FUTURE OF THE SOUTH AFRICAN PLATINUM MINING INDUSTRY
LBMA/LPPM CONFERENCE

Roger Baxter
Chief Executive
rbaxter@chamberofmines.org.za
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Presentation outline

- PGMs key to a cleaner, energy secure, beautiful and financially sound future
- South African mining
- South Africa’s platinum mining sector
- Solutions to the challenges
- Quo Vadis
A cleaner future

Emissions from one car sold in 1960s

Emissions from 100 cars sold in 2015

PGMs, technology development and standards enabled this to happen

PGM vehicle emission catalysts including exhaust system catalysts, catalysed particulate filters and emission absorbers convert 99% of combustion engine pollutants (HC, CO, NOx, and particulates) enabling vehicle producers to meet EU standards.
A cleaner future, cont’d

**Bus and trucking fleets becoming cleaner**
- Real world emission tests of Euro VI buses in London have shown a 95% drop in NOx emissions versus Euro 5 buses (Transport for London)
- Euro VI clean diesel cars with appropriate platinum catalysts and soot filters catch 99% of particulates and 99% of combustion process pollutants (IPA)

**Making fertiliser production cleaner**
- In the EU 17% of GHG emissions come from fertiliser production with 1,2 million tons N₂O emitted by acid producers (equivalent to CO₂ emissions of 80 million vehicles) (IPA)
- Platinum based secondary catalysts reduce the N₂O emissions by 90% from these fertiliser plants (IPA)

Based on excellent technology PGMs have an excellent track record in reducing GHG, poisonous gas and diesel particulate emissions, making our cities and planet cleaner
A cleaner energy-secure future

Platinum based fuel cell technology is unlocking the potential of the hydrogen economy

Example: Toyota Mirai FCEV

- Comparable speed and range performance with conventional cars
  - 0-100 km/h 9.7 secs
  - Range 600km (vs 150km EV)
  - Refill time 3 minutes vs 3-9 hours EV
  - 3x more energy efficient than conventional petrol vehicle
  - More efficient electro-chemical energy process, not combustion
  - Zero emissions during driving
  - Low motor noise (lower noise pollution)
  - Can be used as alternative power supply for home usage

Source: Toyota
A cleaner energy-secure future, cont’d

Platinum based fuel cell technology is unlocking the potential of the hydrogen economy

Chamber 100kW FUJI fuel cell

- First base-load 100kW platinum fuel cell installed in Africa
- In operation since 18/12/2014
- Uses natural gas (Egoli gas)
- Electro-chemical process, no moving parts
- 25 year design life, minimal servicing
- 50% energy efficient
- Further 30% energy to be captured for heating building
- Levelised energy cost cheaper than municipal supply
- Collaborative project, CoM, DTI, Mitochondria, Fuji, Egoli Gas, demonstration of platinum beneficiation

See www.platinumpowerfuelcell.co.za
A cleaner energy-secure future, cont’d

Benefits of Chamber platinum fuel cell

- Demonstrate technology
- Baseload supply
- Promote beneficiation
- Partnership with government

Annual savings

- 430 tons CO2
- 320 kgs NOx
- Megalitres of water

See www.platinumpowerfuelcell.co.za
A more beautiful future

- Platinum helping to create meaningful commitments of eternal love in the bridal market.
- The Platinum “Pure, Rare and Eternal” branding demonstrate Pt as a eternal love symbol.
A more financially sound future

Platinum is worthy of consideration as an investment asset

- Platinum’s 20 year price performance from 1995 to 2015 is highly credible
- Platinum’s price performance from 1995 to 2011 is compelling (+223%, ranked 4th)

Source: WPIC
PGMs key to a cleaner, energy secure, beautiful and financially sound future

South African mining

South Africa’s platinum mining sector

Solutions to the challenges

Quo Vadis
South Africa ranked 49/140 countries in WEF Global competitiveness index

<table>
<thead>
<tr>
<th>Some of the positives</th>
<th>Some of the negatives</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Strength of auditing and reporting standards – rank 1</td>
<td>• Flexibility of wage determination – rank 137</td>
</tr>
<tr>
<td>• Regulation of security exchanges – rank 2</td>
<td>• Quality of the primary education system – rank 127</td>
</tr>
<tr>
<td>• Efficacy of corporate boards – rank 3</td>
<td>• Business costs of crime – rank 131</td>
</tr>
<tr>
<td>• Strength of investor protection – rank 14</td>
<td>• Burden of government regulation – rank 117</td>
</tr>
<tr>
<td>• Property rights – rank 24</td>
<td></td>
</tr>
<tr>
<td>• Efficiency of legal framework in challenging regulations – rank 17</td>
<td></td>
</tr>
<tr>
<td>• Quality of management/business schools – rank 24</td>
<td></td>
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<tr>
<td>• Effectiveness of monopoly policy – rank 13</td>
<td></td>
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<tr>
<td>• Soundness of banks – rank 8</td>
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</tbody>
</table>
Mining sector contribution diversified

**SA Mining sector contributes (2014)**

- 7.6% to GDP
- 26% of merchandise exports
- 12% JSE market capitalisation
- 14% to FDI in 2013
- 495 000 jobs directly
- 1.3 million jobs directly and indirectly
- Consumes 15% of total SA electricity production

**Sector contributions to mining minerals exports in SA (2014)**
# Rand commodity prices: under pressure in 2015

## Spot Prices (01 Oct 2015) vs 2015 Average

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Units</th>
<th>Spot (01 Oct 2015)</th>
<th>2015 ave</th>
<th>Spot % chng (YTD)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rand Gold</td>
<td>R/oz</td>
<td>15 348</td>
<td>14 308</td>
<td>8.1</td>
</tr>
<tr>
<td>Rand PGM</td>
<td>R/oz</td>
<td>11 333</td>
<td>12 555</td>
<td>-11.6</td>
</tr>
<tr>
<td>Rand Oil</td>
<td>R/bbl</td>
<td>621</td>
<td>681</td>
<td>-1.8</td>
</tr>
<tr>
<td>Rand Iron ore</td>
<td>R/t</td>
<td>731</td>
<td>720</td>
<td>-6.2</td>
</tr>
<tr>
<td>Rand Thermal coal</td>
<td>R/t</td>
<td>786</td>
<td>733</td>
<td>6.4</td>
</tr>
<tr>
<td>Rand/USD</td>
<td>R/USD</td>
<td>13.8</td>
<td>11.8</td>
<td>17.9</td>
</tr>
</tbody>
</table>

## Average 2015 vs 2014 % chg

- Gold: $/oz, Av 2015 = 1 113, Av 2014 = 1 210, % chg = -8.0
- PGM: $/oz, Av 2015 = 822, Av 2014 = 1 059, % chg = -24.8
- Iron Ore: $/t, Av 2015 = 53, Av 2014 = 61.0, % chg = -20.2
- Thermal Coal: $/t, Av 2015 = 57, Av 2014 = 62, % chg = -9.5
- Oil: $/bbl, Av 2015 = 45, Av 2014 = 58, % chg = -16.7
Rand commodity prices: inflation input costs remain higher than revenue drivers

Cost inflation affecting the mining sector (Annual average increase 2008 to 2014)

- Electricity: 19.4%
- Diesel: 12.9%
- Reinforcing steel: 11.3%
- Wages per employee (total Mining): 10.8%
- Structured steel: 8.4%
- Overall PPI: 6.9%
- Cement: 6.4%
- Mining machinery: 5.0%

Future of the South African Platinum Mining Industry - LBMA/LPPM Conference October 2015
South African mining sector: recent challenges

- Mineral prices in rand terms have fallen (excluding gold)
- Viability challenges facing portions of gold, platinum, coal sectors
- Instability in labour market (especially contestation between rival unions)
- Much of wage demand pressures linked to social wage issues (e.g. Marikana crisis – housing, unemployment, access to public infrastructure, etc.)
- Industry faced bouts of policy, regulatory uncertainty despite efforts to address this (nationalisation discussion, review of mining taxation, Mining Charter, MPRDA Amendment bill, etc.)
- Industry faced binding infrastructure constraints (electricity shortages since 2007)
- Declining productivity, rapidly escalating costs
- Inappropriate application of regulatory tools harming sector (e.g. inappropriate application of S54 safety stoppages)
PGMs key to a cleaner, energy secure, beautiful and financially sound future

South African mining

South Africa’s platinum mining sector

Solutions to the challenges

Quo Vadis
South African platinum mining industry

In 2014 the PGM mining sector was:
- largest contributor to exports
- biggest mining employer (190 000 workers and paid R36 billion in salaries)
- second largest part of mining sector by GDP

Since 2011, sector has been hard hit by:
- same issues listed on slide 15
- Marikana tragedy
- industrial unrest including unprecedented five month strike in 2014
Electricity and wages in relation to total costs

Key points

• Electricity costs for PGM has grown from 6% to an expected 17% of cash costs
• Labour costs have risen and productivity has fallen

Cost components for the PGM sector

Platinum industry: unit cost growth

Source: Chamber of mines member estimates, *PGM sector proxy represented by 80% of production, ^Chamber members
Platinum mining company responses

- Reviews of businesses
- Restructuring and cost cutting programs (including rationalising production)
- Restructuring head offices (where applicable) and reducing employment levels
- Cutting of capex (long term and short term)
- Investing in next generation mining technologies
- Engaging government (via the Jobs Declaration)
- Focusing on cost containment and productivity improvement
- Restructuring of businesses and consolidation (eg. Sibanye’s purchase of the AAP Rustenburg Asset)
- Sustaining investment in ongoing market development
Capital expenditure has declined

- Platinum production fell 500 koz/pa between 2008 and 2013
- Capex fell by 40% between 2008 and 2013
- In 2014, five month strike affected production, resulting in marginal recovery off lower base in production in 2015
- In 2016, Venmyn Deloitte estimate capex will decline by further 16% to R11 billion; similar decline expected in production ounces in 2016

Source: WPIC/Venmyn Deloitte
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1. PGMs key to a cleaner, energy secure, beautiful and financially sound future
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4. Solutions to the challenges
5. Quo Vadis
Getting the right Vision and plan in place to get RSA mining industry back on the front foot

“Action without vision is only passing time, vision without action is merely day dreaming, but vision with action can change the world.”

- Nelson Mandela
What SA mining needs to encourage investment

- More effective problem solving partnership between government, business and organised labour
- Regulatory and legislative environment that is stable, predictable and competitive
- Stable and constructive labour relations environment and better social license to operate
- Access to available, efficient and cost effective infrastructure (electricity, rail)
- Solutions to improve productivity (next generation mining) and reduce cost pressures
More effective problem solving partnerships

Mining Phakisa (the Mining LAB)
- Planned for Oct/Nov 2015. A key area of focus for all players to work together and present an action plan for growth and transformation which encourages investment
- Driven by Presidency and focus is on problem solving and 3foot plans to resolve challenges

MIGDETT tripartite revived (Mining Industry Growth, Development and Transformation Task team)
- Tripartite between Government (DMR), Labour (4 mining unions) and business (Chamber and SAMDA)
  - Mining Charter process: Promoting certainty on the Charter requirements; 2014 assessment; Declaratory order process – jointly agreed; Mining Charter 3; DTI BBBEE Act and codes
  - Job saving task team: 10 interventions aimed at promoting sustainable mines and employment
  - PGM task team: stimulating long term demand
Progress on the policy challenges

MPRDA amendment bill

• Should be finalised by year end

Davis Tax Commission – response to interim report

• Retention of mining royalty model; rejection of the notion of a resource rents tax
• Alignment with all sectors, e.g. manufacturing
  • 100% year 1 capital write-off vs 40/20/20/20 write off profile
  • removal of ring-fencing principle (key change)
  • phasing out of gold tax formula (existing mines unaffected)
• Allowance of social infrastructure spend tax deduction

Section 54 safety stoppages

• Speeding up development of implementation policy pertaining to Section 54 implementation

Environmental licensing

• New “One Environmental system” in place. Real progress made
Next generation mining: possible future scenarios (20 years)

**High local content**

**Stay as is:**
Mostly conventional mining
- Health and safety plateaus
- Rapidly depleting mineral wealth
- Lower production and higher costs
- Rapidly declining jobs
- 55% portable skilled labour in mining
- GDP growth opportunity lost
- Lack of Foreign Direct Investment (FDI)

**Modernised:**
Continuous, mechanised mining with local machines
- Zero Harm: remove people from high-risk areas
- SA’s wealth: >50% increase in PGM tonne-years; >20% for gold tonne-years
- Growth: >10% in GDP growth gained (losses prevented)
- Employment: >10% increase in PGM job-years; >5% for gold job-years
- Exports: >10% in exports gained (losses prevented)
- Govt revenue: >5% in revenue gained (losses prevented)
- Skills: 90% portable skilled labour in mining
- Investment: Higher investment potential in optimal production at lower costs

**Where we are**

**Low mechanisation**

**Continuous, mechanised mining with imported machines**
- As above, but with:
  - Higher cost of mining
  - Lower economic growth
  - Reduced employment
  - Enhanced imports
  - Less portable skills

**High mechanisation**

**Early 1900s**
- Health and safety plateaus
- Rapidly depleting mineral wealth
- Lower production and higher costs
- Rapidly declining jobs
- 55% portable skilled labour in mining
- GDP growth opportunity lost
- Lack of Foreign Direct Investment (FDI)

**Where we want to be**
Next generation mining: real potential for the Platinum mining sector
Promoting stability in employment relations

President’s framework agreement:
• Stabilise the industrial relations environment. Promote law and order. Investigate the key negative issues in the migrant labour system (and to propose solutions)
• Get the mining industry back on track from an investment and growth perspective.

NEDLAC task team – minimum wage and strike action committee
• S18 representation and secret strike ballots on the agenda

Farlam report on the Marikana tragedy
• Industry in process of implementing key learnings

Gold and Coal wage negotiations
• 3 year agreement for 2 gold companies
• 2 year wage agreement in coal (after short strike)
• Platinum not negotiating in 2015 (next round in 2016)
Infrastructure developments

Electricity supply disruptions and costs – multiple initiatives
- Eskom expecting stability for 12 months (maintenance program now embedded)
- 5 gigs renewables and 6 gigs gas/base-load contracted in by DOE
- Keeping lid on big price increases

Economic transport regulator
- Centralised ‘NERSA’ equivalent for transport, road, air and rail infrastructure
- Holistic cost impact assessment welcomed
- Pricing transparency and consistency key

Water & environment
- Water and Sanitation Economic Regulator-transparent and uniform pricing of water
- A concern of inclusion of management of legacies (AMD) in the pricing strategy
- Incentives for Water Conservation and Water Demand Management efforts by various users ie. mining industry
Vision for SA PGM mining industry

**Government and trade unions:**
- Proud of and fully supportive of mining industry; acknowledge industry as important for country

**Workforce,** transformed, productive; fair wages; non-discriminatory, safe and healthy workplaces

**CONSTRUCTIVE PARTNERSHIPS BUILT ON TRUST**
- Key exporter
- Key earner of foreign exchange
- Key taxpayer
- Creator of decent jobs
- Developer of skills
- Key contributor to economy

**Management** not only focus on profits but provide decent jobs, play positive role in mining communities, sensitive to environment

**Investors** regard industry as good investment destination

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