to have been factored in at the time of the commitment.

Analysis of the available data shows the aggregated BEE ownership of the mining industry has, at best reached 9 percent. There are several empowerment vehicles that constitute BEE ownership, namely, Women in Mining, Employee Share Ownership Schemes (ESOPs), Community Trusts, Anchor Partners and Special Purposes Vehicles (SPVs). Regrettably, the reported level of BEE ownership is concentrated in the hands of anchor partners and SPVs, representing a handful of black beneficiaries, contrary to the spirit and aspiration of both the Freedom Charter and the Mining Charter.

Despite the noble intention of the empowerment vehicles (ESOPs and Community Trust) to effect the broad ownership transformation envisaged in the Mining Charter, a closer examination of these vehicles highlights the pervasive constraints presented in the form of non-equitable distribution of benefits inherent in their implementation and such benefits being extended to non HDSA, which remains proverbially problematic.

The underlying empowerment model has resulted in the actual ownership of mining assets intended for transformation purposes being tied in loan agreements. Accordingly, the net value of a large proportion of empowerment deals is negative, due to high interest rates on the loan and moderate dividend flows, compounded by the recent implosion of the global financial markets. The rapacious tendencies of the capital markets have consistently thwarted the intended progress towards attaining the goals of transformation, as embedded in the Charter.

The assessment shows that the structure of most empowerment deals is insidiously effected at operational (mining rights) levels, which allows for ring-fencing of transformation at holding company level. Such undesirable practices perpetuate a culture and focus on regulatory compliance at the expense of fundamental transformation of the mining industry, including albeit not limited to deracialising the corporate profiles and ownership of mining companies.

The assessment also points to a structural malaise in BEE deals focused solely on economic interests, which is not representative of the true ownership transfer of mining assets to HDSAs. As a result of these structural weaknesses, the BEE companies end up in an invidious financial position, as evidenced by the swift mass exodus of these companies, which coincided with the global financial crisis.

The realisation of the benefits of BEE deal-flows to HDSA beneficiaries is delayed by elusive structuring of these deals. The nature of most BEE deals is such that the repayment terms

for the HDSA continue beyond the Life of Mine (LOM). There are often onerous conditions attached to agreements to discourage HDSA participation. A majority of empowerment deals are structured with a lifespan ending 2014, contrary to the object of this element, which sought to achieve these targets as a baseline of transformation. Some companies have used what they call the “pool and share” method, which is their own creation and feature nowhere in the Charter. Through this method, established mining companies enter into joint ventures with black-owned companies and each party brings resources into the deal based on the close proximity of their operations “geographically”.

The profits are shared on the basis of who has what percentage of the reserves brought into the deal. Effectively, the BBEEE ownership in such an arrangement is based on how much reserves each party brings into to deal. In essence such companies are not empowered and should not claim credit on the basis of attributable units of production since they did not give up any of their reserves for the benefit of black-owned company and their racial profile remains unaltered.

Lack of HDSA representation at empowering companies’ boards limits their decision making authority and leaves them at the mercy of empowering companies. Consequently, HDSA companies are generally excluded from major decisions relating to investment/divestment and key policies that determine the future direction of the company.

The prevalence of fronting is both an insult and an indictment to the broader objectives of the Mining Charter. This unscrupulous practice sets back the transformation agenda and must be condemned in the strongest terms possible. The surreptitious nature of fronting remains a scourge to South Africa’s transformation agenda.

Recommendation:

While the element captures the recognition by government and industry that one of the means of effecting entry of HDSAs into the mining industry and of allowing HDSAs to benefit from the exploitation of mining and mineral resources is by encouraging greater ownership of mining assets by HDSAs, it only provides the definition of participation in terms of active and passive involvement, the terms of which are not clearly defined. This provides room for ambiguity and different interpretations. For example, the DMR interpretation of ownership includes voting rights, economic interest and net value, while the industry obfuscates interpretation of ownership as HDSA’s economic interest, and views net value as an additional ownership criterion. In addition, the absence of criteria for offsetting beneficiation against ownership, as well as lack of clarity on the continuing consequences of previous BEE transactions and the use of attributable units of production require specific attention.

Department of Mineral Resources: Amendment of the Broad-Based Socio-Economic Empowerment Charter for the South African Mining and Minerals Industry, 2010

The findings of the assessment (above) identified a number of shortcomings in the manner in which the mining industry has implemented the various elements of the Charter, namely ownership, procurement, employment equity, beneficiation, human resources development,

mine community development, housing and living conditions, all of which have not embraced the spirit of the Charter to the latter. To overcome these inadequacies, amendments were made to the Mining Charter of 2002 in order to streamline and expedite attainment of its objectives. This study proposes that the destructive practice of BEE fronting for foreign suppliers be eliminated by making the BEE credit based on the local content of the goods or services provided: i.e. the BEE rating of the supplier times the local value added of the product to give the BEE proportion of the product supplied.

DRAFT

State Intervention in the Minerals Sector Before 1994

Historical state intervention in the minerals sector

The interventions of the apartheid state in the minerals sector are well documented¹⁰ and spanned a period of four decades from 1948. The key policy objectives pursued can be distilled into the following:

- Advancing Afrikaner large-scale capitalist interests across all economic sectors, including mining
- Full employment for white South Africans
- Development of new industries, particularly those which increased national self-sufficiency

The policy instruments wielded to achieve these objectives varied over time and differed by sector and circumstance. These are summarised below, organised by different mining sector, but the instruments included:

- Financial support through the Industrial Development Corporation
- Conditional access to state-owned infrastructure, including rail and electricity
- Regulating access to national resources (mineral rights, production licensing, water, etc)
- Preferential procurement
- Direct intervention using state-owned enterprises in specific sectors
- Transferring/privatising developed state assets in particular sectors preferentially to advance Afrikaans large-scale capitalist interests
- Creation and use of a domestic capital market
- Selective import tariffs to support mineral beneficiation

In parallel with the state's actions, it is important to outline the approach that capital was taking over this period. In short, as was outlined more detail in the relevant mining sector segments above, the strongest and dominant segment of capital in the 1950s was that fraction best described as English-speaking, with strong relationships with British and European financial interests. Afrikaans-speaking capitalist interests in the 1950s were fragmented and evolved over the next few decades in different forms. Those interests that entered into mining during the 1950s were largely the ones associated with Sanlam, which was the largest Afrikaans financial institution of the time, which had an explicit objective of advancing large-scale (rather than small-scale) Afrikaner capitalist undertakings. The Fedvolks mining company was created in 1952 by Sanlam.

Domestic capital markets were developed in the 1950s. In 1949, Government created the National Finance Corporation which was followed by AAC's Union Acceptances Limited (UAL)

¹⁰ Fine and Rustomjee (1996)

in 1955, Sanlam's Central Finance and Acceptance Corporation and the IDC-controlled Accepting Bank for Industry.

In the decades of the 1960s, 1970s and 1980s, Afrikaans's capitalist interests evolved on an increasingly large scale, coalescing around a handful of distinct conglomerate structures with diverse interests across most sectors of the economy. Large-scale Afrikaans capitalist interests interpenetrated with large-scale English capitalist interests, in conjunction with state institutions like the IDC and, by the 1980s, the distinction between these interests had become significantly blurred.

Afrikaans capitalist interests battled to enter many economic sectors which were monopolised by English capitalist interests. In the mining sector, entry into coal was facilitated by preferential procurement policies of the state, with several Afrikaans-owned mining houses evolving between the 1950s and 1990. In the case of gold mining, state leverage forced the Anglo American Corporation to facilitate entry, culminating in Sanlam's Fedvolks buying AAC's General Mining Corporation in 1962. The latter grew its operations through acquisitions and greenfield investments over the next three decades across a range of mineral sectors to become the giant Gencor, which later reversed offshore into Billiton in 1996 and subsequently was swallowed up by BHP Billiton. Iscor dominated the entire iron ore to steel value chain for many years, entering into joint ventures with private partners in specific sub-sectors until it was privatised in the late 1980s.

By the early 1990s, the South African economy had grown and diversified around the mining sector. As is argued elsewhere, the diversification was limited in that it concentrated around specific sectors with strong forward and backward linkages to mining including electricity, port/transport and storage infrastructure, coal-based chemicals and liquid fuels, ferrous and non-ferrous metal production. Collectively, these sectors formed a core locus around which the national economy evolved in the post-war period and the evidence suggests that this core still continues to strongly influence the direction of economic growth in 2011.

In the 1990s, emerging black capitalist interests entered the MEC stage, supported by a democratically elected state. A process of contestation and accommodation has ensued as these new interests have attempted to involve themselves in different sectors. There are both similarities and differences in the way in which these processes are playing out in different sectors as happened half a century ago with the accommodation of Afrikaans capital by English capital.

The first difference is that the democratic state has a mandate from a much broader social constituency but it has had the choice of a largely similar range of policy instruments to wield as wielded by the apartheid state. It has used some of these instruments including IDC financing, mineral rights and preferential procurement. But as outlined in the individual sector sections above, the policy objectives appear to have been more heavily focused on achieving ownership transfer than on any strategic sector development objectives.

This is evident in that, despite considerable rhetoric and policy objectives supporting beneficiation, the MPRDA has never been actively wielded to leverage any changes in corporate strategy to achieve beneficiation policy objectives. The record of how preferential

procurement has been applied is rather worse from a domestic industrialisation perspective. There have been frequent examples where tenders have gone to black capitalist import traders to the detriment of domestic white-owned industry.

A second difference lies in the balance between state-support for large-scale black capital versus support for small-scale capital. Thirdly, the financial sector in the 21st century is far more developed and globally interlinked that it was between the 1948 and 1994 and the process of unbundling of conglomerated corporations as well as the complex financial engineering that has accompanied contemporary transfer of ownership have all been core sites of accumulation for finance and speculative capital. These differences are further discussed below.

According to Fine and Rustomjee (1996:72), mining is important as a foreign exchange generator as well as for employment purposes. Gold mining is said to have been the central feature in the industrialisation process of the South African economy since the country was formed in 1910. The financial assistance provided to government from taxation of the mining industry stimulated “the growth of secondary industries through preferential tariffs, direct subsidies, differential railway rates and controlled marketing” (Allen 2003:55).

Background

When the Dutch colonised the Cape of Good Hope in 1652, they used the law of Holland which was that land ownership included what lay underground including minerals. Thus land owners also had the rights to minerals beneath the ground. This law however began to change, except for some Boer republics after the British Crown annexed the Cape Colony. (Dale, 1997 pp 15-16). By 1866 the right to mine precious metals was in the hands of the Crown or the State.

Just before the end of apartheid, in the eighties and early nineties, the government further made significant changes to the policy around minerals. The changes led to a new minerals act of 1991. Some of the main changes were that the government decidedly moved more towards privatisation and away from State control of minerals. For instance, the rights of the State to hold exclusive rights to precious mineral mining and natural oil were done away with. The rights to minerals were vested in the hands of the holder of the mineral licence instead. In addition other fiscal changes which aimed to reduce and eventually eliminate the income tax rate differentials in mining. In addition the establishment of trusts was also allowed for so that mines could use this channel for income tax deductions, Dale 1997. This act also included laws about health and safety, although these were essentially placed in the hands of the mine and the government, with little consultation with the unions nor the workers. Legislation on the environment was strengthened and included rehabilitation of the surface and the requirement for environmental impact assessments, Dale 1997.

Private mining capital in South Africa was largely coordinated by the Chamber of Mines, which was dominated by 6 main producers. Oligopoly power characterised the production of the most valuable minerals. According to Fine and Rustomjee (1996:98), from 1932, there were 57 gold mining companies which were largely controlled by six finance houses or groups. Later on, this oligopoly developed into conglomerate forms whose power was partly

included in the control of the financial sector. Production and marketing of all individual mineral markets in the 1980s was dominated by the subsidiaries of the 6 large mining houses:

- Anglo American Corporation (AAC)
- General Mining Corporation,
- Anglo Transvaal (Anglovaal)
- Rand Mines (a subsidiary of SA Mutual, the Life Assurance Company)
- Genmin,
- Sanlam (the life assurance company)
- Gold Fields of South Africa (GFSA)
- Johannesburg Consolidated Investment (a subsidiary of (AAC)

However, the list of mining houses slightly differs as given by Allen (2003:53) who states that mineral production was dominated by the following 7 mining houses that were affiliates to the Chamber of Mines:

- Anglo American Corporation
- Anglo Transvaal Consolidated Investment Company
- General Mining and Finance Corporation
- Johannesburg Consolidated Investment Company
- New Consolidated Gold Fields (Gold fields of South Africa)
- Rand Mines and Union Corporation
- Union Corporation

Table 1 gives the mining houses' shares of production in various minerals.

Table: Market concentration of the six major mining houses in mineral production (%), 1988

	Anglo American	Rand Mines	Gencor	JCI	Anglo Vaal	GFSA	% of total market
Controlling Shareholder	AAC	SA Mutual	Sanlam	AAC	family	family	
Gold	39	8	14	6	6	18	91
Coal	23	20	21	3	-	4	71
Diamonds	100	-	-	-	-	-	100
Ferro-chrome	-	27	42	13	8	-	90

Platinum	49	1	39	2	-	-	91
Vanadium	77	-	-	-	-	-	77
Copper	69	-	-	-	29	2	100
Iron ore	?	-	-	-	?	-	30
Chromite ore	3	30	42	-	9	-	84
Antimony	-	-	-	100	-	-	100

Source: Fine and Rustomjee (1996:100); Information on iron ore is not available. Ownership of most of the mines was under Iscor, the largest consumer of iron ore. No clear ownership control of Iscor emerged since it was privatised but significant stakes were held by AAC, SA Mutual and the IDC.

Diamond production, on the other hand, was monopolised by De Beers which was not in the Chamber of Mines. However, De Beers was a subsidiary of Anglo American Corporation, a member of the Chamber of Mines. About 95% of diamond production was undertaken by De Beers, which had monopoly over the sale of diamonds through its Central Selling Organisation. A government controlled agency, a few private concerns registered as rough diamond producers and a fluctuating number of individual diggers accounted for the remaining 5%. (Allen 2003:79).

Mineral production was generally characterised by a high degree of monopoly. However, there were also a small number of parastatal and privately owned conglomerates, independent of the mining houses, which were involved in the mining of asbestos, chrome, copper, manganese and iron ore (Allen 2003:53).

Government Intervention

The government intervened in the mining sector in South Africa through a number of ways including, taxation, limiting sales of output, price controls and labour market discrimination (supporting white workers against black workers).

Taxation

According to Lipton (1986:119), in the 1920s mining was heavily taxed and faced discriminatory freight and pricing policies as compared to manufacturing; because mines were foreign-owned. In the 1930s the mining industry was more and more heavily taxed to finance the 1st World War. The industry's tax bill accounted for 9 per cent and 22.5 percent of gross profits in 1939 and 1943, respectively (Bell 2001:31).

All mining was taxed at flat rates but gold was taxed according to a formula as below. It is important to note that the Income Tax Act defined mining for gold to include mining for uranium and income from mining gold to include any income received from minerals incidental to its production such as silver, osmiridium and pyrites. Income from mining gold and related minerals was not taxed at a flat rate but on a sliding scale. Thus gold mining income was taxed according to a formula that relates the tax rate to the ratio of profit to revenue, $y = a - ab / x$ where y is the tax rate to be determined, a and b are factors fixed

by the statute and x and x is the only variable, that is the rate ratio of taxable income from gold mining to the total income from gold mining expressed as a percentage, (Van Blerck 1990, p 205). Two versions commonly referred to as the 360-formula and the 480 formula

were used, one for pre-1966 mines and the other for post-1966 mines. 30 pre-1966 mines and 7 post-1966 mines existed.

The two formulas were:

$Y = 60 - 360/X$; for pre-1966 mines

$Y = 60 - 480/X$; for post-1966 mines

Where Y is the rate of tax expressed as a percentage, X (expressed as a percentage) is the ratio of profits to revenue.

The post-1966 formula resulted in a slightly lower rate of tax. A 25% surcharge was levied in addition to the tax calculated on the formula.

The effective tax rate for gold mines during the 1970s to 1980s was 55%. The effective tax rate of gold mines fell sharply during the 1990s due to the sliding scale of gold mine taxation. (Malherbe and Segal 2000:11). The mining income of non gold and diamond mining companies was taxed at a rate of 57.5% which comprised of a flat rate of 50% and a surcharge of 15% on the flat rate. The surcharge was originally introduced in 1951; "at a slightly different rate". Mining companies were exempt from provincial income tax, which was paid by non-mining companies. The purpose of the surcharge was thus to put mining companies at par with non-mining companies. However, the surcharge remained after the abolition of the provincial income tax some years later. Diamond mining was taxed at 56.25% (45% flat rate and 15% surcharge). 15% export duty was charged on the value of exported unpolished diamond stones. It is argued that there is conflicting evidence on the purpose of the duty. On one hand it was portrayed as a pure revenue duty intended to generate revenue and on the other as a protective measure meant to encourage a local cutting industry, Republic of South Africa (1987).

Hence, including surcharges, the effective tax rates on minerals were much higher than in other sectors in the pre 1994 era. Including surcharges, Gold's marginal rate was 63% in 1979 and 75% in 1989; diamond was charged at a flat rate of 47.25% in 1979 and 56.25% in 1989 while other minerals were also at flat rates of 42% in 1979 and 57.5% in 1989, (Van Blerck 1990, p 205). Van Blerck (1990) further comments that including royalties, the tax for gold and diamonds was in the region of 80 and 60% respectively. The Marais Technical Committee called for the mining tax rates to be equalised to other company tax of 50% by 1994. However, there was a capital allowance of up to 12% of taxable income for new gold mines, 10% of existing gold mines and 6% of natural oil mines. Other mines did not qualify for this allowance. South Africa did not tax capital gains.

Intervention in the labour market

The legislation for the responsibility for safety and health was strengthened between 1956 and 1967. The legislation differed according to mineral where in some cases the responsibility for safety and health belonged to the management while for others it belonged to the State, Dale 1997. However, no explicit focus on the environment.

The government influenced the mining industry labour market. Bell (2001:33) points out that in 1948 the mining industry, specifically Anglo American, was forced to submit to government's enforcement of its migratory labour system for Blacks; against its wish for a settled Black labour force on the mines. The 1948 van Eck *Commission on Conditions of Employment in the Gold Mining Industry* recommended an increase in wages for both Blacks and Whites.

According to Bell (2001:29), in the 1920s the National Party/Labour Party coalition government was sympathetic to the desires of White workers on the mines in their fight against the advancement of Black workers by the mining houses. The mining industry had to assent "to the true beginnings of apartheid". The "Nationalist government tightened and extended the job bar (racial discrimination) on mines" in 1948; resulting in the lowest ratio of white to black workers as well as a widening of the wage differential (Lipton 1986:116).

The government was also directly involved in mining production. According to Moncur and Jones (1999:119), the establishment of ISCOR, a public corporation for producing iron and steel, and later of ESKOM and SASOL for production of electricity from coal and oil from coal respectively; and acted as important stimulants to the production of both iron ore and coal.

Controlling the sales of mining output

The government regulated the sales of mining produce. In 1948 as a result of the van Eck *Commission on Conditions of Employment in the Gold Mining Industry*, the government passed the Atomic Energy Act to regulate sales of uranium (Bell 2001:33). The government did not only regulate the sale of mining output but also controlled the use of earnings from sales of mining products. In 1980, according to Bell (2001:42), the government insisted that all sales from exceptional returns to the gold mines be repatriated and did not allow them to be invested overseas.

The amount of coal exports was controlled by government. Following investigations to determine ways of increasing coal exports; the government, in 1978, issued provisional letters of allocation for the export of an additional 24 million tons of coal a year through Richards Bay. The expansion of the coal industry in the 1970s is said to have been dependent on government involvement which included production quotas, price controls and provision of state transport and harbours. (Moncur and Jones 1999:129).

Price Control

The government controlled the price of mineral production. In 1975, the government increased the controlled price of bituminous coal by 35 percent, which led to a moderate expansion in domestic coal production. The domestic price of pithead coal was increased at the beginning of 1979, by 12.1 per cent and 14.1 percent in the Transvaal and in Natal respectively, (Moncur and Jones 1999:128).

Intervening to pursue government political interests

Between 1950 and 1971 apartheid "served to bolster the relative prosperity of the White workers on the mines and to ensure that there was no advancement of Black labour" (Bell 2001:34). Fundamental changes were made in government policy to dismantle racial discrimination in the work place on recommendations of the Wiehahn and Riekert

Commissions which were appointed by government in 1977. The Wiehahn Commission was appointed to examine 13 major statutes governing industrial relations practice in order to recommend a fresh foundation for labour relations. The Riekert Commission examined all legislation affecting the use of labour not covered by the Wiehahn Commission. As a result of these commissions, the government accepted that the apartheid policies were no longer applicable and subsequently, significant measures were in progress to establish modern labour relations into the mining industry by 1980. (Moncur and Jones 1999: 140).

The support of the state in regulating capital is one of the ways through which large scale capital was empowered. According to Fine and Rustomjee (1996:112), after 1948, the National Party used its control of state apparatus to consolidate and build an Afrikaner economic base; in addition to providing jobs to Afrikaners who had previously been economically and politically disadvantaged among whites. Mining capital was then more monopolised under the dominant control of domestic or foreign firms which had no Afrikaner connections. In 1954, the national Party (after its re-election in 1952) forced the Transvaal Coal Owners Association (TCOA) to admit two Afrikaner coal owners. The TCOA was a cartel representing the major English mining houses that dominated coal mining.

Fine and Rustomjee (1996:112) argue that the aim of the 1955 Monopolistic Conditions Act was rather to force existing monopolies to admit large scale Afrikaner capital, and not to break them. Any commitment to promote competition under the 1995 Monopolistic Conditions Act was in contradiction to the government's objective to empower large scale Afrikaner capital. Despite the existence of direct regulatory policy on monopoly and competition in South Africa since 1995 (the Regulation of Monopolistic Conditions Act no. 24 of 1955), large scale capital has never been challenged by such legislation (Fine and Rustomjee 1996:111). The anti-monopoly legislation since its existence in 1955, Fine and Rustomjee (1996:112) point out, was never used to the disadvantage of large scale capital. Instead it was initially used as a lever to assist or force the English capital, which was dominated then, to accommodate Afrikaner capital.

The entry of Afrikaner capital was influenced by favourable treatment by the state. Fine and Rustomjee (1996:112) allege that the state used its institutional position and its role as the major consumer to shift state bank accounts to Afrikaner financial institutions and to award profitable contracts for coal supply to Afrikaner-owned mines. During the construction of new power stations in the 1950s, according to Fine and Rustomjee (1996:158) contracts to supply coal were increasingly being awarded to coal mines owned by Afrikaners.

Intervention to support mining operations

In order to support weak mines, Bell (2001:35) says at one point the government initiated a system of state assistance to marginal mines. Bell (2001:40) further argues that in trying to cushion mining companies from rising production costs and inflation in 1979 and 1980 the government made efforts to liberalise foreign exchange control for non-gold mining receipts. The SARB, however, continued to be the sole marketer of gold.

Other forms of intervention

According to the Chamber of Mines of South Africa (1994:53), the government introduced *ring fencing* on gold mining with the intention of halting "the erosion of the tax base arising

from the situation where an existing tax-paying mine is used as a vehicle to partially finance a new non-contiguous mine". The initial impact of ring fencing was an increase in tax revenue. However tax revenues arising from these operations subsequently decreased because ring fencing severely restricted new mining ventures.

In situations when mining companies could not readily access land with mineral deposits the government would come in with rules to give access to mining companies. In order for mining companies to have a free hand to develop as they wished, the government assisted them by imposing restrictions on other users of the designated mining areas (Allen 2003:59).

THE ROLE OF SOEs IN MINERALS PRE-94

Introduction

From the 1950s the state used its political power to support the Afrikaners both as workers and as owners of capital in South Africa. Policies were put in place, initially to help Afrikaner capital to compete with English capital and later to help Afrikaner capital to cooperate and join with English capital. According to Rustomjee (1993:213), the empowerment of Afrikaner capital was the underlying thrust of the MEC and this helped the Afrikaner capital to interpenetrate English capital.

The policies were driven by Afrikaners in government, in academia and in business alike. Rustomjee (1993:268) argues that "South African industrial policy formulation and conduct has, until very recently, been the preserve of a handful of Afrikaner bureaucrats, academics and industrialists". According to Hamann (2004:279), the activities of the mining houses were inseparably connected to colonial and, subsequently, apartheid policies through the migrant labour system. Parastatal monopolies were, according to Malherbe and Segal (2001:18) "aggressively used to provide employment for surplus white (mainly Afrikaans) unskilled workers and eventually to create an Afrikaans-speaking managerial class".

Mining operations had advantages because they required little commitment to train labour as compared to such sectors as textiles, hence did not require high skilled white labour like the processing operations and were based on well-known coercive labour management techniques and supportive legislation.

Origins of Afrikaner Capital

The Afrikaner capital structure that was effectively consolidated by 1950 had emanated from the Afrikaner economic movement that was initiated in 1934 and shaped in 1939 at the first People's Economic Congress (Economie Volkskongres). Two powerful Afrikaner financial groups emerged from the 1940s, Sanlam which was directly linked to the Cape National Party in the then Cape, and Volkskas which dominated Afrikaner nationalism in the north, the then Transvaal (Fine and Rustomjee 1996).

Table: Growth of Afrikaner capital between 1939 and 1949

Sector	Turnover (£m)		% Afrikaner	
	1939	1949	1939	1949
Commerce	28	203.7	8	25

Manufacturing	6	43.6	3	6
Finance	27	74.4	5	6
Mining	1	1	1	1
Total	61	322.7	5	11

Source: Fine and Rustomjee (1996:150)

The share of Afrikaner capital rose from 5% to 11% between 1939 and 1949 as indicated in Table 1. However, as Fine and Rustomjee (1996:150) point out, Afrikaner capital was significantly established in commerce between 1939 and 1949 but was practically absent in mining activities.

2.1 Promotion of Afrikaner Capital

According to Fine and Rustomjee (1996:148), the promotion of Afrikaner interests during the 1940s and 1950s, specifically the promotion of Afrikaner finance capital, strengthened Afrikaner capital as well as state institutions. In addition to the support it received, Afrikaner capital was deployed in productive activities which were previously the domain of English capital. In the 1950s, Afrikaner capital was represented by four important groups; three large centralised groups and one group consisting of a large number of small-scale enterprises. The large groups (Volkskas, Sanlam and Rembrandt) were involved in a number of diverse and overlapping activities. The fourth group was composed of a large number of commercial and industrial small-scale enterprises concentrated in the Transvaal and Orange Free State rural areas.

The dominance of British commercial banks in mobilising capital for industrialisation was challenged by the promotion of Afrikaner capital as well as the creation of a range of institutions around gold mining; which happened about the same time. The above two overlapping processes resulted in “the accommodation of Afrikaner banking institutions by the dominant Standard and Barclays Banks; the strengthening of Afrikaner institutions through state patronage; and the creation of a long-term capital market” (Fine and Rustomjee 1996:153).

Fine and Rustomjee (1996:147) point out that Afrikaner finance capital first rose to prominence, under state support, in the 1950s. This happened prior to its integration with what was previously the absolute stronghold of English mining capital. The interpenetration of large-scale Afrikaner finance capital into mining and other activities in the 1960s, Fine and Rustomjee (1996:147) assert; was supported by the implementation of industrial policy through state-owned corporations in steel, chemicals, fuels and energy.

There was a significant increase in the share of Afrikaner capital in the mining sector, initially through the coal contracts from the growing state electricity giant Escom. According to Fine and Rustomjee (1996:160), of the five stations commissioned in the 1960s, Sanlam’s Federale Mynbou (the mining subsidiary of its industrial arm) was awarded four contracts. The Federale Mynbou was the second largest coal company in the country by 1962, after AAC.

2.2 The Focus on Large-Scale

The Economiese Volkskongres realised that most small-scale enterprises could not compete with established English competitors and that scale was essential to successfully compete with English capital. The policies towards industrial development, especially the actions of the Industrial Development Corporation (IDC), are argued to reflect the embraced approach of focusing on large-scale investments. Barclays and Standard Banks dominated banking in mobilising national savings until the 1960s. The growth of the National Finance Corporation and subsequently private merchant banks together with competition from Volkskas, Nedbank, Trustbank, building societies and life assurers eroded the dominance of Barclays and Standard Banks. (Fine and Rustomjee 1996:151).

3. Interest Groups

The major English mining houses, which were represented by the Transvaal Coal Owners Association (TCOA), dominated coal mining in the 1950s. Access to the domestic market was effectively controlled by this cartel. The average cost of coal at the pit's mouth was the lowest (about 7s) in comparison to countries in Europe (between 45s and 65s), North America (between 34s and 36s) and to Australia (17s). The controlled price of coal during the 1950s encouraged exports at the expense of the local market. Even though exports accounted for only 7.5% of total mined coal, they accounted for 46% of coal mine profits. The coal industry was heavily controlled by TCOA and in order to further their own interest, the coal mines owned by Sanlam influenced the Department of Commerce and Industry to allocate scarce rail trucks and export licenses independently of the TCOA cartel. (Fine and Rustomjee 1996:157).

When coal rationing was introduced in 1952, TCOA gave "first claim on supplies to state railways, the central state, municipal and mine power stations and gold mines", (Fine and Rustomjee 1996:158). The National Party, which was re-elected in 1952, ensured continuing support to Afrikaner capital. As a result TCOA was forced to admit two Afrikaner coal miners into the cartel by 1954. Even though Afrikaner capital was still on the fringes of coal industry, coal supply contracts were increasingly being awarded to Afrikaner-owned coal mines.

4. Government Policy in MEC Industries in Relation to English and Afrikaner Capital

Prior to the 1950s mining capital was dominated by the English, who had economic power while the Afrikaners had political power (Fine and Rustomjee 1996). Although Afrikaner capital was not developed at par with English capital by the 1950s, it had enough strength to interpenetrate and co-operate with English capital. As a result the government later on coordinated and served the common interests of both Afrikaner and English capital. During the 1960s, industrial policy was mainly based on two activities. The first is the operation of state corporations and tariff protection in favour of large-scale capital and energy-intensive industries, within the Minerals Energy Complex (MEC). The second is the preferential treatment of Afrikaner capital, enabling its greater infiltration of many industries which were previously dominated by English capital (Fine and Rustomjee 1996).

The state was able to adopt extensive coordinated industrial policies for the first time in the 1970s, following the erosion of the disjuncture between English and Afrikaner capital. Coal utilisation in the expansion of Electricity Supply Commission (Escom), power generation as well as in the development of coal exports through Richards Bay is argued to be probably the best example of state coordinated policy.

From the early 1970s there was a rapid growth of coal output driven by electricity demand, Sasol I and II plants demand and export demand. By the early 1970s, Genmin's Trans Natal Coal (TNC) was the largest single producer of coal in the country through the patronage of Escom contracts. Closely coordinated policies were crucial in facilitating the pooling of large-scale resources necessary for the development of the coal export industry. The decision by the state to construct Sasol II and Sasol III, with considerable assistance from IDC, is regarded to be probably the most decisive industrial policy since the formation of Iscor (Fine and Rustomjee 1996:169).

The MEC industries tended to be capital-intensive such as Sasol and Foskor. Minerals were used to produce industrial goods and provide support for skilled white as opposed to unskilled, black employment. It should be noted however that its contribution in creating the MEC was indirect as it was done by financing non-mining MEC infant industries. These included Sasol I (1951), Southern Oil exploration Company (Soekor) (1965) Aluminium Development Corporation of South Africa (Alusaf) aluminium smelter (1967), Sasol II (1976) and Sasol III (1979). The building of these plants with considerable assistance from the IDC further enhanced the MEC within the economy.

By the 70s, the ownership of the 7 largest foundries was concentrated in the South African state through Iscor and the IDC, international capital and local mining and industrial finance. The realization and entrenchment of the MEC was predominantly done at the hands of South Africa's state cooperation's in joint ventures with private capital. Whilst Iscor inspired diversification into heavy steel manufacturing Sasol took the lead in providing the basis for diversification into heavy chemicals.

Sectors were chosen on the basis of comparative advantage and the future development of South Africa was pegged on iron, steel, engineering and metal industries. This was also the case with chemicals. Within the context of the MEC this comparative advantage was to be found in the country's natural resources (iron and steel, foundry products, ferro-silicon, ferro-chrome, ferro-manganese) and energy which was relatively cheap at the time. Van Eck in 1962 (the then Chairman of Escom and IDC) is quoted as having said, "in South Africa, far from relying on so-called cheap labour we believe in the application of power. The generation of electricity per head is just about 1500 kWh per annum." (Fine and Rustomjee 1996). This figure was comparable to that of Britain; a highly industrialized country. Escom's power generation capability had to be closely linked to coal mining and a rail system that could transport the coal to the power plants.

In the 1970s there was an attempt to shift the South African economy away from its reliance on MEC sectors. This came in the form of the Reynders (1972) Commission. The main focus of the commission was to avoid obstacles that would curtail South Africa's export momentum and the removal of balance of payments constraints. Some of the proposals in

the commission included improved productivity monitoring by the state's National Productivity Institute (NPI), state support in raising skill levels, export marketing assistance, improving the transport and port systems and the promotion of export processing zones. In the mid 1970s, in implementing the recommendations of the 1972 Reynders Commission report, the government provided finance charge aid to exporters of some minerals. The government also implemented Reynders' recommendation of granting rebates on the transport costs of exports of unprocessed or semi-processed raw materials. In addition, the government increased tax allowances on capital investment, market development, initial allowances and beneficiation allowances (Fine and Rustomjee 1996:196).

However, not all of Reynders's recommendations were implemented. For example, there was no diversification away from the MEC, as had been recommended. Instead, following the 1973 gold and energy price boom, industrialisation around the MEC intensified. These industrial policy decisions, including Sasol II and III mentioned above, Escom expansion and Armaments Corporation of South Africa (Armcor), are said to have been partly led by the IDC. Instead of a broad application of Reynders recommendations, it was the MEC sectors that benefited. In 1974 the ferro-alloy industry was given a power subsidy of 20% which contributed to the growth of ferrochrome exports. The growing interpenetration between Afrikaner and English capital in specific sub-sectors such as coal (which facilitated large-scale coal exports), progressively propelled such policy decisions.

As documented by Fine and Rustomjee (1996:196), there was a fall in global demand for MEC exports and thus benefits from the gold and energy boom of the 1970s was exhausted. Although at the time of the gold and energy boom, in the 1970s the focus of policy on MEC industries seemed justified, it seemed ill conceived after the collapse of the global demand for MEC exports. Industrial policy coordination, which was not unified in the first place, further faded away in the 1980s because of the diminishing MEC revenues together with the apartheid crisis.

Since the disjuncture between English and Afrikaner capital was fundamentally eroded by the 1980s, there was increased conglomeration and interpenetration between these two fractions of capital. This was accompanied by privatisation of state corporations in the late 1980s, for example of Iscor and Sasol. (Fine and Rustomjee 1996:196).

Nonetheless, although the 1980s saw an increase in conglomeration and privatization the shift from an inward orientation to an outward orientation did not occur. If anything the increased dominance of the IDC in the industrial policy space allowed a continuation of policies and interventions that supported large scale MEC industries. Throughout the greater part of the post war years the Board of Trade and Industries (BTI) and the IDC played the most prominent roles in shaping the industrialization of South Africa. After growing disagreements between the two regarding industrial policy the BTI was later renamed the Trade and Industry Advisory Board in 1992. Industrial policy in the rest of the 1990s was dominated by the IDC, which continued with policies that had a bias toward MEC sectors. Large-scale major projects which included Sasol's expansion, aluminum smelting, stainless steel and potash were carried out albeit with a private sector drive. Support for MEC sectors

continued into the 1990s with commitments being made in steel and stainless steel beneficiation, wood pulp, chemicals and petrochemical products.

4.1 Financing of MEC and Related Operations

The IDC, which was heavily involved in developing the synthetic fuel and chemical industries, was formed in 1940 for the purpose of encouraging secondary industrialisation. Historically, the IDC financed the creation of infant industries. Although it promoted other industries, most of the IDC's resources were deployed to promote the MEC. 77% of IDC's total investments in industry had, by 1956, been invested in South African Coal, Oil, Gas Corporation Ltd (Sasol) (Fine and Rustomjee 1996:159).

The greater part of the 1960s was dominated by iron and steel, which absorbed more than a quarter of all annual fixed investment in the manufacturing sector. Fine and Rustomjee (1996), argue that when the IDC promoted other industries, which included armaments such as Atlas Aircraft Corporation (1964), most of the resources were deployed to promote the MEC, with 68.3% going to the complex in 1960 falling in the early 1980s to 37.4% and bouncing back to 48.0% by the mid-1980s. The table below shows the contribution of IDC to MEC financing. Furthermore, Fine and Rustomjee (1996) argue that as a system of accumulation, the MEC represented the means by which Afrikaner fractions of capital would increase their involvement in mainstream economic activity. Afrikaner capital furthered its investment in chemicals with the assistance of the IDC.

Table : IDC Financing of the MEC between 1965 and 1985 (%)

1960	195	1970	1975	1980	1985
68.3	64.6	52.3	53.5	37.4	48.0

Source: Fine and Rustomjee (1996:159)

IDC was largely more supportive of large-scale MEC operations, and in practice, it devoted not as much funds to the support of decentralisation or small-scale industry. Fine and Rustomjee (1996: 192) point out that in 1959 IDC had investments in 75 companies; R104m was invested in 3 companies; Iron and Steel Corporation of South Africa (Iskor), Sasol and Phosphorous Corporation of South Africa (Foskor) while R26m was invested in the remaining 72 smaller companies.

This meant that Iskor, Sasol and Foskor each got an average of R30m whilst the remaining 72 got an average support of R300, 000 each. The situation had not changed in the 1990s as Ben Vosloo¹¹ highlighted in the, Business Day, in 1992 that R1.411bn was allocated to export trade promotion and distributed to 2500 companies. Of that total, SMEs only received R75m through the Small Business Development Corporation (SBDC) whilst the reminder went to relatively large companies with a strong MEC orientation. This meant that the IDC, which had been entrusted with supporting small-scale businesses, never accorded the sector any significant priority. That instead principally went to the MEC. In addition to providing financing to the MEC, IDC also entered into joint ventures with private capital. In the 1960s, the main drive of industrial development was the policies that had been adopted in the

¹¹ Managing Director Small Business Development Corporation (SADC) in Fine and Rustomjee

1950s through state corporations and joint ventures between IDC and private capital in and around the MEC (Fine and Rustomjee 1996:162).

State Corporations

The National Finance Corporation (NFC), which was created by the National Party in 1949, was not only an instrument for directing short term funds into the hands of government bodies but was also, in many respects, a financial intermediary which channelled profits made from Anglo American Corporation (AAC)-owned De Beers diamond sales into AAC's Orange Free State Goldfields (FSG) (Fine and Rustomjee 1996:154-5). In 1958 De Beers accounted for 38% of the NFC's deposits; marking a shift away from private to institutional sources of financing (Fine and Rustomjee 1996). It is stated that investing through the NFC enabled a mining house to spread the risk associated with mining and hedge its liabilities with the purchase of guilt-edged securities. Fine and Rustomjee (1996:155) further assert that "with the NFC bearing the risks, financing investment in mine development followed a well-lubricated path". The state profited, through the NFC, on the spread between deposits and investment; for example NFC turnover increased from £70m in 1949 to £1045m in 1953 (Fine and Rustomjee 1996:155).

The participation of state corporations in productive activities increased over time. According to Malherbe and Segal (2001:18), rail transport, steel, telecommunications, postal services, airlines and air cargo, the ports, pipelines, oil and gas exploration, oil-from-coal extraction and armaments manufacture were dominated by state-owned companies by 1960. The majority of these state-owned enterprises were granted statutory monopolies.

Birth of Specific SOEs in SA

ISCOR and ESKOM

Scholars from a wide political spectrum have argued that the early development of South Africa's state corporations represented a battle between national and foreign, or industrial and mining, or, sometimes, Afrikaner and English forces for control of the economy; a struggle in which ultimate victory went to the national/industrial/Afrikaner forces, Clark 1987. Furthermore, the formation of Escom, in 1923 followed by the second state owned enterprise (SOE) Iscor in 1928 were aimed at promoting local industrialization and, consequently, the interests of the white community. Clark (1987) however argues that the relationship between these entities was not as antagonist as has been suggested by most scholars. "The state corporations did not so much challenge private capital nor work as a 'tool' of private enterprise, but rather they provided a growing link between the state and the private sector. Indeed, in attempting to initiate industrialization in South Africa, the state corporations took over many of the practices which their promoters claimed they were established to subvert..." (Clark 1987:p122).

Iscor's primary objective was to provide the country with cheap steel and as such, it was not allowed to undertake the processing and manufacturing of secondary products. There is evidence to show that the greater bulk of South Africa's economic activities in the 1950s revolved around Iscor. In fact, Fine and Rustomjee (1996) argue that not only did MEC growth dominate industrial development in the 1950s but there were major state policies

that entrenched the importance of electricity, coal mining, chemical and fuel industries in South Africa. These policies included the nationalisation of the electricity industry (Escom) and a corresponding power station construction programme and the creation of a state-owned fuel chemical industry.

Clark (1996:122) lists three relevant factors leading to the establishment of Iscor as an SOE;

1. Firstly, the steel industry was considered to be an important part of the move toward industrialization and a solution to the large unemployment of Afrikaners.
2. Secondly, the formation of the International Steel Cartel in 1926 led to steel price increases. There was the fear that with the bulk of the steel being imported it could damage the cost structure of the railways and gold mines.
3. Thirdly, a steel work SOE would be, along with the introduction of a new national flag, an important symbol of the nation-state

On top of the need to industrialize the establishment of Iscor greatly facilitated the operations of the mines and the establishment of domestic manufacturing. 'Steel was a key input in the mining process, iron ore was plentiful in South Africa, and cheap power was available from Escom' (Schneider 2000: 417) It is the availability of this cheap power from Escom that was to later shape the industrialization of South Africa around primary production. Nonetheless, with respect to the second objective of SOEs, which was the creation of employment for white Afrikaners, Schneider 2000, goes on to highlight that firms were only given protection if they agreed to employ a large percentage of white labourers and if they paid high ("civilized") wages to their white employees. If Dietz's (1992) argument on the impact of a state that only serves the interests of a special group is accurate, then these policies were laying the foundation of what he called a "captured" state. The level of rents obtained from the state at the expense of broad-based development would eventually sap the possibility for continued growth.

Alexkor

In 1926, the rich diamond deposits at Alexander Bay were discovered. These deposits proved so rich that in 1927 the Government prohibited all further diamond prospecting on state owned land in Namaqualand. In 1928 the South African Government started mining operations at Alexander Bay (now Alexkor). Alexkor was established in terms of the Alexkor Limited Act (No. 116 of 1992), as amended, and is wholly owned by the government of South Africa. Alexkor has two divisions, namely Alexander Bay Mining (ABM) and non-core operations. Alexkor's core business is the mining of diamonds on land, along rivers, on beaches and in the sea along the north-west coast of South Africa. These activities are complemented by geology, exploration, ore reserve planning, rehabilitation and environmental management. Its main aim is to maximise the value from the sustainable exploitation of the resource and to make a contribution towards the socio-economic upliftment of the region. With respect to the latter, Alexkor seems to be struggling to make its socio-economic contribution. In 2010, Alexkor recorded a decline in its total number of

permanent employees. The state-owned mining company now employs just 105 people on a full time basis. This was down from 691 full-time positions in 2000. The company has shed jobs for the fifth consecutive year, while accumulated losses now stand at R275 million. The past decade has been characterised by a track record of loss-making.

Central Energy Fund (CEF)¹²

CEF is owned and controlled by the State and is not transferable. The company is controlled by the Minister of Minerals and Energy. The Minister appoints the board of directors, who act as the accounting authority in terms of the PFMA. CEF (Pty) Ltd. is involved in the search for appropriate energy solutions to meet the future energy needs of South Africa, the Southern African Development Community and the sub-Saharan African region, including oil, gas, electrical power, solar energy, low-smoke fuels, biomass, wind and renewable energy sources. CEF also manages the operation and development of the oil and gas assets and operations of the South African government. As a private company it was, incorporated in terms of the Companies Act, and is governed by the CEF Act which states that, the purpose of CEF is to give effect to the objectives of the Central Energy Fund, which are to:

- Finance and promote the acquisition of coal, the exploitation of coal deposits, the manufacture of liquid fuel, oil and other products from coal, the marketing of the said products and any matter connected with their acquisition, exploitation, manufacture and marketing;
- The acquisition, generation, manufacture, marketing or distribution of any other forms of energy and research connected therewith;
- Any other object for which the fund may be applied, and which has been designated or approved by the Minerals and Energy Minister with the concurrence of the Minister of Finance."

The CEF Act also establishes the Central Energy Fund and the Equalisation Fund and determines that CEF will take up the shares in the Strategic Fuel Fund Association (SFF), which is responsible for managing South Africa's strategic crude oil stocks on behalf of the state.

The CEF Group

The CEF group operates in the energy sector and controls entities with commercial, strategic, regulatory and developmental roles. The CEF group consists of seven operating subsidiaries:

- PetroSA;
- iGas;
- Petroleum Agency SA;
- OPCSA;

¹² <http://www.cef.org.za>, accessed Friday, August 19, 2011

- South African National Energy Research Institute (Saneri);
- The National Energy Efficiency Agency (NEEA); and
- The Strategic Fuel Fund Association (SFF).
- The Energy Development Corporation (EDC), a newly created division.

Transportation Network (Transnet)

On 01 April 1981, the government restructured the South African Railways and Harbours (SAR&H) to become a state business enterprise known as South African Transport Services (SATS). SATS in turn became Transnet Limited - incorporated as a company on 1 April 1990 with the State as its sole shareholder. As the national rail operator, Transnet Freight Rail (then Spoornet) became one of the major divisions of Transnet. Transnet and its two predecessors played a crucial role in the development of mining in South Africa. The development of rail seemed to fit into the MEC paradigm, in that sales of coal for domestic consumption are almost exclusively to the state electricity utility Eskom. The coal is from mines, which are tied to particular power stations. Coal exports on the other hand are licensed by the state through a quota system and depend crucially rail to the new development of Richards Bay Harbour, both of which are run by the state-owned Transnet – formerly SATS

Conclusion

By the 1960s the creation of state corporations and related industries had played an important role in the MEC and shaping SA industrialization. The focus on the mineral sector had been achieved at the expense of the manufacturing sector, which was never fully exploited. Industrial policy consisted of state corporations and tariff protection, which were operated by the early 1960s in favour of large-scale, capital and energy-intensive industries within the MEC. Afrikaner capital was also favoured by state entities such as the IDC, resulting in greater penetration of several industries which were formerly the preserve of English capital.

South Africa's Mineral Resources

In a 2010 report Citigroup claimed that South Africa is the world's richest country in terms of the value of its mineral reserves, estimated at US\$2.5 trillion¹³. The report estimated that Russia comes second and Australia third. However, 92% of the US\$2.5 trillion is attributed to its PGM¹⁴ reserves (US\$2.3 trillion) which is probably more a reflection of the stratiform and predictable nature of the layered igneous Bushveld Complex (BC) PGM resources (i.e. currently determinable "reserves"), than of South Africa's potential mineral resource endowment compared to other countries. Wilson, M. Notes that *"The Merensky Reef, which has developed near the top of the Critical Zone, can be traced along strike for 240 km and is estimated to contain 60 000t of platinum-group metals to a depth of 1 200 m below surface."*

13 Sainsbury, Craig, Citigroup, 2010, reported in Business Report April 28, 2010

14 PGM: Platinum Group Metals- Pt, Pd, Rh, Os, Ru & Ir

¹⁵, In general, a state's mineral endowment is roughly proportionate to the area of the earth's crust contained within its territory and in this regard South Africa, at 1.2 million km², is but 16% of the area of Australia (7.6mn km²) and a mere 7% of the size of Russia (17.1mn km²). Nevertheless, its mineral resource endowment is exceptional for its size.

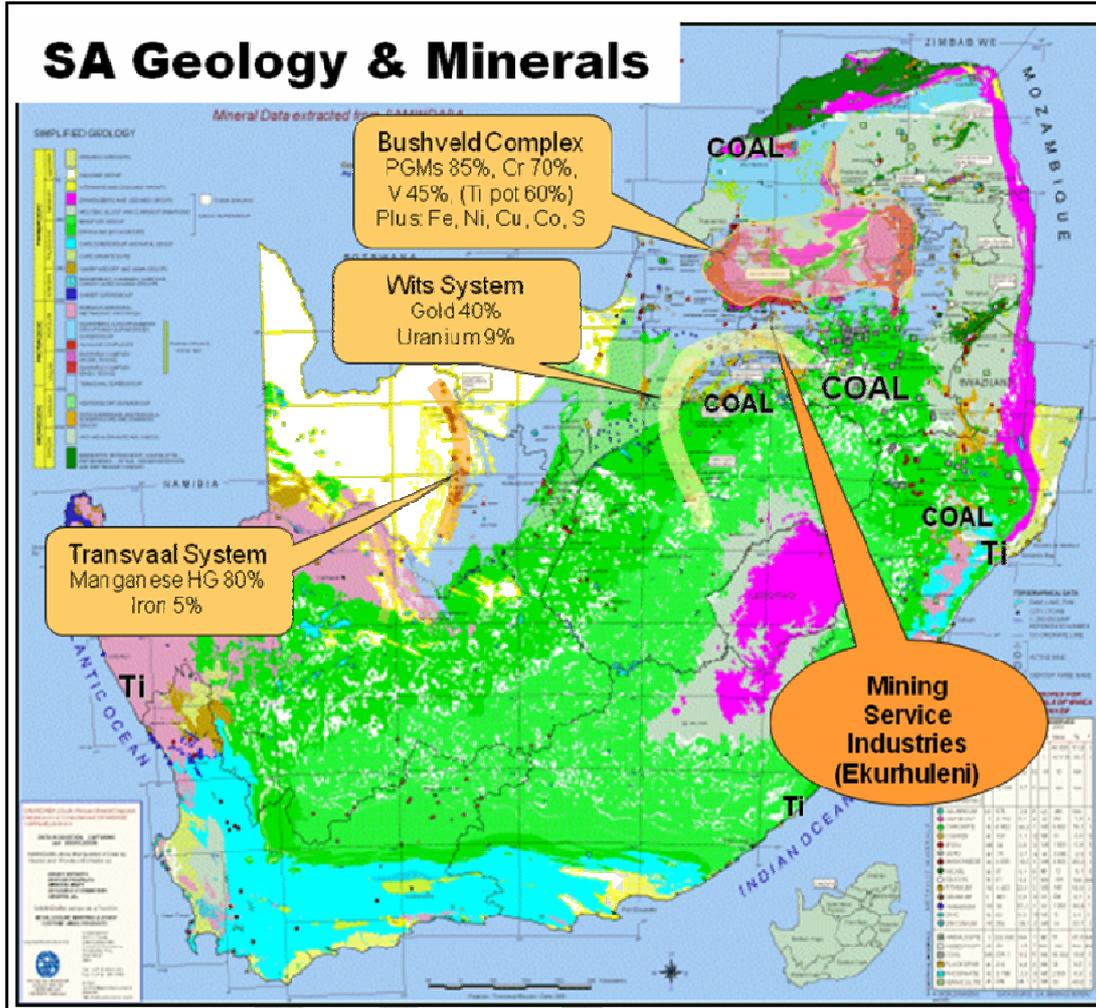
South Africa's mineral resources are mainly found in the following geological formations and bodies:¹⁶

- **The Witwatersrand Basin:** Gold (>90% of current production), as well as considerable resources of uranium, silver, pyrite & osmiridium;
- **The Bushveld Complex:** PGMs with associated copper, nickel & cobalt. Also, chromium (chromite seams) and vanadium & titanium bearing magnetite (iron ore) seams, as well as industrial minerals, such as fluorspar & andalusite;
- **The Transvaal Supergroup:** Large resources of manganese & iron ore;
- **The Karoo Basin:** Considerable bituminous coal & anthracite resources;
- **The Phalaborwa Igneous Complex:** Copper, phosphate, titanium, vermiculite, feldspar & zirconium;
- **Kimberlite pipes:** Diamonds (also occur in secondary alluvial, fluvial and marine deposits);
- **Heavy mineral sands:** Titanium (ilmenite & rutile), zircon and magnetite, mainly in coastal paleo-dunes;
- **Bushmanland Group:** lead-zinc with copper & silver.

15 CGS 2005, "A Brief Overview of the Economic Geology of South Africa" by Wilson, M.G.C., Pretoria, www.geoscience.org.za

16 SAMI: South Africa's Mineral Industry, DMR 2009 (www.dme.gov.za)

SOUTH AFRICA: GEOLOGY & MAIN MINERALS



Source: Adapted from CGS 2005

Two-Thirds of South Africa is covered by sediments of the Karoo Supergroup (coal, uranium & potential shale gas), but most of the mineral resources are concentrated in the centre-east of the country, (Northern Cape, North-West, Free State, Gauteng and Limpopo Provinces), particularly the Wits Basin and the Bushveld Complex. The Western and Eastern Cape Provinces have meager resources, likewise the Free State where most of the Wits gold has been extracted, though the deep Bothaville gold resources may still underpin future gold mining. Ekurhuleni (Gauteng) is the centre of the mineral backward linkage cluster (mining supplier industries)

SOUTH AFRICA'S ROLE IN WORLD MINERAL RESERVES, PRODUCTION & EXPORTS, 2009

COMMODITY	RESERVES				PRODUCTION				EXPORTS			
	Unit	Mass	%	Rank	Unit	Mass	%	Rank	Unit	Mass	%	Rank
Aluminium*		*	*	*	kt	1025			kt	538	3,1	7
Alumino-silicates	Mt	51	*	*	kt	265	60,2	1	kt	109		*
Antimony	kt	350	16,7	3	t	3 000	1,6	3	t	*	*	*
Chrome Ore	Mt	5 500	72,4	1	kt	6 762			kt	1035		
Coal	Mt	30 408	7,4	6	Mt	250,6	3,6	7	Mt	60,5	6,4	5
Copper	Mt	13	2,4	14	kt	89	*	*	kt	27	*	*
Ferro-chrome		*	*	*	kt	2 346	39,2	1	kt	2 621	56,5	1
Ferro-Mn/Fe-Si-Mn		*	*	*	kt	392	*	*	kt	411	*	*
Ferro-silicon		*	*	*	kt	148,9	2,9	6	kt	82,0	2,1	1
Fluorspar	Mt	80	17	2	kt	180	3,5	5	kt	*	*	*
Gold	t	6 000	12,7	1	t	197	7,8	5	t	180	*	*
Iron Ore	Mt	1 500	0,8	13	Mt	55,4	3,5	6	Mt	44,6	4,7	5
Lead	kt	3 000	2,1	6	kt	49	1,2	10	kt	47	1,9	14
Manganese Ore	Mt	4 000	80,0	1	kt	4 576	17,1	2	kt	3 978	26,6	2
Nickel	Mt	3,7	5,2	8	kt	34,6	2,4	12	kt	27,3	*	*
PGMs	t	70 000	87,7	1	t	271	58,7	1	t	251	*	*
Phosphate Rock	Mt	2 500	5,3	4	kt	2 237	1,4	11	kt	0	*	*
Silicon Metal		*	*	*	kt	38,6	2,8	6	kt	38,4	3,5	6
Silver		*	*	*	t	77,8	0,4	20	t	70	*	*
Titanium Minerals	Mt	71	9,8	2	kt	1 100	19,2	2		*	*	*
Uranium	kt	435	8	4	t	623	1,3	10		*	*	*
Vanadium	kt	12 000	32,0	2	kt	11,6	25,4	1	kt	11,9	*	*
Vermiculite	Mt	80	40,0	2	kt	194,3	35	1	kt	164,6	*	*
Zinc	Mt	15	3,3	8	kt	29	0,2	25	kt	5	0,1	24
Zirconium	Mt	14	25	2	kt	395	32	2		*	*	*

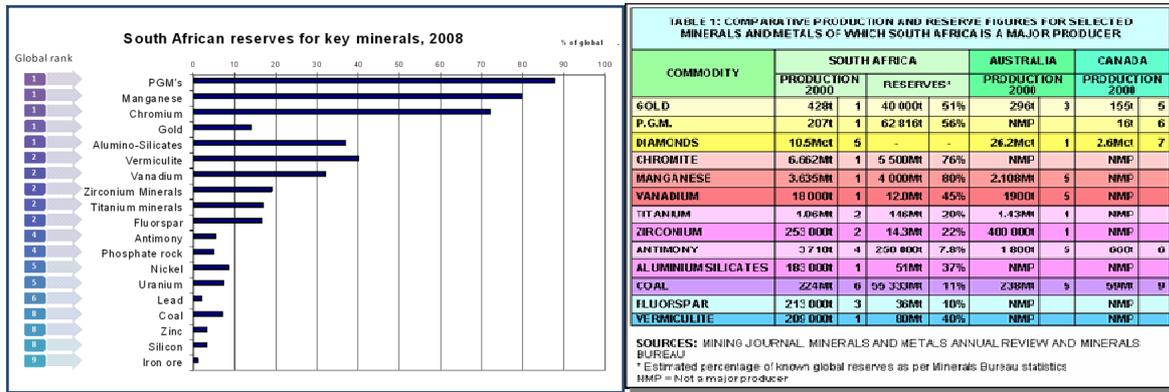
Source: SAMI 2010

“Demand for the majority of commodities that South Africa possesses has played a major role in growing the economy of the country. The mining industry is a well-established and resourceful sector of South Africa’s economy and has a high degree of technical expertise as well as the ability to mobilize capital for new development. It has provided the impetus for the development of an extensive and efficient physical infrastructure and has contributed greatly to the establishment of the country’s secondary industries. With the diversity and abundance of its natural resources, South Africa is a leading producer and supplier of a range of minerals and produced approximately 53 different minerals from 1 548 mines and quarries in 2009 as well as exported to approximately 80 countries. Gold was produced from 53 mines, platinum-group metals (PGMs) from 45 mines, coal from 108 mines and diamonds from 395 mines, all as primary commodities”¹⁷.

From the Table (Mineral Reserves, Production & Exports) it is apparent that South Africa has the world’s largest resources of the PGMs, chromium, gold, manganese (high-grade ore) and vanadium and large resources of several other minerals. However, almost all of its mineral wealth is exported as ores, concentrates, alloys or metals with very little transformed into fabricated products. The two most important mineral inputs into manufacturing are iron/steel and polymers (from oil and coal), both of which are supplied into the domestic

¹⁷ SAMI 2010, p1

market at monopoly (IPP¹⁸) prices, severely disadvantaging potential manufactured exports and job creation.



Source: CoM 2011 & CGS 2005

Ecopartners has estimated the value of South Africa’s mineral resources at an astounding USD4.71 trillion¹⁹. However, the methodology used to arrive at these estimated was not available to the SIMS team.

Proportion of South Africa's Minerals by Value

Mineral	Percentage
Precious Metals	64%
Ferrous Metals	18.2%
Base Metals	3.7%
Energy Minerals	13%
Precious Stones	1%
Industrials*	0.1%
Total	100.0%

Source: Baartjes, N & Gounden, K (2011) "Synopsis of the First Report of Mineral Resources and Reserves in South Africa", EcoPartners, www.ecopartners.co.za

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!

¹⁸ IPP: Import Parity Price

¹⁹ Source: Baartjes, N & Gounden, K (2011) "Synopsis of the First Report of Mineral Resources and Reserves in South Africa", EcoPartners, www.ecopartners.co.za

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

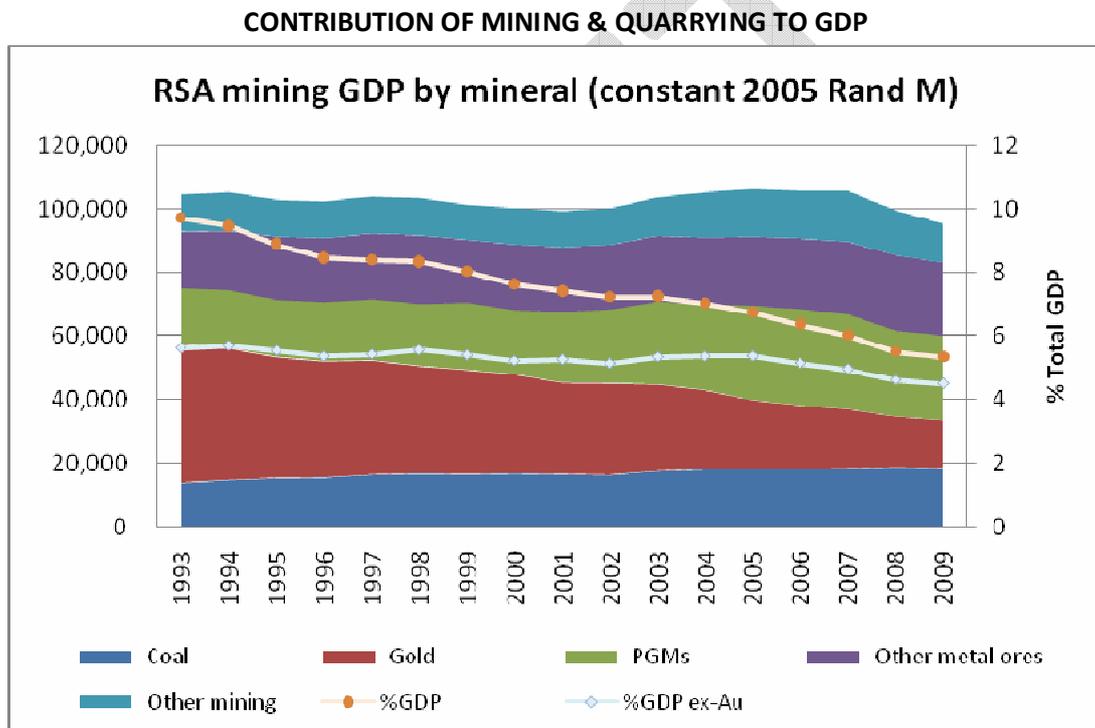
Mineral	Unit	RESERVES			PRODUCTION 2009			LIFE
		mass	%World	Rank	Mass	%World	Rank	Years
Alumino-silicates	Mt	51	*	*	0.265	60.2	1	192
Antimony	kt	350	16.7	3	3	1.6	3	117
Chromium Ore	Mt	5500	72.4	1	6.762	*	1	813
Coal	Mt	30408	7.4	6	250.6	3.6	7	121
Copper	Mt	13	2.4	6	0.089	*	*	146
Fluorspar	Mt	80	17	2	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)

The Role of Mining and the Minerals-Energy Complex (MEC) in the South African Economy²⁰

The Minerals-Energy-Complex

The contribution of “mining & quarrying” (strictly defined) to GDP has fallen from 10% in 1993 to less than 6% in 2009 (see graph, below), but much of this decline is due to the exhaustion gold reserves. Other mining’s contribution has in fact been fairly constant at around 5% of GDP (see graph) if smelting and refining (particularly ferro-alloys and iron/steel) are included the proportion is significantly higher.



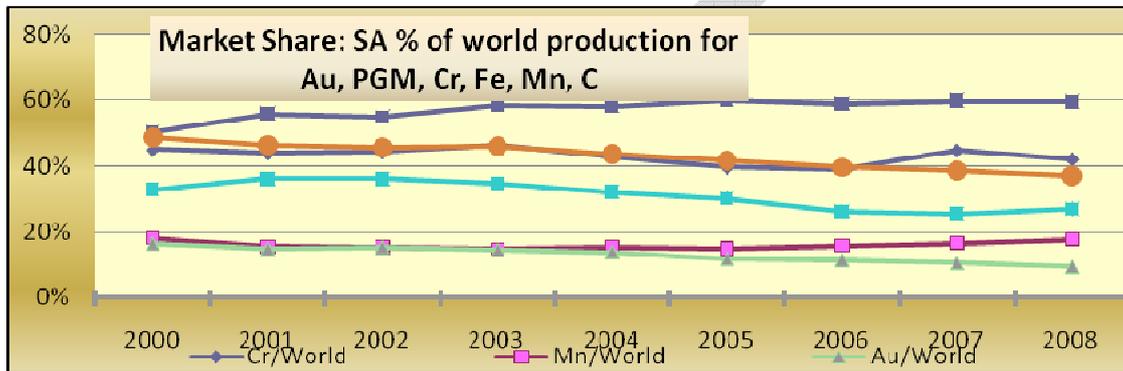
Source: CoM 2011²¹

The graph clearly illustrates the falling contribution of gold mining and the increasing role of PGMs. The alleged “failure” of South Africa to take full advantage of the 2003-2008 resources boom is generally opportunistically blamed on the allegedly onerous mining regime by the miners and bankers (seeking an even more “liberal” minerals regime). However, a more differentiated analysis (see chart below) indicates that infrastructure and reserves/geological constraints were the predominant cause:

²⁰ This section is based on a sub-contracted piece of work by Dr Zavoreh Rustomjee: Rustomjee, Z, (2011), “The Role of Mining and the Minerals-Energy Complex (MEC) in the SA Economy – Trends & Outcomes”, prepared for ANC SIMS study.

²¹ Derived from Chamber of Mines (CoM) dataset 2011

- a. PGMs – increased market share: expanded into the boom, though Platreef development (Limpopo Province) was constrained by water availability. Nickel and part of copper production are limited by PGMs, as by-products;
- b. Gold – lost market share: constrained by limited reserves (the Wits resource is in terminal decline);
- c. Coal – lost market share: constrained by rail/terminal capacity;
- d. Iron ore – lost market share: constrained by rail/terminal capacity;
- e. Chromium – slightly lost market share: FeCr constrained by the power crisis;
- f. Manganese – kept share, despite rail constraints;
- g. Copper – lost market share: constrained by limited reserves (Phalaborwa) and the PGM mining shift from the Merensky Reef to UG2 (less Cu & Ni);



Source: Derived from Raw Materials Data. Copyright: Raw Materials Group, Stockholm, 2010

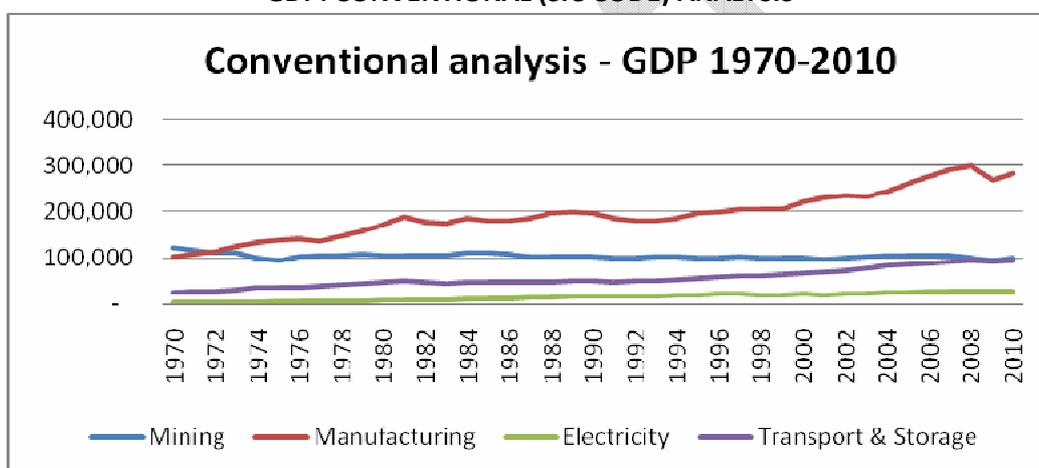
Resources infrastructure needs timely response to market signals (Transnet funding constraints), however, if the resource linkages were not being realised, then the conserving of finite resources (albeit unwittingly through infrastructure constraints) was arguably not a bad thing, as it gives the state a second chance to optimise the developmental impact and the impact of coal prices on electricity tariffs would have been greater, with unconstrained coal export options. However, where the linkages are being pursued, Transnet needs to provide the requisite cost-effective transport infrastructure and, where they are not able to respond, consideration should be given to user concessions, but with developmental conditions and third party access (at non-discriminatory tariffs), to optimise their developmental impact;

Dr Rustomjee and others have argued that conventional analysis has it that South Africa's industrialisation has been dependent on mining but that the economy has historically diversified away from mining, initially towards manufacturing and in more recent years the financial sector and services have greatly increased their share of GDP.

However, they propose an alternate analysis that indicates that South Africa's industrialisation path continues to depend on the mining sector and that manufacturing growth has largely been composed of the primary mineral processing stages (smelting & refining). Apart from the heavy industrial processing of ferrous and non-ferrous metallic

ores, and unlike many other industrial economies, South Africa’s fuel industry and its heavy basic chemical industry have evolved around the coal industry. At a sectoral level, these linkages were conceptualised as a Minerals-Energy Complex (MEC).²² The MEC was also analysed as a system of accumulation in which specific social and economic vested interests evolved around. The MEC sectors are defined as 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.²³ The MEC conceptualization has also been incorporated into ANC economic policy²⁴ For instance, the Polokwane National Conference 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.*”

GDP: CONVENTIONAL (SIC CODE) ANALYSIS



Source: Rustomjee 2011²⁵

The narrow definition analysis over the last 40 years illustrates the conventional view, with manufacturing’s contribution to GDP outstripping mining from the early 1970s (see graph). In this analysis mining’s contribution has remained static since 1974 (see graph).

According to Fine & Rustomjee, the South African economy “...can be characterised as being dominated by a minerals-energy complex (MEC)”²⁶. Rustomjee has calculated that the MEC²⁷ has a much larger contribution to GDP than non-MEC manufacturing. If the minerals & energy components are stripped out of manufacturing, then its contribution to GDP has

²² Fine, B. and Rustomjee, Z. (1997) *South Africa's Political Economy: From Minerals-Energy Complex to Industrialisation*, Johannesburg: Wits University Press

²³ Earlier analysis did not include “transport and storage”, which largely relates to rail and port infrastructure, as an MEC sector. In recent years, the importance of infrastructure to the MEC has become much more apparent.

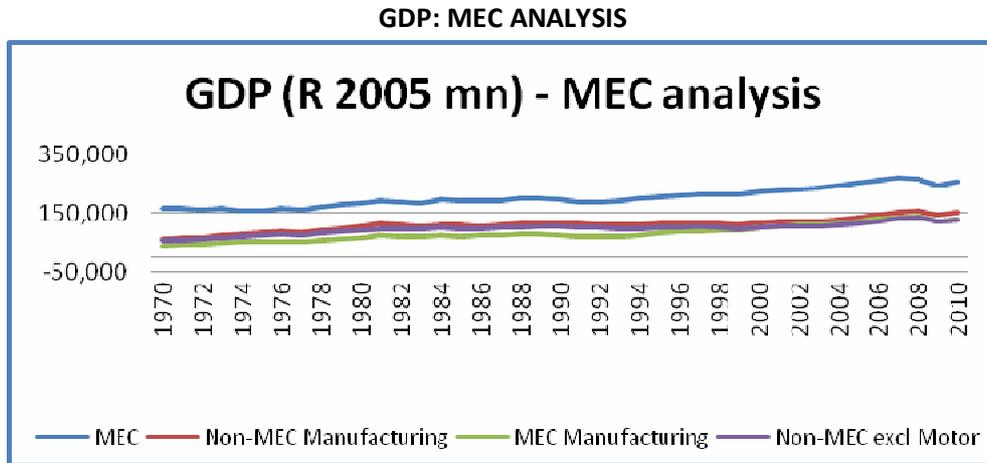
²⁴ See for instance, ANC 52nd National Conference Economic Transformation Resolution, section 1.5

²⁵ Rustomjee, Z. (2011), “The Role of Mining and the Minerals-Energy Complex (MEC) in the SA Economy – Trends & Outcomes”, confidential report prepared for ANC SIMS study.

²⁶ Fine, Ben, 2010, op cit, p174

²⁷ MEC Sectors: Mining, Coke & refined petroleum products, Basic chemicals, Other chemicals & man-made fibers, Rubber products, Glass & glass products, Non-metallic minerals, Basic iron & steel, Basic non-ferrous metals, Electricity, transport and storage.

been under 5%, but the MEC's contribution has been closer to 20% (see graph). The US global "toxic debt" crisis caused the MEC contribution to fall in 2008/9 but since then it has recovered due to Asian demand.

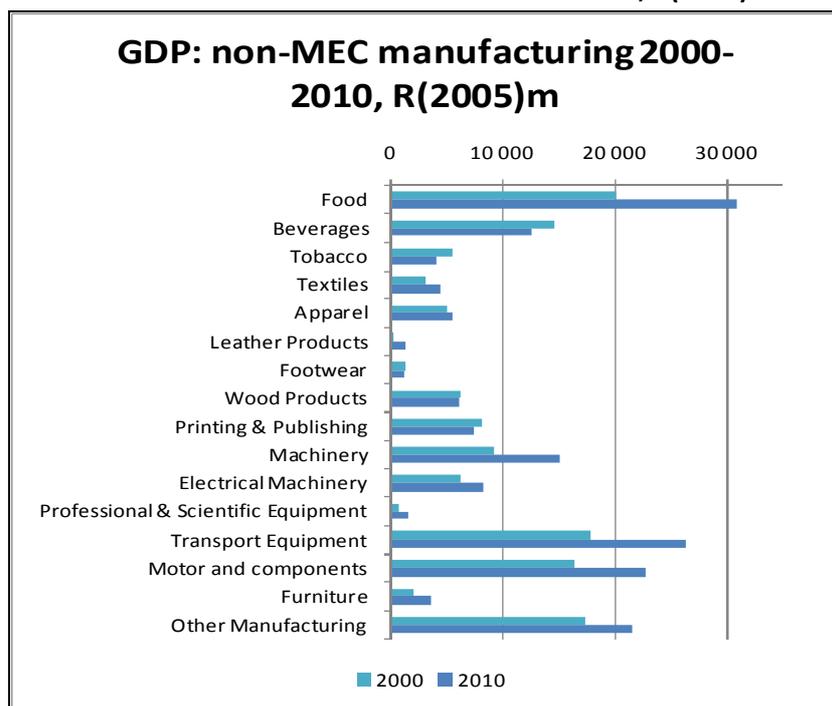


Source: Rustomjee 2011

However, using the broad MEC definition, the central role of the MEC is illustrated (see graph) with MEC contribution to GDP growing consistently from the early 1970s to 2008. Non-MEC manufacturing sectors contribution grew strongly between 1970 and 1980 but then stagnated at half the quantum of the MEC up until around 2000, after which non-MEC manufacturing also grew consistently until 2008, due partly to the growth of the automotive sector.

The composition of non-MEC GDP contribution is illustrated in the following graph which shows that the main non-MEC manufacturing growth sectors between 2000 and 2010 have been food, machinery, transport equipment and motor & components.

GDP: NON-MEC MANUFACTURING 2000-2010, R(2005)M



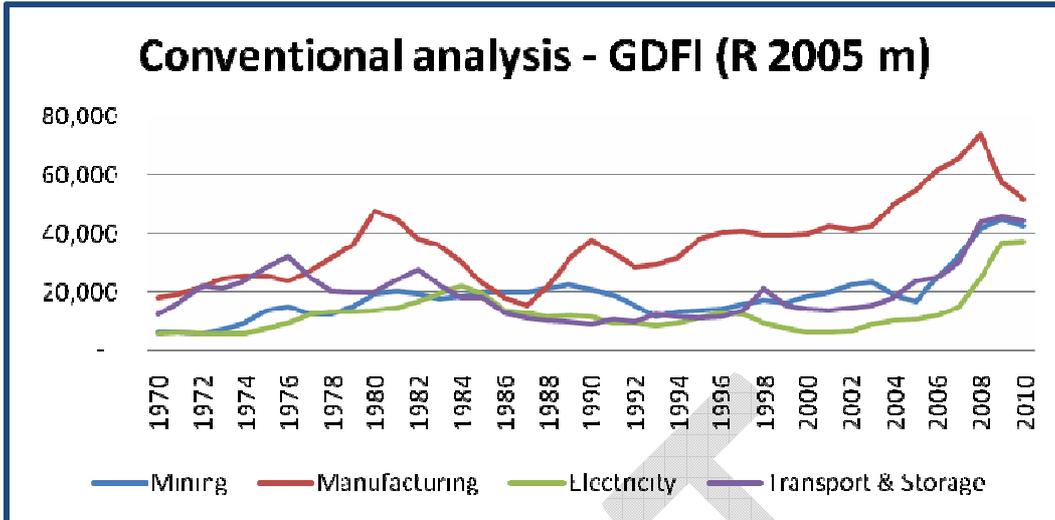
Source: Rustomjee 2011

The large growth in GDP contribution of the food and beverage sector probably relates to the growing role of domestic consumption and the increasing concentration and expansion of the big four retail chains of Pick and Pay, Shoprite, Massmart/Walmart and Spar. Growth in the motor and components sectors has been spurred by the motor industry development programme (MIDP). Growth in transport equipment and, to a lesser extent, electrical and machinery sectors are likely to have been stimulated by the expansion of MEC sectors, including mining and associated infrastructure (electricity transport and storage).

Investment

In terms of investment, gross domestic fixed investment (GDFI) in the manufacturing sector grew strongly during the 1970s but declined significantly from 1980 to 1987 after which GDFI grew rapidly and consistently until 2008. Investment in mining grew from 1970 to 1988, dipped until 1993, grew steadily till 2003, after which GDFI accelerated exponentially, nearly trebling by 2008.

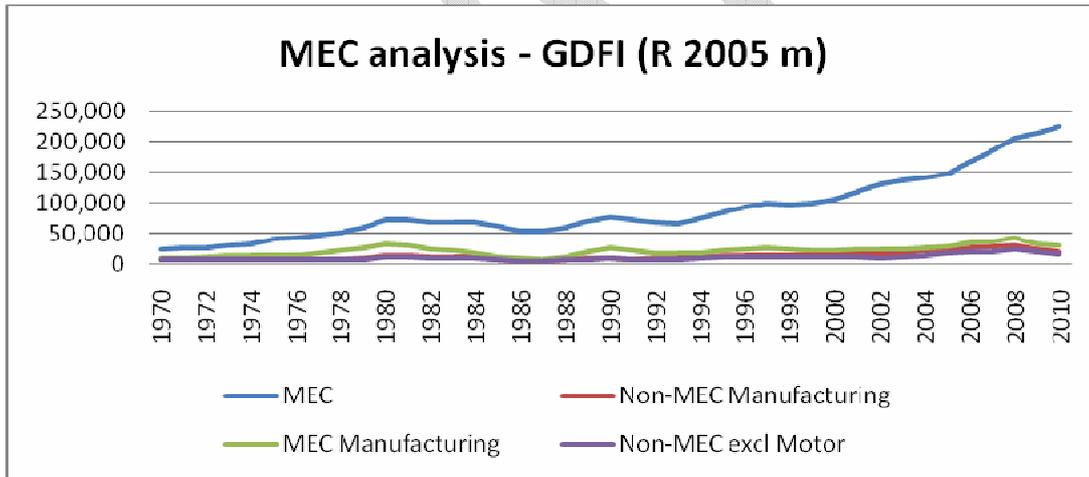
CONTRIBUTION TO GDFI (CONVENTIONAL ANALYSIS)



Source: Rustomjee 2011

However, the extent to which the MEC has been the recipient of most of the economy's fixed investment since the early 1980s is starkly illustrated in the graph below. Fixed investment in the MEC has grown fourfold since 1984 while investment in non-MEC manufacturing has puttered along an almost flat line.

CONTRIBUTION TO GDFI: MEC ANALYSIS

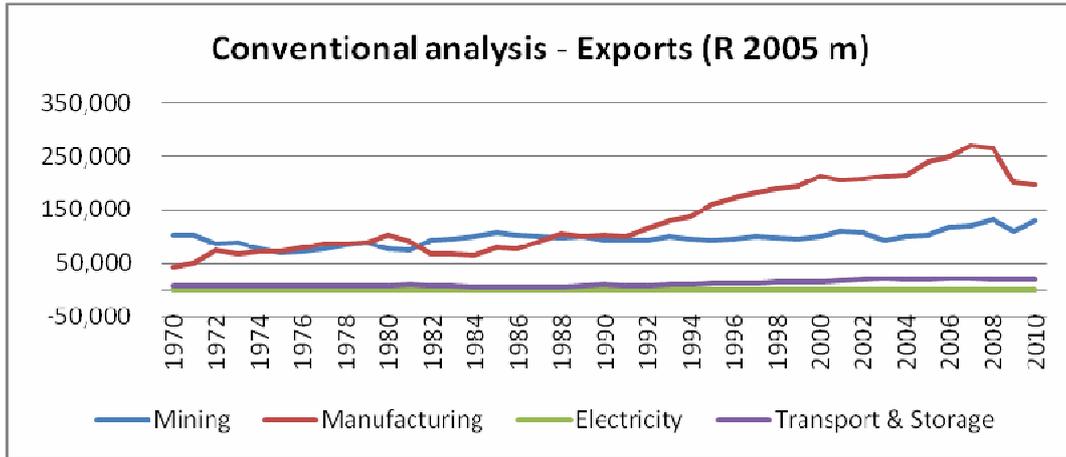


Source: Rustomjee 2011

Trade

Manufactured exports rose steadily from the early 1980s to 2008. After the global financial crisis of 2008, both imports and exports declined sharply with imports rising again in 2010.

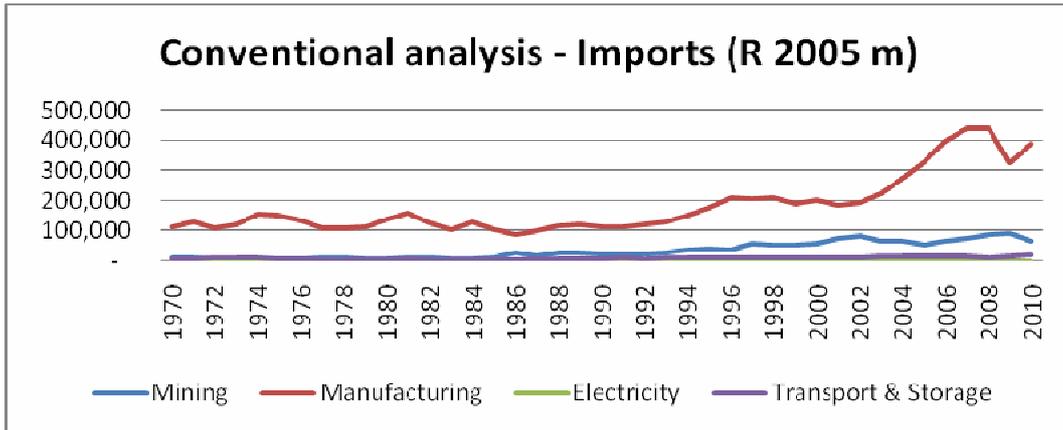
EXPORTS: CONVENTIONAL ANALYSIS



Source: Rustomjee 2011

Imports by manufacturing sectors increased rapidly from 1986 to 1994 and, after stabilising until 2002, rapidly rose until the global crisis in 2008. Imports into mining sectors have increased gradually from 1984, despite the decline in gold mining, due to the increase in other mining (mainly PGMs).

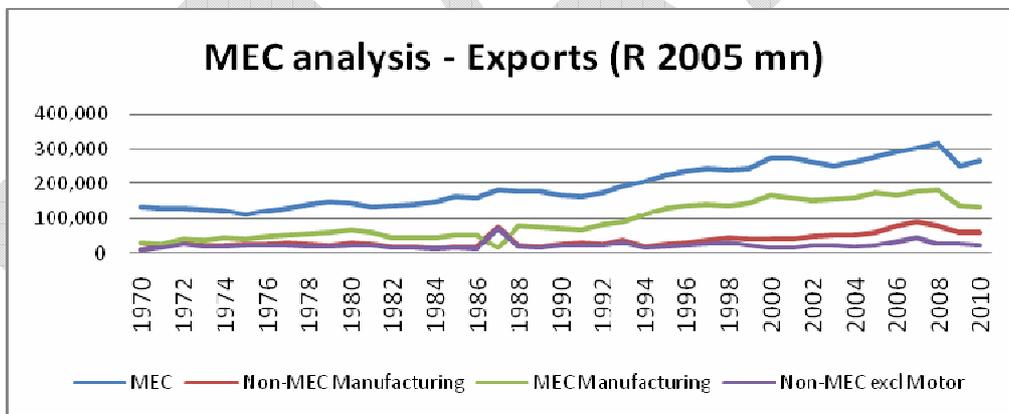
IMPORTS – CONVENTIONAL ANALYSIS



Source: Rustomjee 2011

Using the broad definition, MEC exports dominate South Africa’s outbound trade, at almost three times those of manufacturing (see graph). The MEC is the predominant contributor to national exports, with steady growth between 1974 and 2008. Different global crises in 1998 and 2008 resulted in respective sharp declines in exports immediately after the external shocks. Non-MEC manufacturing exports have been constant between 1972 and 1994, after which exports rose gradually, accelerating after 2004 and peaking in 2007 before the 2008 global crisis (the anomaly in 1987 is probably due to an inconsistent allocation of activity between mining and manufacturing in the dataset).

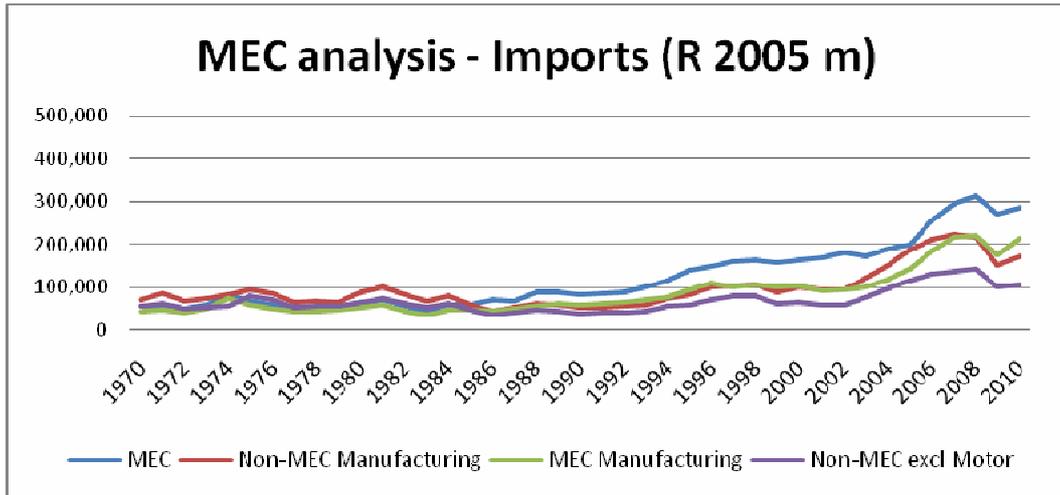
Exports: MEC Analysis



Source: Rustomjee 2011

Imports into MEC sectors have risen continuously since the early 1980s, with imports accelerating after 2004 and then declining after 2008.

IMPORTS: MEC ANALYSIS



Source: Rustomjee 2011

With regard to trade, disaggregating MEC imports and exports is revealing. The following table shows the relative proportion of MEC trade between 2000 and 2010.

DISAGGREGATED MEC TRADE SHIFTS 2000-2010

Sector	Imports	Imports	Exports	Exports
	2000 R(2005)m	2010 R(2005)m	2000 R(2005)m	2010 R(2005)m
Gold	0	0	41 364	19 441
Coal	615	219	14 034	21 106
Other Mining	58 932	69 761	45 806	89 735
Paper	3 318	5 928	9 044	5 198
Refined products	2 797	26 318	19 671	7 400
Basic Chemicals	17 075	21 092	21 890	20 461
Other Chemicals	15 291	29 589	5 685	5 463
Rubber	2 266	5 807	1 934	1 271
Plastic Products	2 779	6 403	1 346	1 576
Glass	829	1 390	680	586
Non-metallic minerals	3 176	5 077	1 876	1 114
Basic Iron & Steel	3 273	7 556	34 352	40 103
Non-ferrous Metals	7 730	5 540	14 742	9 111
Fabricated Metal Products	4 493	10 155	6 946	5 213
Sub-total MEC Manufacturing	63 026	124 855	118 167	97 497
Electricity	612	780	515	555
Transport & Storage	13 007	20 783	15 567	18 907
Total MEC	136 191	216 398	235 452	247 241
MEC manufacturing as % total manufacturing	31%	32%	56%	50%
Motor and components	36 199	68 375	24 047	32 620
Total Manufacturing	203 449	388 180	212 773	194 851
Non-MEC manufacturing	100 217	174 116	44 079	61 183
motor as % of total manufacturing	18%	18%	11%	17%
Motor as % of total Non-MEC manufacturing	36%	39%	55%	53%

Source: Rustomjee 2011

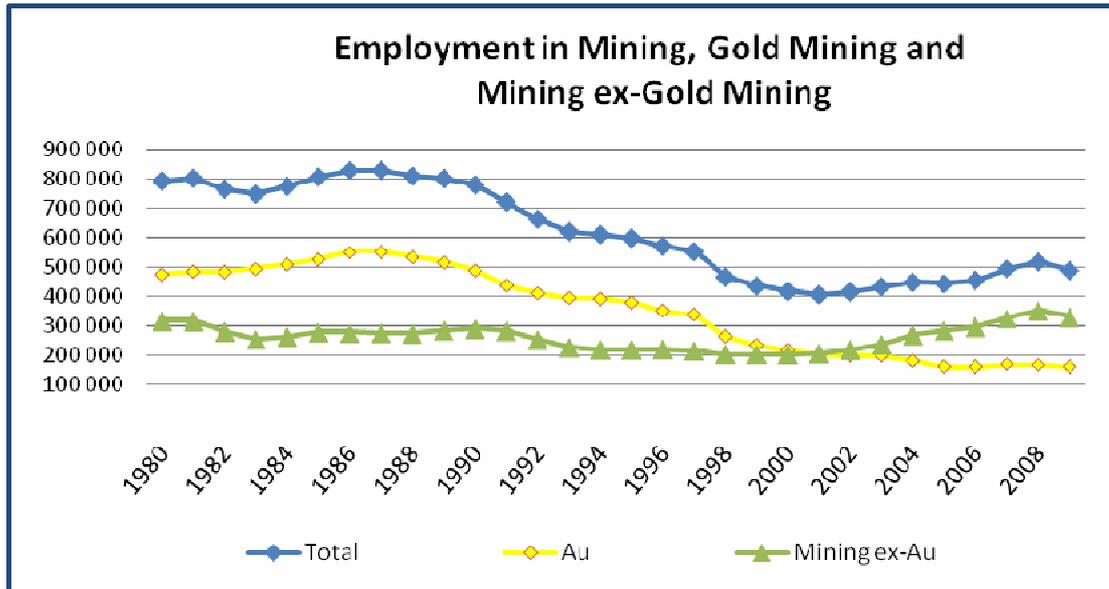
The growth in platinum group metal exports (the main component of "Other Mining") is clearly shown, with a decline in gold exports in the same period between 2000 and 2010.

The bulk of manufacturing MEC imports centre around the fuels and chemicals sectors. The motor and component industry is the largest component of the non-MEC manufacturing sectors accounting for 39% of imports and 53% of exports in 2010.

Employment

Employment in mining has fallen from over 800 thousand in the mid eighties to just over 400 thousand by 2001. Since then it has been increasing, due to voracious Asian demand for minerals, and currently sits at around half a million. The decline in gold mining is predominantly caused by resource depletion (finite resources), but if gold mining is stripped out, employment in mining ex-gold increased by 75% from 2000 to 2007 (from 201 to 352 thousand). It declined in 2009 due to the global crisis, but recovered in 2010.

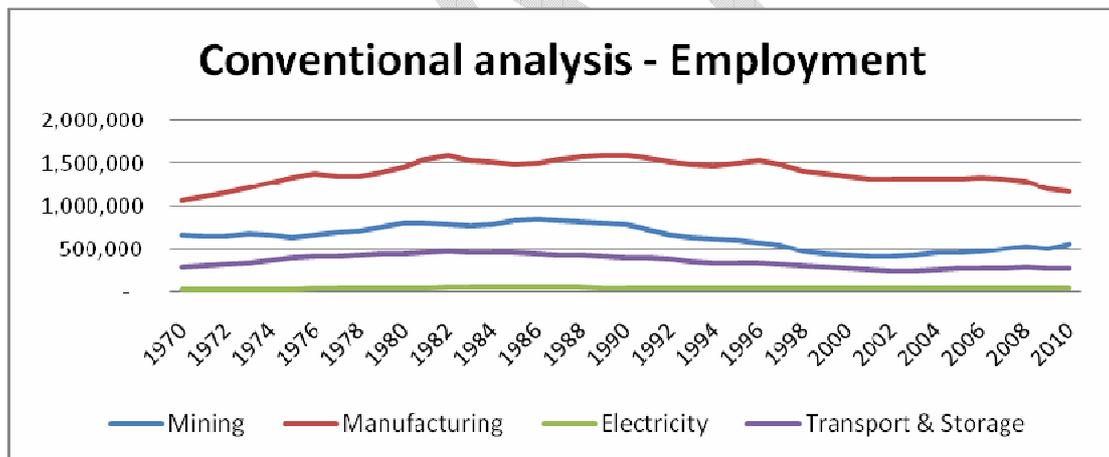
Employment in Mining, Gold Mining & Mining ex-Gold MINING



Source CoM 2011

Using conventional analysis, employment in manufacturing grew strongly between 1970 and 1980, stagnated until 1990 and then began a general decline to 2010.

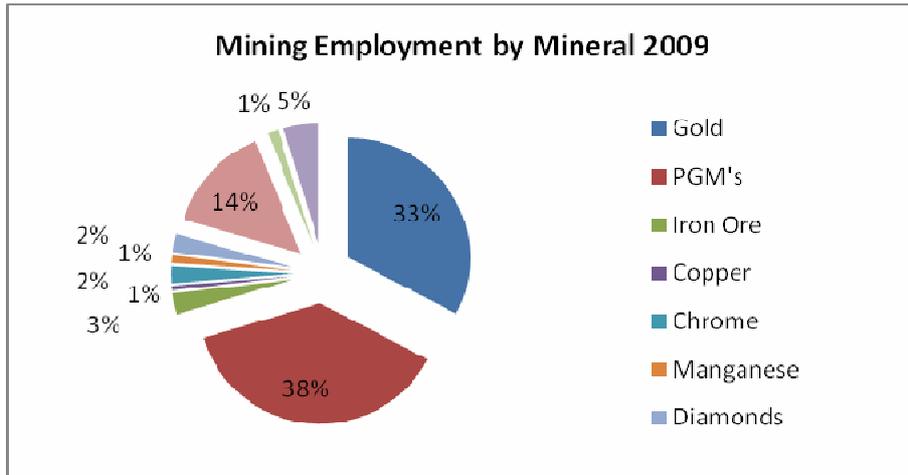
EMPLOYMENT – CONVENTIONAL ANALYSIS



Source: Rustomjee 2011

Within mining, platinum group minerals (PGMs) employ the largest number of people, followed by gold, coal, “other minerals”, iron ore and diamonds.

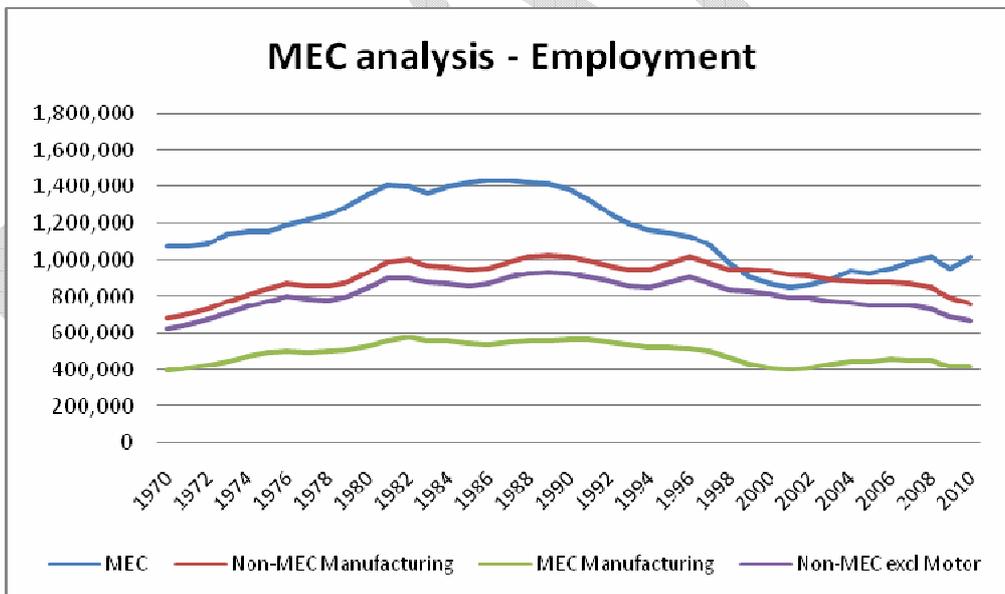
Employment distribution within mining sector



Source CoM 2011

Using the MEC definition, collectively the MEC sectors are the largest sector, generally employing more people than the non-MEC manufacturing sector, with the largest contributor being the mining sub-sector. From 1970 to 1987 the MEC grew 36% from just over one million to almost 1.5 million, before falling back to less than a million by 2001 (less than non-MEC manufacturing). Due to the Asian Boom, it then grew by 16% to just over a million by 2010 (roughly equal to 40 years earlier).

EMPLOYMENT – MEC ANALYSIS



Source: Rustomjee 2011

Several commentators' see the MEC as posing an obstacle to the establishment of a Democratic Developmental State. Ha-joon Chang argues that South Africa has "...energy-minerals conglomerates, with unusually globalised links and capabilities for firms from a developing country. This reduces the range of things that the state can do without facing

major opposition from the capitalists...”²⁸. Nevertheless Chang also points out that “South Africa has a uniquely strong mass party base. This means that the South African state can implement its policy much more thoroughly, if it has the political will”²⁹. The ANC’s 2007 Polokwane Conference has given government the political mandate to establish a Democratic Developmental State that optimises the developmental impact of its mineral resource endowments. However it remains to be seen whether the juxtaposition of national and international forces will permit that mandate to be realised. The MEC conglomerates and their international allies (particularly the Bretton Woods institutions) appear to have prevailed in subverting the first developmentalist agenda (the RDP), but will they prevail again over the new DEMOCRATIC DEVELOPMENTAL STATE agenda? The counter-agenda has arguably been weakened since 1994 by:

1. the exit of the main conglomerates (their control of the economy has been dramatically reduced through “unbundling” and a refocus on their core competence of “dirt-digging”);
2. the widespread discrediting of the “free market” non-interventionist ideology by the recent global US toxic debt crisis;
3. the increasing success and importance of China and other Asian economies in the global balance of power and economic strategies (the “Beijing Consensus” v/s the “Washington Consensus”).

Consequently, the time may be opportune for establishing a developmental state trajectory where South Africa’s mineral assets are maximised and the MEC once again becomes a major employment creator through the optimisation of the mineral economic linkages opportunities.

“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. Whilst the forms of state interventions would differ, the over-riding objective would be to intervene strategically in these sectors to drive the growth, development and transformation of the structure of our economy.”³⁰

²⁸ Chang, Ha-Joon, “How to do a Developmental State” p88, in Edigheji, Omano (Editor); “Constructing a Democratic Developmental State In South Africa”, HSRC Press, 2010.

²⁹ Chang, Ha-joon, op cit, p88

³⁰ ANC 52nd National Conference Economic Transformation Resolution, 1.5

The MEC: Origins, Restructuring and Trends

Gold and uranium³¹

Gold mining restructuring 1948-2010

Following the second world war, gold production was central to economic growth. Large new deposits were developed in the Free State in the 1950s, requiring huge infrastructure investment. This process was not unlike the recent growth of (particularly platinum) mining activity geographically focussed around the bushveld igneous complex but much larger in scale and impact on the national economy.

The cost of the infrastructure was carried by the state, either directly, or by taxation policies which facilitated the large-scale private investment required, made mainly by the Anglo American Corporation (AAC). The state also borrowed heavily from the IBRD (Forerunner to the World Bank) to finance the infrastructure to support the Free State Goldfields.

In the 1950s, ownership of gold mining was dominated by English-speaking capitalists, with strong linkages to British and European financial capitalist interests. The interests of emerging Afrikaans-speaking capitalist interests began to be reflected in the increasingly strained relationship between the state and the Anglo American Corporation. This manifested itself in a number of areas including through the promulgation of the Regulation of Monopolistic Competition Act of 1955.

Table 1: Dominant mining and industrial groups, 1960-1970

	Market	Ultimate controller
Anglo American Corporation	87.3	AAC
JCI	15.1	AAC
Rand Mines	12.7	AAC
Central Mining	15.5	AAC
General Mining	15.3	Sanlam
Union Corporation (1)	32.8	Sanlam/Rembrandt
Anglovaal	5.7	Hersov/Menel
Goldfields	33.7	Goldfields

Source: Innes (1984, p. 165). (1) General Mining took control in 1975.

The Sharpeville massacre in 1961 led to some foreign investors withdrawing from South Africa. This provided opportunities for English and Afrikaans capital to increase their involvement in mining. Federale Mybou targeted JCI but was blocked by AAC, as JCI had significant holdings in diamonds (De Beers), platinum and copper. AAC subsequently acquired JCI.

By the early 1960s also, the class differences that were represented by the National Party were emerging openly. Pressure from those segments that had been less empowered during

³¹ DMR (2010a), Operating gold mines and recovery plants in the Republic of South Africa, 2010; Directory D3/2010, Department of Mineral Resources

the 1950s, together with pressure from AAC's Afrikaans corporate rivals, led to the state instituting a Commission of Enquiry into the affairs of the Anglo American Corporation in 1964.

The pressure on AAC, coupled with its own internal strategy led it to sell General Mining, one of its less profitable gold mining companies, to Sanlam's Fedvolks in 1964. This was Afrikaans capital's first entry into gold mining.

In subsequent years, gold mining continued to be a core part of economic activity in South Africa and was dominated by domestic capital, in particular AAC, but with increasing involvement by Afrikaans firms. One significant exception was Goldfields, which was owned by a London-based company that was subject to a takeover bid by AAC's Luxembourg-based Minorco in 1989. Hanson PLC ultimately acquired the London parent, Consolidated Goldfields, and then sold its South African subsidiary to South African financial institutions, including the Rembrandt group.

Up until the late 1980s, gold mining remained an important component of the operations of the domestically-rooted conglomerates. However, significant diversification away from gold took place over this period.

Evolution of conglomerate structure

By the late 1980s, the interpenetration of ownership between the six large axes of capital in South Africa had become quite extensive

Table 2: RSA mineral production, 1988 market concentration of the six major mining houses (%)

	Anglo American (3)	Rand Mines (SA Mutual)	Gencor (Sanlam)	JCI (Anglo)	Anglo-Vaal (Hersov/Menell Family)	GFSa (Rembrandt-Rupert Family)	Total %
GOLD(1)	39	8	14	6	6	18	91
COAL(2)	23	20	21	3	-	4	71
DIAMONDS	100	-	-	-	-	-	100
FERRO-CHROME	-	27	42	13	8	-	90
PLATINUM	49	1	39	2	-	-	91
VANADIUM	77	-	-	-	-	-	77
COPPER	69	-	-	-	29	2	100
IRON ORE (4)	?	-	-	-	?	-	30
CHROMITE ORE	3	30	42	-	9	-	84
ANTIMONY	-	-	-	100	-	-	100

Source: Fine and Rustomjee (1996). (1) 1989 statistics used for market share. (2) 1984 statistics used for market share. (3) Ultimate controlling shareholder in brackets. Source: McGregor (1990). (4) Information is not available. Iscor is the largest consumer of iron ore, owning most of its mines. Since privatisation, no clear ownership control of Iscor has emerged, but AAC, SA Mutual and the IDC hold significant stakes.

Table 3: South African mining house cross-holdings, 1988

% OWNED BY PARENT/CONTROLLING INTEREST							
Ultimate controlling interest	Parent	Anglo American	Rand Mines	Gencor	JCI	Anglo-Vaal	GFSa

AAC	AAC	----	5.5	50.0	21.8
SA MUTUAL	BARLOW RAND	----	10.3	10.3	<10.0
SANLAM	GENCOR	----		26.7	
AAC	JCI			----	
HERSOV/MENEL FAMILY	ANGLOVAAL			2.3	----
REMBRANDT	GFSA				----

Source: McGregor (1990). (----) denotes a controlling interest.

The 1980s, then, witnessed the emergence of five interpenetrated 'axes' of capital straddling the mining, manufacturing and financial sectors. Their origins differed ethnically and sectorally. AAC had moved from gold and diamond mining into domestic manufacturing, domestic finance and regional and international mining. Sanlam had used its pooled Afrikaner financial resources to break into mining and manufacturing. Rembrandt had grown domestically and internationally retaining a focus on cigarettes, tobacco and liquor production, but also diversifying its investment portfolio. Anglovaal, the smallest group had retained a historical base in manufacturing while Liberty/Standard bank had remained in the financial sphere. Thomas Barlow had developed its manufacturing interests, diversified into mining through acquisition of Rand Mines in 1971, and had retained the financial backing of SA Mutual, mainly to prevent itself from being taken over by other conglomerates.

State policies generally facilitated gold mining, taking account of the high input costs and the increasingly marginal nature of some gold mines through the specific tax regime that prevailed for gold as well as through the provision of low cost electricity and the subsidising of pumping costs for deep level mines. In the early 1990s, gold production in South Africa was dominated by four firms, each of which was part of one of the large conglomerate corporations which dominated the RSA economy:

- JCI (Anglo American)
- Genmin (Gencor/Rembrandt)
- GFSA (Rembrandt/Anglo American)
- Randgold (Barlow Rand)

In the early 1990s, the gold price fell and put great stress on marginal mines. This happened again in the mid-1990s and was coupled with rising cost pressures and declining grades. The response of the dominant gold miners was to consolidate around the more sustainable gold mining assets and to close or dispose of marginal assets. This process is traced below, largely in terms of the ownership changes that have occurred.

Anglo American unbundling and reversing offshore

In the early 1990s, as the momentum behind a peaceful political transition gathered momentum, the owners of mines faced a likely possibility of a loss of profits through either greater taxes or nationalisation. Their response was predictable and relatively easy, since a number of firms already had internationalised their assets during apartheid and held offshore assets under offshore subsidiaries. Anglo American Corporation of South Africa (AAC) had long established Luxembourg-based Minorco and had been expanding its non-South African operations during the 1980s. In 1990, it bought the Freeport-McMoRan Gold

Company in the USA and the Hudson Bay Mining & Smelting company in 1991. In 1993, Anglo American placed all its offshore assets out of reach of a looming democratically elected government in South Africa by selling the South American, European, and Australian operations of both Anglo American and De Beers to Minorco in exchange for \$1.4 billion of Minorco stock.

In 1994, Anglo sold its African Life insurance company to a group of black capitalists.

In 1998, AAC bought out other shareholders, owning 57% of Minorco (including De Beers' 23%) at a cost of \$2.3 billion. At the same time, it unwound a number of the complex cross-holdings that bound the various firms in the Anglo stable together and it bought out minorities in Amcoal and AMIC and delisted these companies from the JSE. De Beers ended up owning only diamond assets.

It then effectively reversed itself into Minorco and listed the combined entity on the LSE as Anglo American plc. At the time, Anglo American was one of the world's largest mineral resource companies, with assets in gold, platinum, diamonds, coal, base and ferrous metals, industrial minerals and forest products. Before the closing of the public offer, Minorco divested itself of its gold interests and interests in Engelhard Corporation and Terra Industries. Based on the closing share price of AAC on October 14, 1998, and reflecting the terms of the share offer for Minorco, Anglo American had a market capitalization of nearly £6.1 billion, enough to be included in the FTSE 100 index. The company commenced trading shares on the London Stock Exchange in May 1999, with secondary listings on the Johannesburg Stock Exchange and Swiss Exchange SWX.

Over the next few years, Anglo expanded its mining assets but also sold \$840m of non-core industrial interests in 2000 and exchanged its non-core holding in FirstRand in return for various mining assets worth around US\$730 million. In 2001, it acquired Zambia's Konkola copper mines, which at the time was responsible for about 66% of total Zambian output.

The cross-holding with De Beers was eliminated in 2001 through the reorganisation of De Beers ownership wherein the assets of Debswana, the joint venture between De Beers and the Government of Botswana, were injected into the parent group in exchange for Debswana acquiring a 15% share of the parent De Beers Investments.³² Anglo American ended up owning 45% of De Beers.

Between 2001 and 2002, global base metal prices fell to 30 year lows resulting in Anglo American impairing and closing its Konkola copper mine.

Anglo American's restructuring of its main South African mineral assets is outlined in the following sections.

Anglogold

In May 1995, AAC unbundled its holdings in listed JCI into three companies. JCI Limited held coal, ferrochrome, gold, and base metals. Anglo American Platinum Corporation Limited

³² Competition Tribunal (2001), DB Investments SA v De Beers Consolidated Mines Ltd, Case Number: 20/LM/Mar01, Date of Judgment: 18 MAY 2001

(Amplats) housed platinum mining and processing and Johnnies Industrial Corp. (Johnnic) housed the non-mining industrial holdings. JCI and Johnnic were sold to black capitalists (see the section on JCI below).

At around the same time, Anglo American consolidated its own wholly owned mines under its gold division. The division was listed 1996 as AngloGold Ltd, thus creating the world's largest gold company with an annual production of 186 tons of gold. AngloGold's next step was to dispose of certain marginal operations as per the table below:

Table 4: Anglo American gold division – disposals or marginal mines 1997-1999

Description of asset sold	Purchaser	Effective date of sale	Consideration
Vaal Reefs Nos. 1, 3, 4, 5, 6 and 7 shafts, exclusive of all major equipment and winders	African Rainbow Minerals & Exploration (Proprietary) Limited	27.1.98	R38 million
Freddies Nos. 7, 8 and 9 shafts	Kadas Barnea CC	2.3.98	R26 million
President Steyn Nos. 1, 1A ventilation and 2 shafts, and President Steyn gold plant	Kadas Barnea CC	3.4.98	R114 million
President Steyn Nos. 5, 6, 7 and 8 shafts	Harmony Gold Mining Company Limited	1.5.98	R85 million
Western Holdings Nos. 1, 2, 3, 4, 6 and 7 shafts and the previously closed Welkom gold plant	African Rainbow Minerals & Exploration (Proprietary) Limited	31.7.98	R28 million
Masimong Mine (Freegold 3) and the Free State 3 (Saaiplaas) gold plant	Harmony Gold Mining Company Limited	21.9.98	R110 million

Source: AngloGold annual reports

In 1997 JCI, under new black ownership, encountered difficulties and sold the Western Areas and H.J. Joel mines to AngloGold. The transaction in 1998 with African Rainbow Minerals (ARM) was therefore the second transfer of gold mining assets to black capital, the first having been Anglo American's sale of JCI to Capital Alliance Holdings (see below).

As part of its global restructuring, Anglo American vended the in North and South American gold assets held by Luxembourg-based Minorco into AngloGold in 1998.^{33 34}

In December 2000, AngloGold sold its Elandsrand and Deelkraal mines to Harmony Gold. On April 11, 2002 AngloGold announced the sale of its Free State assets to African Rainbow Minerals Gold (ARM gold)

Apart from rationalising its South African operations, from 1998 onwards, AngloGold expanded globally through the acquisition, development and disposal of firms in a number of countries. In 2004 it absorbed the assets of the Ashanti Goldfield Company, becoming AngloGold Ashanti. In 2006, Anglo American PLC reduced its holding in AngloGold Ashanti from 52% to 16.6% and finally sold the balance of its holding to Paulson & Co. in 2009, bringing its historic involvement in the South African gold sector to a close.³⁵

³³ <http://secure.financialmail.co.za/98/1211/invest/pet.htm>

³⁴ <http://www.anglogoldashanti.co.za/NR/rdonlyres/91B74CA5-8170-4C66-B5A0-0B43D9C05C81/0/AngloGoldAshantiCompanyHistory.pdf>

³⁵ www.anglogold.co.za/subwebs/informationforinvestors/reports07/AnnualReport07/overview/letter.htm

Also in 2006, to fulfil its Mining Charter and MPRDA obligations, AngloGold Ashanti sold about 2% of its shareholding to a consortium of employees and black-owned Izingwe.³⁶ It was reported that AngloGold Ashanti received credits to the extent of about 20.8% of its required 26% MPRD and mining charter target.³⁷

By 2010, only 39% of AngloGold Ashanti's gold production was sourced from South Africa.

Table 5: AngloGold Ashanti - changes in global production sources 2004-2010

AngloGold Ashanti geographic production	2010 gold production	2004 gold production
South Africa	39%	51%
Continental Africa	33%	27%
Americas	19%	15%
Australasia	9%	7%

Source: AngloGold Ashanti annual reports, (2010:p.36) (2004:p.22)

Although headquartered in Johannesburg, by 2010, more than 50% of stock was held by foreign institutions, as reflected in the following table:

Table 6: AngloGold Ashanti – Extent of non-South African ownership, 2010

1. Paulson & Co. Inc	10.76
2. Allan Gray Unit Trust Management Limited	8.31
3 Fidelity Management & Research	7.45
4. Public Investment Corp. of South Africa	4.09
5. NWQ Investment Management Co. LLC	3.32
6. Tradewinds Global Investors LLC	3.07
7. Government of Ghana	2.95
8. Van Eck Global	2.93
9. Wellington Management Co. LLP	2.76
10. Blackrock Investment Management (UK) Limited	2.58
11. First State Investments International (UK) Limited	2.45
12. Vanguard Group Inc	2.11
13. Blackrock Fund Advisors	2.1
14. Franklin Advisers Inc	1.83
15. Investec Asset Management (Pty) Limited (South Africa)	1.78
16. Comgest SA	1.77
17. Government of Singapore Investment Corp. Pte Limited	1.59
18. Old Mutual Investment Group South Africa (Pty) Limited	1.44
19. Capital International Research & Management	1.19
20. Northern Cross LLC	1.17

Source: AngloGold Ashanti Annual report (2010:p.81)

Even though Anglo American had significantly diversified its operations away from South Africa by 2009, in that year it sold its remaining 11.3% shareholding in AngloGold Ashanti to Paulson & Co as part of its strategy to dispose of its non-core holdings. This ended an era. Whereas in 1990, gold mining was controlled by RSA-owned conglomerates, this has completely changed by 2011.

³⁶ <http://www.miningmx.com/empowerment/234181.htm>

³⁷ <http://www.miningmx.com/empowerment/233024.htm>

Harmony

Harmony Gold Mining Company was originally owned by Barlow Rand and was bundled with Barlow's mining assets under the Rand Gold and Exploration Co. (Randgold) when Barlow Rand unbundled in 1993. In 1994, a sludge dam burst in Merriespruit and killed 17 people. Following this, a consortium of British banks took control of Randgold and hired a new management team, including Peter Flack as chairman of Randgold and Bernard Swanepoel as managing director of Harmony.

Harmony became an independent company in September 1997 when Randgold separated four mature mines and placed them under two independent companies, Durban Roodepoort Deep and Harmony Gold Mining Company. To Harmony's operations Randgold added East Rand Properties, which included the Grootvlei and Consolidated Modderfontein mines, and Saaiplaas No. 3 shaft near the Harmony mine, the last purchased by Randgold in early 1997.

Harmony mining began expanding in 1997 when it acquired AngloGold's President Steyn and Masimong mines. It promptly disposed of its own marginal mines of Cons Modder and Grootvlei in 1998 to Petra Mining³⁸ and followed this with the purchase of Elandsrand and Deelkraal mines in 2000 from AngloGold and Randfontein Estates in the same year. In its 2000 Annual Report, Harmony noted that between 1995 and 2000, the South African gold industry had consolidated from 37 mining companies to just 6 companies.³⁹

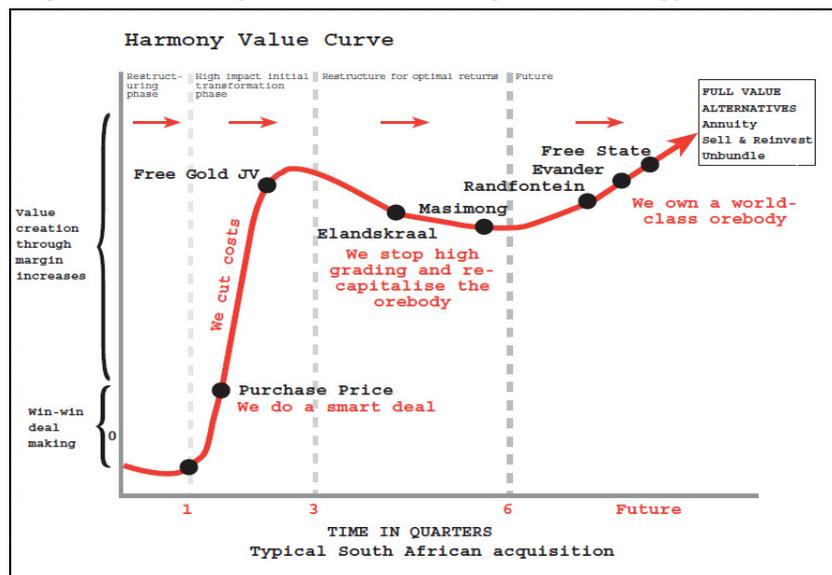
Between 1996 and 2002, Harmony completed 23 acquisitions, raising production from 560 000 ounces to 3.1 million ounces and its reserve base from 8 million ounces in 1995 to an estimated 49 million ounces. By June 2002, Harmony had catapulted to becoming the fifth largest gold producer in the world.

In 2002, Harmony entered into a joint venture with ARM gold to purchase AngloGold's Free State goldfields. This was followed by the purchase into the JV of Goldfield's St. Helena mine. In the same year, Harmony purchased several assets outside South Africa.

³⁸ <http://secure.financialmail.co.za/98/1009/invest/harmony.htm>;
secure.financialmail.co.za/98/1211/invest/pet.htm

³⁹ Harmony Gold (2000), Annual Report

Figure 1: Harmony Gold's 1997 - 2002 growth strategy illustration



Source: Harmony Gold (2002), Annual Report

The Harmony model appears to have been very successful, with the company pioneering a range of methods including continuous mining facilitated by agreement with the National Union of Mineworkers.

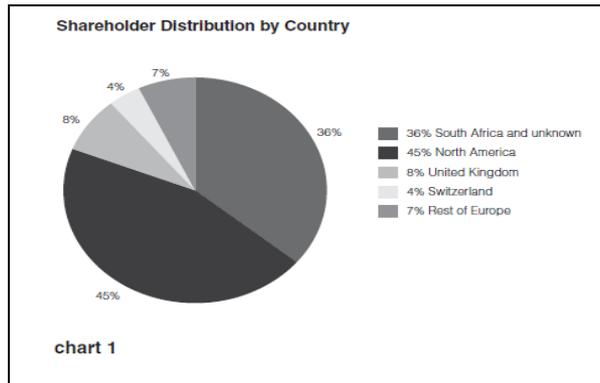
To fulfil its obligations under the MPRDA,⁴⁰ Harmony sold a 6.4% share at holding company level to black-owned Simane Security Investments. This was funded by the IDC. In addition, black-owned Khuma Bathong⁴¹ acquired a 10% participation in Elandskraal for R100m when it was purchased in 2001 from AngloGold. It was funded by Harmony with the turnaround profits being allocated to repayment. However, the rapid success in the turnaround allowed Harmony to repurchase the stake for R210m less than a year later and Khuma Bathong exited the business. The 2002 JV with black-owned ARMgold involving the acquisition of AngloGold's Free State assets (Free Gold) at a total cost of R2.832 billion also contributed to Harmony's MPRDA scorecard.

By 2003, Harmony had a very diverse shareholder base with South African shareholders constituting only 36%.

⁴⁰ Harmony Gold (2002), Annual Report

⁴¹ 40% of Khuma Bathong shareholders were community trusts

Figure 2: Harmony Gold – Extent of non-South African ownership, 2003

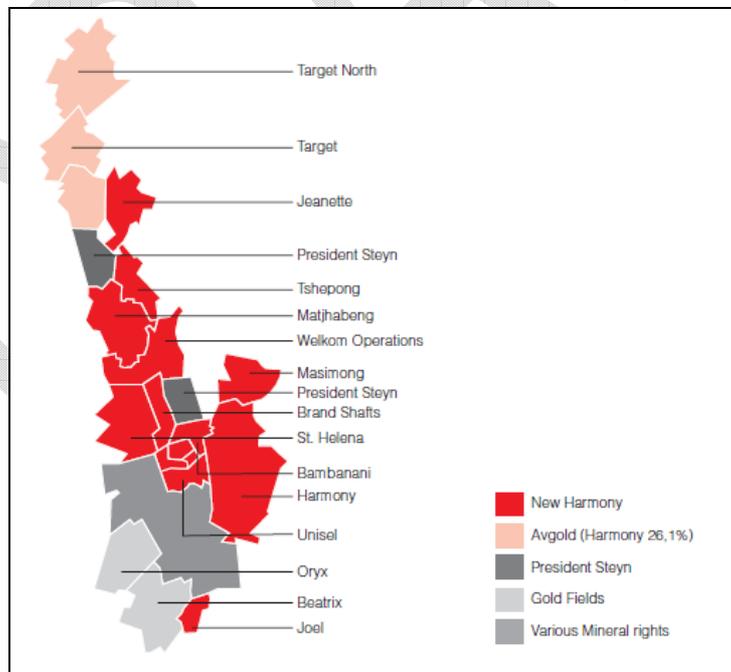


Source: Harmony Gold (2003), Annual Report

In 2003, ARM Gold was vended into Harmony Gold by African Rainbow Minerals and Exploration

Investments (Pty) Ltd (ARMI), represented by Patrice Motsepe. In exchange ARMI acquired a 14% share in Harmony Gold, becoming its largest shareholder with Motsepe taking the Chair. In a further complex transaction, the origins of which will be traced elsewhere in this paper, Harmony Gold used its balance sheet to assist ARM gold and Harmony to jointly acquire Anglo American PLC’s 34.9% stake in Avmin in May 2003.⁴² Avmin’s gold assets were then combined with Harmony Gold. The logic of the transaction is apparent when one considers the contiguous nature of the mineral assets as depicted in the following figure.

Figure 3: Harmony Gold – Free State mine rationalisation map

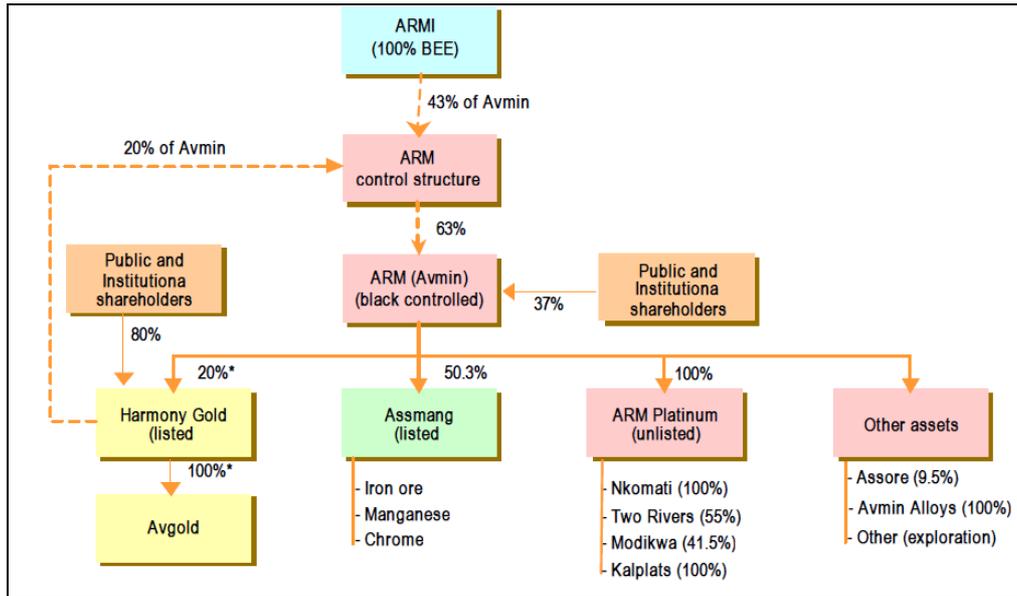


Source: Harmony Gold (2003), Annual Report

The assets in Avmin and holding company of ARM were then reorganised to achieve the following structure.

⁴² <http://angloamerican.com/media/releases/2003pr/2003-05-02>

Figure 4: ARM: 2002 corporate structure – post Avmin acquisition



Source: ARM annual report

At this point in time, Harmony represented about 50% of ARM’s balance sheet value.⁴³

Through this transaction, Harmony expanded its asset base with Avgold’s gold mining assets. This transaction raised the black ownership of the world’s sixth largest gold producer from 14% to 20%.⁴⁴

In May 2005, Harmony sold its 20% stake in ARM to a broad-based black consortium for R1.03 billion. According to market perception the sale was done at a price that reflected a notional loss of R550m. Harmony argued that the sale was a strategic decision and that the cash realised would be utilised to fund new projects.⁴⁵ At the time, the DMR (who had approved the conversion of two of Harmony’s mining right applications) was reported to have been critical of the extent to which ARM ownership was concentrated in the hands of the Motsepe family and that the DMR had approved Harmony’s mineral rights conversion on the condition that its ARM stake would not be sold back to the Motsepe family but that it would be allocated to a broad-based black-owned shareholding group.⁴⁶

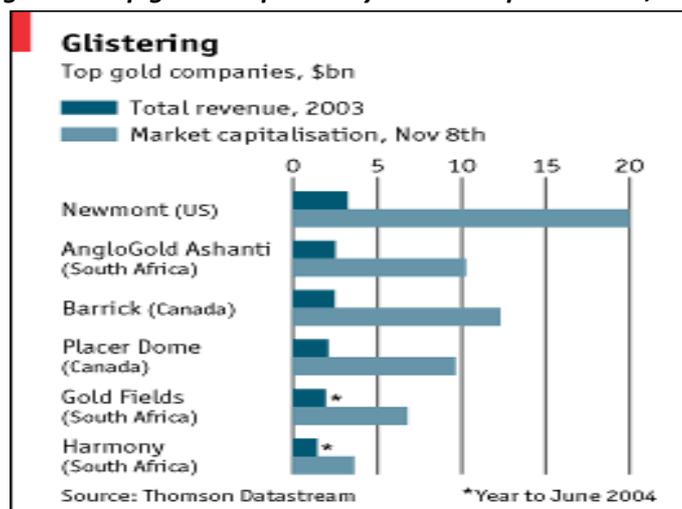
Between October 2004 and May 2005, Harmony prosecuted a hostile takeover bid for its slightly larger rival Gold Fields. Goldfields had itself made a bid for the lamgold firm at the time.

⁴³ http://www.miningmx.com/news/gold_and_silver/454289.htm

⁴⁴ <http://www.miningweekly.com/article/x2018r10bn-x2018triplewinx2019-deal-to-lead-to-new-bee-giant-2003-11-14>

⁴⁵ http://www.miningmx.com/news/gold_and_silver/435661.htm

⁴⁶ http://www.miningmx.com/news/gold_and_silver/456355.htm

Figure 5: Top gold companies by market capitalisation, 2003

Source: Economist 11 November 2004; <http://www.economist.com/node/3389335>

Gold Fields vigorously opposed Harmony in a costly legal battle which was ultimately successful.^{47,48} Following this, between 2005 and 2007, Harmony consolidated its assets, tried to contain costs and embarked on investment-led growth. As part of rationalisation, it shut its ageing gold refinery and contracted out to Rand Refinery,⁴⁹ and sold some of its less profitable mines to Pamodzi Gold which listed on the JSE in 2006 as the only black-owned and controlled listed gold company.

Pamodzi Gold was a wholly-owned subsidiary of the Pamodzi Group which, in 2007, diversified into resources. Pamodzi represented black business interests which had effected a leveraged buyout of one of South Africa's largest food processors, Foodcorp in 1997. Reports indicate that the losses suffered in their foray into gold represented only 4% of the Pamodzi Group's assets.

Two of the other liquidated Pamodzi Gold mines, the Grootvlei and Orkney mines, were purchased by Aurora Empowerment Systems. It appears that Aurora then proceeded to asset strip the mines amid great controversy until the liquidator was removed and the Aurora transaction reversed. The controversy still rages with continuing litigation around the removal of previous liquidators and a recent announcement that a Chinese company had bought the Orkney mine.⁵⁰

The 2008 global financial crisis placed great stress on Pamodzi Gold and the company was liquidated in 2009. Harmony repurchased Pamodzi liquidated Gold's Free State assets in 2010. In the same year, it closed the Virginia operation's Harmony 2, Merriespruit 1 and Merriespruit 3 shafts which had reached the end of their lives.

⁴⁷ <http://www.thelawyer.com/gold-fields-and-harmony-fork-out-millions-in-takeover-battle/115655.article>

⁴⁸ <http://news.bbc.co.uk/2/hi/business/4567379.stm>

⁴⁹ http://www.miningmx.com/news/gold_and_silver/434430.htm

⁵⁰ <http://www.miningweekly.com/article/chinese-buy-liquidated-orkney-gold-mine-for-r150m-plan-r525m-capital-injection-high-court-aurora-enquiry-2011-08-12>

In a separate transaction with another arm of Pamodzi Group, Harmony vended 60% of its Randfontein Estates Cooke Shafts and associated uranium assets to Pamodzi Resources Fund I (PRF) to create Rand Uranium, a dedicated uranium producer, which is planned to begin production of 2m pounds per annum of uranium from the tailings dump in early 2012.⁵¹

Harmony received all of its new order mining rights in 2008. Since then, gold production has declined to about 1.4m ounces per annum, a reflection of Harmony's declining RSA reserve grades and the closure of some operations. In partial response, Harmony has been developing a significant project in Papua New Guinea together with Newcrest Gold.

As at 2010, some 45% of Harmony was held by South Africans with 34% being held between ARM (14.6%), Alan Grey (12.9%) and PIC (6.4%) institutions.

Gold Fields of South Africa (GFSA)

Gold Fields of South Africa (GFSA) was set up in 1887 as the holding company for the mining properties of Cecil Rhodes and Charles Rudd. By 1932, the company had been renamed Consolidated Gold Fields (Consgold) and it led the field in developing the West Rand together with Anglo American and General Mining and Finance Corporation, using the company West Witwatersrand Areas Ltd. It also operated in Australia, Russia, New Guinea, Trinidad, Venezuela and North America. Gold began to be produced from the West Rand only in 1939.

Diversification out of South African deep underground gold mining was a natural tendency given the uncertainties and boom-bust tendencies of the industry. Gold Fields did this as early as the 1920s, relying on three mines, Simmer and Jack, Robinson Deep and Sub-Nigel, to carry other global mining and exploration operations together with the diversification industries.

Gold Fields created Rustenberg Platinum in the 1920s and 1930s through mergers and acquisitions.

A second period of global and sectoral diversification began after the mid-1950s.

In 1959, possibly due to the pressure being exerted by the National Party government and by Afrikaans capital, the UK-based company reorganised its Southern African assets under the Johannesburg-based GFSA holding company, itself a 100% subsidiary of Consolidated Gold Fields London. The 'separation' also proved convenient for the GFSA London-based parent during the post-Sharpeville period which ultimately led to sanctions on South Africa.

In 1971, West Witwatersrand Areas Ltd West Wits took a 52% controlling interest in Gold Fields of South Africa's assets, reducing Consgold's shareholding to 48%.

Unlike other South African corporates during that period, GFSA's did not diversify very much away from mining between 1970 and 1990. It did attempt this through the failed bid for Union Corporation in 1974. At the time, Union Corporation had about half its assets invested in manufacturing industry.

⁵¹ http://www.prf1.com/Rand_Uranium_Factsheet.pdf

By 1990, the company had invested in platinum, zinc, lead, silver, and tungsten which, in 1990 contributed 17% of GFSA income (from 7% of assets) with platinum and gold collectively accounting for 55% of income (with 74% of assets).

In 1989, Minorco and Hanson PLC both tried to take over London-based Consolidated Gold Fields. Hanson PLC won and then sold its 38% stake in the South African asset, GFSA, to a Rembrandt-controlled holding company named Gold Fields of South Africa Holdings, in which Liberty Life held 20%.

In 1997 GFSA merged its gold mines with Gencor to form Gold Fields Ltd (see below). Further unbundling followed which included the sale of GFSA shares in the following underlying companies and the winding up of GFSA:

- **Gold Fields Ltd** - shares unbundled to GFSA shareholders
- **Standard Bank investment Corporation** – shares unbundled to GFSA shareholders
- **Northam Platinum** – shares unbundled to GFSA shareholders
- **Gold Fields Coal** - sold to Amcoal in July 1999
- **Black Mountain and Gamsberg zinc mines** – sold to Anglo American in 1999
- **O'okiep Copper** – sold to Metorex in 1999
- **Zincor** – GFSA 65% share sold to partner Iscor in 1999
- **Commercial Union** – GFSA 22% share sold to Metropolitan Life in 1999
- **Dwarsrivier chrome and platinum mineral rights** – sold to Associated Manganese(Assmang) in 1999

Gencor

General Mining

In 1980, Gencor was formed through the merger between General Mining and Finance Corporation and Union Corporation.

General Mining and Finance Corporation started as a gold company in 1895. Like other gold miners, it diversified, into silver and base metals in the Transvaal (unsuccessful) but its investment in the Phoenix Oil and Transport Company was more successful in the 1920s.

Unlike GFSA, General Mining participated in the Free State Goldfields. It also contributed to developing the Far West Rand goldfields, pioneering cyanide extraction of gold and, through West Rand Cons, was the first mining house to produce uranium. Through taking over Consolidated Rand-Transvaal Mining Group in the 1950s, which owned the Geduld gold mine, the company expanded into platinum (Lydenburg), pipe fabrication, and sugar. In 1964, a merger with Strathmore Consolidated Investments placed the Klerksdorp Stilfontein and Buffelsfontein mines in its stable.

General Mining was taken over by Afrikaans-owned Federale Mynbou with the assistance of Anglo American, partly to alleviate the pressure on Anglo American from emerging Afrikaans capitalists, but also to divert Fedmyn from seeking to take control of JCI, which held diamonds (De Beers), platinum and copper, around that time.

Initially, Federale took a majority stake and Anglo a substantial minority interest. In 1965, Federale and General Mining merged. At the time, it was responsible for a significant portion of national production of uranium, gold and coal, including;

- 34% of national uranium output,
- 7% of gold
- 10% of national coal output, through ownership of 10 collieries
- Investments in asbestos fibre production, platinum, and copper
- oil production, exploration, and marketing, including petroleum company Trek.

In 2000, Anglo American (jointly with Billiton) repeated this process by vending some of their coal mines to Eyesizwe. This transaction catapulted Eyesizwe into producing 9% of national coal output through ownership of 3 collieries.

Union Corporation

Union Corporation was set up in 1897 and operated the Modder Deep Levels mine in the East Rand.

In 1938 it discovered the Orange Free State gold fields and set up the first mine there in 1947, St. Helena. In 1951, the company discovered and developed the Evander gold field building the Bracken, Kinross, Leslie, and Winkelhaak mines.

Impala Platinum was set up in 1969 as an integrated mining and refining operation. The Beisa uranium mine was established in 1978. It also set up titanium sands producer Richards Bay Minerals in the 1970s. Industrial investments included paper company Sappi, set up in 1936-37, packaging company Kohler Brothers, African Coasters (later Unicorn Shipping Lines), Darling and Hodgson and Evelyn Haddon engineering.

By 1980, nearly half of Union Corporation's assets were in manufacturing, as follows:

- 33% - Gold (7 gold mines—Marievale, Bracken, Kinross, St. Helena, Winkelhaak, Leslie, Grootvlei and Unisel)
- 23% - Platinum, uranium, coal and other minerals
- 44% - Industrial investments including, Sappi paper (58%), Kohler Brothers packaging (74%), Darling and Hodgson engineering (55%), Haggie wire ropes (17%), Kanhym livestock/meat (27%), Capital and Counties (U.K. property concern which later became the major investment of First International Trust, the overseas arm of the Liberty Life group)

In 1974, General Mining acquired a 29.9 percent stake in Union Corporation after a battle with Gold Fields of South Africa. It increased its stake 1976, making Union Corporation a subsidiary of General Mining. At the time of the merger, Union Corporation and General Mining were the 4th and 5th largest mining-based companies in South Africa by market capitalisation, with manufacturing investments contributing about 35% of respective company income.

General Mining's objective in the merger was firstly to achieve greater balance sheet scale in order to finance the large investments required at the time for Sappi's Ngodwana mill (Phase

1) and the Beatrix and Beisa uranium mine. Greater diversification of assets was a second objective as gold mining was the only common activity in the respective portfolios. A third objective for the merger, perhaps more from Union Corporation's perspective, was that the latter would be within an Afrikaans capitalist fraction that had closer and more favourable relations with the state. In the early 1980s, the two main shareholders in Gencor were Sanlam and Rembrandt. Merging the two entities was not a very successful process and, after five years of relatively rudderless direction, the company was separated into respective and relatively autonomous mining and manufacturing holding companies in 1986.

Between 1986 and 1990, Gencor expanded through organic growth and acquisitions. It developed the Oryx and Weltevreden gold mines and through Impala, built the Karee platinum mine. It diversified into aluminium smelting, buying a 30.7% controlling interest in Alusaf, the Richards Bay aluminum smelter, from the Industrial Development Corporation for R270 million in 1989. Paper industry acquisitions included Saiccor, which specializes in the productions of chemical cellulose pulp, a 49% share of the Usuthu pulp mill in Swaziland and five UK paper mills in 1994.

By 1989, Gencor's mining assets were organised under General Mining Metals and Minerals Limited (Genmin) and comprised some 60 operations, including 14 gold mines, the base metals group Samancor, the platinum producer Impala, the coal group Trans-Natal, and the minerals division.

The group's energy interests, which included exploration and refining of crude oil and marketing of the final products were consolidated under Engen, with an acquisition of US oil giant Mobil Corporation's crude oil refinery in Durban and its distribution network of 1150 service station sites in July 1989 for \$150m. Gencor also held its Trek network of petroleum outlets, 20 percent interest in the state-owned oil and gas exploration company Soekor, and a 30 percent stake in, as well as the management contract for, Mossgas, a synthetic fuels venture.

Subsequently, in the early 1990s, Gencor divested itself of the listed Engen, Genbel, Malbak, and Sappi entities, thereby unlocking the value as Gencor had been trading at a discount to asset values.

In 1994, Gencor bought the Royal Dutch Shell mining and commodity trading assets which were housed in Netherland's-based Billiton International for £780 million. By 1995, Alusaf began operating the Hillside Aluminum Smelter and plans were approved for a further smelter project in Mozambique.

By 1996, Gencor's main earners were steel and ferroalloys (31.7%) and aluminium (27%). None of its other operations contributed more than 10% each and about 50% of revenues were from outside South Africa.

In 1997, Gencor sold its base metals and non-gold interests, including Alusaf and Richards Bay Minerals to Netherlands-based Billiton and then listed Billiton PLC on the LSE. The remaining gold and platinum divisions were retained within Gencor. In one stroke, South

African assets which had previously been owned and controlled by South African-based capital, became subsidiaries of a London-based corporation.

Gencor – final unbundling

Gencor had to underwrite warranties furnished for 4 years after the 1997 Billiton transaction.

It remained listed until 2002 when Gencor finally unwound its shareholding in Impala Platinum, the world's second largest platinum producer, passing these back to Gencor shareholders.

Gencor's exit from gold mining and the creation of Gold Fields Ltd

In 1995, Randgold (see below for an account of Randgold's evolution) bought some of Gengold's less profitable mines, while Gengold acquired some new mines of its own.

In 1997, the decline in South African gold grades and price translated in to the industry's lowest output since 1956, and Gold Fields of SA (GFSA) – itself a conglomerate - began discussions with Gencor about merging their respective gold assets. This was supported by Rembrandt which was a major shareholder in both GFSA and Gencor and by Anglo American which also owned nearly 25% of GFSA at the time. At the time, Anglo American was also in the process of consolidating its own gold assets under AngloGold.

The outcome was that Gold Fields Ltd emerged as the country's second-largest gold company producing more than 3m ounces of gold per annum and owning Driefontein, Kloof, Beatrix, Oryx, St Helena and Evander mines in South Africa together with GFSA's Tarkwa mine in Ghana. Gold Fields also retained the technical rights to the BIOX gold biological leach process.

From 1998 onwards, the gold price rose above its 18 year low and Gold Fields continued to expand, buying out other shareholders in the St. Helena Gold Mines and acquiring St. Ives and Agnew Gold Mines (2001) and Abosso Goldfields Ltd (2002).

To comply with the mining charter in 2004, Gold Fields sold a 15% beneficial interest to black-owned Mvelaphanda Resources Ltd (Mvela), a listed company. The financing structure was fairly complicated because the value of the Gold Fields shareholding far exceeded the capitalisation of Mvelaphanda Resources itself.⁵² The latter raised debt and issued a very large number of new Mvela shares so as to purchase 50 million shares for R4.1 billion.⁵³ Ironically, in issuing more Mvela shares, its black ownership fell from 50.1% down to 28%. The transaction matured in March 2009 and Mvelaphanda immediately sold 11 million shares in the market in order to reduce its debt. At the end of this process, in 2009, Mvelaphanda held 7% of Gold Fields' shares. Further sales took place up until April 2010, by which time the remaining 3% of Gold Fields shares (22.2 million) were distributed to Mvela shareholders as part of Mvela's unbundling.⁵⁴

⁵² http://www.miningmx.com/news/gold_and_silver/387922.htm

⁵³ http://www.goldfields.co.za/news_article.php?articleID=175

⁵⁴ <http://www.advn.com/nyse/StockNews.asp?stocknews=GFI&article=45079119&headline=mvela-resources-sells-down-remaining-stake-in-gold-fields>

The bulk of Goldfields shareholders are foreign, as the following table shows:

Table 7: Goldfields shareholder global profile, 2009

Beneficial shareholders holding of 3% or more	Number of shares	%
Tradewinds Global Investors LLC	38,822,278	5.51
Arnhold & S.Bleichroeder Advisers LLC	36,184,489	5.13
Public Investment Corporation of South Africa	35,297,817	5.01
BlackRock Investment Management (UK) Limited	31,148,016	4.42
Capital World Investors	27,500,000	3.90
Old Mutual Investment Corporation South Africa (Pty) Limited	22,730,194	3.22
Paulson & Co Inc.	21,923,223	3.11
Mvelaphanda Gold (Pty) Limited	21,506,918	3.05
Total	235,112,935	33.35
Foreign custodian shareholders holding of 3% or more	Number of Shares	%
Bank of New York Unrestricted Depository Receipts	298,196,921	42.31
JP Morgan Chase (Custodian)	41,262,838	5.86
Bank of New York, Brussels (Custodian)	27,338,820	3.88
Strate Street Bank and Trust (Custodian)	50,669,697	7.19

Source: Goldfields (2009), Annual Report

As at 2011, Gold Fields' wholly owned mines include Driefontein, Kloof, and Beatrix. Its international arm overseas includes Ghanaian and Australian mines, along with the Arctic Platinum Partnership in Finland.

Anglovaal unbundling and demise

Anglovaal was established in 1932 by the Menell and Hersov families. It's growth trajectory was very different from that of mining. From the outset, it followed an explicitly diverse investment strategy which was only partly based on extractive mining as a means to achieving a larger manufacturing footprint. By 1935, the company had investments in petroleum refining, cement and bricks and tiles, all based on local raw materials. Anglovaal established the first South African oil refinery in 1934 in Boksburg through its South African Torbanite Mining and Refining Company (Satmar) subsidiary. It processed imported crude and shale oil, retorted at its Ermelo shale mine. Two factors underpinned the plant in the 1930s. First, the natural protection of the inland market through railway freight rates, tariff protection for local manufacture and, during the war years, the irregular imports of crude oil. A large proportion of the inland market was supplied by this plant. It is interesting to note that most of its capital was raised domestically through the stock exchange. Unlike the mining houses, Anglovaal was not dependent on European financial houses and it continued to grow through to the 1990s, emerging as a diversified conglomerate with a strong and historical base in manufacturing.

In 1999, Anglovaal unwound the pyramid structure which allowed the Menell and Hersov families to exert 51% control over the conglomerate, separating its mining and industrial holdings under Avmin and Anglovaal Industries (AVI) respectively. The process was completed in 2001 with the Menell family taking 50.4% control of Avmin and the Hersov family controlling 50.4% of AVI.

Avmin's mining assets in 1999 were:⁵⁵

- A 66% holding in Saturn, the partnership entitled to a 50% share of the pre-tax profits arising from Venetia diamond mine in the Northern Province (and managed by De Beers);
- Ferrous metals in the shape of its 50% stake in Associated Manganese,
- 100% in each of Lavino and Horizon Chrome
- Dwarsfontein chrome mine and reserves purchased in 1998 from Gold Fields of SA;
- Base minerals through its 75% stake in the Nkomati joint venture (for nickel, with Anglo American Corp) and in Anglovaal Zambia;
- Coal through subsidiary Avmin Coal which holds 100% stakes in Forzando and Dorsfontein, and 30% in Eloff Mining
- Industrial minerals - 100% of the equity in Rhino Minerals and 50% in Nyala Minerals
- Gold through Avgold (comprising its wholly-owned subsidiaries ET Cons, Hartebeestfontein, Loraine, Target, Sun and Oribi).

As part of a strategy to focus on diamonds, gold, ferrous metals and base metals, Avmin sold its coal and industrial mineral interests in 1999, together with the marginal Hartebeestfontein gold mine. Its chrome mining operation was sold in 2000.⁵⁶ In 2000, Avmin sold their share in the Venetia diamond mine to JV partner De Beers for R3.7 billion as well as their 20% shareholding in Finsch Diamonds for R20m. In 2000, Avmin and Impala jointly purchased Assmang's share in the Dwaarsrivier platinum project. Also in October 2000, Avmin announced that the Menell family had pooled its shareholding with foreign investors in a single vehicle called Arctic Resources, which held 40.9% of Avmin. The foreign investor was one Benny Steinmetz, an Israeli diamond magnate. This probably represented the historical moment when domestic capital, represented by the Menell family, sold control of Avmin to foreign speculative capital. Both sets of interests then engaged in a collective speculative exercise around Iscor's Northern Cape iron ore assets.

By 2001, Avmin's holdings were focused on:⁵⁷

- Gold and platinum under Avgold: Target and ETC gold mines and the new Two Rivers Platinum (55%) project
- Base metals - nickel through the Nkomati nickel mine (75%)
- Base metals - cobalt/copper through Chambishi Metals plc (Chambishi) (90%)
- Ferrous metals (iron, manganese and chrome ores) through Assmang Limited (Assmang) (50%)
- Iscor Limited (13%)
- Assore Limited (18%) – which holds Assmang shares

The Iscor shareholding had been purchased in 2001, partly to benefit from the value unlock in the planned Iscor unbundling, and also in anticipation that it would put Avmin in a strong

⁵⁵ <http://secure.financialmail.co.za/report/unbundle/unbund7.htm>

⁵⁶ Avmin Annual report 1999

⁵⁷ Avmin Annual report 2001

position to participate in the rationalisation and development of the Northern Cape mining region.

In 2001, Avmin also reported problems in the new smelting technology that they had used in a new smelter at Chambishi to treat slag material from the company-owned dump. Initial commissioning was interrupted by a water leak from the copper coolers necessitating the re-bricking of the furnace refractory lining.

Chambishi seems to have been a major contributor to the company's demise. In 2002, Avmin reported that the Chambishi furnace cooling system and refractory lining was to be renewed. At the same time they reported a partial write-down of R1600m on the Zambian investment. At the time of the writedown, the market capitalisation of Avmin was only around R4 billion and base metal prices were at 30 year lows.

The financial difficulty the company found itself in appears to have led to a systematic asset-stripping exercise in which the main beneficiaries were Benny Steinmetz and Anglo American plc.

According to Avmin's 2002 annual report, the company was forced to sell assets, including its 2001 investment in Iscor, which was first sold to Benny Steinmetz, who subsequently sold this on to Anglo American for R911m. A further R234m was raised through the sale of some Avgold and Assore assets. At the same time, Anglo American plc bought Benny Steinmetz's 34.9% share in Avmin and took control of the company, leveraging this to acquire control of the Sishen iron ore assets. (see the section on iron ore below)

In 2003, Avmin sold the Chambishi mine to a JW company controlled by Benny Steinmetz for \$6.5m. Avgold sold the ET Cons mine for R235m. Finally in 2004, in a complex financial transaction which seemed to have been leveraged by the balance sheet of Harmony Gold, Avmin's assets were merged with those of African Rainbow Minerals (ARM, resulting in all the gold assets being consolidated within Harmony and with Patrice Motsepe's family-controlled ARMI taking control of the renamed Avmin. On inception, the listed entity ARM had a market capitalisation of about R6.9 billion.⁵⁸

JCI Limited

After splitting JCI into three separate companies housing the platinum mining, other mining and industrial holdings, in 1996, Anglo American first sold its shares in the listed industrial holdings company Johnnic to a black-owned consortium led by New Africa Investments Limited (NAIL), headed by Cyril Ramaphosa.⁵⁹

⁵⁸ ARM annual report, 2005

⁵⁹ Johnnic's holdings included South African Breweries (13.7%); Premier (27.8%); Toyota SA Marketing (26.4%); and 43.2 percent of a newspaper and magazine publisher, Omni Media. Little interest had been apparent for the JCI stake, with the *Economist* speculating that black South Africans' business inexperience made running a holding company more attractive than the messy business of mining.

In November 1996 Anglo American, through a competitive bidding process, then sold 34.9% of the listed JCI mining arm to another black-owned consortium, African Mining Group (AMG).⁶⁰ JCI held the following assets:

Gold	- H.J.Joel(57%), Randfontein Estates(31%), Western Areas(35%), Lindum Reefs(84%)
Coal	- Tavistock (100%), United Carbon Products (58%)
Base metals	- Consolidated Murchison (33%) – antimony and gold
Chrome	- Consolidated Metallurgical Industries
Mineral Rights	- 41% of Freddev, 45% of Barnex
Platinum	- Amplats (7%), Johnson Matthey (9%)

AMG was controlled by Mzi Khumalo's Capital Alliance Holdings (CAH), with other members including Thebe, Women Development Bank Investment Holdings and Co-ordinated Network Investments.

AMG turned to listed Saflife to provide financing and Saflife took a stake of 50.3% in CAH and bought 30% of JCI, giving AMG a one-year option to buy the remaining 4.9%. The deal was struck with Anglo at R54.50 a share payable on February 28, 1997. AMG also had preemptive rights for Anglo's remaining 13% in JCI. At the time, CAH was also influenced by NUM's Mineworkers Investment Company, Mineworkers Social Benefit Investment and Sactwu Investments who collectively controlled 63% of CAH.

Between February and October 1997, the JCI share price fell to R20, exposing CAH shareholders to bankruptcy. And within one year, JCI ran into difficulty as the gold price continued to fall below \$300 per ounce. Market commentators attributed this partly to JCI having paid too much for the asset.⁶¹ The company was broken up in September 1997. Tavistock and UCP was sold to the Lonrho-controlled Duiker Mining. CMI was sold to Sudelectra, which was 40% owned by the Swiss-based Glencore trading house. Western Areas and HJ Joel were sold back to Anglo American.

Through a complex arrangement, Anglo swapped its 26% shareholding British conglomerate Lonrho for JCI's 36.6% holding in Western Areas, JCI's 60% stake in Joel as well as its 3% interest in Anglo American Platinum Corporation.

JCI then resold for cash its 26% interest in Lonrho back to the group founded by Mr Tiny Rowland. This transaction also resolved the difficulty that Anglo had found itself when the EU Competition authorities gave it 2 years to divest and reduce the 27.5% predatory stake in Lonrho acquired in early 1997. The EU rejected the Lonrho tie up because of Anglo's dominant platinum market position with Amplats as well as the significant influence that the stake would give Anglo on Lonrho-owned Eastern and Western Platinum.⁶² JCI then unwound its holdings, passing shares in JCI Gold, Randfontein Estates and other assets back to shareholders.

⁶⁰ <http://www.btimes.co.za/96/1201/comp/comp5.htm>

⁶¹ http://findarticles.com/p/articles/mi_qa5327/is_n230/ai_n28703368/

⁶² <http://www.independent.co.uk/news/business/anglo-hits-at-eu-ruling-to-cut-stake-in-lonrho-1269005.html>

The JCI process was a microcosm of the social process of class creation accommodation that was underway in 1997.

Firstly the dominant fraction of old-order capital, represented by Anglo American, was initially set on obtaining the maximum return for its JCI asset which it achieved at the expense of the AMG consortium, who were advised by financial sector interests to pay a price that subsequently was widely acknowledged to have been too high. Subsequently, when JCI ran into difficulties and was most vulnerable, Anglo used the JCI assets to optimise Anglo's global position, cherry picking and buying back the gold mining assets at distressed prices and using the opportunity to resolve its difficulties with the EU competition authorities. Secondly, there was no coherence between the capitalist factions that became involved in JCI.

During the bidding process, the consortium's membership waxed and waned, with many of the emerging high-profile black capitalists included Bobby Makwetla's African Renaissance Holdings, Reuel Khoza's Co-ordinated Network Investments and Don Ncube's Real Africa Investments, jockeying for front runner position in the process. This reflected the outlooks of different fractions of emerging capital which, together with the interests of Anglo American were all represented in a fractious and divided JCI board of directors who were split on whether to apply the JCI assets towards at least four conflicting strategies, which included:

- Focus on gold (supported by Brett Kebble)
- Diversify into a global multi-commodity mining company with an African base, financed by the sale of some of KCI's gold mines (supported by Mzi Khumalo)
- Asset strip JCI and distribute the proceeds to shareholders (some AMG shareholders)
- Use JCI assets to achieve other objectives (Anglo American)

These strategies could not be reconciled in an environment during which the price of gold continued to decline while internal cost reductions could not be realised. At the same time many of the shareholding parties were simultaneously involved in other potential deals including Khumalo's involvement with Southern Mining, trade union opposition to any sale of JCI's gold mines and Anglo's attempt to take over Lonmin.

Thirdly, and following its liquidation, a number of the fractious JCI interests continued to pick on the carcasses of the remaining JCI gold assets for some years after. Apart from reported fraud associated with fantastic financial engineering, very little was achieved in terms of investment and actual organic growth of mining, and the sorry saga resulted in the high profile murder of Brett Kebble. Of late the saga continues with the high profile case of black capitalist owners of Aurora Systems stripping the Grootvlei mine of its assets and walking away.

Rand Gold and Exploration – Rand Mines

In 1993 Barlow Rand (in which Old Mutual held 22%) started the unbundling process in South Africa. It split Rand Mines into Randgold and Randcoal and passed these shares together with its shares in CG Smith back to shareholders.

Rand Gold and Exploration was formed in July 1997 from Rand Mines to acquire and rehabilitate marginal cost mines. It restructured its holdings into JSE listed Durban Roodepoort Deep Ltd. (DRD) and London listed Randgold Resources Ltd.⁶³

The Harmony Gold Mining Company Ltd. (discussed separately above) was spun off by Rand Gold and Exploration Co. in 1997 as an independent company.

At the time in 1997, DRD operated the mines at Durban Roodepoort Deep, the East Rand Proprietary (ERPM), and the South Wits deep extension gold mines. Durban Roodepoort Deep itself represented the 1997 merger of three West Rand gold mines—Blyvooruitzicht, Buffelsfontein, and Durban Deep.

The rest of the gold mining assets originally owned by Rand Mines have not played any major national economic role since the late 1990s.

As at 2011, most of the underground operations have ceased and the still-listed DRD Gold is currently South Africa's fourth largest gold producer with 241 194 ounces produced in 2010,⁶⁴ mainly from surface dump recovery operations as follows:⁶⁵

- Blyvoor – underground mining, surface tailings retreatment
- Ergo – surface tailings retreatment
- Crown Gold Recoveries (Pty) Ltd (Crown) – surface tailings retreatment
- East Rand Proprietary Mines Limited (ERPM) – underground mining discontinued, surface tailings retreatment reported under Crown.

Control of Randgold and Exploration⁶⁶ passed to Brett Kebble in the early 2000s. In 2005, evidence emerged that the firm's assets had been plundered and the company was suspended on the JSE.

Gold and uranium – conclusions

Gold mining infrastructure has been typified by the following characteristics:

- Increasing capital intensity associated with deeper mines and falling average ore grades

Table 8: Declining gold ore grades 2004-2009

Gold ore grade grams/ton	2004	2005	2006	2007	2008	2009
Anglogold - RSA grade	3.0	2.8	2.3	2.3	2.1	
Goldfields - RSA grade		5.7	5.9	5.4	5.2	4.6
Harmony - RSA grade		4.0	3.9	3.5	2.6	2.5

- Increasingly concentrated ownership core around 3 firms (Anglogold Ashanti, Goldfields and Harmony) jointly producing around 90% of total national production

⁶³ <http://www.randgoldresources.com/randgold/content/en/2009/randgold-who-we-are>

⁶⁴ <http://www.drd.co.za/>

⁶⁵ The company's black economic empowerment partners are Khumo Gold SPV (Pty) Limited (Khumo Gold) and the DRDSA Empowerment Trust, which hold 20% and 6% respectively in DRDGOLD's operating subsidiaries Ergo Mining Operations (Pty) Limited (Ergo) and Blyvooruitzicht Gold Mining Company Limited (Blyvoor)

⁶⁶ <http://www.randgoldexp.co.za/about.html>

Table 9: Gold production by mine 2004-2009

Mine	2004	2005	2006	2007	2008	2009
Anglogold - RSA	88 860	83 223	79 427	72 429	65 283	
Barberton Mines	3 230	3 088	2 800	2 984	3 075	
DRD Gold Total	14 051	9 828	10 404	9 580	7 704	
Eastern Goldfields		397	377	320	243	
Goldfields - RSA		87 838	82 725	82 302	75 243	63410
Harmony		82 998	67 073	65 610	54 776	47937
Mintails				516	629	571
Simmer & Jack				4 353	4 105	4024
Angloplat: Bafokeng-Rasimone Platinum	250	226	276	351	259	
Anooraq - Bokoni Platinum Mine	192	185	191	209	144	
Metorex - Consolidated Murchison	728	659	578	687	923	
Eastplats - Crocodile River		7	15	24	13	
Xstrata - Eland Platinum Mine				40	33	
Aquarius - Everest Platinum Mine			52	44	32	
First Uranium - Ezulwini				125	336	
Implats - Impala Platinum Mine	1 566	1 369	1 241	1 275	1 161	
Aquarius - Kroondal Platinum Mine	33	58	31	80	43	
Lonmin - Marikana	549	808	789	757	640	
Aquarius - Marikana Platinum Mine	19	25	19	34	19	
Implats - Marula Platinum Mine		14	33	47	48	
First Uranium - Mine Waste Solutions				1 249	1 243	
Arm - Modikwa Platinum Mine	94	113	114	129	110	
Angloplat - Mogalakwena mine	668	676	669	718	590	
Xstrata - Mototolo Platinum mine			3	37	33	
Arm - Nkomati Nickel Mine	33	20	24	18	0	
Northam Platinum Mine	200	217	229	163	161	
Palabora Mining Company	160	462	29	574	373	
Rand Uranium					383	
Angloplat - RPM - Amandelbult	668	604	740	345	276	
Angloplat - RPM - Rustenberg	1 157	1 028	1 259	536	441	
Angloplat - RPM - Union	182	164	201	167	127	
Angloplat - Twickenham Platinum Mine				8	7	
Arm - Two Rivers Platinum Mine			8	43	42	
Total - RSA production (Kg)	112	274	249	245	218	
Total - RSA production (Tons)	112.6	274.0	249.3	245.8	218.5	
From Platinum and other mines	6.5	6.6	6.5	7.7	7.4	
% from others	5.8%	2.4%	2.6%	3.1%	3.4%	
% from Anglo	78.9%	30.4%	31.9%	29.5%	29.9%	
% Goldfields	0.0%	32.1%	33.2%	33.5%	34.4%	
% Harmony	0.0%	30.3%	26.9%	26.7%	25.1%	
Total - Big 3	78.9%	92.7%	91.9%	89.7%	89.4%	

Source: DMR (2010a)

- Small proportion of gold produced from retreatment plants processing mine dump discards and as a by-product from platinum and other non-gold mines.

- Fragmented peripheral and relatively marginal gold producers, with high turnover of asset ownership. A good example of this is in the most recent high profile case of Aurora Empowerment System’s takeover of Pamodzi’s Grootvlei mine, which Pamodzi purchased a few years before from Harmony and which Harmony purchased a few years previously.
- Declining annual gold tonnage produced to 160 tons in 2009 and associated decline in the global role of South African production to fourth largest after Australia in 2009.

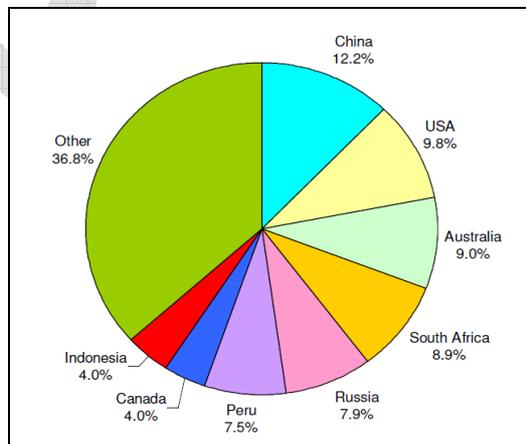
Table 10: South Africa gold output and grades 1990-2010

	Ore Milled	Gold produced	Grade
1990	111.175	565 654	5.09
1991	107.352	562 023	5.24
1992	106.4	574 319	5.40
1993	103.297	578 011	5.60
1994	98.852	537 147	5.43
1995	98.815	483 011	4.89
1996	93.724	460 766	4.92
1997	93.27	460 869	4.94
1998	82.874	421 652	5.09
1999	86.552	399 490	4.62
2000	83.956	378 071	4.50
2001	82.962	342 552	4.13
2002	81.422	347 543	4.27
2003	68.215	311 258	4.56
2004	59.702	282 031	4.72
2005	49.609	255 290	5.15
2006	50.349	235 043	4.67
2007	53.257	219 223	4.12
2008	50.999	182 490	3.58
2009	65.545	170 298	3.29
2010	73.803	160 046	3.04

Source: Chamber of mines:

www.bullion.org.za/content/?pid=79&pagename=Historical+Summary

Figure 6: RSA 2009 gold output as % of global gold production



Source: DMR(2010a:p.4)

- Foreign ownership of the more sustainable parts of RSA's gold mining sector have increased since the 1990s. Two of the three main RSA gold producers, AngloGold Ashanti and Goldfields has shifted offshore with the largest proportion of shareholders being foreign institutions. Harmony's shareholder base has more South African capital, the largest single shareholder in Harmony being ARM.

A preliminary analysis of gold exploration and mining projects in progress reported by the DMR in 2010 reveals that most such projects are being promoted by small and junior mining companies. No major projects are being promoted by two of the largest gold miners, AngloGold Ashanti and Goldfields. It therefore appears unlikely that there will be any significant growth in gold output from South Africa in the future.⁶⁷

Platinum

Platinum production history

Platinum production has historically been dominated by subsidiaries of three South African apartheid-era conglomerate firms namely, Anglo American Corporation (Anglo American Platinum - Amplats), Gencor (Impala Platinum) and GFSA (Northam). An additional dominant platinum producer is Lonmin, which represents the slimmed-down remnants of is the British conglomerate, Lonrho.

The following sections trace the trajectory of individual platinum producers in South Africa.

Anglo American Platinum - (Amplats)

Rustenburg Platinum mine began production in 1931. It was controlled by JCI who acquired the Union platinum mine from Gold Fields in 1950. In 1972, JCI built the Amandlembult platinum mine and the three mines were combined under Rustenburg Platinum Holdings 1976. For many decades after, it was the dominant global producer of platinum. The company was controlled by JCI and Anglo American⁶⁸ up until 1997 when Anglo American restructured its platinum assets under Anglo American Platinum.

From the outset, Rustenburg Platinum developed a very close relationship with its markets through Johnson Matthey of the UK who were agents, marketers and refiners of the smelted platinum matte produced on or close to the mines. JCI took control of Johnson Matthey in 1947. The Atok mine was developed by Anglovaal and taken over by JCI in 1997. JCI combined this with Maandagshoek and Potgieterust Platinum (PPRust) to create Lebowa Platinums. These assets passed to Anglo American during the 1990s unbundling of JCI.

Rustenburg expanded organically and through acquisitions in the 1950s to meet increasing demand from the oil industry. Expansion again took place in 1970s after Johnson Matthey and Engelhard developed automotive catalyst technology which expanded the market for platinum. In addition joint investments were made with Johnson Matthey to construct a base metal refinery in South Africa 1980.

⁶⁷ DMR (2010b), An overview of current gold exploration projects and new mine developments in South Africa, Department of Mineral Resources

⁶⁸ Rustenburg Platinum Holdings was owned by JCI (32.9%) and Anglo (23.9%), with Anglo also owning and controlling 48.2% of JCI.

South African platinum producers have dominated global supply for many decades. Such dependence on South African producers increased from the 1970s once automotive catalysts became the main market for platinum. Managing the market so as to avoid oversupply and associated commodity price fluctuations have been central drivers of the corporate strategy of platinum producers.

During the 1980s, South African platinum mine profitability and global dominance was threatened by the substitution of palladium in auto catalyst formulation and the emergence of Russia as the dominant global supplier of palladium.⁶⁹ During the 1990s, the upheaval in the Russian economy led to significant oversupply of platinum and palladium and consequent falls in platinum prices.

Figure 7: Global platinum supply and demand 1991-2001

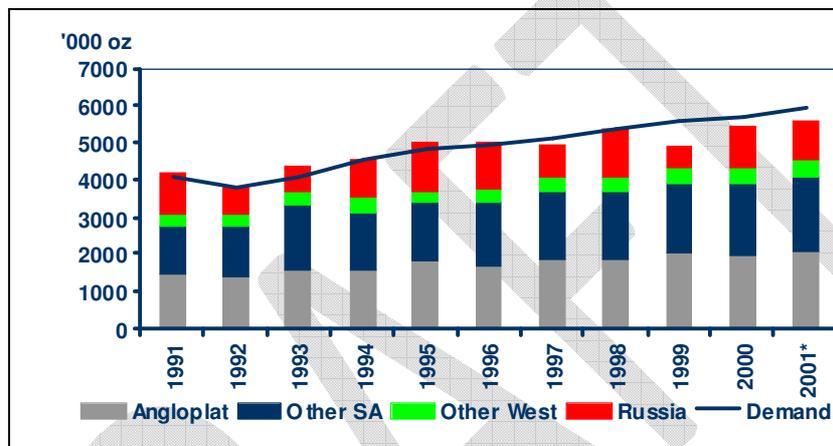
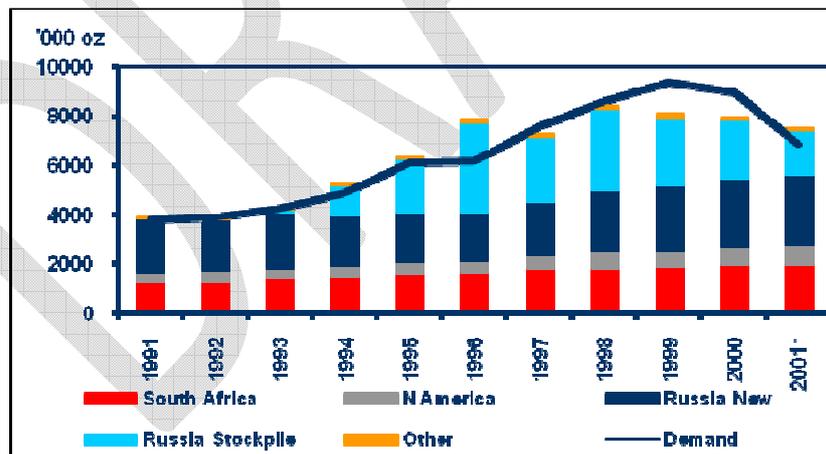
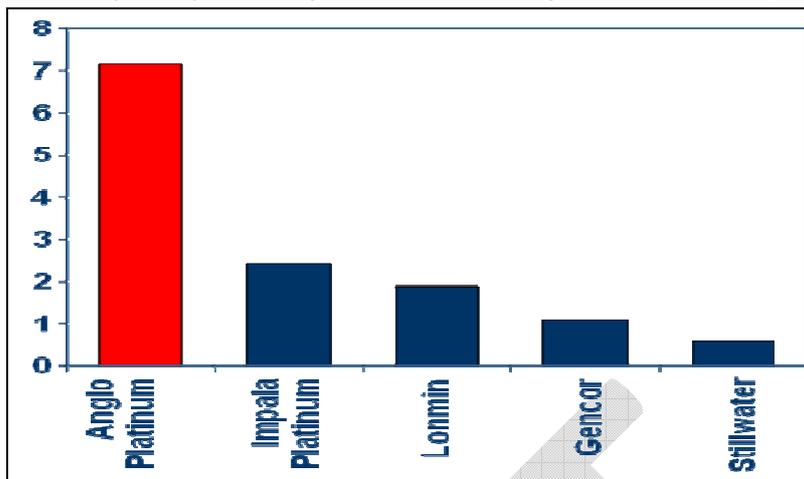


Figure 8: Global palladium supply and demand 1991-2001



Source: Amplats (2001), Seminar presentation, Johannesburg

⁶⁹ Platinum Group Metals (PGMs) include platinum, palladium and rhodium. These are usually found together in geological formations, but the proportions differ. South Africa's deposits are platinum-rich whereas Russia's deposits contain more palladium.

Figure 9: South African platinum producer market capitalisation, 2001 (US\$ billion)

Source: Amplats (2001), Seminar presentation, Johannesburg

As part of its overall unbundling and shifting offshore, Anglo American consolidated its JCI and other platinum holdings under Anglo American Platinum, listing this separately on the JSE in 1995 and retaining a 58% controlling share.

With an eye on its global consolidation objectives, Anglo American swooped on Lonrho in 1997, acquiring a 27.5% stake in the company. The EU Competition authorities disapproved the purchase on the grounds that it would have led to Anglo and Impala to dominate the global platinum market, and they ruled that Anglo had to reduce its stake in Lonrho to 10% within 2 years.⁷⁰ Anglo complied by using the Lonrho asset to address its restructuring strategy in the gold sector (See section above on JCI)

In October 1997, Amplats began building the BaFokeng Rasimone Platinum Mine (BRPM). This followed its negotiated surface lease agreement on the Boschkoppies Farm with the Royal Bafokeng Authority (RBA). In February 1999, the RBA negotiated a further joint-venture with Amplats to expand BRPM to include the RBA's mineral reserves on the adjacent farm Styldrift.⁷¹

Then in 1998, Cabinet approved the White Paper on Minerals and Mining Policy for South Africa and intense interaction followed between the Department of Minerals and Energy and the mining industry. This put platinum mineral rights previously awarded by Lebowa Bantustan authorities in jeopardy, threatening the viability of Amplats. In 1999, Amplats consisted of three wholly owned subsidiaries:

- Rustenburg Platinum Holdings – Rustenburg platinum mine (Western BIC)
 - Rustenburg section
 - Union section
 - Amandlebult section
 - BaFokeng Rasimone section (since 1997)
- Potgieterust Platinums Ltd - PPRust mine (Northern BIC)

⁷⁰ <http://www.independent.co.uk/news/business/anglo-hits-at-eu-ruling-to-cut-stake-in-lonrho-1269005.html>

⁷¹ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=299

- Lebowa Platinum Ltd - Leplats mine (Eastern BIC) In January 1999, Amplats commenced expansions on the Amandebult section UG2 mine.

Development of the Mandagshoek mine was announced on 20 December 1999, together with an announcement that this would be jointly developed with the black-owned African Rainbow Minerals (ARM).⁷² At the same time, Anglo American plc indicated that it had raised its shareholding in Amplats above 50%.⁷³

In December 2000, Amplats came to an agreement with the Department of Minerals and Energy which awarded Amplats mineral rights over certain properties previously obtained from the Bantustan Lebowa Minerals Trust on condition that Amplats enter into joint ventures with emerging black capitalists.⁷⁴

Further expansions of existing operations continued including in 2000, the Pietersburg platinum smelter⁷⁵, Waterval UG2⁷⁶ and Union section UG2⁷⁷. Amplats also announced a R12.6 billion expansion plan to increase output from 2m ounces to 3.5m ounces per annum by 2006.⁷⁸

In February 2000, Amplats vended some of its mineral areas into Northam Platinum in exchange for a 20% share in Northam Platinum. In August 2000, Amplats entered into a joint venture with black-owned Mvelaphanda whereby Mvela acquired 22.5% of Northam (17.5% from Anglo American plc and 5% from Remgro – the respective proceeds of GFSA's unbundling in 1998).⁷⁹

A further joint venture with Aquarius Platinum began in September 2000 through the pooling of Amplats properties and rights adjacent to those of the Kroondal Mine and the planned expansion of this 50:50 joint-venture from 100,000 oz to 300,000 oz per annum.⁸⁰ A similar agreement was struck between the two parties on properties around Aquarius' Kroondal mine in December 2005.⁸¹

By 2001, platinum prices had increased significantly and Amplats' profits exceeded \$1 billion in that year.

The Pandora joint venture to expand Lonmin's Eastern Platinum mine began in April 2001 with Amplats vending land and mineral rights contiguous to Eastern Platinum for the JV.⁸² The mine's output was to be 230,000 oz of refined platinum and 110,000 oz of refined palladium per annum. Lonmin and Amplats stated their intention to invite a black partner into the project at an appropriate time.

⁷² http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&ld2=381

⁷³ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&ld2=296

⁷⁴ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&ld2=366

⁷⁵ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&ld2=428

⁷⁶ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&ld2=424

⁷⁷ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&ld2=423

⁷⁸ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&ld2=426

⁷⁹ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&ld2=425

⁸⁰ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&ld2=367

⁸¹ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&ld2=342

⁸² http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&ld2=308

Amplats and the Royal Bafokeng Authority finalised the agreement to develop the Styl drift project in July 2001. In August 2001, following a bidding process, Amplats formed a 50:50 joint venture with a broad-based consortium led by Patrice Motsepe's African Rainbow Minerals (ARM) to develop the Modikwa/Maandagshoek project.⁸³ The R1.35 billion project was expected to produce 162,000 oz of platinum per annum.

In September 2001, the Twickenham project commenced with plans to produce 160,000 oz of platinum and 176,000 oz of palladium per annum.⁸⁴ In November 2002, Amplats announced that the Department of Minerals and Energy had identified the Pelawan black-owned consortium as the partner and that negotiations were underway.^{85 86}

Amplats appears to have accommodated foreign platinum producers like Canadian firm Anoroaq Resources in exploration of unknown acreage. In February 2002, Amplats allowed Anoroaq to explore certain of Amplats mineral rights areas on the understanding that there would subsequently be a 50:50 jv with Amplats having first call on marketing concentrator output.⁸⁷ A similar exploration agreement was struck with Cluff Mining in July 2002,⁸⁸ and with Canada's Platinum Group Metals and black-owned Africa Wide Mineral Prospecting and Exploration in October 2004.

On the marketing front, Amplats took a 17.5% stake in Johnson Matthey plc's Fuel Cell subsidiary in November 2002. By December 2002, Anglo American plc had raised its shareholding in Amplats to 66.75%.⁸⁹

At the end of 2003, Amplats revised its expansion plans downward on the basis of revised global supply-demand forecasts.⁹⁰

In August 2005, Amplats and Xstrata entered into a joint venture to develop the Mototolo project involving pooled acreage and mineral rights. Amplats was to purchase all the platinum concentrate output (132,000 ounces of platinum and 82,000 ounces of palladium in concentrate per annum) while Xstrata would set up a plant to process UG2 tailings and buy all the chrome concentrate production from this facility.⁹¹

By 2005, the black-owned Pelawan partner to Canadian-listed Anoroaq did a reverse takeover to become the controlling partner and was progressing a bankable feasibility study with Amplats on the Ga-Pasha project.⁹² Amplats agreed to finance this process in 2006.⁹³

⁸³ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=306

⁸⁴ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=294

⁸⁵ The consortium included Meapong Investments (Pty) Ltd, Kgathelopele (Pty) Ltd, Leswika Womens Investment and Africa Without Boundaries (Pty) Ltd.

⁸⁶ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=398

⁸⁷ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=393

⁸⁸ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=394

⁸⁹ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=400

⁹⁰ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=409

⁹¹ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=337

⁹² http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=388

⁹³ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=342

In December 2006, Amplats fulfilled its MPRDA and charter compliance on its Union section when it converted the previous royalty agreement it had with the Bakgatla community into a 15% equity stake in the Union section together with agreements to jointly develop other properties.⁹⁴ A further R1.57 billion expansion of the Amandelbult section started in December 2006 to produce an additional 100,000 oz of platinum per annum.⁹⁵

In 2008, Amplats sold its 22.3% shareholding in Northam Platinum as well as its 50% rights to the Booyendal mine project to Mvelaphana Resources for R4 billion. In April 2008, the DME finally issued Amplats with the following licenses which were associated with 85% of total 2007 output:⁹⁶

- Rustenburg – 8 licences
- Amandelbult – 1 licence
- Union – 2 licences
- Lebowa – 2 licences
- Mogalakwena – 1 licence
- Twickenham – 1 Licence
- Der Brochen (including Mototolo) – 1 licence

In October 2008, Amplats facilitated the listing of Royal Bafokeng Platinum holding company by vending the Bafokeng Rasimone Platinum Mine (BRPM) Joint Venture, including the Styldrift Platinum, into a special purpose vehicle.⁹⁷ RBPlats was listed in November 2010.⁹⁸

In July 2009, Amplats committed R100m for a development fund towards local market development and innovation.⁹⁹

In May 2009, Amplats announced that it had facilitated the creation of black-owned platinum company that would be the third largest producer in South Africa.¹⁰⁰ Amplats vended their 150,000 oz per annum producing Lebowa Platinum mine, together with other joint ventures to a holding company that would be jointly owned by Anooraq, Pelawan and Amplats, with the latter committing to sell down its share over time.

It delisted its secondary listing from the London Stock Exchange during 2009.

The Group's mining operations were restructured in 2009 in response to depressed platinum prices. The former Rustenburg Section was split into the Bathopele, Khomanani, Thembelani, Khuseleka, and Siphumelele mines and three shafts were closed, while the former Amandelbult Section was split into the Tumela and Dishaba mines. Union Mine, Mogalakwena Mine and Twickenham Mine remained managed operations of the Group. Expenditure on a number of capital projects was deferred.

⁹⁴ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=351

⁹⁵ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=350

⁹⁶ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=444

⁹⁷ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=448

⁹⁸ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=471

⁹⁹ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=453

¹⁰⁰ http://www.angloplatinum.com/pdf/APL_ARQ_joint_announcement_140509.pdf

On 30 June 2009 Amplats sold and transferred control to Anooraq Resources (Anooraq) of an effective 51% of the formerly wholly owned Lebowa Platinum Mine (Lebowa) and an additional 1% of the Ga-Phasha, Boikgantsho and Kwanda joint-venture projects.

The Group is also in joint venture with:

- ARM Mining Consortium Limited, a historically disadvantaged South African (HDSA) consortium, to operate the Modikwa Platinum Mine;
- Royal Bafokeng Resources, an HDSA partner, over the combined Bafokeng-Rasimone Platinum Mine (BRPM) and Styldrift properties;
- the Bakgatla-Ba-Kgafela traditional community, who hold a 15% share in Union Mine;
- Eastern Platinum Limited (subsidiary of Lonmin Plc) and its HDSA partner, the Bapo-Ba-Mogale traditional community and Mvelaphanda Resources to operate the Pandora Joint Venture;
- and Xstrata Kagiso Platinum Partnership, to operate the Mototolo Mine.

Amplats also has pooling-and sharing-arrangements with Aquarius Platinum (South Africa), covering the shallow reserves of the Aquarius Kroondal and Marikana mines that are contiguous with Amplats's Rustenburg mines.

The Group's smelting and refining operations are wholly owned through Rustenburg Platinum Mines Limited and are situated in South Africa. These operations treat concentrates not only from the Group's wholly owned operations, but also from its joint ventures and third parties.

In February 2011, Amplats announced its intention to undertake a transfer of assets equivalent to between 1-2% of market capitalisation to those communities that had not benefited from other Amplats empowerment transactions. In particular Amplats was to target communities around the Twickenham, Mogalakwena, Rustenburg and Amandelbult operations, as well as the key labour sending areas.

By 2011, Amplats was responsible for 40% of the world's newly mined platinum.

Impala Platinum - Gencor

In 1964, the Union Corporation began prospecting for platinum. Impala platinum started mining at in 1969. The company was listed on the JSE in 1973 and later became part of the Afrikaans capital axis of Sanlam-Gencor.

Like Rustenburg Platinum, Impala grew rapidly between 1970 and 1990, acquiring 55% of Messina in 1988 and the Barplats platinum mine in 1991, through Sanlam's 38% share in Rand Mine's Barplats.

In 1996, while in the process of unbundling and shifting offshore, Gencor also took a 27% stake in Lonrho's Western and Eastern Mines. Gencor's attempt to expand its Impala platinum interests by purchasing Lonrho's entire platinum interests was stopped by the European Commission because the platinum market would then have been dominated by

Amplats (Anglo American), Impala and Russian producers.¹⁰¹ At the time, Gencor already had a 27% share in Lonrho's Western Platinum and Eastern Platinum. In a consistent ruling in 1997, the European Commission also pressured Anglo American to relinquish its significant stake in Lonrho plc.¹⁰² Anglo did so through a complicated transaction around its predatory raid on Kumba iron ore shares (See Avmin section above).

In 1997, Gencor sold its base metals and non-gold interests, including Alusaf and Richards Bay Minerals to Billiton and listed Billiton PLC on the LSE. The remaining gold and platinum divisions were retained under Gencor control.

In 1999, Implats finally settled its long-running dispute with the Bafokeng over the mineral rights granted to Impala during apartheid times. The settlement increased the royalties payable from 14.94% to 22% to the Royal Bafokeng authorities (RBA) and gave the RBA a 1.7% equity share in Impala Platinum and a seat on the board. The RBA simultaneously engaged with Amplats on the Bafokeng Rasimone Rustenburg platinum mine (See above).

Between 2000 and 2003, Implats followed three strategies; leveraging surface assets, strategic acquisitions and organic/project growth within and outside South Africa.

It entered into agreements with junior producers Kroondal, Aquarius (Marikana and Everest South) and Messina were established to provide smelting, refining and marketing of product through Impala Refining Services (IRS). This allowed Impala to exert a greater degree of control over PGM supply onto the global market. 22 June 2000

In 2000, Implats acquired a 25.5% share of South African registered Aquarius Platinum (SA) Pty Ltd (Aquarius) from Australian and London-listed Aquarius Platinum Limited. This interest was acquired for mineral rights in respect of the Everest South, portion of Everest North and Chieftains Plain projects from Impala. Aquarius subsequently developed the Marikana platinum project which came into production in July 2001, producing some 150 000 oz of combined pgms per annum. Implats also held a 14% stake in Aquarius Platinum Limited until April 2008 when Implats sold its shares in Aquarius, regarding these as no longer core.¹⁰³

Through its 27% share of Lonmin, Impala was also able to exercise certain pre-emptive rights. This allowed Implats to influence Lonmin's strategy in a manner which was aligned to Implats strategies. Implats also took a strategic stake in Aquarius platinum which gave the former access to additional PGMs and a Life of Mine smelting, refining and marketing contracts for IRS.¹⁰⁴

¹⁰¹ <http://www.independent.co.uk/news/business/europe-vetos-lonrho-platinum-merger-1306719.html>

¹⁰² <http://www.independent.co.uk/news/business/anglo-hits-at-eu-ruling-to-cut-stake-in-lonrho-1269005.html>

¹⁰³ <http://www.implats.co.za/implats/pr-20080416.asp>

¹⁰⁴ http://www.implats.co.za/implats/pr_16112000.asp

Implats revived the mothballed Crocodile River mine in 2000¹⁰⁵ which was to add 80,000 oz per annum to Implats 2000 production of 2 million oz per annum. However, technical difficulties led to the plant being shut in 2003¹⁰⁶ However, other expansion project continued.

In 2000, Impala established a foothold in the Eastern Limb by buying Platexco.¹⁰⁷ The Platexco transaction in 2000 is a particularly good example of how the different capitalist groupings began to collaborate. As part of Amplats' agreement with the DME over obtaining security of tenure over its existing mines, Amplats ceded a former LMT mineral right on the Driekop property to a black grouping constituted as (an aptly named) Trojan Mining. Trojan Mining was a subsidiary of Canadian-listed Platexco and Driekop was adjacent to the Winnaarshoek Property which Trojan Mining had acquired some years previously. Trojan had attempted to develop the property themselves by reverse listing in Canada in order to raise funds. In a related transaction, Impala swapped rights to other properties so as to acquire the Forest Hill and Clapham properties, adjacent to Driekop and Winaarshoek. Thus all parties bound themselves in a medium-term plan to systematically mine the entire area in an optimal way. The Minister of Minerals and Energy, in her capacity as Trustee of the LMT at the time, approved the mineral lease to Amplats and the sub-lease to Trojan subject to black partners being included in the development.^{108 109} These developments were to add a further 200,000 oz per annum of capacity to Impala.

Mmakau Mining was initially chosen in 2001 to form the black consortium to develop Winnaarshoek.¹¹⁰ The project was renamed the Marula mine and came into production in 2005. Ultimately, Impala involved two additional consortia in the project. The Tubatse Platinum consortium represented local black capitalist interest while the Marula Community Trust represented community organisations.¹¹¹ In 2008, new order mining rights were awarded to Marula and the 3 black partners increased their shareholding to 9% each.¹¹² Full production of 140,000 oz per annum at Marula was expected to be achieved in 2009. However, the mine was designed for mechanised mining and technical difficulties required it to be operated conventionally, limiting output at 70,000 oz per annum as at 2011.¹¹³

In May 2001, Implats and Avmin commenced on a 55:45 JV to develop the Two Rivers mine. The rights were acquired from Assmang on a competitive bidding process.¹¹⁴ By 2003, a 25% shareholding in the project was sold to a black consortium headed by black-owned TISO Capital which included TISO; Safika Investments; Aka Resources; Siyanda Resources, which represents a large number of black mining professionals; and a trust to be formed for the

¹⁰⁵ http://www.implats.co.za/implats/pr_09022000_exploits.asp

¹⁰⁶ http://www.implats.co.za/implats/pr_24112003.asp

¹⁰⁷ http://www.implats.co.za/implats/pr_07062000.asp

¹⁰⁸ http://www.implats.co.za/implats/pr_19122000.asp

¹⁰⁹ http://www.implats.co.za/implats/pr_06122000.asp

¹¹⁰ http://www.implats.co.za/implats/pr_11072001.asp

¹¹¹ <http://www.implats.co.za/implats/pr-20060705.asp>

¹¹² <http://www.implats.co.za/implats/pr-20080403.asp>

¹¹³ http://www.implats.co.za/implats/downloads/2011/press_releases/27%20May%202011%20-%20Strategic%20repositioning%20of%20Marula%20Platinum.pdf

¹¹⁴ http://www.implats.co.za/implats/pr_30052001.asp

benefit of the community surrounding the new Two Rivers mine.¹¹⁵ In June 2005, Implats announced that, following trial mining, the R1.2 billion project to produce 220,000 oz of platinum per annum was to go ahead.¹¹⁶

Implats also expanded activities outside of South Africa, including developing a nickel project in the Phillipines (2000),¹¹⁷ acquisition of Zimplats (2001),¹¹⁸ Mimosa – Zimbabwe (2001).¹¹⁹ Mimosa began production in joint venture with Aquarius Platinum in December 2002.¹²⁰ In 2003, Implats increased its shareholding in Aquarius to 32%.¹²¹ In September 2005, Implats announced an expansion from 135,000 oz to 168,750 oz per annum.¹²² A further expansion to 195,000 oz took place in 2007.¹²³ Subsequently, Implats has been engaged with the Zimbabwean government over indigenisation legislation and the process is ongoing as at 2011.¹²⁴

In September 2003, in an \$800m transaction, Implats sold 9.1% of its 27.1% stake in in Lonmin's Western and Eastern Platinum mines back to Lonmin. Implats also vended the remaining 18% stake in Lonmin's Western and Eastern Platinum mines into a special purpose company jointly held by Implats and Lonmin.¹²⁵ This was part of a broader joint transaction by Lonmin and Implats aimed at complying with their respective MPRDA's black ownership obligations. Lonmin subsequently named the special purpose company Incwala Resources. The IDC was also involved in providing finance for the Incwala transaction in 2004.¹²⁶ (See Lonmin section below).

By 2003, as part of the completion of its unbundling process, BHP Billiton completed the unwinding of Gencor (See section above). Gencor ceased to exist following the unbundled its 46.1% controlling stake in Impala Platinum Holdings to shareholders.¹²⁷

In March 2003, Implats was stunned by the content of the draft Minerals and Petroleum Royalty Bill released by the National Treasury, which suggested that Implats operations might be subject to royalty payments to the Treasury.¹²⁸ Implats had been of the view that their 2000 agreement with the Royal Bafokeng authority which converted future royalties due to the RBA into Impala equity had addressed any future royalty obligation on the company.

¹¹⁵ http://www.arm.co.za/im/press_display.php?id=2003/17jan03

¹¹⁶ http://www.implats.co.za/implats/pr_07062005.asp

¹¹⁷ http://www.implats.co.za/implats/pr_23022000.asp

¹¹⁸ http://www.implats.co.za/implats/pr_26032001.asp

¹¹⁹ http://www.implats.co.za/implats/pr_27072001.asp

¹²⁰ http://www.implats.co.za/implats/pr_13122002.asp

¹²¹ <http://www.comptrib.co.za/assets/Uploads/Case-Documents/35LMJul03.pdf>

¹²² http://www.implats.co.za/implats/pr_21092005.asp

¹²³ <http://www.implats.co.za/implats/pr-20070109.asp>

¹²⁴ http://www.implats.co.za/implats/downloads/2011/press_releases/30_March_2011-Zimbabwe_indigenisation.pdf

¹²⁵ http://www.implats.co.za/implats/pr_18092003_agrees.asp

¹²⁶ http://www.implats.co.za/implats/pr_06092004_sale.asp

¹²⁷ http://www.implats.co.za/implats/pr_10062003.asp

¹²⁸ http://www.implats.co.za/implats/pr_27032003.asp

In December 2005, Impala announced that agreement had been reached with the Bafokeng, represented by the Royal Bafokeng Resources Holdings (Pty) Ltd, such that RBR would ultimately acquire 9% of Impala. This transaction, together with credits from Impala's earlier transactions including facilitating the Lonmin empowerment transaction rendered Impala compliant with the MPRDA and Charter requirements of 26% black ownership.¹²⁹ However, the Treasury did not back down from the principles embodied in the Royalty Bill and, in September 2006, Impala and RBH came to an agreement whereby Impala exchanged future notional (previously agreed Bafokeng) royalty streams for 9.389 million Impala shares, bringing RBH's stake in Impala to 13.4%.¹³⁰ In addition, Impala announced the creation of an employee share ownership scheme for its approximate 28,000 employees.

In December 2006, Impala announced that the DME had awarded it 6 new order prospecting rights on areas contiguous and within existing Implats areas.¹³¹ In 2006, Impala also committed capital to expanding smelter and refining capacities from 2m oz in stages to 2.8m oz per annum.¹³²

Implats continued to buy into projects developed by junior miners. In December 2006, Implats took a 29.9% stake in the South African projects of AIM-listed Afplats. Afplats (Pty) Ltd is a company holding the mineral rights for several areas including the prospecting permit to the Leeuwkop Project on the western limb of South Africa's Bushveld Complex.¹³³ In 2007, Implats bought out the shareholders in Afplats for GBP 297m. New order rights were awarded in 2008 to the Leeuwkop project on the basis that the Bakwena Ba-Magopa traditional community holds a 26% interest and retains a free carry for the first R1 billion of capital expenditure. The project has a life-of-mine concentrate offtake agreement with IRS and will produce 160,000 oz of platinum per annum at full production.¹³⁴

In 2008, Implats attempted to acquire Northam Platinum from Mvelaphana Resources but the parties were unable to conclude on fair valuation given the turmoil in global financial markets at the time and the process was terminated in January 2009.^{135 136}

A crucial historic difference between Impala and Anglo Platinum is that the former was established as a unified holding in 1969, while the latter was only consolidated into a single group with unbundling in 1995.

From inception, Impala's platinum assets were historically located on apartheid-created Lebowa tribal trust land. Impala's early mining operations were carried out through an agreement that the company struck with the Lebowa authorities which aimed to lock up the entire mineral rights thereby preventing competitors from upsetting the global market supply-demand balance.

¹²⁹ http://www.implats.co.za/implats/pr_14122005.asp

¹³⁰ <http://www.implats.co.za/implats/pr-20060928.asp>

¹³¹ <http://www.implats.co.za/implats/pr-20061213.asp>

¹³² http://www.implats.co.za/implats/pr-20060316_02.asp

¹³³ <http://www.implats.co.za/implats/pr-20061211.asp>

¹³⁴ <http://www.implats.co.za/implats/pr-20080421.asp>

¹³⁵ <http://www.implats.co.za/implats/pr-20081119.asp>

¹³⁶ http://www.implats.co.za/implats/pr_20090114.asp

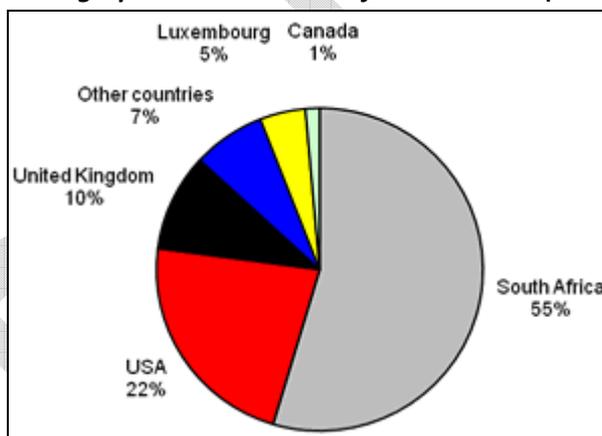
As at 2010, the single largest shareholder is Royal Bafokeng Holdings. The bulk of Impala shareholding is with South African institutions.

Table 11: Impala Platinum – shareholder profile 2010

Analysis of shareholdings				
	Number of shareholders		Number of shares (000s)	
		%		%
Other companies	1 467	4.3	138 688	22.0
Trust funds and investment companies	7 920	23.1	100 636	15.9
Insurance companies	139	0.4	26 055	4.1
Pension funds	538	1.6	97 253	15.4
Individuals	23 985	69.9	15 993	2.5
Banks	254	0.7	253 089	40.1
	34 303	100.0	631 714	100.0

Source: Implats (2010), Annual Report

Figure 10: Geographical distribution of shareholders (30 June 2010)



Source: <http://www.implats.co.za/implats/Shareholding-analysis.asp>

From Lonrho to Lonmin

Between 1961 and the late 1980s, under the tight direction of CEO “Tiny” Rowland, Lonrho grew into a massive conglomerate with a turnover in 1990 of more than \$6 billion.¹³⁷ In comparison, Anglo American’s turnover in 1990 was

It had a widely diversified portfolio within which were platinum mines Eastern and Western Platinum (established in 1971), the 3rd largest global producer of platinum with an annual 250 million ounces. Despite its diverse portfolio, Lonrho was particularly dependent on the profitability of its mining assets. In 1991, mining contributed only 7% of Lonrho's turnover, but 36% of total profit. With the sudden decline in commodity prices in the early 1990s, Lonrho’s profits fell from £273m in 1991 to £79m in 1992. This ultimately led to the unseating of Rowland in 1994 and the subsequent breakup of the Lonrho conglomerate over the remainder of the decade. Around this time, Impala platinum took a 26% stake in Western Platinum.

¹³⁷ <http://www.fundinguniverse.com/company-histories/Lonmin-plc-Company-History.html>

As is apparent from other sections of this section, by the late 1990s Anglo American had targeted the platinum sector as strategic. In January 1997, Anglo acquired a controlling 26% stake in Lonrho (a move which was rejected by EU Competition authorities who ruled that Anglo had to divest to below 10% within 2 years) and by 1999 Lonrho had changed its name to Lonmin plc. In 2000, it exited coal and sold Duiker Mining and Tweefontein Colliery Glencore International AG. In 2001, Lonmin participated in the Pandora joint venture with Anglo Platinum. Platinum Australia Ltd., the first platinum/palladium mine in Australia was established in 2001. Lonmin exited the Southern African gold sector in 2002 when it sold its Independence Gold mine in Zimbabwe.

In 2003, Lonmin created Incwala Resources which owned 18% of the Lonplats mining operations as a vehicle which would be vended to black capitalists so as to comply with the Mining Charter.¹³⁸

Company	Country of incorporation	Interest in ordinary share capital %		Principal activities
Eastern Platinum Ltd	South Africa	82.0	Subsidiary	Platinum mining
Western Platinum Ltd	South Africa	82.0	Subsidiary	Platinum mining and refining
Messina Platinum Mines Ltd	South Africa	82.0	Subsidiary	Platinum mining
Akanani Mining (Pty) Ltd	South Africa	74.0	Subsidiary	Mineral exploration and evaluation

A full list of Group companies will be included in the annual return registered with Companies House.

Xstrata, the transnational miner which bid for Lonmin in 2008 but backed off as the wipeout in financial and other markets continued to bite. During the process, however, Xstrata emerged as the biggest shareholder in Lonmin, holding 24.9% by October 2008. During 2009, Xstrata, which continues to build on its chrome and platinum interests in South Africa, took an impairment charge of USD 241m on its investment in Lonmin.

The drop in platinum prices in 2008¹³⁹ and Lonmin's share price fall and its passing of a dividend in 2009 placed the Incwala transaction in jeopardy as it relied on dividends to finance the transaction. In May 2010, Shanduka Resources purchased a 50.03% shareholding in Incwala for R2.8 billion, borrowing R2.5 billion from Lonmin and injecting R300m from its own cash.

Northam Platinum

Northam Platinum was originally owned by GFSA up until its unbundling in 1999. Upon unbundling, controlling interest passed to Anglo American, as outlined in the following shareholding profile:

¹³⁸ <http://www.incwala.co.za/history.htm>

¹³⁹ <http://www.miningmx.com/opinion/columnists/Shanduka-faced-with-overhauling-history.htm>

Table 12: Northam Platinum – Major shareholders 30 June 2000

Owner	Number of shares	% holding
Anglo American Platinum Corporation Limited	61 000 000	26.5
Standard Bank Nominees (Transvaal) (Proprietary)	44 548 936	19.4
Anglo American plc	30 695 469	13.3
Rembrandt Group Limited	26 687 216	11.6
Nedcor Bank Nominees Limited	21 512 924	9.1

Source: http://www.northam.co.za/im/publications/ar/ar_2000/default.htm

In February 2000, Amplats vended some of its mineral areas in the Elandsfontein and Amandelbult areas into Northam Platinum in exchange for a 20% share in Northam Platinum. In August 2000, Amplats entered into a joint venture with black-owned Mvelaphanda whereby Mvela acquired 22.5% of Northam (17.5% from Anglo American plc and 5% from Remgro – the respective proceeds of GFSA’s unbundling in 1998.¹⁴⁰ At the time, Northam was South Africa’s fourth largest platinum producer, with output of 270,000 oz in 2000.¹⁴¹ In facilitating the Mvela transaction, Anglo secured the option to further develop its own mineral areas that were contiguous to those operated by Northam.

Northam attempted to grow through acquisition and unsuccessfully approached Aquarius Platinum in 2001 to acquire the Kroondal mine.¹⁴² In 2003, shareholders were cautioned about an impending acquisition but this did not happen.¹⁴³

In July 2003, Amplats entered into a JV to develop the Booyensdal project with black consortium Khumama,¹⁴⁴ which had been granted prospecting rights on the Johannesburg and Sheeprun properties on the Eastern Limb.¹⁴⁵ In early 2004, Mvelaphanda acquired the entire issued share capital of and loan accounts against Khumama Platinum (Proprietary) Limited (“Khumama”) for a R313 million. Northam then purchased Khumama’s JV right to partner Amplats on the Booyensdal project for an equivalent of R460m. The three Khumama shareholders then also joined the Northam board.¹⁴⁶

In March 2004, Amplats and Mvela assisted Northam to comply with DME black shareholding requirements in regard to Northam’s participation in Amplats’ Pandora JV (Amplats 85%, Northam 7.5%, Bapo Ba Mogale 7.5%). At the time, the DME did not regard Northam as an empowered entity and Amplats allowed Mvela to warehouse Northam’s shareholding until it achieved its HDSA threshold.¹⁴⁷

¹⁴⁰ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=425

¹⁴¹ http://www.northam.co.za/im/publications/ar/ar_2000/default.htm

¹⁴² http://www.northam.co.za/im/pub_press_display.asp?Id=2001/29jan01

¹⁴³ http://www.northam.co.za/im/pub_press_display.asp?Id=2003/20oct03

¹⁴⁴ Khumama Platinum was chaired by the late Ms Nomazizi Mtshotshisa and consists of three broad-based empowerment consortia, led respectively by Ms Nomazizi Mtshotshisa, Dr Paseka Ncholo and Mr Robinson Ramaite.

¹⁴⁵ <http://www.whoswhosa.co.za/SENS/44768/ANG>

¹⁴⁶ http://www.northam.co.za/im/pub_press_display.asp?Id=2004/12feb04

¹⁴⁷ http://www.northam.co.za/im/pub_press_display.asp?Id=2004/23mar04

Up until 2007, Northam had exported its concentrate to be refined by Hereaus in Hanau Germany. In 2007, Hereaus invested in a basic PGM refinery at Port Elizabeth.¹⁴⁸

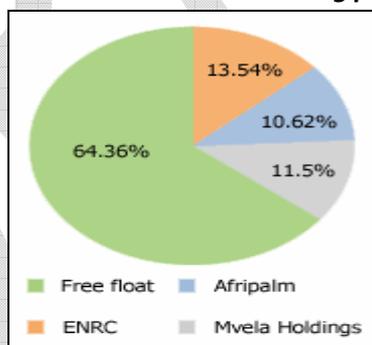
In 2008, Amplats sold its 22.3% shareholding in Northam Platinum as well as its 50% rights to the Booyendal mine project to Mvelaphana Resources for R4 billion. Mvelaphanda Resources then sold 100% of the project to Northam in exchange for 125 million Northam shares, bringing Mvela's shareholding in Northam to 63.4%.¹⁴⁹ The Booyendal property was contiguous to some of Amplats' platinum operations and Amplats continued to provide support for the Booyendal development by, for example allowing power to be drawn through Amplats facilities until Eskom was able to connect Booyendal.¹⁵⁰

In 2008, Implats attempted to acquire Northam Platinum from Mvelaphanda Resources but the parties were unable to conclude on fair valuation given the turmoil in global financial markets at the time and the process was terminated in January 2009.^{151 152}

Following a JSE ruling in 2009 that Mvela was a pyramid company, Mvelaphanda sold a 12% stake in Northam to Kazakh ferroalloy producer Eurasian Natural Resources Corp. (ENRC) for about ZAR2.2 billion, in 2010, leaving Mvela with a 50.5% interest in Northam that it subsequently passed back to its shareholders.¹⁵³

The decision by Mvelaphana to unbundle itself created an instability in Northam shareholder balance. By 2010, Mvela held 50.8% of Northam shares and these were in the process of being unbundled to Mvela Holdings shareholders. Consequently, Northam itself offered to purchase these shares from existing shareholders in February 2011 as well as the Mvela Holdings shares. As at 2011, the Northam shareholding is as follows:

Figure 11: Northam Platinum shareholding profile June 2011



Source: http://www.northam.co.za/im/actions_mvla.aspln

¹⁴⁸ http://www.northam.co.za/im/pub_press_display.asp?Id=2007/07feb07

¹⁴⁹ http://www.northam.co.za/im/pub_press_display.asp?Id=2007/04sep07

¹⁵⁰ http://www.northam.co.za/im/pub_press_display.asp?Id=2008/31jan08

¹⁵¹ <http://www.implats.co.za/implats/pr-20081119.asp>

¹⁵² http://www.implats.co.za/implats/pr_20090114.asp

¹⁵³ <http://www.advfn.com/nyse/StockNews.asp?stocknews=GFI&article=45079119&headline=mvela-resources-sells-down-remaining-stake-in-gold-fields>

2010, Northam entered into a JV with Jubilee Platinum to build a 7MW smelter based on the Mintek-developed Conroast DC-arc smelting process for treating high chrome-bearing platinum concentrates from UG2 reef ores.¹⁵⁴

A portion of the Booyesdal mining right, Booyesdal South, was sold in 2010 to Aquarius Platinum for R1.2 billion.¹⁵⁵

Royal Bafokeng Holdings

Since the discovery of platinum in 1921 on lands owned by or on behalf of the Bafokeng, the latter had enjoyed some income from royalties. In 1968, the Union Corporation-owned Impala Prospecting Company entered into various prospecting contracts with the Bafokeng. At the time, English capital Rustenburg Platinum (JCI) was the dominant producer who had also obtain rights on Bafokeng land and were paying royalties to the Bafokeng. Following the prospecting period, Impala applied to the South African authorities for mining leases on two areas, which were granted for a period of 35 years (ending 2003) at a royalty of 13% of taxable income to be paid to the Bafokeng.¹⁵⁶

With the reserves running out on existing leases, Impala approached the Bafokeng again in 1987 for mining rights on a third area. In the negotiations, the Bafokeng raised a dispute with Impala over the non-fulfilment of the existing agreement and Impala subsequently paid over an additional amount. Partly because of this relationship, the Bafokeng gave the rights to a company which was 25% owned by the Bafokeng and 75% owned by one Fred Keeley. What followed in the early 1990s was a prolonged legal struggle between Impala and the Bafokeng, complicated further by Impala drawing the nearby Bophutatswana Bantustan administration of Lucas Mangope into the process. The latter used its apartheid political power to undermine the legitimate traditional representatives of the Bafokeng and to support certain representatives that were better disposed to Impala.

In 1999, Implats finally settled its long-running dispute with the Bafokeng over the mineral rights granted to Impala during apartheid times. The settlement increased the royalties payable from 14.94% to 22% to the Royal Bafokeng authorities (RBA) and gave the RBA a 1.7% equity share in Impala Platinum and a seat on the board. The RBA simultaneously engaged with Amplats on the Bafokeng Rasimone Rustenburg platinum mine (see above).

The Bafokeng opposed the 2000 Minerals Development Bill (which subsequently became the MPRDA) because of its adverse impact on their rights. They also opposed the 2003 Minerals and Petroleum Royalty Bill which effectively threatened the agreement that they had struck in 1999 with Implats whereby future royalties due to the RBA had been converted into Impala equity.

In 2003, the Bafokeng created the Royal Bafokeng Resources Holdings as a corporate entity to house the nation's economic interest and in December 2005, Impala announced that

¹⁵⁴ http://www.northam.co.za/im/pub_press_display.asp?Id=2010/15jul10

¹⁵⁵ http://www.northam.co.za/im/pub_press_display.asp?Id=2011/4may11

¹⁵⁶ Mandon, A and Mbenga, B (2003), 'The Richest Tribe in Africa': Platinum-Mining and the Bafokeng in South Africa's North West Province, 1965–1999, *Journal of Southern African Studies*, Volume 29, Number 1, March 2003

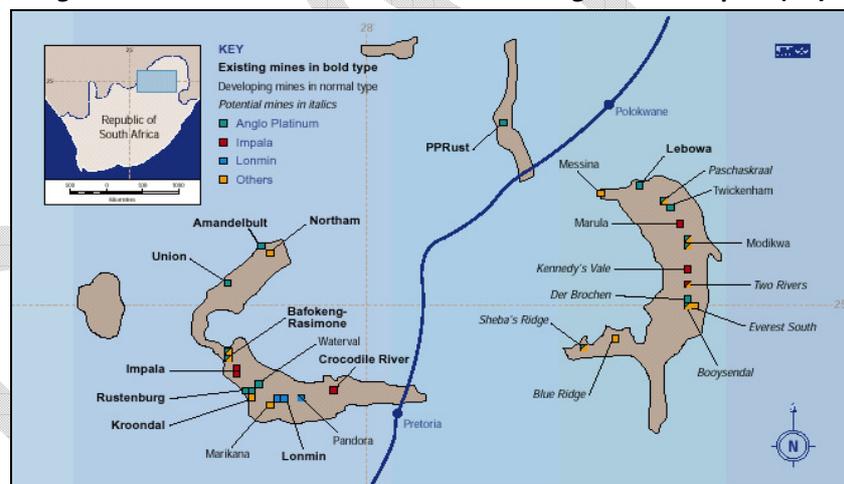
agreement had been reached with the Bafokeng, represented by the Royal Bafokeng Resources Holdings (Pty) Ltd, such that RBR would ultimately acquire 9% of Impala. This transaction, together with credits from Impala's earlier transactions including facilitating the Lonmin empowerment transaction rendered Impala compliant with the MPRDA and Charter requirements of 26% black ownership.¹⁵⁷ However, the Treasury did not back down from the principles embodied in the Royalty Bill and, in September 2006, Impala and RBH came to an agreement whereby Impala exchanged future notional (previously agreed Bafokeng) royalty streams for 9.389 million Impala shares, bringing RBH's stake in Impala to 13.4%.¹⁵⁸ In addition, Impala announced the creation of an employee share ownership scheme for its approximate 28,000 employees.

In 2008, RBH took management control of the Bafokeng Rasimone Rustenburg Platinum mine.

Platinum in South Africa and its role in the MEC

According to the Department of Mineral Resources,¹⁵⁹ in 2009 there were 22 producing platinum mines operating in the Bushveld Complex of which 21 were exploiting the Merensky Reef and/or UG2 Chromitite Layer. The Mogalakwena Section opencast mine was mining the Platreef, on the northern limb of the Complex. 11 mines were the western limb and 10 on the eastern limb.

Figure 12: Platinum mines on the Bushveld Igneous Complex (BC)



Source: Johnson Matthey – R51 (2006)

First stage beneficiation of the ore through milling, flotation and smelting, to form a matte containing the PGMs, gold, silver and the base metals nickel, copper and cobalt, is undertaken at various concentrators and smelters in the area. Further refining of the matte, including extraction of the base metals and recovery of the constituent precious metals, takes place at Anglo Platinum's refineries near Rustenburg, Western Platinum's refineries on the mine property as well as near Brakpan, and Implats' refineries in Springs. Northam's

¹⁵⁷ http://www.implats.co.za/implats/pr_14122005.asp

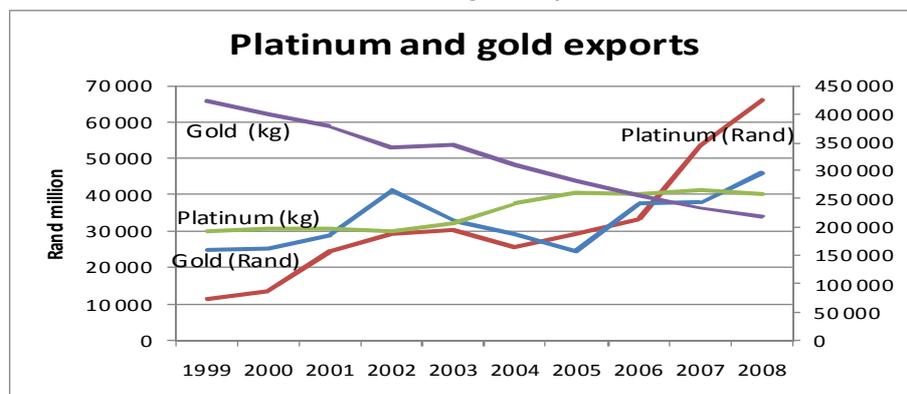
¹⁵⁸ <http://www.implats.co.za/implats/pr-20060928.asp>

¹⁵⁹ DME (2009), Platinum-group metal mines in South Africa, Directory D6/2009, Department of Mineral Resources

base metal refining is done on the mine property, while the precious metal refining is partly done at the Heraeus refinery in Port Elizabeth.

In 2004, the value of platinum production and exports overtook that of gold and the trend seems to be accelerating post 2006. However, the actual quantity of platinum exported has been relatively stable since 2005, reflecting increased platinum prices.

Table 13: Platinum and gold exports 1999-2009



Source: DMR (2009)

Platinum production is concentrated in three foreign-controlled companies, namely Anglo American Platinum, Impala Platinum and Northam Platinum. Their share of total output from mines wholly-owned or majority-owned by these firms has been declining slightly since 2004 from 93% to 83% in 2008. The balance of national output is produced by a few smaller new platinum mining companies, most of which are London- or Australian-listed entities.

Table 14: Platinum production by company 2004-2008

Kilograms	2004	2005	2006	2007	2008
ARM	0	8 476	9 123	13 321	14 531
Anglo Platinum	126 560	126 958	139 070	121 972	110 013
Aquarius Platinum	4 632	5 755	8 753	10 732	10 557
Eastern Platinum	1 149	334	2 331	3 125	
Impala Platinum	61 912	66 621	65 283	63 062	62 680
Lonmin Platinum	46 399	47 784	47 303	45 543	41 414
Northam Platinum	10 592	10 115	11 247	10 087	9 113
Xstrata Platinum	0	0	715	5 754	9 424
Goldplat recovery (PGMs kg)	126	63	6	12	
Nkomati (ARM) Nickel (PGMs kg)	1 150	1 031	1 193	817	
Palabora Mining Company (PGMs kg)	23	66	54	52	
Total	252 542	267 202	285 078	274 477	257 732
Anglo Platinum %	50%	48%	49%	44%	43%
Impala %	25%	25%	23%	23%	24%
Lonmin %	18%	18%	17%	17%	16%
Platinum - Top 3 %	93%	90%	88%	84%	83%

Source: DMR (2009)

Since 2008, Johnson Matthey (2010) reports that total RSA output has stabilised at 4.53 million oz with global demand at around 5.92 million oz.

Table 15: Platinum production by company 2009

million oz	2009
Amplats	2 580 000
Implats	867 000
Lonmin	652 000
Aquarius	330 020
ARM	294 000
Eastern Platinum	130 000
Smokey Hills	27 000
Platmin	28 000
Total	4 908 020
Anglo Platinum %	53%
Impala %	18%
Lonmin %	13%
Platinum - Top 3 %	84%
Source: Johnson Matthey (2010)	

A small proportion of production from the top 3 firms is accrued by the firm's respective black shareholders, whose ownership can be attributed to the firm's compliance with the indigenous ownership objectives of the Mineral and Petroleum Resources Development Act (MPRDA). As at 2011, the most significant black-owned mining company presence in platinum production is African Rainbow Minerals (ARM) and the Royal Bafokeng Holdings (RBH), the latter holding a significant share in Implats.

There was a transition period before the MPRDA which affected platinum mining more than any other mineral, due to the geographic location of PGM ore bodies overlapping with apartheid Bantustan territory. (For a fuller account of the intricacies of the impact of landed property rights, see Capps (2007), but also the section below)

Effectively, a contestation ensued between existing conglomerate controlled platinum companies and the communities previously governed by Boputhatswana and Lebowa Bantustan administrations respectively. Following the MPRDA, the new industry entrants (mainly London- and Australian-listed firms) also contested for the platinum mineral rights, particularly in the Eastern Limb portion of the BIC, which was the site of the former Lebowa Bantustan.

Viewed retrospectively as at 2011, it would appear that the outcome of these battles has been one of (albeit reluctant) accommodation by the two main producers Anglo Platinum and Impala Platinum, of emerging black capitalist and corporatized local community interests and a small number of foreign-owned mining houses. All of the interests are currently in subordinate positions at holding company level, but also at operating mine level, given the nature of the offtake marketing agreements.

This process of contestation and accommodation was underpinned by reforms in the country's mineral rights regime with the enactment of the Mineral and Petroleum Rights Development Act (MPRDA) but also by the specific form of transition from old order to new order rights in this region.

Perhaps because of the huge future potential for platinum, the high profit margins and the dominant role of South Africa's reserves in global demand, black capitalist interests have been accommodated to a greater extent than with other minerals.

Conclusions and peculiarities of platinum mineral rights

Unlike other minerals, most of South Africa's platinum reserves lay within the boundaries of either the Bophuthatswana Bantustan (Western Limb), or the Lebowa Bantustan (Eastern Limb). The specific political and legal dynamics of this situation have shaped the strategies of apartheid-era platinum and ferro-alloy mining capital as well as the strategies and evolution of emerging black mining capitalists.¹⁶⁰

Under apartheid, mineral rights could be held privately and in perpetuity.

In Lebowa, within which the Eastern Limb was located, the mineral rights held by the Lebowa government were transferred into the Lebowa Minerals Trust in 1987. The LMT was effectively a corporate entity possessing mineral property in a similar manner to a private rights holder, but with the authority to negotiate these rights with third parties. It operated largely for the benefit of the chiefs and Ministers who constituted Lebowa's Bantustan elite and the LMT proceeded to negotiate with old order mining capitalists around mineral rights. A similar power was conferred on the Minister of Economic Affairs in Bophuthatswana (which unlike the self-governing Lebowa, was regarded by South Africa as a "sovereign state").

According to Capps (2007), *"The Apartheid government also enacted specific measures to protect white interests in different economic sectors. As with the 1991 Abolition of Racially Based Land Measures Act (the 'Land Act'), the 1991 Minerals Act was a key component in the ensuing battery of prophylactic legislation and state handouts; its principal aim was to narrow the scope for the statist redistribution of (white) mineral property through the further privatisation of mineral rights and 'deregulation' of the minerals system"*¹⁶¹. Accordingly, the Minerals Act, *inter alia*, 'liberalised' state mineral rights so 'releasing' them for market acquisition; 'encouraged' the market transfer of private rights from 'small' holders (like farmers) to the mining houses; enhanced the protection of private rights acquired in terms of repealed legislation; and radically reduced state involvement in the industry (Anon, 1991:38; DME, 1998:12; Smith and MacDonald, 1998:621-622). The overall effects of 'redistribution through deregulation' were two-fold. First, the ratio of private to state mineral property significantly increased, so reducing the post-Apartheid state's control over mineral resources and their revenues¹⁶². Second, it significantly increased, and entrenched, the mining houses' monopoly over private mineral property."

¹⁶⁰ For a fuller account of this see Capps, G. (2007), *White Gold, Black Land: The Platinum Mining Industry and Mineral Property in the New South Africa, 1994-2000*, Unpublished manuscript

¹⁶¹ The provisions and intention of the 1991 Land Act are critically outlined by Francis and Williams (1991). On 'deregulation' and other measures to protect the white farming bloc centred on the maize industry, see Bernstein's seminal analysis (1996b:137-140 and 1996c:24-26)

¹⁶² The success of the National Party's strategy is suggested by the registration of some 6000 mineral cessions and prospecting contracts in South Africa's deeds offices in the five years between 1991 and 1996 (DME, 1998:12). It would be interesting to conduct further research to specify exactly where there 'released' rights came from and to whom they went.

This resulted in the registration of some 6000 mineral cessions and prospecting contracts in South Africa's deeds offices in the five years between 1991 and 1996.¹⁶³

In Lebowa, the result was that *"...by 1994, Rustenberg platinum and JCI had gained exclusive control of the mining rights to 26 farms through a series of agreements with the Lebowa Government, which resulted in the formation of several JV companies (ibid). As mining rights were perpetual rights in law, this effectively enabled JCI/Anglo Platinum to monopolise the entire Eastern limb of the BIC¹⁶⁴"*

In 2000, the LMT was reported to control 1,500 title deeds to mineral rich farms, of which 1,432 were registered in the trust's name. The total value of these assets were estimated to be in the region of R280 – R300 million, while the LMT's royalty income was close to R20 million a year (MG21/04/00).

After 1994, the powers previously enjoyed by Bantustan Ministers and the LMT were, through the existing 1991 Minerals Act, vested with the RSA Minister of Minerals and Energy with executive authority to grant the prescribed mining authorisations.

By 1995, Anglo Platinum had acquired more than 80% of the known platinum mineral rights in the BIC, aided by the 1991 Minerals Act which, amongst others, facilitated transfer of state-owned mineral rights. The Minerals Development Bill, which later became the MPRDA, particularly threatened the huge tracts of platinum mineral rights it had acquired. In this regard rivals Impala and potential new mining entrants into the industry were more supportive of the MPRDA.

Thus, at the end of 2000, Amplats entered into what appears to have been a package agreement with the Department of Minerals and Energy whereby Amplats cancelled their previous agreements with the LMT over all mineral assets previously held. In exchange they were awarded mineral rights over a smaller number of properties for a period of 25 years. The agreement was subject to Amplats developing the mineral assets in joint ventures with black capital. As outlined in the Amplats section above, all subsequent expansions of Amplats' platinum production have been in accordance with this agreement.¹⁶⁵

While black capital benefited from this active state intervention to forcing Amplats to give up its monopoly grip on Lebowa mineral rights, it also benefited old order capital, Implats, in respect to its Marula/Winnaarshoek project (See Implats section above). Other, mainly foreign, mining houses benefited from this arrangement as witnessed by the number of new entrants that were producing platinum by 2010. (See table below). In some cases, Amplats actively incorporated these new players into joint ventures which gave Amplats some control over the ounces of platinum produced.

¹⁶³ DME (1998), Annual report.

¹⁶⁴ In April 2000, only two of these were being mined by Anglo Platinum and the LMT's numerous royalty deals and joint ventures agreements were described as a 'rip-off' by the DME. For example, Anglo Platinum was reported to be paying a royalty of just R5m from a net profit of R122m on one of these ventures (MG21/04/00)

¹⁶⁵ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=366

In addition, the concept of “broad based” empowerment also became established in the platinum sector when the DME pressured Implats to include community organisations in the equity shareholding of the Marula project. Up till then, Implats had not broadened the black shareholding group to the extent desired.

The package agreement with Amplats set a precedent in that it actually reflected the implementation of the MPRDA some two years before the MPRDA’s detail was set down and finally promulgated in 2003. This process was not smooth and there was considerable contestation leading up to promulgation between old order capital, emerging black capital and the state. The drafting of the MPRDA and the associated empowerment charter was subject to considerable lobbying during 2002 with an early leaking of a draft leading to significant drops in mining counter values on the JSE in July 2002. The tension continued after promulgation of the MPRDA in October 2002 into 2003 when the National Treasury released the first draft of the Mineral and Petroleum Royalty Bill (MPRB).

The Royalty Bill was criticised by both old order and emerging black capital reflecting their confluence of interest in maximising mining sector profit. For the latter, this was necessary so that their leveraged equity position in mining sectors could be serviced with higher levels of dividends and rising share prices.

In March 2001, Amplats applied for four mining licenses for its existing Eastern Limb mines and two additional licenses for new mining projects in the Twickenham and Der Brochen areas. An intense battle ensued between the Department of Minerals and Energy with Amplats until August 2002. The outcome was that Amplats received its mining licenses but it also committed to entering into two new 50-50 joint ventures with two black mining consortiums in the Twickenham and Der Brochen areas.¹⁶⁶ The agreement gave Amplats security of tenure on its existing mines, subject to the existing operations being compliant with the Mining Charter objectives. The agreement also allowed Amplats, in addition to the JVs, to develop other projects within the areas applied for on a 100% ownership basis.

Platinum - conclusions

Thus from the perspective of the MEC, for specific reasons of global supply-demand, platinum mining evolved rapidly to the refined metal beneficiation stage by the early 1980s. The industry then locked itself into a long-term supply relationship with automotive OEMs, enabling the firms to reduce risks associated with capital-intensive mining expansion investments. Post-apartheid industrial policies tried to deepen beneficiation by linking this sector to automotive component manufacture and vehicle assembly.

Following the resolution of the historically exploitative relationship between Impala and the Bafokeng in the late 1990s, all fractions of capital involved in the BIC platinum arena have proceeded to develop the resource in the most coordinated and optimal manner. Mining acreage was swapped to maximise synergies.

Both Impala and Amplats, with the support of their black capitalist shareholders, have systematically bought into and neutralised all emerging platinum and palladium production

¹⁶⁶ http://www.angloplatinum.com/investors/invest_sub/display.asp?Related=true&Id2=414

ounces. The flurry of new entrants in the early 2000s was fuelled by the vast rights previously held by the Lebowa Minerals Trust, which had been appropriated by Amplats until the promulgation of the MPRDA in 2002.

In anticipation of losing control over the LMT rights and the likelihood that this would threaten the global market supply-demand balance that was being maintained by Amplats and Impala, Amplats effectively entered into an arrangement with the state whereby it gave up control over the bulk of the Eastern Limb LMT rights in exchange for certainty of tenure on its existing mines and a selected number of high potential deposits. Even prior to the MPRDA having legal effect, Amplats agreed to developing new projects on a joint basis with black capital. As for the rights under the custodianship of the state, the Department of Minerals and Energy proceeded to allocate the former LMT and other mineral rights in contiguous properties to a broadening range of emerging local capitalists, larger-scale national black capitalists and local community organisations. In turn, Amplats and Implats systematically acquired control of these developments through various means, thereby extending their control over supply of PGMs into global markets. The trajectory of achieving historic redress, managing new class creation and achieving overall national industry development around platinum has only been possible because of the dominance of South African platinum production coupled with the burgeoning and sustained global market growth and PGM price growth.

There could have had a different outcome. Had the state not aligned itself to a strategy driven by large-scale established old order (and emerging large-scale black) capitalist interests, it is possible that overproduction might have ensued with the classic boom-bust characteristics that prevailed in gold mining, which might have slowed down the overall industrial development trajectory.

An alternative approach could also have had more optimal national development outcomes. For example, a Lebowa Minerals Trust-type institution at national government could have been created to house the national patrimony in mineral rights but this was not possible when the issue emerged in the late 1990s, as there were other political factors around the LMT and the KZN Ingonyama Trust. The Bafokeng, on the other hand, have corporatised their financial interests into a RBH and have taken the approach of using platinum revenues to develop infrastructure while also actively diversifying out of platinum. This approach could have allowed the “National Minerals Trust” to competitively concession these properties against development impacts, particularly backward and forward linkages. If all the properties that were held but not developed pre-2002 had also been lodged in the National Minerals Trust, the impact on job creation in the subsequent public tender could have been significant.

By 2003, the confluence of interest in orderly development of platinum production manifested itself in a joint research programme to jointly investigate solutions to common technical problems of underground mining by the four major platinum producers (Anglo

Platinum, Impala Platinum, Lonmin Platinum and Northam Platinum) and the state's research agency, CSIR.¹⁶⁷

The PlatTech project was to focus on new mining methods and novel approaches to address common challenges associated with mechanisation. The PlatMine was to focus on overall safety and health issues relating to the long-term sustainability of the platinum industry in South Africa. Both projects had a R10m budget for 2003, 70% of which would come from the platinum producers.

Both Amplats and Impala have shared a clear strategy of controlling the pace of expansion of platinum output. Rapidly expanding industry made it possible to more rapidly grow a black mining-based capitalist class, than was the case with Afrikaans capital.

Coal, Electricity and the MEC

This section illustrates how industrialisation (particularly energy-intensive industrialisation) has evolved around gold mining, coal mining and electricity generation in South Africa and the ways in which different components of the state have interacted with the various interests involved in the respective sectors.

Up until 1948, the electricity sector was the preserve of a private monopoly, the Victoria Falls Transvaal Power Company (VFTPC), which contrary to the name did not generate hydro power but generated using coal.

After the Boer war, mining cost containment drove scale economies in electricity generation. The VFTP was created by Cecil John Rhodes' BSA Company in 1906 and was financed by Deutche & Dresner Banks. But this dominant player threatened other interests including the profits of coal suppliers and the coal shipment revenues of the state-owned railways. Lobbying followed and this led to the promulgation of the 1910 Power Act, which regulated private generators through licensing. In term of the Act, private ownership was to revert to the state after 35 years.

By 1922, the gold mines began to experience increased electricity costs resulting from high steam-locomotive rail costs. This also adversely affected the export revenues of coal mines. In response, the state passed the 1922 Electricity Act which apart from creating Eskom and transferring responsibility for power generation to the state, also largely served to support the electrification of the South African Railways and provided power connections to coal mines.

The boom in gold production that followed the abandoning of the gold standard in 1932 resulted in a 500% growth in Eskom output, much of which was sold through the VFTPC distribution monopoly to gold mines. After WWII there was a further gold mining boom with massive power demand increase which was filled largely by Eskom and some investment from the VFTPC.

Anglo American then lobbied the National Party government in 1948 to nationalise the VFTPC, two years before the due date, so as to avoid delays in generation investment to

¹⁶⁷ http://www.implats.co.za/implats/pr_10042003.asp

supply mines. By 1948, 59% of generated power was consumed in gold mines. This increased during the 1950s as the (mainly AAC-owned) Free State gold mines began production.

Following the generation capacity expansion of the 1950s the economy grew strongly in the 1960s and 1970s, particularly with a number of energy-intensive manufacturing mega projects. Eskom borrowed heavily from IBRD to finance the 600% generation expansion that took place by 1974. Of the £105m of long term liabilities raised by the Union Government in the 1950s, more than half (£58.5m or \$117m) was incurred before 1955, specifically for energy and railway infrastructure.

The expansion programme continued into 1980s, based on massive international borrowing. Sectors around the minerals energy complex (MEC) sectors continued to benefit from Eskom's utility rate of return approach which provided electricity at very low rates.

Following the 1983 financial crisis, the De Villiers Commission recommended the commercialisation of Eskom and the implementation of a unified national tariff. This was promulgated in the Electricity Act 1987, resulting in Eskom being shifted from the Department of Mineral and Energy Affairs to the newly created Department of Public Enterprises, as first step to privatisation. The 1985 debt moratorium had halted South Africa's growth and exacerbated the fiscal crisis.

In 1980 amalgamation of DoM and DoE into DMEA (including Sasol and Eskom)

Table 16: Eskom commissioning schedule 1961 – 1992

Power station	Date of entry into commercial service	Maximum capacity (MW)
Komati	1961	906
Camden	1966	1 520
Grootvlei	1969	1 130
Hendrina	1970	1 900
Arnot	1971	1 980
Kriel	1976	2 850
Koeberg	1976	1 840
Matla	1979	3 450
Duvha	1980	3 450
Tutuka	1985	3 510
Lethabo	1985	3 558
Matimba	1987	3 690
Kendal	1988	3 840
Majuba	1992	3 843

Source: Eskom (1993), Annual Report

Electricity demand projections were not realised after the prolonged economic downturn that accompanied the 1985 debt moratorium and a very large electricity generation surplus prevailed for nearly two decades after that. During this period, electricity prices were amongst the lowest in the world. Energy-intensive industries were encouraged the period witnessed considerable investment in the smelting of chrome, manganese, titaniferous ores and aluminium.

By the late 1990s and early 2000s, it became apparent that the apartheid electricity dividend was eroding and that new generation capacity would be needed. However, the 1998 Energy

White Paper had adopted a policy approach which sought to unbundle Eskom into its separate generation, transmission and distribution parts. A portion of Eskom's generation capacity was to be privatised and an appropriate market model, together with the requisite rules and regulations, grid code, etc was to form the basis for private investors to increase generation capacity. To ensure equitable system access, the transmission system was to be separated from Eskom. The fragmented municipal distribution infrastructure was to be amalgamated with Eskom's and reorganised into 6 wall-to-wall regional distribution entities.

For various reasons, this policy was not implemented and in early 2008 the supply shortages occurred and widespread blackouts were experienced with disruption to existing supply prevailing for much of the first half of 2008. The lack of certainty about new generation capacity caused many energy-intensive projects put on hold for some time after. Government subsequently directed Eskom to plan and execute new generation capacity projects to meet demand over the next 5-6 years, while reformulating its approach towards renewable energy and private generation of power.

As at 2011, Eskom is in the process of building some 12,000 new megawatts of electricity which will be commissioned over the next 4 years. An integrated resource plan has been publically debated and adopted which includes options for long-term mitigation of greenhouse gases in accordance with commitments made in international fora.

Coal 1950 - 1989

Coal has played a critical role in the generation of electric power from the turn of the century. By the 1950s, coal mining was organised under the Transvaal Coal Owners Association (TCOA), mainly English-speaking capital, which effectively operated as a cartel. Most of these mines produced high-grade coal for export and also supplied domestic power stations.

In the post-war period, increasing coal shortages were experienced arising from increased electricity demand, driven by higher gold mining demand. Rail capacity constraints also contributed to the shortages. In addition, domestic coal prices were regulated at a low level from 1948 in comparison to the higher export prices.

The state did not involve itself in direct ownership of coal mining. Afrikaans capital had already begun to occupy that space by the late 1940s. These firms also sought the higher priced export market.

In 1952, coal rationing was introduced with the TCOA forced to supply domestic needs before exports would be allowed. In addition, the state withheld allocation to TCOA members of railway wagons for export coal, import and export permits and electricity during periods of shortage, often favouring Afrikaans-owned mines at the expense of TCOA members. Faced with this pressure, by 1954, the TCOA was forced to admit 2 Afrikaans-owned firms into the cartel.

Affirmative procurement policies pursued by Eskom resulted in most of the contracts for coal supply being allocated to Afrikaans-owned mines like Federale Mynbou, which got the contracts for the new Taaibos & Highvelt stations of the 1950s. The share of Afrikaner

ownership of the coal mining sector increased significantly in the 1960s. Of the five stations commissioned in the 1960s, four coal contracts were awarded to Sanlam's Federale Mynbou, whose coal interests were subsequently placed under the Trans Natal Coal subsidiary, TNC. By 1962, Federale Mynbou was the second largest coal company in the country, after AAC.

Table 17: Eskom commissioning schedule 1962 -2001

COAL-FIRED STATIONS	LOCATION	RATING	MINING MW	HOUSE	FIRST SET	LAST SET
KOMATI		Middelburg	1000	TNC	1962	1966
INGAGANE	Newcastle	500	TNC	1963	1969	
CAMDEN		Ermelo	1600	TNC	1967	1969
GROOTVLEI	Balfour	1200	AAC	1969	1977	
HENDRINA	Hendrina	2000	TNC	1970	1977	
ARNOT		Middelburg	2100	AAC	1971	1975
KRIEL		Bethal	3000	AAC	1976	1979
MATLA		Bethal	3600	TNC/GFSA	1979	1983
DUVHA		Witbank	3600	RM	1980	1984
LETHABO	Vereeniging	3708	AAC	1985	1990	
TUTUKA		Standerton	3654	AAC	1985	1990
MATIMBA	Ellisras	3325	ISCOR	1987	1991	
KENDAL/KHUTALA	Kendal	686	RM	1988	1993	
MAJUBA		Volksrust	3600	RM	1996	2001
Source: Eskom (1990)						

Through the patronage of Eskom contracts, General Mining's Trans Natal Coal became the largest single producer of coal in South Africa by the early 1970s. By then the interests of both Afrikaans and English capital involved in coal mining merged and what followed was the coal industry's consolidation and modernisation around three major groups; AAC's Amcoal, General Mining's TNC and Rand Mines' Randcoal. This was carried out through closely coordinated policies which facilitated the pooling of large scale public and private sector resources. The state developed infrastructure to facilitate rail transport of coal from the developing Eastern Transvaal coal fields to Richards Bay, ensuring that the harbour would be developed to accommodate large coal carriers. The TCOA undertook to develop the mines and to build, maintain and operate the coal-loading terminal. At the time this grand project, of developing the new port of Richards Bay, the connecting Coalex bulk freight rail line from the Mpumalanga coalfields, and the development of the coalfields themselves, was one of the largest coordinated industrial development programmes undertaken during apartheid. This was reflective of the MEC, as both the most important site of accumulation and as the platform from which the economy was propelled in the 1970s (and on which it faltered in the 1980s).

At that time, four firms dominated the coal mining sector.¹⁶⁸ Their business model was based on medium- to long-term contracts to supply Eskom with a large proportion of low-grade coal from mines that were usually located close to the power station being supplied. As was the case in the 1950s, the bulk of the coal was sold to power stations at low prices. The modernisation process of the 1970s had tied the mines into long-term contracts which were

¹⁶⁸ Sasol, while it mined a large amount of coal, utilised this entirely within its coal-to-liquids plans.

usually on a cost-plus basis. As in the 1950s, the coal companies made most of their profits in exporting a portion of coal output, which was washed to remove ash and raise the calorific value.

Table 18: Dominant coal suppliers 2003

Saleable Production of Coal by the Major Mining Groups in South Africa — 1993 Financial Year		
Company	Mt	Total, %
Amcoal	45,5	24,9
Sasol	40,2	22,0
Randcoal*	33,4	18,3
Trans-Natal	33,2	18,2
Iscor	12,9	7,1
JCI*	8,2	4,5
Goldfields	3,1	1,7
Duiker	4,6	2,5
Other	1,6	0,8
Total	182,7	100,0

Source: Cook, A.B. (1994), Coal and Progress – The South African Story, SAIMM, v.094n11p.329.

From Trans-Natal Coal to BHP Billiton - Ingwe

As outlined above, Trans-Natal Coal emerged as part of the evolution of Afrikaans capital's involvement in the coal sector. By 1989, it was fourth largest coal producer in the country.

Further consolidation of coal mining took place in the 1990s. This was prompted by the unbundling of the Barlow Rand group (itself falling within the sphere of SA Mutual conglomerate control) in 1993 into its main holding firms, industrial holding company CG Smith, gold mining holding company Randgold and coal mining holding company Randcoal. In October 1994 Gencor subsidiary Trans-Natal Coal bought out the shareholders of Randcoal and merged the assets with Trans Natal Coal, renaming the company Ingwe Limited, which at that time was the world's largest producer of steam coal. While consolidating its assets within South Africa, Ingwe Coal also expanded its non-South African asset base, buying Coal Mines Australia from AMP in 1996.

Also in 1994, Gencor acquired Royal Dutch Shell's Netherlands-based Billiton mining assets for US\$1.2 billion. Billiton was then shifted onto the London Stock Exchange (LSE) as Billiton plc in 1997. In September 1998, Billiton PLC acquired 100% ownership of Ingwe from Gencor South Africa, thereby completing a process by which ownership and control of the largest coal miner in South Africa shifted offshore.

Following the merger with BHP of Australia, BHP Billiton plc amalgamated the respective coal assets of the two companies. As part of the consolidation of coal assets within the parent company, mines which were less profitable and sustainable were sold. These sales coincided with BHP Billiton's black ownership transfer obligations in terms of the MPRDA. Thus in 2002, the Delmas Colliery was sold to black-owned Kuyasa Mining. Since then, a

number of other coal mining assets have been sold to black consortia while Ingwe has consolidated around its existing mines, developing these in partnership with Anglo American. (See below)

Anglo American Coal

In May 1999, the Anglo American Corporation of South Africa (AAC) merged into its Luxembourg-based offshore holding company Minorco Société Anonyme, creating the London-based Anglo American PLC company.

In the same year, Anglo Coal, now owned by a London-based PLC corporation, commenced its global strategy which included defending the profitability of its South African assets while expanding its footprint in other parts of the world. It purchased one third of Rio Tinto's Carbones del Cerrejón operation in Colombia in a joint venture with Glencore International.

In July 1999, Anglo American bought the coal arm of Goldfields, which itself was in the process of unbundling. Anglo Coal retained the Greenside colliery but placed the other Goldfields Coal assets (including a 50% shareholding in the Matla colliery) together with some of its own assets, into a special purpose vehicle called Newcoal. The coal assets earmarked for disposal collectively generated \$9m of 1999 coal operating profit of \$114m to the Anglo group. Billiton PLC also bundled a number of its coal mining assets which were mainly oriented towards supplying the state-owned utility Eskom. The package included:

- Matla Joint Venture and Matla Colliery, comprising an underground colliery that is contracted to supply 10-million tons a year to Eskom's Matla Power Station, and its related management contract
- New Clydesdale Colliery, an underground mine which produces a million saleable tons a year, largely for the export market
- The underground operation of Arnot Colliery that is contracted to supply five-million tons a year to Eskom's Arnot Power Station, and its related management contract
- Glisa Colliery, an opencast and underground mine which produces a million saleable tons a year for supply mainly to the domestic industrial market
- The coal rights and obligations associated with these operations
- Other uncommitted coal reserves and rights previously owned by Gold Fields Coal
- 800 000 t/y of throughput entitlement at the privately-owned Richards Bay Coal Terminal (RBCT)

At that time Eskom was initiating a procurement policy which gave preference for black-owned suppliers.¹⁶⁹ The assets were placed under a holding company called "Newcoal" and bids were invited from prospective black consortia. There were 55 black capitalist bidding groups. The Eyesizwe transaction was concluded in July 2000.

By 2001, Eyesizwe Coal emerged as a new black-owned coal mining company with a sizeable presence in the domestic market. As with earlier ownership transfers to Afrikaans capital, the vendors retained a portion of ownership of the company. While Eyesizwe Coal was 66%

¹⁶⁹ <http://www.engineeringnews.co.za/article/eskom-to-review-its-procurement-policy-2000-06-16>

owned by the black consortium's Eyesizwe Mining, Anglo American retained 11%, Ingwe 9% and PricewaterhouseCoopers 4%.

In 2000, Anglo Coal reported that it was also exploring participating in a new proposed coal export terminal (South Dunes) at Richards Bay.¹⁷⁰ Between July and October 2000, Anglo Coal expanded its global operations in Australia and Venezuela when it bought Shell Petroleum's Coal Holdings for \$959 million.¹⁷¹ Anglo Coal's diversification strategy is reflected in the following table showing the significant increase in non-South African coal revenues. It should also be noted that coal prices turned upwards in 2001, following record lows in earlier years.

Table 19: Anglo American plc – diversification of coal operations 2001

Anglo American Coal	Total operating profit/(loss), \$m	
	2001	2000
South Africa	271	136
Australia	173	35
South America	49	(2)
Total	493	169

The internationalisation of the previously South African-based coal mining firms of Anglo American and Billiton (before its merger with Australia's BHP) was driven by dramatic changes in coal markets arising from the deregulation of (mainly developed market) electricity industries in the 1990s.¹⁷² Whereas previously, the bulk of global coal trade was directly between coal miners electricity utilities through long-term contracts, the emerging patterns of deregulated electricity utilities towards buying on the spot market increased significantly. In 1996 70% of Billiton Coal's European sales were through long-term contracts, 19% through yearly contracts and 11% spot trades. By 2000, a hybrid long-term flexibly-priced contract had emerged which accounted for 29% of sales, while only 16% was traded through long-term contracts and 50% on the spot market.

A second factor that shaped the internationalisation of the coal divisions of Anglo and Billiton was the higher Asian market growth for coal. Industry forecasts in the year 2000 were for average annual coal consumption to increase by 1.5% in developed countries and 3.6% in developing countries, with mainly in Asia. The transport cost advantage of coal supply to these markets from Australia and the Asian region itself was very compelling. South Africa's export coal advantage lay in its proximity to relatively slow-growing European markets.¹⁷³

As in the case of both gold and coal, the new black capitalist owners of mining assets entered the industries financed through highly leveraged BEE transactions at a low point in the commodity cycle. Although heavily encumbered with debt, they had the good fortune of entering the industry with mediocre operating assets, some with expansion potential, at a

¹⁷⁰ Anglo American (1998), Annual Report

¹⁷¹ Anglo American (2000), Annual Report

¹⁷² <http://www.miningweekly.com/article/coal-emerging-from-painful-low-cycle-2000-06-16>

¹⁷³ <http://www.miningweekly.com/article/australia-poised-to-match-sa-coal-exports-in-five-years-says-redman-2000-11-24>

point when the cyclical prices for both gold and coal turned upwards very rapidly from 2000 onwards.

In 2002, a consortium of Anglo Coal, BHP Billiton and Glencore bought Exxon Mobil's coal interests in Colombia, International Colombia Resources Corporation LLC (Intercor), allowing the consortium to rationalise and achieve scale economies in existing Columbian operations.

Both Anglo Coal and BHP Billiton's Energy Coal divisions appear to have followed a pattern thereafter where they have either partnered with black capital in joint ventures to supply Eskom's new requirements, or they have sold their stake in those mines that have been mainly dependent on existing Eskom-linked mines in less profitable cost plus or fixed price contracts. In other ventures which release export grade coal, Anglo Coal and BHP Billiton have tended to go it alone or in partnership with each other.

The main driver that propelled Anglo Coal and BHP Billiton to sell to black capital were the minimum 15% black ownership by 2009 and 26% black ownership target requirements by 2014 of the Mining Charter, which was given legal force by the promulgation of the MPRDA in 2004. The system adopted by the Department of Minerals allowed for firms to generate credits for certain approved transactions which could be applied to the conversion of old order mineral rights for non-related assets which had not achieved the 26% black ownership threshold.

Anglo American – Eyesizwe Coal

Thus in 2004, Anglo Coal entered into a joint venture with Eyesizwe to develop the Arnot north colliery largely to supply Eskom. In the same year, Anglo Coal commenced development on its own of the 5mtpa Isibonelo Colliery in a 20 year contract to supply Sasol. Anglo Coal also commenced development with BHP Billiton of their contiguous coal mining assets within what was termed the Western Complex, an exercise on a huge scale that was manageable using their collective balance sheets.

In 2005, in a separate exercise of accommodation of black capitalist interests, Anglo PLC unbundled its 66% holding in Kumba, retaining its grip on the iron ore assets. Kumba's coal mining and other mining assets were merged with the coal assets of Eyesizwe and the combined entity listed on the JSE in 2006 as Exxaro, with a majority black-ownership in which Anglo PLC retained a 17% shareholding.¹⁷⁴

Anglo American – Inyosi JV

In 2007, in a process reminiscent of the Eyesizwe transaction of 2000, Anglo Coal placed a number of its South African coal mine assets into the Anglo Inyosi vehicle and vended 27% of the share to the Inyosi black capitalist consortium. The assets included Anglo Kriel, Elders, Zondagsfontein/Zibulo, New Largo and Heidelberg mines and projects. This exercise was carried out to ensure that Anglo Coal qualified for Eskom's anticipated procurement of 15mt per annum for the planned Kusile power station. Fulfilment of the Inyosi transaction only happened in 2010, when Anglo PLC reported that the conditions precedent had been

¹⁷⁴ <http://www.resourceinvestor.com/News/2005/10/Pages/Anglo-Splits-Kumba-to-Create-BEE-Flagship.aspx>

fulfilled. Among these conditions were that Eskom would award the coal supply contract for the planned Kusile power station to Anglo Inyosi.

In 2008, Anglo Coal reported that the Zondagsfontein project was on track to deliver coal 6.6mt export and domestic coal by 2010.

By 2009, and despite the transfer of assets to accommodate black capitalist interests, about half of Anglo plc’s operating profit was sourced from South African coal assets, the same proportion as was the case in 2001.

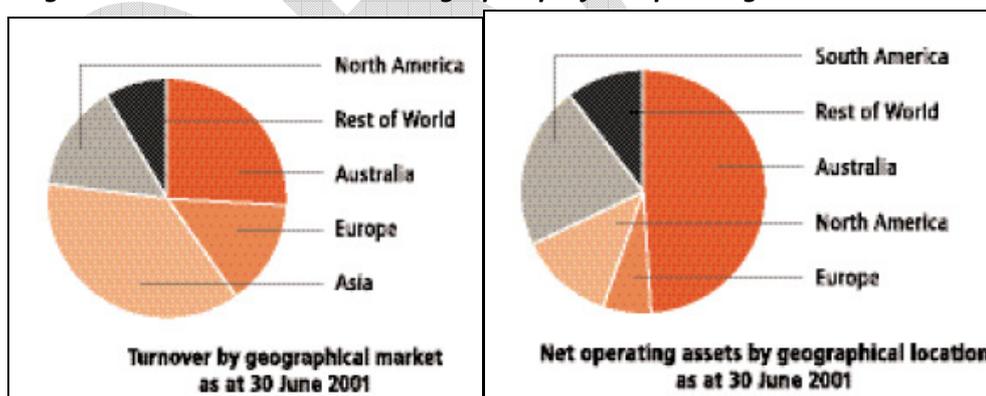
Table 20: Anglo American plc - Diversification of coal operations 2001

Financial highlights: Thermal Coal		
\$ million (unless otherwise stated)	2009	2008
Operating profit	721	1,078
South Africa	442	736
South America	305	375

Source: Anglo American, annual reports

In contrast to Anglo PLC’s significant activist role in accommodating black capital in the ownership of coal mining, BHP Billiton has played a less prominent role in this sector in South Africa. Following the Eyesizwe transaction in 2000, in 2001, Billiton PLC merged with Australia’s BHP. Implementing the merger absorbed much of the company’s energy over the next two years. Southern Africa turnover became a relatively small part of the company’s global operations, so small that the company subsumed South Africa within the “Rest of the World” slice in its 2001 Annual Report.

Figure 13: BHP Billiton 2001 – Geographic profile: Operating assets and market turnover



Source: BHP Billiton Ltd Annual Report, 2001.

http://www.bhpbilliton.com/home/investors/reports/Documents/BHPBillitonLimited_partA.pdf

BHP Billiton’s emerging corporate structure was organised in a market-facing form around Customer Sector Groups (CSGs). BHP Billiton’s South African assets, which were previously managed collectively within some semblance of a country strategy were quickly subsumed within the strategies of respective CSG’s, with South African operations having to compete for expansion capital with the respective CSG’s other global operations. In 2001, the Southern African assets included:

- Ingwe Coal (Energy (thermal) Coal CSG)
- Manganese (Carbon Steel Materials CSG)
- Aluminium (Aluminium CSG)
- Chrome and ferrochrome (Stainless Steel Materials CSG)

As with Anglo Coal, BHP Billiton's coal operations have gradually scaled back to a set of world-scale core mines and processing plants which produce thermal coal for Eskom and for export markets. Whereas in 2001, BHP Billiton mines produced 56 million tons of coal from its various mines, by 2010 it was producing 30 million tons from three mine complexes including the combined Douglas-Middelburg mine, Khutala and Klipspruit. This was partly the outcome of a \$975m optimisation of Douglas and Middelburg mines with the objective of producing 10m tons of export coal and 8m tons for supply to Eskom. Billiton's second major coal investment post 2000 has been its Phola coal processing plant joint venture with Anglo Coal, which allows BHP Billiton to expand exports from the Klipspruit export coal mine so as to fully utilise its 18m ton Richards Bay Coal Terminal (RBCT) export entitlement

In 2008, BHP Billiton divested completely from two coal mines. The Optimum Colliery, together with its RBCT ownership entitlement to 6.5mt of export coal capacity was sold to a black-owned consortium involving Optimum's previous management. The Koornfontein Colliery was also sold to a different black-owned consortium. In 2010, BHP Billiton put out a tender for mineral rights that it currently holds which it does not intend to develop, signalling its overall intention to consolidate around existing South African mineral assets.

Exxaro

As outlined above, in 2005, Kumba further unbundled itself, separating its coal mining and other mining assets into a separate company. Anglo retained 66% of Kumba Iron Ore, and 17% of the newly created coal company. Other shareholders in KIO include the IDC (14%) and minorities 20%. A merger ensued with the assets of this company being amalgamated with the assets of Eyesizwe Coal. The resulting entity listed on the Johannesburg Stock Exchange in 2006 as Exxaro, with a majority black-ownership in which Anglo PLC retained a 17% shareholding.¹⁷⁵

Since 2006, Exxaro has consolidated its position. It received the coal supply contract for Eskom's Medupi power station in Lephalale, which Exxaro will supply from the Grootvlei mine that is already supplying the Matimba power station in the same area. This provides the basis for further extraction from the Waterberg coal field which extends into both Botswana and Zimbabwe.

Optimum Coal

In 2008, BHP Billiton divested completely from two coal mines. The Optimum Colliery, together with its RBCT ownership entitlement to 6.5mt of export coal capacity was sold to a black-owned consortium involving Optimum's previous management. The Koornfontein Colliery was also sold to a different black-owned consortium.

¹⁷⁵ <http://www.resourceinvestor.com/News/2005/10/Pages/Anglo-Splits-Kumba-to-Create-BEE-Flagship.aspx>

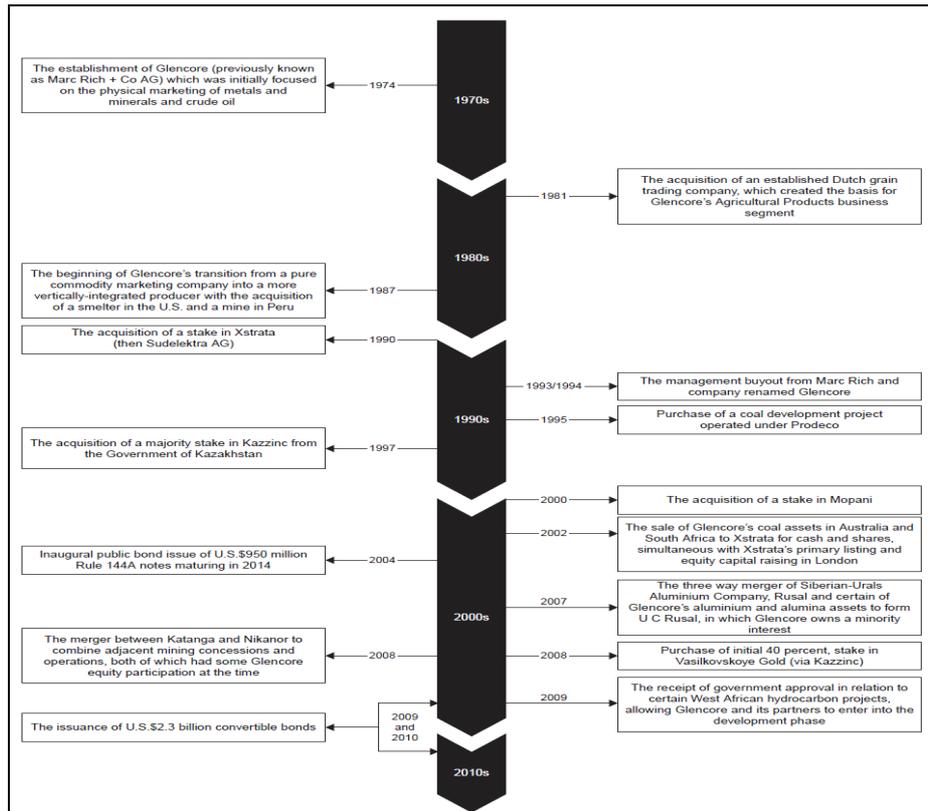
By 2009, black-owned Optimum Coal had become South Africa's sixth largest producer of thermal coal and the fourth largest exporter of thermal coal, although in terms of the sale agreement it is obliged to sell all Optimum Colliery export coal through BHP Billiton. During 2009, Optimum bought Koornfontein from its black owners and then listed on the JSE in March 2010, raising substantial capital for expansion. In August 2011, Optimum Coal became a takeover target for Glencore.

Glencore¹⁷⁶

Glencore began in 1974 as the Swiss-based Marc Rich + Co AG. At the time it was involved in the marketing of ferrous and non-ferrous metals and minerals and crude oil. In 1981 it expanded into agricultural product trading after acquiring a Dutch grain trading company. At around the same time, Glencore began trading coal. From the late 1980s, Glencore strengthened its marketing role by acquiring strategic holdings in producing mines and smelters together with the associated offtake agreements. In 1987, it bought a 27% stake in the US-based Mt. Holly aluminium smelter and in 1988, when took a controlling 66.7% share in a Peruvian zinc/lead mine. In the 1990s, founder Marc Rich was accused of tax evasion, fraud and racketeering by the U.S. federal government (though Rich was later pardoned by Bill Clinton at the end of his term in office). In 1994, Rich sold his share of the company to management which, at the time, had a strong South African component. The origins of this probably lie in the opportunities that existed in circumventing sanctions during apartheid, for Rich had been cited in various reports as having been involved in supplying crude oil and trading South African coal to South Africa during the 1980s. The company was rebranded as Glencore.

¹⁷⁶ Glencore (2011), IPO Prospectus

Figure 14: Glencore history 1974 - 2011



Source: Glencore (2011), IPO listing prospectus

In South Africa, apart from trading, Glencore's main involvement has been through a combination of direct investment as Glencore and through investing via its listed associate company Xstrata, in which Glencore holds a 34% share.

Glencore's approach seems to have been to acquire dominant market positions through long-term marketing agency agreements with commodity producers. Where appropriate, Glencore has taken commodity ownership stakes in selected commodity producers. In South Africa, this approach has been followed in regard to ferrochrome, ferrovanadium and coal, mainly through Xstrata.

In 2011, Glencore listed on the LSE, raising significant capital.

Xstrata

In 1990, the Swiss-based trading group Glencore International bought ferrochrome producer, Sudelektra, from the Union Bank of Switzerland. Glencore had been founded by Marc Rich who was accused of tax evasion, fraud and racketeering by the U.S. federal government (though Rich was later pardoned by Bill Clinton at the end of his term in office). Rich sold his share of the company to Glencore management which, at the time, had a strong South African component. The origins of this probably lie in the opportunities that existed in circumventing sanctions during apartheid, for Rich had been involved in supplying crude oil to South Africa during the 1980s.

Xstrata emerged in 1998 as the renamed ferrochrome and vanadium producer Sudelektra. That part of its history is more fully discussed in the ferrochrome section below.

The firms were added to Südelektra's holdings in South African ferrochrome company Chromecorp Holdings. Chromecorp was listed on the JSE in May 1995 and expanded chrome and ferrochrome output considerably. Only 10% of the shares were free float and this constrained capital raising. In 1997, Südelektra delisted Chromecorp.

In 1998, as part of JCI's unbundling, it sold its ferrochrome unit CMI to Südelektra.¹⁷⁷ At the time, CMI was the third largest ferrochrome producer in South Africa. In 1999 the company changed its name to Xstrata AG. It continued to dispose of non-core businesses such as aluminium, oil and gas and to focus on low-cost production in its key markets. It moved into the zinc and lead market buying Spanish-owned Asturiana in May 2001.

In June 2000, Xstrata and Samancor set up a 180,000 ton per annum joint venture to mine ore from a contiguous Samancor deposit at Xstrata's Kroondal mine and smelt it in Xstrata's Wonderkop ferrochrome facility near Rustenburg, North West Province. In October 2001, former BHP Billiton finance director Mick Davis became CEO of Xstrata and, in March 2002, Xstrata PLC was listed on LSE, with Glencore retaining a 34% shareholding. In the same year, Xstrata acquired further coal assets, Glencore's Australian (Enex) and Lonrho's South African Duiker Mining and Tweefontein Colliery for \$2.5 billion, becoming the world's largest exporter of thermal coal at the time.

Xstrata subsequently acquired coal and zinc operations and properties, including MIM Holdings, the largest remaining independent mining group in Australia, with operations in coal, copper, lead and zinc. Xstrata was outbid by BHP Billiton in 2005 for Australia's WMC but instead it took control of the Canadian nickel and copper mining company Falconbridge and a 30% share in the El Cerrejon coal operation in Colombia.

In 2008 Xstrata's attempted merger with Brasil's CVRD was called off. It also failed to take over Lonmin platinum in a \$10 billion bid in 2008. Its proposed merger with Anglo American in June 2009 was also rejected.¹⁷⁸

By 2011, Xstrata Alloys had become the world's largest producer of ferrochrome and a leading producer of primary vanadium. By 2011, Xstrata Coal had become one of the world's largest exporter of thermal coal and a significant producer of premium quality hard coking coal and semi-soft coal.

In December 2003, Xstrata started building the Lion ferrochrome smelter project in South Africa which raised Xstrata's annual ferrochrome production capacity to one-third of current global capacity. In February 2004, Xstrata established a shared pooling of assets venture with SA Chrome & Alloys, which made Xstrata compliant with the MPRDA and charter. It also expanded the quantum of ferrochrome that Glencore was able to market and at the time, the combined ferrochrome output was about 26% of total world output.

In June 2007, Xstrata bid for Canadian-owned LionOre which held a 50% share in the Nkomati nickel project. However, Norlisk beat Xstrata's bid.

¹⁷⁷ <http://www.xstrata.com/media/news/1998/04/09/0001CET/>

¹⁷⁸ <http://www.crocodyl.org/wiki/xstrata>

Xstrata entered the platinum market in August 2007, when it acquired Eland Platinum Holdings for around \$1 billion. This was followed by a 24.9% stake in Lonmin in October 2008.

Today, Xstrata is the world's largest producer of export thermal coal, the largest producer of ferrochrome, one of the top five producers of coking or metallurgical coal, the fourth largest global copper producers, the fifth largest global nickel producers and one of the world's largest miners and producers of zinc.

Xstrata's South African coal holdings are relatively small compared to its global position, as outlined in the following figure.

Table 21: Xstrata's global coal assets, 2010

Project	Location	Interest	Indicative start-up	Indicative capex ⁴ (\$m)	Indicative saleable production ² (Mtpa)	Status
Goedgevonden OC	South Africa	74%	2010	500	7	Completed
Blakefield South UG	NSW	87.50%	2010	330	4	Completed
Mangoola OC	NSW	100%	2011	880	8	Implementation
ATCOM East OC	South Africa	100%	2011	407	4	Implementation
Newlands Northern UG extension	Queensland	55%	2011	130	3	Implementation
Ulan West UG	NSW	90%	2012	1,100	7	Implementation
Oaky Creek (Phase 1)	Queensland	55%	2011	tbc	1	Feasibility
Cerrejon OC	Colombia	33.33%	tbc	tbc	tbc	Feasibility
Ravensworth North OC	NSW	90%	2013	1,200	10	Feasibility
Bulga Optimisation OC & UG	NSW	87.50%	2013	tbc	5	Feasibility
United OC	NSW	95%	2013	tbc	4	Feasibility
Tweefontein OC	South Africa	100%	2013	600	4	Feasibility
Wandoan OC (Phase 1)	Queensland	75%	2015	tbc	22	Feasibility
Wandoan Port and Rail	Queensland	tbc	2015	tbc	n/a	Pre-Feasibility
Rolleston OC Expansion	Queensland	75%	2013	tbc	6	Pre-Feasibility
Sarum UG & OC	Queensland	55%	2013	tbc	4	Pre-Feasibility
Collinsville OC Expansion	Queensland	55%	2013	tbc	6	Pre-Feasibility
Oaky OC (Phase 2)	Queensland	55%	2016	tbc	3	Pre-Feasibility
Zonnebloem OC	South Africa	100%	2016	tbc	4	Pre-Feasibility
United UG	NSW	95%	tbc	tbc	3	Pre-Feasibility

■ Completed
 ■ Implementation
 ■ Feasibility / scoping study

Source: Xstrata (2010), 2010 Half-yearly results, 3 August 2010.

However, these assets were still subject to the MPRDA and charter. In 2006, to protect these, Xstrata sold ARM a 20% stake in Xstrata's South African coal division. This strategy was successful and during 2010, ARM Coal reported that all the conversions of all the old order mining rights into new order mining rights for the operations in Xstrata Coal South Africa had been approved by the DMR.¹⁷⁹ ARM was also a 50% participant in the 6.6mt Goedgevonden coal project.

ARM Coal

A subsidiary of the black-owned ARM group, ARM Coal was formed in June 2006 to purchase 20% in Xstrata Coal and 51% in Xstrata's Goedgevonden coal project.¹⁸⁰ In June 2007, the Goedgevonden project commenced with a planned 3.1mt export and 3.6mt domestic coal

¹⁷⁹ Arm (2010:60), Annual report

¹⁸⁰ http://www.arm.co.za/im/press_display.php?id=2006/11sep06

capacity.¹⁸¹ ¹⁸²In December 2009, Eskom signed a 17 year 3.5mt per annum contract for coal supply to Majuba with Goedgevonden.¹⁸³

During 2010, ARM Coal reported that all the conversions of all the old order mining rights into new order mining rights for the operations in Xstrata Coal South Africa had been approved by the DMR.¹⁸⁴

Shanduka Coal

In 2002, the company controlled by Cyril Ramaphosa entered the coal sector, purchasing a 20% share in the 3mt per annum Kangra Coal. At the time Kangra exported 2mt through the Richards Bay Coal Terminal and also owned 2.3% of RBCT. Coal trading was contracted to Glencore. Shanduka subsequently increased its stake to 40% and had a pre-emptive right on full ownership. Subsequently, Shanduka and Glencore purchased 3mt domestic coal Graspan colliery.

In 2008, Shanduka is reported to have bid for BHP Billiton's Koorfontein mine, but were beaten by Optimum Coal. Although Koorfontein's mine life was limited, it was attractive to an export-oriented firm because it owned washing plants to upgrade coal and had its own rapid load-out terminal for loading trains hauling coal to Richards Bay. In August 2011, Shanduka and Glencore made a bid to buy out shareholders in Optimum Coal.

Coal ports and exports

The Richards Bay Coal Terminal was opened in 1976 with an export capacity of 12 Mtpa. A phase 2 expansion doubled capacity to 24 Mtpa in 1979. Phase 3 in 1984 increased capacity to 44 Mtpa.

A third of these export allocations were granted to Shell, BP and Total, motivated by a strategic objective of securing ongoing investment and involvement by oil multinationals at a time of international oil sanctions against the apartheid state. Shell entered into a 50:50 joint venture with Rand Mines. BP also collaborated with Rand Mines in its Middleburg Colliery and Gencor entered into a joint venture with BP and Total to develop the Ermelo colliery. JCI also collaborated with Total.

Further upgrades increased capacity to 63 Mtpa in 1991, 72 Mtpa in 1999 and 76 Mtpa in 2008. The phase 5 expansion in 2010, at a cost of R1.2 billion (US\$150m), has taken capacity to 91 Mtpa. Feasibility studies are being done to increase RBCT's capacity to 105 Mtpa in five years, although this next phase is likely to be delayed until rail capacity catches up. RBCT is the largest single coal terminal in the world.

Coal exports through Richards Bay have declined for the past four years, mainly because of the rail constraints mentioned above. RBCT coal exports peaked at 69.2 Mt in 2005 but declined to 61 Mt in 2008, implying 30% of the port's new export capacity could remain

¹⁸¹ <http://www.xstrata.com/media/news/2007/07/11/0700CET/>

¹⁸² http://www.arm.co.za/im/press_display.php?id=2007/11jul07

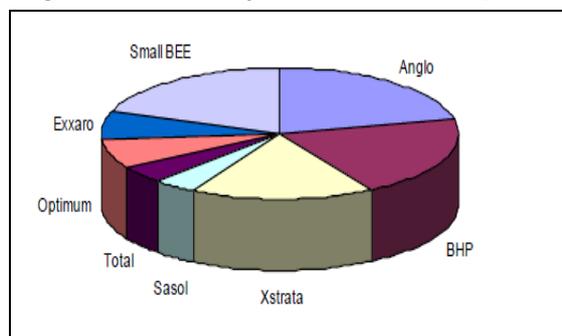
¹⁸³ <http://www.xstratacoal.com/EN/PressReleases/Pages/Xstrata-ArmCoal%27sGoedgevondensigns17yearsupplyagreementwithEskom.aspx>

¹⁸⁴ Arm (2010:60), Annual report

unused. South Africa's global ranking as a coal exporter has declined. In 2000 it was second behind Australia, but by 2008 it has been overtaken by Indonesia, Russia and Colombia.

In 1994, Anglo, BHP and Xstrata were the major shareholders in RBCT with export allocations of 19.8, 17.95 and 15.05 Mtpa respectively, accounting for three-quarters of the terminal's capacity.

Figure 15: RBCT export coal allocation, 2010



Source: Eberhard (2010)

By 2011, black-owned coal companies¹⁸⁵ have about a third of export allocations, more or less in proportion to their overall contribution to coal production. There is strong pressure to acquire RBCT allocation from black-owned coal exporters. Of the planned 19mt expansion, the Department of Minerals and Energy-led Coal Industry Task Team (CITT) allocated the Quattro export entitlement to 18 black-owned emerging companies, typically with annual export volumes below 250,000 tons, for a minimum three-year period to facilitate mine development plans, structured financing and the development of long-term relationships with international customers.¹⁸⁶ Some 6 Mtpa has also been allocated to the South Dunes Coal Terminal Consortium¹⁸⁷ representing mainly black-owned exporters. The balance of allocation will be put out to tender, with black-owned firms being given priority.

Coal, electricity and the MEC - conclusions

Not much has changed in the factors which have historically shaped the evolution of that part of the MEC which includes domestic and export coal industry and the electricity industry. In the apartheid period, coal and electricity growth were intertwined and the affirmative procurement practices of Eskom and the state's preferential allocation of rail capacity, favouring Afrikaans capital and contributed to the latter's growing strength. By the 1970s, Afrikaans capital was able to cooperate with English capitalist coal mine owners in one of the largest coordinated mining, logistics and electricity generation programmes ever witnessed on the African continent. The result by the late 1970s was significant expansion of domestic coal mining, associated expanded coal-fired power generation capacity,

¹⁸⁵ Companies include Exarro, Mbokondo, Umcebe, South African Coal Mining Holdings, Worldwide Coal Carolina, Mmakau, Arm Coal, Tumelo and the South Dunes Coal Terminal Consortium.

¹⁸⁶ Eberhard (2010)

¹⁸⁷ The South Dunes Coal Terminal consortium consists of Anglo, Total, Exxaro, Optimum, Small black-owned coal exporters, BHP Billiton, Xstrata and Sasol.

corresponding export rail logistics infrastructure and the modern seaport of Richards Bay with the Richards Bay Coal Terminal anchor tenant.

What then followed was a comparative 25 year lull across the value chain. The Eskom demand driver only emerged around 2005, coupled with sharply increased demand for export coal from Asian markets. By 2010, Eskom estimated that some R110-billion worth of new capital investment in some 16 estimated new coal-mines and conveyor systems was required over the coming decade to ensure that South Africa's current and future fleet of power stations are adequately supplied with primary energy. Also from the 1990s, a vociferous black capitalist class had also emerged, often targeting the quick and more profitable export market returns.

By the early 2000s, the corporate ownership structure of coal had also shifted. This was driven by old order capital executing conglomerate restructuring as well as by the MPRDA and mining charter requirements. The latter forced old order capital to accommodate black capitalist coal interests, and the latter have adopted different strategies.

Black-controlled Exxaro has emerged as one of the largest coal mining companies in the country. Xstrata is also an important supplier, and they have drawn ARM in as their preferred black partner. ARM entered coal indirectly through its tie up with Xstrata and is a relatively small participant in coal currently. Optimum Coal was bought out of BHP Billiton by Optimums' management (mainly black) and, in August 2011, it was the subject of a takeover offer from Glencore.

Old order Anglo Coal and BHP Billiton remain significant coal suppliers, but appear to have consolidated their respective positions post-unbundling around their most sustainable assets. New investments are few and those made are usually made together with black joint venture partners. In the BHP Billiton case, it appears that the company may have taken a strategic decision to shrink rather than expand its South African coal assets.

Since the early 2000s, those firms and sectors that were dependent on a reliable and low cost supply of electricity did organise themselves through the EIUG and contributed to shaping the electricity sector policies, market model, grid code and regulations that were being developed by the DME at the time. For Anglo, BHP Billiton and Xstrata, despite the unbundling, there are still a few synergies that remain between electricity supply availability and electricity utilisation in other industries owned.

Anglo, through its platinum mines, is an important user of electricity, as is BHP Billiton with its aluminium smelters. Xstrata has major investments in ferrochrome smelting. In addition, all firms concerned could gain from capturing future coal supply contracts.

Since 2010, a national coal road map strategy is being developed through the Department of Energy with all the major firms like Xstrata, BHP Billiton, Anglo American and Exxaro amongst others participating. All indications point to the need for major rationalisation of the coal supply sector on a large scale. However, there are some immediate factors impacting on small-scale coal mining.

In the past, nearly all of Eskom's coal was supplied on long term contracts. Eskom is now also exposed to short or medium term contracts which account for about a quarter of its coal supply. Small coal contractors, supplying via road transport, are an increasing phenomenon. In part this is due to Eskom's power stations being run at capacity factors higher than those envisaged in the long term supply contracts. A further driver has been Eskom's commitment to increase its procurement expenditure with black-owned firms, as part of government's overall black-economic empowerment drive. The growth in short term contracting was also spurred by the fact that the coal mines that were originally developed for two of Eskom power stations, Majuba and Tutuka, were unable to meet production expectations and these are now also supplied mainly by road and, in the case of Majuba, partially by rail. Increased dependency on road transport has seriously impacted road infrastructure and Eskom has had to invest directly in road repairs. In addition, the uncertainty about the role of coal in future generation technology choices is adding to the confusion.

From a global market perspective, 2011 reveals a coal mining industry in South Africa which has become one manageable part of a global oligopoly that dominates seaborne coal trade. Ironically, the main players in the oligopoly, Glencore, Xstrata, Anglo and BHP Billiton, grew out of South African-based mining operations but are now transnational in character. Their status and scale totally dwarf the small and subordinate role that is being played by those segments of black capital currently involved in coal mining, domestic marketing and exports.

Iron ore - steel

From Iscor to Kumba

Time has not permitted a more historic analysis of the iron ore – steel value chain. In summary though, it is popularly held that the state created the iron and steel industry in South Africa in 1926 through the creation of Iscor. In actual fact, a privately-owned domestic steel industry, based on recycling scrap steel, already existed in the early 1920s and in 1924, nine years before Iscor began production, the sector already contributed 18.8% of the manufacturing sector's gross output.

At the time, two firms were in competition to expand production through the mining and smelting of primary iron ore. These were the Union Steel Corporation (Usko), wishing to expand its smelting works in Newcastle (based on scrap steel), and the Afrikaans-owned Pretoria Iron Mines (PIM).

The creation of Iscor was ultimately based on the PIM asset and was accompanied by intense lobbying by the private owners of PIM and various Pretoria municipal entities.

In subsequent decades, Iscor expanded steel production in Vanderbijlpark, Newcastle and Pretoria and entered into many downstream joint ventures with private, mainly international, steel processors. In 1964, Anglo American built the Highveld Steel and Vanadium plant which produced steel as a by-product of vanadium production. In the mid-1960s, Barlow Rand entered the steel industry with its Middleburg Steel and Alloys plant. In the mid-1970s, Middleburg converted to producing stainless steel. In the 1970s also, the state invested in the dedicated Sishen-Saldhana rail line which propelled Iscor into a significant global exporter of iron ore.

Privatisation of Iscor

In 1989, the apartheid state privatised Iscor through a listing on the JSE. In 1990, Iscor shareholding was increasingly dominated by institutions with the IDC the single largest shareholder with 16%.

Table 22: Iscor shareholding 1991

Company	% shareholding
IDC	16.06
Standard Bank nominees	12.64
SA Mutual	9.10
81 Main Street nominees	7.64
Southern Life	6.97
Sanlam	5.48
Total	57.89

Source: *Financial Mail* 15 November 1991

In the mid-1990s, Iscor and IDC invested in a state-of-the-art steel plant and continuous thin-film casting facility at Saldhana.

Unbundling of Iscor into mining (Kumba) and steelmaking (Iscor) components

From the mid-1990s up until 2002, global steel prices plummeted, at times well below the cash costs of production. Iscor management's response was to rationalise production, including shutting down the Pretoria works and to unbundle Iscor into its mining and steelmaking components. However, shareholders led by the IDC, opposed the nature of the proposed split, which would have heavily encumbered the steel plants with debt, at a time when there was no certainty of a recovery in steel prices. There followed an intense negotiation, the outcome of which was a separate listing for the iron ore and other mineral assets, housed under newly named company Kumba. Iscor retained its listing but was now a steel company. Part of the negotiation involved Iscor effectively owning its iron ore supply through an agreement with Kumba which provided an evergreen right to 6.25 million tons of iron ore from the Sishen mine at a price of cost plus 4%.

Kumba's Sishen iron ore mine became a target for global mining houses even before the Iscor unbundling. In 2001, Avmin acquired a sizeable 14% stake in Iscor through the open market, as did Anglo American and other investors/speculators.¹⁸⁸ Avmin's stated intention was to take control of Kumba and rationalise its operations with the adjacent iron ore assets owned by Assmang, a Northern Cape iron ore and manganese producer in which Avmin had a 50% stake. However, prior to the listing, Avmin sold its Iscor shares to a foreign entity called Stimela, the latter owned by Israeli Benny Steinmetz's Arctic. Stimela entered into an agreement with the IDC to facilitate the planned industry rationalisation proposed by Avmin. Between them, they held about 24.5% of Kumba. However, this plan was sabotaged by Anglo American, which announced on 12 March 2002 that it had bought Arctic Resources'

¹⁸⁸ Competition Tribunal (2002), In the large merger between: Anglo American Holdings Ltd and Kumba Resources Ltd with the Industrial Development Corporation intervening - Decision and Reasons [Non-Confidential Version] Case No.: 46/LM/Jun02

34.9% share in Avmin as well as 100% of Stimela, which held 10.5% of Kumba. Anglo American subsequently took control of Kumba acquiring 66% of its shares in 2003.¹⁸⁹

By 2005, Kumba's expansion was well under way to increase production from 10 million tons to 41 million tons per annum by 2009.¹⁹⁰ The target had increased to 45 million tons by 2009 per annum at a cost of \$754m in 2006. Anglo further stated its intention to raise production to 70m tons per annum by 2015.¹⁹¹

Unbundling of Kumba into iron ore and coal (Exxaro)

Also in 2005, Kumba further unbundled itself, separating its coal mining and other mining assets into a separate company. Anglo retained 66% of Kumba Iron Ore, and 17% of the newly created coal company. Other shareholders in KIO include the IDC (14%) and minorities 20%. A merger ensued with the assets of this company being amalgamated with the assets of Eyesizwe Coal. The resulting entity listed on the Johannesburg Stock Exchange in 2006 as Exxaro.

The transaction was also structured to fulfil Anglo PLC's MPRDA and Mining Charter obligations in respect to ownership of the Sishen Iron Ore Company (SIOC) that houses the actual Sishen mine. Kumba Iron Ore (the listed vehicle) owns 74% of SIOC, with Exxaro retaining a 20% shareholding and the employees of SIOC and local communities owning 6% of SIOC. As happened in the 1960s and 1970s with Afrikaans capital, this exercise of accommodating emerging black capital has resulted in Anglo American PLC achieving its objective of cementing control over South Africa's current iron ore mines and positioning itself favourably for any expansion into the future.

Assmang

Economically exploitable deposits of manganese were established through prospecting between 1923 and 1926 in the Postmasburg – Sishen area. Iscor was established around this time. In anticipation in 1926, one Guido Sacco formed The Gloucester Manganese Mines (Postmasburg) Limited. At the time, there were no suitable railway connections to this area.

In 1929, European capital financed the Manganese Corporation Limited to exploit deposits on the Beeshoek farm. An agreement was struck with the South African Railways to extend the railway line from Koopmansfontein (near Kimberley) to the Mancorp mine but the Great Depression delayed the project mid-way, with the railway investment unrecovered for several years.

In May 1930, the Ore & Metal Company Limited was set up to import and export mineral concentrates, including manganese. Another firm, the African Mining and Trust Company Limited was formed in December 1931 to acquire mineral rights and explore mineral deposits. In 1934, Anglovaal acquired the mineral leases of Mancor. Ultimately, the firms merged their interests and Assmang was formed in 1935 and listed on the Johannesburg Stock Exchange in 1936.¹⁹² During 1934 the South African Railways re-opened the railway

¹⁸⁹ Anglo American (2003), Annual Report.

¹⁹⁰ Anglo American (2005), Annual Report.

¹⁹¹ Anglo American (2006), Annual Report.

¹⁹² <http://www.assmang.co.za/au/history.asp>

line and extended it to Gloucester and manganese exports began through Durban harbour in March 1936. Assmang came to be ultimately controlled as a 50:50 joint venture between the Sacco and Hersov/Menell families.

Assmang's Manganese Division consists of the manganese mines in the Northern Cape, Nchwaning and Gloria, and the works at Cato Ridge in KwaZulu-Natal. The Chrome Division consists of the Dwarsrivier chrome mine and the Machadodorp Works both in Mpumalanga, while the Iron Ore Division is made up of the Beeshoek mine and the iron ore resources in the Northern Cape around Postmasburg and on the three farms adjacent to Kumba Resources' Sishen mine. Assmang accounts for 20% of South Africa's iron ore exports.

Columbus Stainless steel – Middelburg Steel and Alloys

Following the creation of the ferrochrome industry in 1964 by RMB Alloys, a subsidiary of Rand Mines using local chromite ore construction began on the Southern Cross Stainless Steel plant, built in Middelburg with IDC assistance between 1964-65. However, the state owned primary steel maker, Iscor, still remained the major producer and investor in the sector. In 1968, the plant became the Steel Division of Middelburg Steel and Alloys (Pty) Ltd .

In 1991, Barlow Rand, during its unbundling, sold the plant to a joint venture company, Columbus Stainless (Pty) Ltd. Columbus was owned by Samancor, Highveld Steel and the IDC.

In 2001, the joint venture partners Samancor (BHP Billiton and Anglo American), Highveld Steel and the IDC sold 64% of MS&A to Acerinox of Spain.¹⁹³ In 2005, Highveld Steel sold exited the investment and Acerinox increased its shareholding in Columbus Stainless to 76%.

Highveld Steel and Vanadium

For much of the decade of the 1960s, the iron and steel sector absorbed more than a quarter of all annual fixed investment in the manufacturing sector. Specific investments in the steel industry included, in 1964, the AAC-owned Highveld Steel and Vanadium plant costing R127m (compared to total 1964 manufacturing sector fixed investment expenditure of R241m). Highveld prompted a second round of investment as AAC vertically integrated its steel and engineering activities. Scaw Metals, a speciality steel producer was also acquired in 1964 and by 1969 had assets of R40m. In 1976, Highveld entered the manganese alloy business by acquiring Transalloys. In 1978, the purchase of Rand Carbide gave Highveld a presence in ferrosilicon market. In 1991, Highveld purchased a share of Middelburg Steel and Alloys.

In 2007, Anglo American sold its stake in Highveld to Evraz. At the time, the new owners of Samancor, Kermas, also bid for the Highveld asset.¹⁹⁴

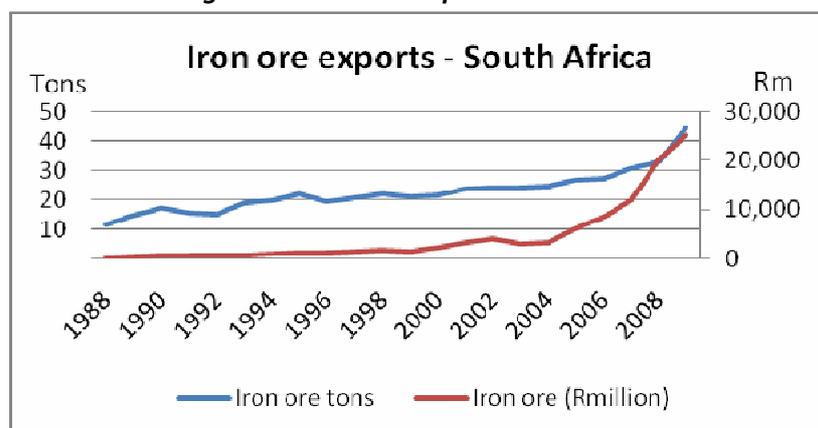
Iron ore - steel conclusions

¹⁹³ <http://www.bhpbilliton.com/home/investors/news/Pages/Articles/MOU%20Signed%20For%20Sale%20of%20Majority%20Stake%20in%20Columbus%20Stainless.aspx>

¹⁹⁴ <http://www.miningweekly.com/print-version/samancor-chrome-to-invest-15bn-in-sa-beneficiation-projects-2006-09-15>

After two decades of steady growth, iron ore exports have increased very rapidly to about 42mt in 2009.

Figure 16: Iron ore exports 1988 - 2009



Source: www.dmr.gov.za/Mineral_Information/Statistics/B1%20Information%202009.pdf

As is apparent, steel manufacture has played a central role in South Africa's industrialisation. Developed through state-owned Iscor, the latter was privatised in 1989 and then unbundled in 2001 to spin off the mining assets. A second unbundling to spin off the coal assets took place in 2005.

All of the individual parts of the former Iscor are still in existence but South Africa's iron ore and steel manufacturing facilities are all owned and controlled by transnational corporations domiciled elsewhere.

Anglo American plc, through Kumba, has taken firm control of the Sishen opencast iron ore mine, South Africa's best iron ore asset, despite efforts by other interested parties to wrest control of the asset. Luxemburg-domiciled Arcelor-Mittal Steel owns the steel-making assets.

Only the former Iscor-owned coal assets are under the control of Exxaro, which is largely owned by South African institutional capital, with a significant proportion of black capital.

During apartheid the steel industry was built behind relatively high tariff barriers under the prevailing Import Substitution Industrialisation (ISI) strategy at the time, which was based on import parity pricing. However, with the change to increasing global competitiveness through dramatic reductions in tariffs under the GATT Uruguay Round, this practice has impaired the competitiveness of the manufacturing sector, which the Competition Commission has been unable to curb.

Manganese

Samancor Manganese

The history of manganese mining and smelting in South Africa reflects the growing accommodation between English capital and Afrikaans capital. By the 1970s, Afrikaans capital was also confidently reorganising other important sections of the mining and manufacturing industry, although not without favourable assistance from state institutions

like the IDC, which supported the acquisitions of fragmented chrome mines in the early 1970s. These were then consolidated and recapitalised leading to the development of the ferrochrome and ferromanganese industry on a large scale.

After embarking on a joint venture with Union Carbide, which led to the construction of the Tubatse Ferrochrome smelter, Genmin took control of its main rival Samancor in 1984 in controversial circumstances. Samancor, formed by a merger between SA Manganese and AMCOR in 1975, was controlled by Iscor (39.6%) with AAC as the largest private shareholder and Gencor as a smaller partner (7%). In 1977, both AAC and Genmin bid for Iscor's 40% share but each was blocked by the state. In 1983, Genmin instituted a R120m court case against Iscor on a coal supply contract at the tied Hlobane colliery where Iscor was demanding reductions in supply. To resolve this, in June 1983, Iscor exchanged 50.25% of AMCOR (which controlled its share of Samancor) for Hlobane and 70% control of Dunswart Steel despite the fact that AAC would have paid more for the stake. In June 1984, Samancor bought the remainder of Iscor's share

Up until 2007, Samancor Manganese remained a joint venture between Anglo American PLC (40%) and BHP Billiton PLC (60%) and is the main producer of manganese in South Africa, mining this at Hotazel in the Northern Cape with a capacity of about 6m tons per annum.

As a condition of conversion of its old order mining right in 2007, Samancor Manganese sold a 26% share of its Wessels and Mamatwan manganese mining operation to a black-owned consortium consisting of Ntsimbintle¹⁹⁵ (9%), NCAB¹⁹⁶ (7%), Iziko (5%) and the HMM Education Trust (5%). The consortium had acquired manganese mining rights in 2005 on properties contiguous to the Samancor mines. These contiguous properties were vended into Samancor in exchange for the 26% shareholding.¹⁹⁷

This manganese operation forms a significant part of BHP Billiton's global manganese business, being the world's largest producer of manganese ore and one of the top three global producers of manganese alloy. The balance of production is from the company's

¹⁹⁵ Ntsimbintle is 30% owned by Safika Resources with the balance held between Nkonjane, Wiphold, Northern Cape Women in Mining, the Kgalagadi Development Trust, the Natural Resources Empowerment Fund, the Retrenched Workers Association, the Hotazel Women's Association and the Northern Cape Community Business Men.

¹⁹⁶ NCAB is held by www.matasis.co.za, an investment company co-founded by Manne Dipico and Zahid Faqui-Dawood which has been broadened to include other black investors.

¹⁹⁷ Hotazel Manganese Mines: An agreement has been reached between Samancor Manganese and empowerment consortium Ntsimbintle Mining Pty Ltd. The Ntsimbintle agreement has been signed by both parties and approved by the South African Government. This transaction allows for the inclusion of part of the Prospecting Rights held by Ntsimbintle into the Mamatwan and Wessels Mining Areas in exchange for 9% equity in Hotazel Manganese Mines (Pty) Ltd, thereby adding the Ore Reserves of Mamatwan and Wessels within the Ntsimbintle Prospecting Right to the Mamatwan and Wessels Mining Rights. Section 102 applications have been lodged with the South African Department of Mineral Resources (DMR) to amend the Mamatwan and Wessels Mining Rights areas to include the Ntsimbintle Prospecting Right. Hotazel Manganese Mines (Pty) Ltd is the owner of Mamatwan and Wessels mines. The other 26% is held by: Ntsimbintle (9%), NCAB (7%), Iziko (5%) and the HMM Education Trust (5%). The addition of other empowerment consortiums during 2010 has diluted Anglo American's share in Hotazel Manganese Mines (Pty) Ltd to 29.6%.

Australian mines. About 80% of ore production is sold directly to customers in the steel industry and 20% is converted to alloys.

In May 2010, Samancor Manganese sold its 51 per cent equity stake in Manganese Metal Company to Agattu Trading 195 (Pty) Ltd.

In 2010, Samancor Manganese commenced a \$26m expansion of the Wessels mine to increase production from 1m tons to 1.5m tons per annum by 2013.

Assore – Assmang -ARM

Assmang is a 50:50 joint venture between ARM and Assore and its origins are traced in the section below on the ARM group. It is the second largest producer of manganese ore to Samancor, with a capacity of about 1.3m tons of ore per annum from its Nchwaning and Gloria manganese mines. Manganese alloys are produced at the Cato Ridge, KZN plant. Following a brownfield expansion of Nchwaning in 2005, the mine has a capacity of 3.5mt, although output has been limited to 2mt per annum in line with market demand requirements.

To comply with the MPRDA and the Mining Charter, Assore sold a 15.02% share in the company to Shanduka Resources and the Bokamoso Trust in November 2005. In June 2008, Assore acquired 10.47% of Assore's shareholding from Old Mutual. The shares were warehoused for utilisation in achieving the 26% black ownership threshold required by the charter.

In December 2009, the Bokamoso Trust increased its shareholding to 14.28%, taking the total black ownership above the 26% threshold. In its announcement, Assore indicated that it had done this in order to ensure the conversion of was now in a position to obtain the conversion of all remaining old order rights to new order rights, obtaining new order mining rights for the Rustenburg Minerals Development Company, (Proprietary) Limited chrome operations on the farms Zandspruit and Groenfontein and obtain new order mining rights on the iron ore deposits mined at Khumani.¹⁹⁸

In June 2011, Shanduka exited its investment in Assore. Since it was in advance of its lock-in period up to 2014, the transaction was carried out at a discount. The market valued the transaction at about R2.8 billion. This was almost the same amount that Shanduka paid in 2010 for a 50.03% share in Incwala resources.

During 2010, Assmang has systematically converted a significant part of its smelting capacity from charge chrome to ferromanganese in anticipation of higher medium-term returns from the latter.¹⁹⁹ As at 2011, ferromanganese capacity stood at about 290,000 tons per annum.

Ntisimbintle Manganese

¹⁹⁸ The Bokamoso Trust was founded for the benefit of the communities in and around Assore's areas of operation. In 2009, the trustees of Bokamoso Trust were Desmond Sacco and Christopher Cory. As part of the 2009 transaction, Assore undertook to appoint independent trustees to the trust.

¹⁹⁹ http://www.assore.com/company_releases/pdf/Assmang%20furnaces%20announcement%20_10-09-10%28FINAL%29.pdf

Ntsimbintle was one of three applicants that received prospecting rights for manganese in the Northern Cape in 2005. Some of the fields on which applications were made had previously been held by established firms in the region, including Assmang and Samancor. At the time, both Assmang and Samancor would have needed to introduce black partners for any application for renewal of the prospecting permits.²⁰⁰

Since 2007, Ntsimbintle seems to have been trying to break the mould of dependence on Anglo American PLC and BHP Billiton PLC. Having acquired prospecting rights on a number of other properties around Hotazel, it is in the process of constructing a 3m ton per annum capacity mine. The project is a joint venture with OMH of Australia. In November 2009, Ntsimbintle sold a 20% share in itself to OMH of Australia for Au\$64m.²⁰¹ By June 2011, it had assembled a range of partners and raised capital for the project which will be 50.1% owned by Ntsimbintle SPV and 49.9% owned by Jupiter Mines (a subsidiary of Pallinghurst), including²⁰²:

- Pallinghurst: A specialist mineral resources investment company listed on the Bermuda Stock Exchange (“SBX”) and the Johannesburg Securities Exchange (“JSE”) in South Africa.
- AMCI: A leading private North American based resource company and a global investor in a wide range of mineral projects.
- EMG: A North American based private equity fund that invests in entities that acquire, develop and own energy infrastructure and natural resource based assets.
- POSCO: A Korean steel making conglomerate with interests across a wide range of industry sectors, listed on the Korean Exchange (“KRX”) and the New York Stock Exchange (“NYSE”).
- Investec

Kalagadi Resources

A second black-owned consortium, Kalagadi Resources also followed a similar path to Ntsimbintle. It set up in 2001 and applied for manganese mineral rights in the Northern Cape which it was awarded in 2005. Following prospecting, it developed a pre-feasibility plan and obtained finance from the IDC to take this to bankable stage. Kalagadi Manganese was formed with ArcelorMittal contributing R3.4 billion for a 50% share, the IDC 10% and Kalagadi Resources 40%. The project encountered a disruption in September 2010, when a group of black businesspeople allegedly led by one Sandi Majali apparently hijacked the company by exploiting weaknesses in the national company registration office (CIPRO) and replacing the existing directors with themselves.²⁰³ The matter was ultimately rectified by CIPRO but in a strange co-incidence, Mr. Majali was found dead in a Johannesburg hotel room not long after.²⁰⁴ Construction commenced in 2011 of a 3m ton per annum capacity mine and

²⁰⁰ <http://www.miningmx.com/news/archive/459556.htm>

²⁰¹ <http://www.safika.co.za/media-ntsimbintle-australia-pr.html>

²⁰² http://www.jupitermines.com/projects/manganese/tshipi_manganese_project.phtml

²⁰³ <http://www.moneyweb.co.za/mw/view/mw/en/page299364?oid=505079&sn=2009%20Detail>

²⁰⁴ <http://www.miningweekly.com/article/police-waiting-for-medication-tests-after-majali-death-2010-12-27>

sintering plant in the area.²⁰⁵ The main shaft is expected to reach production level by September 2012. Sinter is expected to be railed to the Coega port where 70% would be exported while 30% would be smelted into ferro-manganese alloy. Arcelor-Mittal and the IDC are partners in the estimated R11 billion project with Arcelor-Mittal having a committed offtake agreement for 50% of the smelter output.

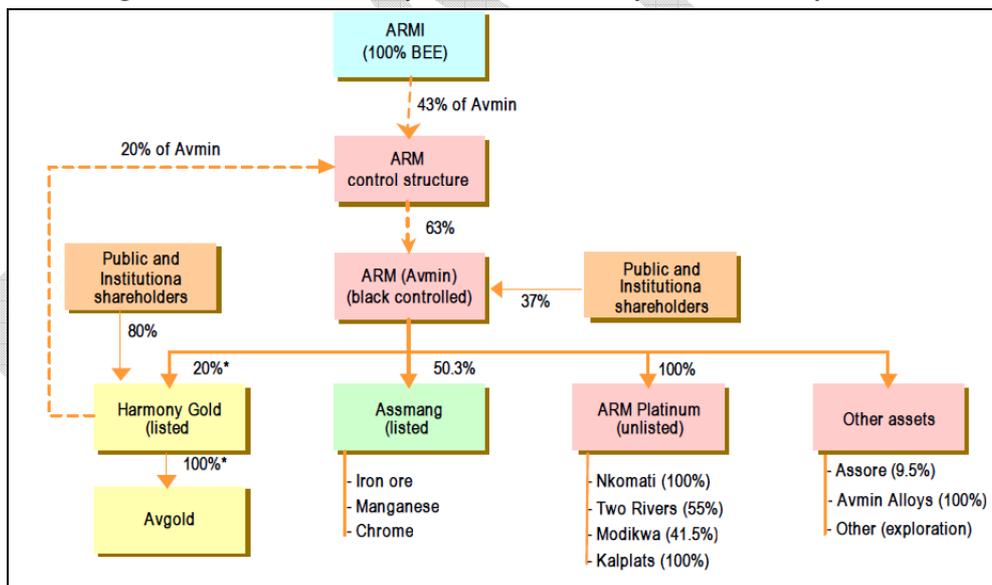
African Rainbow Minerals (ARM)

African Rainbow Minerals bought some of AngloGold’s marginal mines in 1998 and proceeded to restructure and manage these.

In 2003, ARM Gold was vended into Harmony Gold by African Rainbow Minerals and Exploration Investments (Pty) Ltd (ARMI), itself owned by Patrice Motsepe. In exchange ARMI acquired a 14% share in Harmony Gold, becoming its largest shareholder with Motsepe taking the Chair. In a further complex transaction, the origins of which will be traced elsewhere in this paper, Harmony Gold used its balance sheet to assist ARM gold and Harmony to jointly acquire Anglo American PLC’s 34.9% stake in Avmin in May 2003.²⁰⁶ Avmin’s gold assets were then combined with Harmony Gold.

The assets in Avmin and holding company of ARM were then reorganised to achieve the following structure.

Figure 17: ARM: 2002 corporate structure – post Avmin acquisition



Source: ARM annual report

At this point in time, Harmony represented about 50% of ARM’s balance sheet value.²⁰⁷ ARM’s stated strategy then was to diversify its mineral portfolio by developing the various projects already in its portfolio. By 2010, Harmony’s balance sheet value had reduced to 13% of the total.

²⁰⁵ <http://www.miningweekly.com/article/work-accelerates-on-r11bn-integrated-manganese-venture-2011-05-17>

²⁰⁶ <http://angloamerican.com/media/releases/2003pr/2003-05-02>

²⁰⁷ http://www.miningmx.com/news/gold_and_silver/454289.htm

In February 2004, ARM raised its ownership to 100% after acquiring Anglo American's remaining 25% share in Nkomati Nickel. In May 2005, Harmony sold its 20% stake in ARM to a broad-based black consortium for R1.03 billion. At the time, the DMR (who had approved the conversion of two of Harmony's mining right applications) was reported to have been critical of the extent to which ARM ownership was concentrated in the hands of the Motsepe family and that the DMR had approved Harmony's mineral rights conversion on the condition that its ARM stake would not be sold back to the Motsepe family but that it would be allocated to a broad-based black-owned shareholding group.²⁰⁸

In June 2005, ARM (55%) and Impala (45%) commenced the R1.2 billion 220,000 oz per year Two Rivers Platinum PGM on the Eastern Limb of the Bushveld Complex. ARM was to manage the project with the output being refined by Implats.²⁰⁹

In the same month, ARM entered into a 50:50 venture to develop the Nkomati nickel project with LionOre, owners of the Activox nickel smelting technology.²¹⁰ By July 2006, the 60,000 ton per annum expansion project was started.²¹¹ In June 2007, Norilsk Nickel purchased LionOre and thereby acquired 50% interest in the Nkomati joint venture.²¹² By September 2007, the partners commenced construction of a R3.2 billion plant to increase nickel output to 20,500 tons per annum.²¹³

In November 2005, ARM listed its 66% held TEAL on the Toronto Stock Exchange. TEAL represented ARM's non-South African projects.²¹⁴ In 2008, ARM bought out the minorities in TEAL and delisted the company. At the same time, it introduced Brazil's Vale as a 50:50 shareholder in TEAL.²¹⁵ In August 2010, the \$380m Konkola copper project was launched with with commissioning of the concentrator plant in 2013 and full production in 2015. The Zambian state mining company, ZCCM, was to hold a 15-20% share with a 5% free carry.²¹⁶

In November 2005, ARM and Assore (the largest shareholders in listed iron ore and manganese producer Assmang) moved to buy out Assmang shareholders and to delist Assmang.²¹⁷ This was followed in January 2006 with the commencement of a R3.2 billion 8.4m ton per annum iron ore mine at the Bruce, King, Mokaning properties (BKM), adjacent to Kumba's Sishen mine, near Kathu in the Northern Cape. Estimated first production from the Khumani mine was mid-2008.²¹⁸ In November 2006, the DME granted Assmang new order mining rights for its Khumani Iron Ore Mine on Portion 5 and Remainder of Bruce 544, Portion 1 and Remainder of the Farm King 561, Portions 1, 2, 3, 4, 5 and Remainder of the

²⁰⁸ http://www.miningmx.com/news/gold_and_silver/456355.htm

²⁰⁹ http://www.arm.co.za/im/press_display.php?id=2005/07jun05

²¹⁰ http://www.arm.co.za/im/press_display.php?id=2005/02feb05

²¹¹ http://www.arm.co.za/im/press_display.php?id=2006/07jul06

²¹² http://www.norilsk.ru/en/our_products/norilsknickelafrica/

²¹³ http://www.arm.co.za/im/press_display.php?id=2007/26sep07

²¹⁴ http://www.arm.co.za/im/press_display.php?id=2005/17nov05

²¹⁵ http://www.arm.co.za/im/press_display.php?id=2008/01sep08

http://www.arm.co.za/im/press_display.php?id=2009/16feb09

²¹⁶ http://www.arm.co.za/im/press_display.php?id=2010/27aug10

²¹⁷ <http://www.miningmx.com/news/archive/484792.htm>

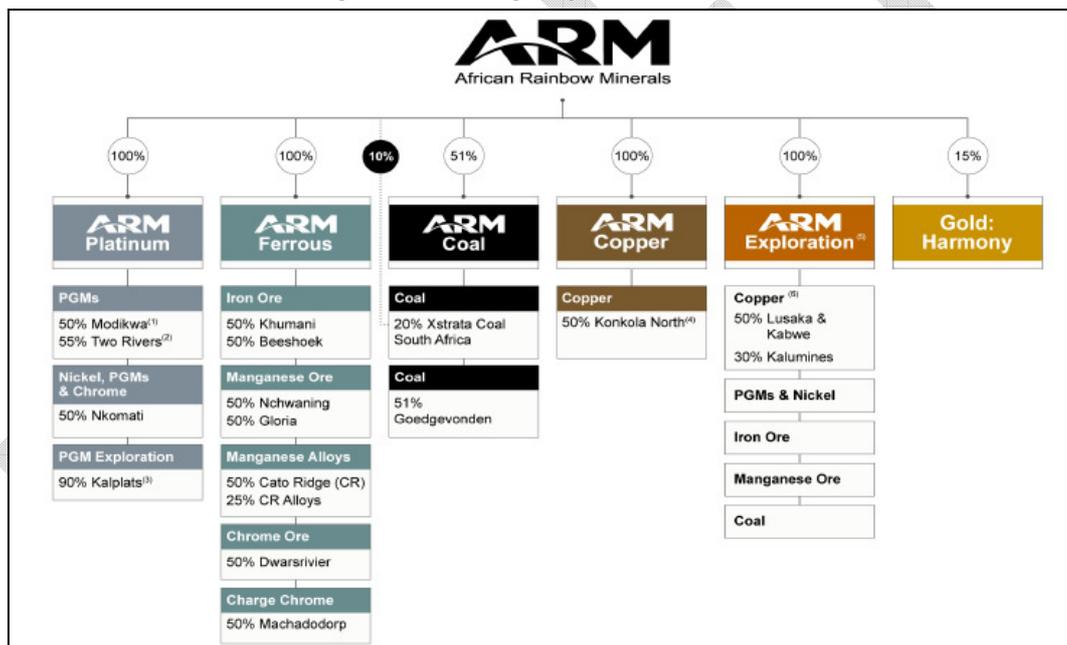
http://www.arm.co.za/im/press_display.php?id=2005/09nov05

²¹⁸ http://www.arm.co.za/im/press_display.php?id=2006/26jan06_ii

Farm Mokaning 560 and the Remainder of Parsons 564. These properties are located in the Kuruman district of the Northern Cape Province. Khumani’s initial 8.4m tons per annum of export iron ore, later raised to 10mtpa was expected to ramp up to 16.8 million ton subject to Transnet rail capacity being available. Khumani would replace iron ore production from Assmang’s Beeshoek operation near Postmasburg, which was nearing the end of its life.²¹⁹ In May 2007, Assmang announced a principal agreement on a 20 year contract with Transnet for the export of 10 mtpa of iron ore from Khumani through the Orex rail link and Saldanha Iron Ore Export Terminal. During the 2009 financial year, 7,2 million tonnes will be exported from Khumani and an additional 1,2 mtpa will be exported from the existing Beeshoek Mine.²²⁰ In September 2008, a decision was taken to expand the 10 million tons per annum project by a further 6m tons per annum.²²¹

ARM Coal was formed in June 2006 to purchase 20% in Xstrata Coal and 51% in Xstrata’s Goedgevonden coal project.²²² In June 2007, the Goedgevonden project commenced with a planned 3.1mt export and 3.6mt domestic coal capacity.^{223 224} In December 2009, Eskom signed a 17 year 3.5mt per annum contract for coal supply to Majuba with Goedgevonden.²²⁵

Figure 18: ARM group structure 2010



Source: ARM (2011), 2nd Annual DB Access Asia Conference 2011

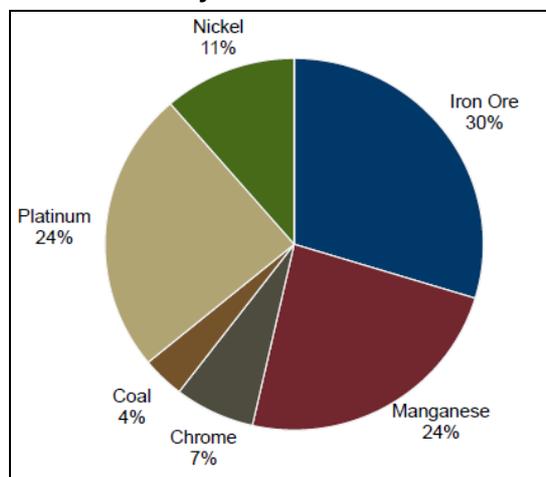
From inception, generating cash flow in order to sustain investments in greenfield projects has been a key driver of ARM strategy. Fortunately, rising commodity prices across ARM’s diverse mineral portfolio have assisted in this regard. By 2010, a decade after starting out as

²¹⁹ http://www.arm.co.za/im/press_display.php?id=2006/28nov06
²²⁰ http://www.arm.co.za/im/press_display.php?id=2007/17may07
²²¹ http://www.arm.co.za/im/press_display.php?id=2008/01sep08
²²² http://www.arm.co.za/im/press_display.php?id=2006/11sep06
²²³ <http://www.xstrata.com/media/news/2007/07/11/0700CET/>
²²⁴ http://www.arm.co.za/im/press_display.php?id=2007/11jul07
²²⁵ <http://www.xstratacoal.com/EN/PressReleases/Pages/Xstrata-ArmCoal%27sGoedgevondensigns17yearsupplyagreementwithEskom.aspx>

a gold company, ARM has largely divested out of gold, deriving only Harmony Gold dividend income from its historic involvement in gold.

By 2011, almost 80% of ARM's revenue was drawn from iron ore, manganese and platinum sales.

Figure 19: ARM 1ST half 2011 Revenue – sales contribution



Source: ARM (2011), 2nd Annual DB Access Asia Conference 2011

Manganese - conclusions

South Africa holds the world's largest known reserves of manganese and is the second largest producer and exporter of manganese ore and ferro-manganese.

Table 23: Manganese – Global reserves, production and exports 2007

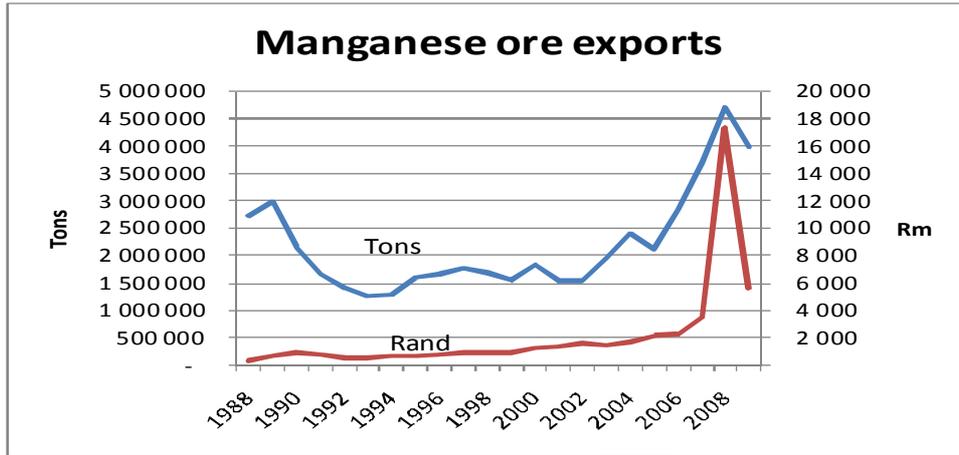
COUNTRY	RESERVE BASE#			PRODUCTION			EXPORTS		
	Mt	%	Rank	kt	%	Rank	kt	%	Rank
Australia	75	1.5	5	4 967	10.9	3	3 920	22.0	2
Brazil	56	1.1	6	2 868	6.3	6	1 807	10.2	4
China	100	2.0	4	19 000	41.8	1	-	-	-
CIS	560	11.2	2	3 565	7.8	4	735	4.1	6
Gabon	150	3.0	3	3 248	7.1	5	2 756	15.5	3
Ghana	*	*		914	2.0	8	1 059	6.0	5
India	36	0.7	7	2 295	5.0	7	134	0.8	7
Mexico	9	0.2	8	378	0.8	9	23	0.1	8
South Africa+	4 000	80.0	1	6 895	15.2	2	5 526	31.1	1
Other	14	0.3		1 351	2.9		1 823	10.3	
TOTAL 2008	5 000	100		45 479	100		17 783	100	
2007				38 230			15 108		

Sources: USGS, 2007 (for Reserve base)
 *DMR, Directorate Mineral Economics
 IMnl, for production and export figures

Notes: # Manganese content
 * Included under "Other"

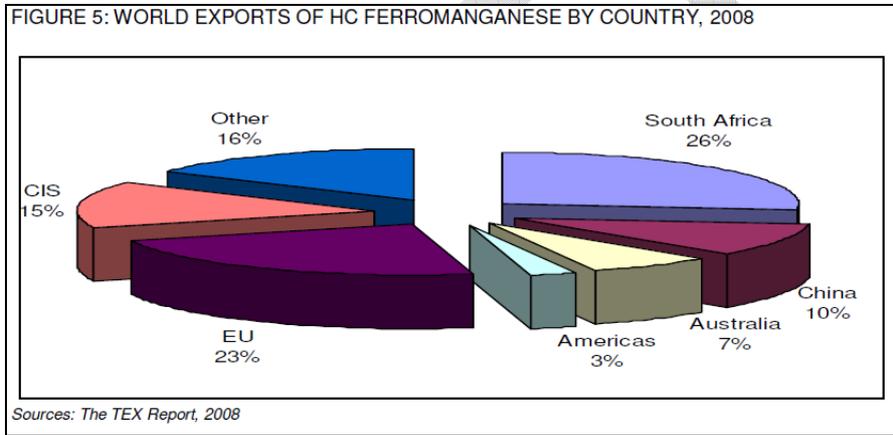
Source: Department of Minerals (2008), South African Minerals Industry (SAMI)

Figure 20: Manganese – South African exports 1988 - 2009



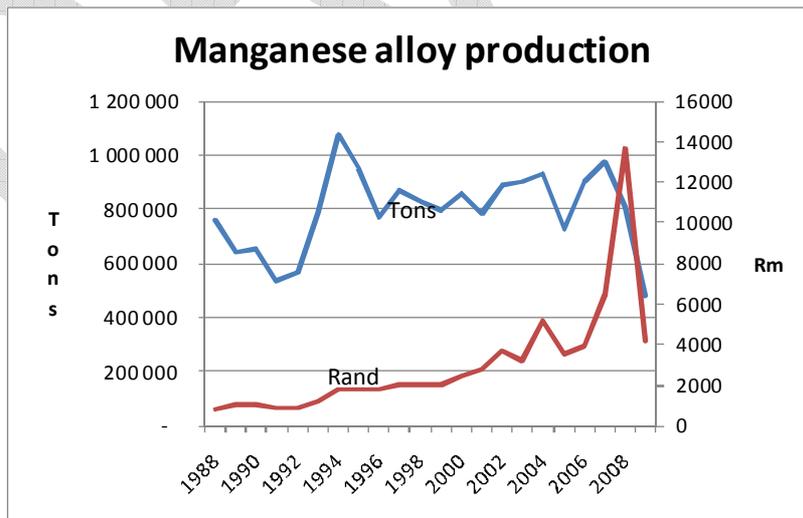
Source: www.dmr.gov.za/Mineral_Information/Statistics/B1%20Information%202009.pdf

Figure 21: Ferromanganese – Global export profile 2008



Sources: The TEX Report, 2008

Figure 22: Manganese alloy production – South Africa 1988-2009



Source: http://www.dmr.gov.za/Mineral_Information/Statistics/B1%20Information%202009.pdf

For many years, Samancor together with Assmang dominated RSA output of both manganese ore and ferroalloys. Their capacity to supply has often exceeded global market demand and the global prices have generally exhibited boom-bust cycles. Manganese pricing

is closely associated with price trends for iron ore and steel, which peaked for all three of these commodities in 2008.

Black capital has, through the leverage of the MPRDA, succeeded in acquiring ownership of manganese ore reserves. Old order capital, represented by Samancor and Assmang, have responded by coopting black capital into their own mining operations. During the 2008 iron ore and manganese price flyup, huge windfall gains were made by those invested in ARM, Samancor and Kumba.

Kalagadi Manganese and Ntsimbintle have accelerated their mine development plans to take advantage of high export prices for, over the next decades, there will be very significant rents associated with the specific ferrous minerals in the Northern Cape.

The recent seemingly uncoordinated investments in additional manganese ore capacity by new-entrant black-owned consortia could potentially lead to market oversupply and price depression. Much will depend on the pace of global economic recovery and the extent to which the capitalists involved in the Northern Cape accommodate each other.

Both the old order, and new black capitalist interests that stand to benefit from future manganese and iron ore rents, have adopted an enclave-like dig-and-deliver strategy, which epitomises the manner in which the MEC has appropriated resources for its own internal beneficial interests.

The state-owned transport and port utility, Transnet, has been drawn very firmly into this MEC web and appears to be currently locked into a mutually reinforcing relationship whereby Transnet's investments are made in accordance with the short-term interests of the Northern Cape mining interests. Export expansion is constrained to by Transnet's rail capacity at 4.2mt per annum. Transnet has committed to increase this to 4.8mt in 2010 and 5.2mt in 2011 to match the PE port terminal capacity of 5.2mt.

In 2009, Transnet went through a process to allocate/ration existing capacity with current and future manganese exporters and has committed existing capacity to four firms with firm contracts signed to 2013 when these will be reviewed. Getting logistics allocation post-2013 will be the next big contestation between the various interests involved in manganese mining in the Northern Cape.

Transnet's short term trajectory is to expand rail capacity from Sishen to Saldhana. A longer term and more developmental approach would be for the Postmasberg – PE line to be upgraded to become a second bulk freight line and for the manganese terminal at PE to be moved to Coega. The latter approach may be more costly in the short term for existing exporters, but from a national perspective, would facilitate many other economic activities. Transnet is currently evaluating the two options because the PE terminal has been earmarked for decommissioning in 2016. Transnet's decision will effectively shape the trajectory of Northern Cape MEC development.²²⁶

²²⁶ Herbert, Samantha, Transnet: The Key to Unlocking South Africa's Manganese Potential, 37th International Manganese Institute Conference, 26 May 2011

Until then, Transnet's capacity constraints might perhaps be a blessing in disguise that contributes to keeping global manganese prices higher and protects the profits of those already invested in manganese production, than they might be the case if there were a surge of oversupply from South Africa.

Chromite and Ferrochrome²²⁷

The ferrochrome industry was created in 1964 by RMB Alloys, a subsidiary of Rand Mines using local chromite ore. This was followed by the Southern Cross Stainless Steel plant, built in Middelburg with IDC assistance between 1964 and 1965. However, the state-owned primary steel maker, Iscor, still remained the major producer and investor in the sector. In the mineral processing sectors, large investments were made in the Alusaf aluminium smelter. Construction of Alusaf began in 1967 and came into production in 1971 with 53000tpa capacity.

By the 1970s, Afrikaans capital was also confidently reorganising other important sections of the mining and manufacturing industry, although not without favourable assistance from state institutions. Acquisitions of fragmented chrome mines in the early 1970s were consolidated and recapitalised leading to the development of the ferrochrome industry on a large scale.

After embarking on a joint venture with Union Carbide, which led to the construction of the Tubatse Ferrochrome smelter, Genmin took control of its main rival Samancor in 1984 in controversial circumstances. Samancor, formed by a merger between SA Manganese and AMCOR in 1975, was controlled by Iscor (39.6%) with AAC as the largest private shareholder and Gencor as a smaller partner (7%). In 1977, both AAC and Genmin bid for Iscor's 40% share but each was blocked by the state. In 1983, Genmin instituted a R120m court case against Iscor on a coal supply contract at the tied Hlobane colliery where Iscor was demanding reductions in supply. To resolve this, in June 1983, Iscor exchanged 50.25% of AMCOR (which controlled its share of Samancor) for Hlobane and 70% control of Dunswart Steel despite the fact that AAC would have paid more for the stake. In June 1984, Samancor bought the remainder of Iscor's share.

A 20% power subsidy was allowed to the ferro-alloy industry in mid-1974, retrospective to October 1973, and contributed to the growth in ferrochrome exports. Government implemented a number of recommendations including finance charge aid to exporters of some minerals, but rejected private sector proposals to lower export finance charges below domestic interest rates in a scheme which involved the Reserve Bank raising off-shore loans. Instead, the South African Reserve Bank (SARB) allocated R95m per annum for foreign exchange forward cover losses during 1973-4, and the IDC allocated R40m per annum to subsidise export production capacity creation. Some of Reynders Commission's recommendations on transport were also implemented. Rebates were granted on the transport of unprocessed or semi-processed raw materials destined for export either directly to ports or via processing plants. Government also increased tax allowances on market

²²⁷ DME (2006), South African ferro-alloy handbook, H1/2006

development expenditure, capital investment, initial allowances and beneficiation allowances. Massive state investment in power generation capacity followed.

Xstrata

Südelektra AG, a Swiss company with investments in infrastructure and electricity projects in Latin America was set up in 1926. The Union Bank of Switzerland, which came to control Südelektra, sold its stake to the Swiss trading group Glencore International in 1990. Glencore achieved notoriety after its founder, Marc Rich, was accused of tax evasion, fraud and racketeering by the U.S. federal government (though Rich was later pardoned by Bill Clinton at the end of his term in office).

Südelektra subsequently invested in a variety of industrial properties and metals including the Mount Holly aluminum smelter in South Carolina and two vanadium producers in South Africa: Rhoex and Vantech, delisting them from the JSE.

In 1997, Sudelectra purchased vanadium and ferrovandium producers Vantech and Rhoex from Glencore,²²⁸ whose combined output represented approximately 17% of world production. Vantech had expanded production after 1992 from 3000 to 5400 tonnes per annum and had become one of the lowest cost producers in the world. Rhoex owned 95% of its operating subsidiary, Rhovan. Südelektra subsequently increased production to 7000 tons per annum, entering into a long term agency agreement with Glencore to market the vanadium pentoxide. The firms were added to Südelektra's holdings in South African ferrochrome company Chromecorp Holdings. Chromecorp was listed on the JSE in May 1995 and expanded chrome and ferrochrome output considerably. Only 10% of the shares were free float and this constrained capital raising. In 1997, Südelektra delisted Chromecorp.

In 1998, as part of JCI's unbundling, it sold its ferrochrome unit CMI to Südelektra.²²⁹ At the time, CMI was the third largest ferrochrome producer in South Africa. In 1999 the company changed its name to Xstrata AG. It continued to dispose of non-core businesses such as aluminium, oil and gas and to focus on low-cost production in its key markets. It moved into the zinc and lead market buying Spanish-owned Asturiana in May 2001.

In June 2000, Xstrata and Samancor set up a 180,000 ton per annum joint venture to mine ore from a contiguous Samancor deposit at Xstrata's Kroondal mine and smelt it in Xstrata's Wonderkop ferrochrome facility near Rustenburg, North West Province.

In October 2001, former BHP Billiton finance director Mick Davis became CEO of Xstrata and, and in March 2002, Xstrata PLC was listed on LSE, with Glencore retaining a 34% shareholding. In the same year, Xstrata acquired further coal assets, Glencore's Australian (Enex) and Lonrho's South African Duiker Mining and Tweefontein Colliery for \$2.5 billion, becoming the world's largest exporter of thermal coal at the time.

Xstrata subsequently acquired coal and zinc operations and properties, including MIM Holdings, the largest remaining independent mining group in Australia, with operations in coal, copper, lead and zinc. Xstrata was outbid by BHP Billiton in 2005 for Australia's WMC

²²⁸ <http://www.xstrata.com/media/news/1997/12/16/0001CET/>

²²⁹ <http://www.xstrata.com/media/news/1998/04/09/0001CET/>

but instead it took control of the Canadian nickel and copper mining company Falconbridge and a 30% share in the El Cerrejon coal operation in Colombia.

In 2008 Xstrata's attempted merger with Brasil's CVRD was called off. It also failed to take over Lonmin platinum in a \$10 billion bid in 2008. Its proposed merger with Anglo American in June 2009 was also rejected.²³⁰

By 2011, Xstrata Alloys had become the world's largest producer of ferrochrome and a leading producer of primary vanadium. By 2011, Xstrata Coal had become one of the world's largest exporter of thermal coal and a significant producer of premium quality hard coking coal and semi-soft coal.

In December 2003, Xstrata started building the Lion ferrochrome smelter project in South Africa which raised Xstrata's annual ferrochrome production capacity to one-third of current global capacity. In February 2004, Xstrata established a shared pooling of assets venture with SA Chrome & Alloys, which made Xstrata compliant with the MPRDA and charter. It also expanded the quantum of ferrochrome that Glencore was able to market and at the time, the combined ferrochrome output was about 26% of total world output.

In June 2007, Xstrata bid for Canadian-owned LionOre which held a 50% share in the Nkomati nickel project. However, Norlisk beat Xstrata's bid.

Xstrata entered the platinum market in August 2007, when it acquired Eland Platinum Holdings for around \$1 billion. This was followed by a 24.9% stake in Lonmin in October 2008.

Today, Xstrata is the world's largest producer of export thermal coal, the largest producer of ferrochrome, one of the top five producers of coking or metallurgical coal, the fourth largest global copper producers, the fifth largest global nickel producers and one of the world's largest miners and producers of zinc.

Merafe Resources

South African Chrome & Alloys Limited (SA Chrome) was incorporated in South Africa on 24th July 1987 as Southern Witwatersrand Exploration Company Ltd. It changed its name to SA Chrome in December 1999. The company was listed on the JSE in 2001 to raise capital to build a chrome mine, sinter plant and 235,000 ton per annum smelter at Boshhoek which began production in 2003. The Royal Bafokeng Nation took a majority stake in the company from the outset and this greatly assisted the firm to secure its mineral right conversion for its Horizon chrome mine as well as to acquire more reserves near the Boshhoek smelter from the Royal Bafokeng Nation.²³¹

²³⁰ <http://www.crocodyl.org/wiki/xstrata>

²³¹ In 2003, SA Chrome acquired an additional 20 million tonnes of chromite resources on the farms Boshhoek, Bultfontein and Boekenhoutfontein, which are adjacent to the SA Chrome smelter. It also signed an agreement with the Royal Bafokeng Nation for the acquisition of their 100 million tonnes of chromite resources on the farms Boschkoppie, Turfontein and Beerfontein, which are also adjacent to the SA Chrome smelter.

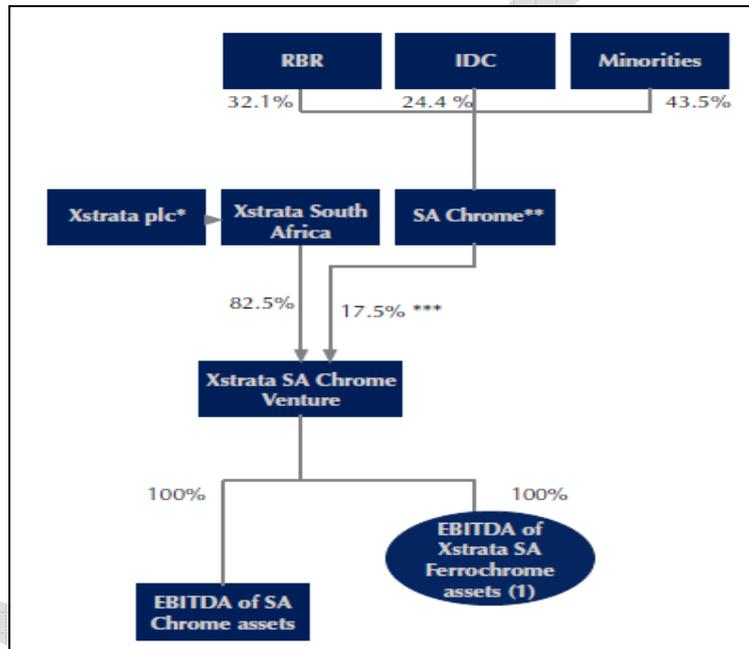
Table 24: Merafe Resources – shareholding profile 2003

Royal Bafokeng	35.0%
The IDC	24.1%
Bateman	5.4%
Others	35.5%

Source: SA Chrome (2003), Annual Report

On 1st February 2004, SA Chrome pooled its assets with those of Xstrata South Africa (Pty) Limited to form a joint venture such that both companies would share in the pooled earnings before interest, tax, depreciation and amortisation (EBITDA) in proportion to their respective participation in the venture.

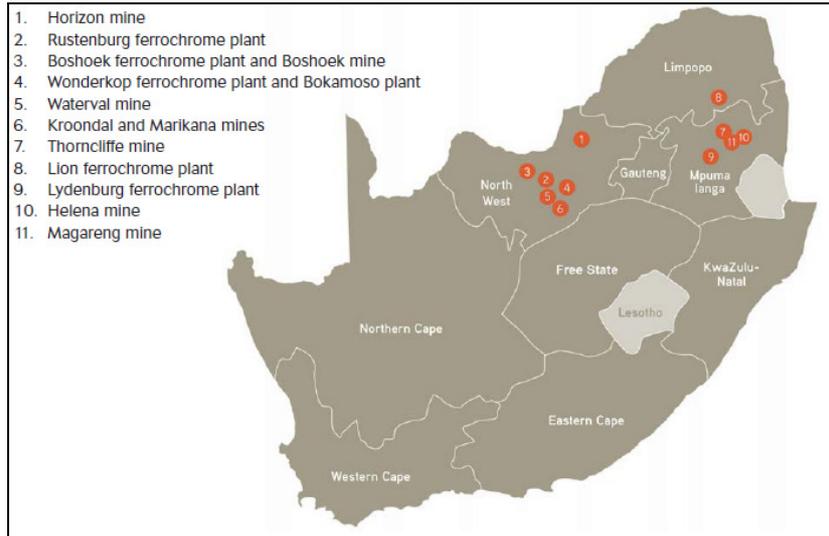
Figure 23: Xstrata – SA Chrome/Merafe asset pooling joint venture 2004



Source: SA Chrome (2004), Annual Report

SA Chrome’s initial participation in the combined EBITDA was 11%, rising to 17.5% from year three onwards of the venture. SA Chrome also had the right to increase its effective interest in the Xstrata – SA Chrome Venture to 26% by contributing proportionately more than its participation interest to the cost of any expansion or acquisition. The transaction secured Xstrata’s compliance with the MPRDA and charter.

Figure 24: Xstrata – Merafe asset pooling geographic location 2009

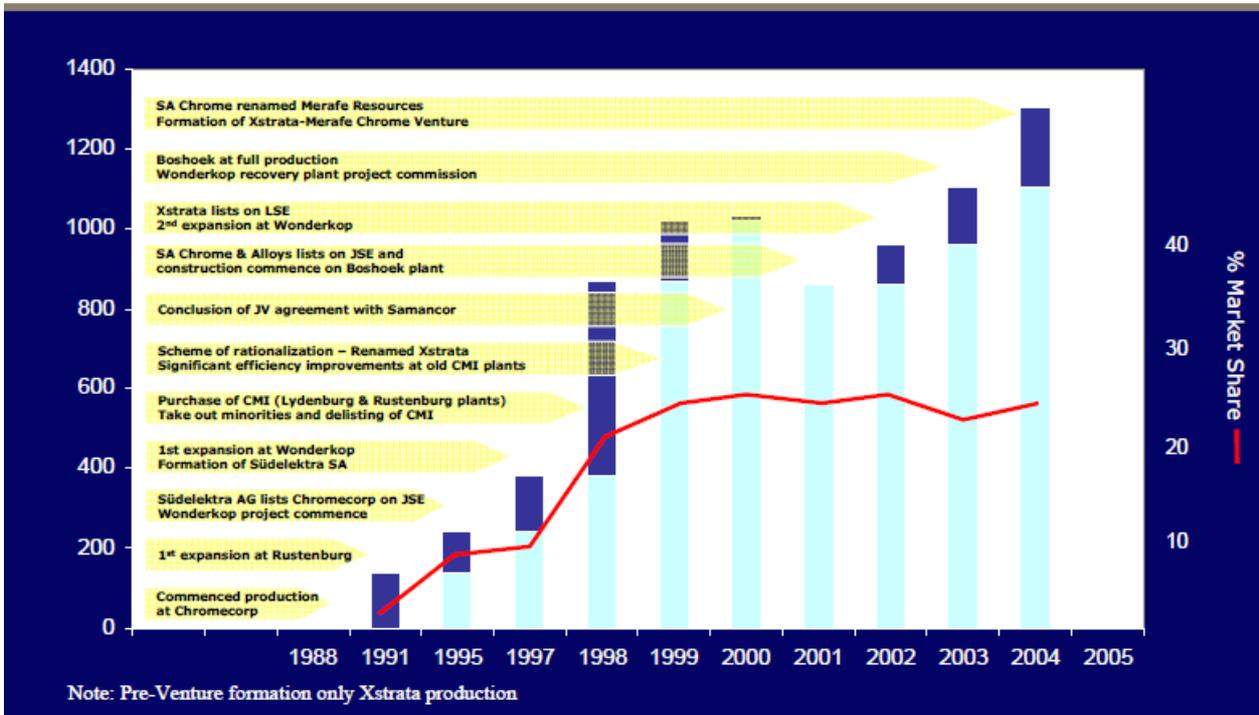


Source: SA Chrome (2009), Annual Report

The venture had a combined 1.4 million tons per annum ferrochrome capacity, 26% of global output, which was marketed exclusively by Glencore in terms of the agreement.

SA Chrome changed its name to Merafe Resources Ltd (Merafe) on 29th November 2004. In 2005, Merafe acquired a 50% interest in Xstrata-Samancor Wonderkop smelter, related mines and a 20.5% share of the 360,000 ton per annum Lion 1 expansion.

Figure 25: Xstrata-Merafe ferrochrome production growth 1991-2005



Source: Xstrata Alloys (2005), Analyst's visit 7 July 2005

In 2007, Merafe took a 20.5% interest in Bokamoso, a mega chrome ore pelletising and sintering plant with an annual capacity of 1.2 million tonnes.

Also in 2007, Merafe diversified into coal by entering into a 50/50 joint venture with Sentula Mining Limited (formerly Scharrig Mining Limited), called Merafe Coal into which it injected three coal development projects with resources amounting to 11.35 million tonnes. In 2009, Merafe announced that the Venture had received all of its New Order Prospecting and Mining Rights and Mining Right Conversions from the Department of Mineral Resources. During 2010, the Merafe-Xstrata venture commenced construction of Project Tswelopele, a pelletising and sintering plant, at the Rustenburg ferrochrome plant. The project is aimed at reducing energy costs by R50 million per annum and to improve ore consumption efficiency by 3.8%. Phase II expansion by 360,000 tons per annum of the Lion ferrochrome plant, in Limpopo province was also announced at a capital cost for both plant and the associated Magareng chrome mine of R4.9 billion with production scheduled for 2013.

In addition, Merafe embarked on a UG2 chromite recovery plant as part of an extension of the existing UG2 offtake agreement for 1.5m tons per annum tailings from Lonmin's Marikana operations. In the 10-year period between 2001 and 2010, Merafe's market capitalisation has grown from R436mn in 2001 to R4bn in 2010 with the Xstrata venture's total ferrochrome capacity at over 2.3 million tons per annum.

Samancor Chrome

Samancor chrome evolved through the Gencor stable as a 60:40 joint venture with Anglo American. Samancor was listed on the JSE for 71 years until 1998 when the minority shareholders were bought out in a scheme of arrangement involving a cash payment of R45/share by the then majority shareholders, Billiton and Anglo American, resulting in the de-listing of the company in December 1998. Gencor transferred its shareholding to Billiton in 1998 and Samancor chrome continued to be operated by BHP Billiton until early 2005, when both Anglo American and Samancor sold the entire company to Kermas of Kazakstan for \$469m. In 2006, International Mineral Resources BV (IMR) acquired a 32.4% share in Kermas South Africa, leaving Kermas with 34.5%. IMR controlled Eurasian Natural Resources Corporation (ENRC) which owned KazChrome. The transaction gave IMR a dominant position in the global ferrochrome market.

Table 25: Ferrochrome – global market shares 2004

Xstrata	21.6
KazChrome	13.6
Samancor Chrome	11.7
China	9.2
Outokumpu (Finland)	4
Hernic Ferrochrome	3.8
Assmang/Ferrolloys	3.5
Chelvabinsk (Russia)	2.9
Kermas	2.6
Facor (India)	2.2
DLA (USA)	1.5
Others	23.4

Source: Competition Tribunal (2006), Case no.: 03//LM/Jan06

To comply with its MPRDA and charter requirements, Kermas allocated a 28% shareholding to the Batho Barena black consortium led by Ehlobo Holdings (14%) and including

employees, local communities and a women's group.²³² At the time, Samancor chrome had a mining capacity of 4.5 million tons and smelting capacity of 1.2 million tons, with a 260,000 ton per annum \$130m brownfields expansion underway.

Subsequently in 2008, it was reported that IMR apparently offered to acquire the consortia's shareholding for \$25m per 1% shareholding. A controversy then arose because the broad based groupings had apparently not been properly constituted and a dispute broke out amongst the consortia members over whether the offer had been communicated to all the shareholders.^{233 234}

In 2009, IMR acquired Kermas' entire stake in Samancor, giving IMR effective control of the company. It appears that the DMR forced Kermas to sell out to IMR and to retain the >26% black shareholding in Samancor as a condition of conversion of mineral rights.²³⁵

Assmang Chrome

In 1971 Feralloys Limited a wholly-owned subsidiary of Assmang, expanded and erected a ferrochrome smelter at Machadodorp for the production and export of charge and low-carbon ferro-chrome. Currently, only charge chrome is produced. By 2001, chrome capacity had grown to 300 000 tons per annum and Feralloys Limited was dissolved as a company in 2001 and incorporated into Assmang Limited. Currently ownership is 50:50 shared between ARM (African Rainbow Minerals) and Assore.

Between 2009 and 2011 Assmang has been converting some of its ferrochrome furnaces to produce ferromanganese, this process appears to be partly linked to the rising costs of electricity as well as Assmang choosing to leverage its strong position in manganese and manganese alloys.²³⁶ In 2011, Assmang announced that it was accelerating its furnace conversion programme, increasing its ferromanganese capacity from 291,000 tons per annum to 450,000 tons. This would be achieved by reducing ferrochrome capacity from 231,000 tons to 100,000 tons per annum.

Other producers

Other smaller producers of ferrochrome include Heric Ferrochrome, ASA Metals, International Ferro Metals (IFM) and Tata Ferrochrome.

Ferrochrome - conclusions

South Africa's ferrochrome output has grown from about 1 million tons per annum in 1992 to over 3 million tons in 2009. Production is dominated by Xstrata-Merafe (2.4mt capacity) and IMR-Samancor (+1.2mt capacity)

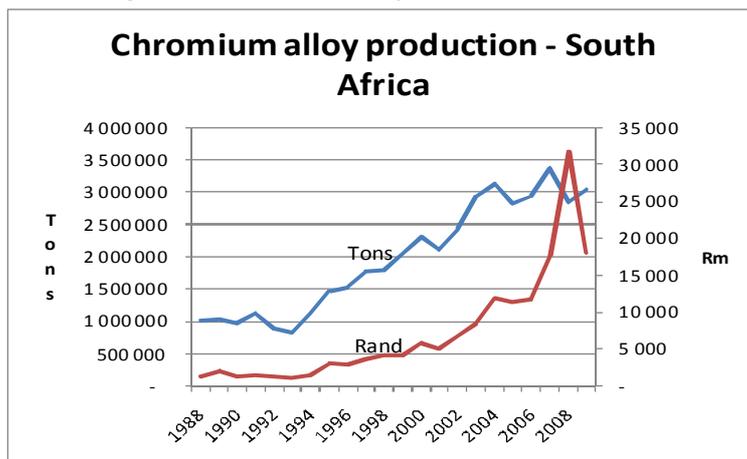
²³² <http://www.fin24.com/Business/Samancor-Chrome-sells-BEE-stake-20060412>

²³³ Batho Barena comprises Ehlobo Holdings, which holds 14percent; the Samancor Workers' Trust, with a 5.6percent stake; and Sibilo Investments local communities 4.2% and Nanka Investments - a group of women involved in mining <http://www.miningweekly.com/article/kermas-sa-empowers-with-sale-of-stake-to-consortium-led-by-ex-dti-dg-2006-04-12>

²³⁴ <http://www.moneyweb.co.za/mw/view/mw/en/page62528?oid=211758&sn=Detail&pid=62528>

²³⁵ Sunday Business Times, Help the poor, not the powerful, Jul 06, 2008

²³⁶ <http://www.miningweekly.com/article/assmang-converts-two-more-furnaces-to-produce-ferromanganese-2011-06-30>

Figure 26: Ferrochrome production 1988-2009

Source: http://www.dmr.gov.za/Mineral_Information/Statistics/B1%20Information%202009.pdf

The rand value of chrome alloy exports has grown exponentially. Global commodity prices peaked in 2008 generating more than R30 billion, up from R12 billion in 2006 on the same 3 million ton amount.

Control over industry output/exports has consolidated, with Glencore and Xstrata playing a central role in this process. They have managed to achieve control without the same commensurate level of ownership of the productive facilities. Although black capital ownership through Merafe, for example, has increased, the marketing of the chrome ore and ferrochrome is controlled by Glencore.

Yet, at the same time, overall ownership of South Africa's ferrochrome industry has passed into foreign hands. This process accelerated in the late 1990s, The MPRDA has ensured that at least 26% ownership is reserved for South African black capital.

Diamonds

De Beers

De Beers emerged in the 1880s as the dominant diamond mining company in South Africa. It was controlled by Rhodes. In De Beers concluded a sales contract with a new dealers' and brokers' syndicate, the London Diamond Syndicate, which also played an important role in managing the diamond market.

Between 1917 and 1929, Ernest Oppenheimer built up a portfolio of diamond interests in South Africa and Namibia for his Anglo American company. He eventually took control of De Beers by building up his own shareholding in De Beers. By 1926 he was elected to the De Beers board and after challenging the Diamond Syndicate with his own marketing arm, he became chairman of De Beers in 1929.

Over decades, De Beers has battled (successfully in most cases) to control the supply of diamonds to the markets and, thereby, keep prices high. Successive competitors were either absorbed completely or locked into De Beers' central selling model.

During the 1920s tensions emerge between the Pact government and De Beers. The state wanted to reserve and promote small-scale alluvial digging as a site for the absorption of white labour, through the Precious Stones Act of 1927, whereas De Beers sought to tighten its control over diamond production. But by 1929 the independent diggers had all but disappeared, and by 1931 De Beers had control over all major diamond production in South Africa. In 1930, in the midst of the Great Depression and with supply exceeding demand, the London-based Central Selling Organization (CSO) was formed to facilitate more orderly marketing and greater stability in the diamond industry.

Conflict focused on the closure of the Premier Mine in March 1932 for which the government did not give permission and De Beers did not give adequate notice as was required by agreement. After this point, as market conditions improved, the government was reconciled to its subordinate role. Following this, the South African government then effectively partnered De Beers, allowing it to rationalise its functions within South Africa and to do the marketing through the London channel.

De Beers also diversified. For some time early in the 20th Century De Beers invested in dynamite production. In the late 1950s, De Beers established production facilities for manufacturing synthetic diamonds and later, together with Anglo American, created the diamond drilling company Boart International.

The strong cross-holdings between Anglo American and De Beers led Anglo in 1962, to block Federale Mynbou's bid for control of JCI. Instead Anglo assisted FedMyn to acquire General Mining and Anglo took over JCI itself, firstly, because JCI had substantial holdings in De Beers and the Diamond Producers' Association. Second, JCI controlled Rustenburg, the world's largest platinum mine and also had substantial copper mining interests. Clearly, uncontrolled penetration of Afrikaans capital's interests in AAC's sphere of influence was not welcome.

In 1969 the huge potential output from Botswana led to a change in the De Beers model. The De Beers Botswana Mining Company Limited (Debswana) was incorporated in 1969 as a joint venture between De Beers and the Botswana government. Significant production followed such that De Beers sold a 5.27% shareholding in the parent company in exchange for 100% control of Debswana and all the diamond stocks built up by Debswana from 1982 to 1985. Botswana's share of De Beers later increased to 15%.

In the 1990s, in anticipation of a potentially hostile post-apartheid government, Anglo American transferred all its non-South African diamond interests to its Luxembourg-based Minorco company. Similarly in 1990, De Beers split itself into two basic parts. Its South African assets were held under De Beers Consolidated Mines Limited (De Beers Consolidated) while its non-South African assets were housed under a Swiss-registered holding company called De Beers Centenary AG (Centenary). In exchange for the asset transfer, De Beers Consolidated was allocated a 9.5% interest in Centenary. At the time, both companies were governed by the same board and their shares were treated as a linked unit.

As part of the unbundling process, in 1998 De Beers and Anglo American rationalised their cross-holdings which led to De Beers transferring its holdings in non-core firms like Anglo

American Platinum Corporation Limited, Mondi Limited, Namakwa Sands Limited, and Samancor. The end result was that Anglo American increased its 32.2% share in De Beers to 45%, with the Oppenheimer family at 45% and the Government of Botswana at 15%.

In 2001, resulting from the increasing uncontrollable production from diverse parts of the world, De Beers changed its CSO model. It delisted from the stock exchange. In 2003, the Kimberley certification process was established which aims to close the marketing opportunities for “blood” diamonds to find their way into global markets.

In 2005, government passed the Diamonds Amendment Acts, 2005 (Act No. 29 of 2005 and Act No. 30 of 2005). The rationale for the amendment of the Diamonds Act, 1986 (Act No.56 of 1986) was to: increase access to rough diamonds for jewellery manufacturing in South Africa; maintain security of supply of rough diamonds, promote the beneficiation of diamonds in South Africa, thus creating jobs and increasing participation, especially from the Historically Disadvantaged South Africans, throughout the diamond value chain.

South African diamond production is dominated by the De Beers consolidated Mines (DBCM) which contributed approximately 93.0% of South Africa’s 2008 total output of 12.9m carats.²³⁷ This reflects a decline from 15.0m carats in 2007 to 12.0m carats 2008 due to the sale of the Cullinan mine and the closure of the oaks mine. In the same year, DBCM opened the R1,3 billion Voorspoed mine in the Free State province on the 4th of November 2008. This is the first kimberlite pipe mine to be opened in South Africa in 16 years and is expected to produce about 800 000 ct/y at full production. DBCM owns 74 percent of Voorspoed and their black partner Ponaholo Trust, the remaining 26 percent.

In comparison, diamond production from SADC countries is far greater than South Africa’s, as outlined in the following tables.

Table 26: SADC mine production of selected minerals 2002-2008

TABLE 18: SADC MINE PRODUCTION OF SELECTED MAJOR MINERALS

MINERAL	PRODUCTION							
	unit	2002	2003	2004	2005	2006	2007	2008
Coal	t	228 400 000	244 543 000	242 543 000	245 000 000	291 764 000	247 666 556	252 100 000
Cobalt	t	11 966	22 271	20 309	6 290	5 482	2 681	8 041
Copper	t	525 700	518 300	602 900	660 500	849 300	643 700	652 600
Chromite	t	7 106 750	7 803 023	7 730 844	8 204 862	8 131 234	10 346 593	
Diamonds	carats	62 281 889	75 538 418	80 910 427	76 680 155	63 330 000	88 431 401	57 807 117
Gold	kg	461 100	442 166	422 200	232 300	341 400	316 598	266 344
PGMs	kg	243 831	274 300	294 897	312 061	317 512	313 953	287 599
Nickel	t	89 900	79 600	74 200	80 000	79 300	81 900	80 530
Lead	t	50 000	57 000	53 000	42 000	69 000	11 100	60 000
Zinc	t	101 000	148 000	230 000	261 000	219 000	316 000	233 000

Source: Mineral Economics
U.S Geological Survey

Source: DMR (2009), SAMI

²³⁷ DMR (2009), SAMI

Table 27: Diamond output by country 2008

COUNTRY	PRODUCTION					
	MASS			VALUE		
	CARATS	%	RANK	US \$	%	RANK
Angola	8 906 974	5.5	7	1 209 789 970	9.5	5
Australia	14 932 137	9.2	4	326 394 284	2.6	8
Botswana	32 276 000	19.8	3	3 273 001 000	25.7	1
Canada	14 802 699	9.1	5	2 254 710 603	17.7	3
DR of Congo	33 401 927	20.5	2	431 833 163	3.4	7
Guinea	3 098 490	1.9	8	53 698 455	0.4	11
Namibia	2 435 195	1.5	9	918 033 930	7.2	6
Russian Federation	36 925 150	22.6	1	2 508 957 130	19.7	2
South Africa	12 901 019	7.9	6	1 236 240 109	9.7	4
Other	4 073 297	2.0		519 620 164	4.1	
TOTAL: 2008	162 907 716	100.0		12 732 278 808	100.0	
2007	168 198 857			12 106 550 822		

Source: KPCS Rough Diamond Statistics, 2008

Source: DMR (2009), SAMI

The MPRDA has influenced De Beers' strategy. In 2005, it sold a 26% shareholding to the Ponaholo Consortium.²³⁸ The beneficiaries included the De Beers employees (50%) and Ponaholo Holdings (50%).²³⁹

On 30 October 2008, De Beers announced the successful conversion of seven of its old order mining rights in the Northern Cape Province to new order rights under the provisions of the MPRDA (Act No.28 of 2002), and the Act's Regulations of 2004. The licenses converted were for the Finsch mine, Venetia mine, Buffels Marine, Buffels Inland, Dikgat, Brand-se-baai and Koingnaas. In addition, the company received a new order mining right for the Verdun area, which forms part of Namaqualand mines, also in the Northern Cape Province.

Trans-Hex and other diamond miners

In 2008, De Beers produced 12m carats while other miners produced 0.9m carats. In 2008, South Africa had 394 operating diamond mines.²⁴⁰ Of these, Trans Hex produced 0.11m carats.²⁴¹ The balance of South Africa's production came largely from state-owned Alexkor and Petra Diamonds and the smaller companies, as well as individual alluvial diamond producers.

²³⁸ <http://www.miningmx.com/diamonds/529424.htm>

²³⁹ Ponahalo Holdings is held by Manne Dipico, Cheryl Carolus, Wendy Lucas-Bull, Dolly Mokgatle, Moss Mashishi, Barend Pieterse and Thandi Orleyn.

²⁴⁰ DMR (2009), South African Minerals Industry 2008-9, SAMI

²⁴¹ Trans Hex (2009), Annual Report. According to Trans Hex's 2008 annual report, carat production fell by 17.4 percent to 0.11m carats due to the decommissioning of the Bloeddrijf plant and the lower than anticipated grades at Baken.

The MEC as a system of accumulation

Ownership changes in MEC sectors

There are several main trends observed in ownership and control of MEC sectors since the early 1990s:

- 1) First, South African-domiciled ownership has been replaced by foreign, mainly London-domiciled corporate ownership. The bulk of this is associated with the exodus starting with De Beers in 1990 and followed by Anglo American and Gencor in 1998. This has not been confined to the productive sectors. Significant segments of financial capital, which might previously have been socially rooted within South Africa has fully or partially externalised or diluted themselves – for example through the shifting of Old Mutual to London in 1996, the acquisition of Absa by Barclays in 2005 and the acquisition of 20% of Standard Bank by China's ICBC Bank.
- 2) In every single MEC sector with the exception of gold and coal, ultimate control of either production or of export marketing has been secured by subsidiaries of one or other offshore transnational corporation. Anglo American currently dominates platinum and iron ore output. BHP Billiton controls manganese. De Beers controls diamonds. Xstrata controls ferrochrome. In regard to gold, Anglo American has completely divested itself of gold mines and gold mine ownership is currently largely institutionally based. In the case of coal, old order (and "transnationalised") capital has tried to retain control over export coal while ceding the less profitable domestic market to black capital. Currently the transnationals are manoeuvring to acquire control over that part of South Africa's export coal that has been reserved for black capital. Striving for control of this sort is quite rational. Cyclical mineral pricing and periodic oversupply, coupled with South Africa's dominant global supply position particularly in respect to diamonds (in years past) and (currently) platinum, ferro-alloys, and manganese have driven firms to try to corner the market.
- 3) South Africa's MEC minerals and processed commodities are largely locked into and traded by the offshore corporate global marketing divisions of the respective transnational corporations.
- 4) Different fractions of black capital have leveraged varying degrees of ownership and control positions across the entire spectrum of MEC sectors, much as their Afrikaans predecessors did between 1948 and the mid-1970s. In some cases, where black capital has secured control over the productive assets, they have been forced to cede marketing control to the transnationals. Some segments of black (and other) capitals have simply traded mining and other MEC assets, taking advantage of cyclical markets and getting out at the top.

- 5) Finally, we observe that looking at ownership in isolation is not as useful as locating this within the context of individual sector drivers and corporate strategies.

The dismembering of corporate conglomerates (“Mining Houses”) and the growth of black domestic capitalist interests in the minerals sector

By the early 1990s, the disjuncture between English and Afrikaans capital had largely eroded and, across all the economic sectors in which they operated, there was considerable interpenetration, cooperation and, at the same time, a degree of corporate rivalry but which was mitigated by the collusive conglomerate oligopolistic structure that characterised the South African economy.

Three factors drove corporate restructuring in South Africa in the 1990s. The first was the election of a democratic government representing black economic interests that were not part of the apartheid economic tapestry. The second was the fact that most of the South African conglomerate capital had already externalised a portion of their asset base and operations and, in some cases, external growth was the main potential or objective. The third was pressure from financial and speculative sector interests to “unlock” conglomerate balance sheet value.

What started as corporate restructuring rapidly merged with processes through which white-owned capitalist interests sought an early accommodation with emerging black capitalist interests, in accordance with the black economic empowerment policies of the ANC government.

Faced with a new state, conglomerate capital succeeded in unbundling itself, yet also evolving into a form which has systematically co-opted black capital across a range of sectors. Even though the corporate tapestry of South Africa is almost unrecognisable in 2011 compared to 1990, the MEC appears to continue to be the locus of economic growth in South Africa.

Those old-order capitalists who steered the unbundling sought to retain (offshore) control over the most valuable assets they held in the 1990s. In disposing of their marginal domestic assets, they were careful to nurture good relationships with emerging black capital, while ensuring that black capitalist ownership was not overly concentrated.

The first major South African corporate unbundling exercise took place in 1993 when Barlow Rand (in which Old Mutual held 22%) passed shares it held in CG Smith (which owned Illovo, Tiger Oats and Nampak), back to shareholders. Barlows also split Rand Mines into Randgold and Randcoal and passed these shares back to shareholders.

As depicted above, in terms of the transfer of assets, the processes followed have not been dissimilar to those pursued in the 1950s and 1960s. However, there appear to be several different characteristics that depict the current period.

In the case of coal, there have been three trajectories followed by old-order capital. First, was a collective trajectory in the early 1990s of consolidation of the domestic value chain around three coal mining firms, namely Anglo American, Trans-Natal Coal and Rand Mines.

Secondly, the approach of the resulting dominant white-owned players (Anglo and BHP Billiton) was a joint one, aimed at co-opting emerging black capitalist owners into retaining and strengthening the stability of the historic arrangements whereby:

- economies of scale prevail in an interdependent coal-electricity-energy intensive user industry structure (minerals-energy complex) such that
- profitability of the best directly-owned assets are retained for Anglo American and BHP Billiton shareholders
- profitability of the transferred assets are more dependent on the state deepening its preferential procurement policy for black-owned suppliers
- emerging black capitalists are incentivised to ensure that there are no systemic disruptions to current dividend flows which would extend the period during which their beneficial shares are paid for and vest fully

The detail of how this strategy has played out in the coal sector is discussed in the relevant section above, but in short, they were very similar:

In the 1960s version, initially, Federale took a majority stake and Anglo a substantial minority interest. In 1965, Federale and General Mining merged. At the time, it was responsible for:

- 34% of national uranium output,
- 7% of gold
- 10% of national coal output, through ownership of 10 collieries
- Investments in asbestos fibre production, platinum, and copper
- Oil production, exploration, and marketing, including petroleum company Trek.

In comparison, when Anglo and Billiton vended some of their coal mines to Eyesizwe in 2000, the latter was catapulted into producing 9% of national coal output through ownership of 3 collieries.

By 2010, BHP Billiton and Anglo American had diversified their respective coal portfolios internationally and had retained only a small number of their most valuable South African coal mine assets, carefully disposing of the rest to accommodate a diverse range of black capitalists but favouring the creation of large-scale black interests, most notable of which is Exxarro (which was itself based on the Eyesizwe and Kumba coal assets), which has emerged as one of the largest coal companies in South Africa.

The third trajectory followed by some old-order capital has been through the evolution of coal trading competences during the era of sanctions, which led to the emergence of two separate and increasingly strong coal trading firms in the 1990s, namely Glencore and Xstrata, both based in Switzerland and intertwined in an ownership relation. Over two

decades, these trading firms integrated backwards into owning strategic stakes in productive coal and ferro-chrome mining assets in South Africa, and other productive assets elsewhere.

The lull in investment around electricity between the 1980s and early 2000s and the subsequent demand growth for coal, also driven by growing Asian demand, resulted in some flux in the sector.

In gold, the main driver in the 1990s was the unsustainable cost structure of the industry in the face of low global prices. This prompted a deep rationalisation of the industry reducing the number of firms involved from 37 to 6 between 1995 and 2002.²⁴² Between 1995 and 2010, Anglo American first consolidated all the gold mines under its domestic and global arms and placed these under separately listed AngloGold, in which Anglo American plc had a controlling interest. AngloGold systematically sold down its South African gold asset base, while expanding its presence in global gold activities. AngloGold also consciously sold some of its non-core assets to black-owned ARM gold, in a move reminiscent of the 1964 Genmin sale to Afrikaans capital. Other assets were sold mainly to Harmony Gold.

Harmony made other acquisitions between 1998 and 2002 and was spectacularly successful in rationalising and turning these operations around. By 2002, Harmony had catapulted to being the world's sixth largest gold producer. Harmony also complied with the MPRDA requirements to involve black capital in its transactions (detailed above).

In the case of gold, the material conditions of declining grades and deep-level mining's capital-intensity, lent itself to an outcome whereby domestic black capital was unable to play anything more than a transient role in the development of the industry, benefiting from the cash flow that ownership of gold mining offered, but rapidly transferring the accumulated rents into other mining or non-mining ventures. If one considers the declining trajectory of gold mining during the 1980s and early 1990s during apartheid, the process has not been very different. Those fortunate to have been able to raise the necessary finance, either through the stock exchange in the 1980s (white capitalists) and early 1990s (black capitalists), or through vendor financing and clever financial engineering (facilitated by state pressure through the mining charter and the MPRDA) have benefited only if the associated commodity price has risen beyond expectations and the party concerned was able to exit at the right time. Such was the case with the Khuma Bathong consortium that was Harmony's partner on Elandskraal. They exited the empowerment deal with Harmony within one year, following Harmony's rapid turnaround of the operation and higher gold prices.

Others lost heavily. In the case of Anglo American's sale of JCI to black capital in 1996, the gold price fell and led to the complete dismemberment of JCI. More recently, Pamodzi Gold represented seasoned black capitalists with a proven track record of leveraged buyouts and subsequent turnarounds. They may have tried to emulate Harmony in operating a marginal gold asset in an environment of rising global gold prices. Unfortunately for Pamodzi, the timing of the acquisition just prior to the 2008 market crash led to their undoing.

²⁴² Harmony Gold (2000), Annual Report

Following this, Aurora Empowerment Systems, which is part-owned by the President's son and legal representative, purchased some of Pamodzi's gold assets. However, it is clear that this high profile and controversial case has reflected on a relatively small and marginal part of gold mining, reflecting both the more brutal and unsavoury aspects of class formation around some of South Africa's mineral resources, as well as reflecting on a particular segment of black capital that is more oriented towards asset-trading and speculation.

Thus in gold, the dominant old-order capitalist owners of the 1980s exited the industry through a series of transfers respectively and at different times via ARM, Mvelaphanda and Capital Alliance Holdings. By 2011, the ownership of gold mining is mainly held by financial institutions, with a significant proportion being foreign owned. In 2009, Mvelaphanda also divested itself from its holding in Gold Fields.

There are some seemingly important emerging differences between the evolution of Afrikaans capital around the MEC and the similar current process involving black capital. Although this requires further research, it is clear that a much more sophisticated and developed financial sector exists now which is capable of financing ownership transfer and class creation on a much larger scale than was possible in the 1960s.

Unbundling was such a strategy adopted on the basis of the sum of parts having greater value to shareholders than the combined conglomerate. Unbundling was also a process driven by financial sector speculation. This was particularly so in a global environment in which a commodity super cycle was evolving.

However, the financial sector seems delinked from black capital in that in the current period, there does not seem to be a Sanlam equivalent whereby the profits associated with financing Afrikaans empowerment transactions were appropriated by Afrikaans-owned financial institutions for the purposes of developing large-scale productive industries. The current financial sector interests seem more oriented towards maximising short-term financial returns through a range of fragmented financial transactions.

Mvelaphanda is an example of this power and process. By 2009, it had emerged as a mini-conglomerate in its own right and, for a variety of reasons, unbundled itself and, amongst others, exited ownership of Gold Fields in 2009.

In the case of platinum, its growth has been partly shaped by specific issues around Bantustan mineral rights. Gencor's unbundling released Impala from conglomerate control but, after resisting at first, it was ultimately forced to accommodate Bafokeng interests at holding company level. Anglo American's unbundling, on the other hand, was shaped in a way which transferred control of Amplats to Anglo plc. But Anglo, for the same reasons, was forced to accommodate a range of black capitalist interests. Unlike gold, platinum output has grown and the growth has facilitated a greater level and quantum of accommodation with black capital. In this respect, the dominance of Impala and Amplats, coupled with the manner in which the state is wielding its power over the licensing of mineral rights has constrained the scramble by domestic and global mining houses to acquire South African PGM reserves.

Not all black capitalist interests have fared well in the platinum process and the Incwala example illustrates how quickly the tide can turn. In 2004, Incwala acquired a stake in Lonmin. By 2007, the Lonmin share price had appreciated by more than 300% and Incwala was considering listing itself on the JSE.²⁴³ Three years later, with the Lonmin share price having crashed and the Incwala transaction under threat, Incwala was forced to sell a controlling interest to Shanduka.

The train of events around Iscor's unbundling is also instructive. Iscor was an integrated iron ore mining and steel company which Iscor management were trying to unbundle into separate mining and steel making assets. In the one corner, you had a purposeful state in 2001, which was prepared to wield the IDC's considerable financial resources together with other state instruments to shape the development of the country's iron ore assets.

In another corner lurked speculative capital, which had identified the opportunity to make a quick return and it made an early move to acquire a stake in Iscor.

At the same time, Anglo PLC, newly domiciled in London, sought to establish a presence in the global iron ore trade as did Avmin and some global mining houses which also saw value in the current existing asset and future developmental potential around the asset.

In another corner, emerging out of the specific South African social context, were black capitalists intent on establishing their presence in all manner of commerce and industry. Their pressure had resulted in the particular form in which the state, at that time, was applying the MPRDA and other policy instruments.

A fascinating corporate outcome emerged whereby Anglo plc achieved its primary objective of seizing control of Kumba, while facilitating a very significant transfer of coal assets to black capital. It has taken a decade for a particular fraction of black capital to come to dominate coal production in South Africa through a similar process of accommodation that was followed in the 1960s. In comparison, it took 2 decades for Afrikaans capital, represented by Trans-Natal Coal, to achieve similar market dominance. It is quite likely that had it not been for the iron ore and platinum prize that drove Anglo plc, it would have taken longer for ownership of coal production, which is a scale economy industry, to consolidate.

In 2003 Anglo American increased its stake in Kumba to 20.1%, buying the speculative stake held in the company by Stimela (Benny Steinmetz). By 2005, Anglo was in full expansion mode, allocating \$559m to raise output by 10mt to 41mt by 2009.

Speculative trans-national capital has also entered and exited South Africa through the mining and other MEC sectors. Most notable amongst these parties has been the Benny Steinmetz Group, which leveraged their ownership position of Avmin, benefiting through speculative gains made in trading unbundled Iscor's Sishen iron ore mine and in stripping Avmin of its Zambian copper asset in Chambishi.

What has been striking in comparing the development of mining assets during and after apartheid has been the minimal extent to which domestic capital post-1994, has actively

²⁴³ http://www.miningmx.com/news/platinum_group_metals/258072.htm

shaped the trajectory of mineral developments. The one exception that is notable is the growth through acquisition and consolidation of Harmony Gold – driven by a strong domestic management team with a significant ownership stake in the business. Foreign and institutional ownership of Harmony was always still significant, given the capital intensity of the industry. A second exception is, possibly, the manner in which ARM has emerged with a significant presence in iron ore and manganese, although it has grown more through acquisition than organic growth, but there is a significant pipeline of projects being developed. The Royal Bafokeng Holdings have consolidated their ownership position in platinum and ferro-alloys, but they appear to have adopted a policy to actively diversify out of mining and MEC sectors.

Other than this, domestic capital, black and white, has played a relatively minor role in the growth of minerals sectors. In the case of platinum and iron ore, the dominant old-order owners (Anglo American and Impala) have been the main drivers of growth. They have accommodated domestic black capital in a way which renders the latter subordinate, but very comfortably so.

The emerging capitalist interests are largely fractious and small in scale. Those that have evolved into medium to large scale enterprises are often significantly leveraged financially and therefore hostage to the current trajectory.

The state of the ruling party, in some respects, mirrors the currently fractious nature of domestic black capital and the party itself seems unable to rise above the lowest common denominator and provide industrial development leadership. In a previous epoch, increasingly powerful and organised fractions of domestic Afrikaans capital exerted influence on different provincial parts of the National Party, but collectively they were resolved to focus on growing large scale domestically-rooted capitalist enterprises.

The increased entry in the RSA economy of large and small transnational mining and mineral processing firms

Mining

There has been a long history of involvement of European mining houses and mining finance houses in South Africa. Indeed, the process of colonisation and the various wars that were fought, including the Boer War, were a manifestation of such European corporate interests.

However, following the second world war and up until the mid-1990s, a large proportion of capital invested in South African mining sectors has been under the ownership and control of domestic capital. Such has been the scale and concentration of capital, that all of the large South African mining corporations have also invested capital in other countries across the globe. For some, like De Beers and Anglo American, this process began many decades ago. For other South African mining companies, the process of externalising investments accelerated following the lifting of sanctions, the election of a democratic government and the early policies of that government which facilitated outward investment.

As at 2011, a number of today's transnational mining giants can trace their origins to South Africa, including De Beers, Anglo American (and its various subsidiaries), AngloGold Ashanti, Harmony and BHP Billiton.

Two factors have contributed to increased involvement of large and small (non-South African) transnational mining companies since 1994. First, the interlocking conglomerate corporate structure that prevailed in South Africa up until the early 1990s had the effect of raising barriers to entry. Significant unbundling of these corporate structures took place in the 1990s, although some very strong and focused mining companies emerged from this unbundling. Second, mineral rights were privately owned until the promulgation of the Minerals and Petroleum Resources Development Act (MPRDA) of 2002. The use-it-or-lose-it principle of the MPRDA has contributed to the involvement of many large and small foreign firms in different mining sectors. This is detailed in the relevant mining sub-sector sections of this report.

However, while the MPRDA has increased access, there has been no new entry of significance in mining. There have been a number of new entrants in platinum, and some strong contenders in manganese, but their roles are small. Old order capital seems to have locked up most of the strategic opportunities.

What has also occurred is an increase in the foreign shareholding of most of the large and medium listed mining companies.

Mining technology

Deep level mining in South Africa required technological innovation and expertise. Although not the subject of this study, it is important to note that while some firms remain (eg. Shaftsinkers, Haggie Rand ropes – now a subsidiary of Scaw Metals, etc), many of the South African firms that had built up technology and expertise have been bought out by transnational mining technology providers or have externalised themselves. The list includes Boart (drilling), hydraulic rock drills, Bateman, Deswick, etc

This was not specific to mining. For example, the unbundling of the Sanlam conglomerate stable, under which Sentrachem was located facilitated Dow Chemical's purchase of Sentrachem, and its subsequent breakup, and the subsequent loss of the intellectual property. Dow's main interest in Sentrachem appeared to be its capability to produce the glyphosate herbicide, allowing Dow to compete with Monsanto's top selling Roundup herbicide.

This process of externalising was facilitated by the conglomerate unbundling process and perhaps also by the lack of institutional/policy instruments which would have been able to identify the technologies/intellectual property to be lost and bring resources to bear to prevent this.

Mineral processing

Similarly to mining technology, the technologies that evolved around mineral processing, particularly around the treatment of local ores, were originally owned by South African capital. The current picture is mixed, with some firms like Pyromet still domestically rooted,

but many others have been purchased by foreign firms and the technology development moved offshore.

Future likely trends in the ownership & control of the MEC

The MEC is defined as mining, energy-intensive mineral processing, the coal to electricity sectors and parts of the supportive transport and logistics infrastructure.

This analysis reveals that the MEC has continued through the 1990s and up to 2011, to play a dominant role in the South African economy. More importantly, whether analysed individually or collectively as a set of interlinked sectors, the MEC is largely delinked from the rest of the economy, with the exception of backward linkages

As a system of accumulation, the MEC has been the site on which a black capitalist class is emerging. The process is fragmented and uneven across sectors, but there are a few emerging large-scale black capitalist nodes. However, these still appear to be subordinated to transnational corporation interests.

Historic precedence suggests that domestic black capital will continue to challenge transnational capital for control over the MEC and other sectors, particularly in the domestic markets where the former's social and political influence is greatest. This paper outlines in more detail how this process has played out in different sectors and the role that state policies and instruments have had in the various outcomes. So as this process continues to play out, what role should the state and state institutions play?

In the gold sector, the state's role needs to focus on managing the decline of gold mining, to minimise speculative, asset-stripping and high grading activities, so as to prolong the life of existing mines.

Gold is still an important component of the economy with strong backward linkages on which large sections of the engineering and services sectors are dependent. Future trends in ownership and control are likely to continue as in the past. Declining grades will continue to fuel consolidation, cost reduction and rationalisation. This may lead to a more coordinated approach towards procurement of goods and services by a more organised gold mining producer organisation, as was the case in the past, although conglomerate structure assisted in achieving this level of coordination.

The pressure on gold margins has already prompted a recent unprecedented large-scale corporate dispute in Harmony Gold referring transnational-owned Arcelor-Mittal to the Competition Commission for abusing its dominant position and engaging in excessive steel pricing. Ultimately these two giants straddling the MEC came to an accommodation around steel pricing. But Mittal continues to exert market power on other sections of the economy.

In the coal sector, there are signs of a process of industry consolidation emerging which the state should encourage. Coal lies at the heart of the MEC, interlinked as it is to electricity generation and a range of energy-intensive sub-sectors. But there are signs of instability emerging around security of domestic coal supply. As happened in the 1950s, there is already contestation over which fractions of domestic and transnational capital get access to the more lucrative export market. The scramble for export access is also contributing to

domestic supply and pricing. In this matter, through its ownership of the coal railway connection, the state wields considerable power to shape the outcome and in the coal sector, this analysis suggests that the primary goal of state involvement should be aimed at ensuring stability of this MEC core in the short-term. The planned development of the Waterberg coalfield, with associated should be a second focus of state policy for the medium- to long-term.

In the case of manganese ore, two domestic black capitalist groups are developing separate mines with the objective of challenging BHP Billiton's market dominance. Left to itself, this process will either lead to destructive competition which will most likely be detrimental to black capital, possibly leading to pressure on the state to step in later in a reactive manner. Alternatively, a cosy oligopoly may emerge with BHP Billiton accommodating the new entrants, as has happened in other sectors. A third route might be for the state to ally itself to a process which results in a domestic-domiciled and controlled corporation which plays a dominant role in global manganese ore and manganese alloy markets.

In iron ore, the state wields major infrastructure levers which can effectively throttle or unleash the growth of iron ore and manganese extraction. Anglo plc has succeeded in capturing control over the bulk of iron ore mining, but black-owned ARM and its Assore partner are also growing their presence in the sector. Left to itself, these different interests will shape an outcome of maximum extraction and export of iron ore. In fact, the current Transnet strategy is to do exactly this. The prize for access to, and control of, iron ore is so enormous, that it has led to a bizarre process of litigation between transnational-owned Kumba (Anglo plc) and Arcelor-Mittal, with black-owned ICT over disputed iron ore mineral rights.

The state has found itself embroiled in a subordinate position in respect to these proceedings.

It reflects on a state that has become very defensive and lacking in confidence and clarity in its objectives. This in contrast to the action the state took a decade ago, partly through the use of the IDC, to actively restructure the South African steel industry, acting decisively to place the steelmaking facilities in a strong cost competitive position with the objective of securing access to low cost steel for downstream industries. Following that, the state lacked the resolve to carry this strategy forward and allowed itself to be deviated from that course by an overly accommodative stance with respect to the new foreign owners of Iscor.

Going forward, from an MEC perspective, the maximisation of the beneficiation opportunities around iron ore extraction should be a key objective for the state.

Increasing global concentration of market power around seaborne commodity trade in iron ore, ferro-alloys and coal have been closely integrated with a changing domestic MEC tapestry and have driven Anglo plc to dominate iron ore and Xstrata/Glencore to dominate ferro-alloys and export coal and also shaped BHP Billiton's strategy to dominate manganese.

Apart from these specific sector trends, there are three urgent interventions required of the state.

The first one relates to the MPRDA. National policies towards minerals, themselves an unwieldy amalgam of objectives aimed at accommodating the interests of different segments of society, have been applied in a manner which has emphasised/accommodated the interests of black capital, particularly through the MPRDA. As outlined in the paper, the MPRDA has played an important role in leveraging access for domestic black capital into MEC mining sectors. But the objective of achieving greater black ownership of mines has been given more attention and priority than achieving the objective of maximising the use of mineral resources for national development.

This is because the form that the MPRDA has taken, often relegates the state to a passive librarian-like role. Also, beneficiation is not formally an objective of the MPRDA and this limits the impact that any allocation of mineral rights might have on industrialisation. Amendments to the MPRDA are therefore an essential part of any future reform process. In the case of the development of platinum, the state has used additional legal levers inherited from the apartheid period to shape the trajectory of growth in a slightly different manner than has been possible in other areas.

A second intervention is already contained in the policy stance of government in that it is in the process of leveraging a greater role for a state-owned mining corporation. The state already has a presence through its controlling ownership of Foskor, although this has diluted significantly in recent years. It also owns Alexkor, which plays a minor role in diamonds. Fledgling African Exploration and Mining Finance Corporation (AEMFC), currently temporarily housed under the Central Energy Fund (CEF), has a very small presence in open-cast coal mining. In considering options for expanding state ownership in mining, it may be useful to consider the Lebowa Minerals Trust option which, as outlined above, has provided the basis for very significant growth of platinum.

A third intervention relates to the tension inherent in redistribution, between broadening the base of beneficiaries and achieving the necessary concentration and scale in a particular economic activity to effectively control the direction of the enterprise and the sector itself. The state does not appear to have managed this tension well.

By 2006, black capitalist involvement in mining and mineral processing industries was being very visibly represented by a few individuals that sat atop holding companies with large balance sheets. They included amongst others:

- ARM – Patrice Motsepe – gold, manganese, iron ore and platinum
- Mvelaphana Resources – Tokyo Sexwale – gold, diamonds, platinum
- Eyesizwe – Sipho Nkosi – Coal
- Shanduka – Cyril Ramaphosa – coal, iron ore, manganese

In addition to this, there had been a number of transactions where black beneficiaries of mineral right allocations had simply on-sold these rights to (mainly) foreign mining interests and/or speculative interests. The response of the Department of Mineral Resources was to exert more pressure on mining houses to broaden the base of black partners that the former chose in order to comply with the MPRDA and Charter.

This prompted some observers to argue that broadening the base of shareholding has actually impeded the more rapid development of the resource in question, that it has allowed speculative capital to enter and exit the stage, with no benefit to the domestic economy and that the state should apply its discretionary power to favour greater concentration of assets in the hands of larger-scale domestic capital, rather than spreading the shareholder base.²⁴⁴

This view is borne out by historical analysis of the evolution of the MEC. However, it is complicated by the fact that even the capacity of black capital that is already involved in large-scale activity is limited. Over the past two decades, black capitalists have spent most of their efforts in establishing a foothold in mineral resource extraction sectors. Their position is still not sufficiently secure. Many have ownership stakes on paper but in reality, are locked into financial structures which have yet to unwind or which are financially under water. In most cases, it is the financial sector interests that have put up the capital are likely to benefit most from the transactions once the deals are finally consummated.

The difficulties in forging a unified voice for business interests are a telling reflection on the flux that exists in the current process of old order capital accommodating emerging black capitalist aspirations where a significant part of black capital, particularly those sections that have been more associated with mineral extraction and the financial sector, has evolved to expressing positions that are not too far from the positions of old order capital.

Finally, the area of overlap between finance and the MEC has not been adequately explored. However, what has been clear since the early 1990s is that financial sector interests have had a far greater influence on the corporate strategies of firms in the productive sectors of the economy than has been the case for the 50 year preceding period.

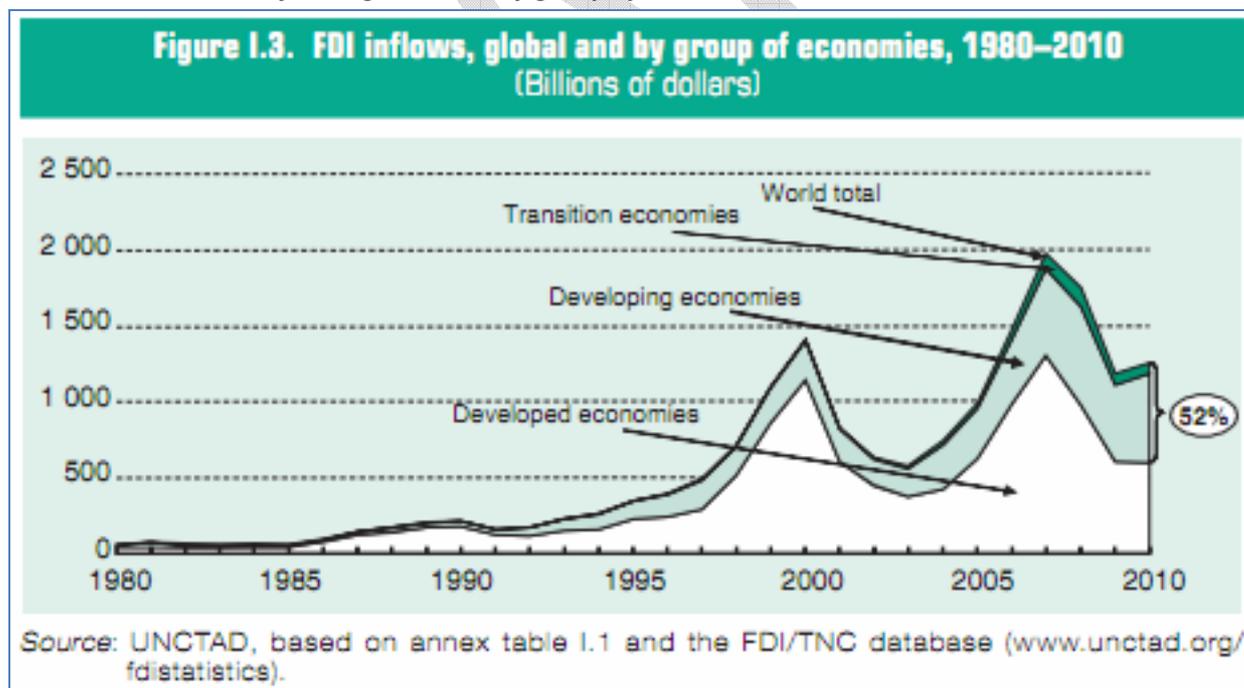
²⁴⁴ <http://free.financialmail.co.za/projects06/topempowerment/stories/ubee.htm>
<http://www.miningmx.com/news/archive/459556.htm>

Mineral supply/demand- the Asian boom and prospects for optimising mineral assets

Any strategy utilising a mineral resource endowment clearly requires a degree of comfort that resources demand will be sustained and that prices will not suddenly collapse as happened in the '80s & '90s and in the second half of 2008.

From 2002 to 2008, many Developing Countries displayed strong growth after several decades of stagnation due to the commodities boom provoked by strong demand from China and, to a lesser extent, other emerging economies such as India and Vietnam. Many Developing Countries have significant potential for commodities production, especially minerals and consequently FDI into the Majority World has displayed a marked upturn (UNCTAD WIR 2011²⁴⁵) since 2002/3, mainly into the mineral resources and tele-communications sectors, though South Africa's share of Minority World FDI has not been spectacular. The commodities boom faltered during the second half of 2008 due to the global recession caused by the US sub-prime debt crisis, but most commodity prices have since recovered.

FDI inflows, global and by group of economies, 1980-2010



Source: UNCTAD WIR 2011 p3

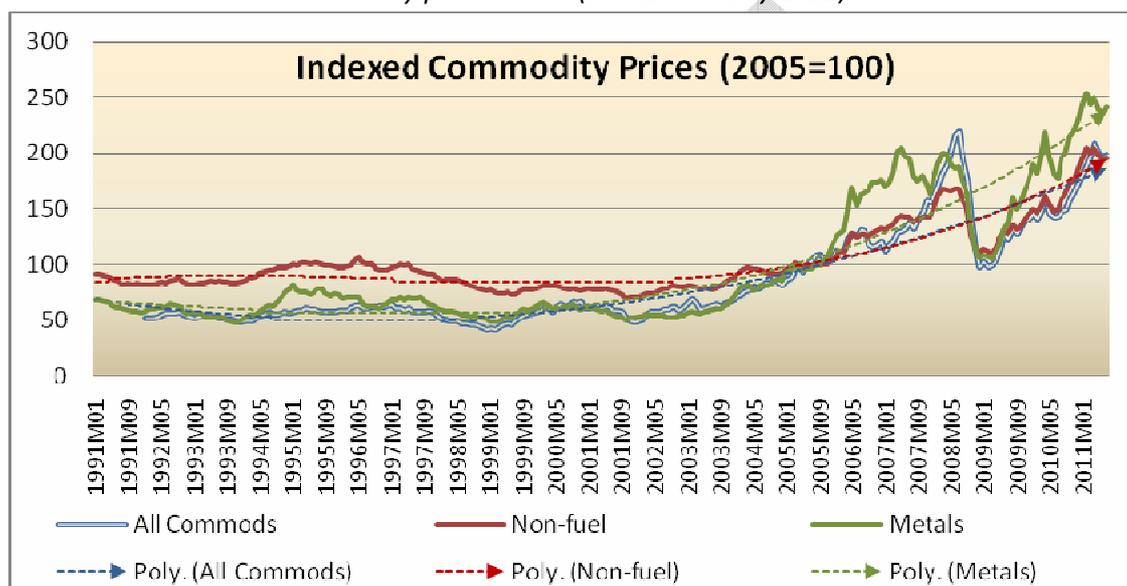
Interestingly, the WIR notes that “State-owned TNCs are an important emerging source of FDI. There are some 650 State-owned TNCs, with 8,500 foreign affiliates across the globe.

²⁴⁵ UNCTAD, 2011, World Investment Report (WIR)

While they represent less than 1 per cent of TNCs worldwide, their outward investment accounted for 11 per cent of global FDI in 2010.²⁴⁶

The resources boom took off in 2002/3 with dramatic increases in the prices of minerals which was followed by agricultural commodities 2006 (see graph). The lag in the price response of agricultural commodities to Asian demand was most probably caused by the price-depressing effects of Minority World agro-subsidies, combined with mineral supply inelasticity. Prices faltered with the US Toxic Debt crisis, but have since recovered and in many cases surpassed 2007 levels.

Commodity price indices (Jan. 1990 – July 2011)



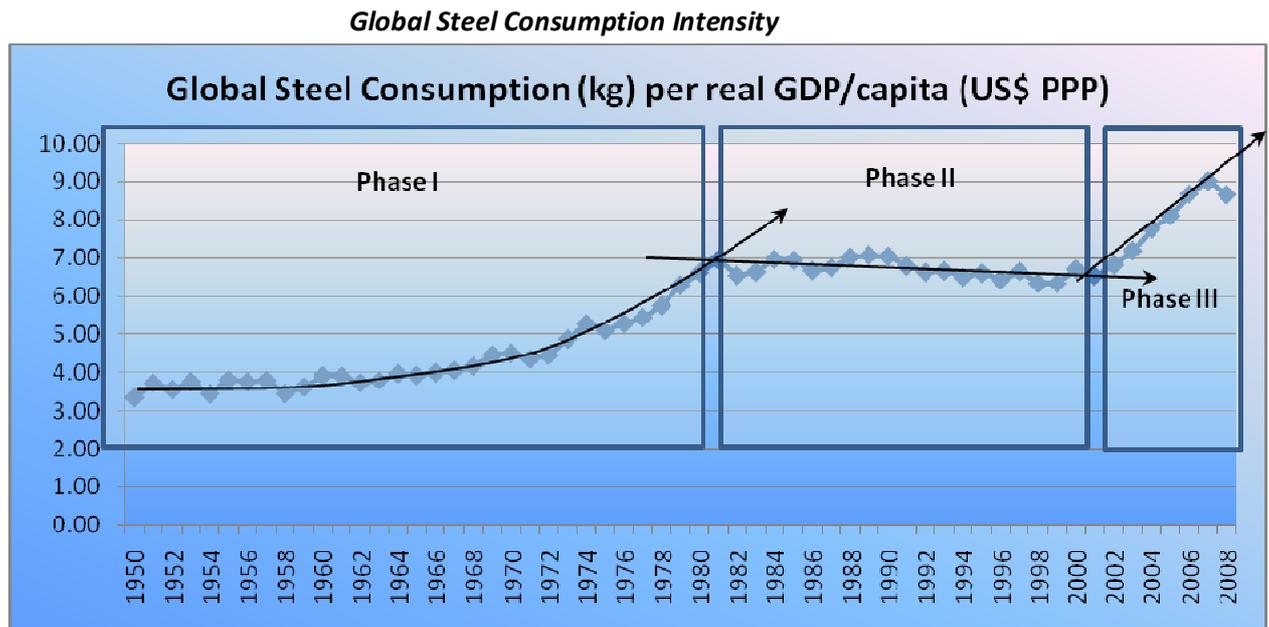
Source: Derived from IMF 2011 Primary Commodity Prices (<http://www.imf.org/external/np/res/commod/index.aspx>)

Mineral supply responses to high demand are generally fairly inelastic due to the long lead times to bring new mines into production, though stocks, recycling and in-mine expansions can satisfy short periods of increased demand. But the current “super-cycle” has generally exhausted these sources of supply, provoking exceptionally high prices.

However, the seminal question is: How long will the underlying demand last - or will it peter out like so many earlier commodity booms?

The underlying driver of mineral demand is the metals intensity of global GDP growth. The following graph displays the global steel intensity (which is a good proxy for metals intensity) per world REAL GDP/capita.

²⁴⁶ UNCTAD WIR p1



Source: Updated from Jourdan 2008 (data sources: IMF, WB, ISSI, US DOL)

The global steel intensity of GDP shows three distinct phases since WWII:

1. Phase I (1950 to ~1975): high intensity - Post WWII Minority World²⁴⁷ reconstruction and increasing buying power within the Minority World, resulting in strong minerals demand and prices. Negligible Majority World²⁴⁸ impact. Commodity driven “boom” in apartheid SA under the then ISI²⁴⁹ strategy. However, due to the strong influence of gold on the economy at the time, the SA cycle was out of sync with the gold boom of the late 70s – early 80s.
2. Phase II (1975 to 2000): low intensity – Minority World infrastructure installed, move to services (only Asian “tigers” in high intensity phase, but too small to impact on global trend). This resulted in over-supply and low prices for most minerals. This gap reflected a failure of continuous global growth due to Minority World hegemony over international trade regimes, and widespread use of subsidies (e.g. CAP & steel). SA stagnates under both stagnant commodity prices and international trade sanctions, till 1994.
3. Phase III (2000 to present): High intensity (higher rate than Phase I) as the Majority World takes off (BRICs²⁵⁰, et al) and trade rules are increasingly revised, reflecting a partial loss of Minority World hegemony over global trade systems (Doha still under debate). Period of high demand and prices, but temporarily stalled due to the extraneous US toxic debt crisis, but by 2010 demand had already showing signs of recovered (mainly Asia). SA had it longest period of positive growth over the 2000-07 period, despite a gradual reduction in gold production, due to declining resources.

²⁴⁷ Minority World = “First World” = “OECD” = “Developed Nations”

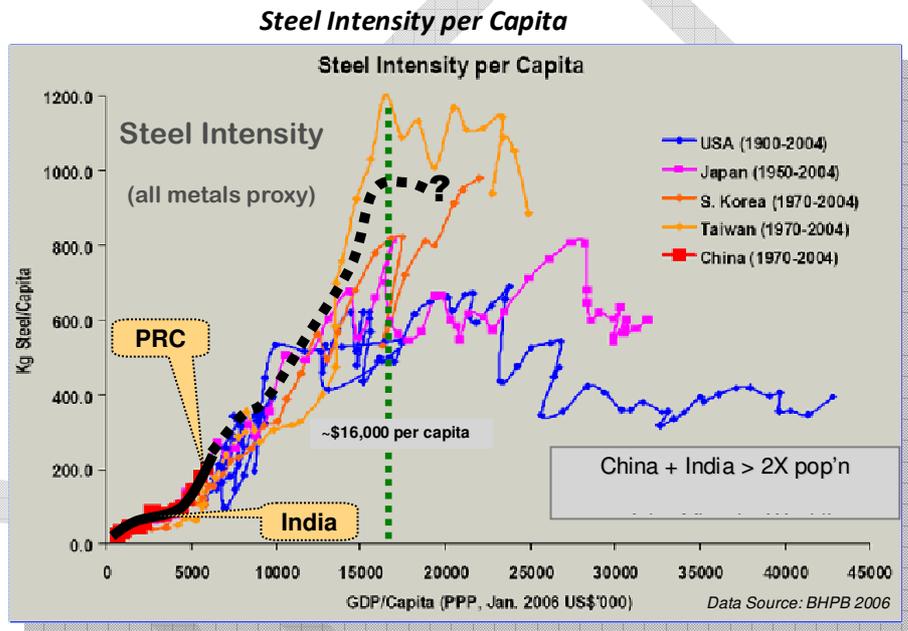
²⁴⁸ Majority World = “Third World”

²⁴⁹ ISI Import Substitution Industrialisation)

²⁵⁰ BRIC: Brazil, Russia, India, China.

Global metal intensity would have been on a continuous increasing trend if global growth had been diffused to more of the world's people in the 1980's, instead diffusion was only to the Asian "tigers" with a population of less than 80 million and a minor impact on global minerals demand. The diffusion of global growth (and intensity) finally only occurred twenty years later (BRICs et al), but was temporarily stalled due to the US toxic debt crisis but demand (prices) has recovered, despite lackluster performance in Japan, Europe and offshoots (USA, Canada, et al).

As is apparent from the Phase I of intensity, sustained by Minority World growth, for any one country, the intensity tends to fall off once the basic national infrastructure is in place and most domestic markets have been developed and penetrated. Growth from then on tends to be in services accompanied by a falling proportion of employment in manufacturing, as evidenced by almost all mature Minority World economies. This is clearly displayed in the next graph of steel intensity against GDP/capita.



Source: BHPB 2006

The country steel intensity per capita data appears to indicate that, at around \$16k/capita (2006 US\$), the metals intensity of GDP growth tends fall off, no matter when the initial metals consuming "lift-off" phase occurred. Given that China (PRC) is only at about one-third up this high intensity phase, that India is at about a third that of China and given that they have a combined population approaching three times that of the Minority World, it would then be reasonable to assume that the current global high metals intensity phase could continue at least as long as Phase I (see Steel/GDP graph) or roughly 30 years (1950 to 1980)! This assumption excludes growing intensity from other emerging economies such as Brazil, Vietnam, Indonesia, etc., which if included could make this a 30 to 50 year high intensity Phase.

In concluding this section, it appears safe to assume that the current commodities slump will be short-lived and that the underlying boom will be an unprecedented long "super-cycle", provided that China and India keep up their robust economic growth. This then leaves us

with the fundamental question of how can the current high commodities demand and prices be transformed into sustainable growth and development in South Africa? The answer to this question is the main thesis of this report on maximizing the developmental impact of mineral assets through considered state interventions.

DRAFT

Africa Mining Vision

In 2007 the AU²⁵¹, AfDB²⁵² and UNECA²⁵³ convened a “Big Table” on “Managing Africa’s Natural Resources for Growth and Poverty Reduction” where the seminal importance of establishing the critical natural resources “linkages” clusters (backward and forward linkages industries) was highlighted²⁵⁴.

Subsequently, in 2008, the AUC²⁵⁵ commissioned a study on a “*Plan of Action for African Acceleration of Industrialisation- Promoting Resource-Based Industrialisation: A Way Forward*”²⁵⁶ which formed a base document for a “technical taskforce”, convened with UNECA, to work on a draft new “Africa Mining Vision” (AMV) in preparation for the “First AU Conference of Ministers Responsible for Mineral Resources Development”. The taskforce included representatives from the African Mining Partnership (AMP: the intergovernmental forum of African ministers responsible for mining), the AUC, AfDB, UNECA, UNCTAD, and UNIDO.

The AMV is based on several other African documents on the maximisation of the developmental impacts of mineral resources exploitation, including:

- The Summary Report of the 2007 “Big Table” on “Managing Africa’s Natural Resources for Growth and Poverty Reduction”
- The Johannesburg Political Declaration and Plan of Implementation - chapter 46 and paragraphs (f and g) of chapter 62 (Sustainable development for Africa) - of the World Summit on Sustainable Development (WSSD);
- The Yaoundé Vision on Artisanal and Small-scale Mining,
- The Africa Mining Partnership’s Sustainable Development Charter and Mining Policy Framework,
- The SADC Framework and Implementation Plan for Harmonisation of Mining Policies, Standards, Legislative and Regulatory Frameworks,
- UEMOA’s Common Mining Policy and “Code Minière Communautaire”, jointly organized by ECA and the AfDB,

²⁵¹ AU African Union

²⁵² AfDB African Development Bank

²⁵³ United Nations Economic Commission for Africa

²⁵⁴ See Jourdan, P.P. “*The Challenge of Effective Management of Natural Resources for Growth and Poverty Reduction in Africa*” The 2007 Big Table, AU/UNECA/AfDB: Addis Ababa, February 2007;

²⁵⁵ AUC Africa Union Commission

²⁵⁶ See Jourdan, Paul, 2008: “*Plan of Action for African Acceleration of Industrialisation- Promoting Resource-Based Industrialisation: A Way Forward*”, paper prepared for the African Union (AU) Commission, Addis, August 2008.

- The Review Africa's Mining Regimes by the ISG²⁵⁷, convened by the AUC and UNECA.

The AMV aims achieve “transparent, equitable and optimal exploitation of mineral resources to underpin broad-based sustainable growth and socio-economic development” (see box) through the realisation of the seminal mineral linkages opportunities:

- Forward: “Down-stream linkages into mineral beneficiation and manufacturing”;
- Backward: “Up-stream linkages into mining capital goods, consumables & services industries”;
- Physical & Knowledge Infrastructure: “Side-stream linkages into infrastructure (power, logistics; communications, water) and skills & technology development (HRD and R&D)”;
- PPP²⁵⁸s & CPPP²⁵⁹s: “Mutually beneficial partnerships between the state, the private sector, civil society, local communities and other stakeholders; and
- Geo-knowledge: “A comprehensive knowledge of its mineral endowment.” (see box)

Africa Mining Vision:

“Transparent, equitable and optimal exploitation of mineral resources to underpin broad-based sustainable growth and socio-economic development”

This shared vision will comprise:

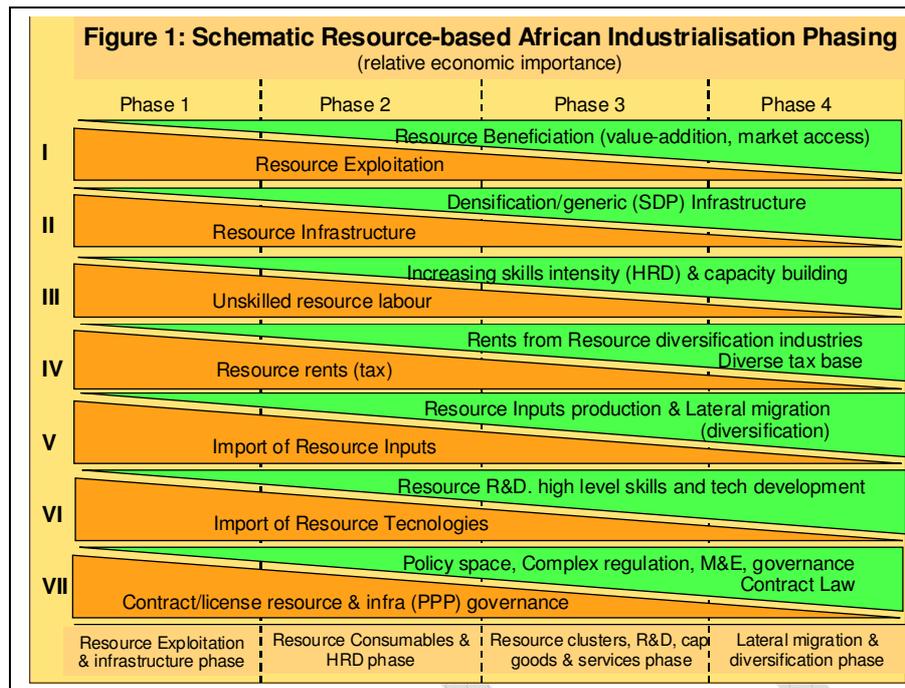
- A knowledge-driven African mining sector that catalyses & contributes to the broad-based growth & development of, and is fully integrated into, a single African market through:
 - Down-stream linkages into mineral beneficiation and manufacturing;
 - Up-stream linkages into mining capital goods, consumables & 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.
- A sustainable and well-governed mining sector that effectively garners and deploys resource rents and that is safe, healthy, gender & ethnically inclusive, environmentally friendly, socially responsible and appreciated by surrounding communities;
- A mining sector that has become a key component of a diversified, vibrant and globally competitive industrialising African economy;
- A mining sector that has helped establish a competitive African infrastructure platform, through the maximisation of its propulsive local & regional economic linkages;
- A mining sector that optimises and husbands Africa's finite mineral resource endowments and that is diversified, incorporating both high value metals and lower value industrial minerals at both commercial and small-scale levels;
- A mining sector that harness the potential of artisanal and small-scale mining to stimulate local/national entrepreneurship, improve livelihoods and advance integrated rural social and economic development; and
- A mining sector that is a major player in vibrant and competitive national, continental and international capital and commodity markets.

Through establishing the linkages industries and industrial clusters, African states will embark on a resource-based development and industrialisation process that will gradually diversify their economies, with decreasing importance of their resources *comparative* advantage and an increasing relative importance of a skills-based *competitive* advantage, along the following continuum:

²⁵⁷ ISG International Study Group

²⁵⁸ PPP Public-Private-Partnership

²⁵⁹ CPPP Community- Public-Private-Partnership



Source: Jourdan 2008²⁶⁰ (used in the AMV 2009²⁶¹)

The AMV recognizes the current commodities boom (caused by Asian demand) as a unique opportunity to “get things right” this time around by developing enhanced mineral regimes that maximize the resource sector industrial linkages

The key elements to an AMV, that uses mineral resources to catalyse broad-based growth and development need to be, from looking at successful resource-based development strategies elsewhere, the maximisation of the concomitant opportunities offered by a mineral resource endowment, particularly the “deepening” of the resources sector through the optimisation of linkages into the local economy. The principal resource endowment opportunities are:

1. Fiscal Linkages (resource rents): The use of resource differential and windfall rents to improve the basic physical and knowledge infrastructure of the nation through investment in physical infrastructure and social & human infrastructure.
2. Spatial Linkages:
 - a. Physical infrastructure: The collateral use of the high-rent resource infrastructure to open up other resource potential (such as agriculture, forestry and tourism²⁶²), to access zones of economic potential with lower returns (e.g. agriculture) that cannot afford their own requisite infrastructure.

²⁶⁰ Jourdan, PP: “Plan of Action for African Acceleration of Industrialisation- Promoting Resource-Based Industrialisation: A Way Forward”, paper prepared for the African Union (AU) Commission, Addis, August 2008 (formed the basis of the AU “African Mining Vision” adopted by AU Summit Feb 2009, Addis)

²⁶¹ African Union (AU) 2009, “Africa Mining Vision”, Addis Ababa, February 2009

²⁶² In most African states tourism potential is based on natural resources such as fauna, flora and geomorphology (beaches, mountains, etc.), rather than man-made attractions.

- b. LED²⁶³ and CSI²⁶⁴: The upliftment of local mining communities and the establishment of sustainable economic activities that will endure beyond the inevitable resource exhaustion (mine closure)
3. Knowledge Linkages (R&D and HRD): Resources exploitation technologies generally need adaptation to local conditions (e.g. climate, mineralogy, terrain), which provide opportunities for the development of niche technological competencies in the resource inputs sector. This sector tends to be knowledge-intensive and accordingly needs “priming” through investment in resources HRD and R&D. However, several studies have shown that it has the capacity to later “reinvent” itself outside the resources sector through the lateral migration of technological competencies to produce new products for other (non-resource) markets.
4. Forward Linkages (downstream value addition): The use of the locational advantage (CIF-FOB) of producing crude resources to establish resource-processing industries (beneficiation) that could then provide the feedstock for manufacturing and industrialisation.
5. Backward Linkages (upstream value-addition): The use of the relatively large resources sector market to develop the resource supply/inputs sector (capital goods, consumables, services).

This report is structured around state interventions to achieve these critical mineral resources economic linkages opportunities

In summary, the key elements of the AMV’s resource-based industrialisation and development strategy are:

1. The realisation of a resource comparative advantage by overcoming infrastructure constraints through the establishment of infrastructure networks. This has largely been achieved in South Africa, but not in Africa;
2. The “densification” of the resource-based infrastructure through the establishment of ancillary and feeder infrastructure to enlarge the resources corridor catchments and beneficiaries. There are still parts of South Africa that are not adequately serviced (e.g. the ex-“bantustans”) and most of Africa lacks densification;
3. To “*deepen the linkages of the mineral sector to the national economy through beneficiation of these resources and creating supplier and service industries around the minerals sector*”²⁶⁵ and developing them into complex resource linkages industrial clusters (up-, side-, & down-stream industries);
4. The re-investment of resource rents into HRD, skills and R&D for technology development to capitalise on the resource linkages opportunities, as well as into long-term infrastructure, for the development of mature resource industrial clusters and, ultimately, a competitive advantage, independent of resource endowments.

The AMV recognises several critical constraints and success factors for realizing the vision, namely:

²⁶³ LED Local Economic Development

²⁶⁴ CSI Corporate Social Investment

²⁶⁵ 52nd ANC National Conference, Economic Transformation resolution 2.10

- The Capture and effective deployment of resource rents (fiscal linkages) including the avoidance of the “resource curse” (rent subversion) and Dutch Disease (currency appreciation)
- Collateral use of resource infrastructure is curtailed through the lack of feeder infrastructure and the failure to build in third party access at non-discriminatory tariffs
- Lack of downstream value addition due to the non-availability of other critical inputs, besides the crude resources, necessary for competitive beneficiation, the high entry barriers (economies of scale) of many beneficiation process, the global corporate beneficiation strategies of the TNCs²⁶⁶ and monopoly pricing (import parity price²⁶⁷),.
- Failure to establish upstream (supplier) industries due to the centralised purchasing strategies of most resource extraction TNCs, the lack of a domestic business sector with the requisite capacity and access to capital to take up these opportunities and the lack of local human resources and technological expertise to establish these, industries
- Failure to promote technology/product development due to a lack of investment in HRD and R&D by the state and the resources companies (TNCs) which TNCs generally centralise their R&D in their home bases

Most of these are governance failures to stipulate the facilitation of these linkages in the concession contracts (mining licenses). In this regard (equitable concessions) the AMV recognises at least three crucial intervention points:

1. The level/quality of the resource potential data: The less that is known about the potential value of a resource the worse the concession contract tends to be for the nation.

Possible methods for overcoming this include:

- Increased investment in geo-survey and geo-knowledge infrastructure
- Progressive tax systems that self-adjust with increasing profitability and thus allow the state to garner windfall rents, such as a resource rent tax (RRT)
- Transparent and competitive concessions (TCCs): Auctioning of prospective resource “blocks” by public tender to aid “price discovery”. In general, mineral investors will tend to have a much better idea of the value of the prospective block than the state and competitive auctioning could be an effective method of achieving fair value. However, this is critically dependent on the level of geo-data (resource/reserves confidence) - an auction is unlikely to flush out fair value where there is paltry resource size/grade data.
- Differentiation of resource terrains based on economic potential by dividing a country into areas of high risk (low geological-data) and areas of low risk over known metallogenic terrains . A self adjusting tax (e.g RRT) system could apply to the former (exploration terrain), whilst the latter (delineation terrain) would be

²⁶⁶ TNC Trans National Corporation

²⁶⁷ Import Parity Price (IPP) is the alternative imported price of the resource (CIF) in a particular country

auctioned off as blocks and the state tax-take (rent share) could be the main bid criteria, in order to flush out the optimal deal for the state.

2. Mineral concession contracts negotiating capacity: Generally these negotiations are extremely asymmetrical, with the investor (TNC) being resourced and the state poorly. Some DFIs²⁶⁸ such as the World Bank and AfDB offer support at this critical juncture. Renegotiating triggers/milestones within the tenure, to adjust for unforeseen developments would also assist. The resource linkage conditions (e.g. local purchasing and beneficiation milestones) are best built into the concession at the outset.

Some of the critical concession contract elements in the AMV include:

- Equitable share of the resource rents;
 - Self-adjusting fiscal regime which adjusts to price movements (e.g. a RRT)
 - Third-party access to the resource at non-discriminatory tariffs;
 - The development of the local resource supplier/inputs sector through the use of flexible local purchase milestones;
 - Flexible value-addition (beneficiation) milestones & incentives
 - Competitive pricing of resource outputs/products in the domestic market
 - Annual expenditure on HRD and R&D,
 - Employment indigenisation milestones, and
 - Auditing and SHE²⁶⁹ standards.
3. Resources development and governance capacity: Creating capacity for ongoing auditing, monitoring, regulating and improving resource exploitation regimes and developing the resource sector linkages into the domestic economy. Consideration could be given to the pooling of resources with neighbouring states through cross border resources infrastructure regulation, possible joint management of cross-border resource occurrences and the creation of a regional capacity within the regional economic communities. This capacity could also be enhanced through accession to continental and international resources monitoring and oversight bodies such as the African Union's APRM²⁷⁰, the EITI²⁷¹ and the Kimberley Process (KPC) for diamonds certification.

The AMV contends that the key element in determining whether or not a resource endowment will be a curse or blessing is the level of governance capacity and the existence of robust institutions. The AMV also notes that there is no "one size fits all" strategy for strengthening African resource governance and institutions. Nonetheless, there are a few broadly applicable strategies such as accession to international protocols (e.g. APRM, EITI) and the establishment of critical institutions to facilitate the optimal exploitation of natural resources, including an independent judiciary, independent competition authorities,

²⁶⁸ DFI Development Finance Institution

²⁶⁹ SHE Safety, health & Environment

²⁷⁰ APRM: Africa Peer Review Mechanism

²⁷¹ EITI: Extractive Industries Transparency Initiative

integration into regional economic blocks (FTAs, customs unions), infrastructure regulators, autonomous Higher Education Institutions (HEIs: universities, colleges) technology development institutions (R&D), local capital markets (banks, stock exchange) and commodity markets and local DFIs (Development Finance Institutions), particularly for SMME²⁷² support. Finally, the AMV notes the most important institution is the resource concession licensing/contracting body.

The foreign resource capital “trade-off”

In order to rapidly acquire the requisite capital and skills, African states have opted to realise their resource endowments through attracting foreign resource companies (TNCs & JRCs), rather than mainly relying on domestic capital. SA domestic mining houses have “converted” into foreign TNCs (relistings) with concomitant disadvantages. The foreign investment (DFI) “trade-off” comes with several possible “threats”

1. TNCs usually have global **purchasing** strategies which are less likely to develop local suppliers (backward linkages),
2. TNCs tend to optimise their global **processing (beneficiation)** facilities which can deny local downstream opportunities;
3. TNCs locate their **tech development (R&D)** in OECD countries, thereby denying Africa the development of this critical side-stream capacity;
4. TNCs also tend to locate their **high level HRD** in OECD countries (often linked to their R&D university partners), which could deny African states the development of this seminal capacity;
5. In the longer term there are clearly **political downsides** to a resource sector dominated by foreign capital;
6. Finally there is the TNC “**core competence**” (dirt-digging = no linkages) conundrum.

However, all of these threats can be overcome or ameliorated through appropriate state actions, policies and interventions!

Source: Adapted from AMV 2009

4. The AMV recommends several interventions for developing a domestic business sector in resources and resources linkages sectors, including:
 - Access to capital (credit)
 - Partnerships with multilateral and donor agencies;
 - Macro-economic stability;
 - Access to skills;
 - Access to technology;
 - Access to the requisite and
 - The foreign resource investors (TNCs) who have the requisite capital, skills and expertise, need to be encouraged to facilitate the growth of local businesses through conditions in the exploitation contract

The AMV notes that the ability of the State to impose conditions is concentrated at the beginning of the process (when the exploitation license/concession is granted) and that later contract/license renegotiations are difficult and fraught. It therefore states that “it is of seminal importance to get it right from the outset, to avoid messy renegotiations at a later stage.”²⁷³

²⁷² SMME: Small- Micro- & Medium-scale Enterprises

²⁷³ AMV 2007 p26

Corporate Governance:

On state ownership, the AMV recommends a nuanced approach that seeks to optimise the benefits for the state and its peoples through the use of shareholdings as well as effective fiscal instruments: “Wholly state-owned mining projects are now becoming rarer and rarer in Africa and in most of the developing world. It is now much more common in mining regimes for the state or a community to take a minority interest by in a mining project”. In addition, it contends that “many States now agree that most of what they wish to achieve through ownership in mining projects can be achieved through the regulatory process or policy and fiscal instruments”.²⁷⁴

*“One of the mechanisms by which host countries have, in the past, sought to capture mineral rent has been through the establishment of state mining enterprises. Although no longer a preferred instrument, some still exist. In many countries, they have been privatized or dismantled. It is often argued that Government investment in mining projects subject public funds to unnecessary risk and that host Government shareholding in mining companies, even if free, does not offer significant benefits if dividends are not regularly declared. **This decision, as to what to do in any particular instance, must be made in the specific context, rather than dogmatically or as a matter of following fashion.**”²⁷⁵(authors’ emphasis).*

On state equity participation the AMV notes that “...it is necessary to assess concretely whether equity participation is merely a piece of symbolism (sometimes an expensive one)”. However, if “...a state possesses the required resources (skills & capital), then it is possible to invest in a profitable and purely commercial operation as in the case of Debswana, a diamond company equally owned by De Beers and the Botswana government.”²⁷⁶

The AMV also refers to the increasing awareness for the need for revenue transparency in the form of “Publish What You Pay Campaign” and the “Extractive Industries Transparency Initiative (EITI)” which several African states have acceded to, but most still need to join, including South Africa.

A resource boom often has several negative impacts on the local economy, which are generally termed the “Dutch Disease”. These include:

- The strengthening of the local currency, causing other export sectors to become less competitive;
- The attraction limited local capital and human resources to the resource boom sector, from other sectors;
- Fiscal instability caused by sudden changes in state revenues and an inability to fund the fiscus resulting in increasing national indebtedness;

²⁷⁴ AMV 2009 p26/7

²⁷⁵ AMV 2009 p26

²⁷⁶ AMV 2009 p27

Sovereign Wealth Funds (SWF): With regard to resource rent fiscal impacts, the AMV notes that many states keep windfall rents in an offshore sovereign wealth fund or “stabilisation” fund in order to ameliorate the Dutch Disease and to provide reliable revenue streams in future years, such the Norwegian “Future Fund”, or to fund long-term infrastructure projects.

“However, it is extremely difficult for a poor state to resist the demands of its people for immediate, but unsustainable, poverty relief. Therefore such fiscal policies need to be enshrined in law with provisions to make it difficult for a future populist government to use the offshore funds to buy short-term popularity.”²⁷⁷

Such stabilisation or future funds would also go some way in providing “inter-generational equity” over non-renewable resource extraction, as future generations would be the beneficiaries of the investments into improving the national physical and knowledge infrastructural platform. In this regard the NGP²⁷⁸ recommends that South Africa considers a SWF for mineral rents²⁷⁹. The NGP also proposes an “African development fund (which would) promote investment in the region. At the same time, it can function as a sovereign wealth fund that invests accumulated foreign reserves in productive projects with a higher yield than investment in developed-country bonds.”²⁸⁰ The putative SWF would also help “to achieve a more competitive rand”²⁸¹ by keeping forex²⁸² earnings offshore.

The AMV also recommends that “part of the offshore funds could be reinvested in regional and continental investment funds (such as the Pan African Infrastructure Development Fund- PAIDF²⁸³) which would provide future revenues to the state as well as facilitate the growth of regional markets for the country’s products and lower cost regional products and logistics for its future imports.”²⁸⁴

The AMV recognises that much of Africa’s diverse resources potential is constrained by poor logistics infrastructure and that “Africa’s relative logistics costs are about 250% of the global average”²⁸⁵. “Nevertheless, groups of projects or a few high rent projects (generally minerals & energy) could often collectively underpin the infrastructure investments through “use-or-pay” contracts with infrastructure providers. Such pooling of usage usually requires cross-border collaboration as resource terrains seldom follow political boundaries. Consequently, the huge resources potential of Africa could conceivably be realised through integrated multi-state Development Corridors, rather than another colonial “scramble for resources”.”²⁸⁶

²⁷⁷ AMV 2007 p28

²⁷⁸ NGP New Growth Path, EDD, 2010.

²⁷⁹ NGP 2010 p12

²⁸⁰ NGP 2010 p15

²⁸¹ NGP 2010 p25

²⁸² Forex: foreign exchange

²⁸³ The PAIDF has been established by a group of African state pension funds to develop the continent and provide future revenues to the pension funds..

²⁸⁴ AMV 2009 p12

²⁸⁵ AMV 2009 p12

²⁸⁶ AMV 2009 p13

The Yaounde Vision on ASM

The Yaounde Vision on ASM was adopted during a joint ECA/UNDESA Seminar on “Artisanal and Small-scale Mining in Africa: Identifying Best Practices and Building Sustainable Livelihoods of Communities”, held in Yaounde, Cameroon from 18 to 22 November 2002. The Vision represents one of the main frameworks for the development of this sub-sector in the continent. It has been adopted by CASM-Africa¹⁸ and provides a blueprint, which will continue to be relevant in the future. The Vision recognizes ASM as a key poverty-driven and poverty alleviating activity for many African rural economies, with very little entry barriers and frames its development problematique in the broader context of the MDGs. It further recommends that ASM should be integrated into local and regional economic development and land-use plans and strategies, specially the Poverty Reduction Strategies (PRS). The Vision also urges that the mining policies and laws of member States should be reviewed to incorporate a poverty reduction dimension in ASM strategies.

Artisanal and Small-Scale Mining (ASM): The AMV notes that ASM has significant employment potential (about 4 million Africans are engaged in it, several times more than in formal mining) and can have positive impacts in ameliorating rural poverty. However, “the ASM sub-sector is beset with problems of sustainability. The sub-sector has been neglected both locally and in the international development agenda and it does not feature in most national and local poverty alleviation strategies” and “the critical challenge for those working in and with the ASM sub-sector is to mitigate its negative consequences and enhance its positive benefits to transform it and maximise its contribution to poverty reduction and creation of resilient communities.”²⁸⁷

Finally, the AMV presents a tentative framework for action over 20-50 years and concludes that “Africa will only achieve its ultimate goal of industrialization and development by acting collectively”²⁸⁸.

Subsequent to the adoption of the AMV by African Heads of State in 2009, the AUC and UNECA embarked on a major study on African Minerals Development by the ISG which is currently being finalised.

²⁸⁷ AMV 2009 p15

²⁸⁸ AMV 2009 p19

Global Trends in Minerals Ownership and Control

(Raw Materials Group²⁸⁹)



Trends 2011

Introduction

In Ernst & Young's 2010 mining report they identified the top 10 business risks of 2011–2012 for mining and metals, as number one they appointed resource nationalism.²⁹⁰

The Australian government's *Export Finance & Insurance Corporation* also highlighted the resource nationalism in their September release of *World Risk Developments*:

"Governments in a variety of countries are examining options to gain a greater share of the windfall profits flowing from strong commodity prices. The options include greater taxes and royalties, state ownership stakes in ventures, use of state-owned mining firms, and contract revisions. In some countries the moves are consistent with healthy private investment and production; in others they threaten profitability and could force mine closures. Venezuela is causing most investor alarm, but South Africa and Zimbabwe are also being watched closely."²⁹¹

Africa

South Africa

In South Africa, there have also been calls for mine nationalisation – by the ANC Youth League – but the government has dismissed them, preferring instead to promote 'black empowerment' through a revised Mining Charter that encourages firms to achieve 26% black equity by 2014. The government has also revived a dormant state company called the African Exploration, Finance & Mining Corporation to do its own exploration and mining. The industry has expressed concern that this company won't compete on equal terms with private companies. Finally, there has been a call for a super-tax on profits, but the industry hopes that the government will listen to its argument that it couldn't bear such a tax because of already high costs.

Zimbabwe

In Zimbabwe, the government wrote in August to foreign-owned firms asking how they planned to meet a September 30 deadline to transfer 51% equity to black ownership. Mining giant Rio Tinto has become the first foreign owned mining firm in Zimbabwe to voluntarily surrender 51% of its shareholdings, as part of the controversial indigenisation campaign. Impala Platinum (Zimplats), the world's No 2 platinum producer, has said it is negotiating with the government on how to satisfy this requirement. President Robert Mugabe said in a

²⁸⁹ This section was developed for the ANC SIMS study by the Raw Material Group (RMG) in Sweden using their global Raw Materials Database (RMD) of mineral corporations.

²⁹⁰ Ernst & Young. Business risks facing mining and metals 2011-2012

²⁹¹ Export Finance & Insurance Corporation. World Risk Developments September 2011

statement in October, adding that he wanted Zimplats to build a refinery in the country. "Mr Brown, go and tell your shareholders that we don't intend to take over (Zimplats). We don't want to steal or rob that which does not belong to us, but we don't want to be robbed as well," Mugabe said to Implats chief executive officer David Brown.²⁹² Most foreign mining investors reportedly see their stakes in Zimbabwe as options to exercise if conditions improve. Some hope that a future democratic government will relax the current requirements.

MDC-T MPs have called for the government to nationalise all alluvial diamonds and revise the much maligned indigenisation policy to improve the country's economy and control of mining resources. This is according to motions introduced in the House of Assembly. The motions were moved by Eddie Cross and Alexio Musundire opening a fresh battlefront for the MDC-T and Zanu PF in the chamber. Zanu PF has for a long time made indigenisation and diamond mining its preserve in all debates on the national economy.²⁹³

Guinea

The government also seems to be taking a measured approach in Guinea, a country attracting strong investor interest thanks to massive bauxite and iron ore reserves. A new democratically elected government led by President Alpha Conde is conducting a review of existing mining contracts and has recently announced a new mining code. The review reflects widespread public anger over a series of deals concluded by a previous military junta that ruled for two years up to December 2008 and by the government of President Lansana Conte beforehand.

Conde called in George Soros's Revenue Watch Institute to help carry out the contract review and draft the code. The Institute is a big supporter of the Extractive Industry Transparency Initiative. The new mining code will seek to raise the state's interest in mining contracts to 35% from 15% before. At this stage it is unclear whether this will apply to all existing concessions. The code reportedly gives the government a free 15% share with the option to buy another 20% at market value. A new state mining company has been created to hold the state's equity. Meanwhile, the contract review looks set to confirm concessions held by Rio and Vale in the giant Simandou iron ore deposit – as well as approve Rio's 'Simfer' joint venture with Chinese state-owned mining company Chinalco. As part of those arrangements, Rio agreed in April to pay the government US\$700 million and to give the government the option to take a 35% stake in the project (consistent with the new mining code). In 2009 the junta confiscated half of Simandou from Rio and awarded it to a company owned by the Israeli diamond billionaire Beny Steinmetz, who went on to sell a 51% interest in its concession to Vale for US\$2½ billion.

Zambia

The Government intends to negotiate with mining investors for increased shareholding of up to 35 per cent in all projects run by foreign firms, Mines Minister Wylbur has said.

²⁹² allAfrica.com. Zimbabwe Independent. "Zimbabwe: No Zimplats Takeover Plans - President Mugabe" 13/10-2011

²⁹³ allAfrica.com. Zimbabwe Independent "Zimbabwe: Nationalise Diamonds" 6/10-2011

According to Reuters, the Government also plans to revamp tax collection which will now be based on the earnings instead of the current profits. Mr Simuusa was yesterday quoted by Reuters as saying that the Government would also improve transparency and maximise benefits for itself.

"We would like to increase our shareholding to at least 35 percent in all the projects, but that will depend on how well we negotiate with the mining firms," he told the news agency.

Mr Simuusa said the decision to seek a higher stake in the mines did not amount to nationalisation of the mining sector in the Southern African country.

"We just want to have more benefits from the mines. There is no cause for apprehension, because nothing will be done without consulting the mining companies," he said.²⁹⁴

Namibia

In Namibia the Swapo Party Youth League secretary for economic affairs, Veikko Nekundi has warned mining companies that they risk paying more taxes if they don't add value to minerals before exporting them. Nekundi said this at a stakeholder workshop organised by the Chamber of Mines of Namibia to discuss benefits of the mining industry to the country. He said: "It should be noted that no mineral is consumed as a final product without value addition, therefore, Namibian mining companies dealing with uranium, copper, manganese and gold can still add value on their mined commodities. Either that or pay more taxes."²⁹⁵

State-Owned Epangelo Mining Company has clinched a ten per cent stake in a uranium venture after signing its first partnership agreement with a foreign investor. Namibia Rare Earths (NRE), listed on the Toronto Stock Exchange, and Epangelo signed a memorandum of understanding (MoU) to explore for and mine uranium at NRE's Lofdal project in the Kunene Region.²⁹⁶

The Labour Investment Holdings (LIH), the business arm of the National Union of Namibian Workers (NUNW), has paid N\$7,2 million for a 2,5 per cent stake in Ongopolo Mining, a subsidiary of Weatherly International.

"This move is part of our long-term strategy promoting Namibian ownership in the mining industry," LIH chief executive officer Jacqueline Prince said in a statement yesterday.²⁹⁷

Mozambique

The government is also revising the mining code in Mozambique against a background of criticism of the tax take from mines. It reportedly favours increased royalties and taxes on new mines, a 10-20% stake in 'strategic' projects for the state mining firm, and licence cancellation for firms that fall behind with their agreed development schedule. It apparently has no plans for a windfall profits tax.

²⁹⁴ allAfrica.com. TIMES OF ZAMBIA "Zambia: State Ponders 35 Percent Increase in Mines' Stakes" 14/10-2011

²⁹⁵ allAfrica.com. Namibia Economist "Namibia: Add Value Or Pay More Taxes – Spyl" 30/09-2011

²⁹⁶ allAfrica.com. The Namibian "Namibia: Epangelo in First Venture, Claims 10 Per Cent Stake" 27/09-2011

²⁹⁷ allAfrica.com. The Namibian "Namibia: Union Buys Stake in Ongopolo Mining" 30/09-2011

Tanzania

In Tanzania, the government has announced that it is looking to raise taxes and royalties to fund a five-year development plan. A windfall profits tax is reportedly one option under review. Tax revenue from mining has remained flat at around US\$100 million a year for five years, so some review is hardly surprising; indeed, the IMF recommended it. Any higher taxes that result will probably be applied only to new mines; existing ventures with tax stabilisation agreements are likely to be shielded.

Togo

In Togo the Societe National des Phosphates du Togo re-activated a national committee in February 2011 to oversee privatization of state-owned enterprises due to declining output.²⁹⁸

Latin America

In Venezuela, President Hugo Chavez signed a decree last month to nationalise the gold mining industry. The main private gold miner that could be affected is Rusoro, a Toronto-listed company of Russian origin. Even before the decree, the industry was dealing with significant sovereign risk. Three companies are involved in arbitration over previous expropriations, including Canada's Crystallex following the takeover of its Las Cristinas mine in February. Limits on exports have also been making miners unhappy, even though those limits have been relaxed recently to allow exports of up to 50% of total production rather than 30%. Meanwhile, state mining company Minerven is facing strikes that have halted operations. The move on gold is part of a wider nationalisation push by Chavez that has already targeted electricity, telecoms, energy, cement, metal smelting, food, beverages, dairy and supermarket chains.

In contrast to the situation in Venezuela, industry is reportedly comfortable with steps being taken in Peru. A new windfall profits tax has been introduced after negotiation with industry. The rate was revised down to ensure Peru kept competitive with Chile. An attractive feature of the tax is that it falls on profits, not revenue, and will be applied on a sliding scale according to price levels; so it won't threaten marginal mines. The tax will be introduced alongside legislation requiring mining companies to consult indigenous communities before operating on their land. The windfall tax and the prior consultation legislation were important items in the election manifesto of President Ollanta Humala who took office in July. He criticised former president Alan Garcia for taxing the industry too lightly even while commodity prices were soaring and allowing it to ride roughshod over local communities. There have been many conflicts between miners and local communities in recent years, often over water, some turning violent.

Government and mining companies have agreed to modify royalty system. The deal was struck following talks between government representatives and an industry association. The Peruvian government has reached agreement with mining companies to change the system

²⁹⁸ Africa Mining Intelligence No. 246 "Fresh talks of selling stakes in SNPT" 16/3-2011

for paying royalties so that they are based on operating profits and not sales, in order to increase state revenues, sources from both sides of the talks said.²⁹⁹

In October the new higher mine royalty was promulgated. The three new laws create a special mining tax, modify the law on mining royalties and establish a new legal framework for taxing the sector. The three new laws create a special mining tax, modify the law on mining royalties and establish a new legal framework for taxing the sector. The taxes are paid quarterly and were agreed with the powerful privately-owned mining industry in August. The Congress approved the legislation a week ago.³⁰⁰

Chile

Mitsui & Co has agreed to provide US\$6.75 billion in bridging finance to Codelco, allowing the Chilean state-run entity to exercise an option to purchase 49% of Anglo American plc's subsidiary in the country, Anglo Sur. Anglo Sur owns the Los Bronces and El Soldado mines, the Chagres smelter and the San Enrique Molito and Los Sulfatos projects. The Sur complex, formerly known as La Disputada de Las Condes, was acquired in 2002 from Exxon Mobil Corp for US\$1.3 billion. Exxon bought La Disputada from state-owned Enami in 1978. The deal included an option to buy a 49% stake during a specified time period every three years. This option has since transferred to Codelco.³⁰¹

Chile's specific tax on mining raised US\$923 million in 2010, reflecting the higher copper price, an increase in the tax and the number of companies which opted for the tax regime.

Chile's specific tax on mining raised US\$923 million in 2010, a rise of 147.5% from the previous year, reflecting the higher copper price, an increase in the tax and the number of companies which opted for the tax regime, said the country's Finance Minister Felipe Larrain

According to the minister, around US\$300 million of the US\$923 million raised was a result of the tax increase.³⁰²

Bolivia

Bolivian President Evo Morales is unlikely to nationalise the country's biggest mines as was previously indicated might happen. It is still anticipated that Mr Morales will raise mining taxes and increase control over parts of the industry. However, Mr Morales is not expected to seize control of major assets, such as Pan American Silver Corp's San Vicente zinc-silver mine. Following his election in early 2006, Mr Morales has taken control of gas fields, oil refineries, pension funds, telecommunications companies and a tin smelter belonging to Glencore. The president indicated in April that he plans to release a decree on May 1 overturning the privatisation of state-owned mining assets.³⁰³

Minera Corocobre – a subsidiary of South Korea's Korea Resources Corporation (KORES) – in partnership with Bolivia's state mining firm Comibol unveiled that Corocoro copper deposit

²⁹⁹ LatinoMinería "Peru – Government and mining companies agree to modify royalty system" 22/08/11

³⁰⁰ LatinoMinería Peru – New higher mine royalty promulgated 03/10/11

³⁰¹ Mining Journal Online 14/10/11

³⁰² LatinoMinería "Chile – Mine tax revenues rise sharply in 2010" 20/06-2011

³⁰³ Mining Journal Online "Morales relents on nationalization" 21/4-2011

contains 100 million tons of reserves. Kores plans to produce 30,000 tons a year of copper cathode, giving the mine a useful life of around 18 years. With this discovery, the value of the metal contained in the deposit is estimated at around US\$4 billion, according to calculations in an article published by Bolivia's La Razon newspaper.³⁰⁴

Asia & Oceania

South Korea

The state-owned company Korea Resources Corp (KORES) has made the next goal to get into the global top 20 mining company. In June Capstone Mining acquired the exploration company Far West Mining in a cash-and-stock deal worth C\$685 million (\$713 million), as it moves to expand its copper resources and future output. The bid was backed by South Korea's state-owned Korea Resources Corp (KORES), which acquired a 30 percent stake in Far West's flagship asset the Santo Domingo copper project in Chile for C\$210 million. KORES also acquired an 11 percent stake in Capstone for C\$170 million

Mongolia

Potential changes to ownership agreements may cause delays to Mongolia's two biggest development projects. Mongolian officials said this week that ownership accords with companies for the Oyu Tolgoi copper-gold and Tavan Tolgoi coal projects may be revised ahead of elections in the country next year. Oyu Tolgoi, scheduled to be in production during 2013, is a joint venture between Rio Tinto and Ivanhoe Mines Ltd, while Mongolia awarded the development of Tavan Tolgoi to companies from China, Russia and the US earlier this year. Mongolia's finance director, Sangajav Bayartsogt, reportedly said: "We will start negotiations to amend the Oyu Tolgoi investment agreement". Under the 30-year investment agreement (IA) for Oyu Tolgoi, signed in 2009, the state can lift its stake from 34% to 50% once the IA has lapsed. Mr Bayartsogt said the government would investigate achieving this higher level more quickly, perhaps by linking it to a recoupment by the developers of their initial investment. Mr Bayartsogt said he is also hoping to secure "additional payment for using reserves".³⁰⁵

Papua New Guinea

The fledgling coalition government of Papua New Guinea might not decide to transfer its ownership of resources to landowner groups – a proposal that has caused widespread anxiety in the mining and petroleum industries. Recently-appointed Mining Minister Byron Chan sparked fresh sovereign risk concerns last week when he revealed that the government would like local community landowners to own anything six feet below land and sea.³⁰⁶

Executive Summary

The trend toward more state engagement in the mining industry has continued, based on recent developments. This study includes an expanded section on the new forms of state control which are found in Africa and also in Russia, China, India, and other emerging economies. It lays out the possible political implications of these trends and draws lessons

³⁰⁴ LatinoMinería "Bolivia – Corocoro copper deposit contains 100 million tons of reserves" 17/10-2011

³⁰⁵ Mining Journal Online "Mongolian government reopens ownership issues" 23/09-2011

³⁰⁶ PNGIndustrynews.net "PNG cools on 'naive' resources plan" 26/08- 2011

from previous periods of increasing state ownership, including how to avoid previous mistakes.

Various metals and the history of nationalization in a number of countries are analyzed as are the possible factors influencing the decision to nationalize, such as the sector's strategic importance and the need to control it.

China's role in investing in Africa is discussed noting the issues concerning negotiation strategies, looking at the history of deals made in Sub-Saharan Africa.

State ownership is defined in detail in the Appendices of this document. A consolidated list of state ownership in mining of selected minerals and mineral refining on which the study is based is also presented in the Appendices.

Following is a summary of the conclusions drawn from the study:

- The level of state control is surprisingly high in many metals irrespective of privatizations during the late 1990s and the first decade of the 2000s.
- State control has increased mostly due to growth of Chinese state-controlled mining in China and gradually also abroad.
- Government's control over the Chinese mining companies is slowly declining with growing private interests and market influences but will remain strong for many years.
- State control of refining is higher than in mining. This is probably due to the higher value added in this sector.
- Privatization in the market economies is more or less completed, only a few assets remain under government control. Even these are however being considered for sale. At the same time the first signs of a renewed interest in state controlled mining companies are to be seen also in these countries.
- There is a growing interest in finding new ways of increasing state revenues from mining/smelting in these times of high metal prices.
- Focus is on improving the tax systems and renegotiating previously not so favorable agreements and capturing rents that way.³⁰⁷
- State-owned mineral development companies have been formed to play a similar role as privately held junior partners. They have been generally set up to work in the market alongside private companies with risky, long-term investments.
- State intervention is concentrated, so far, to a limited number of countries Bolivia, Ecuador, and Venezuela in Latin America and Namibia, South Africa, and Zimbabwe in Africa.
- There seems to be an increasing understanding of the long-term nature of mining and the need to establish stable policies to benefit optimally from mineral resources.

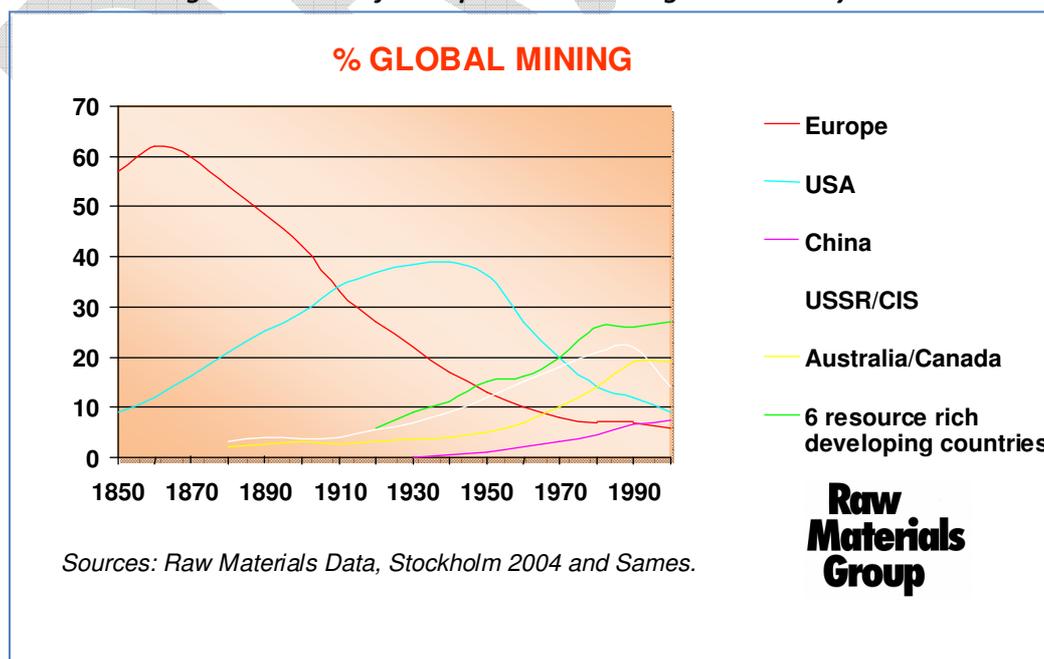
Historic trends

³⁰⁷ There are numerous examples of reviews of the mining tax regimes, UNCTAD, World Investment Report, New York and Geneva 2007, pp. 161-167.

Control over metal supply to the economy has been considered vital for political and economic reasons in most societies. The mining industry has been a focus for government regulation and control over the centuries whether it has been state or privately owned. After the Russian revolution and the nationalization of mineral deposits, the Soviet mining sector was prioritized and metal production grew quickly as illustrated in Figure 1. In the pre-war years the output of metals in the Soviet Union dominated state-owned production globally. After the Second World War the Eastern European countries followed the same development path as the Soviet Union; and the share of total world production controlled by national states increased likewise. The countries of Eastern Europe and the Soviet Union taken together were generally self sufficient in metals with the exception of bauxite, the raw material for aluminum production which is most abundant in a tropical environment. In the mid-1970s these countries controlled some 20-25 percent of the production of most metals that was also their share of total demand indicating a balance between demand and supply in the centrally planned economies in those days.

State ownership of the Western world's mineral industries started to increase in the late 1940s and 1950s. European countries led this process. In Finland, state-owned Outokumpu, founded before the Second World War, began to grow rapidly. The Swedish government bought LKAB from its private owners in 1956, based on a parliamentary decision taken in 1906. However, overall in the 1950s, there was little state-owned mining capacity outside the centrally planned economies (CPE). In the late 1960s and early 1970s, a wave of nationalizations swept through developing countries. The governments of recently independent former colonies and other emerging economies placed high hopes on the socio-economic development potential of the mining industry based on the strong metal markets following the Second World War. During the 1960s 32 expropriations of foreign mining companies were made and during the period from 1970-1976 as many as 48.³⁰⁸

Figure 1. Locus of mine production during the last 150 years



³⁰⁸ UNCTAD, World Investment Report, New York and Geneva 2007, p. 108.

Source: Raw Materials Data 2006, Sames 1984.

State control continued to rise, in the developing countries as well as in the developed market economies (MEC), until the early or mid-1980s, limiting the participation of international mining companies in many developing countries to minority holdings and non-equity arrangements with state-owned companies. In the industrialized countries nationalizations continued, mostly for political reasons, such as the socialist government in France taking over large parts of industry including the mining and metal industries such as the aluminum producer Pechiney, nickel miner Eramet/SLN and others. However at the end of the 1980s the trend reversed as a result of a change in the political climate initiated by Prime Minister Thatcher in the United Kingdom and President Reagan in the United States. There were many reasons for this new trend of which some of the most important were:

- The changing, general political climate, as mentioned above, with emphasis on “free market” and private sector initiatives
- Increasing problems with ineffectiveness and poor management of the state-owned companies in many developing countries.

In addition, during the 1990s and early 2000s, metal prices continued to fall with resulting poor profits and industry decline. Many developing countries opened their economies to foreign direct investments into the mining industry and started to privatize the industry, at a time when metal prices were at their lowest levels in over 30 years.

Early 2000s

State control of total global mine production has varied over the years and from metal to metal between 40–60 percent until the collapse of the Soviet Union. After 1990 the metal production in the former Soviet Union collapsed when the demand from the military complex ceased almost overnight. Mining companies were privatized and came under the control of the so called oligarchs. In the first decade of the 21st century production has picked up again, but the industry is now almost completely privatized. There have been some indications of a renewed interest from the Russian government in controlling mine and metal production through direct ownership.

It has become much more difficult to measure state control in both the CIS and in China during the last decade. In the former Soviet Union it is often not possible to trace ownership as a result of the privatization processes. **ONE GOOD EXAMPLE OF THIS IS THE PROCESS OF RUSSIAN GOVERNMENT REGAINING CONTROL OVER NORILSK NICKEL.** In China the many different levels of state control, national, regional and local, together with the gradual changes in the Chinese economy and the introduction of private ownership also creates methodological and comparative problems. The Chinese situation will be discussed in more detail below.

Although state control globally has decreased considerably since its peak in the mid-1980s, it is not a phenomenon of the past. Table 1 and Figure 2.give an overview of the historic development of state control in mining. In the table state control is measured and added up for nine metals: bauxite, copper, gold, iron ore, lead, manganese, nickel, tin and zinc together accounting for between 85– 91 percent of the value of all metals produced each year. In 1984 total state control measured as a percentage of the value at the mining stage

of all metal production in the world owned by national or regional governments amounted to 46 percent, an increase from 39 percent 10 years earlier. This was followed by a decline to 39 percent in 1989 and a further decline to 22 percent after the collapse and privatization of mine production in the former Soviet Union. The decline was halted in the mid 2000s but state control in mining started to increase again with the growth of Chinese mine production, reaching 24 percent in 2008. This trend will most likely continue as a result of the Chinese policy to increase its control over the supply of natural resources both domestically and through mines abroad, based on control through ownership. It is quite possible that some production capacity will be closed within China in the next few years because of high costs. The mines in China are often small, based on low grade deposits performing poorly in regard to health, safety, and environmental standards. This shutdown is already occurring in iron ore but this decline will be counterbalanced by increased foreign-based, but Chinese-controlled production.

As stated, figure 2 presents the nine most economically important metals. The majority of the remaining metals show a similar pattern of ownership and control and to include them in the analysis would not have changed the conclusions in a substantive way. In recent years however increasing political interest in the industrialized countries has been focused on metals such as lithium, the rare earths, tantalum and so forth, which have a relatively low economic value but are difficult to substitute and play a strategic role in the economy of these countries.³⁰⁹ Some of these are almost exclusively produced in China by state-controlled Chinese companies. These metals have not been included in this analysis as the methodology chosen would give them a very limited weight as a result of their economic value. There are however undoubtedly examples of metals where state influence is large and important.

Coal is not included in the discussion above as it is energy mineral and as such has different characteristics from the other metals in this study. Coal shows however a similar pattern of state control over time as the metals: high level of state control into the late 1980s, over 60 percent, a sharp decline in the 1990s with the fall in production in the former Soviet Union, followed by a rebound in the early 2000s to a fairly constant level of just over 50 percent. In coal the Chinese state almost completely dominates the sector.

There are several indications of a growing government interest, mostly in emerging economies, in controlling domestic mine production as a means to capture a larger share of the rents from mining.

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

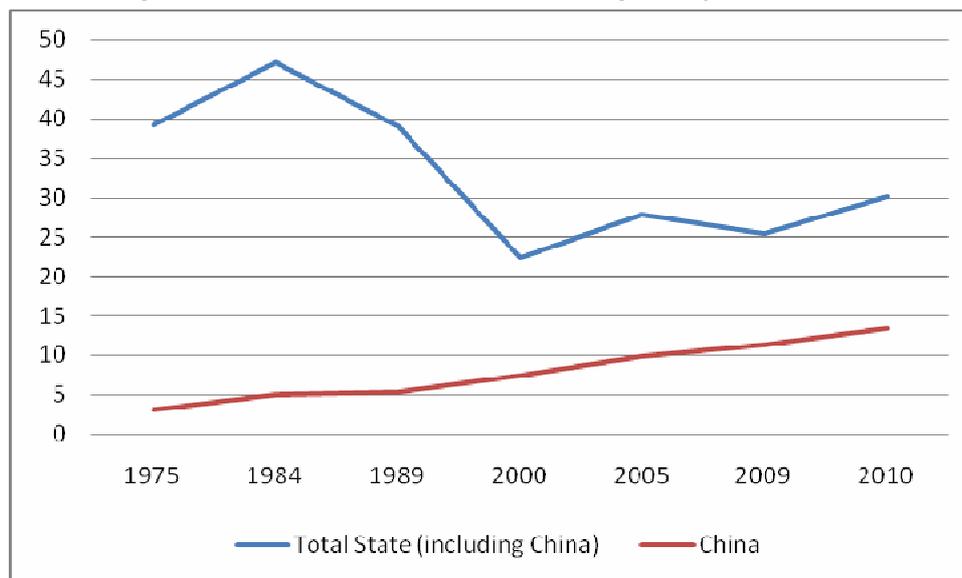
Metal	1975		1989		2000		2005		2009		2010	
	State	Ex-PRC										
Bauxite	1.2	1.2	1.4	1.3	0.8	0.6	0.6	0.4	0.5	0.3	n.a.	n.a.
Copper	8.6	8.3	10.6	9.9	5.5	4.6	5.7	4.7	5.0	3.9	4.7	3.5
Gold	3.1	3.1	6.1	4.9	3.3	1.7	2.5	1	4.0	1.0	3.4	0.8
Iron ore	19.1	17.1	13.5	11.8	7.9	5.7	14.2	8.3	11.3	7.1	18.2	10.8

³⁰⁹ National Research Council of the national academies, *Minerals, Critical Minerals, and the U.S. Economy*, The National Academies Press, Washington DC, 2008.

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)

Figure. Total State value at the mine stage (% of total value)



Source: Raw Materials Data 2010.

Methodology

In the analysis of state control, two concepts are of basic importance, ownership and control. Ownership refers to holding shares in a company and is easy to define and measure; in principle that information is to be found in the share register of a company. The concept of control is more difficult to define and even more difficult to measure accurately. State control is more difficult to define than the overall concept of corporate control.³¹⁰ In this study the following definition has been used.

To be in control is to have the possibility to act decisively on strategically important issues. Such issues include the broad policies of a company, decisions on large investments, buying or selling of subsidiaries and power to appoint or dismiss management. To be in control of a company does not necessarily include having day-to-day influence over all its decisions.

Applying the definition of control given above, state mining enterprises in the mining and smelting industry form a heterogeneous group of companies, which nevertheless can be divided into two broad country categories:

- State-owned companies in market economies countries (referred to as MEC states in the appendix); and

³¹⁰ Marian Radetzki, *State Mineral Enterprises, an Investigation into Their Impact on International Mineral Markets*, Resources for the Future, Washington DC, 1985.

- State-owned companies in centrally planned economies. (referred to as CPE states in appendix).

For all minerals and all three years (2007, 2008, 2009) a statistics file has been made from the Raw Materials Database 2010 showing how much control the MEC States have over different minerals.

In appendix it is assumed that all production in China is state controlled and that all production in Russia and other CIS countries, unless expressly stated otherwise, is in private hands.³¹¹

For details on the methodology and definitions used, please see appendices.

State-owned Mining Enterprises Analysis

Some of the most important observations of state ownership and the dynamics of state participation, which can be made from the tables in Appendix 4 are:

Mining Industry

- Total state control of metal mining has either increased or remains constant for all metals in the study.
- Chinese mining accounts for the bulk of this increase in state control. For all the minerals analyzed Chinese state ownership is increasing.
- For nickel the MEC state share has increased and for bauxite, lead and tin the state share has remained constant; in all other metals there is a decline.
- Total state control varies from only roughly half the peak level for copper, iron ore, manganese, and nickel, to up to 90 percent for bauxite, gold, zinc, and coal, while it is actually equal or higher for lead and tin.

Refining

- Total state control of metal refining has increased for all minerals.
- Chinese refining accounts for the bulk of this growth. For all the minerals analyzed Chinese state ownership is increasing.
- MEC state share declines for all minerals except for nickel and tin where the level is constant.
- Total state control varies from only a third of the peak level for nickel, around 75 percent for copper and alumina, while it is roughly the same or higher for aluminum, zinc, and tin.
- State control is generally higher in refining than at the mine stage.

Metals

- While the state controls gold the least at 17.6 percent in 2009, state control increased from 2006 to 2009.
- The state controls nickel the second least at both the mine and refinery stage (21.5 percent in 2009 at the mine stage) and (17.1 percent in 2008 at the refinery stage).

³¹¹ Ericsson M., Tegen A., *Dynamics of state mining enterprises during the 1980s and the outlook for the 1990s*, Natural Resources Forum 1992, p. 178.

But it is interesting to note that for both nickel and lead the state control is constant or increasing for both MEC states and for China.

- Tin has the highest level of state control at 54.3 percent in 2009, but in terms of economic weight, aluminum, also with more than 50 percent state control, is the most important metal for state companies as the total value of aluminum produced far exceeds that of tin.
- State control for coal is also high at 52.5 percent in 2009.

Countries

Table 3 was calculated based on the figures in Appendix 4 and Table 1. Countries are ranked according to their total state controlled share measured as a percentage of the value of metal production at the mine stage.

Table 3. State Shares of Global Metal Mine Production Value 2009

Rank 2009	Total production 2009 (1)	State control 2009 (1)	State share 2009 (%)	State share 2008 (%)	Rank 2008
1. China	12.8	12.8	100	100	1
2. Brazil	6.4	5.5	86.1	89.5	2
3. Chile	7.6	2.4	31.7	26	3
4. India	5.0	1.4	28.3	28	5
5. Iran	0.9	0.9	100	100	6
6. Poland	0.8	0.8	100	100	4
7. Uzbekistan	0.8	0.8	100	100	7
8. Indonesia	3.3	0.6	18.3	30	8
9. Sweden	0.6	0.3	57.1	78	10
10. Venezuela	0.5	0.3	69.9	87	9

Note (1): Percent of total value of all metal production globally. The state share varies with both the produced volumes and the relative value of the metals produced in each country (classifies Vale as state). Source: Raw Materials Data 2010.

It should be mentioned that the table above does not include diamonds and industrial minerals. Among those there is also considerable state ownership and control of production. (See tables 4 and 5 below.) In the diamond industry there are examples of successful state holdings in Botswana and Namibia. Both countries have formed joint venture companies with De Beers. In each case the state has a 50 percent share in the national diamond mines. The companies are called Debswana and Namdeb respectively. In the case of Botswana the country also has a 15 percent direct interest in the holding company of the DeBeers group, with board representation (two directors) and direct influence on the strategy of the Group.

In the industrial mineral sector the State of Morocco controls the largest company Office Cherifien des Phosphates (OCP) with 15 percent of total world phosphate production. Other Arab states such as Syria, Tunisia, and Jordan also produce phosphate rock and together state control amounts to almost 30 percent of the world production of phosphates.

Table 4. Controlling companies in diamond value mining in 2010

Rank world 2010	Company name	Country	Controlled production 2010 (M\$)	Share of world 2010 (%)	Cum. share 2010(%)
1	Anglo American plc	UK	2541.1	21.18	21.18

2	Alrosa Group	Russia	2350.2	19.59	40.77
3	State of Botswana	Botswana	1250.0	10.42	51.19
4	BHP Billiton Group	Australia	1100.0	9.17	60.36
5	Rio Tinto plc	UK	580.0	4.83	65.19
6	Namibian Minerals Corp	UK	350.0	2.92	68.11
7	Harry Winston Diamond Corp	Canada	240.0	2.00	70.11
8	Ponahalo Investments Ltd	South Africa	198.9	1.66	71.77
9	Petra Diamonds Ltd	South Africa	194.0	1.62	73.39
10	Gem Diamonds Ltd	UK	185.0	1.54	74.93
11	State of Namibia	Namibia	175.0	1.46	76.39
12	State of Angola	Angola	170.2	1.42	77.81
13	Daumonty Financing Co	Netherlands	93.4	0.78	78.59
14	Odebrecht SA	Brazil	85.1	0.71	79.30
15	State of Congo (Dem Rep)	Congo (Dem Rep)	64.0	0.53	79.83
16	State of Lesotho	Lesotho	45.0	0.38	80.21
17	Sedibeng Mining (Pty) Ltd	South Africa	26.0	0.22	80.43
18	Mwana Africa plc	UK	16.0	0.13	80.56

Source: Raw Materials Data, 2010.

Table 5. Controlling companies in phosphate rock mining in 2009

Rank world	Company name	Country	Controlled production (Mt)	World Share (%)	Σ world share (%)
1	State of Morocco	Morocco	24.0	15.19	15.19
2	Mosaic Co, The	USA	14.1	8.95	24.14
3	State of Tunisia	Tunisia	7.0	4.43	28.57
4	Potash Corp of Saskatchewan	Canada	6.7	4.24	32.81
5	State of Jordan	Jordan	6.0	3.80	36.61
6	Bunge Ltd	USA	3.0	1.93	38.54
7	General Co for Phos. & Mines	Syria	3.0	1.90	40.44
8	Israel Chemicals Ltd	Israel	3.0	1.90	42.34
9	CF Industries Holdings Inc	USA	2.8	1.77	44.11
10	State of Egypt	Egypt	2.5	1.58	45.69
11	State of South Africa	South Africa	2.3	1.46	47.15
12	Incitec Pivot Ltd	Australia	2.0	1.27	48.42
13	JR Simplot Co	USA	2.0	1.27	49.69
14	Agrium Inc	Canada	1.9	1.20	50.89
15	State of Algeria	Algeria	1.8	1.14	52.03
16	Yara International ASA	Norway	1.2	0.74	52.77
17	Monsanto Co	USA	1.0	0.63	53.40
18	Anglo American plc	UK	0.8	0.52	53.92
19	State of Togo	Togo	0.8	0.51	54.43
20	State of Senegal	Senegal	0.7	0.44	54.87

Source: Raw Materials Data, 2010.

Market Economy Countries

Some of the most successful state-owned mining companies such as the Chilean copper producer Codelco, the Swedish iron ore miner LKAB, Botswana's diamond joint venture with De Beers Debswana and Indian iron ore mining company NMDC, have been operating under state ownership for several decades or more. Their existence and their ownership structure

have been taken for granted in their respective home countries but recently there have been questions about their future role and functions.

Both Codelco and LKAB have been engaged in discussions to expand their roles outside their home countries. LKAB made a bid for the Brazilian iron ore producer Samitri, but lost. Codelco was reportedly interested in participating in the Zambia Copper Corporation privatization but bowed out in the end. Codelco has established an exploration subsidiary active in several Latin American countries. If such moves are successful, it would mean that the companies would operate increasingly under the pressures of the international market and the risk levels of each would increase considerably. Rumors in Sweden had it that LKAB might be on the privatization list of the conservative alliance government. The government has strongly denied any such plans. The chairman of LKAB has however recently publicly stated that he thinks it would be useful to bring in outside shareholders,³¹² but this created an uproar in the districts where LKAB operates. There is no strong political support for such a move at present but it is definitely interesting that even within LKAB such ideas have been expressed. Any privatization proposal, whether in Chile, Poland, or Sweden, would be fiercely opposed by the trade unions and some of the political parties.

In neighbouring Finland where the Minister of employment and the economy had a study made in early 2011 on the possibility of forming a new state controlled mining company to make the country benefit more from the present metal price boom. The trend towards an increasing state interest in mining is hence not any longer only an issue in emerging economies but also in long established mining countries.³¹³

Russia and East Europe

The privatizations in the former Soviet Union have been completed and only limited production capacity remains under state control. The restructuring of the mining and metal industries in the former Soviet Union has been painful. In Ukraine employment fell by 50 percent from the late 1980s to early 2000s and 500,000 miners lost their jobs and further restructuring has reduced the workforce to less than a third. Dramatic reductions have been made in Russia itself as well as in the East European countries formerly under the CMEA³¹⁴ cooperation umbrella. All metal mining has ceased in the Czech Republic and Slovakia; in Romania little remains of a fairly large base metal sector; likewise in the former Yugoslavia where mining used to play an important economic role. In all these countries mining was based more on political considerations in line with the heavy industry development model undertaken by the Soviet Union rather than on an economic evaluation for each deposit and mine. The deposits were also often exploited without considering the environmental effects. Miners used to be the aristocracy of workers but with the decline they were left without much of a future and no jobs. In the centrally planned economies the mining companies were often responsible for a large part of the social services and this also meant that entire regions experienced severe economic problems. The image of the industry was shaken and

³¹² Reuters online, *Sweden's LKAB would benefit from privatization-chairman*, 31 March 2010.

³¹³ TEM/3385/06.02.01/2010 Kaivosrahoituksen selvitysmiestehtäma, Helsinki 2011.

³¹⁴ Cmea Council for Mutual Economic Assistance, economic cooperation organisation for the Soviet Union and the countries in East Europe also Cuba and Mongolia were members. The organisation collapsed after the fall of the Soviet Union.

this in many ways came to symbolize the failure of the previous political system. Outside Russia and Ukraine, only in Poland and Bulgaria have parts of the industry survived.

In Poland the giant copper miner KGHM Polish Copper was founded in the early 1960s based on a newly discovered, large and rich copper deposit in the western parts of the country. The opening represented one of the few successful new heavy industries set up by the Polish communist government. The company was listed on the Warszawa stock exchange in the 1990s but the government kept a controlling stake of approximately 42 percent. In early 2010 the Government's holding was further reduced to 31.8 percent. The shares were sold in the market through an initial public offering (IPO) and later partial offerings. The government remains the dominant shareholder and does not intend to reduce its stake further, indicating that it wants to keep the copper miner under government control. Other metal mining companies- in the zinc sector -with a lower strategic importance are to be privatized completely. The Polish coal industry continues to be fully state controlled. The sector consists of both hard coal and brown coal mines and Poland is a dominant coal producer in Europe. Partial privatization is planned for the lignite industry, but the hard coal sector will remain in state hands at least for another number of years. There are several reasons for this, not only is the energy sector of strategic importance to the Polish economy and hence more politically sensitive but the hard coal industry is also strongly unionized with agreements in place with the government about its future. With the gradual privatization of Polish mining companies the state's influence is declining but strong political influences continue to linger, sometimes into the day-to-day management of the companies, including those with only a minority state holding. This is an inheritance from the previous political system.

In Bulgaria privatizations took place in the early to mid-1990s. The country's mining sector consisted of base metal mines, mainly copper, lead, and zinc. The lead and zinc operations have not proven viable. The copper operations changed hands a few times during the first years after the initial privatization and in recent years have been fairly successful.

In Russia the privatization-process was disorderly and conducted in such a way that private interests could accumulate very large assets while paying very little for them. The new owners, the *oligarchs*, became rich and powerful during the 1990s. Gradually the opposition against these machinations grew to such an extent that under President Putin the balance of power was shifted toward more state influence over the primary resource sector. The state regained control, in particular over oil and gas assets; but ownership in metals is still in flux, as the power struggle for Norilsk Nickel demonstrates. What is left in regard to state mining assets in the former Soviet Union will probably stay in state hands given the policy to protect the national interests in mining. A few years ago a reversal of the privatizations seemed possible. This has not happened however. It also appears as if the uncertainties and insecurity concerning security of tenure and other rights are gradually diminishing in parallel with the breakdown of the oligarchs' power. Poor governance is still an issue in Russia also affecting the security of tenure. There could still be controversies between the federal government and regional authorities such as the conflict some years ago over the diamond giant Alrosa. The battle for control ended in a compromise where both the federal and the regional owners agreed to settle and the company is now fully operational again.

Africa

Most of the discussion over increased state ownership in the mining sector can be heard from African countries. This is understandable because not only is Africa the least thoroughly explored continent, but also because companies from China and other Asian countries have indicated their interest in African countries as potential investment targets. Although the experience from the previous wave of state-ownership was less than positive, the desire to capture some of the opportunities in the present boom for mining is strong and there is a conviction that many countries are now better prepared to govern the mining sector and manage mining companies than they were 40-50 years ago

South Africa

In February 2010 the Youth League (ANCYL) of ANC, the ruling party in South Africa, started an intensive debate demanding nationalization of the country's mining companies. In a document entitled "Towards the transfer of mineral wealth to the people as a whole – A perspective on nationalizations of mines"³¹⁵ the Youth League proposed nationalization of South Africa's mining industry to make sure that the "people of South Africa would share in the nation's wealth." The call for nationalizations was met with not only an expected uproar from the industry itself but also from the ANC leadership with the Minister of Mines and the President of the Republic at the forefront.³¹⁶ Ownership of minerals in the South African sub-soil was transferred to the government in the early 2000s. In 2005 the so-called Mining Charter was established to facilitate the transition of the South African mining sector after many years of apartheid policies and segregation in the mines to a more inclusive model of ownership of the mining companies. After five years it appears that the Charter has not met the expectations and hence the ANCYL proposal. One of the problems is the failure to transfer at least 15 percent, and later 26 percent, of the ownership of all mineral deposits to "historically disadvantaged South Africans (HDSA)," which is the official term for what is usually called Black Economic Empowerment. Instead of transferring wealth and control over the mining operations to "the people as a whole," a small group of new owners has emerged, accumulating vast wealth. There is also a host of other problems of incompetence and corruption. There is however strong opposition within the ANC to this populist proposal and it has been pointed out that:

- Nationalizations could have negative impacts on existing operations and the flow of investments into the sector.
- The cost of buying existing mining companies would be prohibitive costing several hundreds of billions of rands.
- The record of African governments managing mining operations is poor.

While this political debate is ongoing the government is moving ahead with the setting up of a state-owned mining company where state holdings in the mining sector will be transferred and consolidated. Currently there are two fully state-owned companies, a small diamond producer, Alexko; and the African Exploration, Mining and Financing Corporation (AEFMC),

³¹⁵ ANC YL Discussion Document-February 2010 "Towards the Transfer of Mineral Wealth to the Ownership of the People as a Whole: a perspective on nationalisation of Mines", 2010.

³¹⁶ Hill, Liezel, Mining Weekly.com, *Nationalisation a non-starter, SA Minister assures in Toronto*, 6 March 2010.

which owns exploration and development projects. Some holdings are the result of investments by the fully state-owned IDC (Industrial Development Corporation) in projects such as Palabora Phosphate, Mozal aluminum, Rössing uranium, and many others. This new company will coordinate the government's role as an owner of mining assets.

Namibia

A similar development has taken place in Namibia where a state-owned mining company called Epangelo was established in late 2009, which became operative in mid-2010. Initial financing amounted to 1.5 million Namibian dollars (US\$217,500) from the government.³¹⁷ The purpose is to explore for and develop new deposits. The government of Namibia has said that its long-term goals can only be reached "by means of greater state participation in the mining sector, which is the backbone of the economy." The vision of Epangelo is to become the leading, diversified mining company in Namibia. Government further sees the company as a guarantor of the sustainable utilization of Namibia's natural resources. It has been reported that in the future the company could also engage in joint ventures with private companies.

Namdeb, the large diamond mining company, was originally 100 percent owned by De Beers, but following Namibian independence in 1990 the government obtained 50 percent of the Namibian assets and set up the new joint venture company.

Namibia's government is considering introducing legislation similar to the Mining Charter in South Africa with its Black Economic Empowerment rules. The program is called Transformation of Economic and Social Empowerment Framework (TESEF) in Namibia and has been in the planning for more than five years. The goals set by TESEF are reported to be: 50 percent ownership by "historically deprived Namibians (HDN)," 50 percent HDN in the management cadre, 50 percent of board members, 50 percent of women in top, middle, and junior management, and 80 percent HDN of all staff. The Chamber of Mines of Namibia, the national mining industry organization, supports TESEF and welcomes its enactment. No definitive proposal is yet on the table but voluntary agreements are already being made such as Weatherley International entering into an empowerment deal with the Namibian trade union Mineworkers' Union of Namibia.³¹⁸

Zimbabwe

When Zimbabwe obtained independence in 1980 after a long struggle it followed a similar path that many of the countries in the region had taken 15-20 years earlier. The government seized control over the mining industry and nationalized some assets into a holding company Zimbabwe Mining Development Corporation (ZMDC) and set up a compulsory marketing company, Minerals Marketing Corporation of Zimbabwe (MMCZ), through which all sales were directed. Over the years ZMDC has grown into a diverse group also taking over operations which have not been doing well and at present the company has interests in copper, chromite, gold, platinum, and diamonds. Through the state-owned steel company ZISCO the government also controls an iron ore mine and is also engaged in the Hwange

³¹⁷ Weidlich, Brigitte, Namibian the, *Namibia: Hawala to Head Epangelo Mining Outfit*, 29 July 2010

³¹⁸ Duddy, Jo-Mare, Namibian the, *Namibia: Unions, Miner in BEE Deal*, 13th July 2010 and Namibian the, 4 February 2010.

colliery, which is a cornerstone in the generation of electricity in Zimbabwe. Recently the Zimbabwean Ministry of Defense has become involved in diamonds. Zimbabwean state interests in mining are hence diverse; have not been assembled following a preset strategy but rather ad hoc and are not managed in a coordinated way often lacking professional management.

ZMDC is a passive owner and production from its assets has been more or less constant over recent years. At present the setting up of a government-controlled exploration and development company similar to the one in Namibia and close to realization in South Africa is being discussed in parliament. The reason behind this new company is a lack of trust by the Government in what the industry is doing to optimize sector development in Zimbabwe and to create possibilities for the government to get into new mining projects. After liberalizing the mineral exports in 2009 making it possible for companies to market their products directly, MMCZ-role has been converted to monitor production and exports to avoid transfer pricing and other abuses. The company has come to be viewed as a cost on the industry at a 0.875 percent tax/royalty rate, because in practice MMCZ does not add any value to the selling process.

The ruling ZANU PF party under President Mugabe introduced a process of indigenization in 2009. In the initial proposal 51 percent of the capital of all mining companies should be ceded to Zimbabwean owners.³¹⁹ After severe criticism by industry, which is to a large extent already owned by Zimbabwean's and run by Zimbabwean management, the regulation has been amended and "cede" has been replaced by "dispose". Industry expects that this will result in a fairer valuation of assets. This is further supported by proposals to set up a sector specific committee to oversee the introduction of the new regulations. It also seems as if the 51 percent limit can be reached not only by direct ownership but also through community investments and other ways to reach compliance over an extended period. As a result of these changes most of the fears of industry have been removed and the proposal is met with cautious acceptance.

Democratic Republic of the Congo

The government of the Democratic Republic of the Congo (DRC) has reportedly drawn up a new model contract which proposes that government should have a 35 percent stake in all new mining ventures in the future.³²⁰

For much of the past three years, the DRC mining industry has been embroiled in a confusing review of the exploration and mining licenses entered into by the previous administration. A commission has been tasked to review the contracts between DRC's state-owned mining entities and foreign mining companies operating in the country.

Over 60 contracts signed between 1998 and 2005 were subject to review. In December 2008 a report was issued by the Ministry of Mines that affirmed that 23 contracts would be terminated and that the majority of the remaining 40 contracts had been renegotiated

³¹⁹ Sapa and Miningmx reporter, Mining Mx Online, *Zimbabwe lays out 51% ownership law*, 9 Feb 2010.

³²⁰ Mining Journal Online, *DRC mines ministry creates model contract*, 11 June 2010.

successfully. Notable agreements reached included those with Central African Mining and Exploration Co plc (CAMEC), Moto Goldmines Ltd, Anvil Mining Ltd, Katanga Mining Ltd. and FreeportMcMoRan for the Tenke copper mine.

There is considerable uncertainty in regard to the future trends in DRC at present, especially as the intent and meaning to increase the government's share in future mining projects is not well defined and unclear.

West Africa

In *Senegal* nationalization of the mining industry took place in much the same way as in other African countries after independence. Likewise privatizations were made in the late 1990s and early 2000s and the phosphate and atapulgitite mines were sold off. Draft new legislation currently under consideration proposes that the state gets involved at an early project stage through a 100 percent state-owned exploration and development company. This company should not take full control over projects but participate as a joint venture partner while entering into various profit sharing agreements partly modeled on practices in the oil sector. This is a new line of thought that has evolved in Senegal and it remains to be seen how it will develop when the proposal is put forward formally.

Latin America

In *Venezuela* the first nationalizations in the mining sector were made in the 1970s when the iron ore mines owned by U.S. companies were taken over by government. In recent years under the Chavez government a new wave of nationalizations has swept the country. In 2009 the steel and cement industries were nationalized as well as the activities of the remaining private oil companies. Previously, government had cancelled six nickel mining concessions belonging to Anglo American. There have been discussions that legislation will be introduced to nationalize existing mining companies and to force foreign companies to form partnerships with state owned companies but so far this has not happened.³²¹ The Las Cristinas gold project, operated by the Canadian junior Crystallex, has been among the projects mentioned for nationalization. Recently however it seems as if a solution has been found which does not involve any Venezuelan state participation. Instead Crystallex has entered into an agreement with the Chinese China Railway Engineering Corporation, a company active in many other countries in constructing mining projects. The government has seemingly accepted this deal as it has also allowed the Russian controlled Rusoro to continue its operations near the town of El Callao. In *Ecuador* all mining activities were suspended for 180 days until a new legal framework regulating exploration and mining was put in place. Mining has not yet resumed. A state mining company is in the planning.³²² *Bolivia* under President Morales has nationalized the Vinto tin smelter owned by Glencore in 2007. Most of the actions of the Morales Government have been focused on the oil industry but the mining industry has also been targeted. In his political speeches Mr Morales has stated that state-owned companies should be created to develop the giant Mutun iron ore deposits close to the Brazilian border and to start lithium production from brines in the

³²¹ Mining Journal, London 2008 01 11, p. 1, Kosich, Dorothy, Mineweb, *Venezuela's Hugo Chavez threatens to nationalize gold mining*, 26 April 2010.

³²² Mining Journal, London 2008 05 25, p.1.

Andes. But so far this has not happened and recently the rhetoric has been toned down as foreign direct investment into the natural resource sector of Bolivia has been cut back.

India

India is a country with a large and well developed state sector in the mining industry. In fact Coal India is the largest coal producer globally and one of the largest mining companies in the world. A slow and phased privatization process has been under implementation for more than a decade in India. There are political constraints and although there is a clear policy to continue the process, trade unions continue to oppose the sell off of state companies. In most cases the plan is to divest a minority stake only, in the case of National Mineral Development Corporation, an important iron ore producer controlled by the central government some 10 percent has been divested to private investors. A similar stake has been sold off in Coal India and plans are in place for selling a similar share of the National Aluminium Company (Nalco). The government sold the majority of Hindustan Zinc earlier and retained only 30 percent of the company. The main reason for the privatizations/sales is to generate funds for the Government budget. Government also wants to increase the role of the private sector to secure the necessary growth in mineral resource production to guarantee India's continued economic development trajectory. It has however been difficult to find investors and in some cases the price for the shares sold has not met with the government's expectations and further sell offs have been postponed. The mining companies owned by the states have not been included in these privatization plans but are kept by the respective state government.

The mining companies owned by the the central government have a fairly independent governance structure. A typical board of directors has 2-3 government nominees and 4 independent directors to oversee the general public interest. In strategic issues the government through the responsible ministry, such as the Ministry of Mines (all minerals except coal and iron ore), the Ministry of Steel (iron ore), or the Ministry of Coal, gives directions but in most other issues the board acts on its own.

China

Chinese ownership and control

The Chinese mining sector is still largely under state control whether by central government or by regional or local authorities. The rapid growth of mineral production in China can probably be explained by the unique combination of a culture of central planning with the dynamic forces created by the market economic approach of each enterprise. It remains to be seen if this model can continue to be as successful as it has been in the past decade. Serious challenges lay ahead as the rapid growth has created problems such as severe environmental impacts and health and safety issues. The industry structure is fragmented with many small, by international standards very small operations, and the cost of production is relatively high.

No comprehensive literature exists on the path of partial privatization that the Chinese government has chosen for the Chinese mining industry. The energy industries and in particular the oil sector have been much better covered. Given the similarities between the sectors, the approach used when describing the energy sector, has also been selectively

applied to metals and minerals.³²³ Fuel minerals and metals and non-fuel minerals are resources in the ground owned by the nation. Both industries require large amounts of capital, long lead times and pay back times, and in general a longer term perspective than manufacturing industries. Although some metals and minerals have gradually become vitally important to modern society, , metals do not have the overall strategic importance and direct impact on all aspects of the economy as energy, resulting in a much lower political interest in the mining sector. Over a period of time, from the mid-1980s to the mid 2000s, politicians in both China and the industrialized countries did not focus on metals at all.

In the early 2000s Chinese economic growth advanced so fast and the economy reached such a size that domestic mineral supplies were not sufficient to support the current and projected growth in demand. It became necessary to look for new resources abroad and to make the exploitation of domestic resources more effective and less wasteful. A new “two pronged” mineral supply policy was adopted: (i) intensify and improve the use of domestic resources and (ii) acquire control over foreign resources. The first goal is to be reached through a host of measures ranging from increased exploration expenditures to improving the utilization of existing resources in all steps of the process chain from mining to recycling. The second leg implies a change from imports of ores and metals to direct investments in and ownership of overseas mines.

Partial privatization of existing Chinese mining companies forms part of this policy and supports its long term success. Partial privatization was chosen because full privatization was perceived as a potential threat to national security. The partial privatization model has several important advantages such as: immediate cash injections; restructuring and rationalization of the company structure and organization before the company could be offered to new investors; incentives to motivate and reward management in new ways; and in case foreign investors were brought in, the company could gain technological and managerial experiences, in particular in regard to operating abroad. The lack of foreign experience was perhaps the most important hindrance for a smooth and quick expansion of Chinese foreign mining activities.

The structure of the Chinese mining industry has started to change and with it the influence of the state on the mining companies. The number of privately, so far mostly small, held mining companies is increasing, partly because of privatizations, but most importantly, because of the ever growing demand for mineral resources by the manufacturing industry. These small, flexible, companies, made the unparalleled growth of Chinese mine production in the early 2000s possible. This group of mining companies cannot, simply because of their numbers, be controlled in detail and hence the state control tends to decrease. In iron ore mining there are several thousands of mining enterprises for example and the situation is similar for other metals such as tin, lead, zinc, and coal. To a certain extent authorities

³²³ The following section draws largely on Andrews-Speed, Philip and Zhenning, Cao, “Prospects for privatization in China’s energy sector,” Chapter 10, in *Exit the Dragon? Privatization and state ownership in China*, edited by S. Green and G.S. Liu Centre for Energy, Petroleum and Mineral Law and Policy, University of Dundee and also Andrews-Speed, Philip and Dannreuther, Roland, “China, Oil and Global Politics,” Chapter 4, *China’s Growing Presence in the International Oil and Gas Arena*, Routledge, 2011.

probably chose not to focus too much on possible infringements by these small companies as they were not only important to metal supply but also in regard to job opportunities. The number of jobs provided by these companies exceeded the jobs created in the large scale capital intensive mining industry and they were often offered in areas where little other choices were available. At the same time government is supporting a trend toward larger companies both among state-owned enterprises and in the private sector. This will gradually make central control easier. Although the focus and objectives of the major companies, with tighter links to government, have been changing and they are becoming more profit oriented, Chinese companies are still however, in general, more long term in their strategy and planning than their multinational company competitors. But they cannot, as might have been possible 30 years ago, continue loss making operations relying on capital from government. In addition the government has gradually handed over decision making power to the companies for all day-to-day decisions and also most strategic issues. However the government continues to appoint the directors on the board and the senior executives of most major companies in the mining and metal sectors including the steel industry. Directors are mostly high ranking government officials. The functions of these boards are not well defined and their powers are not well known and documented but they are an important link in the way the Chinese government control the companies.

There have been several partial privatizations and IPOs successfully carried out in the mining sector, in recent years. Some of the major Chinese mining companies such as Zijin Mining (copper, gold), China Molybdenum Co (molybdenum), Jiangxi Copper (copper), Chinalco (aluminum), Shougang Iron & Steel Group (iron ore), China Minmetals (iron ore, rare earths, and others) are listed on stock exchanges in Hong Kong and abroad. In most cases only a minority share of the companies have been offered to the public and the government retains the majority. This has meant that government control has been partly reduced but the central, regional, and local governments undoubtedly maintain the ultimate control over these companies, even if the provision of capital is shared with other investors. There might also be differences in views between the various government levels and what makes sense from the central government's perspective might not always be carried through at regional levels. It must be kept in mind that China is a big country and absolute central control is simply not possible not even over a specific industry branch.

In summary the mining sector has been the focus of increased government attention in recent years and although the day-to-day issues are handled within the companies, government approval is still needed for major, strategic, long-term decisions. There are no indications that this situation will change in the near future, mainly because the metal supply issues are considered too important by the government in relation to the overall development of the economy and the country. The commercial objectives and profit goals of the companies will not always be in line with the government's political agenda and these differences will probably deepen with time.

Chinese foreign investments

The second leg of the Chinese mineral supply policy calls for a change from import of ores and metals to direct investment in overseas mines using ownership as the preferred method

to secure a stable — both in terms of volumes and prices — supply of resources. Outbound investments in mining have grown rapidly from just US\$440 million in 2005, US\$1.8 billion in 2006, to more than \$16 billion in the first five months of 2008.³²⁴ Overseas investment by Chinese mining companies continues to increase. Australia remains the focus for much of Chinese activity in 2009 (42 percent of total) but there is also an increasing interest in other countries.³²⁵

A list of acquisitions includes:

Table 6. Selected Chinese Acquisitions in the Mining Sector

Buyer	Share %	Target	Metal	Value US\$M
Chinalco	9.3	Rio Tinto	Diversified	14,000
Yanzhou	100	Felix Resources	Coal	3,200
CIC	17	Teck	Diversified	1,500
Shandong Iron & Steel	25	Tonkolili	Iron ore	1 500
Chinalco	47	Simandou project	Iron ore	1,350
China Mineral	100	Itaminas	Iron ore	1,220
Valin Iron & Steel	17	Fortescue	Iron ore	939
Chinese investors	51	Wesizwe	Platinum	877
Chalco	100	Peru Copper	Base metals	800
CRCC-Tongguan	97	Corriente	Copper	595
Sino Uranium	?	Somina mine	Uranium	300
CST Mining Group	54	Chariot Resources	Copper	240
Jinchuan group (JNMC)	100	Tyler Resources	Copper	214
Citic Pacific	100	Mineralogy/Korean Steel	Iron ore	200
Xiamen Zijin Tongguan	100	Moterrico Metals	Copper	168
JNMC	100	Crowflight	Nickel	150
Jinduicheng/Northwest	100	Yukon Zinc	Zinc	113
Citic Resources	8.4	Macarthur Coal	Coal	96
CNMC	80	Luanshya	Copper	50

Source: Raw Materials Data 2010.

In Australia the list of joint ventures and M&As is extensive and covers a range of metals/minerals to mention only a selection:

Table 7. Chinese selected acquisitions in Australian mining

Chinese partner	Australian partner	Metal
Valin Iron & Steel	Fortescue	Iron ore
Citic Pacific	Mineralogy	Iron ore
Ansteel	Gindalbie Metals	Iron ore
China Metallurgical	Cape Lambert	Iron ore
Baosteel	Rio Tinto	Iron ore
Yanzhou	Felix Resources	Coal
Citic Resources	Macarthur Coal	Coal
Hunan Non-ferrous	Compass Resources	Base metals
CST Mining Group	Lady Anne	Copper
Guangdong	Kagara	Copper
Jinchuan (JNMC)	Albidon	Nickel

³²⁴ Chau, C., KPMG, M&A in mining in China, Mines & Money Asia, Hong Kong June11-12 2008.

³²⁵ Mining Journal Online, *China's outgoing funds change focus*, 11 June 2010.

Jinchuan (JNMC)	Allegiance Mining	Nickel
Shenzhen Zhongjin Lingnan	Herald Resources	Lead/zinc

Source: Raw Materials Data, 2010.

Two major Chinese investments give a clear indication of the Chinese and hence government interest and intention to increase its role in global mining.

- Industrial and Commercial Bank of China (ICBC) taking 20 percent of the leading resource bank of Africa Standard Bank of South Africa in 2007 in a 36.7 billion ZAR (appr. US\$5 billion) deal.
- The US\$14 billion deal in which Chinalco took control of 9 percent of Rio Tinto and their deepened cooperation in Guinean iron ore mining.

Given the increasing freedom of Chinese state-controlled mining companies even when investing abroad and the growing number of entirely privately held mining companies and other companies investing in foreign mines there are multiple players of Chinese origin both from government and industry and their interests are more often than not diverging. As their experience in and understanding of the how the international mining industry and international mining investments function, the Chinese industry and government are also developing and changing.

When analyzing these investments in more detail a number of observations can be made:

- There appears to be a lack of a coherent strategy in regard to the earlier acquisitions, often the rationale seems to have been the result of circumstances. The first major acquisition was Shougang buying the Peruvian iron ore mine Marcona when it was privatized (!) in 1992 with no other major deal until a decade later. Likewise the first deal in Africa concerned a chrome mine in South Africa bought in 1995 but thereafter it took many years before further acquisitions were made.
- Although the number of deals and amount of money invested has risen in recent years, in particular as the Chinese companies have access to large amounts of capital from the Chinese currency reserves, the importance of Chinese-controlled overseas mine production has been and still is rather limited. There are some exceptions such as copper production in Zambia and iron ore in Australia and Peru as mentioned above but otherwise there is very little productive capacity in Africa or elsewhere in the world.
- Australia has been the most favored target of investments. This is logical given the vast and often high quality resources of Australia and its relative close location compared to Africa and Latin America. Other countries bordering China such as Afghanistan, Mongolia, DR Korea, Vietnam, and Kazakhstan have also recently been subject of Chinese interest.
- Iron ore has been a main focus given the poor quality and mostly limited size of Chinese domestic resources. The second most important metal is copper, which China also lacks.

Chinese investors have various objectives: Chinese steel companies aim to secure a supply of iron ore without having to pay the high prices on the open market, caused by the acute crisis in iron ore supply and the control over the seaborne trade by the “Big 3” (Vale, Rio Tinto and BHP Billiton). In addition the steel companies are often larger than most mining companies and have some experience in international investment projects which most mining companies lack. The aluminum companies have also been active in particular Chinalco buying 9 percent of Rio Tinto, although its second attempt to double that holding did not succeed. In the DRC many small, artisanal copper smelters and refineries were set up by private companies and private capital when copper prices were high in 2007/2008. As a result of the financial crisis and the fall in copper prices most of them were closed in early 2009. Construction companies such as China Railway Engineering Corp have also been active partly in order to supply their skills in the construction of infrastructure such as railways and ports which will be required to bring new iron ore deposits into production.

- Most of the outbound investments go into minority stakes indicating that the Chinese are not yet ready to take full undivided control of new ventures abroad. There is however no doubt that the Chinese mining investors will gain experience both from their foreign investments and the domestic mines as they introduce modern, large scale mining methods to modernize and expand their operations. When this happens they will also most probably be prepared to take full control over foreign operations.

In the Chinese quest for access to foreign mineral resources, the government and companies are the two major actors. As discussed above, although these two parties often have similar goals there might be instances that their motives might be diverging and the commercial agendas of the companies will not always coincide with the government’s political agenda. If the companies want to have access to cost competitive resources and continue their commercial goals, they will need to invest abroad. In this way the companies can both grow and become truly internationally competitive, while management can expand their operational and their staff-skills.

In this way government policy and company motives are coinciding and foreign expansion has been rapid. The government is convinced that the ownership of mineral deposits will improve the security of supply; much in line with the policy which has been pursued on the energy side for a longer period of time. There are also industrial policy motives behind the government’s interest in foreign metal deposits. By securing the flow of iron ore, the Chinese steel industry will be in a position to supply the infrastructure necessary for a growing economy. The same reasoning can be applied to other metals to varying degrees.

As mentioned, the structure of the Chinese mining sector is gradually changing and the industry is becoming more complex. The initiative to consider a new project is always proposed by the companies, the central or regional governments have neither the knowledge nor the capacity to develop new FDI ideas. The countries chosen are those with the best potential and logistically most suitably located, in iron ore for example Australia and West Africa. If the competition from the established mining multi-nationals in the target country is not that strong for reasons of political risks or lack of infrastructure this can be an

advantage to the Chinese investors which generally have a longer time perspective than their competitors. There are lists of favored countries for outward investments issued by government and regularly updated and coordinated between the ministry of foreign affairs and the ministry of commerce and other ministries but the coordination in the mining sector is not as tight as in the energy sector. There are coordinating agencies such as the Secretariat of China-Africa Cooperation Forum and others, however with limited influence. Given the decentralized manner in which the projects are assessed within each company it is often the case that the package of infrastructure development, general trade agreements, and economic development support are prepared as a next step after the companies have already taken the first initiatives.

For any major investment, approval from the central government (NDRC and State Council) is required, in some cases also to obtain the necessary funding. The role of government is mostly reactive; it sees the need for new foreign direct investment (FDI) in mining and has issued its general policy but reacts to the project proposals on a one by one basis. In spite of this lack of complete control, state control over foreign expansion of the Chinese mining industry is still considerable and no major project is undertaken without full government support.

Chinese investments into African metals and oil have been highlighted and intensively discussed in recent years. It is, for example, estimated that over 800 Chinese state-owned companies are active in Africa. The Chinese offer African countries soft loans and technical assistance to develop infrastructure of all types, railroads, ports, power lines, and so forth.³²⁶ Iron ore junior Bellzone Mining has announced that China International Fund (CIF) has agreed to fund the entire \$2.7 billion infrastructure required for its Kalia project in Guinea in return for the right to the mine's entire production.³²⁷ China Nonferrous Metal Mining (CNMC) plans to invest \$600 million in Zambian copper in 2010 and 2011.³²⁸ In Guinea Chinese investors have announced to invest \$7-9 billion in the next five years on mining infrastructure, housing, electricity, roads, and water supply.³²⁹

Although the focus has been on the Chinese presence in Africa, it is important to note that the share of African mine production which comes from Chinese controlled operations is still very limited. When looking at exploration expenditure, that is, the long term future of mining in Africa; the Chinese presence is almost zero. The main Chinese investment projects are focused on known deposits mostly in iron ore and all of them at an early stage. Iron ore is a special case as most iron ore deposits have been better defined than deposits of other metals because most major iron ore deposits in the world were identified during the last iron ore boom in the 1960/70s when major efforts were made to explore for iron ore around the world. To start an iron ore mine is hence not a matter of applying ingenious geological models and putting skilled geologists with sophisticated high tech instruments to work, but rather to solve logistical and operational issues: to supply a large mining operation with all

³²⁶ Mining Weekly, Johannesburg, 2007 09 28.

³²⁷ [Webb](#), Mariaan, Mining Weekly.com, *Chinese firm backs \$2,7bn Guinea iron-ore infrastructure project*, 24 May 2010.

³²⁸ Reuters Africa Online, *China firm to invest \$600 mln in Zambia copper mines*, 8 April 2010.

³²⁹ Mining Journal Online, *China Africa investment relations*, 28 May 2010.

the necessary inputs — not least of which are water and energy in different forms, as well as workers, qualified engineers, maintenance staff, and most importantly to transport millions of tons of ore to a deep water port and ship it. In some cases companies involved in the infrastructural support of mining have taken the lead in the Chinese projects in Africa.

As different companies act in their own different ways in each African project, it is not yet possible to present a number of general applicable conclusions on how these projects will be executed or what the developmental effects will be. This is especially the case as the number of projects which have been completed is small and hence there are only a limited number of projects which can provide insights for the future.

Topics for further discussion

Introduction

The global privatization process in the mining industry was more or less completed in the early 2000s. What remains are a few either exclusive, well-performing companies such as Codelco, LKAB, Polish Copper, and NMDC in India or politically risky assets with long-term potential, such as Gecamines and the Venezuelan iron ore and aluminum industry and parts of some of the Indian state mining companies. The development of these state-owned companies in these countries will take time — either because of the complete breakdown of society, as in the DR Congo, or the strong political opposition to privatization in both India and Venezuela. The downward trend in the privatization of mining companies can be seen both from the number of transactions and the amounts involved in these transactions. From a peak of almost \$5 billion in 1997 (20 deals) the figure was down to \$0.3 billion (4 deals) in 2000 and almost zero in the following years.

The following discussion is primarily intended to serve as an introduction to an important set of questions and to provide a basis for further discussion and deeper studies. It is divided into three parts: first some thoughts about the history of nationalizations and why some metals are more likely to come under state control; second some preliminary conclusions and lessons learned both positive and negative from our work for this study; and a concluding section of what to do to avoid the mistakes made in the past.

Why are some metals more likely to be under state control?

When looking at the history of state ownership of the metals under study both at the mining and refining stage over time, one sees that the picture is complex and it is not possible to draw any simple conclusions. To put this in a different way: It is not possible to fully answer questions such as: Why is the level of state control in the market economy countries at the refining stage only 5 percent for nickel, but 16 percent for copper, and 17 percent for aluminum? Why did state ownership in nickel in the MECs peak at 43 percent in 1989 and tin at 68 percent but only in the year 2000?

It is however possible to obtain some or at least part of the answers to these questions by looking back at the period of nationalizations and the rationale given at the time for these actions. There is no indication that a clear strategy existed in regard to which metals or what stages of the production chain should be nationalized. The objective was to capture rent and to safeguard the national patrimony, most often because of a perception that international

mining companies or foreign investors obtained most of the rent, leaving very little for the host country. The most important mining companies, regardless of which metals were mined, were taken over by the state. Nationalizations were often made in connection with the decolonization process of developing countries. The previous colonies, most often in the Southern hemisphere whether in Africa or Asia — most Latin America states won their independence earlier — are mostly in tropical climates and hence metals which are more abundant in those climates show a higher degree of state ownership than those metals which were not. This was the case for copper where Zambia and the former Congo were important copper producers at the time when the two African countries gained their independence. Also, during the 1960s, the political climate was generally in favor of state interventions based on the experience of the Soviet Union and social democratic countries. In Chile the nationalization was commenced by a nationalistic government from the center/right, which created Codelco. In South East Asia tin was nationalized in Indonesia following its independence from the Netherlands. After the tin crash in the mid-1980s the mines in most other countries in the region and elsewhere were closed down but the Indonesian operations survived partly with state support and the level of state control in tin has remained high since then. In the case of nickel it is interesting to note that the lateritic nickel deposits, which are found in tropical environments, have recently become economical through a new hydrometallurgical process. It will be interesting to see if the degree of state control over nickel production might increase after this.

Apart from geographic/geological reasons, the historic locations of mines, and the wave of independence for mineral rich former colonies, political security considerations can explain higher levels of state control in aluminum. In the first half of the 20th century, aluminum was considered a strategic metal because of its importance in the aircraft industry on the military side. Hence it was considered important to keep at least part of this industry under state control. Even in the United States the aluminum industry was put under tight state control during the Second World War and some of the major companies in the post war period, such as Kaiser owed a lot of their growth to state protection and intervention during the war. The vital importance, given by governments to the energy supply in many countries is certainly the most important explanation of the high level of state control in the energy sector. In regard to iron ore, broader industrial policies and an understanding of the central importance which this sector has for economic development in general have contributed to the slightly higher levels of state control. Iron ore mines were nationalized not only in developing economies but also in countries such as Sweden and other European countries. Gold on the other hand has no or at least limited industrial use, hence the level of state control is low.

As mentioned earlier, in addition to the nine metals analyzed, others such as diamonds and phosphate have large state-controlled sectors and these examples underline the relevance of the hypothesis that there is no metal-specific approach, except the wish to control as large a part of the industry as possible. In Namibia and Botswana diamonds are the most important minerals and in Morocco it is the phosphate industry.

Lessons from previous periods of state ownership

State ownership of a mining company is not necessarily bad

As has been pointed out there are many similarities between the oil industry and hard rock mining but there are equally important differences. One is the ownership situation where particularly in the oil industry state-controlled national oil companies (NOCs) have become the norm. The international oil companies are still important but play a subordinated role compared to the NOCs. In mining the situation is the opposite. Most state-owned mining companies have over the years and in particular in developing countries not been able to operate successfully, leading to privatization. The energy sector shows, however, that such poor performance is not a corollary of state ownership. There are also a few and important examples of successful state owned mining companies such as LKAB, Codelco, Outokumpu, Debswana, and a few others. The success of a state-owned mining company is determined by the governance framework/structure, assets, and capital base. The following observations can be made in this respect.

Capacity to govern a company must be present

An independent Board of Directors consisting of members with sufficient experience and knowledge of the mining sector including finance in mining both domestically and internationally, is a prerequisite for a successful company. If such persons are not available within the country they have to be attracted from abroad. It is equally important that the day-to-day management is placed in the hands of experienced and motivated professional managers who know both the mining industry and the country-specific conditions.

Reinvestments must be made continuously

A mining company can not be used or considered as merely a revenue generator by the government to cover budgetary deficits or other demands for money, skills or capital elsewhere in the national economy. Whereas the expectation of a transfer of skills, experienced people, and not the least annual profits from a state-owned mining company to the state is justified, these contributions must be appropriate compared to the size and profitability of the company. Mining and in particular sustainable mining demand re-investments in exploration and development to maintain current reserves and provide for future production, including the development of ore reserves of at least 5-10 years.

Politicians need to understand the long term and truly international nature of mining

In most countries, industrialized and developing alike there is a need for politicians to understand that it takes 10-15 years to develop a mine and that the industry is a high risk sector. If this understanding is lacking, hopes for quick results and short-term gains will not be realized, disappointing parliamentarians and their electorate. In the same way the stability and continuity provided by mining compared to other branches of industry must also be better understood. If a mine is established it will operate for at least a period of 8-12 years, the average life-of-mine at the start of a new project. During this period the mine will most likely not be closed down and it cannot be relocated. In many cases the mine will continue to operate as new reserves are developed as a result of further exploration work is done properly. A time perspective of 10-15 years is necessary to be able to evaluate a state mining project.

The company must be adequately sourced in relation to its size

Mining is not only a long-term business, it is also a highly capital intensive industry with high risks of failure for a new project. There are geological risks: will a good deposit be found; mining risks: is the shape and geometry of the deposit sufficiently understood to make use of large-scale, efficient mining methods; metallurgical risks: can the metal be extracted profitably; market risks: will demand and price for the metal remain at the expected levels?; financial risks: will investors provide capital; and other risks. If the company does not have a sufficient size and capital base to attract the necessary expertise and to operate for a number of years without positive cash flow, it will fail. In order to be successful in an international competitive environment such as mining only companies with the best management and resources will survive and this is regardless if the owner is a state or private investors.

Competitiveness must be sustained

A state company must be subjected to the same competitive conditions as its international peers. Taxes, royalties and other fees should be levied as per the industry standards in the country. If a state company is given exceptional treatment for example reduced environmental standards or additional demands for example the need to hire local staff even when such staff is not available or in short supply this will affect its competitive position and hence its ability in the long term to perform compared to the rest of the industry.

Mixed capital companies may stand better chances

In the mining sector most state-controlled companies have been 100 percent state owned. Some exceptions exist such as the Outokumpu company, the capital of which was partially listed on the Helsinki stock exchange. In the case of developing country companies, partial privatizations have been carried out, with mostly positive results, such as in Indonesia. For new state-owned enterprises it could be of interest to create a mixed capital type of company with a set timetable for gradual transfer of ownership from the state to private national entities and investors on a jointly agreed timetable.

What can be done to avoid future mistakes?

Clear distinction between the state as an owner and a regulator

Governance of a state mining company should be separately assigned from all other mandates of the sector ministry (in most cases the ministry of mines) and preferably not even in the same ministry but rather in the ministry of finance or similar. Clear goals and objectives should be set for economic performance, employment creation and other non-economic goals in order to make the best use of the advantages of having the state as an owner.

Clear communication lines between owner and the company

There must be clear communications and reporting lines, which is valid for all companies and not specific for the mining sector, with the owner providing its input at the AGM and through its Board members with the role of the Board to oversee that the strategy of the company and its plans for the future are developed and executed accordingly. The day-to-

day management must be left to the management of the company without interference by either the Board or the ultimate owner.

The company should not be part of the treasury

Decision making power over the use of the cash flow should be the prerogative of the Board and not the treasury department of the owner. It is particularly important that sufficient re-investments are made to secure the long term performance of the company.

Full transparency

Many governments believe that confidentiality and opacity or non-transparency are important to manage and operate a state-owned company. In the long run, the opposite is true. A state-owned company should be fully transparent and follow the most stringent reporting rules even if it is not required to do so from a formal point of view. In all respects a state-owned company should be a model for private companies rather than the opposite.

Clear and transparent non-profit goals

Long-term, government strategic goals such as the establishment of downstream operations, train and hire a certain number of nationals, and so forth have to be coordinated and set in line with the company's abilities and its other priorities. These goals should be clearly stated and transparent.

Listing of a state owned company

Listing of a state owned company is often an excellent way to share the burden to raise capital particularly in countries where the government's capital-resources are limited with competing demands on these resources. A listing will also subject the company to more stringent reporting, governance and other public aspects requirements in regard to the management and operation of the company.

The future

The degree of government's interest in the mining sector reflects to a large extent the cyclicity and success of the sector. In the 1960s and 1970s governments pinned their hopes on the socioeconomic development potential of mining, based on the industry's economic performance over the preceding decades. With the benefit of hindsight it is now obvious that the period between the Second World War and the mid-1970s was a period of exceptional and unprecedented growth in metal production and metal prices. In this period the reconstruction of Europe and Japan after the Second World War and the industrialization of the Soviet Union resulted in a rapid growth in metal demand. Most nationalizations were done toward the end of this period at the market's height. Over the ensuing 30 years metal prices were in almost continuous decline. Profits fell and the industry could not meet its societal responsibilities. Privatization occurred during this period of downturn. Developing country governments entered the industry at the top of the market and exited when the markets were down.

However, the privatization process had hardly been completed before governments around the world started to exhibit signs of a renewed interest in the sector as a result of the dramatic metal price increases over the past number of years beginning in 2003/2004. The financial crisis in 2008 put a temporary stop to this but the swift recovery of metal prices in

late 2009 and 2010 created new ambitions for mineral-rich countries. Demands for an increase in the sharing of the profits have come from civil society groups, political parties, trade unions and in Latin America, in countries such as Venezuela, Bolivia, and Ecuador government-control over mineral resources has been put back on top of the political agenda. In both Bolivia and Venezuela nationalizations have also been made. In Africa there is an increased interest in nationalization and initiatives to start state mining companies are concentrated in the Southern African countries, which obtained their political independence after the main nationalization wave in the 1960s and 1970s. They have hence not experienced the negative outcomes of state-ownership of Zambia, Tanzania, Zimbabwe, and others. On the contrary, South African state owned companies, such as IDC, Eskom, and others have been quite successful. Botswana is another positive example in the region that success is possible. In Asia the interest in state control over resources is much less pronounced and with the exception of Mongolia these issues have not been on the top of the political agenda in recent years.

Even if direct control over mineral resources through ownership is only a priority in a few mineral-rich countries, a much larger group of countries are in the process to reconsider their mineral policies to find ways to increase the potential benefits of mineral resources. This renewed political interest is expressed in several ways:

- Increase in taxes and royalties in several countries including industrialized countries.
- Legislation to transfer ownership to certain groups (so called black economic empowerment) in Southern Africa.
- Concerns over security of supply of metals and minerals in China as well as Japan, the United States, and the European Union.
- Discussions and actions to limit foreign ownership of strategic resources in Vietnam, China, Venezuela, and others.
- Re-negotiation of mining agreements in Venezuela, Mongolia, the Democratic Republic of Congo, Guinea, Ghana, and others.
- Establishment of state-owned mining development companies to function as an alternative to the private companies in Southern Africa.

The number of actual nationalizations carried out during the current metal prices boom is limited and it does not appear that this route to more influence and to secure a larger share of mineral rents will be the preferred method. Even in South Africa, where calls for nationalization have been vocal, it is doubtful if these demands will gain wider support.

Given the poor experience from their previous entry into mining, governments can make the case and explain that government should stay out of the industry and allow it to be operated by the private sector. This would then lead to demands of revised taxation or other economic means of extracting a larger share of the profits and mineral rent to achieve the objective of increasing the benefits obtained by the host country. Or a government could reason that it was not so much the state ownership itself that was the problem but the way the state structured the governance and managed the companies it owned and controlled and that lessons have been learnt, using the successes of LKAB, Codelco, and other fully state-controlled companies or those partially controlled such as Debswana or Namdeb and

even those not state controlled anymore such as Outokumpu, Pechiney, and possibly Norilsk and Alrosa as examples.

The proposed state-owned mineral development companies, to be set up in Southern Africa, as an alternative to the private junior exploration companies under fully competitive conditions with the private sector would be an interesting example of this approach and thinking. These could be seen as a sign of a new understanding from governments of the long-term nature of the mining industry based on the assumption that the current minerals boom will last. It is however not at all certain that governments fully realize the need to formulate a long-term strategy for the sector. Demands for an increased share of the rents during times of high metal prices will continue and are understandable. So far most of these demands have resulted in changes to the tax system, such as the introduction of windfall taxes and super profit taxes and in comparisons with the government's experience with the oil sector to obtain an increase in the benefits derived from the sector.

Given that the likelihood of a longer period of relatively high metal prices seems to be fairly high it is important that the establishment of these state mineral development companies and the introduction and development of new, flexible, and ingenious taxation systems are based on lessons learnt and on what constitutes good practice and that key stakeholders are consulted to obtain the necessary support for the proposed actions. A key objective of these initiatives is to ensure that the industry contributes effectively to the socioeconomic development of the various countries and regions in a sustainable way. In this context there is a need for a systematic evaluation of the role and contributions of state owned mining and mineral development companies to facilitate and guide governments in the present situation.

Mineral Resource Asset Management

Mineral Resources Governance

In order to maximise the developmental impacts of mineral assets coordinated strategies are required that optimise their economic linkages opportunities, particularly in the following sectors: industry, trade, knowledge development, energy, and finance.

The lack of coordination and strategy alignment between the Departments of Mineral Resources and of Trade and Industry has probably been the main reason for the lack of progress in realizing the backward and forward linkages and the their job creating potential. The latter (DTI) is responsible for these sectors (mining inputs and beneficiation), but the former (DMR) governs the mineral concessions. This disarticulation has resulted in the widespread practice of monopoly pricing of critical mineral feedstocks into manufacturing, such as steel and polymers, with the resulting enormous loss of job opportunities. This could have been easily resolved by ensuring that all mineral concessions carried a condition that mineral products had to be made available to the domestic market at a competitive price (EPP³³⁰).

Many countries have overcome this disarticulation by combining minerals governance with industry governance in order to maximize the national industrial benefits of mineral assets. Most of the states that have managed to realize their mineral resources economic linkages, and consequently industrialized, combined these functions. Examples are the Ministry of Enterprise, Energy and Communications in Sweden, the Ministry of Employment and Economy in Finland and the Ministry of Trade and Industry in Norway (which incorporates the Geological Survey Department and the Directorate of Mines).

In this regard, the merging of the Ministries of Trade and Industry, of Mineral Resources, of Energy, of Public Enterprises and of Economic Development, would be a vital first step in tackling South Africa's enormous unemployment challenge, through ensuring that the developmental impact of our mineral resources is maximized into upstream and downstream industries, into energy and into economic development.

Mineral concession system: FIFA v/s Fair Value

"Free mining" refers to the mining regimes that were established in the European conquests (colonies), "with roots in the Californian gold rush and mining districts of Medieval Europe"³³¹, "...that privileges the values and interests of mining companies in contrast to those of Aboriginal groups"³³², and were primarily designed to attract European settlers to expropriate the land and minerals and to neutralise the indigenous populations, in the Americas, Africa, Oceania and elsewhere. The mineral regimes of Canada and Australia are modern equivalents of free-mining regimes which are unsurprisingly strongly

³³⁰ EPP: Export Parity Price)

³³¹ Lapointe, Ugo, 2009, p9

³³² Laforce, Myriam, et al, 2009

favoured by the mining TNCs and the World Bank. Barton (1993) defines free mining as including:

- i. *“a right of free access to lands in which the minerals are in public ownership,*
- ii. *a right to take possession of them and acquire title by one’s own act of staking a claim, and*
- iii. *a right to proceed to develop and mine the minerals discovered.”*³³³

The MPRDA contains many elements of a “free-mining” regime, particularly the core “first-in-first-assessed” (FIFA) principle, which dispenses the people’s mineral assets *gratis*, rather than seeking price discovery and the maximisation of the developmental impacts. Fundamentally, *“The free mining system limits the authority and discretionary powers of governments, and as such, governments’ abilities to discharge some of their responsibilities”*³³⁴.

The MPRDA broadly fits into the African mineral regimes reformulation process initiated and sponsored by the World Bank from the late eighties till the present and in this regard Canadian Professor Bonnie Campbell notes that *“...certain elements of the free mining doctrine that animated the nineteenth-century formulation of mining regimes in the American and British spheres have also guided the liberalisation process of African mining regimes over the 1980s and 1990s. One of the ways this came about was through the retrenchment of state authority, which in turn contributed to the institutionalisation of asymmetrical relations of power and influence that had important consequences for local political processes, local participation, and community welfare. The approach consequently helps explain some of the social, economic, environmental, or human rights impacts of these regimes, and prompts one to question the extent to which current mining regime reform processes in Africa can transform the asymmetrical power relations that have typified mining activities on the continent in the past.”*³³⁵

Yet, almost all African states, including South Africa, have some form of legislation that stipulates that all state assets should be disposed of by public tender, ***except for minerals!*** For the disposal of mineral assets most states have variations of the European colonial free mining (FIFA) system under which known mineralisations are given away through a FIFA exploration licence that carries virtual automatic conversion to a mining licence, so long as the requisite legislation is adhered to (environmental, health, licence conditions, such as the Mining Charter, etc.).

The allocation of mineral concessions (rights)

Before the MPRDA (2002) the predominant system in South Africa was private ownership of mineral assets with its origins in the Roman Dutch Law of the Boer settler republics,

³³³ Barton, Barry J. 1993. *Canadian law of mining*. Calgary: Canadian Institute of Resources Law.,193, quoted in Campbell, Bonnie, 2010 “Revisiting the Reform Process of African Mining Regimes” p198

³³⁴ Lapointe, Ugo, 2009, p6

³³⁵ Campbell, Bonnie, “Revisiting the Reform Process of African Mining Regimes” p199, Canadian Journal of Development Studies 30, nos. 1–2 (2010): 197–217 issn 0225-5199

where the colonial farmer owned both the surface and sub-surface rights in perpetuity. However, the colonial mineral “rushes” (diamond rush, gold rushes) led to the widespread “severing” of the sub-surface (mineral) rights where the farmer sold the mineral rights to mining companies, but kept the surface rights for farming. The private owners were fairly competent at maximising these rights for themselves and often used tender systems for disposal. A good example of financial optimisation is the Venetia case where the mineral rights holder (Anglovaal) sold them to De Beers for a 50% share of the profits in perpetuity (though Anglovaal later cashed in on this lucrative revenue stream). It was also common for mining companies to attempt to buy up (sever) all the mineral rights to keep out competition: By the turn of the millennium Anglo Platinum had bought up the bulk of the mineral rights over the two main PGM reefs- the Merensky and the UG2, sterilising these resources for their exclusive use.

The MPRDA gave part-effect to the Freedom Charter by transferring “*The national wealth of our country, the heritage of all South Africans... to the ownership of the people as a whole*” through the conversion of “old order” private mineral rights to “new order” state mineral rights. This unsterilized vast tracts of mineralised terrains, but instead of then ensuring that these national resources were used to catalyse growth and development, they were handed out under the MPRDA’s FIFA system to ostensibly the first applicant, with no attempt at price discovery. This was understandable for operating mines, to ensure continuity and to give surety to the global investment community at the time. However, for unexploited deposits it was a sub-optimal strategy and remains an enigma in terms of the ANC’s stated policies around poverty alleviation, growth, development and employment generation.

Maximising the developmental impact of mineral concessions

South Africa should rather competitively and transparently auction all “known” mineral deposits, as with the disposal of other state assets, to maximise the developmental impact through rents (price discovery- the tax rate (RRT rate) could be made a biddable variable) and linkages (backward & forward). Unfortunately, although the MPRDA transferred ownership of minerals to the South African state, the deposits were subsequently either given back to the previous operators (if under exploitation) or given to B-B BEE and other groups (if unexploited) for nothing (ostensibly, on a “first-in-first-assessed” basis), with no attempt at price discovery. This could have included the optimisation of all five seminal mineral linkages:

- 1.fiscal linkages (tax rates, such as RRT rate) criteria
- 2.backward linkages (local VA in purchases)
- 3.forward linkages (downstream VA: beneficiation)
- 4.knowledge linkages (investment in HRD and R&D) and
- 5.spatial linkages (catalysing LED and through use of mineral infrastructure: transport, power, water, to catalyse other sectors)

Example of a mineral concession bid evaluation matrix:

Element	Mechanism	Scoring (example: $\Sigma 100\%$)
Tax Rate (e.g. RTT)*	Bid up from base rate	Top bid 25, bottom 0, pro-rata in-between
Extra infrastructure	% extra capacity X the base capex for power, transport, water = $\Sigma \text{extra}\$$	Top bid 15, bottom 0, pro-rata in-between
Down-stream	% extra VA above base product (ore, conc) exports	Top bid 20, bottom 0, pro-rata in-between
Up-stream	% local VA purchases @ 5y, 10y, 15y = $\Sigma \%VA$	Top bid 20, bottom 0, pro-rata in-between
HRD , R&D and Community Dev.	Rand/an local spend- Bid up from Rand X**/an	Top bid 10, bottom 0, pro-rata in-between
Indigenisation targets (B-B BEE)	Bid up from 26% or 30%, combined B-B BEE and State holding	Top bid 10, bottom 0, pro-rata in-between
Total		100%

* or State free carry: bid up from, say, 20%; **Depending on size of operation.

Oversight of the public tender process might be best undertaken by an adequately resourced dedicated generic “Concessions and Compliance Commission” (CCC) under the Ministry of Finance. Their PPP Unit could be reconfigured into a CCC. The CCC would support the line department agency that the asset came under (for minerals- the proposed Minerals Commission under DMR) to prepare the state asset for concession (preparation of bid documents, etc.) and carry out the ongoing monitoring & evaluation (M&E) of the concession conditions (e.g. local content milestones)

Categorisation of mineral resource terrains

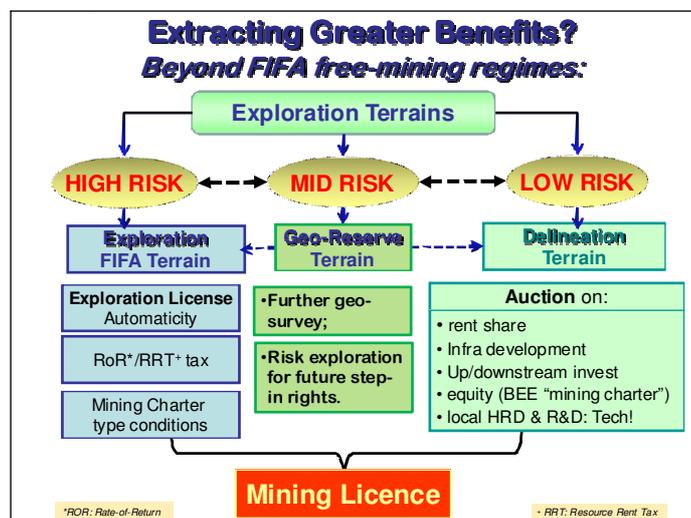
In general, mineral investors will tend to have a much better idea of the value of the state’s mineral assets than the state itself and competitive auctioning (concessions) would be an effective method of achieving fair value and developmental goals. However, where there is little or no geo-data, an auction is unlikely to flush out fair value and these terrains should first be classified as either “partly known” (good economic potential) or “unknown”. The former should be thoroughly surveyed by the state, before auctioning the viable deposits via a time-limited mining concession (license), and the latter opened up to explorers under a FIFA regime.

This differentiation of resource terrains based on mineral potential follows best practice in many countries for solid minerals and is standard practice in the hydrocarbon (oil & gas) sector. It would divide South Africa into areas of high risk (low geological-data) and areas of low risk over known metallogenic terrains, such as the Witwatersrand System, the greenstone Goldbelts (and associated BIFs³³⁶), layered complexes (e.g. the Bushveld Complex), the Transvaal Supergroup manganese (Kalahari Field) & iron (BIFs) terrains, coalfields, carbonatite & kimberlite pipes, etc.

Competitive allocations (terrains with known mineral assets)

BIF: Banded Ironstone Formation

The areas with known mineral assets would be auctioned off as blocks with the state tax-take (e.g. resource rent share) as the main evaluation criteria (price discovery), in order to flush out the optimal NPV (over the life of the concession) for the state, as well as developmental criteria (jobs, infrastructure, linkages, B-B BEE, etc.).



Source: Jourdan 2010

Reserved areas (terrains with partly known mineral assets)

Areas with known mineralisation, but not to the extent for viable public tender would be reserved for further geo-survey by the CGS and the State Mining Company. With increased investment in resource mapping (geo-survey) and geo-data acquisition, areas would gradually be reclassified from high risk to low risk (known assets: high conditionality, bid tax system). Unfortunately the most geologically prospective parts of South Africa have already been concessioned (licensed) with no attempt at price discovery or the maximisation of their growth and development potential. Known and unencumbered terrains could be developed either by the CGS or transferred to a state minerals development vehicle (SMC) and prepared for competitive concessions or retained for state development, for strategic minerals. The CGS could also outsource the exploration of such prospective terrains, if it has capacity constraints, and be reimbursed for the expenditure when the deposit is ultimately auctioned. The Finnish geological survey develops prospective areas, which have been identified through geological mapping, in preparation for public tender (auction). Historically, the development of critical mineral feedstocks for the Finnish economy was undertaken by state companies, such as Outokumpu (base metals), Kemira (industrial minerals) and Rautaruukki (iron and steel).

FIFA allocations (terrains with unknown mineral assets)

Only “unknown” terrains should be allocated via a FIFA system via the granting of exploration (prospecting) licenses which should be governed by the “Use-it-or-Lose-it” (UILI) principle to limit squatting by speculators (flippers). Accordingly, exploration (prospecting) licenses should only be issued over areas that the state (CGS) has confirmed that there are no known mineral assets to companies that have the capability to effectively explore. Consequently, no exploration right should be issued without an appropriate declaration from the CGS stating that the area has no known or partly known

mineral assets, after having been made public for at least thirty working days, for anyone to report any known mineral assets in the area.

In order to promote assessment by diverse exploration companies, the exploration license term should be shortened to 4 years³³⁷, extendable for 2 years over 50% of the area and a final 2 year extension over 50% of the remaining area (25% of the original area). This will bring it more into line with international best practice and oblige the concessionaire to release increasing area over the maximum 8 year period. The released areas will become available, with all their geo-data, to other explorers, increasing the chances of the discovery of a new state asset.

The exploration license should have clear annual minimum work and minimum expenditure obligations (per Ha) and all exploration data should be lodged with the state (CGS). Any default should trigger the suspension of the license. All exploration licenses should contain a clause prohibiting the on-selling of the license without state permission and, if on-sold before mining, the state should take half of the “profit” (sale price less all expenditure incurred and logged with the state) through a 50% capital gains tax, to discourage speculators. The on-selling conditions will also apply if the ultimate ownership of the exploration company changes hands.

Forensic Audit of Mineral Right Conversions

The wholesale handing out of South Africa’s mineral assets in the name of transformation (which could have probably been better served by making the B-B BEE share a biddable variable, above 26%), ***probably cost South Africa several hundred thousand jobs***. Under the MPRDA, exploration (prospecting) licenses should have been given on a “first-in-first-assessed” basis (FIFA: “free mining”), with the caveat that if two applications were received on the same day, the applicant with the higher B-B BEE rating would have preference. Nevertheless, it is common knowledge that certain applications were moved to the top of the pile. Accordingly the state should invest in a forensic audit of all mineral rights conversion and allocations since 2002 and, where proper procedures were not followed, to suspend them. However, where the concessionaire had made significant investments “in good faith”, they could be reserved a commensurate free-carry right in the consequent public tender of the asset and, if a B-B BEE company, they could be granted first option on acquiring the stipulated 26% B-B BEE holding.

The reacquisition of these irregular rights by the state, would give it a second shot at concessioning them through open tender, or for the SMC to develop, to maximize the developmental impact, particularly job creation.

In the case of a FIFA exploration right conversion to a mining right, a “model” Mineral Concession Contract³³⁸ (Mining License), which optimises the beneficial impacts for South Africa, needs to be debated and formulated and should apply to all mining licenses

³³⁷ Under the MPRDA a prospecting License is valid for 7 years, with a possible 2 year extension.

³³⁸ The Model Mineral Development Agreement (MDA) recently formulated by Liberia could serve as a useful starting point.

(concessions). The efficacy of converting current licenses to the “model” contract should also be investigated.

Building the People’s Geological Survey Capacity

Greater investment into the level/quality of the resource potential data is urgently required: The less that is known about the potential value of the state’s mineral resources the greater the share of the rents that the investor/concessionaire will understandably demand, due to the high risk of discovering or dimensioning the resource, which may be turn out to be sub-economic. It also stands to reason that the more a state knows about the potential value of a resource the greater will be its ability to strike an equitable deal on the division of future rents and benefits accruing from the exploitation of the resource.

Dramatically increased expenditure on basic geological mapping, to delineate the nation’s mineral assets, is required, as well as the categorisation of the whole country into areas of “known” resources (for competitive concessions), “unknown” (for “first-in-first-assessed” FIFA exploration licenses³³⁹) and partially-known (reserved for further work by the state to be able to categorise into either “known” or “unknown” resource areas). 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 that the concessionaires abide by their minimum work and investment programmes (under the “use it or lose it” principle).

There have been numerous studies that have clearly shown extremely high returns to the state from investment in basic geological surveys³⁴⁰. The return has been found to be as high 30 times the cost of the mapping³⁴¹. In 2008 the Canadian Natural Resources Minister Gary Lunn stated that: “For every (Canadian) dollar we invest in geoscience, it attracts five dollars from the private sector in exploration, and over C\$125 that are discovered in mineral resources.”³⁴²

State Mineral Resources Development Company

Most resource-based development success stories had a state mining vehicle to assist in maximising the developmental impact, especially linkages: Outokumpu in Finland, Statoil in Norway, Codelco in Chile, Petronas & MNCB in Malaysia, LKAB in Sweden, CVRD/Vale in Brazil, etc. The state holding in companies producing critical mineral feedstocks into the economy (manufacturing, infrastructure, energy, agriculture) tends to be higher than for other minerals and for many developmental states these were, at some point, majority owned or state companies, particularly iron ore and steel (Finland, China, Sweden, South Korea, Brazil, Japan, etc.), hydrocarbons and polymers (Taiwan, China, Norway, Brazil, Malaysia, etc.)

³³⁹ Under the MPRDA exploration licenses are termed “prospecting” licenses.

³⁴⁰ See, for example, USGS 2006.

³⁴¹ Bhagwat, S.B., and Ipe, V.C., 2000, Economic benefits of detailed geologic mapping to Kentucky: Illinois Geological Survey, Special Report 3, 30 p.

³⁴² <http://www.vector1media.com/spatialsustain/roi-for-geological-mapping.html?shared=email&msg=fail>

A South African State Mining Company (SMC) could be initially capitalised by transferring all current state holdings in mineral companies, mainly currently held on behalf of the state by the IDC: e.g. Foskor, Kumba, Mittal SA, Sasol, etc., but also by PIC³⁴³ and CEF³⁴⁴, to it and initially be 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 and of Trade & Industry. Once free standing, under the Ministry of Mineral Resources, its Act should make provision for the nomination of Board Members by the Ministries of Economic Development, of Energy and of Trade & Industry to ensure alignment with national economic development, industrial and energy strategies and policies. However, this would not be necessary if these Ministries were merged.

In many instance a combination of state and Unions (pension) holdings already represents a significant holding in many mining companies, but the Union holding is generally managed by a private sector fund manager, giving little scope for direct influence by the Unions. The Unions should pool their mineral holdings with the state in a SPV that would then have a major influence on the mining companies, which could then used to maximise the economic linkages. In cases where full state control is required (strategic minerals) this holding could be increase to a majority holding, but this may require a change in the constitution to allow the state to force a majority owner to sell down its share.

STATE OWNED MINING COMPANY: NUM VERSION

“The State Owned Mining Company should be established through an Act of parliament or include as amendment of MPRDA and run by a competent board (similar to SABC Board) which shall be directly accountable to Parliament through Mineral Resources Portfolio Committee and DMR. NUM prefers the model of the Chilean State Mining Company, CODELCO. The state mining company should be established through consolidation of all State investments in the Mining sector, some indicated but not limited to the following: [IDC, PIC, DBSA, Alexkor, AEMFC (CEF), Limdev, Eskom, Necsa].

State Owned Mining Company should focus its operation in Strategic Minerals, with mainly dealing with Energy, Infrastructure and Hi-tech Minerals (NUM submission to SIMS Study)”

The NUM conception of a State Mining Company is very close to these recommendations (see box) except for our concept of “strategic minerals” with also includes mineral feedstocks to manufacturing and agriculture.

Consideration should also be given to transferring all state “known” and “partially-known” (but un-concessed) mineral properties to the SMC, to be developed, possibly in partnership with the CGS, for on-concession (auction), once the resource degree of confidence is adequate, with the residual SMC share being a biddable item (state “free carry”). However, this would clearly conflict with a biddable B-B BEE share and a case-by-case political decision would have to be made on which to promote for each state property, unless a new combined target of state and B-B BEE holdings was configured.

Further, the SMC could be given first sight of all new CGS geo-data (such as the new geochemical maps) to assess for a limited time (3 month window) before being made

³⁴³ PIC: Public Investment Corporation

³⁴⁴ Central Energy Fund which owns AEMFC: African Exploration Mining and Finance Corporation

public. This would give the state first sight of state funded geo-information to enable it to reserve potential assets (“partially-known”) for development and possible future concession/auction. Soquem, a subsidiary of the Quebec DFI, SGF, was created in the 1960s to partner with French-speaking Quebecoise (affirmative action) and has subsequently become a generic mineral property development vehicle³⁴⁵. The putative SMC could also be mandated to partner (<50% for non-strategic minerals) with appropriate B-B BEE companies to transfer skills and enhance transformation.

Its principal mandate should be to ensure the development of “strategic minerals” for manufacturing, energy, infrastructure and agriculture, in partnership with other investors, 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 new state financed geo-data (CGS). It should also be tasked with developing other minerals, with B-B BEE 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.

State Participation in the Minerals Sector

State participation has featured prominently in the development of the mining sector internationally over the past 40 to 50 years. 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.

State participation can be broadly defined to comprise a range of options from 100 percent equity participation, through partial or carried equity arrangements, to equity participation without financial obligation.

Mineral resources have long been viewed as having special strategic significance. It is a sector in which the state often believes it must have a high degree of control. In a number of countries, this control has been exercised through direct state participation.

With independence in the 1960s, many African countries in mineral-rich Africa went the route of state ownership of mineral resources and of the resulting revenues. State mining companies (SMCs) were created, and ownership and direct sector participation were achieved through nationalization of foreign-owned mining companies or their assets, or through SMC 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.

By the 1980s and early 1990s disenchantment with the SMC experience had set in. Economic performance in many African and Latin American countries had been poor, the global mining and minerals environment had changed significantly, and a long-term trend toward lower prices was expected. In addition, the break-up of the Soviet Union had eroded confidence in

³⁴⁵ www.soquem.qc.ca/SOQUEM%20anglais.htm

central planning and state ownership. Lower state participation shares 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 partnership arrangements. In Africa there have been several major reversals of nationalization, including in particular Zambia, the DRC, and Ghana.

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, remains common practice.

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.

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 *pari passu* (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 percent 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.

Carried equity participation

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 *pari passu* 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 an “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.)

The table below illustrates the extent of state participation in a range of developing countries.

Table: 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 Republic	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.

Objectives of state participation

These can be divided into non-economic and economic objectives. With regard to the former, state participation was expected to regulate the behaviour of private sector investors in the national interest, to build national capacity in the resource sector through the transfer of managerial and technical skills and information from the private sector, and, whether explicitly stated or not, to address a wide range of development goals outside the resource sectors. Specific objectives could include job creation, provision of social and physical infrastructure, and regional development.

The fiscal objectives of SMC participation relate directly to the generation of additional revenues for the state in the form of profits, taxes and dividends. Participation is also expected to obtain a higher share of sector revenues for the state either through recovery of a share of the fiscal benefits from shares previously allocated to the private sector or through capture of a greater share of the rents generated by profitable projects or as a consequence of massive increases in commodity prices.

Over time, most countries qualified the straightforward revenue maximization objective by taking into account issues such as the need to reduce exposure to risk and the need to compete with other countries to attract foreign investors.

Issues arising from state participation

Experience with state participation in the resource sector has identified a number of challenges including the following: governance (compare for instance Norway -excellent governance model- and Nigeria (at the other extreme, a very poor governance model);

macroeconomic management; funding (funding of state participation can draw resources away from other urgent budget priorities); achieving commercial efficiency; and potential conflicts of interest (e.g. partner with private sector vs. regulator role).

Some positive policy responses

Over the past few years, however, a number of positive policy responses to the specific issues raised by state participation can be identified:

- A greater reliance on, or confidence in, well structured laws and regulations as alternatives to direct participation. Ownership is no longer viewed as essential to protection of the national interest. On accountability and transparency grounds appropriate legislation may well be a feasible alternative to ownership.
- Increased clarity on roles and responsibilities of government ministries and agencies charged with sector oversight. The trends towards transferring non-commercial, quasi-fiscal activities and regulatory or fiscal functions from SMCs back to appropriate ministries or independent agencies, thus removing obstacles to commercial efficiency and reducing or eliminating the potential for conflicts of interest, has been particularly important in this regard. This re-assignment of roles is typically paralleled by efforts to build capacity in the receiving ministries and agencies.
- 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. Credible audits and regular public reporting and other assurances of integrity are heavily emphasized. Macroeconomic management concerns have increasingly stressed the importance of transparency in the resource sectors and, in particular, the explicit recognition in budgets and planning documents of the financial and fiscal costs and risks associated with state participation.
- An increased effort on the part of private sector investors to provide assurances and evidence of accountability.
- A more cautious approach towards exercise of state participation options and a trend towards lower levels of maximum participation. In some cases, the state has wholly or partially withdrawn from sector participation. Elsewhere, an increased emphasis on forms of participation which reduce state exposure to funding obligations, e.g. carried interests, non-recourse finance and/or production sharing, can be observed. At the same time, many countries have provided more space for private sector participation and competition.
- 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.

State Participation in the Natural Resources Sector – selected country examples

This section looks at a sample of countries in which the state has played and/or continues to play an important role in the natural resources sector (petroleum and mining).

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:

- a) commitment to commercial efficiency;
- b) encouragement of foreign private sector participation to benefit from technology and skills;
- c) 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.

Statoil 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 percent 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, Zambia moved away from its hitherto policy of state-ownership of the mining sector and launched with new legislation a program of privatization. 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, with a minority interest in most successor companies, typically in the 10-20 percent range. The government, through its 87.6 percent interest in ZCCM-IH thus holds an equity interest in the same mines.

When ZCCM was privatized, the price of copper was depressed, with no certainty as to when or by how much it might recover. One way for Zambia to share in any potential future upside profitability as a result of price recovery was to take a passive equity interest in the new mining companies. 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 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 "Chileanization" 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 commercialization 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 mine and is one of Chile's largest companies accounting for 5 percent of GDP, 25 percent of exports and 17 percent of the 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. Ten percent of its export income is earmarked for Chile's military. The tight rein on Codelco's revenues facilitates government control.

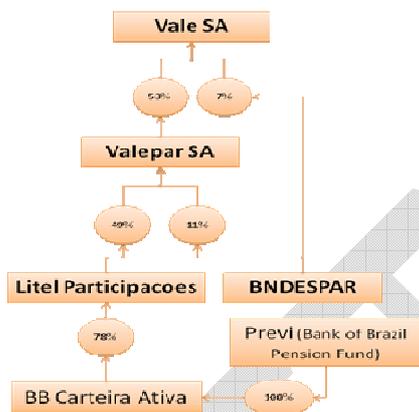
More recently, Codelco's future has become a matter of public debate. Costs are rising, output is falling, and the resources required to make needed investments are substantial. The company is increasingly challenged in global markets by smaller mining companies' mergers and growth. This has led to calls for Codelco's privatization. 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 of the elements of best practice in its own operations and in its relations with Government.

5. Brazil

The Brazilian mining company Vale, the second largest in the world, is officially not a SMC. It was "privatized" in 1999 but the state retained control through special class of shares (the so-called 'Golden Shares') that give the state a veto over the domicile, name, infrastructure,

etc. The Brazilian state retained control by using a combination of pyramids and ordinary and preferential shares. State pension funds have a 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 (steel) and for other national objectives.



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.

6. Namibia

State participation manifests itself in many forms. In the diamond sector, there are two forms of participation. Through NAMDEB, the state owns a fifty percent share in diamond mining with De Beers. Second, there is 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.

State Participation: Pitfalls:

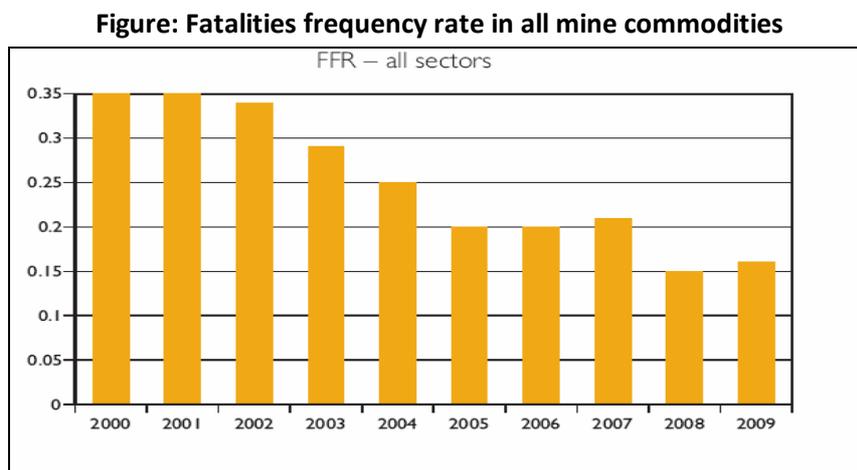
The RMG make the following very useful observations, based on their global survey of state mining companies (SMCs):

- 1) *Clear distinction between the state as an owner and a regulator:* Governance of a state mining company should be separately assigned from all other mandates of the sector ministry (in most cases the ministry of mines) and preferably not even in the same ministry but rather in the ministry of finance or similar. Clear goals and objectives should be set for economic performance, employment creation and other non-economic goals in order to make the best use of the advantages of having the state as an owner.

- 2) *Clear communication lines between owner and the company:* There must be clear communications and reporting lines, which is valid for all companies and not specific for the mining sector, with the owner providing its input at the AGM and through its Board members with the role of the Board to oversee that the strategy of the company and its plans for the future are developed and executed accordingly. The day-to-day management must be left to the management of the company without interference by either the Board or the ultimate owner.
- 3) *The company should not be part of the treasury:* Decision making power over the use of the cash flow should be the prerogative of the Board and not the treasury department of the owner. It is particularly important that sufficient re-investments are made to secure the long term performance of the company.
- 4) *Full transparency:* Many governments believe that confidentiality and opacity or non-transparency are important to manage and operate a state-owned company. In the long run, the opposite is true. A state-owned company should be fully transparent and follow the most stringent reporting rules even if it is not required to do so from a formal point of view. In all respects a state-owned company should be a model for private companies rather than the opposite.
- 5) *Clear and transparent non-profit goals:* Long-term, government strategic goals such as the establishment of downstream operations, train and hire a certain number of nationals, and so forth have to be coordinated and set in line with the company's abilities and its other priorities. These goals should be clearly stated and transparent.
- 6) *Listing of a state owned company:* Listing of a state owned company is often an excellent way to share the burden to raise capital particularly in countries where the government's capital-resources are limited with competing demands on these resources. A listing will also subject the company to more stringent reporting, governance and other public aspects requirements in regard to the management and operation of the company.

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 (figure below) they remain at unacceptably high levels. Figure 1 shows the relative decline in the frequency rate of fatalities across all types of mines for the period 2000-2009.



Source: Chamber of Mines (2009)

The table shows a consistent decline in fatalities between 2002 and 2006, a dramatic rise in 2007 followed by a welcome fall in both 2008 and 2009.

The input by the CSIR (see Appendix) reiterates the historical nature of the health and safety issues in South African mining. It points out for instance, that in the early years of the 20th century, investigations were undertaken to reduce the health effects of dust and heat on workers. By the middle of the century, the rockburst problem (as the major cause of fatalities) had gained prominence and was later solved to the 'point where it no longer challenged the survival of the gold industry'.

The CSIR input to the committee also points out that in 2003, the tripartite alliance of the state, mining companies and employees, agreed to a number of health and safety milestones to be achieved by 2008 and 2013. In the case of accidents, for example, the goal was to achieve at least equivalent performance levels to current international benchmarks. While fatalities have been declining, as described above, it is evident that the sector 'is not achieving the level of improvement needed to reach the milestones' (see for instance, Figure 3, CSIR input, in Appendix).

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.

The CSIR also raises a number of what it refers to as 'many open research questions' relating to health and safety that needs to be answered to order to improve health and safety. These questions include the following:

- a) Identifying the sources of dust exposure – this requires the development of sensors and systems that can measure real-time dust exposure;
- b) The increasing depth of platinum mining leads to higher rates of seismicity as stresses increase. Research is essential to develop appropriate mitigation methods for platinum mining as opposed to gold.
- c) Research is needed to understand better why seismicity affects particular areas underground than others – for instance, this may represent a research opportunity to learn how to design safer mines by extending earthquake engineering from building design into mine design (CSIR, 2011, in Appendix).

South Africa should dramatically increase investment into mining health and safety research, technologies and methods, in addition to the funds currently collected under SIMRAC. In this regard it is recommended that a mining technology Science Council is established (along the lines of the old COMRO/Miningtek) by amending the Mineral Technology Act of 1989 (“Mintek Act”) to cover all activities from mining, through 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. It should be funded through the current budget lines, from the proceeds of a RRT as well as the private sector. Its mandate should include the development and introduction of technologies that:

- Enhance mining and beneficiation health, safety and working conditions;
- Develop the nation’s backward linkages into mineral inputs industries (development of capital goods and services) with the private sector, in particular to ensure that the benefits of mechanization (trackless mining) accrue to South African entities and workers rather than imports;
- Develop the forward linkages into mineral beneficiation industries (development of processing and manufacturing technologies) with the private sector;
- Enhance environmental sustainability and energy efficiency;
- Develop high level human resources in minerals technologies and related fields.

The Board of the new Minerals Technology Science Council should be nominated jointly by the Ministers of Mineral Resources, of Science and Technology, of Trade and Industry, of Energy and of Economic Development, to ensure that technology development maximizes the mineral linkages industrial and employment opportunities.

Mineral Economic Linkages

Discussion

South Africa's rich and diverse resource base, combined with the strong global resources demand (Asia), could provide a unique opportunity to go beyond supplying raw materials to the world economy, by utilising the extensive resource developmental opportunities to develop the crucial resource sector linkages into the local and national economy. This "deepening" of the resource sector through backward, forward, knowledge and spatial linkages could form core industrialisation nuclei for South Africa and neighbouring economies and will, over time, diversify with increasing HRD and skills formation, through the lateral migration of these resource-dependent industrial clusters into resource-independent industrial activities. In this regard the ANC 1992 National Congress resolved "...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"³⁴⁶ in order to realise the seminal down- and up-stream linkages.

In addition to the judicious deployment of mineral rents, South Africa has a comparative advantage in establishing mineral resource linkages industrial clusters through:

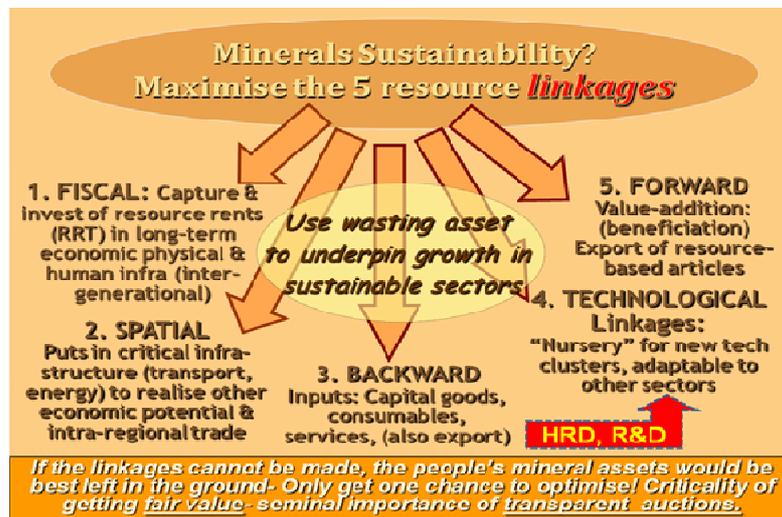
1. The immediate market offered by the local and regional mineral industries demand for inputs such as plant, equipment, machinery, consumables and services. This market can be relatively large for specialised resource industries demand, ameliorating economies of scale constraints (e.g. the region constitutes three-quarters of the global market for PGM mining & processing inputs);
2. A potential technological advantage through close proximity to the resource industries' demand for innovation, adaptation and problem solving (these activities often currently take place offshore);
3. A feedstock price advantage (CIF-FOB) for downstream mineral processing industries, such as smelting, refining, alloying, fabrication);
4. Opportunities to develop the supplier industries for the extensive resource infrastructure requirements, particularly transport, power and water:

Mineral Infrastructure Inputs Markets

Construction (cement, ceramics, steel, copper, etc.)
Railways (rail, sleepers, rolling-stock, signalling, power units, etc.)
Highways, roads (construction materials, vehicles, trailers, etc.)
Ports & Airports (construction materials, capital goods, services, etc.)
Pipelines (pipes, valves, gas, fuels, slurries, etc.)
Power plants & transmission lines
Water (treatment, pumping, storage & transport)
Telecommunications (transmission, etc.)
Knowledge infrastructure (universities, R&D institutions, etc.)
Etc.

³⁴⁶ ANC 1992 "Ready to Govern"

The development of the mineral linkages slowly builds integrated *mineral linkages industrial clusters* where the different components (backward & forward) reinforce one another and, from initially serving local demand, develop competencies to export goods and services to resources sectors in the region and ultimately globally.



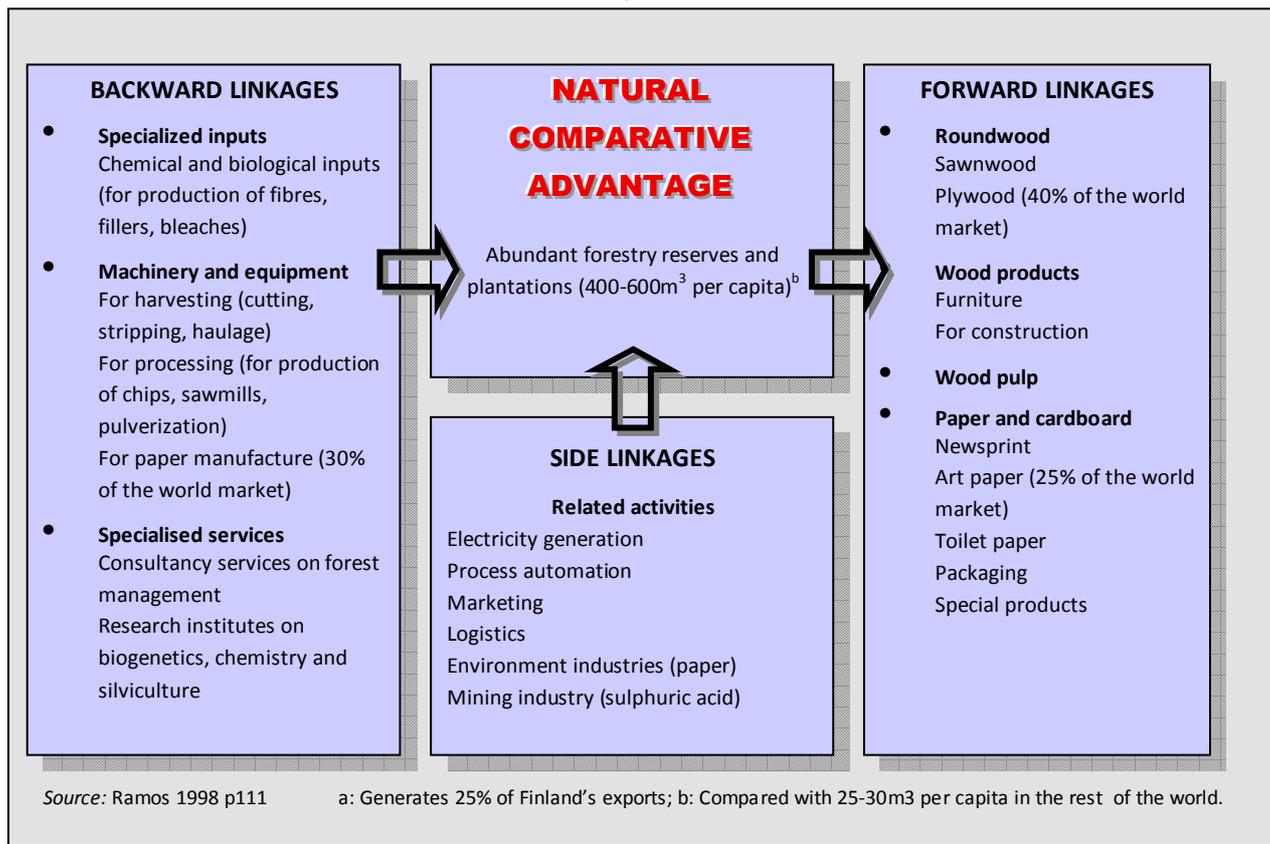
Source: Jourdan, 2010

The resource linkages industrial clusters are indirectly anchored on the comparative advantage of the resources sectors and are comprised of:

1. **Backward linkage** industries: plant, machinery, consumables (inputs), engineering services, geo-science services and equipment, financial services, consultancies, environmental industries, etc.;
2. **Forward linkage** industries: resources processing (value addition) into intermediate products, semi-manufactures, components, sub-assemblies and finished, resource-intensive products. Mineral processing usually also produces co-products and by-products, which also constitute potential feedstocks for further downstream linkage industries. These resource beneficiation industries in turn create markets for further up-stream industries (capital goods, consumables & services);
3. **Spatial linkages:** Transport (rail, road, ports), power (generation & supply), logistics, water (storage, supply, treatment), local economic development,
4. **Knowledge Linkages:** HRD (universities, colleges) and skilling entities and technology development (R&D) entities

These linkages are unpacked by Ramos (1998) for the Finnish Forestry cluster in the diagram below, but similar sector clusters can be developed for South Africa's natural mineral comparative advantages.

Finland: The Mature Forestry Industrial Cluster



Source: Adapted from Ramos 1998 p111 (CEPAL Review, #68, 12/1998);

The evolution of the resource linkage industrial clusters generally goes through the following four phases (Ramos 1998, p112):

1. Phase I: Resource extraction with minimum essential local processing (e.g. ore concentration, raw cacao beans, roundwood, cotton lint, etc.). Almost all the inputs (capital goods, consumables, engineering services, etc.) are imported (except for production engineering services) in this phase;
2. Phase II: Resource processing and export (e.g. wood pulp, agri-processing, mineral smelting & refining, etc.) as well as initial import substitution of the lower-technology imported inputs (usually under licence for the local market) and increasing production engineering services;
3. Phase III: Initial export of some goods and services established under import substitution in Phase II. The engineering services are increasingly based on local IP³⁴⁷ and the resources are processed into higher value added products (fine & special papers, metal alloys, semi-manufactures, packaged agricultural products, textiles, etc.)
4. Phase IV: Exports of a wide range of resource goods & services of increasing complexity and technology including design engineering services, resource plant & machinery (predominantly based on local IP). Exports of resource-based products of

³⁴⁷ IP: Intellectual Property

greater variety and complexity and the migration of knowledge-intensive resource services industries, into new, resource-independent sectors.

These Phases of resource industrial cluster development are in reality more diverse and complex with some activities moving faster and others slower, but overall there is an increase in product complexity and sophistication (both up- & down-stream) that needs to be paralleled with the increasing production of high level skills (engineers & scientists) and investments into R&D (technology development). Ultimately, a *natural comparative advantage* (Phase I) has been transformed into a *competitive advantage* (Phase IV) with continuous incremental improvements in productivity and design, and the basis has been laid for the migration of high-tech industries into new, resource-independent (either as a feedstock or market) sectors, and *generic diversified industrialisation*.

Box: Resource-Based Development³⁴⁸

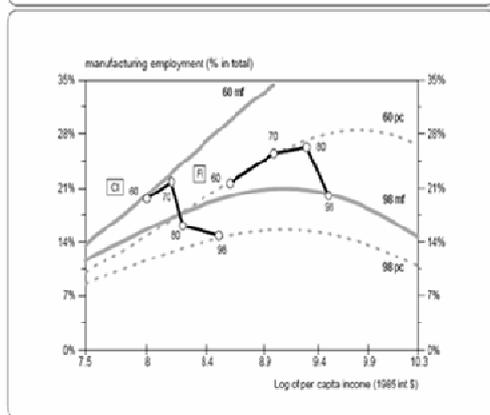
Resource-based Development

Several authors have argued that the key industrialisation opportunity arising out of a natural resource endowment is not just the opportunity to exploit the resource, but rather the opportunity to develop the resource downstream and upstream industries (Ramos 1998, Walker & Jourdan 2002) as was done by the Nordic countries, Canada, Australia and New Zealand. Ramos (1998) looks at the up- and downstream production clusters that grew up around the forestry sector in Finland and recognises three important linkages to the forestry sector:

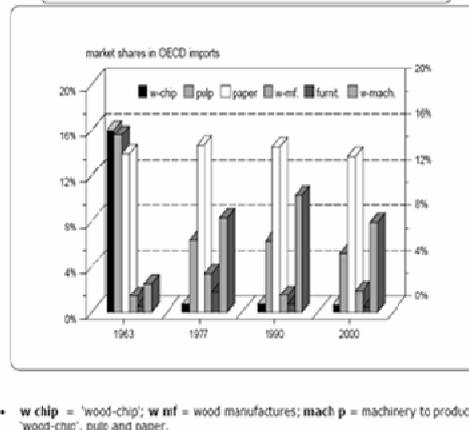
- Forward linkages (wood processing): sawwood to plywood, lumber for construction & furniture, wood pulp, cardboard/paper, packaging;
- Backward linkages (supplier industries): inputs to planting & processing, machinery & equipment (for harvesting & processing), engineering & consultancy services (to the whole cycle), HRD and R&D (biogenetics, chemistry, forestry pulp/paper manufacture).
- Side linkages: electricity generation, chemical & mining (sulphuric acid, fillers), marketing & logistics, process automation, environmental industries (paper) and related services.

Thus Finland's strong natural comparative forestry resource advantage spawned a competitive advantage in the up and downstream industries through the forestry forward, backward and side linkages. Ramos further notes that "...much of the present Finnish engineering industry arose in connection with the forestry and gradually diversified into other areas" (Ramos 1998, p111). Palma (2004) takes this further when looking at the impact of the "Dutch Disease" on Chile and Finland and observes that Finland moved from the 1960 primary commodities Hawthorne inverted U-curve to the 1998 manufacturing curve (through deepening its resource sectors by developing the linkages), whilst Chile moved from the 1960 manufacturing curve to the 1998 primary commodities curve (due to the shift from import-substitution industrialisation to globalisation after the coup in the mid '70's)

B. Finland & Chile: an 'anti'-Dutch disease and a Dutch disease industrialisation?



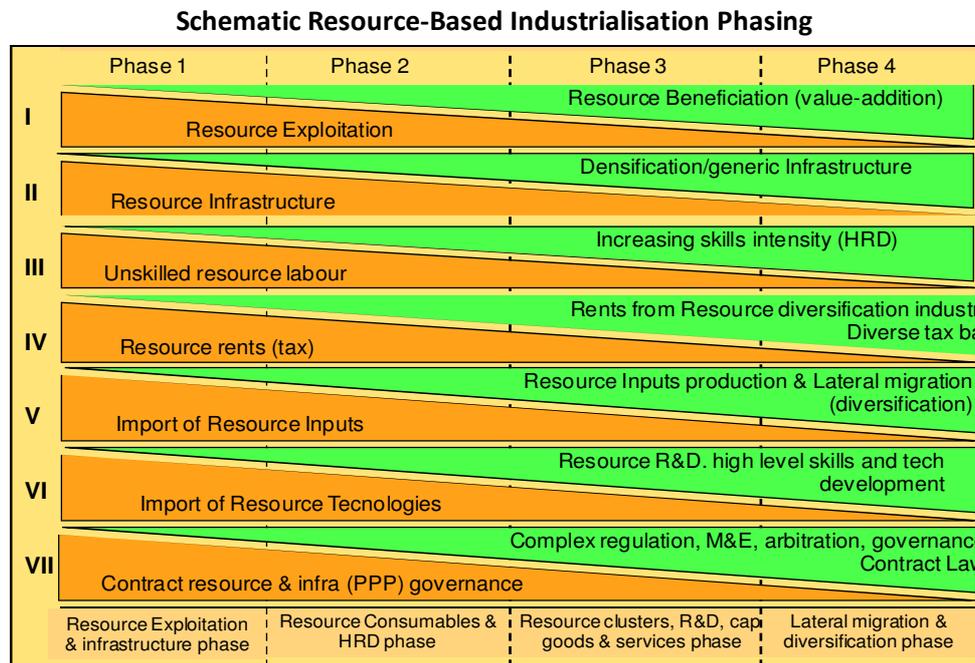
C. FINLAND: changing vertical integration in timber-based exports



He further shows how Finland's market share in OECD imports increased for processed wood products (pulp/paper, furniture) and for forestry/wood/pulp/paper equipment over the same period. The key conditions for this Finnish "Dutch Disease Industrialisation" through developing its resource sector linkages, appear to be good governance and investment in technical HRD (engineers) and technology (R&D).

³⁴⁸ Box adapted from Jourdan 2008 (AU). Uses: Gabriel Palma "Four sources of 'de-industrialisation' and a new concept of the 'Dutch Disease', November 2004; Paper published in J A Ocampo, "Beyond Reforms: structural dynamics and macroeconomic vulnerability", Stanford University Press and World Bank, 2005

A schematic phasing of a resource-based development strategy is presented in the Figure below, which attempts to display the decreasing importance of resource exploitation as the resource linkages are developed.



Source: Jourdan 2008³⁴⁹

A South African resource-based industrialisation strategy would typically go through similar phases of industrialisation, with decreasing importance of its resources *comparative* advantage and an increasing relative importance of a skills-based *competitive* advantage.

Almost all southern African economies can be positioned on this continuum, though most would still be in Phases 1 or 2, whilst South Africa would probably be positioned somewhere between Phases 3 & 4, though indications are that it has slipped since the “liberalisation” of the economy post apartheid, particularly elements III (skilling), IV (rents), V (inputs) & VI (technology) in the figure above.

In summary, the key elements of a resource-based industrialisation & development strategy are:

5. The realisation of a resource comparative advantage by overcoming infrastructure constraints through the establishment of infrastructure networks. This has largely been achieved in South Africa, but not in southern Africa;
6. The “densification” of the resource-based infrastructure through the establishment of ancillary and feeder infrastructure to enlarge the infrastructure catchments and beneficiaries. There are still parts of South Africa that are not adequately serviced (e.g. the ex-“bantustans”) and most of southern Africa (SADC) lacks densification;

³⁴⁹ Jourdan, PP: “Plan of Action for African Acceleration of Industrialisation- Promoting Resource-Based Industrialisation: A Way Forward”, paper prepared for the African Union (AU) Commission, Addis, August 2008 (formed the basis of the AU “African Mining Vision” adopted by AU Summit Feb 2009, Addis)

7. To “deepen the linkages of the mineral sector to the national economy through beneficiation of these resources and creating supplier and service industries around the minerals sector”³⁵⁰ and developing them into complex resource linkages industrial clusters (backward & forward linkage industries);
8. The re-investment of resource rents into HRD, skills and R&D for technology development (knowledge linkages) to capitalise on the resource linkages opportunities, as well as into long-term infrastructure, for the development of mature resource industrial clusters and, ultimately, a competitive advantage, independent of resource endowments.

However, Seeraj Mohamed’s comment that “...it was the capital intensive, resource-based sectors that grew (since democracy) while the decline was generally in labour-intensive, value-added sector”³⁵¹ is indicative of a limited strategy that only contained one element (capital-intensive downstream production of intermediate goods³⁵²) of a comprehensive resource-based strategy that could have also developed the labour-intensive resources upstream sectors as well as going further downstream, beyond intermediate goods, into labour-intensive fabrication, which was severely stunted by the widespread practice of monopoly pricing (IPP) of intermediate goods³⁵³.

Fiscal Linkages

Introduction

Minerals are an important source of export earnings and taxation revenue in many countries. 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. 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. Since 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.

The unusual and substantial risks inherent in the mining sector need to be stressed. These risks include, for example: a long exploration period with uncertain geological outcomes; a large significant outlay of development capital that is not transportable (‘sunk’ costs) once invested; uncertain future revenues due to very volatile and unpredictable mineral prices; a long period of production to reach break-even point, which exposes the investor to political and policy instability; and potentially significant environmental impacts requiring large costs to be incurred when the mine closes, and often during production to support affected local communities. These considerations motivate measures such as accelerated depreciation and extended loss-carry forward limits, to hasten payback of initial outlays.

³⁵⁰ ANC 2007: 52nd National Conference, Economic Transformation resolution, 2.10 (see appendices)

³⁵¹ Mohamed, Seeraj, 2010, p158, op cit

³⁵² In the early ‘90s capital-intensive downstream investment benefited from the 37e immediate capex tax write off incentive for the carrying out of “value-added processes”.

³⁵³ See, for example, Jourdan, Paul, 1992.

While rents and risks are also present in other sectors, their scale and characteristics have led to special tax treatment of the sector, using a wide variety of fiscal instruments. These instruments include royalties, resource rent taxes, windfall taxes, corporate income taxes and state ownership. Each has its advantages and disadvantages with respect to the impact on investor behavior, the degree of progressivity (i.e. the extent to which the “government take” increases as a project’s profitability increases), the sharing of risk between the government and investor, and the administrative and compliance costs.

Mineral fiscal regimes vary widely between countries and minerals for a number of reasons. For example, the level of taxation is likely to vary with country risk. This is because investors base their decisions on risk-adjusted rates of return, and the lower the country risk the higher the level of taxation consistent with a given project exceeding the minimum required return. The royalty rate and other instruments most directly targeted at rent are also likely to vary with perceptions of the size of the rent available. This explains why high value minerals like diamonds and gold tend to attract a higher royalty rate.

The optimal mix of fiscal instruments will also vary depending on the country’s preferences and capabilities. Some governments may prefer production-based instruments as they are easier to administer and provide earlier and more stable revenue. However, as this shifts more of the risk onto companies, governments will most likely need to accept a lower overall expected level of taxation. Other countries might therefore prefer a more progressive regime that involves the government assuming more risk but also expecting a higher take from profits.

In addition to variation between countries, a number of global trends can be discerned over the past half century. These have tended to be punctuated by external events that shifted the balance of power between mineral producing countries and investors. This shift in power is analyzed in Box 1 with reference to three countries: Chile, Papua New Guinea, and Zambia (drawn from Hogan and Goldsworthy, 2010).

Box: Fiscal Regimes – selected country experiences

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.

The evolution of fiscal instruments in mining

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. Key developments included the following:

- *State ownership.* Many governments sought to increase state ownership and control over mineral assets through nationalization, equity participation or joint ventures. Nationalization 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). 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 spillovers to the rest of the economy.

- *Ad valorem royalties.* Royalties based on production value, and not simply volume, became increasingly common. More recently, several jurisdictions have adopted sliding scales based on price, production, sales and even perceived costs of operation. In industrialized 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). The shift from volume-based to value- and profit-based royalties represents an attempt to more accurately target rent.
- *Income tax.* 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.
- *Introduction of 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. 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.

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 nationalization. Papua New Guinea, followed by others, introduced special instruments designed to increase the government “take” in boom times. The specific form varied from country to 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. There was also a growing focus on using the fiscal regime to encourage local processing, such as by imposing export duties on raw materials.

In the 1980s and 1990s, mineral prices declined in real terms. State-owned enterprises, which often struggled to deliver the expected higher revenues in the boom years due to inefficient operations, became an even greater drain on government finances. Combined with poor economic performance overall, a high debt burden, and the collapse of the Soviet Union which discredited central planning and state ownership, some mineral producers began to reconsider the role of the state. Some began a process of privatizing their mining

industry and confined government's role to one of regulation and investment promotion. Others commercialized 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 and Zambia.

Depressed prices discouraged mineral exploration and mine development. In an effort to promote activity in the sector and foreign direct investment more broadly, countries became increasingly concerned with how their level of mining and non-mining taxation compared with that of competitors. International competition prompted revised fiscal terms in a number of countries that, in general, involved lower rates. 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 Indonesia, Papua New Guinea and Namibia (variable income tax) removed additional profit taxes. 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*#

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%. Source: Hogan & Goldsworthy, 2010.

In 2002, the trend decline in real mineral prices suddenly changed course with prices tripling over a five-year period, 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 prices. 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.

Types of fiscal instruments

This section will describe the following types of fiscal instruments: rent-based taxes; profit-based taxes and royalties; output-based royalties; and state equity.

Rent-based taxes

- 1) The **Brown tax** (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.

- 2) **Resource rent tax** – 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 averse private investors for the risks incurred in the activity.

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.

- 3) **Excess profits tax** – 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.

Profits-based taxes and royalties

- 1) **Corporate income tax** – 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).
- 2) **Profit-based royalty** – 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.

Output-based royalties

- 1) **Ad valorem royalty (AVR)**– 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.

- 2) **Graduated price-based windfall tax** – the government collects a percentage of a project’s value of 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).
- 3) **Specific royalty** – the government collects a charge per physical unit of production.

State equity

- 1) **Paid equity** – 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.
- 2) **Carried interest** – 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.

It is evident that a complex system of mineral taxation agreements currently applies in the world economy. Moreover, taxation agreements vary between countries between sub-national governments within countries, and between minerals and projects. 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. 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 industrialized 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-profits RRT is due to be implemented in Australia in 2012. Specific royalties mainly apply to high-volume, low value non-metallic minerals, particularly construction materials.

Taxation instruments – selected countries

Type of taxation 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

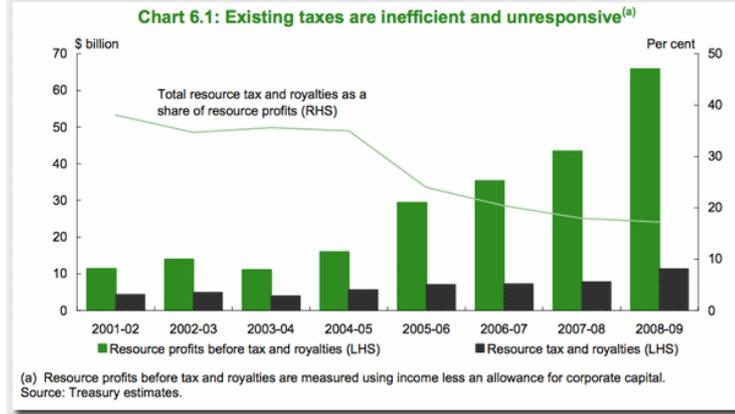
Taxation Instruments in South African mining

- 1) **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%.
- 2) **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.
- 3) **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
- 4) 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.

Some other interesting country case studies:

1. **Brazil:** a 25% WHT is levied on payments made to persons resident or domiciled in tax havens. Otherwise, it is 10-15%.
2. **China:** A resource tax (RT) is applied, whose rate varies according to the type of mineral and is based on sales volume.
3. **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.
4. **Australia:** The Asian boom, with strong demand and prices, caused the state share of mineral profits to fall substantially using standard tax instruments (see figure below). The Henry commission recommended a form of a Brown Tax (the RSPT: Resource Super Profits Tax) in 2010, which provoked a massive reaction by the mining companies who reportedly spent ~R1 billion on a scurrilous media campaign demonising the tax, as it would give the nation 40% of their super-profits. This resulted in the exit of the Prime Minister (Rudd), and the reconfiguration of the RSPT into a milder, MRRT (Mineral Resource Rent Tax). MRRT rate 30%, once the threshold return (long term government bond rate plus 7%) is breached, but projects are entitled to an “extraction allowance” of 25%, therefore the effective MRRT rate of 22.5%.

Australia: Falling State Share of Resource Profits With Increasing Prices



Source: *Australia's Future Tax System: Report to the Treasurer p. 47 (Henry Tax Review)*

Box: The Australian Resource Super Profits Tax (RSPT)

According to the Australian government, a key objective in introducing a RSPT is to raise the nation's return for allowing access to its natural resource deposits and to do so in a way that would not distort production decisions. The basic concept is to apply a tax to above-normal or super profits. Normal profits are sufficient to attract and retain miners in operation on viable deposits. Super profits arise because of the scarcity value of the resources embedded in the deposits (and not because of monopoly power among mine producers). The Australian government proposed that the RSPT be set at 40% of the revealed value of a deposit (RVD). The RVD is the revenue gained from selling the resources less the costs of extracting them. In this case, the amount of tax payable in a particular year with a 40 per cent rate of tax would be: $\text{Tax} = 0.4 \times (\text{Revenue less costs})$, where costs are determined by outlays or expenditures. Tax liabilities would vary from year to year, depending on production patterns, prices, and costs incurred. In some years, such as in the development phase of a mine, costs exceed revenue and so mining companies would be entitled to a refund.

Under the RSPT, an alternative to immediate refunds in loss years was proposed. Rather, mining companies would carry forward losses and be allowed to offset them against future liabilities. They would be compensated for having to wait to receive the benefit from any refund through the application of an annual interest rate 'uplift'. The interest uplift is an essential feature of the Allowance for Corporate Capital (ACC) method. Moreover, the ACC method would not operate entirely on a cash expenditure basis. Operating expenses would be allowed in the year in which they are incurred. But depreciable assets would be treated in the same way they are treated for income tax purposes. Any undeducted component of capital expenditure would also attract the ACC uplift. Although the ACC method would bring a different pattern of liabilities and payments, it is meant to have the same end results as a cash flow method (Brown Tax). The interest 'uplift' is the mechanism that brings equivalence.

Financing costs (such as interest payments) are excluded in the calculation of RSPT liabilities. The ACC can be thought of as an allowance in lieu of financing costs. Furthermore, since it does not include financing costs, it does not favour one form of financing (such as debt) over another (equity).

In this model, the long term government bond rate will be used as the ACC rate. Many are likely to argue that the required rate of return for the company should be used. However, with a government guarantee, the amounts carried forward under RSPT are not at risk. Notionally, a 'taxing point' is needed to make the RSPT operational. The taxing point is the physical point in the production and distribution of resources at which Revenue and Costs are determined for calculation of RSPT liabilities. Under the proposed RSPT, there can be considerable flexibility in determining the taxing point. However, other taxing points could equally be used. If the taxing point is shifted to the port, the appropriate revenue amount is the raw, unadjusted sales figures. But costs would also include the cost of transport to the port. Therefore, the tax base and the amount of tax payable would be the same at the two taxing points.

In the end, everything comes back to the actual value realized for the resource, for example, sale proceeds. All costs associated with the realization of the resource are subtracted from this to determine the tax base.

As far as resource super profits are concerned, the government would in effect be taking a 40 percent share in mining activity, receiving 40 percent of the profits from mineral extraction and paying 40 percent of the costs. The government would bear some risk in return for the charge for access to the resource deposits. It bears the risk that it will incur a liability in some years, rather than receive a RSPT payment. In most cases, the government would receive positive net payments over the life of a project. But it would also bear the risk that, in the event that a project turns out to be unprofitable, the government would grant access to a deposit but would incur a net liability.

In sum, the RSPT uses an allowance for corporate capital (ACC). The allowance and operating costs are subtracted from company income to calculate the residual super profits. $(\text{Income} - \text{expenses}) - \text{ACC} = \text{Amount of super profit}$

The Rationale for the RSPT

Australia has an abundant supply of mineral resources which belong to the community. Mining companies are given rights by the government to extract these resources and sell them for a profit. The state governments levy a royalty on certain minerals, which companies pay based on the volume of resources extracted and sold. The amount of royalty collected by the government is generally only a small portion of the profits being made by the mining company.

When there is a mining boom, mining companies make significant profits because they are selling more minerals at a higher price, while the costs of extraction remain stable or increase less than prices. Under the current output based royalties, mining companies pay less royalty (as a proportion of income) in boom times, and more when their profits are low.

The current arrangements fail to collect an appropriate return for the Australian community because they are unresponsive to changes in profit. Further, they distort invest and production decisions because their costs are not recognized for tax purposes.

Source: www.treasury.gov.au

Resource Rent Taxes (progressive taxes)

Tax regimes which augment with increasing returns and thus allow the state to garner differential rents for above average grades and windfall profits, are necessary for mineral resources to garner the state's fair share of resource rents³⁵⁴ from its mineral assets. In addition to straight corporate tax as a percentage of profit, a Resource Rent Tax (RRT) should be implemented (similar to the new Australian MRRT) of 50%, which would share the exceptional return on investment (resource rents) equally between the resource owner (the people) and the concessionaire (mining company).

The RRT trigger in after the "expected" return on investment has been achieved (Treasury long-bond rate plus a margin). A RRT would give the state its share of the differential rents embodied in rich and/or amenable mineral deposits. South Africa's gold formula can capture resource rents (depending on its configuration), but should be replaced by a common tax regime for all minerals, comprising royalties, CIT (corporate income tax) and the RRT.

Examples of Resource Rent Taxes

Country	Sector	Name	Years in Force	Legislated/Contractual
Canada, Saskatchewan	Mining (Uranium)		Since 1976	Legislated
PNG	Petroleum	APT	Since 1977	Legislated
PNG	Mining	APT	1978 – 2003	Legislated
Australia	Petroleum	Petroleum RRT	Since 1984	Legislated
Ghana	Petroleum	Additional Oil Entitlement	Since 1984	Contractual
Tanzania	Petroleum	APT	Since 1984	Contractual
Ghana	Mining	APT	1985 – 2003	Legislated
Madagascar	Petroleum and Mining	Supplementary Profits Tax	1980s	Legislated
Canada, BC	Mining		Since 1990	Legislated
Namibia	Petroleum	APT	Since 1993	Legislated
Russia	Petroleum (PSAs)	ROR Profit Sharing	Since 1994	Contractual
Angola	Petroleum	ROR Profit Sharing	Since mid-1990s	Contractual
Kazakhstan	Petroleum	ROR Profit Sharing	Since mid-1990s	Contractual
Solomon Islands	Mining (Gold)	APT	Since 1999	Contractual
Timor Leste	Petroleum	Supplemental Petroleum Tax	Since 2003	Legislated
Malawi	Mining	RRT	Since 2005	Legislated
Liberia ¹	Mining	Surtax High-Yield Mineral Projects	Since 2009	Legislated
Australia ¹	Mining	MRRT	Since 2011	Legislated

Source: Land, Bryan 2009; "Resource Rent Tax: A re-appraisal" World Bank, ¹Since 2009, Liberia and Australia have introduced mineral resource rent taxes.

The resource owner (the State) should concomitantly share some of the risk of discovering and developing new viable mineral deposits through:

³⁵⁴ David Ricardo: Economic Rent is a surplus of individual investors' paper profit (which has its value in control over resources rather than directly in the resources themselves) over societal gain. As such, it does not represent any gain but rather an unearned transfer of wealth (Wiki). Hence the need for a Resource Rent Tax (RRT).

- a) Dramatically increased investment in nationwide systematic geo-mapping comprising geological, geophysical, geochemical and other relevant surveys. This will significantly improve the geo-data platform and lower the exploration risk for investors.
- b) The development of select deposits by the CGS for subsequent concession.
- c) The SMC taking on exploration risk for select deposits of strategic minerals to supply the nation's needs.
- d) Permitting a 50% immediate write-off of eligible private sector exploration expenditure on new terrains (prospecting licenses) as negotiable tax certificates (similar to the old 37e beneficiation concession)

The Resource Rent Tax revenues should be ring-fenced and kept in an offshore “sovereign” wealth fund³⁵⁵, to ameliorate currency appreciation during resource booms (“Dutch Disease”) to stabilize fiscal revenues over booms and busts, to reinvest in the development of the minerals sector and for investment into long-term infrastructure. The “New Growth Path” recommends “...greater utilisation of the mineral resource base of the country for developmental purposes, including potentially through a sovereign wealth fund”. The SWF (Sovereign Wealth Fund) should be used to finance three “funds”:

1) *A Minerals Development Fund* to:

- a) Dramatically increased geo-mapping by the CGS³⁵⁶ to underpin the replenishment of diminishing mineral assets (2.5%). The SMC would be given a 3-month exclusivity window on all the new state-funded geo-data.
- b) An exploration facilitation fund (negotiable tax certificates) to ameliorate exploration risk and concomitantly greater investment into discovering and developing mineral assets (5%).
- c) Dramatically increased technical HRD (engineers & technicians) particularly maths & science at primary, secondary and tertiary education levels (10%)
- d) The Fiscus, to compensate for reduced mineral royalty rates³⁵⁷ (5%)
- e) The expansion and rehabilitation of minerals R&D, particularly mining technology, together with the private sector (2.5%). Total minerals sector R&D should target 3% of VA (around R3G/an)
- f) Beneficiation Hubs: Massive job creation through labour safety nets (retrenchment remuneration & reskilling) in “pilot” Resources Value-Addition SEZs with enhanced labour absorption and flexibility (15%).

³⁵⁵ See Havro G, & Santiso J. 2008 (Ibid) for a useful discussion of the Norwegian Global Fund and the Chilean Copper Stabilisation Fund.

³⁵⁶ CGS: Council for Geosciences

³⁵⁷ In 2007/8 royalties were ~R1G

2) *A Regional Trade Infrastructure Fund to:*

- a) Facilitate inter-regional trade. This 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 (~R12G/an).
- b) Open up regional markets for both imports and exports;
- c) To enhance regional economic and political integration. Mechanisms should be devised to encourage other states to contribute proceeds from resource rents to the fund.

3) *A Fiscal Stabilisation Fund to:*

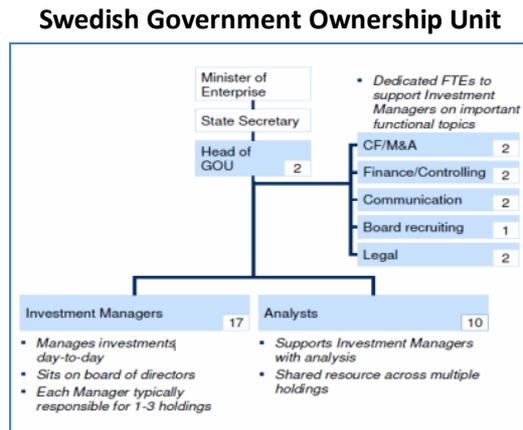
- a) Stabilise mineral revenues to the fiscus over periods of dramatic reductions (global crises) above a threshold (remainder of RRT revenues).
- b) In the longer term, once it has accumulated sufficient funds to cover fiscal stabilisation contingencies, begin to build a resources *future fund* for future generations to access, after resources depletion.

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

Sovereign Wealth Funds

Sovereign Wealth Funds (SWFs) are being used by an increasing number of countries and now hold over USD4 trillion. There are broadly three types of SWFs: Government holding companies, Development investors and Savings funds:

1. Government holding companies are generally established in order to consolidate state assets, to reduce short-term political involvement, to group state assets by type, to clarify targets and goals and to improve processes and competencies. In this regard we should investigate the efficiency of this model in other countries such as the Swedish Division of State Enterprises under the Ministry of Enterprises which operates as a holding company of SOEs. Finland has a similar holding company, Solidium Oy, for holding state assets. Such a structure would consolidate all SOEs currently under Public Enterprises, and other Ministries (Telkom, CEF, SANRAL, etc.) under a single state holding company reporting to the proposed merged Ministry of Economy or to the Presidency. This would allow for integrated SOE management for developmental goals.



2. Development Investors- are essentially DFIs, mainly with minority interests in listed companies (e.g. IDC & DBSA in SA).
3. Passive funds- The New Growth Path proposes the establishment of a SWF which could be realised by ring-fencing all revenues from the proposed resource rent tax and keeping them offshore. Both Chile and Botswana have passive SWFs. This would protect us from the Dutch Disease (currency appreciation during commodity booms) and the negative impact on manufacturing exports. The SWF should to fund three instruments:
 - a. 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
 - b. A Regional Development Fund to invest in regional trade infrastructure to facilitate intra-regional trade. In 2010 the 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. Contacts awarded by the fund should be restricted to regional construction companies and services providers only. The fund should be situated in the DBSA.
 - c. A Minerals Development Fund to invest in the discovery and development of new mineral assets, the management of mineral assets as well as medium to long term minerals human resources development and technology development

Export Tariffs

“...export taxes have been used by governments as a tool in their industrial policy and to raise revenue since the 11th century. In fact it was the most important tool in industrial development while England was industrializing. Developing countries continue to use export taxes today as a source of government revenue, to encourage value added and infant industries, to attract foreign investment, for price stability, to improve terms of trade, or to deal with currency devaluations and inflation and as a method of addressing tariff escalation in importing countries.”³⁵⁸

³⁵⁸ Third World Network 2009: “Benefits of Export Taxes”, www.twinside.org.sg

Export tariffs are used by many states³⁵⁹ (e.g. China, Russia, Indonesia, Mexico, Venezuela, Mongolia, Canada and, historically, most OECD states) to encourage beneficiation on the assumption that the raw mineral producer will be encouraged to transform the product into a higher value added product that will not attract the tariff, or at least offer a discount to a local beneficiator. "Export taxes on primary commodities (especially unprocessed) work as an indirect subsidy to higher value-added manufacturing or processing industries. Export taxes on primary commodities can be used to reduce the domestic price of primary products in order to guarantee supply of intermediate inputs at below world market prices for domestic processing industries. In this way, export taxes provide an incentive for the development of domestic manufacturing or processing industries with higher value-added exports"³⁶⁰.

For minerals that are mainly exported, this equates to a second royalty and accordingly should be applied sparingly as it will inevitably sterilise resources by increasing the cut-off grade, but this could be negligible where there is an established competitive local downstream industry or where the mining company also beneficiates in-house. In some examples the export tax is only applied once an independent assessment has shown that a next stage beneficiation project is viable³⁶¹.

³⁵⁹ Price A, & Nance S. 2009: "Export Barriers and Global Trade in Raw Materials: The Steel Industry Experience" OECD, 2009

³⁶⁰ Piermartini, R. 2004: "The Role of Export Taxes in the Field of Primary Commodities." WTO, (2004): p11-12, http://www.wto.org/english/res_e/booksp_e/discussion_papers4_e.pdf.

³⁶¹³⁶¹ See for example the model Liberian MDA.

EXPORT TAXES IMPOSED ON STEEL RAW MATERIALS		
Commodity	Country	Amount of Tax
Steel scrap	China	10%
	Russia	15% or €15/MT (whichever is larger)
	Ukraine	€25/MT
	India	15%
	Argentina	20%
	Guinea	GNF25,000/MT (US\$4.98 at current rates)
	Iran	30%
	Kazakhstan	15%
	Pakistan	25%
	UAE	Dirham 250/MT (\$67.94)
	Vietnam	35%
Iron Ore	India	8-15%
	Vietnam	20%
Coke	China	40%
	Russia	6.5%
Aluminum	China	15%
	Russia	6.5%
	Ukraine	30%, but not less than €.40/kilogram
	Indonesia	10%
Manganese	China	20%
	Gabon	3%
	Ghana	6%
Molybdenum	China	15-20%
	Russia	6.5%
Nickel	Russia	5-30% (depending upon form)
	Ukraine	30%, but not less than €5.50/kg
Tin	China	10-20%
	Russia	6.5%
	Ukraine	30%, but not less than €1.60/kg
	D.R. Congo	11%

Source: Price, Alan H & Nance, Scott (2009). "Export Barriers and Global Trade in Raw Materials: The Steel Industry Experience," Report to the OECD, Paris. <http://www.oecd.org/dataoecd/54/10/43959882.pdf>

Export taxes/tariffs could escalate the cost of raw materials for OECD countries and "...the EU is therefore trying to discipline developing country use of export taxes and restrictions at the World Trade Organization (WTO) and in its free trade agreements (FTAs) including economic partnership agreement (EPAs)³⁶², which is one of the reasons why the ANSA (Angola Namibia & South Africa) states are refusing to sign the EU EPAs. Unfortunately the 1999 SA-EU trade agreement commits South Africa not to use 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.

Export tariffs are permitted by the WTO. GATT Article XI (General Elimination of Quantitative Restrictions) states that there shall be "No prohibitions or restrictions other than duties, taxes or other charges, whether made effective through quotas, import or export licences or other measures, shall be instituted or maintained by any contracting party on the importation of any product of the territory of any other contracting party or on the exportation or sale for export of any product destined for the territory of any other contracting party"³⁶³

³⁶² Third World Network 2009: Benefits of Export Taxes

³⁶³ http://www.wto.org/english/docs_e/legal_e/gatt47_01_e.htm

In this regard, consideration should be given to the introduction of reasonable export tariffs on strategic minerals or mineral-based feedstocks to facilitate local beneficiation, particularly where such feedstocks are sold into the local market at Import Parity Prices (IPP).

Tobin tax

The **Tobin tax**, suggested by Nobel Laureate economist James Tobin was originally defined as a tax on all spot conversions of one currency into another. The tax is intended to put a penalty on short-term financial round-trip excursions into another currency.

Tobin suggested his currency transaction tax, shortly after the Bretton Woods system of monetary management ended in 1971. Prior to 1971, one of the chief features of the Bretton Woods system was an obligation for each country to adopt a monetary policy that maintained the exchange rate of its currency within a fixed value—plus or minus one percent—in terms of gold. In August 1971, United States President Richard Nixon announced that the United States dollar would no longer be convertible to gold, effectively ending the system. This action created the situation whereby the U.S. dollar became the sole backing of currencies and a reserve currency for the member states of the Bretton Woods system, leading the system to collapse in the face of increasing financial strain in that same year. In that context, Tobin suggested a new system for international currency stability, and proposed that such a system include an international charge on foreign-exchange transactions.

The tax on foreign exchange transactions was devised to cushion exchange rate fluctuations. The idea is very simple: at each exchange of a currency into another a small tax would be levied - let's say, 0.5% of the volume of the transaction. This dissuades speculators as many investors invest their money in foreign exchange on a very short-term basis. If this money is suddenly withdrawn, countries have to drastically increase interest rates for their currency to still be attractive. But high interest is often disastrous for a national economy, as the nineties' crises in Mexico, Southeast Asia and Russia have proven.³⁶⁴

Tobin's purpose in developing his idea of a currency transaction tax was to find a way to manage exchange-rate volatility. In his view, "currency exchanges transmit disturbances originating in international financial markets. National economies and national governments are not capable of adjusting to massive movements of funds across the foreign exchanges, without real hardship and without significant sacrifice of the objectives of national economic policy with respect to employment, output, and inflation".

The idea of some sort of tax on financial transactions has acquired some momentum particularly in Europe recently in the wake of the financial crisis but as described above it has a long history. When Tobin proposed a tax on currency market transactions, his concern was rapid international financial flows, putting constraints on the ability of governments and central banks to pursue the right policies for their national economies. Exchange rate speculation he wrote in 1978 "can frequently have serious and painful real internal economic consequences". To limit the problem and restore some autonomy to

³⁶⁴ http://en.wikipedia.org/wiki/Tobin_tax

governments, he said, “We need to throw some sand in the well-greased wheels “ (of the foreign exchange markets).³⁶⁵ Tobin’s method of “throwing sand in the wheels” was to suggest a tax on all spot conversions of one currency into another, proportional to the size of the transaction. In other words, raising the cost of currency transaction would reduce their volume and destabilising effects.

In 1994, Canadian economist Rodney Schmidt noted that: “in two-thirds of all the outright forward and [currency] swap transactions, the money moved into another currency for fewer than seven days. In only 1 per cent did the money stay for as long as one year. While the volatile exchange rates caused by all this rapid movement posed problems for national economies, it was the bread and butter of those playing the currency markets. Without constant fluctuations in the currency markets, Schmidt noted, there was little opportunity for profit.”³⁶⁶

This certainly seemed to suggest the interests of currency traders and the interests of ordinary citizens [in national economies] were operating at cross-purposes.

Schmidt also noted another interesting aspect of the foreign- exchange market: The dominant players were the private banks, which had huge pools of capital and access to information about currency values. Since much of the market involved moving large sums of money (typically in the tens of millions of dollars) for very short periods of time (often less than a day), banks were perfectly positioned to participate. Among swap transactions, which represented a major chunk of the foreign exchange market, 86 per cent of the transactions were actually between banks.

Current proposals for a Tobin tax have a wider range of transactions in their sights. They are not confined to the currency markets. They generally include trading in shares, bonds and derivatives.

They also have additional objectives, although all would presumably have some impact on the volume of financial trading. The European Commission, for example, has proposed one for the EU. It would, according to the Commission, discourage risky and unproductive trading. But it also argues that it would enable the financial sector to make what the Commission calls a fair contribution to the consolidation of government budgets taking place across Europe.

For development lobby groups, there is another objective – raising money for aid. Hence the other name given to the idea: “a Robin Hood tax”. Oxfam reckons a tax of 0.05% could raise up to \$400 billion. That is almost ten times the group’s figure for the cost of meeting the Millennium Development Goals, the UN targets for tackling poverty and other related development challenges.³⁶⁷

Backward Linkages

³⁶⁵ Ibid

³⁶⁶ Ibid

³⁶⁷ <http://www.bbc.co.uk/business-15555812>

International best practice

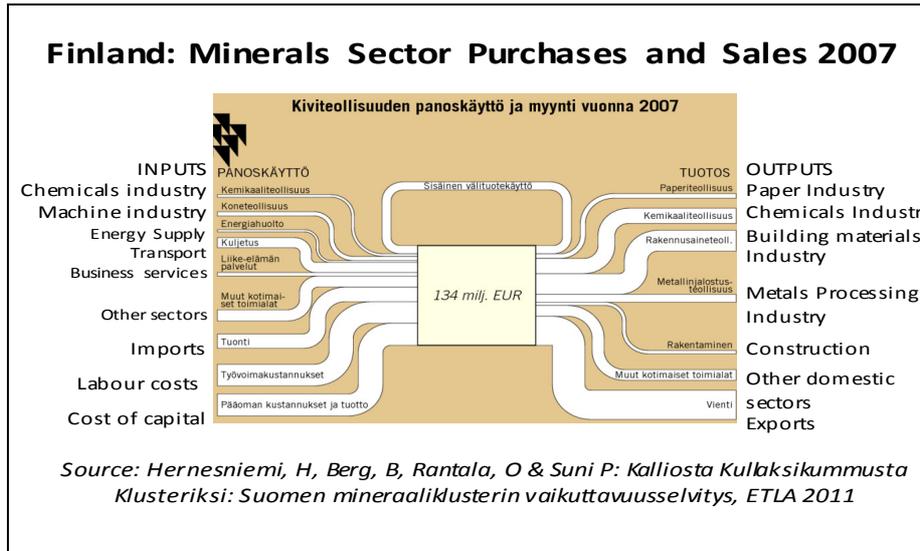
Of all the mineral resources economic linkages opportunities, the backward linkages potential most probably represents the most important and most difficult to realise. The mineral inputs (purchases) sector is dominated by capital goods (vehicles, rolling stock, plant, machinery, etc.), services (technological, engineering, analytical, financial, labour, etc..) and consumables (explosives, fuels, wear parts & spares, grinding media, reagents, etc.). In general, the backward linkages are knowledge intensive (engineering) which take time to build, but they are also the most “agile” in that international experience has shown that many enterprises that started out in the resources inputs sector were able to reinvent themselves in other sectors, due to being “engineer-intensive”. Consequently, as a cluster, it is able to reduce dependence on exhaustible resources and form the nuclei of resource-independent industrialisation and job creation. Accordingly the development of the minerals upstream cluster is seminal to an industrialisation strategy that will facilitate our economy *“...to break free from total dependence on the power of the mining-energy-finance monopoly capital. This is important because minerals resources are non-renewable resources, which will be depleted with the passage of times”*³⁶⁸.

There are numerous factors impacting on the growth, competitiveness and sustainability of the upstream cluster including: *“access to engineering and technical skills, access to skilled artisans, access to government incentives and finance for R&D for ‘home-grown’ firms, awareness of projects and business opportunities, lack of adequate business training and management, certification, high cost of imports, lack of resources to identify assistance programmes, lack of understanding of BEE, preferential relationships in the procurement process, and threat of inferior imports”*³⁶⁹. However, experience from states that managed to make the transition from resource-based economies to industrialized economies with full employment (e.g. the Nordic states), strongly suggests that the most important instruments that facilitate the growth of the backward linkages industries are:

- HRD- production of engineers, scientists and technicians
- R&D- technology development, both state and private
- Access to capital

³⁶⁸ ANCYL, 2010: “Towards The Transfer Of Mineral Wealth To The Ownership Of The People As A Whole: a perspective on nationalisation of Mines”. Discussion paper (www.anc.org)

³⁶⁹ Walker M, 2005: “Unpacking the Nature of Demand and Supply Relationships in the Mining Capital Goods and Services Cluster: The Case of PGMs”, *Corporate Strategy and Industrial Development (CSID) Research Programme, School of Economics and Business Sciences, University of the Witwatersrand*



In 2011 The Research Institute of the Finnish Economy (ETLA) completed a major study³⁷⁰ on the broader economic impact of their minerals sector and showed a 6:1 employment generation in other upstream and downstream industries, due to their well-developed mineral linkages. The SA Chamber of Mines estimates a 1:1 generation, due to our weaker backward and forward linkages. The Finnish mineral technology cluster employed twice as many people abroad than in Finland.

Finland: Mineral cluster size ratios (Mineraaliklusterin kokoa kuvaavia tunnuslukuja)

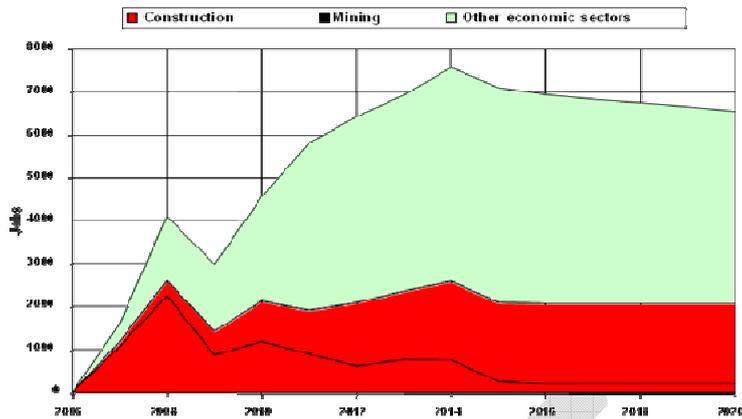
2009/2010	Mining operations Services	Mining industry	Natural Stone Industry	Stone material industry	Mineral-technology companies	Mineral Cluster in Finland	Mineral-technology companies abroad	Mineral Cluster Total
Companies	25	36	306	294	104	765	..	
Locations	27	58	347	365	122	919	..	
Net sales, €m	27	768*	212	492	1 115	2 614	2 447***	5 062
Employment TOTAL	368	3 725*	2 291	2 660	7 177	16 222	16 248	32 469
Company staff	202	2 044*	1 627	1 742	4 727	10 342	10 702**	21 043
Input Industries personnel ****	166	1 682	664	918	2 450	5 880	5 546	11 426
Industry products Exports €m **		141	70	20	1 064	1 295	..	
Industry products Imports, €m **		1 806	14	16	434	2 270	..	
Industry imports, € m**		50	30			80		
Overall impact on employment ****	504	7 135	2 750	3 486	11 014	24 889	24 935	49 824
Effects of the total output ****	48	1 444	363	802	1 851	4 508	4 063	8 571

Source: Hernesniemi, H, Berg, B, Rantala, O & Suni P: Kalliosta Kullaksikummusta Klusteriksi: Suomen mineraaliklusterin vaikuttavuus selvitys, ETLA 2011. Table 10 (rough translation). * ETLA: An assessment of companies since 2010, National Board of Customs ** 2010, *** Business and the National Board of Patents and Registration, data for 2009 and **** ETLA calculated using information from an intermediate product purchases and input-output model multiplier effects.

The Asian boom has given a second wind to Finnish mining, which had been in decline at earlier prices and cut-off grades. However, due to their well-developed mineral linkage industries, ETLA estimates total projected employment at more than 3 times the mining jobs:

³⁷⁰ Hernesniemi, H, Berg, B, Rantala, O & Suni P: Kalliosta Kullaksikummusta Klusteriksi: Suomen mineraaliklusterin vaikuttavuus selvitys, ETLA 2011

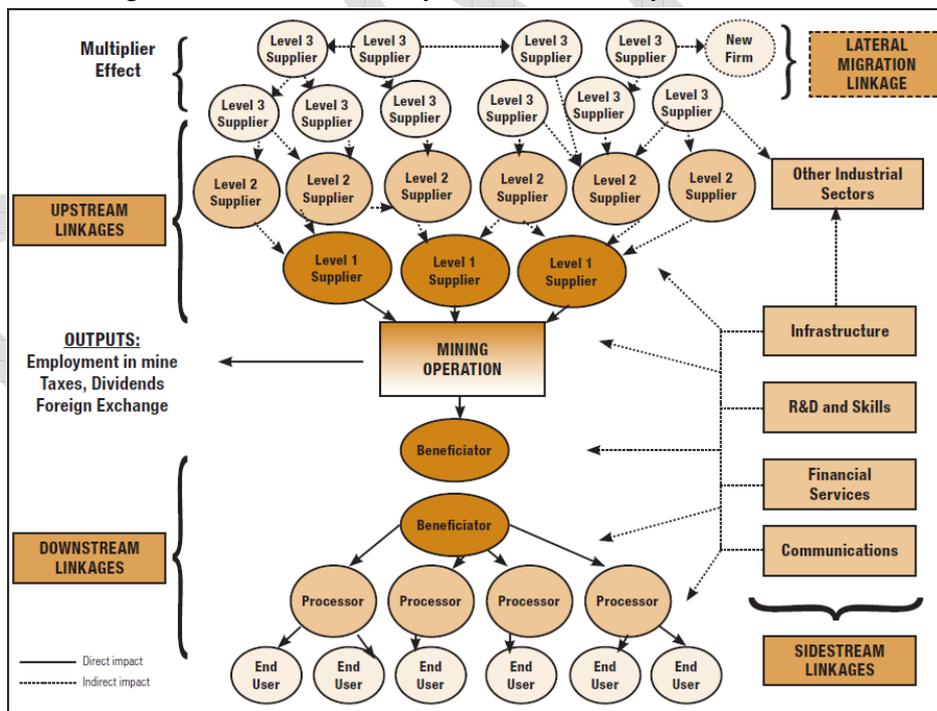
Finland New Mines: Impact on national employment



Source: Hernesniemi, H, Berg, B, Rantala, O & Suni P: "Kalliosta Kullaksikumusta Klusteriksi: Suomen mineraalikulusterin vaikuttavuusselvitys", ETLA 2011, Fig 29

There have been several similar linkages studies done for the minerals sector in both South America and southern Africa. A recent (2009) study of the South African PGM³⁷¹ sector developed the backward linkages which are generic to most minerals.

Linkages in the minerals industry and the relationship between firms



Source: Lydall, 2010. Cited in AU 2011 "Minerals and Africa's Development" p103³⁷²

³⁷¹ PGM: Platinum Group Metals

³⁷² African Union 2011, "Minerals and Africa's Development", AU/UNECA, Addis Ababa

The EPCM³⁷³ firms are critical to optimising the initial (capex) linkages, which also impact on the potential ongoing (opex) linkages in terms of the technologies and processes selected. In addition, the Mozal (BHPB) linkages programme has indicated that the configuration of local sub-contracts is important to the success of developing local suppliers. A survey of mining supplier firms in Ekurhuleni indicated that the elevated price of steel (AMSA: IPP pricing) was a major constraint to the growth of the cluster, as steel represented 30%-50% of their material costs.

Economies of scale:

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. 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”*³⁷⁴. The viability of establishing supplier industries in South Africa and in the region would be substantially enhanced by the extension of the SACU to some other SADC states, with a review of the current tariffs to facilitate investments in new capacity (products & services), distributed equitably across the region. *“In this regard a special facility should be created to promote investment in the sub-continent”*³⁷⁵, possibly through the extension of the brief of a mineral rents “sovereign wealth fund” to invest in long-term human & physical infrastructure across the southern African region. A larger 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.”*³⁷⁶ The NGP notes that *“South Africa cannot succeed with regional development without strong partnerships with other countries on the continent. Our 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.”*³⁷⁷

State intervention to grow the Upstream (backward) linkages:

Mineral concession contracts (licenses) should include clear milestones on local value addition in order to maximise the upstream linkages, failing which the concession could be forfeited and re-concessed. All HRD and technology development related to the exploitation of the mineral asset must be done in-country order to facilitate further growth of the upstream cluster and related sectors. Investments in new upstream (supplier) industries, particularly mineral capital goods and R&D facilities, should form part of the evaluation matrix for all competitively concessioned mineral assets. In this regard the following interventions should be pursued:

³⁷³ EPCM: Engineering, Procurement, Construction Management

³⁷⁴ See appendices – ANC 52nd Congress Economic Transformation Resolution, 2.12

³⁷⁵ RDP 2004, op cit, see Appendix, #12.

³⁷⁶ RDP, see Appendix, 2.11

³⁷⁷ EDD 2010, NGP, p14.

1. Amend the MPRDA to include upstream value addition (backward linkages: local content) as an objective of the Act and strengthen the Minister's power to include such conditions in the mining concession/license. This could be done through the development of clear local content milestones (5, 10, 15 year targets) for all mining concession contracts (licenses) in order to maximise local value addition. Such milestones should also reward regional content, possibly at a discount to SA content, to encourage regional sourcing of inputs. The concession contract (license) should make it clear that failure to achieve the asset owner's targets could result in a cancellation of the contract and that the asset will be re-concessed (auctioned against developmental criteria). Amend current licenses to include such local content milestones and amend the MPRDA to effect this;
2. Make local content commitments a bid variable with significant weighting (30%?) for all new competitive mineral concessions (auctions);
3. Enhance the development of backward linkages by basing the B-B BEE purchase requirements in the Mining Charter on the B-B BEE proportion of local value added in the goods or services supplied, rather than the total value of the goods or services, to eliminate destructive B-B BEE fronting for foreign suppliers and to increase the upstream developmental impact;
4. Task DTI, DMR, EDD and DST with developing and implementing comprehensive industrial sub-sectoral strategies to grow the mineral upstream sectors (capital goods, services, consumables) including the use of instruments such as import tariffs, investment incentives, innovation stimuli, market access, access to finance, competitive inputs, etc.
5. Task the nascent SMC with developing appropriate capital goods, with the private sector and technology institutions, to overcome the challenges of our minerals sector and to improve health and safety of workers.
6. Establish "Beneficiation Hubs" as *"...minerals-centred Industrial Development Zones (IDZs) to spread out development and economic opportunities"*³⁷⁸

Forward Linkages

Introduction

The use of the locational advantage (CIF-FOB) of producing crude resources to establish resource processing industries (beneficiation) that could then provide the feedstocks for manufacturing and industrialisation. In this regard the resource contracts/licenses need to provide incentives/disincentives for mineral resources downstream beneficiation. However, the widespread practice of monopoly pricing (IPP) of beneficiated mineral/metals in the SA market often negates this advantage for our manufacturing industry.

In addition, the first steps of beneficiation are often energy intensive (smelting) which is currently constrained by SA's power shortages. Consideration should be given to importing low cost & sustainable hydro-power (HEP) from other SADC states, which have enormous

³⁷⁸ ANCYL, 2010: "Towards The Transfer Of Mineral Wealth To The Ownership Of The People As A Whole: a perspective on nationalisation of Mines". Discussion paper (www.anc.org)

potential (estimated at 200GW). These could be ring-fenced imports, thereby placing the supply risk with the smelting companies.

One of the beneficiation enigmas is manganese where two-thirds of this high-grade resource is exported as crude ore, despite the next step (smelting to produce manganese ferro-alloys) being electricity intensive and South Africa having had low electricity prices over the last 30 years. However, the manganese export ore price was controlled by an oligopoly of four companies³⁷⁹ which resulted in monopoly ore prices³⁸⁰ and very high returns for mining. Any downstream investments in capital intensive smelting would consequently have yielded lower returns on capital than selling ore at monopoly prices. In this way one distortion (monopoly pricing) led to another (lack of beneficiation) and this would be a good example of the necessity for state intervention to effect a correction, through, for example, applying a correcting export tax on manganese ore exports, a resource rent tax on the excess profits or using infrastructure tariffs.

Another example would be Anglo American's divestment from its main PGM downstream beneficiator and technology developer, Johnson Matthey Plc³⁸¹, in the '90s (when it was the major shareholder, >40%), after investing heavily in it, especially in technology development, over the previous 40 years!³⁸² This was probably due to its increasing focus on "core competence" (mining) in preparation for its exit and London listing. This appears to indicate that the decision to allow Anglo to relist abroad was possibly ill-advised and that a developmental state might take a different view on the "unfettered" movement abroad of domestic capital. In this regard Omano Edighedi, correctly argues that *"...by virtue of the listing of key South African conglomerates overseas, South Africa's government has lost influence over the conglomerates and stripped itself of resources that it could have used for its developmental purposes."*³⁸³ Seeraj Mohamed further notes that *"These companies were restructured by shareholder pressure, and while there may have been benefits for shareholders, the South African economy lost influence over large, powerful corporations that could have been part of a developmental project to deepen and diversify the country's industrial base"*³⁸⁴.

Mineral Feedstocks

Value addition of minerals (forward linkages) can be tackled from a supply-side or a demand-side methodology. The former starts with what mineral resources the nation has and then

³⁷⁹ CVRD (Vale), Eramet, Assmang & Samancor

³⁸⁰ Fe ore and Mn ore are mined from the same Kalahari field in the N. Cape, but the average export price received for Fe ore between 1997 & 2004 was about R100/t compared to about R400/t for Mn ore

³⁸¹ In 2009/10 JM Plc has a turnover of USD13bn & profits of about USD400mn (www.matthey.com)

³⁸² JM Plc R&D expenditure in 2009/10 was £92 million - over R1 billion. In 2002 Anglo Platinum took a 17.5% stake in JM Plc's fuel cell components subsidiary, Johnson Matthey Fuel Cells Limited (www.matthey.com). JM Plc is the sole marketing agent for Anglo Platinum, the world's largest PGM producer.

³⁸³ Edighedi 2010, p22, op cit.

³⁸⁴ Mohamed, Seeraj, 2010, op cit, p161.

develops strategies for their beneficiation³⁸⁵, whilst the latter identifies what mineral inputs the economy needs for rapid job creation and then develops strategies for the cost-effective supply of those inputs.

Given the overriding importance of creating jobs in South Africa, the latter (domestic demand driven) methodology is used here, except for minerals with potential “producer power” (where SA has a large share of resources combined with relatively low global supply and demand elasticities).

The Principal Local Mineral-Based Feedstocks into the Economy

1. Manufacturing:	Steel, polymers (coal, HCs), base metals
2. Energy (electricity):	Coal, radioactive minerals, natural gas (CBM, shale gas), limestone
3. Infrastructure:	Steel, copper, cement (limestone, gypsum, coal)
4. Agriculture:	Nitrogen (coal, gas), phosphate, potassium, conditioners (limestone, dolomite, sulphides)
5. Producer power:	Finally, where SA has potential producer power, there could be increased downstream (beneficiation) potential: PGMs

Strategic Minerals demand sectors

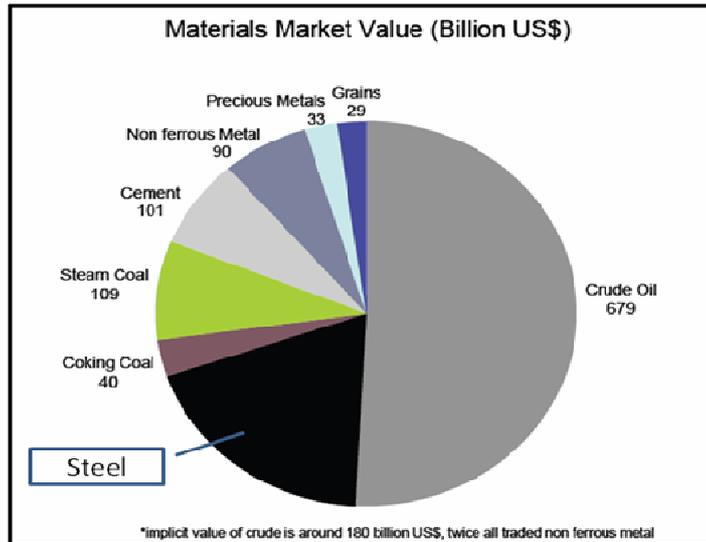
Minerals for Manufacturing

The manufacturing sector has the greatest potential for rapid job creation and the most important mineral-based inputs are steel (from iron ore and coking coal), polymers (from coal in SA) and base metals (Cu, Zn, Pb, Ni, etc.). Globally steel and polymers are by far and away the most important feedstocks into manufacturing at about 1.4Gtpa and 0.4 Gtpa respectively.

Steel

By volume the global consumption of steel alone is around 14 times that of all other metals combined! By value it is more than double all other metals combined, including precious metals.

³⁸⁵ This generally appears to be the approach in “A Beneficiation Strategy For The Minerals Industry Of South Africa”, DMR 2011



Steel: The main cost drivers of steel production are:

- Iron ore and scrap
- Reductants (coking coal, coal or gas)
- Energy (electricity)
- Capital

The table below gives costs for a typical blast furnace (BOF) steel plant using coking coal:

Item \$/unit	Factor		Unit cost	Fixed	Variable	Total	%	Σ	SA
Iron ore	1.435	t	62		88.97	88.97	23%		+++
ore transport	1.435	t	20		28.7	28.7	8%	31%	++
Coking coal	0.519	t	128.5		66.69	66.69	18%		+++
C transport	0.519	t	19.5		10.12	10.12	3%	21%	++
Steel scrap	0.162	t	325		52.65	52.65	14%		~
Scrap delivery	0.162	t	5		0.81	0.81	0%	14%	~
Oxygen	80	m ³	0.08		6.40	6.40	2%		+
Ferrous alloys	0.014	t	1400		19.60	19.60	5%		+++
Fluxes	0.521	t	30		15.63	15.63	4%	9%	++
Refractories	0.011	t	600		6.60	6.60	2%		++
Other costs	1		13	3.25	9.75	13	3%		~
By-products					-20.00	-20	-5%		~
Thermal energy,	-2.68	GJ	12.50		-33.50	-33.5	-9%		~
Electricity	0.122	MWh	150	2.75	15.56	18.3	5%	-4%	++
Labour	0.64	m-h	35	5.6	16.8	22.4	6%		+
Depreciation				40.00		40.00	11%		~
Interest				44.00		44.00	12%	23%	-
Total				95.6	284.78	380.37	100%		++

Source: derived from steelonthenet.com, accessed 10/08/10

The last column attempts to give SA's relative global position. For most items SA is in a relatively very strong position (+++) or strong position (++) due to having the requisite mineral resources (ore, coal, fluxes, alloys, etc.). Only on the cost of capital (Interest) is SA in a slightly negative position, due to higher interest rates than most competitors. This would appear to indicate that steel could be produced very competitively in SA...

However, steel is supplied into the domestic market at predatory or monopoly prices (IPP³⁸⁶) by AMSA³⁸⁷ and Highveld. Recognising the seminal importance of low-cost manufacturing feedstocks, several developmental states established state utilities to supply low-cost (or cost-plus) steel into their manufacturing sector and thereby underpin their international competitiveness. Examples are POSCO in S.Korea³⁸⁸, Japan Iron & Steel Company³⁸⁹, CSC (Taiwan), Rautaruukki (Finland), NJA³⁹⁰-SSAB (Sweden) and Bao Steel in China.

Estimated output and employment responsiveness of downstream steel firms to reductions in the domestic price of steel		
% reduction in the domestic price of steel	% of firms that would increase output by more than 10%	% of firms that would increase employment by more than 20%
10% lower steel prices	43.5%	21.8%
20% lower steel prices	67.7%	44.9%
30% lower steel prices	80.9%	56.7%

Source, Zalk (dti, 2010) from CSID

AMSA was a SOE from the formation of Iscor in 1934 until its privatization by the apartheid regime in 1989³⁹¹. It later split into Kumba Resources (mining - Anglo) and Iscor (steel making) in 2001 and Iscor was renamed Arcelor Mittal South Africa (AMSA) in 2007. However, due to the ISI (import substitution industrialization) strategy of the apartheid era, Iscor/AMSA have always relied on monopoly pricing to maximize profitability and/or subsidise inefficiencies, with devastating impacts on the competitiveness of downstream steel-intensive manufacturing. Post liberation in 1994, the democratic ANC government has been markedly unsuccessful in curbing this job-destroying abuse, despite concerted efforts to achieve competitive steel pricing by the Competition Commission.

³⁸⁶ IPP Import Parity Price

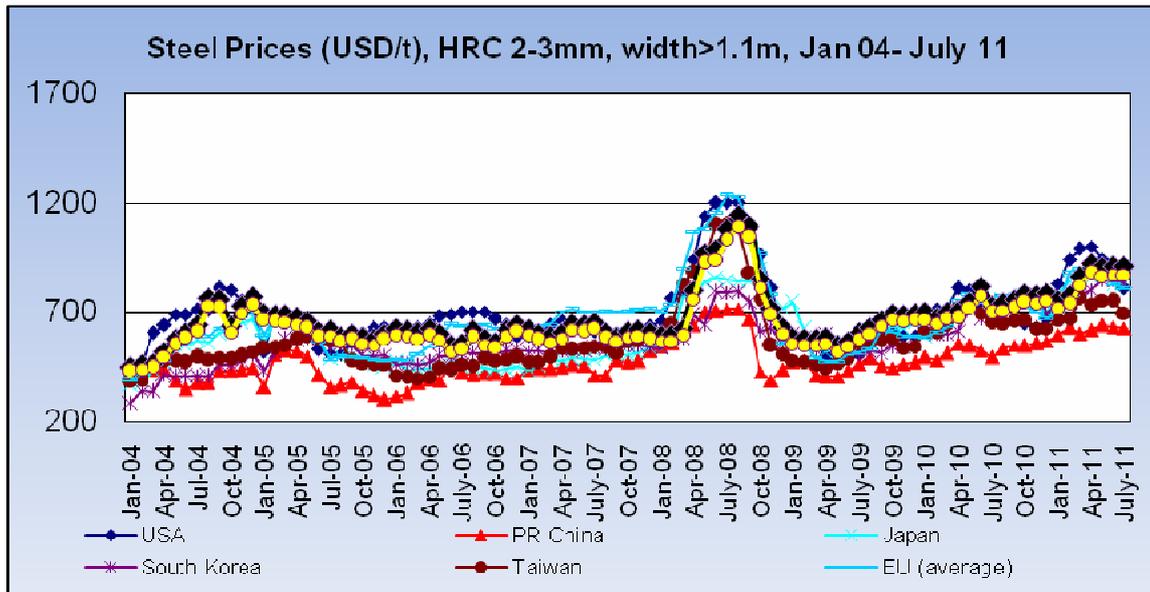
³⁸⁷ AMSA: Arcelor-Mittal South Africa

³⁸⁸ POSCO: The Pohang Iron and Steel Company; "With the strong Korean shipbuilding and automobile industry dependent on POSCO for steel, it has been seen as the bedrock of Korea's industrial development over the past 40 years." (www.en.wikipedia.org/wiki/POSCO).

³⁸⁹ "In 1934 the Japanese government took a major step toward finally gaining self-sufficiency in steel. The Imperial Works at Yawata was merged with six leading private steelmakers--Wanishi, Kamaishi, Fuji, Kyushu, Toyo, and Mitsubishi--to form Japan Iron & Steel Company, Ltd., which was about 80 percent owned by the government" (<http://www.fundinguniverse.com/company-histories/Nippon-Steel-Corporation-Company-History.html>)

³⁹⁰ Norrbottens Järnverk- merged into SSAB, privatized 1989

³⁹¹ See History of the South African primary steel industry" (SA Iron & Steel Institute SAISI: <http://www.saisi.co.za/pdf/history.pdf>)



Source Derived from DTI MEPS dbase 2011

Between March 2004 and July 2011 the SA price for HRC (Hot Rolled Coil) was 46% above the price in China and 20% above the price in both South Korea and Taiwan.

Overview of the primary steel industry in South Africa

South Africa was ranked the 21st largest crude steel producing country in the world by the World Steel Association (worldsteel) in 2008. South Africa is also the largest steel producer in Africa, producing 48% of the total crude steel production of the continent during 2008.

Total South African crude steel production as reported by the members of SAISI amounted to 8,176* Mt in 2008, a decrease of 9,0%, compared with 8,986 Mt during 2007. This represents about 0,6% of world production which reached 1 327,3 Mt in 2008 according to the World Steel Association (worldsteel), a decrease of 1,8% when compared with 2007.

Carbon steel deliveries by the South African primary steel industry amounted to 6,535* Mt in 2008, a decrease of 10,6% compared with 2007. During 2008 5,415* Mt of carbon steel products were sold on the local market, representing an increase of 1,7% compared with 2007. During 2008 1,120* Mt of carbon steel products were exported, a decrease of 43,6% compared with 2007.

Imports of carbon and alloy primary steel products (excluding semis, stainless steel and drawn wire) during 2008 amounted to 0,560 Mt, an increase of 16,3% compared with 2007. Imports during 2008 accounted for 9,4% of apparent domestic carbon and alloy steel consumption compared to 8,3% of apparent domestic carbon and alloy steel consumption during 2007.

The range of primary carbon steel products and semi-finished products manufactured in South Africa includes billets, blooms, slabs, forgings, light-, medium- and heavy sections and bars, reinforcing bar, railway track material, wire rod, seamless tubes, plates, hot- and cold-rolled coils and sheets, electrolytic galvanised coils and sheets, tinplate and pre-painted coils and sheets.

The range of primary stainless steel products and semi-finished products manufactured in South Africa includes slabs, plates and hot- and cold-rolled coils and sheets.

A volume of 1,270 Mt of ferrous-scrap were exported and 0,086 Mt were imported in 2008.

Source: <http://www.saisi.co.za/primsteel.php>, accessed 09/11/11

The IDC has been mandated to facilitate the establishment of a new steel producer (especially flat products) to enhance domestic competition and to curtail monopoly pricing, but a key constraint is access to suitable iron resources to attract an investor. In this regard, the Kathu iron ore resources produce a significant fraction of iron 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, for a local steel plant and for export.

Brazil has a major iron ore slurry pipeline (Samarco) that carries ~20 Mtpa over 400km from Germano (Alegria Complex) to the coast where the fines are pelletised (Ponto Ubu) before export (Espírito Santo)³⁹². A new pipeline will add a further 20Mtpa by 2014. In this regard, the Ministers of Public Enterprises, of Trade and Industry, of Water Affairs and of Mineral Resources should be tasked with assessing the viability of slurrying at least 25Mtpa of fines to 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 the project is 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 Brazil and India have leveraged iron ore exports to obtain steel plants and both Sweden and Finland used the iron ore resources to underpin state steel producers.

Decisive and effective state intervention to achieve competitive domestic steel prices is an essential prerequisite for job creation in the manufacturing sector. Some options could include:

Steel Intervention Options

Option	Comment/Action
Use state ownership of mineral rights to apply cost-plus ore pricing conditions to local customers and on local customers (for their domestic on-sales) for select “strategic” mineral feedstocks, particularly iron/steel.	Amend the MPRDA to include value addition as an objective of the Act and strengthening the Minister’s power to include such conditions in the mining concession/license. This could be done in combination with a license condition for “strategic” minerals for the satisfaction of local demand at competitive (EPP) prices.
Regulate steel prices against a basket of international prices	New legislation to set up a regulator with the capacity to track global steel prices, monitor local pricing and periodically reconfigure the reference price basket and weighting. NERSA could possibly be reconfigured to accommodate the regulator.
Strengthen the Competition Act to allow for the effective imposition of competitive pricing in the domestic market;	Amend the Competition Act to impose stronger penalties for abusive pricing as well as giving the Minister discretionary powers to sanction abusers
Introduce competition through state	Obtaining resources from current rights holders in

³⁹² Samarco 2011: <http://www.samarco.com>

<p>facilitation of new players- This would entail the reservation of ore resources for such new entrants. Suitable ore deposits could then be tendered against the establishment of a steel plant to supply the domestic market at competitive prices (see slurry option below).</p>	<p>exchange for export rail capacity (e.g. the slurry pipeline concept, above) Cancellation of select prospecting licenses on undeveloped ore resources which would be facilitated by amending the MPRDA to give greater state control over resources of “strategic” minerals, such as high grade ferrous ores.</p>
<p>Increase state control of current iron ore producers (Kumba ~13% state) and steel makers (AMSA ~17% state) to >50%.</p>	<p>Kumba: It would cost more than R15 billion to take the state holding from ~13% to >50%. AMSA: It would cost the state roughly R7.5 billion to take the state shareholding back to >50%. Both may cost less if the state and the Unions (pensions) combined their holdings. Forcing Arcelor-Mittal and Anglo to reduce their holdings may also require a constitutional amendment.</p>
<p>Ban all exports of base ferrous scrap, as is done by several other states (some 20 countries apply restrictions to exports of scrap, from taxes to outright bans³⁹³).</p>	<p>This will result in a lower domestic scrap price, stimulating downstream industries and job creation.</p>
<p>Use state infrastructure tariffs (energy, transport) to leverage competitive prices.</p>	<p>Shareholders instruction to Transnet and Eskom (DPE) to apply a surcharge to companies that monopoly price (IPP) in the domestic market.</p>
<p>A user-concession (BOT) on the Saldanha ore line, would transfer the expansion costs to the users (but must be made conditional on local ore sales at cost-plus with an on-obligation to the customer (steel plants) to also price steel into the domestic market at cost-plus or an international basket index price) and the ceding of iron resources to the state to develop a new steel player (below).</p>	<p>Transnet would have to be instructed to configure the BOT on the iron ore line for the minimum time to give the expansion project viability. The BOT would include an annual concession fee to Transnet to compensate it for the potential revenue foregone. Alternatively, Transnet could form a JV with the users who would fund the expansion and Transnet would be contracted to operate the line.</p>
<p>A user-concession (BOT) should be made conditional on ceding the iron ore dumps & other resources to the state for public tender against the establishment of a slurry pipeline to Ngqura and a steel plant (>3Mtpa) that would sell into the local market at EPP to discipline AMSA. The remaining ore could be exported as fines or pellets.</p>	<p>The Kathu iron ore miners have upgradeable dumps (200-400Mt) that could be slurried down to Ngqura using the Gariep Dam water already allocated to the Nelson Mandela Metro. The slurry line could be established by Transnet, the tender winner or a separate concession (BOT). This could create 50k to 100k jobs in downstream steel-based industries.</p>
<p>Combinations of the above.</p>	

Polymers

Polymers (plastics) are the second most important global feedstock into manufacturing at around 400Mtpa. The SA plastics industry consumes about 1.35Mtpa in around 850 (mainly SMME) converting companies that employ around 35,000 people, with a contribution to GDP of about 5%³⁹⁴. In addition, ~150ktpa is from recycled material, giving a total of ~1.5Mtpa. Sales are ~R25 billion/annum with very little exported³⁹⁵ (mainly in other export goods such as motor vehicles), primarily due to cost factors including the monopoly pricing

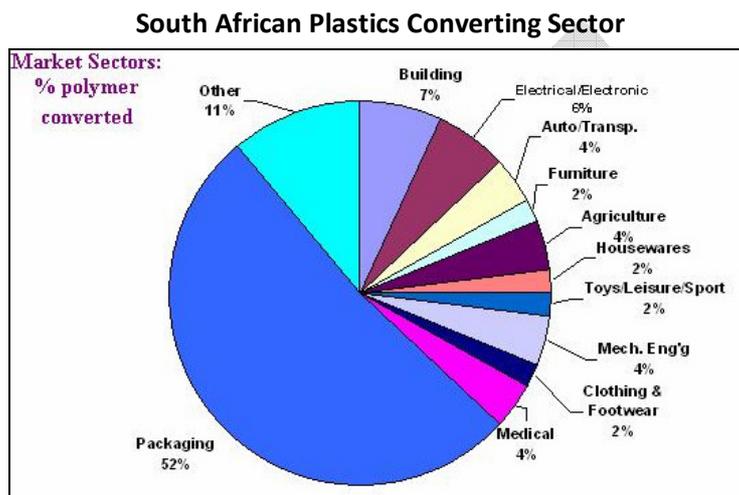
³⁹³ Price A, & Nance S: “Export Barriers and Global Trade in Raw Materials: The Steel Industry Experience” OECD, 2009

³⁹⁴ PFSA: <http://www.plasticsinfo.co.za/industry-overview.asp>, accessed 09/11/11

³⁹⁵ PFSA: <http://www.plasticsinfo.co.za/industry-overview.asp>, accessed 09/11/11

(IPP) of feedstocks by Sasol. Accordingly, there is substantial scope for export expansion, both in plastic-intensive products and in other export goods. However our relatively low per capita consumption of 25 kg/annum indicates substantial potential for growth and job creation.

Local polymer production is around 1Mtpa, mainly from Sasol (80%) from monomers derived from coal gasification. The only other polymer producer is Safripol (ex Dow Plastics), but they purchase their monomers (ethylene and propylene) from Sasol at IPP. In addition about 365ktpa are imported and 265ktpa exported.



PfSA: <http://www.plasticsinfo.co.za/industry-overview.asp>, accessed 09/11/11

Recognising the seminal importance of low-cost manufacturing feedstocks, several developing states established state utilities (refineries or oil companies) to supply low-cost (or cost-plus) polymer feedstocks into their manufacturing sector and thereby underpin their international competitiveness. Examples are CPDC (polymers) in Taiwan³⁹⁶, Petronas in Malaysia and Petrobras in Brazil. Brazil has had a “Plastic Export Plan” since 2002 and the converter sector currently employs around 300k workers. This would equate to about 75k workers in SA with 25% of the Brazilian population and a similar GDP/capita. This is more than double the current employment in the sector (~35k).

In order to achieve this quantum of jobs, we not only need low cost polymers, but also a well-configured national export strategy for plastics and end-products that contain polymers (e.g. electronics, automobiles), as well as appropriate strategies on innovation, technology development, etc. Decisive and effective state intervention to build a competitive plastics export sector for job creation is essential and competitively priced polymers, the first step. Some options could include:

³⁹⁶ CPDC: China Petrochemical Development Corporation: Owned by the KMT, its principal activity is refining petroleum and petrochem production: chloral-alkali, phosphoric acid and other related chemicals and derivative products. Other activities include researching and developing chemical related products; trading, handling and selling garment, accessory, electric, book, stationery, automobile and household products, entertainment facilities; designing and selling computer software, handling information registration. (www.corporateinformation.com)

Polymers: Intervention Options

Option	Comment/Action
Use state ownership of coal mineral rights to apply cost-plus polymer pricing conditions on Sasol for their domestic on-sales for select “strategic” mineral feedstocks, particularly coal.	Amend the MPRDA to include value addition as an objective of the Act and strengthen the Minister’s power to include such conditions in the mining concession/license. This could be done in combination with a license condition for “strategic” minerals (coal) for the satisfaction of local demand at competitive prices.
Regulate polymer prices against a basket of international prices (ICISLOR, Platts, Harriman)	New legislation to set up a regulator with the capacity to track global polymer prices, monitor local pricing and periodically reconfigure the reference price basket and weighting. NERSA could possibly be reconfigured to include the regulator.
Strengthen the Competition Act to allow for the effective imposition of competitive pricing in the domestic market;	Amend the Competition Act to impose stronger penalties for abusive pricing as well as giving the Minister discretionary powers to sanction abusers
Introduce competition through state facilitation of new players- This would entail the reservation of suitable coal resources for such new polymer producers, which could then be tendered against the establishment of a polymer competitor to Sasol (competitive or indexed prices).	Suspension of select prospecting licenses on undeveloped coal resources which would be facilitated by amending the MPRDA to give greater state control over resources of “strategic” minerals, such as coal.
Increase state control of Sasol (currently 26% owned by the IDC & PIC) to >50%	It would cost the state roughly R55 billion to renationalise Sasol (take the state shareholding back to >50%). However, if the state and SA Fund managers pooled their holdings into an SPV it would have a controlling share. This would require active shareholder intervention by the Unions (pensions) in their Fund Managers.
Use state infrastructure tariffs (energy, transport) to leverage competitive prices from Sasol.	Shareholders instruction to Transnet and Eskom (DPE), but could be difficult and may have constitutional implications
Combinations of the above.	

Base Metals

The most important base metal feedstock into manufacturing (and infrastructure) is copper. SA has very limited primary copper resources and modest copper associated with the PGM resources (total reserves are estimated at 2.4% of world³⁹⁷). Copper is mainly consumed in the electrical, construction, transport and capital goods sectors. Most copper alloy (brass) is obtained from scrap.

Copper is produced by PMC (Phalaborwa) and by the PGM miners as a by-product. PMC is controlled by Rio Tinto (58%) and Anglo (17%) but is currently on the market. The IDC has tendered together with their subsidiary, Foskor, and a Chinese company. However, the mine life is reportedly only 8 more years. As with steel and polymers, copper is sold at an IPP “Republic Price”, though the IPP premium is limited by the availability of copper from countries in the region (Zambia and Zimbabwe). Both primary copper and scrap needs to be

³⁹⁷ DMR: SAMI 2011, p83

made available in the domestic market at competitive prices. Options for state intervention include:

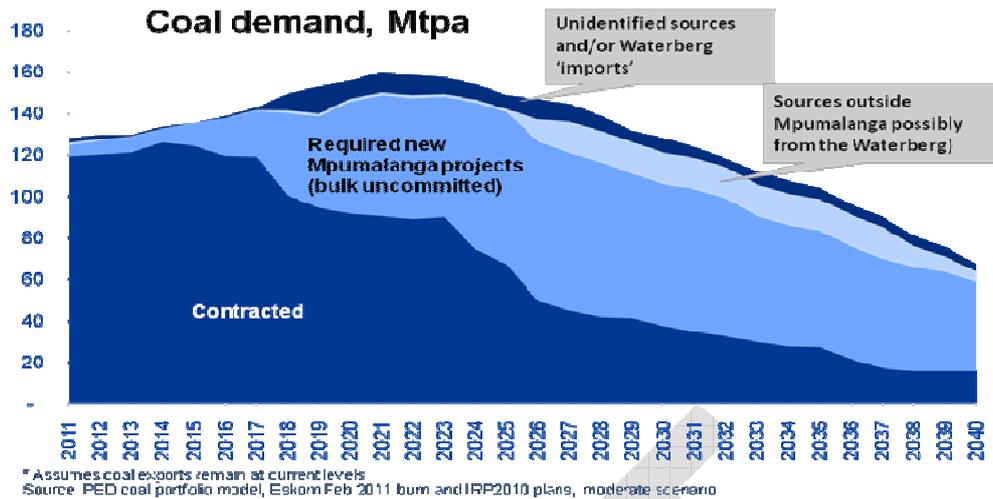
Base Metals: Intervention Options

Option	Comment/Action
Use state ownership of base metal mineral rights to apply cost-plus pricing conditions on producers for their domestic on-sales for select "strategic" mineral feedstocks (copper).	Amend the MPRDA to include value addition as an objective of the Act and strengthen the Minister's power to include such conditions in the mining concession/license. This could be done in combination with a license condition for "strategic" minerals (copper) for the satisfaction of local demand at competitive prices.
Regulate base metal (copper) prices against a basket of international prices (SHME, LME, Nymex, SMX)	New legislation to set up a regulator with the capacity to track global base metal prices, monitor local pricing and periodically reconfigure the reference price basket and weighting. NERSA could possibly be reconfigured to include the regulator.
Strengthen the Competition Act to allow for the effective imposition of competitive pricing in the domestic market;	Amend the Competition Act to impose stronger penalties for abusive pricing as well as giving the Minister discretionary powers to sanction abusers
Introduce competition through state facilitation of new players- This would entail the delineation of new resources through a thorough assessment of potential targets by the CGS & SME.	Reserve all known occurrences of copper (base metals) for exploration by the SMC/CGS. However, the chances of locating a new significant copper deposit are slim. Consideration could be given to the SMC developing the Gamsberg zinc deposit with Vedanta or purchasing it.
State purchase of PMC from Rio Tinto & Anglo. The IDC consortium has made an offer.	If successful, the state should mandate the IDC to make copper (cathode & CCR) available at competitive prices (EPP) in the domestic market. However, the PMC pipe has limited reserves.
Ban all exports of base metal scrap, as is done by several other states	This will result in a lower domestic scrap price, stimulating downstream industries and job creation.
Use state infrastructure tariffs (energy, transport) to leverage competitive prices from base metal (copper) producers.	Shareholders instruction to Transnet and Eskom (DPE), but could be difficult and may have constitutional implications
Combinations of the above.	

Minerals for Energy

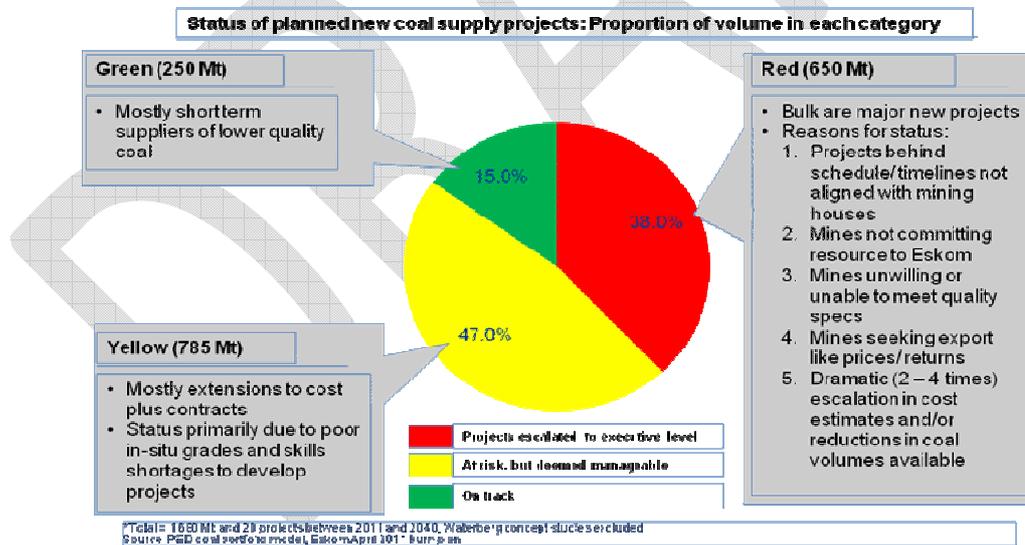
Coal

Coal is by far the most important energy feedstock in SA at over 90% of electricity supply. Eskom consumes about 130Mt annually, but is experiencing supply problems due to the depletion of resources in the Mpumalanga coalfields, the granting of suitable coal mineral rights to other parties by the DMR and hefty increases in price due to the producers demanding export (FOB Richards Bay) related prices. This has been exacerbated by increasing exports of lower grade coals (suitable for Eskom) to India. These factors have resulted in increases in electricity prices with concomitant loss of jobs and hardship for poor domestic consumers. Eskom estimates that the price of coal constitutes around 50% of the electricity tariff.



Source: Eskom 2011: SIMS submission

The nation has also experienced debilitating power shortages and our generation capacity needs to be substantially expanded to cater for national energy requirements and job creation. Coal resources need to be prioritised for this need. Nearly 40% of Eskom’s coal requirements going forward (650Mt) are considered extremely insecure and have been escalated to the executive level (see figure below). It is untenable that the nation’s coal resources are open to manipulated for short-term gain by unscrupulous concessionaires in this way. The state must ensure adequate coal supply of suitable grades and cost-plus prices for its energy needs.



Source: Eskom 2011: SIMS submission

In addition to coal, Eskom requires suitable grades of limestone for the cleaning of power station emissions (sulphur) and is also experiencing supply and price problems for these requirements.

Coal for power generation is clearly a strategic national need and the satisfaction of these national requirements should take precedence over any exports of the people’s coal assets. Some options for effecting this are:

Energy (coal): Intervention Options

Option	Comment/Action
Use state ownership of coal mineral rights to apply cost-plus pricing conditions on producers for their domestic on-sales for select “strategic” mineral feedstocks (coal & limestone) for power generation (as per coal into polymers).	Amend the MPRDA to include value addition (forward linkages) as an objective of the Act and strengthen the Minister’s power to include such conditions in the mining concession/license. This could be done in combination with a license condition for “strategic” minerals (coal/limestone) for the satisfaction of energy demand at cost-plus prices.
Expand the regulation of energy prices (NERSA) to include energy feedstocks (coal).	Amend NERSA legislation to include thermal coal price regulation and build the capacity to determine coal mining costs/prices, to monitor local pricing and periodically reconfigure the prices to ensure a reasonable return.
Reserve appropriate coal and limestone resources for Eskom to develop (with the SMC) or contract (cost-plus prices)	This would entail the assessment of the nation’s coal resources by the CGS & SME to reserve deposits for Eskom. Audit all coal and limestone mineral rights granted since 2002 and suspend them if the allocation is found to be irregular.
State (Eskom) purchase of critical thermal coal and limestone deposits.	Cost: Unknown, but could be high. Eskom should be mandated to identify targets critical to their needs in order to determine likely costs and affordability.
Instruct Transnet to only allocate coal export rail/port capacity to coal mineral exporters once Eskom’s needs have been satisfied at cost plus prices.	Eskom would have to provide the exporter with a declaration to this effect. This will result in a lower electricity tariffs, stimulating industrial activity and job creation.
Expansion of Ermelo-Richards Bay (Coalink) Railway capacity: Assess the efficacy of a user-concession (BOT) of the main users (Anglo Coal, BHPB, Sasol, Exxaro, Total, et al) along the lines of the RBCT ³⁹⁸ , but make it dependent on first transferring mining rights to Eskom of their coal seams/fractions for Eskom’s security of supply over the life of the resource/mine in question	Such a BOT should include the following conditionality: Third party access to the concession on non-discriminatory terms; An annual concession fee to Transnet to compensate it for the revenue foregone; The employment of all current coal line staff; The continued servicing of other (non-coal) users at equivalent rates and conditions; The concession should be for the minimum period to give financial viability; All improvements/expansions will revert to the state (Transnet) at the end of the concession.
Limpopo Coalfields Railway (Waterberg (and adjacent Botswana resources), Soutpansberg, Limpopo fields): The Ministries of Transport, of Energy and of Public Enterprises should commission a study of the most viable export route for exploiting these resources (and adjacent resources in Botswana) to optimise: The long-term (20 year) cost effectiveness of the different options (Rand/t-km in year 20); The collateral impact of the infrastructure in terms of stimulating other economic sectors; Intra-regional trade and development.	The study should explore funding/concession options for establishing the new coal line/route, incorporating the relevant suggested conditions for the putative Ermelo – Richards Bay rail concession (above). This configuration could both stimulate mining expansion as well as secure Eskom’s coal needs in Limpopo Province.
Combinations of the above.	

³⁹⁸ RBCT: Richards Bay Coal Terminal

Nuclear Minerals (uranium, thorium)

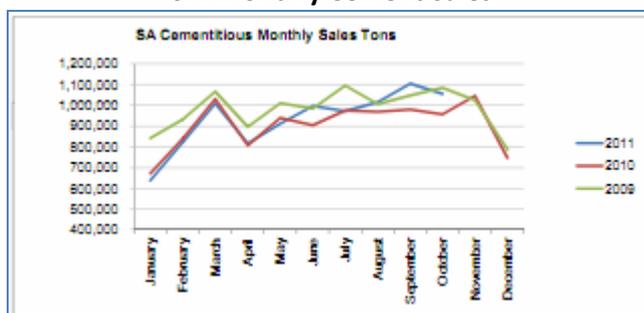
South Africa’s uranium production is a by-product of gold mining and is all exported, so there is no direct link to the manufacture of fuel rods for the Eskom’s nuclear power generation, which are imported. However, NECSA has plans to produce nuclear fuel in the future and consequently appropriate nuclear mineral (uranium and thorium) deposits should be identified by the CGS and reserved for development by Eskom and/or the SMC. Nuclear minerals should be classified as strategic minerals and the MPRDA and regulations should be amended to make all strategic mineral rights dependent on supply to domestic manufacturers at cost-plus before any sales to any other customers (and exports).

Minerals for Infrastructure

Cement (limestone, coal, gypsum)

The South African construction industry is a major job creator, and employed over 1 million people at various skills levels during 2009. Between 2006 and 2009, approximately US\$ 128 billion was spent on infrastructure (double the previous 4 years), including associated mechanical and engineering equipment and services associated with power generation³⁹⁹. Growth in the construction industry has obvious implications for the local cement industry and by 2009, production capacity had increased to 17.5Mtpa and there are plans to increase production by 25% over the next four years, including Sephaku Holdings (greenfields plant) and Jidong of China (MOU between Wiphold, Conticem, Jidong and the CADFund signed in 2010). The SA market is dominated by four players: PPC ~43%, Afrisam ~24%, Lafarge ~23% and Cimpor ~10% in 2009. These four players operate as a virtual cartel resulting in monopoly cement prices (e.g. 65% higher than Egypt) with consequent negative impacts on the cost of construction including low-cost housing.

SA: Monthly Cement Sales



Source: www.ncni.org.za, accessed 05/11/11

Cement is a vital feedstock for infrastructure provision and as such cement minerals (limestone, gypsum and coal) should be regarded as strategic for the nation’s construction needs to ensure that cement is supplied into the local market at the lowest possible prices. Some options to realise this include:

Cement: Intervention Options

Option	Comment/Action
Use state ownership of cement minerals (limestone, gypsum, coal) mineral rights to apply cost-plus pricing conditions on producers for their domestic on-sales for	Change MPRDA & regs to obligate local sales of “strategic minerals” (limestone, coal, gypsum) at “cost plus” and to on-obligate local customers (cement) to apply cost plus prices in

³⁹⁹ <http://www.worldcement.com>, accessed 20/09/11

select "strategic" mineral feedstocks (copper).	the local market.
Regulate cement prices against a basket of international FoB prices	New legislation to set up a regulator with the capacity to track appropriate cement prices, monitor local pricing and periodically reconfigure the reference price basket and weighting. NERSA could possibly be reconfigured to include the regulator.
Strengthen the Competition Act to allow for the effective imposition of competitive pricing in the domestic market;	Amend the Competition Act to impose stronger penalties for abusive pricing as well as giving the Minister discretionary powers to sanction abusers
Introduce competition through state facilitation of new players- This would entail the delineation of new resources through a thorough assessment of potential targets by the CGS & SME.	Reserve all known unallocated occurrences of cement minerals (limestone, gypsum, coal) for development by the SMC/CGS with a new cement company.
State control of a major producer to realise reduced national prices (>50% holding)	Cost: Target unknown. Commission the IDC to determine which producer would be appropriate to reduce prices and to determine the probable costs and impediments.
Use state infrastructure tariffs (energy, transport) to leverage competitive prices from cement producers.	Shareholders instruction to Transnet and Eskom (DPE), but could be difficult and may have constitutional implications
Combinations of the above.	

Steel (rebar):

See Manufacturing above

Copper:

See Manufacturing, above

Minerals for Agriculture (NPK)

The most important minerals for agriculture are nitrogen (urea, from coal/gas), phosphates (from Phalaborwa) and potassium (imported).

Nitrogen: Sasol is the main producer of nitrogenous fertilisers and sells into the domestic market at monopoly (IPP) prices. To curb this abuse similar options are available to discipline Sasol as those presented for polymers (Manufacturing), above.

Phosphates: Foskor (IDC) is the main supply of phosphate fertilisers (MAP, DAP, STP) and the state should mandate the IDC to sell all phosphate products/compounds into the local market at cost plus and to on-obligate local customers (distributors) to apply cost plus prices in the local market.

Potassium (imported): Charge CGS and Mintek with: (a) locating suitable resources of potassium in SA and SADC and (b) the development of appropriate processing technologies to produce products for agriculture.

Other agricultural minerals (conditioners, crop treatments, etc.): Change MPRDA & regs to obligate local sales of other agricultural minerals (calcareous alkalis, sulphides, etc.) at “cost plus” and to on-obligate local customers (agricultural inputs) to apply cost plus prices in the local market.

Resources Dominance

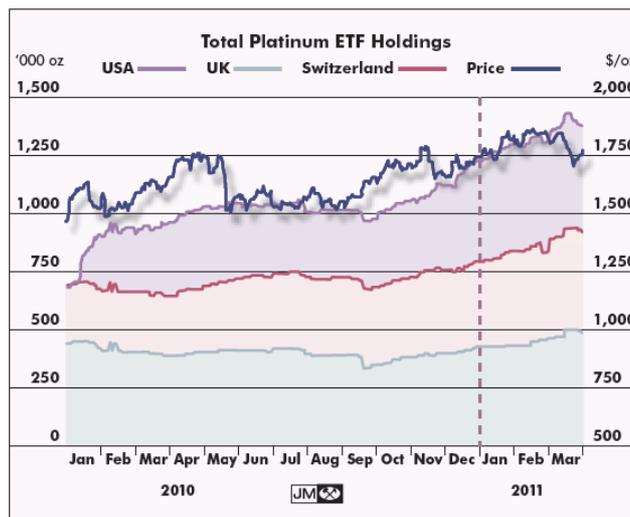
PGMs

Platinum is the only metal where SA has a majority of world’s resources and which has relative supply and demand inelasticity. However, the bulk of SA’s platinum production is beneficiated in the developed countries into catalysts and jewellery. In order for the nation to use this potential producer power to realise the backward and forward linkages opportunities, it requires influence over the marketing of its PGM assets.

Platinum Supply and Demand			
'000 oz			
Supply	2008	2009	2010
South Africa	4,515	4,635	4,635
Russia	805	785	825
Others	620	605	600
Total Supply	5,940	6,025	6,060
Gross Demand			
Autocatalyst	3,655	2,185	3,125
Jewellery	2,060	2,810	2,415
Industrial	1,720	1,140	1,690
Investment	555	660	650
Total Gross Demand	7,990	6,795	7,880
Recycling	(1,830)	(1,405)	(1,840)
Total Net Demand	6,160	5,390	6,040
Movements in Stocks	(220)	635	20

Source: www.platinum.matthey.com, accessed 02/11/11

In this regard the state should amend the Exchange Control Regulations to prohibit the sale of “Precious Metals” without Treasury exemption (currently this clause only applies to gold sales). Platinum, like gold, represents a store of value (platinum bars/coins) and should accordingly fall under the same regulations. Treasury exemption should then only be granted to those producers that agree to negotiate a PGM supply and local beneficiation plan with their international PGM customers (beneficiators).

Platinum Exchange Traded Funds (ETFs)

Source: www.platinum.matthey.com, accessed 02/11/11

Like gold, platinum has become a major store of wealth (investment instrument), especially in times of global uncertainty. *“Total net investment demand for platinum was 650,000 oz in 2010... Investment demand for platinum in 2010 was largely a story of physically-backed ETFs⁴⁰⁰, with total net fund holdings reaching over 1.2 million ounces for the first time in 2010. The unique combination of worldwide economic circumstances in 2010, a time of low interest rates and rising commodity prices, led to a flood of investment in ETFs⁴⁰¹.”*

Other major global resources (chromium, vanadium, manganese, alumina-silicates)

Other minerals where South Africa has a strong position in terms of global resources are chromium, vanadium, manganese and alumina-silicates. However the supply and demand elasticities (substitutes, other accessible resources, etc.) are not as strong as for platinum. Consequently the state should commission an expert study to assess the potential producer power for each by determining the relative supply elasticity (other resources, substitutes, etc.) and demand elasticity (price sensitivity, alternatives, etc.). The DTI & DMR could manage the study and develop a strategy to maximise the economic linkages, as per PGMs, based on the assessment.

Job Creating Beneficiation Hubs

In order to facilitate the rapid creation of jobs in the backward and forward linkages industries, it is proposed that 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 and new locations close to areas of exceptional unemployment.

These pilot zones would offer a competitive human and physical infrastructure platform to attract investors and jobs. They would operate on the principle of protecting workers rather than jobs, thereby giving companies labour flexibility. The workers would be protected through a Retrenchment Safety-Net fund that would pay a retrenched worker 90% of his/her salary for 1 year, 80% for 1 year and 70% for 1 year. All workers in the zone earning less than

⁴⁰⁰ ETFs: exchange traded funds

⁴⁰¹ Johnson Matthey 2011: “Platinum 2011”, p30, www.platinum.matthey.com, accessed 02/11/11

R100k/an would be eligible for the full benefit after 36 months and pro-rata benefits for 1 to 36 months. This fund would be complemented by a Re-Skilling Fund that would train eligible retrenched worker in new skills with identified demand for 3 years. All workers eligible for the Retrenchment Safety-Net would automatically be eligible for the Re-skilling scheme.

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, they could then be discontinued.

The basic configuration of the Pilot Beneficiation hubs 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% for 2 nd year, 70% for 3 rd year	To protect retrenched workers from loss of income (36m)	R3000mn
	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	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
Element	Description	Justification	Funding/an
Location	Adjacent international ports (as per IDZs)	To facilitate exports and customs procedures (free zone)	NA
	Close to areas with extreme unemployment: >60%	To target areas with greatest need for jobs	NA
Products	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
	>50% exports	To avoid the relocation of existing industries	NA

Incentives	50% CIT for 12y. After 12y- full CIT	Increase returns during risky period of capital servicing	NA
	Special IDC fund for capex: equity (<50%) & debt	Access to capital	R500m
	Infrastructure Connection Fund	To connect the investment to power, water, transport, telecoms	R500m
	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% for 2 nd year, 70% for 3 rd year	To protect retrenched workers from loss of income (36m)	R3000m/an
	Automatic Re-skilling Scheme for retrenched labour for 3 years	To rapidly re-employ retrenched workers	R1500m/an
	Accommodation fund for migrant workers	To cater for unemployed in remote areas	R500m/an
		TOTAL	R6000/an

The Pilot Beneficiation Hubs would be financed from the recommended Minerals Beneficiation Fund, which is one of the three windows of the proposed Resource Rent Tax Fund. They would be managed on the same lines as the IDZs (under PFMA), but with Union representation on the Boards, and owned by National government, Provincial government and Local government.

Consequently, it is proposed that the Tripartite Alliance constitute a team to assess this concept and to adapt it and expand it appropriately.

Knowledge Linkages

Introduction

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. Education impacts on economic development in many ways, through for example, its impact on labour productivity, poverty eradication, technology, and health.

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.

Going beyond these enrolment deficiencies, the 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.

Quality of Education

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.

The limited evidence on measurements of quality suggests that considerable efforts need to be made in this regard. This section reports on the findings of the SACMEQ (Southern and Eastern Africa Consortium for Monitoring Educational Quality) tests on reading and mathematics scores for primary school children. SACMEQ covers 15 countries in the region. The SACMEQ evaluations were undertaken in 1995, 2005 and 2007.

The table below shows the achievements of pupils in reading and mathematics in the 15 SADC countries. This data reveals that while South Africa is one of the three richest countries in the region in terms of GDP per capita and spends the most on education and training, it

was surpassed by eight SADC countries in reading performance in 2005 and 2007, and by nine countries in Maths in 2005, and seven in 2007.

Table: Levels and trends in pupil achievement for SACMEQ countries

	Pupil reading score			Pupil mathematica score		
	2005	2007		2005	2007	
Botswana	521.1	534.6	▲	512.9	520.5	▶
Kenya	546.5	543.1	▶	563.3	557.0	▶
Lesotho	451.2	467.9	▲	447.2	476.9	▲
Malawi	428.9	433.5	▶	432.9	447.0	▲
Mauritius	536.4	573.5	▲	584.6	623.3	▲
Mozambique	516.7	476.0	▼	530.0	483.8	▼
Namibia	448.8	496.9	▲	430.9	471.0	▲
Seychelles	582.0	575.1	▶	554.3	550.7	▶
South Africa	492.3	494.9	▶	486.1	494.8	▶
Swaziland	529.6	549.4	▲	516.5	540.8	▲
Tanzania	545.9	577.8	▲	522.4	552.7	▲
Uganda	482.4	478.7	▶	506.3	481.9	▼
Zambia	440.1	434.4	▶	435.2	435.2	▶
Zanzibar	478.2	533.9	▲	478.1	486.2	▶
Zimbabwe	504.7	507.7	▶	xx	519.8	xx
SACMEQ	500.0	511.8	▲	500.0	509.5	▶

It is evident also that quality of education provision is seriously differentiated by gender, socio-economic status, and location, as shown in the four tables below.

Table below shows SACMEQ II (2005) scores by country and gender. On reading scores, girls outperform boys in seven out of ten SADC countries for which the data is available, including South Africa. In fact in South Africa, girls outperform boys on both reading and maths scores.

Table : SACMEQ II Scores by Country and Gender; SADC countries

Country	Boys Reading	Girls Reading	Boys Maths	Girls Maths
Botswana	507.2	534.4	508.2	517.4
Lesotho	446.7	454.8	445.7	448.3
Malawi	431.9	425.6	437.7	427.7
Mauritius	523.1	550.7	579.3	590.2
Mozambique	518.4	514.1	537.0	519.5
Namibia	446.0	451.3	433.3	428.6
South Africa	478.3	504.8	482.1	489.8
Swaziland	525.0	533.9	518.9	514.3
Tanzania	554.3	538.2	539.6	506.7
Zambia	439.8	440.7	440.2	430.0

Table below shows the reading and mathematics scores by country and socio-economic status.

With only one exception (mathematics in Lesotho), pupils from high SES backgrounds outscore pupils from low SES backgrounds in every country. What is of additional concern is

the magnitude of the difference in the score in many countries. On the reading scores, the difference between high and low SES students ranges from 5 points to 103. South Africa is the worst offender in this regard with a 103 point difference. On the mathematics scores, the difference ranges from -4 to 78, with South Africa again the worst offender.

It is interesting to note that the richest countries in the region (South Africa, Botswana, and Mauritius) fare extremely poorly on this measure of inequality. This data confirms what is already known about income inequality in Botswana and South Africa, as well as Namibia.

Table : SACMEQ II Scores by Country and Socio-Economic Status (SES); SADC countries

Country	SES Low Reading	SES High Reading	SES Low Maths	SES High Maths
Botswana	502.5	543.6	498.9	529.8
Lesotho	449.2	454.5	448.6	444.9
Malawi	422.9	440.7	428.2	442.2
Mauritius	508.3	555.1	550.0	607.7
Mozambique	510.5	523.0	527.5	532.6
Namibia	421.5	486.1	408.7	461.3
South Africa	440.2	543.6	446.8	524.3
Swaziland	519.1	541.0	511.3	522.2
Tanzania	528.8	575.2	509.0	545.5
Zambia	423.6	456.5	425.5	444.8

Finally, the two tables below show respectively the reading and mathematics scores by country and location. With two minor exceptions on the reading scores, in every country, pupils from large cities score the highest, followed by those in small towns.

The difference in reading scores between large cities and isolated rural areas ranges from 13 (Mauritius) to 174 (South Africa), with the average at 65. Worst offenders in this regard are South Africa, Namibia (122), Tanzania (72), and Zambia (70).

The difference in mathematics scores between large cities and isolated rural areas ranges from 13 (Mozambique) to 135 (South Africa), with the average at 47. Worst offenders in this regard are South Africa, Namibia (103), Tanzania (51), and Lesotho (45).

The findings from the SACMEQ evaluations confirm the following:

- i) The quality of primary education provision in most SADC countries needs to be improved drastically; and
- ii) Education outcomes differ substantially by gender, socio-economic status, and region/location.

Table : SACMEQ II Scores by Country and Location, Reading Scores

Country	Isolated Rural	Small Town	Large City
Botswana	502.4	525.5	549.6
Lesotho	441.3	461.9	482.1
Malawi	423.5	429.8	455.8
Mauritius	531.3	530.3	544.3
Mozambique	502.3	510.5	533.3
Namibia	417.6	470.3	539.7

South Africa	426.6	482.9	600.4
Swaziland	517.8	552.2	562.2
Tanzania	525.1	598.6	597.2
Zambia	410.6	444.9	480.5

Table: SACMEQ II Scores by Country and Location, Mathematics Scores

Country	Isolated Rural	Small Town	Large City
Botswana	500.5	517.4	530.6
Lesotho	436.8	456.7	482.2
Malawi	429.1	434.0	451.2
Mauritius	577.6	584.2	593.5
Mozambique	524.0	527.5	536.7
Namibia	404.7	448.7	507.6
South Africa	436.6	472.4	571.3
Swaziland	510.9	528.3	531.1
Tanzania	508.7	554.0	559.4
Zambia	418.3	439.2	456.7

South Africa has also performed poorly in international measures of maths, reading and science. The table below shows how poorly South Africa fared against a range of developing countries, in science and maths compared to a range of countries in the Trends in International Mathematics and Science Study (TIMSS) in 2003. The table also shows how performance in these tests differed between students in the former white, Indian, Coloured and African schools.

Furthermore, of the 40 countries tested in the *Progress in International Reading Literacy Study* (Pirls) Grade Five reading and literacy test in 2006, South Africa came last.

Table : South Africa's position in TIMS

INTERNATIONAL STUDENTS ACHIEVEMENTS IN MATHS AND SCIENCE AVERAGE SCALE SCORE (GRADE8)							
Country	Science			Maths			change in achievement
	1999	2003	change in achievement	1999	2003	change in achievement	
Indonesia	435 (4.5)	420 (4.1)	+	403 (4.9)	411 (4.8)	+	
Tunisia	420 (3.7)	413 (2.9)	-	448 (2.4)	410 (2.2)	-	
Chile	430 (3.4)	404 (2.1)	-	392 (4.4)	387 (3.3)	-	
Philippines	345 (7.5)	377 (5.8)	+	345 (6.0)	378 (5.2)	+	
South Africa	243 (7.8)	244 (6.7)	+	275 (6.8)	264 (5.5)	-	
Country	1999	2003	change in achievement	1999	2003	change in achievement	
Indonesia	435 (4.5)	420 (4.1)	+	403 (4.9)	411 (4.8)	+	
Tunisia	420 (3.7)	413 (2.9)	-	448 (2.4)	410 (2.2)	-	
Chile	430 (3.4)	404 (2.1)	-	392 (4.4)	387 (3.3)	-	

CHANGE IN SCIENCE AND MATHS PERFORMANCE FROM TIMSS 1999 AND 2003							
	Science			Maths			1999-2003 difference
	1999 average scale score (SE)	2003 average scale score (SE)	1999-2003 difference	1999 average scale score (SE)	2003 average scale score (SE)	1999-2003 difference	
Ex DET schools	195(3.8) n=6166	199(3.9) n= 6 697	4	238 (4.9) n= 6166	227(2.9) n= 6 697	-11	
Ex HoR schools	348 (17.1) n=1 059	311 (9.9) n=1 211 059	-37	348 (16.1) n= 1059	314 (8.6) n=1 211 059	-34	
Ex HoD schools	420 (16.7) n=212	371 (26.3) n=303	-49	406 (14.3) n = 212	366 (24.9) n=303	-40	
Ex HoA schools	457 (25.1) n=709	483 (17.3) n= 741	26	442 (18.0) n=709	468 (20.3) n= 741	25	
National Average	243 (7.8)	244 (6.7)	1	275 (6.8)	264 (5.5)	-11	

Source: TIMS (2003) The Presidency Report 2010 South Africa

South Africa’s poor performance in these tests does not bode well for its ability to expand post-school education in terms of both quantity and quality.

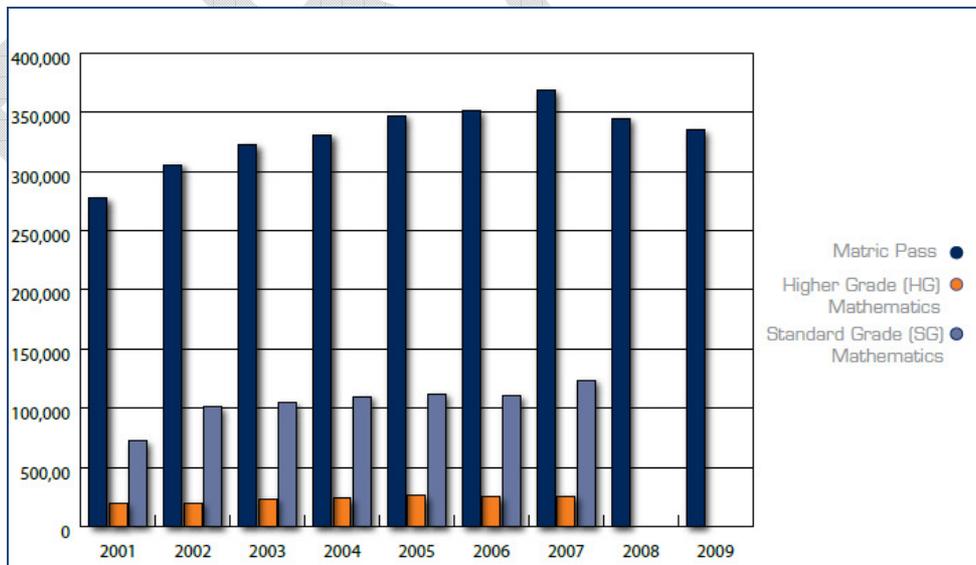
Maths and Science Education

One of the major challenges in the education system relates to Maths and Science Education.

A *Centre for Development and Enterprise (CDE)* study argued that the South African schooling system continues to produce far fewer passes in maths and science – particularly in the (former) higher grade – than the country’s economy requires. Many university degrees and professional and technical careers require grounding in maths and or science, and the critical shortfall in learners leaving the schooling system with HG maths and science was identified as a significant constraint on economic growth. This lack of quality maths and science was seen also as an impediment to the development of state capacity, and further undermined both public and private programmes for black economic empowerment.⁴⁰²

As stated earlier, South Africa’s educational crisis does not arise from a lack of access to schools, but from a lack of efficiency and quality. The public education system is characterised by high enrolments and low quality. The CDE report further suggested that underachievement would continue unless the government deepened and broadened its efforts to improve maths and science education, with the private sector playing a significant role in helping the educational system to achieve more.⁴⁰³ Figure below shows the huge divergence between the number of matric passes on the one hand, and mathematics passes on the other, for the period 2001-2009. The next figure shows the low number of passes in maths and science relative to other subjects.

Figure : South African matriculation results (2001-2009)

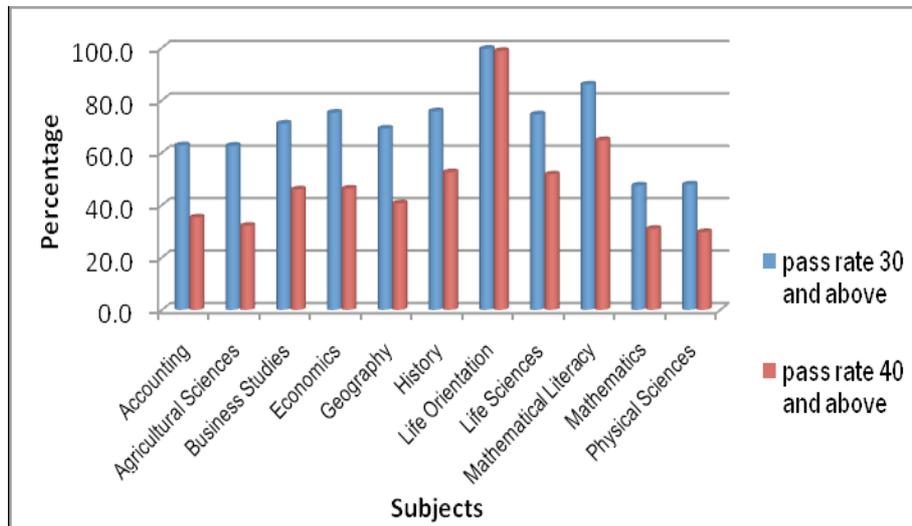


Explanatory note A new Mathematics curriculum was introduced in 2008 with the effect that Mathematics is offered on one level only (No more Standard Grade (SG) and Higher Grade Data (HG)).

⁴⁰² CDE 2007 “Doubling the Growth: Addressing maths and science challenge in South Africa’s Schools” CDE Research No.15

⁴⁰³ Ibid.29

Figure: Percentage of candidate's achievement in selected subjects: 2010



Source: Department of Education National Senior Certificate results 2010

Another CDE report identified the major hurdle in maths and science education, namely the inadequate number of properly qualified teachers in Maths and Science. This report estimated that the teacher training system is producing only about a third of the country's requirement of about 25 000 new teachers a year. The report further noted that while government had allocated bursaries for students teachers, it did not appear to be adequate.⁴⁰⁴

Training

Training in South Africa takes places essential at three sites:

- a) At the level of the firm;
- b) At the Sectoral Education and Training Authorities (SETAs) – there are 22 SETAs covering all economic sectors; and
- c) Further Education and Training (FET) colleges – there are 50 FET colleges spread across the country which provide formal vocational education training programs as well as training on behalf of firms and SETAs.

Financing Education and Skills Development in South Africa

South Africa spends a large proportion of its national budget on education and skills development. At the present time (fiscal year 2011/2012) the expenditure on education and training consumes about 22 per cent of the budget and about 5.5 per cent of GDP (National Treasury Budget Review, 2011). Both these figures are well above the average for both developing and middle-income countries.

The National Skills Development Strategy

⁴⁰⁴ IBID.3

The National Skills Development Strategy (NSDS-1) introduced by the Government of South Africa in 2001 is funded through an employee payroll tax. The rationale for the introduction of such a levy to fund training of the employed and unemployed was two-fold. First, the new democratic government of 1994 inherited an education and training system characterised, inter alia, by a chronic shortage of skills necessary for stimulating economic growth and reducing unemployment. Second, and related to the above, the private business sector of the apartheid era seriously under-invested in work-place training initiatives mainly because of an undue emphasis on short-term profits and a tendency to see training as a cost rather than as an investment. For these reasons the post-apartheid government was compelled to develop and implement a tax-funded skills development strategy which was met at its commencement, by a high level of hostility by the private business sector.⁴⁰⁵

The NSDS was intended to “radically transform education and training in South Africa by improving both the quality and quantity of training to support increased competitiveness of industry and improved quality of life for all South Africans”⁴⁰⁶.

The first NSDS (NSDS 1) was launched in February 2001 with targets to be achieved by March 2005. The strategy was underpinned by the Skills Development Act (SDA) of 1998 and the Skills Development Levies Act (SDLA) of 1999. This legislation provided the basis for the skills development system which was aimed at addressing the structural problems of the labour market inherited from the past, and at transforming the South African labour market “from one with a low skills base to one characterized by rising skills and a commitment to lifelong learning”.⁴⁰⁷

The five objectives of the NSDS were:

- Developing a culture of high quality lifelong learning;
- Fostering skills development in the formal economy for productivity and employment growth;
- Stimulating and supporting skills development in small businesses;
- Promoting skills development for employability and sustainable livelihoods through social development initiatives; and
- Assisting new entrants into employment (DoL, 2001).

Twelve success indicators and three equity targets were associated with these objectives.

A follow-up to NSDS-1 was introduced in 2005(NSDS-2) for the period 2005-2010 and a third one (NSDS-3) was released recently (February 2011).

Institutional Mechanisms – the National Skills Fund and the SETAs

The implementation of the NSDS is the responsibility of the National Skills Fund (NSF), and the Sector Education and Training Authorities (SETAs).

⁴⁰⁵ Gustafsson, Martin and Pundy Pillay (2008) *Financing Training in South Africa*, with, in **The Economics of Vocational Training**, UNESCO, Paris, 2008.

⁴⁰⁶ DoL, 2005. National Skills Development Strategy, 2005-2010, Pretoria.

⁴⁰⁷ Department of Labour (DoL), 2001. The National Skills Development Strategy, Pretoria.

The NSF was until recently managed by the Department of Labour (DoL) but is now under the purview of the Department of Higher Education and Training. It is funded through receiving a portion of the levies paid by employers. All employers are required by the SDLA to pay 1% of their payroll to the South African Revenue Service. From this levy, 80% is transferred directly to the SETA in which the employer is registered. The remaining 20% is transferred to the NSF.

The NSF was created to provide funding to address issues of national importance including job creation, small business development and special assistance to women, youth and rural people and people with disabilities. The DoL's provincial offices, labour centres, SETAs as well as other disbursing agencies are allocated funding from the NSF for specific projects that meet the objectives of the NSF.

Twenty-five SETAs (subsequently reduced to 23) were established under the SDA in March 2000. They are responsible for developing sector skills plans, approving, registering and promoting learnerships, quality assuring training and administering levies and grants. As stated above, they are funded through the 1% levy paid by employers, of which they receive 80% (10% of which is spent on administration). SETAs disburse mandatory grants on the receipt of workplace skills plans (WSPs) and implementation reports from employers. In addition they disburse "discretionary grants" for projects that address specific sectoral needs identified in their sector skills plans.

A study commissioned by the DoL⁴⁰⁸ to investigate skills development in the public sector identified the following challenges:

- Critical skills needs are not being adequately addressed in the areas of financial management, computer skills, project management, human resources management, customer care, communication skills and ABET.
- Low exposure of management to key skills such as financial management and computer skills
- Slow progress on the implementation of learnerships
- Insufficient expertise in the collection of skills development information and reporting on training
- Low attention paid to quality assurance of training
- Low proportion of training staff to government workers.

Post-school education

In this report the term post-school education (PSE) is used interchangeably with the terms 'higher education' (HE) and 'tertiary education' (TE). It is becoming increasingly evident to policy makers that HE is critical inter alia, for economic growth and technological absorption.

Higher Education and Economic Growth

⁴⁰⁸ Peterson, A., McGrath S. & Badrrodien A., 2003. *A National Skills Survey, 2003*. Human Science Research Council, Pretoria.

Higher education is an important form of investment in human capital development. In fact, it can be regarded as a high level or a specialized form of human capital, contribution of which to economic growth is very significant. The contribution of higher education to development can be varied: it helps in the rapid industrialization of the economy, by providing individuals with professional, technical, and managerial skills. In the present context of transformation of nations into knowledge economies and knowledge societies, higher education provides not just educated workers, but knowledge workers to the growth of the economy. It creates attitudes, and makes possible attitudinal changes necessary for the socialization of the individuals and the modernization and overall transformation of the societies. Fourthly, and probably most importantly, higher education helps, through teaching and research in the creation, absorption and dissemination of knowledge. Higher education also helps in the formation of a strong nation-state and at the same time helps in globalization. Lastly, higher education allows people to enjoy an enhanced 'life of mind' offering the wider society both cultural and political benefits.

Higher education and technological absorption

In a rapidly technologically changing world, technology makes a significant difference to the economic growth of nations. UNDP (2001) developed a technology achievement index (TAI), based on the degree of creation of technology in a given economy, the extent of diffusion of old and recent innovations, and human skills. It is clear from this body of work that the level of achievement in technology critically depends upon the level of higher education in a given economy. After all, it is higher education and research that help in developing new technology; and it is higher education and research that contributes to innovations and in their diffusion. So one can expect a very strong effect of higher education on the development of technology in any society. In fact, the level of achievement in technology may be a close indicator of economic growth itself. Most countries with high enrolment ratios in higher education became 'leaders' in technology, with high levels of achievement in technology, as shown in the table below. The converse is also true: a large number of countries with low enrolment ratios (say less than ten percent) are 'marginalized' in the area of technology. Those with medium level of enrolment ratios, nearly 20 percent, like Singapore and Hong Kong have indeed become 'potential leaders' in technology (Table below).

Table: Higher Education (GER) and Technology (Technology Achievement Index)

Gross Enrolment Ratio (GER)	High TAI (>0.5)	Medium TAI (0.4 -0.5)	Low TAI (<0.4)
High (>20)	New Zealand, Korea, Australia, Israel, Japan		Philippines
Medium (11-20)	Singapore	Hong Kong	Thailand, Cyprus, Syria
Low (<10)			Iran, Indonesia, Malaysia, India, Sri Lanka, Nepal, China, Pakistan

A few countries like Philippines and Thailand with medium and high levels of enrolment ratios are classified by the UNDP as "dynamic leaders". The rest who did not expand their higher education systems well, are indeed 'marginalized.' There is not a single country with a low enrolment ratio (less than 10 percent) in higher education which has achieved high or medium level of achievement in the technology index.

The relationship between higher education and technology could be shown statistically as well. The simple coefficient of correlation between enrolment ratio in higher education and TAI in the Asia and the Pacific countries is as high as 0.8 and that between technology and higher education attainment it is 0.65. Though the number of observations is small, the simple regression equations estimated show a very strong and statistically significant effect of higher education on the level of achievement of technology.

Challenges in the South African Post-Schooling Sector

The first challenge relates to access. Although South Africa has a relatively high 'Gross Enrolment Ratio' in universities (at around 17-18 per cent) in the African context, this figure masks the fact that very few students are enrolled in the PSE vocational and education sub-sector, namely in the FET colleges. In general, the main barrier to access is poor and inadequate schooling. For instance, large numbers of students leave the schooling system each year without having the necessary qualifications to enter the PSE sector.

The second challenge relates to equity. There are usually three important determinants of inequity: gender, socio-economic status, and region. However, South Africa does have a higher proportion of women in HE. Second, access to the higher quality HE institutions is significantly determined by socio-economic status, often because children from richer households attend better quality schools. Third, participation in the better quality HE institutions is skewed in favor of students from urban and metropolitan areas.

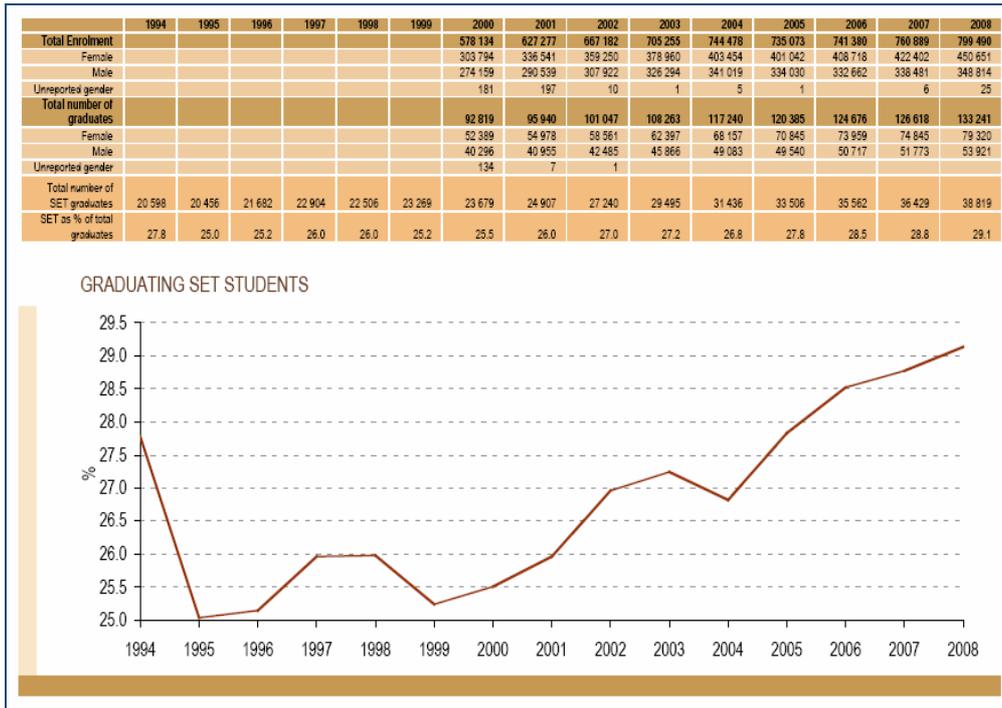
The third challenge relates to quality. As with the schooling sector, the challenge of quality is pervasive in the HE sector, with large numbers of students obtaining certification that does not appear to equip them with requisite skills for gainful employment in the labor market.

The fourth challenge in South African higher education relates to the relative under-production of graduates in the science and engineering disciplines. Again, this is directly related to the poor standard of Mathematics and Science education prevailing in the schooling system

Tertiary-Engineering and Science University Graduates

Figure below shows the output of engineering and science graduates from South African universities for the period 1994 to 2008. The encouraging feature of here is the increasing trend in the output of Science, Engineering and Technical (SET) graduates, although it is not clear that the number of engineers is increasing proportionately.

Output of Engineering & Science Graduates from SA Universities (1994 - 2008)

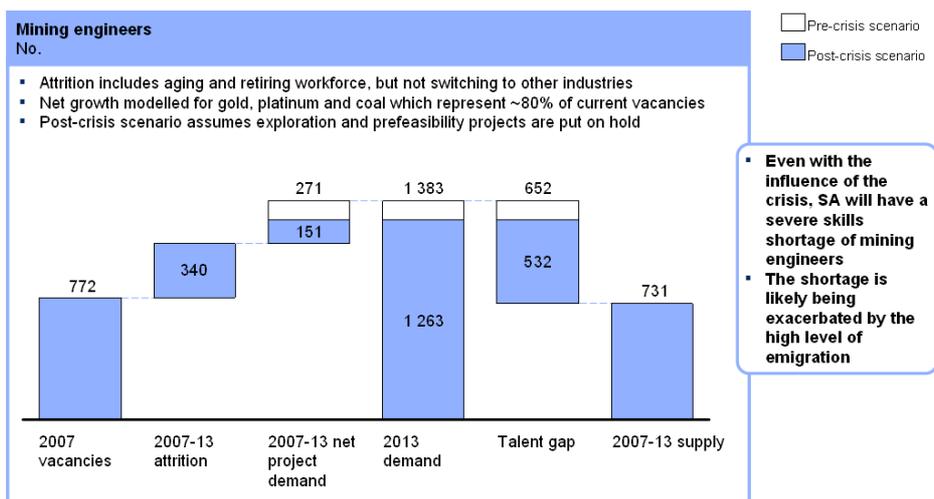


Source: Department of Education Higher Education Management Information System

There is a worldwide shortage of technical skills particularly in mining. High-level technical skills are particularly useful in the conceptualization, design and implementation stages of a new mining project. It is at these stages that most value is created, and that require the most innovative, high level and experienced skills that can be brought to bear on the project. If high-level skills are not available, the value that will be created from a mineral resource will be reduced.⁴⁰⁹

For mining engineering at graduate level, the universities have recently increased output. For example, Wits University graduated 79 mining engineers in 2010 from 27 in 1999. Post-graduate output however is extremely low. There is also a need for highly skilled human resources to assist in accident investigations and to provide skills necessary to create evidence based policy. However, studies are suggesting a growing shortage of mining engineers in the next decade (see figure below).

⁴⁰⁹ CSIR input to the ANC Research Team.



1 Vacancies from MQA Scarce Skills Survey and JIPSASA estimates engineer attrition rates are 10-17% (10% used); 2 Difficult to quantify as many mobile skilled engineers leave for extended periods but are not classified as having emigrated; 3 In 2006, 428 mining engineers graduated from SASA universities, so this gap is more than 25% greater than this

Graduate holding strategies

Like many other developing countries, South Africa loses a significant proportion of its skilled workforce every year. These losses began in the 1970s, but have accelerated since 1994. A 2006 study estimated that more than 520 000 South Africans, a large proportion of them undoubtedly highly-skilled, emigrated between 1989 and 2003, with the numbers growing by 9 per cent a year.⁴¹⁰ In the light of these losses and an education system that is not producing the requisite skills, the number of so-called scarce skills in the economy increased dramatically up to 2007, although it appears to have come down since (table below) but still remains at a relatively high level.

Table : Scarce Skills in South Africa, 2007 and 2008

Occupational category	2007	2008
Managers	322 950	41 585
Professionals	160 100	137 545
Technicians	92 600	
Technicians and trade workers		113 065
Community and personal service workers	77 785	54 585
Clerical and administrative workers		53 580
Sales personnel	21 300	25 780
Machinery operators and drivers	13 167	42 580
Elementary workers	261 215	33 345
TOTAL	949 117	502 335

Source: Adapted from Department of Labour, National Master Scarce Skills List for South Africa, 2007, 2008

The training of engineers and scientists is heavily subsidised by the state (70 to 80%) and in order to discourage the exit of these skills, consideration should be given to converting the state subsidy 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

⁴¹⁰ Ibid., p.9

before 10 years, they will be liable for the full outstanding portion of the loan (loan converts from notional to real).

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 mining sector. 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 ECSA⁴¹¹.
- Financial support to Engineering Faculties for post-graduate studies.
- Grants for Engineering and Technician learnerships through the appropriate Sector Education and Training Authorities (SETAs).

Research and Development

There is a correlation between a country's investment in R&D and its economic performance. This correlation has led to a national drive to increase R&D spend to 1.5% of GDP by 2014. In the mining sector, strong state support for knowledge linkages would have beneficial effects on all the challenges.⁴¹²

South Africa needs R&D capacity in mining to enable it to deal with technical health and safety challenges. It creates the tools and techniques to liberate value from increasingly difficult-to-mine ore bodies; and provides the environment where the high-level technical skills can be created that will greatly increase our ability to take full advantage of our mineral resources.⁴¹³

Apart from universities, mining research institutions (e.g. CSIR, MINTEK) are also important in addressing the challenge of high-level skills. Not only do they undertake fundamental and applied research, they also provide the training ground for the development of very high-level engineering skills.

In the mining sector research expenditure and capability have been falling since the early 1990s. For example, rock engineering capacity has been weakened by a lack of investment in

⁴¹¹ ECSA: Engineering Council of South Africa

⁴¹² CSIR input to research team.

⁴¹³ Ibid

new capacity and by the aging of the researcher population. Researchers participating in mining research have fallen from over 600 in 1988 to less than 80 currently.⁴¹⁴ This has been attributed to a lack of investment by the mining industry.

Box: Technology Linkages- Minerals Capital Goods

MMCP: South African Mining Equipment and Related Services: 10 key propositions:

1. "South African mining activities have, from a very early stage, required the utilisation of advanced technologies and systems.
2. The local deployment of such technologies and systems combined with a particular structure of the South African mining industry and state directed policies, allowed for the early development of considerable development of local technological expertise. State policies and linkages with the National System of Innovation (NSI) have accordingly been critical. Market structure, rather than ownership, has also played an important role.
3. The technological content of mining and mining related activities everywhere has increased significantly over the last two decades as a result of a number of factors – including increased globalisation, market segmentation and the changing role of MNCs and the engagement of generic technologies – particularly IT.
4. This significantly enhanced technological content of mining related activities coincided with two critical changes in South Africa: the decline of mining output for some minerals, notably gold and the end of apartheid in 1994. As a result, South African mining firms have engaged in substantial expansion abroad. This, in turn, has created significant opportunities for exports of mining related equipment and services.
5. South Africa has a significant cluster of firms in mining equipment and related services which are at the global technological frontier. This is evident in respect of trade (exports), IP and leading products. Indeed, this cluster is the only significant area of industrial activity where South Africa is located at the global technological frontier.
6. South Africa's competitive position is however being undermined – both at the "lower" manufacturing end and at the "higher" end of R&D and new product development.
7. These issues are not currently being addressed. The sector receives very little state support and, other than downstream beneficiation, which is in any event ill-advised, there is no defined strategy for the sector. Policies to meet these challenges, both at the "bottom" and at the "top" are urgently required.
8. The major thrust of government's strategy currently is beneficiation i.e. government attempts to encourage activities downstream of mineral production.
9. This strategy is misplaced and should be replaced by a strategy that seeks to encourage the "lateral" migration of firms and technologies into new products and new markets.
10. Such policies should be designed and implemented in consultation and in concert with the firms and with the industry and export associations."

David Kaplan 2011: "South African mining equipment and related services: Growth, constraints and policy",

Investing in the Development of Minerals R&D

The once world-class South African minerals R&D sector is in crisis. Since the early 90s it has been in decline, starting with the exit of the Chamber of Mines by transferring its research arm, Comro, to the CSIR where it was renamed "CSIR: Miningtek" and then slowly withered away, from 400 professionals (Comro) to about 40 today. At the same time the internationalisation of the South African mining houses was generally followed by a reduction or closing of their South African R&D facilities (e.g. Gencor- JTC). Also the restructuring of Anglovaal saw the demise of their capacity, etc. Today our minerals technology development capacity is but a shadow of what it was pre-democracy. We need to urgently rectify this through enhanced investment, particularly the establishment of a mining technology expertise to ensure that the future inevitable mechanisation of our industry creates upstream jobs here rather than in other countries (imported machinery).

"There is a widespread view that while both the CSIR and MINTEK have some capacity, there has been a clear deterioration over time. Skilled personnel have been lost and a number of programs closed, particularly at the CSIR. The latter is said to have hardly any research capacity remaining in relation to mining. There has been major decline in mining related activity here. Formerly COMRO – the research arm of

⁴¹⁴ Ibid

the Chamber of Mines – undertook very significant research on behalf of the industry. The CSIR which absorbed COMRO continued to have large scale mining research projects – principally in trackless mining and rock engineering. However, these research programmes had a limited life and currently the capacity at the CSIR has been depleted almost to extinction. It is widely stated in the industry that MINTEK has seen a significant decline in its capacities. The Council for Geoscience is similarly said to be experiencing difficulty and losing staff. Few of the firms interviewed had significant links with the science councils – and where they did, these links were becoming more limited over time⁴¹⁵

The country surveys also displayed a strong correlation between investment into minerals technology development (R&D) and success in creating the important mineral linkages clusters (backward and forward), particularly in the Nordic states, but also increasingly in Brazil, Australia and Chile. China has moved with alacrity and is already an exporter of yellow goods (excavators, bulldozers, ADTs, front-end loaders, etc). Our minerals technology development capacity needs to be urgently revitalised or we will be doomed to a future of commodity exports (banana republic). The minerals technology development sector could be the nursery for the development of a minerals capital goods export sector, like in Sweden and Finland, and the source of technologies and products for other sectors.

To deal with this crisis we must earmark a proportion of mineral taxes (RRT) to both earth science (geology) research (CGS) as well as mining and mineral processing technology development. In this regard we need to establish a mining technology Science Council (along the lines of the old COMRO/Miningtek) by amending the Mineral Technology Act of 1989 (“Mintek Act”) to cover all activities from mining, through 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. It is proposed that 2.5% of the proceeds of the putative RRT be allocated to the rehabilitation and expansion of minerals research and development (R&D), particularly mining technology, together with the private sector, on a 1:1 funding basis. Total minerals sector R&D should target at least 3% of mining value-added (around R3bn/an).

⁴¹⁵ David Kaplan 2011: “South African mining equipment and related services: Growth, constraints and policy”, Department of Economics, UCT, MMCP Discussion Paper No. 5, March 2011, p20

Mineral Spatial Linkages

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. What is special about minerals is that they require a diverse set of infrastructure to support them. An important aspect of mineral development impact arises from the fact that the spatial linkages that it creates first with its immediate surroundings and then with the broader economy, tend to be strong. Like most mature minerals economies, the spatial linkages that the minerals industry has created in South Africa traverse the infrastructural spectrum. Through its demand for transportation, energy, water, and social infrastructure for the workers who work in the mines, the industry has had an impact on South Africa's economy that dates back from the time diamonds were discovered in 1867.

Collateral infrastructure impact/optimisation

Mining activities always require a significant investments in infrastructure before the actual mining takes place especially in a context where deposits to be mined are located in remote areas lacking infrastructure. It is for this reason that minerals are usually regarded as a catalyst of development in as far as it 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.

Spatial Linkages: Country Survey 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 ⁴¹⁶
Malaysia	Malaysia has excellent infrastructure across the entire country. Has five major development corridors traversing the country. Government involvement is a key player

Source: SIMS Country Surveys 2011 (see appendix)

Transport (rail, road, ports, terminals, pipelines)

Rail and Road Transport

The “failure” of South Africa to take full advantage of the 2003-2008 resources boom is generally opportunistically blamed on the allegedly onerous minerals regime by many miners and bankers (seeking an even more “liberal” minerals regime). However, a more differentiated analysis indicates that infrastructure and reserves/geological constraints were the predominant cause:

- PGMs – increased market share: expanded into the boom, though Platreef development (Limpopo Province) was constrained by water availability. Nickel and part of copper production are constrained by PGMs, as by-products;
- Gold – lost market share: constrained by limited reserves (the Wits resource is in terminal decline);
- Coal – lost market share: constrained by rail/terminal capacity;
- Iron ore – lost market share: constrained by rail/terminal capacity;
- Chromium – slightly lost market share: FeCr constrained by the power crisis;
- Manganese – kept share, despite rail constraints;
- Copper – lost market share: constrained by limited reserves (Phalaborwa) and the PGM mining shift from the Merensky Reef to UG2 (less Cu & Ni);

Resources infrastructure needs timely response to market signals (Transnet funding constraints), however, if the resource linkages were not being realised, then the conserving of finite resources (albeit unwittingly through infrastructure constraints) was arguably not a bad thing, as it gives the state a second chance to optimise the developmental impact. However, where the linkages are being pursued, Transnet needs to provide the requisite cost-effective transport infrastructure and, where they are not able to respond, consideration should be given to concessioning (PPPs) the infrastructure, but with

⁴¹⁶ Zhang and Shi (Undated)

developmental conditions and third party access (at non-discriminatory tariffs), to optimise their impact.

Transportation is perhaps the most important type of infrastructure needed in a mineral rich country such as South Africa. Consequently, the transportation grid radiates from the Wits gold deposits (Johannesburg) to the coast. These arteries were initially established more for minerals inputs than for mineral products (gold) due to their exceptionally high value. In recent years, there has been a significant amount of investment in transport infrastructure, though insufficient to cater for demand from the minerals sector, particularly coal and iron ore. From a spatial perspective, transport plays an important role in the economy in two distinct ways, which are central to the minerals sector's impact: Transport infrastructure provides a direct service to the minerals sector through the movement of mineral inputs and outputs and it also acts as a catalyst for strategic integration and development of other sectors.

Although precious minerals (PGMs, gold, diamonds) dominate the South African minerals sector (by value), there are many minerals that rely on rail transportation due to the bulkiness of many mineral products (low value to weight ratio- e.g. coal and iron ore) and/or mining inputs (supplies- e.g. liquid fuels, reductants, fluxes). Transnet has two business units that are responsible for rail, Transnet Freight Rail and Transnet Rail Engineering. Freight Rail is the biggest division of Transnet, which specializes in heavy haul freight; it is the biggest outside the United States. Transnet Rail Engineering is dedicated to in-service maintenance, repair, upgrade, conversion, and manufacture of freight wagons, mainline and suburban coaches, diesel and electric locomotives as well as wheels, rotating machines, rolling stock equipment, castings auxiliary equipment, and services.

The problem with state ownership of Transnet is that it has been open to the influence of vested interests and local politics. To avoid the issues around local politics three lines were built to each of the ports of the Colony⁴¹⁷. During the 1950s, the lack of sufficient railway trucks and locomotives constrained the movement of goods, particularly bulk coal from mines to urban power stations and urban consumers. This also had an impact on coal exports, which were also constrained by the lack of transport.

Road transport was prioritised by the post-apartheid government with the establishment of the South Africa National Roads Agency Limited (SANRAL) in 1998. According to the Strategic Framework the total extent of the road network is approximately 752 000 km, comprising approximately 532 000 km of classified roads and approximately 220 000 km of unclassified roads. Historically, many of the unclassified community access roads have been neglected⁴¹⁸. The challenges faced by South Africa's road infrastructure is that whilst road usage is continually increasing, road funding in real terms generally declines over time putting road expenditure under constant pressure. According to the Department of Transport, the current state of the road infrastructure requires strengthening, asset preservation rather than expansion and sustainable access provision, especially in rural areas. This has

⁴¹⁷ Coleman F. L. (1983) *The Economic History of South Africa*, HAUM Educational Publishers, Pretoria

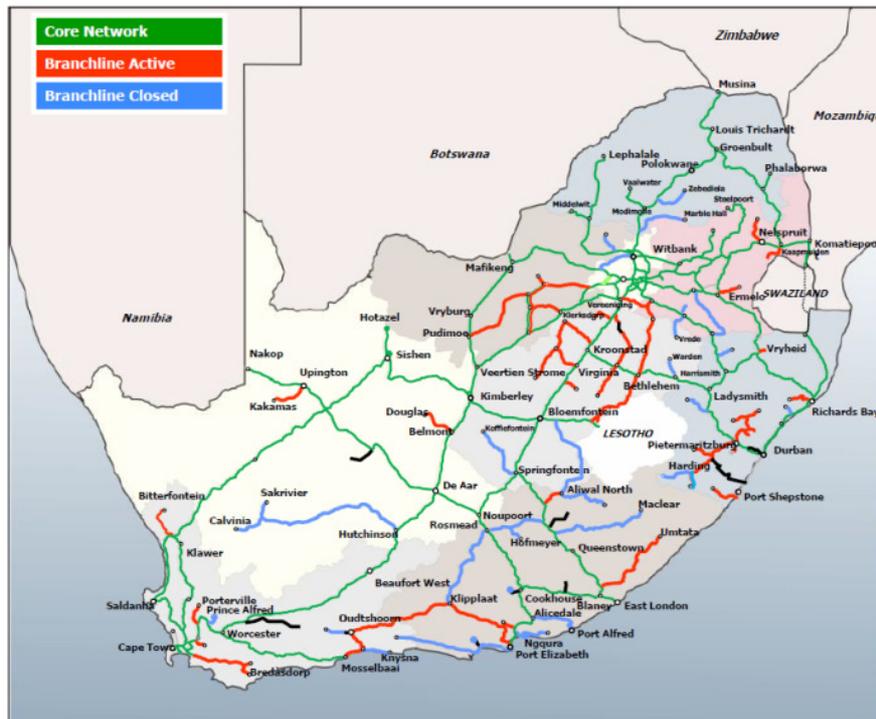
⁴¹⁸ National Department of Transport, *Road Infrastructure Strategic Framework for South Africa Discussion Document*

necessitated a network-wide Asset Management System which manages the entire road network. The overall state of SAs road network has been deteriorating over the past few decades due to underfunding and was one of the reasons that led to the formulation of the Road Infrastructure Strategic Framework for South Africa.

Towards the end of the 1970's adequate resources of road funds started to diminish, as the country was faced with rapidly escalating costs in other sectors of society. Significant disinvestment in the road sector took place with ultimately disastrous consequences for the network and its users. This was combined with a rapid growth in road traffic, occasioned mainly by rapidly rising vehicle ownership rates in the private sector as well as a phenomenal growth in freight conveyance by road, primarily because of the inability of the rail mode to offer an acceptable service to shippers, but also by deregulation in the movement of freight – a consequence of the national transport policy studies undertaken at that stage. It is estimated that about 100Mt/ann of potential rail traffic has been lost to road hauliers. National roads, through the advent of loan financing redeemed by road tolling in the early 1980's, and the concessioning of highways to private consortiums from the mid-1990's has to a large extent managed to maintain the national road network in an acceptable condition. Provincial roads however suffered severely from this disinvestment, and in the face of severe financial constraints the authorities were unable to maintain the quality of the provincial road system beyond the mid-1980. Severe overloading by many road freight hauliers has exacerbated the position and has led to major structural damage to roads in certain haulage corridors.

In South Africa rail transport formed the back bone of the transport system. In the first half of the last century the growth in rail was spurred by gold mining and other mining developments. The expansion of South Africa's railway network has progressed at a very slow rate. In 1900 the entire railway was 7 000 kms and within 10 years it had increased by 4 300 kms to 11 300 kms of railways⁴¹⁹. Since then, the rail network expanded gradually and in 2005 the total network comprised of 25 000 route kilometres, an addition of about 14 000 kms since 1910. It is therefore not easy to appreciate the capital investment backlogs that the Rail Transport Policy is trying to address. Of the total network about 12% is in private ownership.

⁴¹⁹ Department of Transport, National Transport Master Plan 2050 Phase 1: Status Quo of Transport, May 2011, pp10.



Source Transnet 2011

The state of South Africa's rail transport is in a similar state to that of road transport. According to the National Transport Master Plan 2050⁴²⁰, South African railway infrastructure and rolling stock is approximately 35 years behind the current state of the art. On top of this, more rail freight lines have been closed over the last few decades than new ones being developed, other than some specialised lines, such as Sishen (Kathu). The challenge is three-fold –

- firstly, the need for a definite policy shift from the Cape Rail Gauge of 1067 mm to the Standard Gauge of 1435 mm;
- secondly, the need for a qualitative and quantitative analysis both of the socio-economic impacts if the country shifts to standard gauge, and the strategic constraints and lost opportunities it faces if it does not; and
- thirdly, to re-assess the role of rail in the country and in particular which corridors where this mode is not available or where it is inactive, could or should qualify for new rail investment or revival⁴²¹.

This applies to long national corridors as well as metropolitan and other shorter distance corridors. As part of the above re-assessment, possible regulatory mechanisms should be considered to ensure undesirable freight commodities (dangerous goods and heavy mineral products) that are currently using road transport and which should rather be transported by rail. The baseline freight rail performance is summarised in the table below.

⁴²⁰ Department of Transport, National Transport Master Plan 2050 Phase 1: Status Quo of Transport, May 2011

⁴²¹ Ibid, p.1-3, (2011)

With respect to rail, they have been calls to unbundle State-owned port and freight rail company Transnet of its rail infrastructure assets. The rail division would become an operator competing with private-sector companies, if proposals to open the rail sector to private investors are adopted. Though the economic arguments of efficiency that justify the proposals find theoretical and in some cases empirical support, the cost of an “unintegrated” freight solution to the overall country’s needs should be comprehensively evaluated. Privatisation efforts that lead to an increase in user costs could very well create a whole set of problems than they intend to solve. At the same time the proposals also serve as a call to action which in the event of integration being chosen over an unbundled solution the concerns around efficiency should lead to substantive strategies and changes that try and remedy the lacklustre performance of the SOE. This debate is important as it has serious implications on the minerals sector, which is the single largest user of rail infrastructure in South Africa. To the extent to which the mining sector plays a significant role in the economy these concerns, by default, will also have a bearing on the national economy.

Annual Tonnes hauled on Rail by Origin and Destination Province (2005)⁴²²

Province	Origins		Destinations	
	Annual Tons	% of Total Tons	Annual Tons	% of Total Tons
Mpumalanga	89 933 788	49.4%	9 489 332	5.2%
Northern Cape	43 224 771	23.7%	1 145 638	0.6%
KZN	14 935 906	8.2%	97 726 530	53.6%
Limpopo	10 370 394	5.7%	1 307 205	0.7%
North West	7 665 651	4.2%	2 467 472	1.4%
Gauteng	6 669 184	3.7%	23 280 668	12.8%
Free State	3 854 907	2.1%	3 030 441	1.7%
Western Cape	3 069 106	1.7%	34 957 491	19.2%
Eastern Cape	1 365 747	0.8%	4 348 159	2.4%
Botswana	430 128	0.2%	741 180	0.4%
Swaziland	206 535	0.1%	261 144	0.1%
Zambia	157 795	0.1%	683 000	0.4%
Namibia	134 679	0.1%	395 120	0.2%
DRC	47 790	0.0%	300 161	0.2%
Mozambique	19 710	0.0%	1 992 330	1.1%
Zimbabwe	1050	0.0%	112 140	0.1%
TOTAL	182 086 241		182 237 993	

This has led to the planned Rail Transport Policy. This policy is meant to reinforce issues such as the movement of cargo from road to rail, realignment of institutional arrangements in the rail sector and extension of rail passenger services in the rural areas. The Department of Transport is hoping that the policy will bring certainty to the Rail Sector regarding the governance of the sector and closing of pertinent policy gaps. Some of the key policy issues that would be addressed relevant to the minerals sector include capital investment backlogs, deteriorating rolling stock and aging infrastructure, inefficient operations and increasing gaps in the supply of specialized technical skills. The draft policy is expected to undergo parliamentary processes during the financial year 2011/12.

⁴²² Department of Transport (2011) National Transport Master Plan 2005 – 2050 Consolidated Report Phase 1: Status Quo of Transport, Government of South Africa, pp. 6-9

It also has to be emphasized that, although there has been a shift away from mining and agriculture to manufacturing and services, the dominant economic activity of the former two sectors still have extensive linkages in the economy which require continued investments in the transport infrastructure that services these sectors. The mineral sector's medium to long term outlook remains plagued by, inter alia, inadequate infrastructure, particularly transport related infrastructure; bureaucratic red tape; and high labour costs relative to global players⁴²³, which has dramatically limited the extent to which the country has been able to benefit from the exceptional mineral prices driven by Asian demand since 2002.

Regional Mineral Activities and Infrastructural Needs

An understanding of the regional distribution of mining activities is important in understanding regions that should be priorities in terms of mining transport investments. The National Transport Master Plan (NATMP) 2050 Phase 1: Status Quo of Transport provides an extensive overview of the state of South Africa's transport infrastructure. The importance of the NATMP is that it is the only document in South Africa that tries to systematically consolidate the issues around South Africa's transport infrastructure. The following sections only cover those aspects that are relevant to the mining industry.

Province	State of Mining	Infrastructural Needs
Eastern Cape	The minerals industry is very small with a value added of only R179 million in year 2000. Mining is predominantly located in the eastern areas. Mining activities include asbestos, clay and sulphur mining near Port St. Johns; coal mining at Indwe; granite mining in the Willowvale area; and clay mining around Grahamstown. Deposits of limonite occur in the coastal dunes. However, the E.Cape is a major mineral transit route (Mn) with potential for an iron ore slurry line from Kathu.	Low, though the low grade coal resources in the Indwe/Molteno area are under assessment. Also, the province hosts the manganese ore terminal (from N.Cape) which needs to be relocated to the Port of Ngqura. Iron ore slurry line from Kathu requires reassessment.
Free State	Minerals are important to the province (major employer). Most profitable gold mines are located in the province (NE bordering on the North West and Gauteng Provinces). Also produces a substantial portion of silver, coal and diamonds. Mining concentrated in the area of the Matjhabeng and Masilonyana Local Municipalities (Welkom, Virginia, Allanridge, Henneman and Theunissen area), which is part of the Lejweleputswa district Municipality. The Bothaville titanium ore resources need reassessment.	Future mining related infrastructure low due to continued decline of the gold mining sector. Might be offset by efforts to stimulate the agricultural sector. Possible Ti ore (ilmenite) logistics in future.
Gauteng	Vanadium can be found North of Pretoria but is not of much significance. Diamonds are mined in the Cullinan area, but also not of much significance (compared to other diamond resources). The Witwatersrand deep gold mine belt running through Gauteng is vastly depleted, but there are possible resources to the south and west overflowing into NW Province. The West Rand portion of the belt is expected to be depleted within the next 10 to 20 years. Deep level resources of the Central Rand need reassessment. However, a major PGM refinery is located in Springs and most iron ore smelting is undertaken in Van der Bijl Park (AMSA).	Low The most important minerals that will influence development and transportation are PGMs, coal, copper, diamonds, iron ore and gold. However, several other mineral corridors could traverse Gauteng in the future.
KwaZulu Natal	Diverse mining operations for the extraction of a range of mineral products, coal, lime, slate, titanium, granite, sand and stone quarries for construction materials. Production	Very high demand for mineral related infrastructure. Investments in rail are needed

⁴²³ Ibid, p. 3-40, (2011)

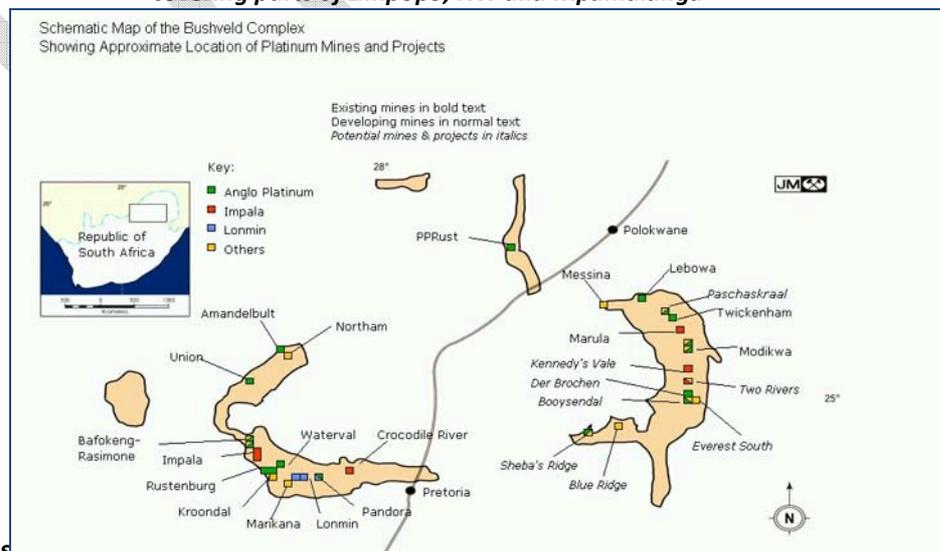
	<p>facilities for ferro-silicon, ferro-manganese, aluminium, titanium, zircon and rutile. Richards Bay is the largest HMS mining and mineral processing area in the world, with reserves said to last for the next 50 years. Coal mining, mostly in the northern areas is the major activity 2.2 million Metric tonnes of coal are mined per year. Most of the coal produced in KwaZulu Natal is used by industries in the province, or exported via the Port of Durban, with very little distribution into other provinces to the north. Richards Bay is currently the centre for the country's aluminium industry operations (based on imported alumina). The Piet Retief iron ore resources are under assessment.</p>	<p>to move transportation of ores from road. Investments in port facilities (terminals) to facilitate export of ores. The KwaZulu Natal coal transportation modal split is 300 kt/an by road, and ~1.9Mt/an by rail. Approximately 69Mt/an of coal is exported via the RBCT (Richards Bay). The Piet Retief Fe resources may require major infrastructure.</p>
Limpopo	<p>70 operating mines, of which 20 are large-scale mining and 50 are small to medium scale mines. Venetia diamond mine, the Grootegeluk and Tshikondeni collieries, the Amandelbult, Northam, Potgietersrus, Messina, Lebowa, Marula and Modikwa PGM mines and the copper, phosphate and vermiculite operations at Phalaborwa. These mines account for some 80% of the province's mineral revenue. The province's primary minerals income was 17.4% of South Africa's total primary mineral sales in 2005. The province has a vast coal reserves (Waterberg, Springbok Flats, Limpopo and Soutpansberg). The Phalaborwa Mine (Ba-Phalaborwa Municipality) operates South Africa's largest copper mine, but reportedly only has ~8y of life left. The Venetia Mine (Musina Local Municipality) is the only major diamond mine to be developed in South Africa in the past 25 years. Thabazimbi, in particular the Northam region, forms part of the north reaches of the Merensky Reef, which contains the world's largest concentration of PGM reserves. The Reef runs around the edge of the Bushvel Complex). Operators include Anglo Platinum, Impala and Goldfields. The huge iron, titanium and vanadium resources of the Bushveld magnetites require reassessment.</p>	<p>Given the large concentration of mineral deposits in Limpopo future infrastructural demands are expected to be very high, particularly the construction of a new coal export line for the Waterberg and adjacent resources in Botswana (Mmamabula & Morupule). Also, possible future infrastructure for magnetite mining and for the Springbok Flats coal basin.</p>
Mpumalanga	<p>Mining and quarrying contributed about 18.8% of provincial GGP (third highest after North West and Limpopo). Main minerals found in the province include coal (in 2005, 245Mt = 81% of coal in the country), sand, clay, gold, silver, chromite, granite, manganese and vanadium.</p>	<p>Infrastructural needs for the province are high given its role as the leading coal producer (rail). Its Bushveld magnetites and chromites may also require future infrastructure.</p>
Northern Cape	<p>Main economic sector in the province. Diamonds in Bultfontein, Dutoitspan and Wesselon, iron ore in Sishen, Lead near Springbok and Manganese in Hotazel. Produced approximately 33% of all diamond production and 27% of kimberlite diamonds in 2003. The Northern Cape Sishen, the biggest iron ore deposits in South Africa, account for the 80% of South Africa's production. Sishen mine was produced up to 25 million metric tonnes of 65% pure iron in 2006.</p>	<p>Due to the presence of iron ore in the province a steady increase in the demand for iron can be expected. Hence infrastructure needs will grow.</p>
North West	<p>45% of all mining employment in South Africa taking place in the province. Mining contributes 23.3% of the province's GDP to the economy and accounts for nearly 20% of total employment in the province. The areas surrounding Rustenburg (the second principal city in the province) and Brits, boasts the largest single platinum production in the world. Produces 70% of the world's platinum from these mines. The province is also the third largest provincial producer of gold in the country (at 139.2 metric tonnes - 24% of the total in 1994). Note that in 1994 there were 87 mines in North West out of the RSA</p>	<p>Based on need the NW is also expected to have high demand for mining related infrastructure. Given its contribution to total national employment supporting road commuter transportation will also be needed.</p>

	total of 843 (i.e. 10% of South African mines), and there have been further new developments and some closures during the past ten years. The major mining activities in North West include gold, platinum, chrome, diamonds, nickel, cobalt, manganese, vanadium, lead, zinc and fluorspar. Quarrying activities include granite, slate, dolomite, gravel and aggregates.	
Western Cape	The Western Cape is not a major producer of minerals. Heavy mineral sands containing ilmenite are mined at Brand-se-Baai on the West Coast. The output from the process is pig iron, titanium, zircon and rutile used in the beneficiation of steel. Current production is 200 000 metric tonnes of titanium slag, 120 000 metric tonnes of high purity pig iron, 25 000 metric tonnes of rutile, and 125 000 metric tonnes of zircon. Most of this is exported through Saldanha in bulk, or in containers through the Port of Cape Town. Dolomite for cement production is mined in the De Hoek area and cement production is major industry in the province. Granite is mined in the Klawer area and an amount of 54 000 metric tonnes was recorded on the Bitterfontein line for 2004, of which 36 000 metric tonnes was exported.	Low

Mineral Based Manufacturing and Transport Infrastructure

South Africa’s minerals industry is concentrated primarily around primary activities such as mining due to the availability and close proximity of raw materials. The majority of primary steel production takes place around the Gauteng and Mpumalanga regions. The only other production plants in the country are in Newcastle (KwaZulu Natal) and Saldanha Bay (Western Cape), which is primarily involved in exports due to coastal location. In the North West manufacturing is almost exclusively dependent on the performance of a few sectors in which the province enjoys a competitive advantage (agriculture and mining: PGMs & chromite). Industrial activity is centred on the towns of Brits, Klerksdorp, Vryburg and Rustenburg.

Map showing Bushveld Complex (PGMs, chromite, magnetite) covering parts of Limpopo, NW and Mpumalanga



Provinces

Source: <http://www.platinum.matthey.com/media-room/photo-library/mining/>, accessed 08/11/11

The Northern Cape is the major source of iron ore in South Africa; however, there are no metal producers in the province. Most of the steel is produced in Vanderbijlpark, Newcastle and Saldanha. In Northern Cape the major steel users are the mining and construction industries in the Kathu and Postmasburg area. Most rail lines in Northern Cape are dissected by various provincial borders and as such, do not form end-to-end corridors within the borders of the province.

In the north-western area of Free State, the mining industry is a source of a considerable amount of heavy tipper traffic. The petro-chemical industry moves large volumes of petroleum products by road.

The main road freight corridor in Limpopo is the N1 between the Gauteng border and Beit Bridge. The N11 corridor crosses the N1 to provide access to Botswana via Martins Drift and provides one of the more popular corridors for freight transport to Zambia, northern Namibia and the DRC, via Kazangula Ferry. In the Eastern area in the vicinity of Phalaborwa there is considerable amount of heavy mineral traffic and to the north, volumes of agricultural commodities. In the west of the province there is considerable mining activity and heavy vehicle traffic in the vicinity of Lephalale and Thabazimbi. The total length of the existing main Limpopo provincial rail network is about 1 135km. The network in the Province is fairly well developed and connects to the major mining, industrial, forestry and agricultural nodes in the Province. Limpopo has a fairly extensive coverage of branch lines, which could create an enabling environment for other mining, industrial, forestry and agriculture activities in the region, if the rail's service quality were able to handle perishable agricultural traffic.

In Mpumalanga, several national corridors cross from north to south and east to west. The N4 national route between Gauteng and Ressano Garcia (Maputo Corridor) provides a link from the port of Maputo to Gauteng. In the Highveld section of this route, there is extensive movement of coal and mineral ores by road in the vicinity of Witbank and Lydenburg. On the Lowveld section from Nelspruit through Komatipoort, the traffic is mainly agricultural with concentrations of timber traffic to the north and to the east, bulk sugar cane traffic supplying the two mills in the Lowveld area (Malelane and Driekoppies). The Maputo Corridor (N4) carries approximately 4Mt/an in the vicinity of Komatipoort with approximately 3.5Mtpa crossing the border to Mozambique. The major route to the south east of the Province, from Ermelo via Piet Retief is a major corridor for the transport of timber, board and paper products and is increasingly being used for the transport of chromite ore by road to Richards Bay. In the east of the Province, the chemical industry in the general area of Secunda is a major source of heavy vehicle cargo, on the route through to Gauteng.

Road freight traffic in Northern Cape is most extensive along the Orange River area in the vicinity the N14 route from Upington to the north east, which serves as the link between Northern Cape and Gauteng and is heavily used in the vicinity of Kuruman and Vryburg for mineral and agricultural traffic. Road transport in the vicinity of Kimberley includes cement from ULCO and mineral ores from Danielskuil and Lime Acres. It is reported that manganese ore from Postmasburg is being transported by road directly to Richards Bay for export.

Road freight traffic in North West is heaviest in the northern areas in the vicinity of Brits, Rustenburg, Magaliesburg. In the south east of the Province, there is extensive mining activity in the vicinity of Klerksdorp and Potchefstroom and the distribution of fuels and grain to the eastern areas and the West Rand. The province has an extensive rail line network. Both road and rail transport are used for movement of mining raw materials.

The major arterial routes in the Western Cape are the N1 national corridor between Cape Town and Gauteng and on the west coast, the N7 which runs from Cape Town to the Namibian border at Vioolsdrif. The coastal corridor via the N2 national road is the arterial route between Cape Town and Port Elizabeth, but does not carry high volumes of traffic. Steel from the plant at Saldanha and cement from Riebeeck West are transported on the N1 as well as fruit, fish, vegetables and fruit juices. The regional traffic outside of the Peninsula area of the Western Cape tends to be largely agricultural, serving the wine and fruit industries with packaging and supplies.

Major mineral ore railway corridors (iron ore, manganese ore and coal):

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)

1) 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?);
- All improvements/expansions will revert to Transnet at the end of the concession.

Slurry Pipelines

The Kathu iron ore resources produce a significant fraction of iron 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, for a local steel plant and for export. Brazil has a major iron ore slurry pipeline (Samarco) that carries ~20 Mtpa over 400km from Germano (Alegria Complex) to the coast where the fines are pelletised (Ponto Ubu) before export (Espirito Santo)⁴²⁴. A new pipeline will add a further 20Mtpa by 2014.

In this regard, the Ministers of Public Enterprises, of Trade and Industry, of Water Affairs and of Mineral Resources should be tasked with assessing the viability of slurrying at least 25Mtpa of fines to 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 Brazil and India have leveraged iron ore exports to obtain steel plants and both Sweden and Finland used the iron ore resources to underpin state steel producers.

Critical Issues Rail, Road & Slurry pipelines

ISSUE	STATE INTERVENTION	IMPACT
Mining freight traffic is increasingly using road instead of rail at both the expense of non-freight traffic and the condition of the country's road network. ⁴²⁵	Sectoral strategic interventions should be considered when implementing the national freight logistics strategy in rail, roads, air and ports to ensure that the relevant sectoral freight is transported over the most appropriate transportation mode. This can be achieved through the appropriate regulatory mechanisms.	This will serve to remove current system blockages, especially heavy freight from road to rail, thereby increasing freight movement capacity, overall transportation efficiency and the negative consequences related to overloading on the countries road network.
Capital backlogs in rail investments have led to the substitution of rail for road transport in moving mineral products and have stunted the expansion of exports to Asia.	Investments in rail need to be scaled up to address these backlogs (possibly through conditional user-PPPs) to move minerals back to rail as well as to expand mineral rail capacity. However, exports should not compromise domestic supply, which should be at cost-plus prices.	This will reduce the volume of traffic on national and provincial roads, which will extend the life span of the road network. Expand exports and lower costs to domestic consumers

⁴²⁴ Samarco 2011: <http://www.samarco.com>

⁴²⁵ Evidence of this can be seen in Limpopo province where there is considerable mining activity and heavy vehicle traffic in the vicinity of Lephalale and Thabazimbi. Also in the Eastern area in the vicinity of Phalaborwa there is considerable amount of heavy mineral traffic, National Transport Master Plan 2050 (2011)

<p>There is a lack of modal coordination and integration; including poor land use/transport integrated planning in South Africa. Transport is slow and inadequate to respond to the needs of committed and/or proposed land use developments and not optimising economic and spatial development.</p>	<p>The State needs a policy framework that creates this desired coordination and integration of South Africa’s transport system. The National Transport Master Plan can form the basis of such a framework.</p>	<p>A dynamic and efficient transport system that serves the needs of the economy.</p>
<p>The depletion of the Mpumalanga coalfields will lead to a long term decline in exports if other coalfields are not developed timeously (Waterberg (& Botswana), Soutpansberg, Limpopo and Springbok Flats)</p>	<p>Commission a study to determine the most cost effective rail routes in the long term (cost/t-km in year 20). Export allocations on condition of cost-plus domestic supply. Determine optimal financing model (PPP?, Transnet Capex and or Gearing and or, Revaluation and or Project finance??)</p>	<p>Expanded exports and economic activity in other sectors serviced by the new rail corridor. Domestic supply at cost-plus prices. Lower electricity tariffs (job creation)</p>
<p>Iron ore slurry pipelines to lower the cost of exports</p>	<p>Assess the viability of iron ore slurry lines from Kathu to Ngqura, Phalaborwa to Maputo and Piet Retief to Richards Bay, conditional on cost-plus supply to local industry (steel)</p>	<p>Expanded exports. Competitively priced steel into local economies: expanded employment opportunities. Possible relatively clean water catchment transfer.</p>

Ports/Terminals

Most resource countries rely on mineral exports for revenue. For these countries to be able to benefit from international trade they need to have, on top of roads and rail, ports capable of handling the shipping of bulk mineral exports. In South Africa, two ports, Saldanha and Richards Bay, perform the task of handling bulk cargo. Unlike most of the other major ports, these were developed to enable the transportation of mineral ores (iron and coal). These special ports were built in the post war years, Saldanha Bay, which handle millions of tons of iron ore annually mostly destined for Asia. The ore is brought by special trains from Sishen/Kathu in the Northern Cape. Richards’s Bay is an artificial harbour built in the 1970s with the aim of providing fast handling of bulk coal exports. It is linked directly with the Transvaal coalfields by a specialised railway line⁴²⁶.

There are currently 18 ports of note along the 2 954 km long RSA coastline which include 8 multi-purpose commercial ports in three provinces, fishing harbours and other government and private port facilities. The commercial ports are located in KwaZulu Natal (Richards Bay and Durban), Eastern Cape (East London, Ngqura and Port Elizabeth) and Western Cape (Mossel Bay, Cape Town and Saldanha Bay), with a total land area of 6 272 hectares (ha). Durban and Richards Bay constitute two of South Africa’s largest and busiest ports, with Durban being the busier of the two and Africa’s largest and busiest port. However, Richard’s

⁴²⁶ Ibid

Bay is larger in terms of tonnage. The only other province with a coastline is Northern Cape which has three small craft harbours.

These ports are managed by Transnet National Ports Authority (TNPA) as a landlord agency of Transnet. Most of the terminals in the commercial ports are operated on common user basis by the Transnet Port Terminals (TPT) which is another business division of Transnet. TPT manages 15 port terminals and that makes the parent government parastatal both landlord and tenant, a situation that has negative implications for the regulation and efficiency of the ports.

The ports and their relative geographic locations, capacities and specialisations lend themselves to zoning into three regions: western region (Saldanha, Cape Town and Mossel Bay), central region (Port Elizabeth, Ngqura and East London) and eastern region (Durban and Richards Bay). Maputo Port in Mozambique also mainly serves the SA (Gauteng) market. Within the commercial ports, there are specialised terminals which include:

Critical Issues: Ports/Terminals

Issue	State Intervention	Impact
Transnet Port Terminals (TPT) manages 15 port terminals which makes Transnet both landlord and tenant, a situation that has negative implications for the efficiency of the ports.	Change regulatory and policy environment following the implementation of the National Ports Act 2005.	Improved efficiency and accountability.
Although South Africa's ports are ranked respectably worldwide, they face a series of challenges: Skills shortages, increasing congestion, poor regional integration, weak maritime connectivity and the carbon intensity of the current system.	Create additional capacity through efficiency improvements and expansion, attract more cargo to rail and promote inter-modal solutions. Develop a transshipment hub (Ngqura?) to improve maritime connectivity (regional and global)	This will not only improve overall efficiency, it will also see SA move up in the logistic performance index (LPI) ranks which will help in attracting investment.
The Richards Bay Coal Terminal (RBCT: private- user-owners), is the largest in the world but is constrained by rail capacity.	Expand the Coalink (Ermelo-R.Bay) capacity, if necessary through PPPs, but make requisite Eskom supply a condition for the allocation of export capacity.	Expanded exports without compromising Eskom supply. Lower electricity tariffs nationwide, due to cheaper coal into power stations.
Port Elizabeth Transnet manganese terminal is constrained (old and impacts negatively on the Metro).	Transfer the Mn ore terminal to the new Port of Ngqura. Expand the Hotazel-PE line, if necessary, but on condition of a minimum ferro-alloy conversion	Expanded exports, positive revenue to Transnet, greater beneficiation
Saldanha Bay iron ore terminal (Transnet) is constrained by the rail (Orex) capacity.	Consider a user-concession (PPP) for the rail expansion, but make requisite domestic supply (steel) at cost a plus price (with similar pricing obligation on the client-steel producer) a condition for the allocation of	Expanded exports and cost-effective inputs into local steel plants. Cheaper steel into economy with concomitant job creation.

	export capacity. The terminal should remain with Transnet.	
Waterberg (& Botswana), Soutpansberg, Limpopo and Springbok Flats future Coal export routes (port/terminal)	Determine the best location for future port/terminal on the basis of cost (price/t), collateral impact on other sectors and intra-regional trade.	Expanded exports. Expanded economic activity in other sectors serviced by the new port/terminal. Job creation.

- Five dry bulk terminals: coal terminal and general dry bulk terminal at Richards Bay, iron ore terminal at Saldanha and manganese export terminal at Port Elizabeth. Port of Richards Bay is the largest African port in terms of freight handled. The Port of Saldanha is the deepest and largest natural port in Southern Africa, the largest iron ore exporting facility in Africa, the only iron-ore handling port in South Africa and the third largest port in terms of tonnage handled. All the dry bulk, container and car terminals are operated by TPT except for the Richards Bay Coal Terminal which is a private sector facility.
- Three container terminals at Durban, Port Elizabeth, and Cape Town. Durban is Africa's busiest port and serves the immediate Durban/Pinetown industrial areas, Gauteng, and the Southern African region. It is the largest container terminal with a capacity of 2 million teu (twenty-foot equivalent unit) and it is the second largest in terms of cargo throughput. Cape Town is world-renowned for the export of deciduous fruit, perishable and frozen products, as well as fishing.

Three car terminals at Durban, East London and Port Elizabeth; and Liquid bulk terminals including a dedicated chemicals and fuels basin with 8 berths and a tank farm area at the Port of Durban.

Energy

Coal is the highest energy input into South African Mining. The main reason is that coal is the major source of electricity in South Africa and electricity is used in about 85% of mining operations, After coal follows diesel which is used mainly in mining operations dominated by opencast mining as well as for on and off-road transportation in the mining sector. The remaining sources of energy, natural gas, paraffin and other petroleum products, are minor energy sources in the mining industry. The table below summarises the main costs and benefits of various energy sources in South Africa.

Possible energy sources for mining in South Africa

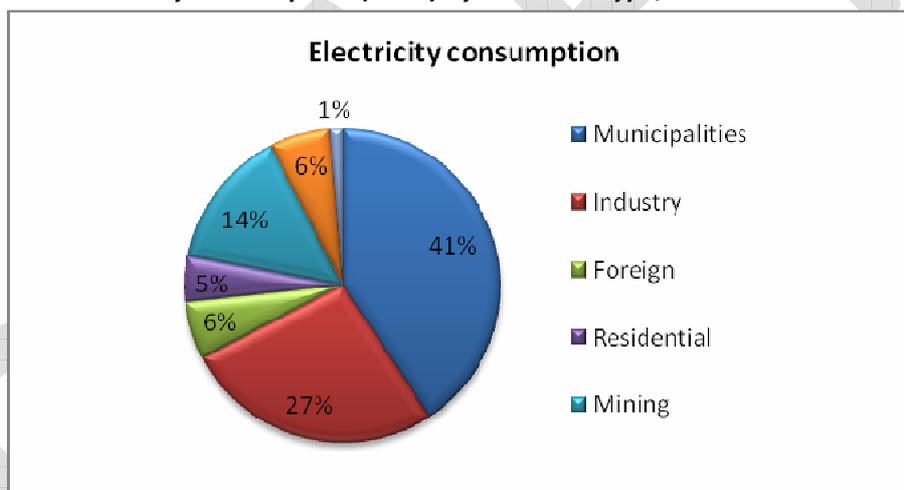
Source	Pros and cons	
	Benefit	Cost
Eskom bulk electricity	Usually fairly cheap and supply stable	Recent supply interruptions Eskom need to upgrade facilities- impacts on future price Contributes to national greenhouse gas (GHG) emissions profile
Natural Gas (domestic & imports)	Huge new resources (Rovuma Basin),\ Lower Greenhouse Gas emissions	Shale gas (Karoo) resources & impacts still under investigation Imports: Security of supply.
Diesel and	Only option for many	Used as necessity in remote areas

petroleum fuel	vehicles used in mining	Expensive and price fluctuates Contribution to GHG's
Renewable Energy	Lower emissions Very limited hydropower potential, but probably wind and solar potential	Much more expensive Supply networks not well developed
Imports from the Region (HEP)	Near zero carbon emissions Potentially very low cost More equitable trade flows	Security of supply

Electricity

South Africa's electricity sector is strongly linked to the mining industry, as 85% of electricity is generated from coal. This includes the 4.4% that comes from nuclear since uranium is also mined. Eskom supplies about 95% of South Africa's electricity and approximately 45% of Africa's. Of its total installed net capacity of 41.2 GW, coal-fired stations account for 35.0 GW and nuclear 1.8 GW⁴²⁷. In recent years, the amount of electricity consumed by the mining sector has decreased as can be seen from **Error! Reference source not found.** the figure below. This differs significantly from the situation in 1950s where 59% of power generated was consumed by the gold mines alone.

Electricity consumption (GWh) by customer type, 31 March 2011



Within the mining industry, Gold followed by PGM use the most energy as the picture for 2006 shown in the Table below. This is essentially due to the nature and complexity of mining these two products.

Percent of electricity used in mining 2006

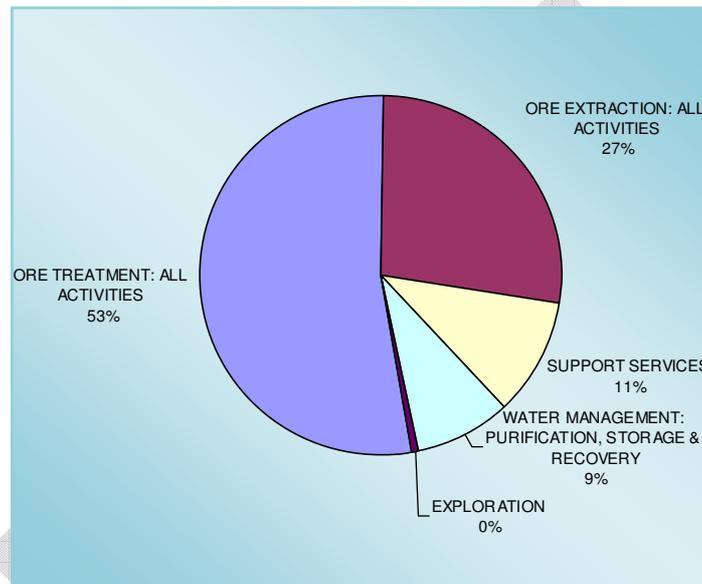
Product	%
Gold	47
PGM	32
Coal	7
Diamonds	4
Quarrying	3
Base metals	2

⁴²⁷ Eskom (2011) Transmission Ten-Year Development Plan 2011-2020, Retrieved: 04-09-2011
Eskom Holdings (2011) Annual Report,
http://financialresults.co.za/2011/eskom_ar2011/downloads/eskom-ar2011.pdf

Manganese	1
Iron ore	1
Limestone	1
Phosphate	1
Chrome	1

In terms of specific activities, ore treatment (concentration) is the most energy intensive followed by ore extraction as shown below. However, the reduction of the concentrate to metal/s, through smelting or electro-winning, is the most energy intensive (not shown).

Electricity usage by major activity⁴²⁸



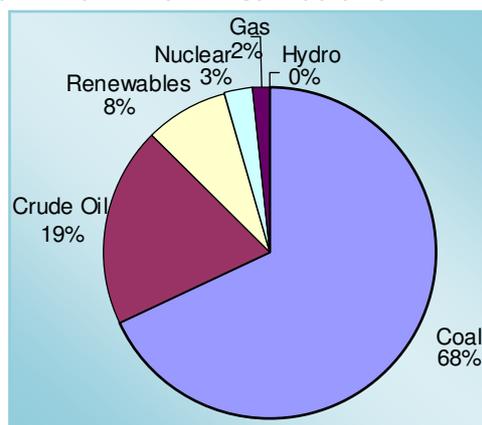
To a large extent, the electricity problems that South Africa faces today can be traced back to the 1950s. Lack of adequate investment due to uncertainty, existing with and post-war industrialisation in the early 1950s led to periodic power shortages. In order to address South Africa's electricity crisis, Eskom, has started encouraging independent power producers (IPPs) by putting in place the necessary policies to allow IPPs to supply electricity to the national electricity grid. IPPs are expected to deliver a minimum of 10% of South Africa's power needs by 2013.

Coal

Coal mining is the main primary source of energy supply to the mining sector.⁴²⁹ This is seen in the figure below:

⁴²⁸ Department of Minerals & Energy. *Digest of South African energy statistics 2006*. Department of Minerals & Energy of South Africa: Directorate: Energy planning and Development. 2006. South Africa.

⁴²⁹ Department of Minerals & Energy. *Digest of South African energy statistics 2006*. Department of Minerals & Energy of South Africa: Directorate: Energy planning and Development. 2006. South Africa.

South Africa's primary energy supply by source. 2004430

On the eastern Highveld section of Mpumalanga, the major industry is coal mining and this supplies coal through to the national power generation company (Eskom). Due to current rail constraints with coal supply to Eskom, approximately 50 million tonnes of coal was hauled on road from mines in the Mpumalanga area to Eskom power stations during 2008. The excessive use of the roads for haulage of coal is causing a major problem for the provincial government, where roads in the vicinity of Witbank, Hendrina, Ermelo, Palmford, and Bethal are being severely damaged.

Coal supply to Eskom

One of the biggest challenges that the 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 need 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 "strategic mineral" which would allow the DMR Minister to apply certain conditions on the production, storage, and use of coal in South Africa. Though calls to declare coal a strategic resource have yet to be formally considered the current status quo which resembles some kind of moral suasion might not lead to a resolution of the issue. A more formal approach that leads to concrete proposals needs to be initiated. This is important given the fact that with the demand for seaborne coal being at an all time high, a trend that is set to continue for years, if not decades, it is not difficult to appreciate the continued tension between the local mining industry supplying the lucrative export market over Eskom.

The issues surrounding the load shedding in 2008 are also complicated as they are related to poor planning and lack of investments in power generation during the Apartheid era. At the time of the crisis, some of these problems were also blamed on the quality of coal and

⁴³⁰ Ibid

intermittent supplies of coal to Eskom. In as far as the constraints related to lack of investments in new generation capacity are well understood the quality issues seem to have been related to Eskom stockpile policies through its maintenance programmes and the need to reduce working capital tied up in the stockpiles.

There have also been concerns that in order to meet capacity, Eskom has been forced in some cases to increase output above nameplate capacity, and, so, consuming more coal compared to design, and supply, contracts. The implications of this are that tied collieries, which were planned and built to meet the coal requirements for designed utilisation rates, are simply unable to supply additional coal, forcing Eskom to top up with coal from elsewhere. This means increased coal transport, translating to higher overall coal costs.

Critical Issues: Coal for Power Generation

Issue	State Intervention	Impact
Conflict between the domestic and export coal markets.	The state will have to strike a balance between increased regulation which might create its own problems and allowing exports of coal which bring in foreign currency to the South Africa. The resolution of this conflict of interest requires that electricity generation issues be separated from those that are related to capacity constraints due to investment backlogs and those that are related to the supply of coal from tied collieries. There may be scope to satisfy ESKOM demands first before exporting; concessioning of select power plants to consortia of coal producers and electricity consumers; importing low-cost carbon free hydropower from the SADC	More certainty regarding the supply of coal for electricity generation.
Railway constraints for coal transportation related to rail investment backlogs.	The proposals identified in the National Transport Master Plan need to be taken seriously, as it is clear that they have far-reaching consequences that extend beyond the freight industry.	Better supply of coal from collieries to power plants.

Recommendation

Electricity constraints have limited growth in the minerals sector, particularly downstream beneficiation. 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);
- 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 revenue foregone, plus a premium (15%?);

- The employment of all the power plant Eskom 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.
-
- **Convert from Coal to Gas:** 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 (CCGT⁴³¹) 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 optimal strategy for their exploitation. However, reportedly, large areas have already been allocated to Shell and a few other companies.
 - The viability of importing low-cost carbon free hydropower from the SADC. It is estimated that the SADC states in the tropics have in excess of 100GW of hydropower (HEP) potential;
 - Likewise, the viability of connecting to the vast natural gas resources on the West Coast (Angola) and East Coast (Mozambique and Tanzania). The lowest cost and most sustainable energy scenarios lie with deepening regional economic integration;
 - The implementation of incentives/disincentives to encourage greater energy efficiency and cogeneration in the minerals sector, particularly pyro-metallurgical processes.

Water

South Africa's average rainfall is approximately 500mm per annum which is below the world average of 860mm per annum. South Africa ranks as the twenty ninth driest country in the world. Further, the water resources are very unevenly distributed within the country. South Africa is estimated to 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.

⁴³¹ CCGT: Combined Cycle Gas Turbines

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.

Table: Water use per industry in selected industries (%)⁴³²

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

Subsequent conflicts between European settlers over access to mineral resources in South Africa magnified problems within the water sector, typified by the blatant use of government policies during the apartheid era to favour the mining industry at the expense of the majority population⁴³³. In their article Adler et al (2007) focus on water problems associated with the minerals industry by outlining the history of the industry in the context of water resource driven conflict. Using the history of the relationship between mining and the water sector they focus on two drivers of conflict pertaining to the mining sector at the sub-national level: (1) the laissez faire approach by government to regulation of the mining industry following the Anglo Boer war and (2) the negative externalities associated with mining activities, including but not limited to contamination of ground and surface water, and the subsequent damage to human and environmental health and ground stability, as well as socioeconomic, political, and financial effects.

The main conclusions from Adler et al carry important lessons for the future development of minerals in South Africa. The negative externalities associated with mining need to be internalised to avoid the failures that originated under apartheid. During this period, 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

⁴³² Quantec Supply and Use Tables 2006

⁴³³ Adler R. A. , M. Claassen, L. Godfrey, and A. R. Turton (2007) Water, mining, and waste an historical and economic perspective on conflict management in South Africa, *The Economics of Peace and Security Journal*, Vol. 2, No. 2

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.

Acid Mine Drainage (AMD)

Acid Mine Drainage (AMD) occurs when sulphide found in pyrite-based ore bodies is exposed to oxygen after the mine closes down. A team of Experts was instructed by a Task Team, chaired by the Directors General of Mineral Resources and Water Affairs to advise the Inter-Ministerial Committee (IMC) on acid mine drainage (AMD), comprising the Ministers of Mineral Resources, Water Affairs and Science and Technology and the Minister in the Presidency: National Planning Commission. At the beginning of 2011, the Expert team realised a report⁴³⁴ which examined the international and local literature on all aspects of AMD (e.g. its formation, control, management, treatment, and impacts) indicates that the subject has been extensively researched and studied globally and in South Africa. This has resulted in a sound but generic understanding of the process and the various components of the AMD problem in South Africa. This examination has also, highlighted the complexity of the host and receiving environments that militates against a single or 'one size fits all' solution to address the problems associated with AMD.

The report notes that AMD has been reported from a number of areas within South Africa, including the Witwatersrand Gold Fields, Mpumalanga and KwaZulu-Natal Coal Fields and the O'Kiep Copper District. The Western, Central and Eastern Basins are identified as priority areas requiring immediate action because of the lack of adequate measures to manage and control the problems related to AMD, the urgency of implementing intervention measures before problems become more critical and their proximity to densely populated areas.

Solutions

In the case of the Witwatersrand Gold Fields three generic solutions have been recommended by the report;

- To prevent water from reaching the surface through pumping water so that water levels in the basins are held at or below the relevant Environmental Critical Levels (ECLs).
- Ingress control — reduction of the rate of flooding and the eventual decant volume. To avoid the costly pumping and treating of water in the future.

Water quality management: Even if the above measures are implemented, AMD will still be produced and require treatment to a quality that is fit for a predetermined use, or for discharge to surface streams. It is important to include these conditions in the licence granting agreements and to implement and monitor these agreements.

LED and Corporate Social Responsibility/Investment (CSR/CSI)

⁴³⁴ Expert Team of the Inter-Ministerial Committee (2010) Mine Water Management In The Witwatersrand Gold Fields With Special Emphasis On Acid Mine Drainage, Report To The Inter-Ministerial Committee On Acid Mine Drainage, <http://www.dwaf.gov.za/Documents/ACIDReport.pdf> Retrieved: 06-09-2011

Though mines are often the key economic engines of the communities in which they are located, evidence to date shows, however, that in many countries the positive impact of foreign direct investment on local communities is often extremely limited due to the lack of automatic spill-over effects⁴³⁵. CSR/CSI in mining can be seen as a response to two undesirable consequences of mining. The first is related to the significant negative environmental and social impacts of mining that occur during the active mining phase, whilst the second is related to the post mining environmental and social impacts⁴³⁶. Historically, very little attention was paid to these two negative impacts, mining companies operated in areas without social legitimacy, causing major devastation, and leaving when an area had been exhausted of all economically valuable resources⁴³⁷. However, in recent years greater awareness of the impact of mining on the environment and the need to have mining activities that facilitate local economic development has seen increased prominence of CSR as a function that is pursued by mining companies. These two fall into the ambient of sustainable development as it relates to mining and have since taken centre stage to a point where they have been integrated in the mining acts of a number of countries. Part of the CSR of a typical mining company has involved the formulation of strategies that link its efforts on the environmental side to those at the community level. According to Jenkins (2004), in response to widespread and increasing criticism, the minerals industry has started to pay serious attention to its environmental and social impacts, manifesting itself in the formulation of CSR policies and strategies and a proliferation of CSR, environmental, sustainability and community reporting⁴³⁸. Local economic development as part of CSR arises from the fact that mining activities usually take place in close proximity to indigenous people, whose lives are often drastically changed as a result. In Australia, for example, the emancipation of indigenous rights, engagement with aboriginal groups has become a reputational and political imperative for mining companies. According to Guerra (2002), for the mining industry, CSR is about balancing the diverse demands of communities and the imperative to protect the environment with the need to make a profit⁴³⁹. In doing so mining companies must recognize newly empowered stakeholders (such as indigenous peoples), identify the interests, concerns and objectives of stakeholders and recognize the need to balance or accommodate these different interests.

The foregoing refers to the general state of CSR/CSI at a broad international level. In South Africa, the same trend can be observed more so given the establishment of the sustainability index for the Johannesburg Stock Exchange top 160 listed companies. In South Africa it is apparent that companies' reports are still primarily about public relations due to the fact that, an overview of South African companies' public reports indicates that there is a common lack of location-specific, non-selective, and comparable data in most public reports

⁴³⁵ World Bank (2010) Mining and Local Economic Development, <http://go.worldbank.org/WQH8UWT600>

⁴³⁶ Hamann and Kapelus (2004)

⁴³⁷ Jenkins and Obara (2008) Corporate Social Responsibility (CSR) in the mining industry - the risk of community dependency, CRRC 7-9 September 2008, Queen's University Belfast

⁴³⁸ Jenkins (2004) Corporate Social Responsibility and the Mining Industry Conflicts and Constructs, *Corporate Social Responsibility and Environmental Management*, 11, 23–34 (2004)

⁴³⁹ Guerra MCG. (2002) Community relations in mineral development projects. *The CEPMLP Internet Journal* 11:1–31.

regarding CSR/CSI activities⁴⁴⁰. To this end, a case study was conducted on the South African mining sector to try and assess the impact of CSR/CSI activities on the ground. Focusing on the North West province, they found that companies' dominant interpretation of CSR has been in terms of so-called corporate social investment: philanthropic initiatives in communities surrounding the mines or via national programmes in education, health, welfare, or small business development. Although these initiatives have represented welcome development contributions, they have had little impact on the root causes of social problems surrounding the mines. Many of these root causes relate to core business practices of the mining companies, especially employee recruitment and housing. CSR/CSI initiatives in South Africa might fail to achieve their intended objectives of enhancing local economic development (LED). The root causes that have led to the mining industries CSR initiatives missing their objectives arise out of core business practices framed under South Africa's apartheid era and the detrimental social impacts of migrant labour and large single-sex hostels. Post 1994 the mining sector has been struggling to structure both their social responsibility and investments into initiatives that lead to sustainable LED. In the case study area by Hamann and Kapelus (2004) it is pointed out that most of the social problems in the Rustenburg area, for example, arise from the mining companies pre-1994 practices such as single sex hostels. These have given birth to the growing informal settlements (squatter camps) around the mines, whose residents suffer deteriorating social conditions, including no service delivery, crime, and disease. Although the transition away from single sex hotels has been noted in recent years it seems as if this is not part of a deliberate and well-conceived CSR initiative. Rather it is borne out of companies' enlightened self-interest, over and above continuous pressure from the state and the unions, the desire to decrease the spread of HIV/AIDS among the workforce, decrease the risk of labour unrest, increase productivity, and establish legitimacy, (Hamann and Kapelus 2004) . With respect to the role of the State in mining as it relates to CSR, Hamann and Kapelus argue that, state CSR related prerequisites, as they are linked to the awarding of licences, as an example, could be used to effect change. They appear to be key drivers of change that elevate CSR/CSI at the company level to a function that is taken more seriously by management. The latter shows that the limited linkages from the mining activities to the local community can be enhanced by having appropriate local economic development (LED) instruments; mining projects could bring more than their own direct employment to a community.

Post-mining economic activity

Although it is now generally accepted that after the closure of a mine land should be returned to a viable post-mining use, such as agriculture, historically, once mining operations ceased the mines were boarded up and abandoned and the towns that had sprouted around the mine simply died out. Nowadays, it is not even sufficient to simply, physically, reclaim mined lands as the socio-economic impacts of the closure must also be assessed and managed⁴⁴¹. Challenges associated with mine closures are acute in a mature

⁴⁴⁰ Hamann and Kapelus (2004) CSR Mining in Southern Africa Fair accountability or just greenwash, Development, 2004, 47(3), (85–92)

⁴⁴¹ Limpitlaw, Aken, Lodewijks and Viljoen (2005) Post-Mining Rehabilitation, Land Use and Pollution at Collieries in South Africa, Presented at the Colloquium: Sustainable Development in the Life of Coal Mining, Boksburg, 13 July, 2005

mining country like South Africa. Without any legislative framework to guide the process of mine closures the industry remained unregulated up until the Mineral and Petroleum Resources Development Act (28 of 2002). This act set out the framework for the rigorous mitigation of both biophysical and socio-economic impacts related to mine closures. According to Swart (2003), early legislation was inadequate as it only paid attention to surface rehabilitation. Mining companies focused on economic gains whilst complying with the absolute minimum required by the law. This meant that environmental management and rehabilitation were rarely adhered to. Furthermore, Swart highlights that without a legislative framework many mining companies “used irresponsible mining methods with no regard towards protecting the environment and had often shirked their responsibility towards environmental rehabilitation by leaving an area unrehabilitated prior to them being liquidated or leaving the country” (Swart, 2003, p.489).

LED: Critical Issues

Issue	State Intervention	Impact
Deteriorating conditions around mines	Closer enforcement of CSR/CSI and tied to licences with the option of revoking licences where this is not observed.	Better mine communities with increased community involvement
Improving employment in mines communities	Requirement by the state for mines to employ indigenous people and offer first option to the community on a quartet basis	Increased employment in South Africa and at the local level

Review, Proposals & Conclusions

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 MPRDA⁴⁴², 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.**
- 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.

⁴⁴² MPRDA: Minerals & Petroleum Resources Development Act of 2002

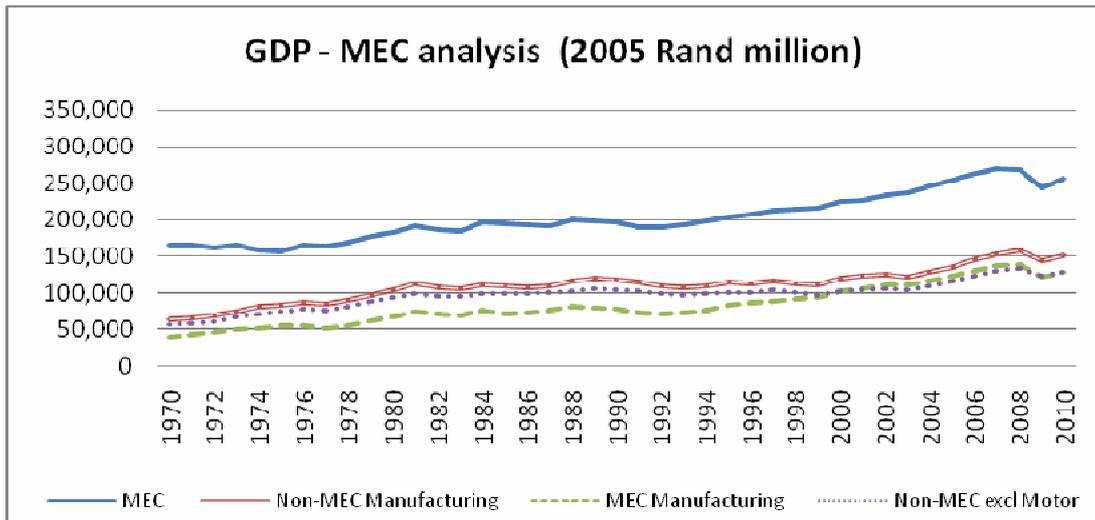
- 8) Before the European colonial invasions minerals were generally mined for local uses, such as clays for pottery, iron for hoes, arrow heads and assegais and copper and tin for ornamentation and vessels. However, although gold was mined for local ornamentation, it appears that southern Africa was 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
		mass	%World	Rank	Mass	%World	Rank	Years
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

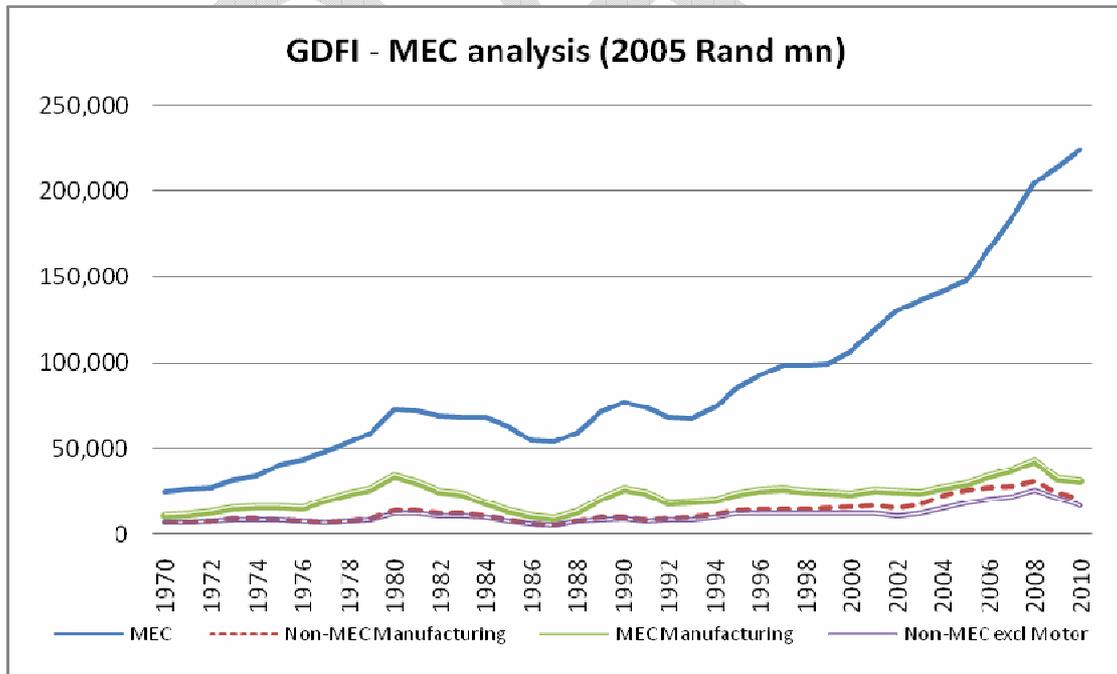
Source: SAMI 2009/2010, DMR 2010; and Wilson & Anhaeusser 1998: "The Mineral Resources of South Africa", CGS Pretoria (for BC- Bushveld Complex)

- 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.

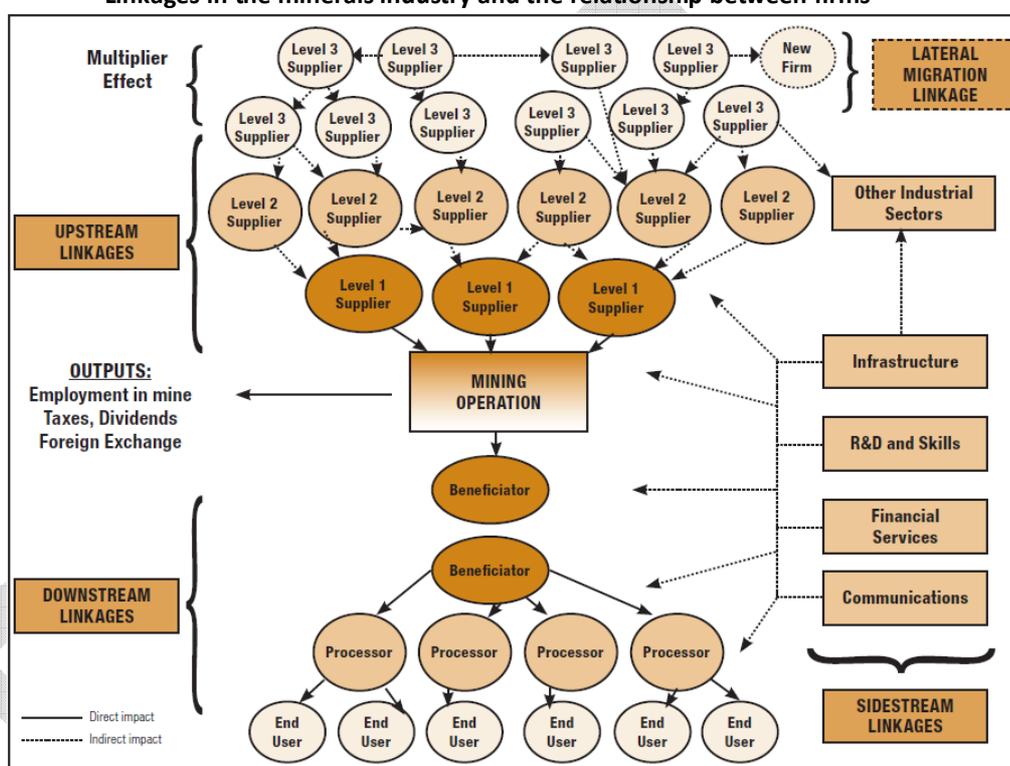


Source: Rustomjee 2011 (Quantec data)

- 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 HRD⁴⁴³ and R&D⁴⁴⁴) and the Spatial Linkages (sidestream- collateral use of mineral infrastructure and LED⁴⁴⁵). 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, 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” p103⁴⁴⁶

- 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

443 HRD: Human Resources Development

444 R&D: Research & Development

445 LED: Local Economic Development

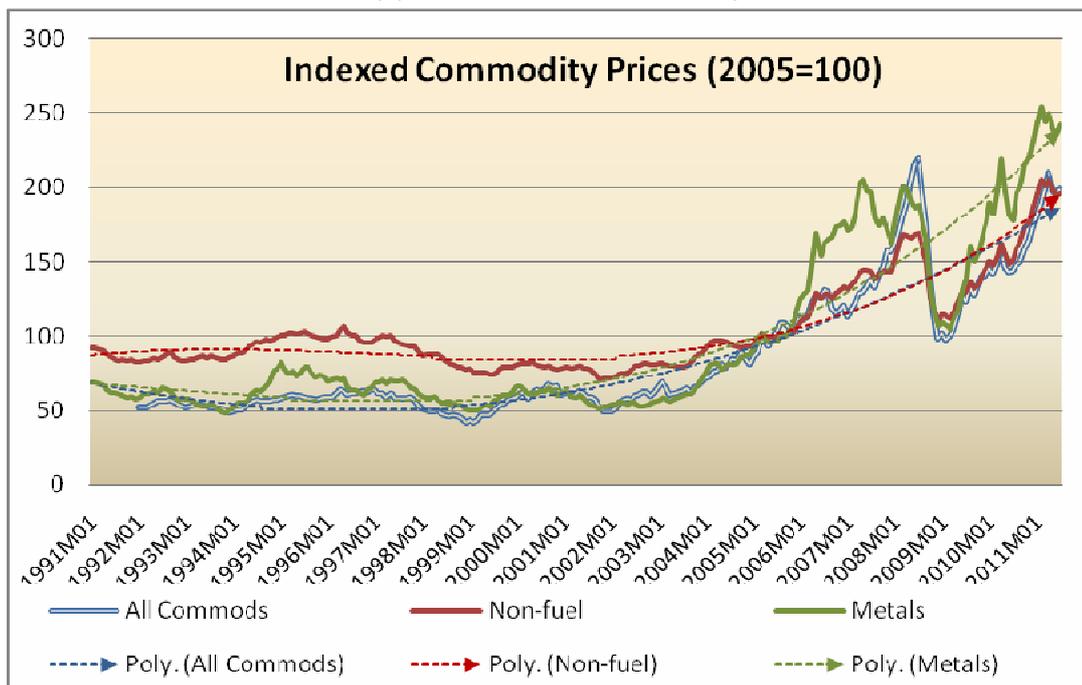
446 African Union 2011, “Minerals and Africa’s Development”, AU/UNECA, Addis Ababa

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/Miningtek⁴⁴⁷ 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 *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).

⁴⁴⁷ Comro: Chamber of Mines Research Organisation, became CSIR: Miningtek in the 1990s, which has virtually disappeared.

Commodity price indices (Jan. 1990 – July 2011)



Source: Derived from IMF 2011 Primary Commodity Prices⁴⁴⁸

- 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;*
- *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”⁴⁴⁹*

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 RMG⁴⁵⁰ 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,

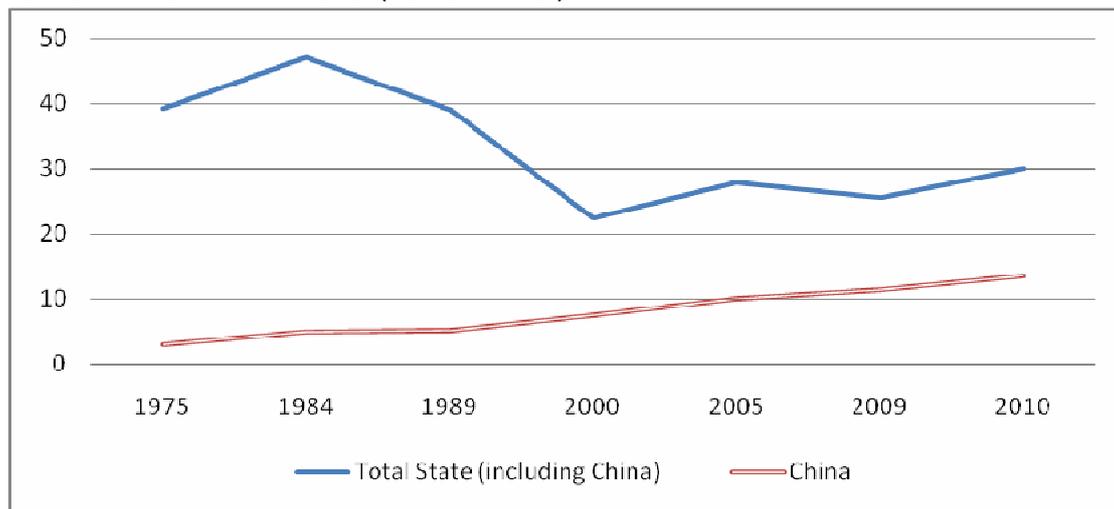
⁴⁴⁸ <http://www.imf.org/external/np/res/commod/index.aspx>

⁴⁴⁹ African Union 2009: African Mining Vision (AMV), Addis Ababa, February 2009

⁴⁵⁰ RMG: Raw Materials Group

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.

TOTAL STATE VALUE AT THE MINE STAGE (% OF TOTAL VALUE)



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 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 participation in minerals exploitation has featured prominently in the development of the mining sector internationally over the past 40 to 50 years. 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.⁴⁵¹

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* can be broadly defined to comprise a range of options from 100% equity participation, through partial or carried equity arrangements, to equity participation without financial obligation. Mineral resources have long been viewed as having special strategic significance. It 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). In a number of countries, this control has been exercised through direct state participation.
- 22) *Decolonisation*: With independence in the 1960s, many mineral-rich African countries went the route of state ownership 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.⁴⁵² 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 nationalisation. South Africa's mineral sector was predominantly owned by domestic capital (albeit "white") before 1994, but it is now

⁴⁵¹ 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.

⁴⁵² Ibid.

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 SMC⁴⁵³ experience had set in.⁴⁵⁴ Economic performance in many African and Latin American countries had been poor, the global mining and minerals environment had changed significantly with a long-term trend toward lower prices (falling intensity of minerals in global GDP). In addition, the break-up of the Soviet Union had eroded confidence in central planning and state ownership. 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*”.⁴⁵⁵ In Africa there have been several major reversals of nationalisation, including in particular Zambia, the DRC, Tanzania and Ghana. 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, remains common practice.

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 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.
<i>“Free” equity participation</i>	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.).
<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

⁴⁵³ SMC: State Minerals Company

⁴⁵⁴ Ibid.

⁴⁵⁵ AU 2011, “Minerals and Africa’s Development”, AU/UNECA, Addis Ababa.

	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. Cl: carried interest; WI: working or paying interest; F: "free" equity.

- 25) *Reasons for state participation*: The objectives of state participation can be divided into non-economic and economic objectives.⁴⁵⁶ With regard to the former, state participation was expected to regulate the behaviour of private sector investors in the national interest, to build national capacity in the resource sector through the transfer of managerial and technical skills and information from the private sector, and, whether explicitly stated or not, to address a wide range of development goals outside the resource sectors. Specific objectives could include job creation, value-addition, provision of social and physical infrastructure, and regional development.
- 26) *The Fiscal Objectives of SMC Participation* relate directly to the generation of additional revenues for the state in the form of profits, taxes and dividends. Participation is also expected to obtain a higher share of sector revenues for the state either through recovery of a share of the fiscal benefits from shares previously allocated to the private sector or through capture of a greater share of the rents generated by profitable projects or as a consequence of massive increases in commodity prices. Over time, most countries qualified the straightforward revenue maximisation objective by taking into account issues such as the need to reduce exposure to risk and the need to compete with other countries to attract foreign investors.
- 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

⁴⁵⁶ Ibid.

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).⁴⁵⁷ Over the past few years, however, a number of positive policy responses to the specific issues raised by state participation can be identified⁴⁵⁸:

- A greater *reliance on well structured laws* and regulations (mineral regime) as alternatives to direct participation. Ownership is no longer viewed as essential to protection of the national interest. On accountability and transparency grounds appropriate legislation may well be a feasible alternative to ownership.
- Increased *clarity on roles and responsibilities* of government ministries and agencies charged with sector oversight. The trends towards transferring non-commercial, quasi-fiscal activities and regulatory or fiscal functions from SMCs back to appropriate ministries or independent agencies, thus removing obstacles to commercial efficiency and reducing or eliminating the potential for conflicts of interest, has been particularly important in this regard. This re-assignment of roles is typically paralleled by efforts to build capacity in the receiving ministries and agencies.
- 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. Credible audits and regular public reporting and other assurances of integrity are heavily emphasised. Macroeconomic management concerns have increasingly stressed the importance of transparency in the resource sectors and, in particular, the explicit recognition in budgets and planning documents of the financial and fiscal costs and risks associated with state participation.
- An increased effort on the part of private sector investors to provide assurances and *evidence of accountability* (e.g. adherence to EITI⁴⁵⁹ and Equator Banking principles)
- A *more cautious approach towards the exercise of state participation* options and a trend towards lower levels of maximum participation. In some cases, the state has wholly or partially withdrawn from sector participation. Elsewhere, an increased emphasis on forms of participation which reduce state exposure to funding obligations, e.g. carried interests, non-recourse finance and/or production sharing, can be observed. At the same time, many countries have provided more space for private sector participation and competition.

⁴⁵⁷ Ibid.

⁴⁵⁸ Ibid.

⁴⁵⁹ EITI: Extractive Industries Transparency Initiative

- *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.

DRAFT

State Participation in the Natural Resources Sector – selected country examples⁴⁶⁰	
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

⁴⁶⁰ Ibid.

	it more efficient and competitive. Codelco may in many ways be a model in adopting a number 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:* Minerals are an important source of export earnings and taxation revenue in many countries. 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. 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. Since 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. The unusual and substantial risks inherent in the mining sector need to be managed. These risks include, for example: a long exploration period with uncertain geological outcomes; a large significant outlay of development capital that is not transportable (‘sunk’ costs) once invested; uncertain future revenues due to very volatile and unpredictable mineral prices; a long period of production to reach break-even point, which exposes the investor to political and policy instability; potentially significant environmental impacts requiring large costs to be incurred when the mine closes; and often during production support to affected local communities. These considerations motivate measures such as accelerated depreciation and extended loss-carry forward limits, to hasten payback of initial outlays.
- 29) *Capture of Mineral Rents:* While rents and risks are also present in other sectors, their scale and characteristics have led to special tax treatment of the sector, using a wide variety of fiscal instruments. These instruments include royalties, resource rent taxes, windfall taxes, corporate income taxes and state ownership. Each has its advantages and disadvantages with respect to the impact on investor behaviour, the degree of progressivity (i.e. the extent to which the “government take” increases as

a project's profitability increases), the sharing of risk between the government and investor, and the administrative and compliance costs.

- 30) *Mineral fiscal regimes vary widely* between countries and minerals for a number of reasons. For example, the level of taxation is likely to vary with country risk. This is because investors base their decisions on risk-adjusted rates of return, and the lower the country risk the higher the level of taxation consistent with a given project exceeding the minimum required return. The royalty rate and other instruments most directly targeted at rent are also likely to vary with perceptions of the size of the rent available. This explains why high value minerals like diamonds and gold tend to attract a higher royalty rate. The optimal mix of fiscal instruments will also vary depending on the country's preferences and capabilities. Some governments may prefer production-based instruments as they are easier to administer and provide earlier and more stable revenue. However, as this shifts more of the risk onto companies, governments will most likely need to accept a lower overall expected level of taxation. Other countries might therefore prefer a more progressive regime that involves the government assuming more risk but also expecting a higher take from profits. In addition to variation between countries, a number of global trends can be discerned over the past half century. These have tended to be punctuated by external events that shifted the balance of power between mineral producing countries and investors. This shift in power is analyzed in the Box below with reference to three countries: Chile, Papua New Guinea, and Zambia.⁴⁶¹

Box: Fiscal Regimes – selected country experiences

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 mining*⁴⁶²: 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. Key developments included the following:
- 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). 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 spillovers (linkages) to the rest of the economy.
- 33) *Ad valorem Royalties*. Royalties based on production value, and not simply volume, became increasingly common. More recently, several jurisdictions have 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). The shift from volume-based to value- and profit-based royalties represents an attempt to more accurately target rent.
- 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.
- 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. 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.

⁴⁶² Ibid.

- 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 nationalisation. Papua New Guinea, followed by others, introduced special instruments designed to increase the government “take” in boom times. The specific form varied from country to 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 (RRT⁴⁶³). 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. State-owned enterprises, which often struggled to deliver the expected higher revenues in the boom years due to inefficient operations, became an even greater drain on government finances. Combined with poor economic performance overall, a high debt burden, and the collapse of the Soviet Union which discredited central planning and state ownership, some mineral producers began to reconsider the role of the state. Some began a process of privatising their mining industry and confined government’s role to one of regulation and investment promotion. 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 Zambia.
- 37) *Depressed prices* discouraged mineral exploration and mine development. In an effort to promote activity in the sector and foreign direct investment more broadly, countries became increasingly concerned with how their level of mining and non-mining taxation compared with that of competitors. International competition prompted revised fiscal terms in a number of countries that, in general, involved lower rates (the “race to the bottom”). 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 (variable income tax) additional profit taxes were removed. 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

⁴⁶³ RRT: Resource Rent Tax

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%.

- 38) *The Asian Boom:* In 2002, the trend decline in real mineral prices suddenly changed course with prices tripling over a five-year period, 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 prices. 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 equity:

Fiscal Instruments	
<i>Rent-based taxes:</i>	<p>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.</p> <p><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.</p> <p><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.</p> <p><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.</p>
<i>Profits-based taxes and royalties:</i>	<p><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).</p> <p><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.</p>
<i>Output-based royalties</i>	<p><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 AVR 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.</p>

	<i>Graduated price-based windfall tax</i> – the government collects a percentage of a project’s value of 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.
<i>State equity:</i>	<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 in the world economy. Moreover, taxation agreements vary between countries between sub-national governments within countries, and between minerals and projects. 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. 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 materials.

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%.
- 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 ⁴⁶⁴
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

⁴⁶⁴ Zhang and Shi (Undated)

calls from some quarters for the Department of Mineral Resources to declare coal as “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 (%)⁴⁶⁵

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.

⁴⁶⁵ Quantec Supply and Use Tables 2006

- 52) *Local Economic Development (LED)*: Mining also has a local impact (mining communities) and an impact on sending communities. South Africa's mining activities in the last century have left behind a trail of ghost mining towns⁴⁶⁶, 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 diseases⁴⁶⁷.

⁴⁶⁶ Department of Mineral Resources, 2009 "Mining Charter Impact Assessment Report"

⁴⁶⁷ *ibid* 2009.

2. 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 terms⁴⁶⁸. 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.*

2.1 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*

⁴⁶⁸ 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).

compensation. It is estimated that the cost for the state to acquire 100% of *listed* mining companies only would be just under one trillion Rand⁴⁶⁹ 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 2012/13⁴⁷⁰. 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 rule that it should be at market value, if challenged.

3. *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.

⁴⁶⁹ Gregory White & Gavin Keeton 2010, "Is the Nationalisation of the South African Mining Industry a Good Idea?" Department of Economic History, Rhodes University.

⁴⁷⁰ Treasury 2011: MTBPS, <http://www.treasury.gov.za/documents/mtbps/2011/mtbps/MTBPS%202011%20Full%20Document.pdf>

4. *Targeted State Interventions:* Nationalisation is but one instrument that we could use to achieve our developmental objectives. The principal outcomes desired are a 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 Mining⁴⁷¹, AMSA, Herculite, Impala, Merafe, Wesiswe, Hillside Aluminium⁴⁷², etc.) and CEF (AEMFC⁴⁷³). 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

⁴⁷¹ 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.

⁴⁷² Ditto

⁴⁷³ AEMFC: African Exploration Mining and Finance Corporation

should come under the proposed (below) merged super-Ministry of the Economy, 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 FIFA⁴⁷⁴ 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

⁴⁷⁴ FIFA: First-In-First-Assessed

well as to effectively monitor all extant exploration (prospecting) licenses to ensure 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 Brazil⁴⁷⁵, 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

⁴⁷⁵ New Brazilian National Mining Agency- “to ensure the exploitation of mineral resources is consistent with the national development strategy”, <http://www.mayerbrown.com>

assessment of which minerals should be designated as “strategic minerals” for final 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 (SMC⁴⁷⁶). 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 PGM⁴⁷⁷ 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

⁴⁷⁶ SMC: State Minerals Company

⁴⁷⁷ 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 licenses⁴⁷⁸) 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&E⁴⁷⁹.
- 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.

⁴⁷⁸ Under the MPRDA exploration licenses are termed “prospecting” licenses.

⁴⁷⁹ 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 returns*⁴⁸⁰. So they are exceptional profits embodied in the people's

⁴⁸⁰ Sinner J & Scherzer J 2007: The public interest in resource rent, www.ecologic.org.nz

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 contacts, 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).

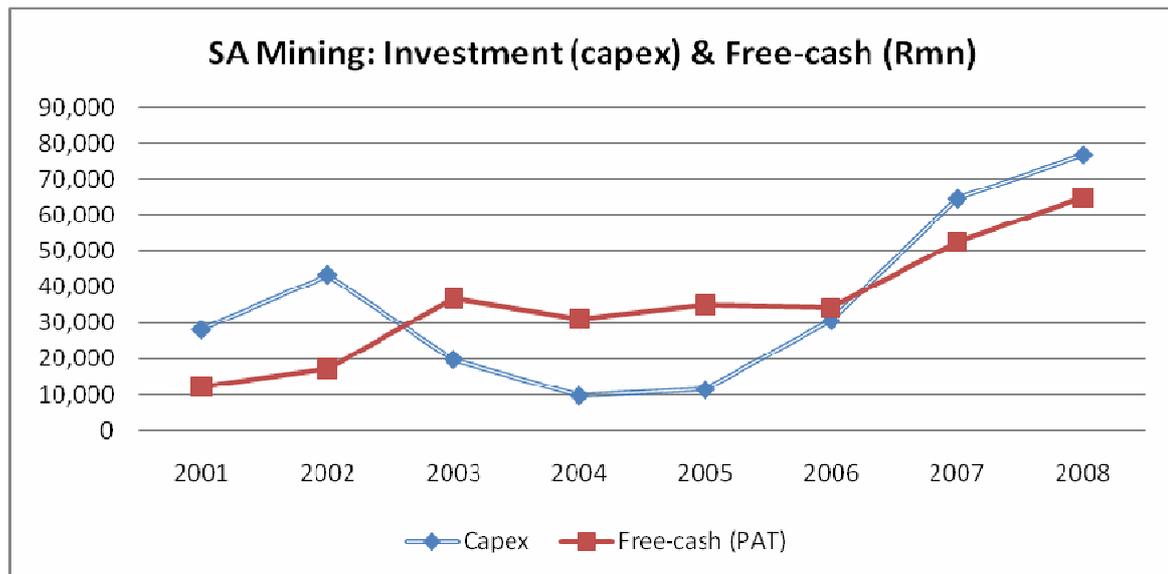
- 2) *Fiscal Linkages: Capturing the Resource Rents:* Under the current fiscal regime our nation is clearly not getting a fair share of the resource rents generated from its mineral assets. In the 2007/8 tax year the mining industry’s return on capex⁴⁸¹ was 118%, on owner’s equity 33% and on carrying value⁴⁸² 29%. However, for iron ore, manganese, HMS⁴⁸³ (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” return⁴⁸⁴ (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.

⁴⁸¹ Capital expenditure in 2007/8

⁴⁸² Carrying value of property, plant and equipment and intangible assets at the end of the financial year (StatsSA)

⁴⁸³ HMS heavy mineral sands (Ti, Zr)

⁴⁸⁴ ‘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: Xsrata). 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:

1. *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.
2. *Exploration Facilitation Fund* (negotiable tax certificates) to ameliorate exploration risk and concomitantly greater investment into discovering and developing new mineral assets (5% of SWF).
3. *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).
4. *Royalty Compensation Fund*: To the Fiscus to compensate for reduced mineral royalty rates of <1%, see above (~5% of SWF).
5. *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).
6. *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 SWF
<i>Minerals Development Fund</i>	40.0%
Geo-survey	2.5%
Exploration facilitation	5.0%
Royalty compensation	5.0%
Technical HRD	10.0%
Minerals R&D rrrrrrrrrrrrrrrrrRtechnology R&D	2.5%
Beneficiation Hubs	15.0%
<i>Regional Development Fund</i>	30.0%
<i>Fiscal Stabilisation Fund</i>	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: PGMs⁴⁸⁵ 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 states⁴⁸⁶ (e.g. China, Venezuela, Zambia, Russia, India, Indonesia, Mexico, Mongolia, Canada, Turkey and, historically, most OECD states) to encourage

⁴⁸⁵ PGMs – Platinum Group Metals (Pt, Pd, Rh, Os, Ru, Ir)

⁴⁸⁶ Price A, & Nance S. 2009: "Export Barriers and Global Trade in Raw Materials: The Steel Industry Experience" OECD, 2009

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.

- 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 NMM⁴⁸⁷. 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 before⁴⁸⁸. 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 slurrying at least 25Mtpa of fines to 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 rebar⁴⁸⁹: 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/GTL⁴⁹⁰ 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

⁴⁸⁷ The quality of the water delivered is likely to be cleaner than through the current Fish-Sundays Rivers delivery system.

⁴⁸⁸ Samarco 2011: <http://www.samarco.com>

⁴⁸⁹ Rebar- reinforcing steel bar (for construction)

⁴⁹⁰ CTL: coal to liquids; GTL: gas to liquids

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.

- 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 ETFs⁴⁹¹) 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

⁴⁹¹ ETFs: exchange traded funds

supply and up/downstream investments with the customers, as per PGMs, based on the assessment.

- 14) *Pilot Beneficiation*⁴⁹² *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

⁴⁹² 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.

	“Safety-Net” for labour under R100k/an: 90% for 1 st year, 80% for 2 nd year, 70% for 3 rd year	To protect retrenched workers from loss of income (36m)	R3000mn
	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 mining sector. 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 ECSA⁴⁹³.
- 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?);

⁴⁹³ 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 (CCGT⁴⁹⁴) 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

⁴⁹⁴ CCGT: Combined Cycle Gas Turbines

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 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*”⁴⁹⁵. 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

⁴⁹⁵See Annexure – ANC 52nd Congress Economic Transformation Resolution, 2.12

be greatly enhanced by larger (regional) markets (economies of scale) and our government should be mandated to progress the extension of membership of the 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 NTBs⁴⁹⁶). 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.*”⁴⁹⁷ “*In this regard a special facility should be created to promote investment in the sub-continent*”⁴⁹⁸, 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.*”⁴⁹⁹ 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- ECSC⁵⁰⁰), 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).

⁴⁹⁶ NTBs non-tariff barriers

⁴⁹⁷ EDD 2010, NGP, p14.

⁴⁹⁸ RDP 2004, op cit, see Annexure, #12.

⁴⁹⁹ RDP, see annexure, 2.11

⁵⁰⁰ ECSC: European Coal and Steel Community (ECSC) was the foundation of the European Union.

- 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 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 economy⁵⁰¹.

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/Imst.	20	10

⁵⁰¹ CoM: Submission to SIMS

• EPP Other (NPK)	30	10
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

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).

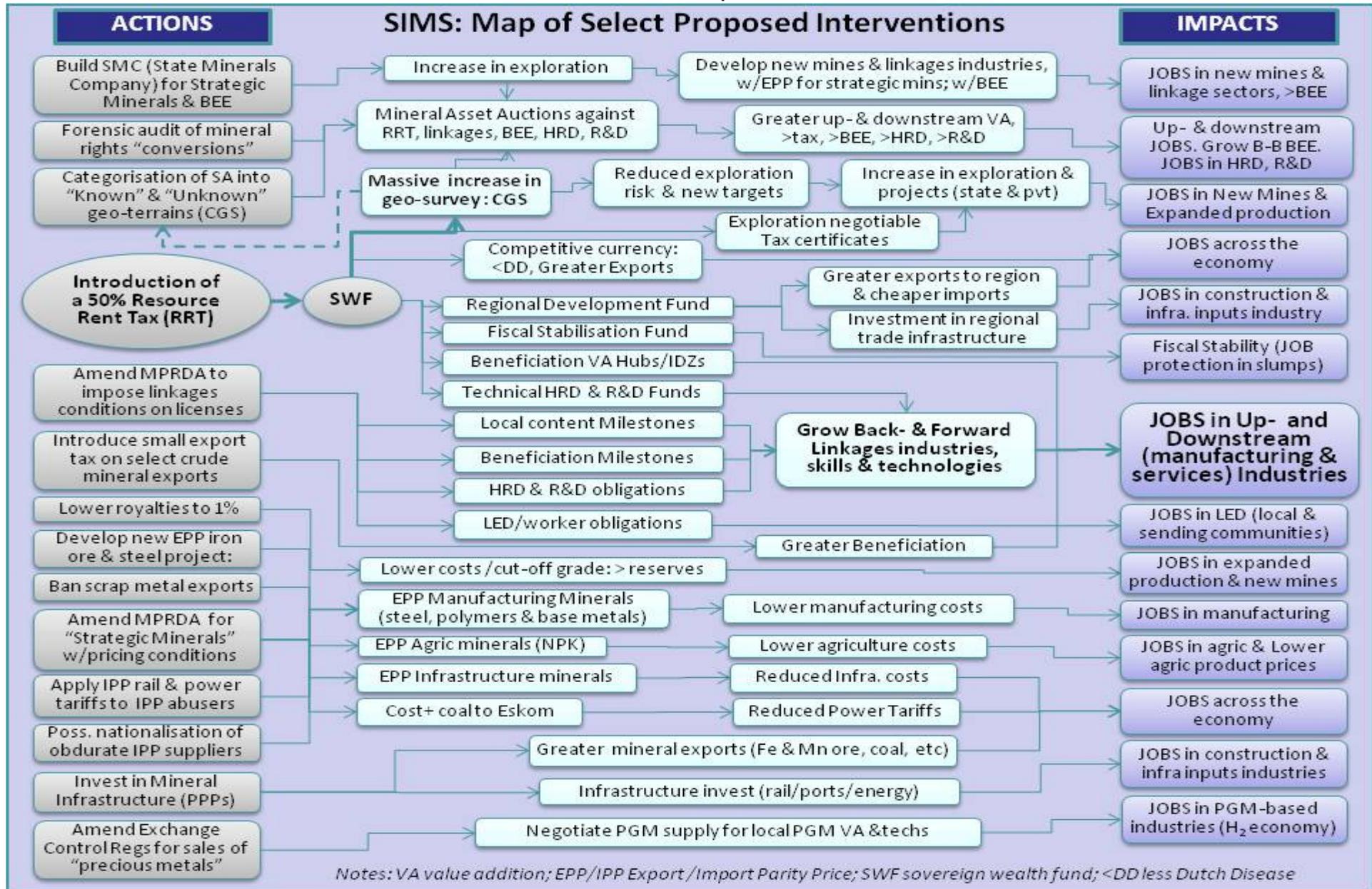
A major challenge is ensuring that a much higher proportion of the super-returns from the extraction of the people's resources is in the hands of the state to invest for the people as a whole, whilst ensuring that the minerals sector continues to grow and prosper. South Africa's taxes are generally lower 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.

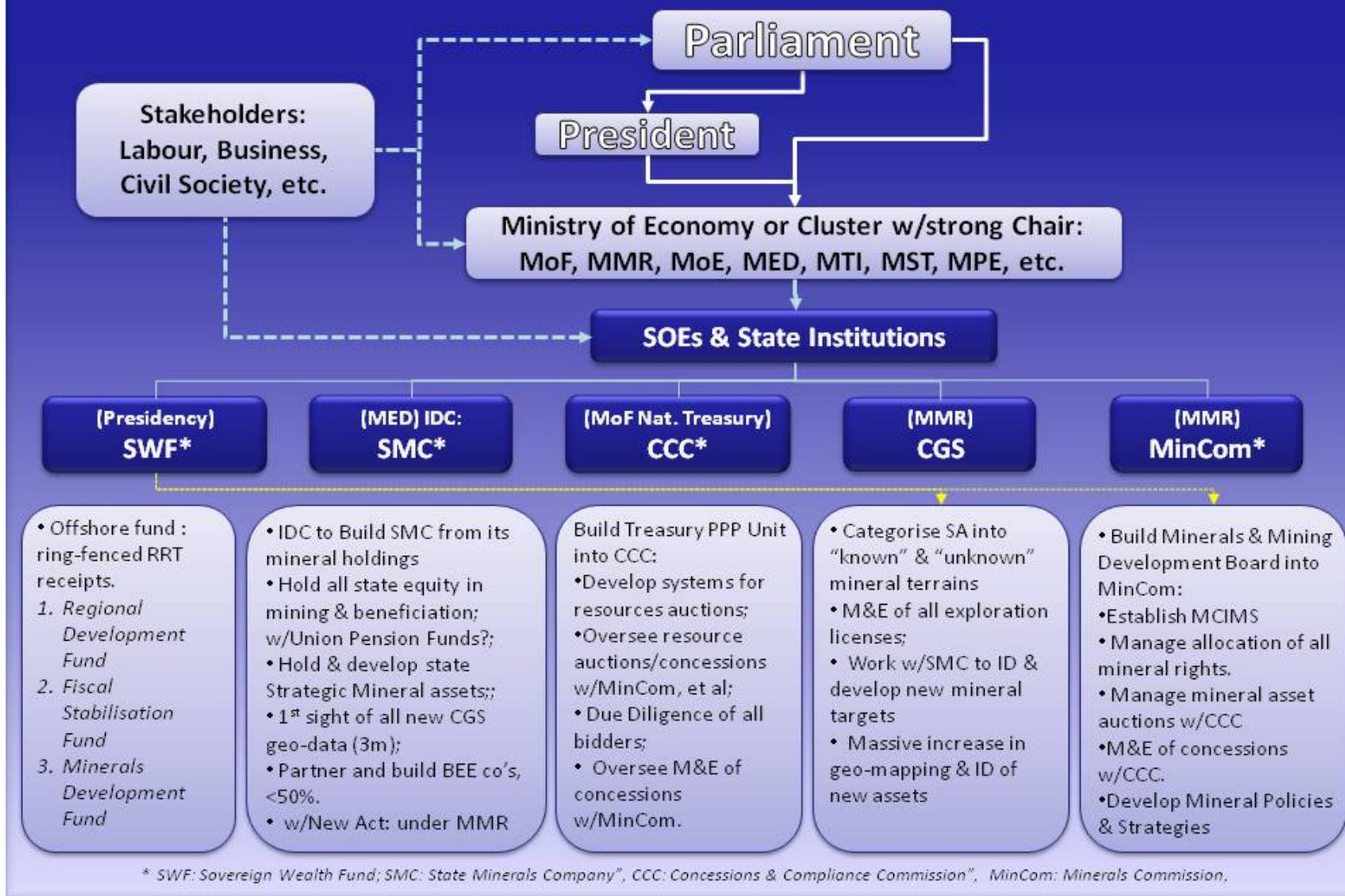
*****ENDS*****



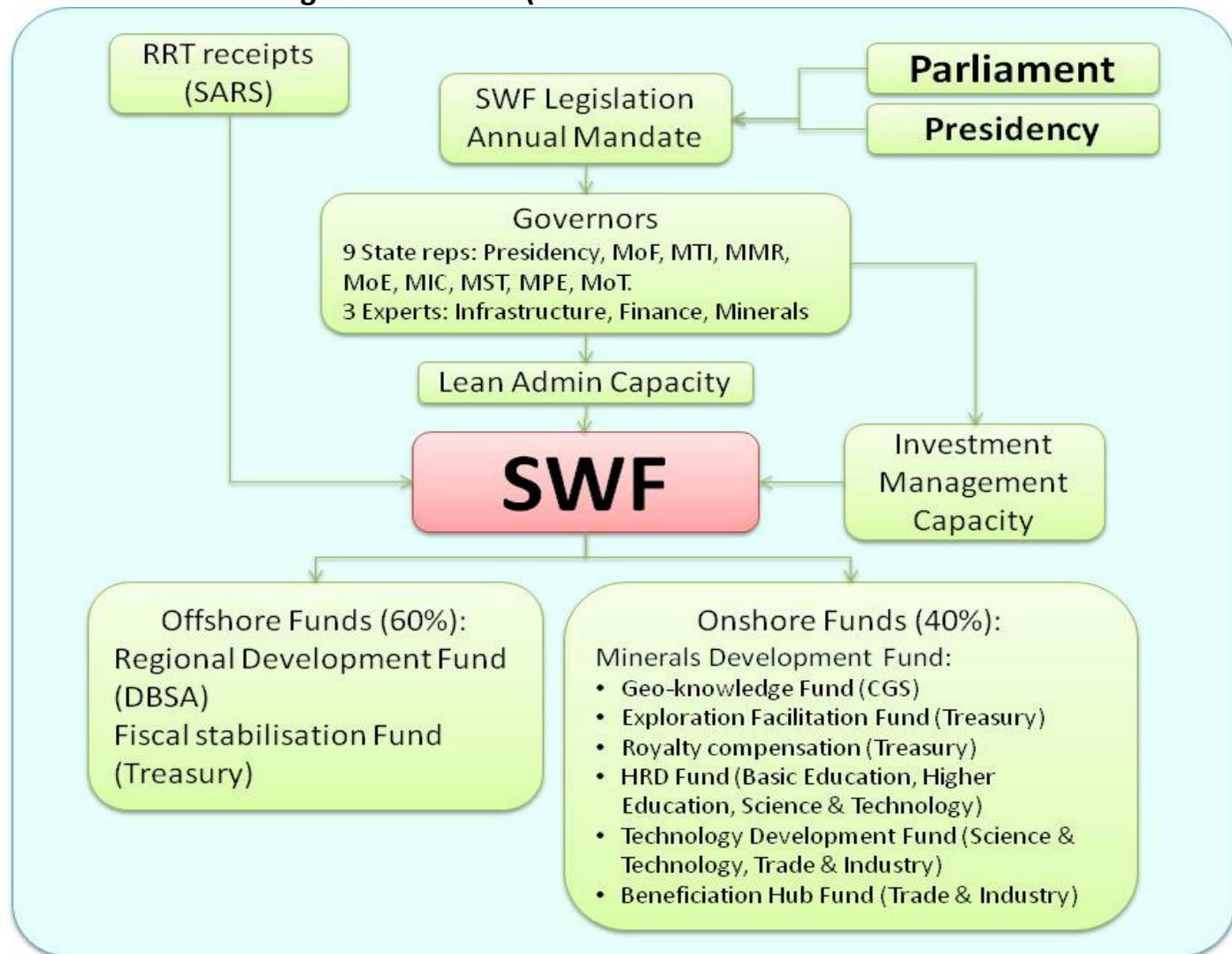
SIMS Indicative JOB CREATION Guesstimates (400k to 1 million)

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 JOB S. Grow B-B BEE. JOB S 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:



CONFIDENTIAL DRAFT: Not to be copied, cited or circulated
Sovereign Wealth Fund (indicative- still to be



configured)

Appendices

<u>Appendix 1: SIMS Country Studies</u>	Error! Bookmark not defined.
<u>Appendix 2. RMG: Definition of state control</u>	Error! Bookmark not defined.
<u>Appendix 3: RMG Tables</u>	Error! Bookmark not defined.
<u>Appendix 4: RDP section on Mining and Minerals (4.5.1)</u>	Error! Bookmark not defined.
<u>Appendix 5: ANC 52nd National Conference (Polokwane 2007): ECONOMIC TRANSFORMATION RESOLUTION</u>	Error! Bookmark not defined.
<u>Appendix 6: African Mining Vision</u>	Error! Bookmark not defined.
<u>Appendix 7: Requisite short-term changes to the MPRDA</u>	Error! Bookmark not defined.
<u>Appendix 8: Section 25 of the Constitution</u>	Error! Bookmark not defined.
<u>Appendix 9: Stakeholder Workshops Report</u>	Error! Bookmark not defined.
<u>Appendix 10: Executive Summary of “Minerals and Africa’s Development”</u>	Error! Bookmark not defined.
<u>Appendix 11: Stakeholder Submissions</u>	Error! Bookmark not defined.

CONFIDENTIAL