PLATINUM:

MARKET DEVELOPMENT AND OPPORTUNITIES FOR INVESTORS

Investing in African Mining: Indaba Conference
Platinum Panel
Main Stage: 14:00 – 15:00
5 February, 2019
PLATINUM: MARKET DEVELOPMENT AND OPPORTUNITIES FOR INVESTORS

Panel:  
- **Chris Griffith**, CEO, Anglo American Platinum  
- **Nico Muller**, CEO, Impala Platinum  
- **Steve Phiri**, CEO, Royal Bafokeng Platinum  
- **Roger Baxter**, CEO, Minerals Council of South Africa  
- **Charl Malan**, Portfolio Manager and Senior Analyst, Van Eck

Moderator:  
- **Paul Wilson**, CEO, World Platinum Investment Council, WPIC

Introduction:  
- **Trevor Raymond**, Director of Research, WPIC

**Why invest in platinum? Why now?**  
**Does market development help?**
PLATINUM PRICE DID NOT RESPOND TO DEFICITS; ARE SURPLUS & SENTIMENT NOW FULLY PRICED?

Source: WPIC Research, SFA (Oxford), Johnson Matthey, Bloomberg
PLATINUM PRICE WEAKENED ON FALLING DEMAND AGGRAVATED BY NEGATIVE SENTIMENT

Platinum Demand vs Price

Source: WPIC Research, SFA (Oxford), Johnson Matthey, Bloomberg
SIZE OF SHORT POSITIONS GREW AS NEGATIVE SENTIMENT CONTINUED AND PRICE DECLINED

Source: WPIC Research, Bloomberg
PALLADIUM PRICE WAS VERY SLOW TO RESPOND TO SUSTAINED DEFICITS

Source: WPIC Research, Johnson Matthey, Bloomberg
PALLADIUM PRICE STRENGTHENED ON RISING DEMAND

Source: WPIC Research, Johnson Matthey, Bloomberg
IS PLATINUM AT A TURNING POINT?
WHAT WILL CHANGE THE STATUS QUO?

1. Recognition of constrained supply

2. Clarity on:
   1. Diesel car portion and platinum content
   2. Timing of platinum use in fuel cell vehicles
   3. Platinum substitution of palladium in gasoline

3. Investor interest and sentiment

4. Market development

5. What should the SA Government do to assist Platinum?
MINING SUPPLY IS MORE EFFICIENT WITH A DIFFERENT MIX YET 2018 AT 2015 LEVELS

South African quarterly production (koz)

<table>
<thead>
<tr>
<th>Quarter</th>
<th>Refined production</th>
<th>Q3 production</th>
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<tr>
<td>Q3’14</td>
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<td>Q3’15</td>
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<td>Q3’16</td>
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<td>Q3’17</td>
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<td>Q3’18</td>
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Annual mining supply (koz)

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<tr>
<th></th>
<th>2015</th>
<th>2018</th>
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<tbody>
<tr>
<td>Production</td>
<td></td>
<td></td>
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<tr>
<td>South Africa</td>
<td>4,480</td>
<td>4,395</td>
</tr>
<tr>
<td>Total mining</td>
<td>6,190</td>
<td>6,170</td>
</tr>
</tbody>
</table>

- Tight margins and tough cost reduction
- Significantly lower capital expenditure
- Consolidation and closures
- Some respite from R/$ and palladium

Source: WPIC Platinum Quarterly Q3 2018, SFA (Oxford)
Germany has agreed a 270 mg/km NOx limit allowing retrofitted diesels to avoid bans

Automakers recognise the problem – data shows 270 mg/km is a sound compromise

Source: WPIC Research, Emissions Analytics, AECC, ADAC
HEAVY INVESTMENT IN BATTERY ELECTRIC CARS - A BOOST FOR FUEL CELL VEHICLES

Global Fuel Cell tracks Solar & Wind adoption paths

- Wind (1992 to 2003)
- Solar PV (1996 to 2011)
- All FCs (2011 to 2017)

Fuel Cells: 2017
Solar PV: 2002
Wind: 1994

Source: WPIC Research, Toyota, Tesla, Matthew Klippenstein
IS PGM SUBSTITUTION HAPPENING?
ARE PAST INDICATORS HELPFUL?

Platinum & rhodium substituted for palladium in gasoline in 2000

Platinum auto demand up by 1 million oz per year 1999 - 2002

Source: WPIC Research, Johnson Matthey, Bloomberg
CHINA 6 LIMITS ARE TOUGHER THAN EU AND US MORE UPWARD PRESSURE ON PGM DEMAND

- Unavailability of Palladium – in price and lease rates
- China 6 adds pressure to use platinum in gasoline
- Only 20% switch in US OR China is over 400 koz Pt/year

Source: OICA, WPIC Research, Johnson Matthey, ICCT, Bloomberg
1. Recognition of constrained supply

2. Clarity on:
   1. Diesel car portion and platinum content
   2. Timing of platinum use in fuel cell vehicles
   3. Platinum substitution of palladium in gasoline

3. Investor interest and sentiment—multiple indicators being recognised

4. Market development - active for jewellery, investment and industrial

5. What should the SA Government do to assist Platinum?
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