

Southern African expansions set to meet growing platinum demand

PDAC
March 2004



Bob Gilmour



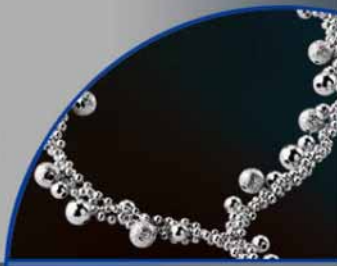
Overview

- Historical platinum and palladium demand and supply
- Outlook for platinum demand
- How growing platinum demand will be met?



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Historical platinum and palladium demand and supply



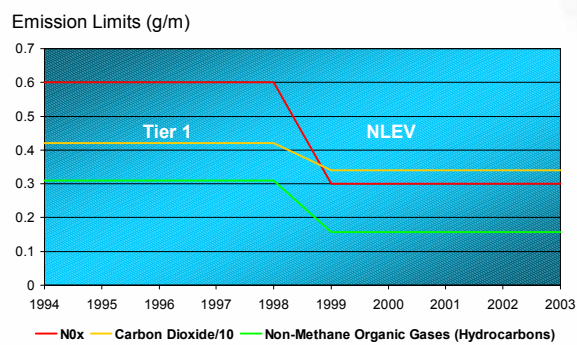
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Platinum demand



Automotive

- Spread of emission legislation and adoption of stricter standards

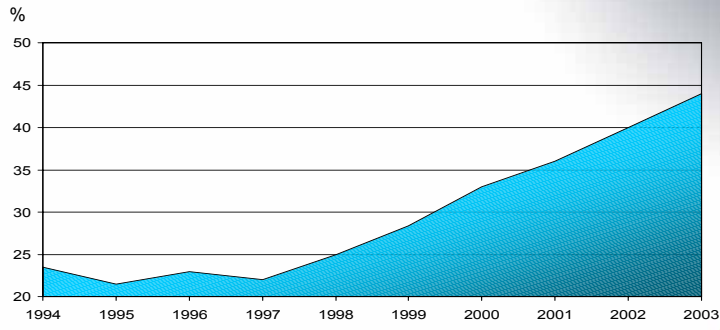


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Platinum demand

Automotive (cont)

- Diesel share of European new car sales



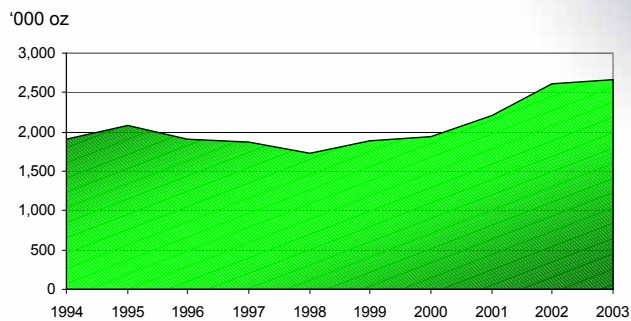
Source: Schmidt



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Platinum demand

Total Automotive demand



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Platinum demand

Jewellery

- Consumer desire for white metal

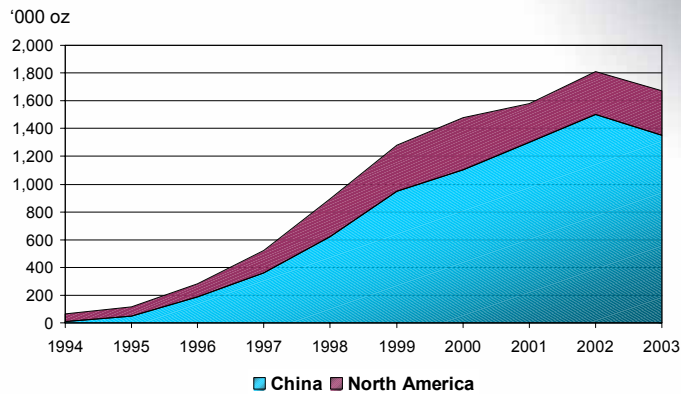


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Platinum demand

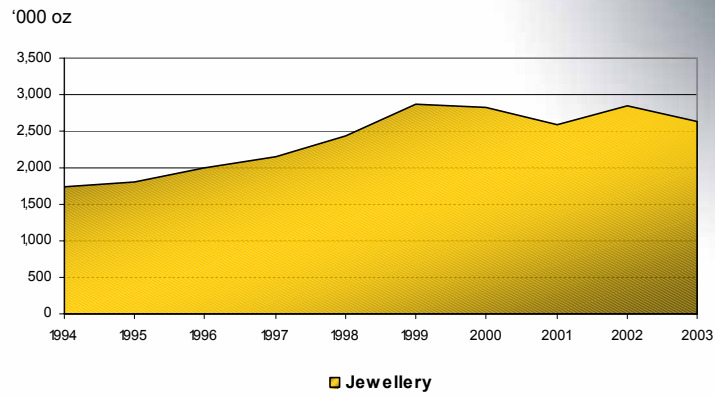
Jewellery (cont)

- New markets



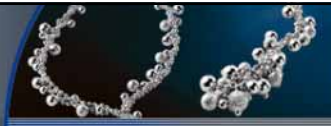
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Platinum demand



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Platinum demand



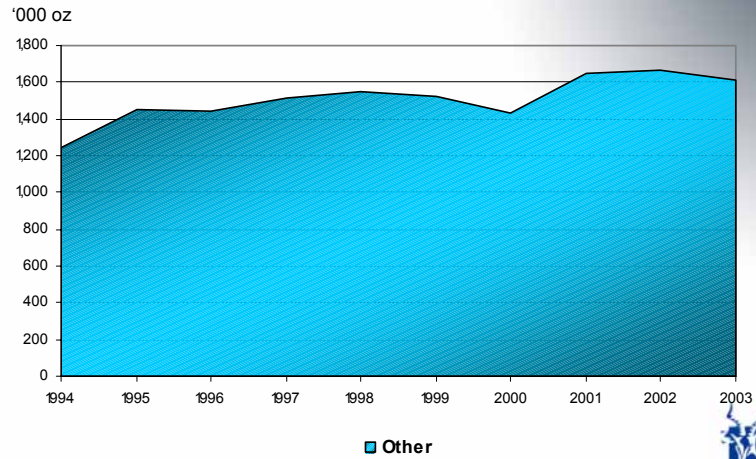
Other

- **Industrial**
 - Expanding applications
 - Economic growth
- **Investment**
 - Price sensitive



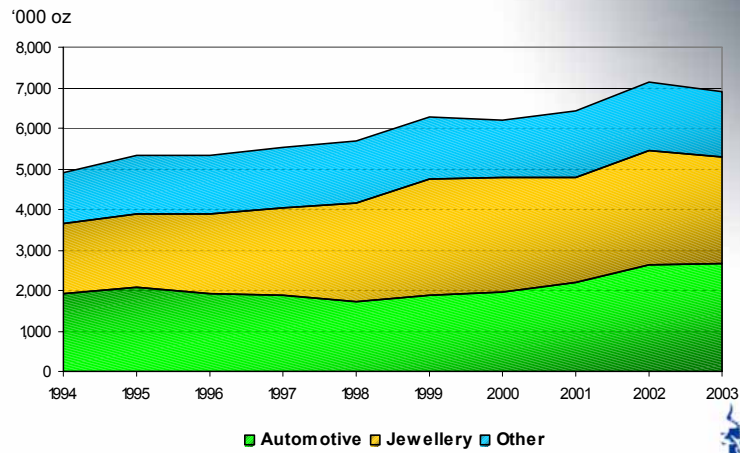
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Platinum demand



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Platinum demand

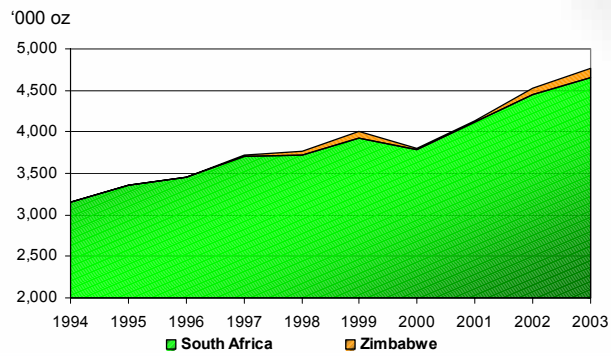


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Platinum supply

Southern Africa

- South African expansions
- Emergence of Zimbabwe

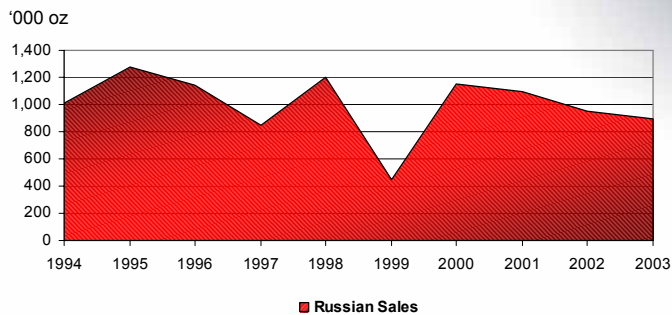


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Platinum supply

Russia

- Sales erratic



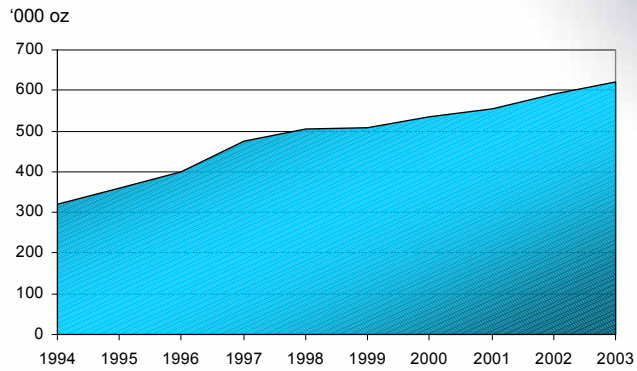
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Platinum supply



Secondary

- Increase in recycling



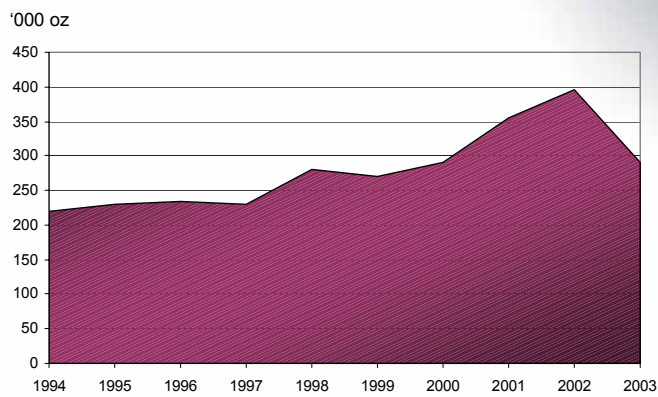
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Platinum supply



North America

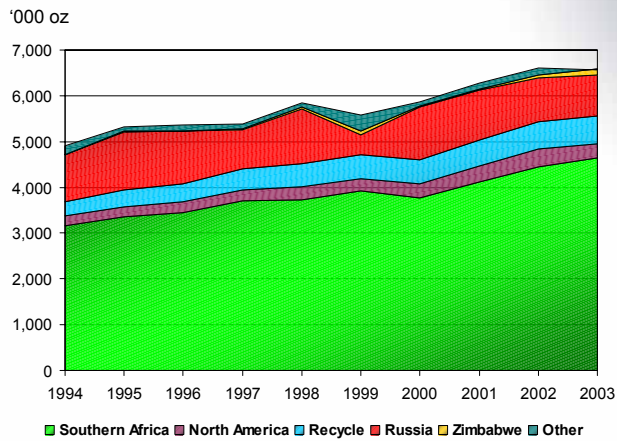
- Combination of primary and by-product output



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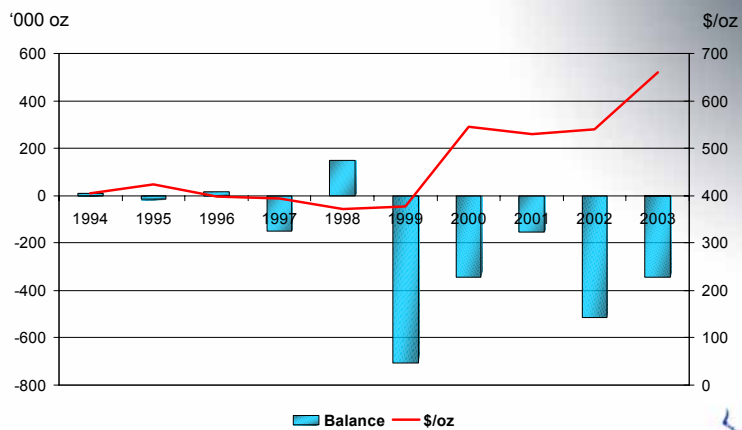
Platinum supply

Global supply



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Platinum supply/demand balance



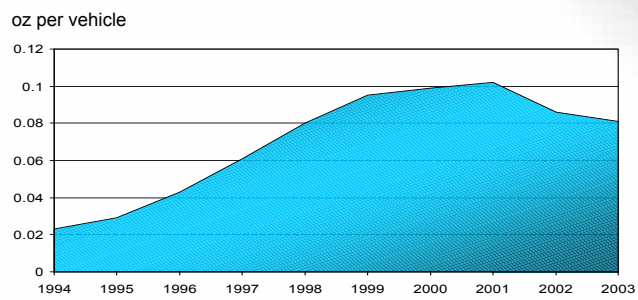
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Palladium demand



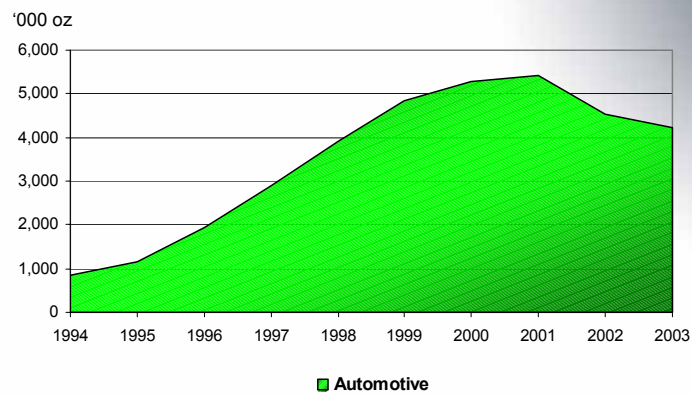
Automotive

- Legislation
- Substitution for platinum



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Palladium demand

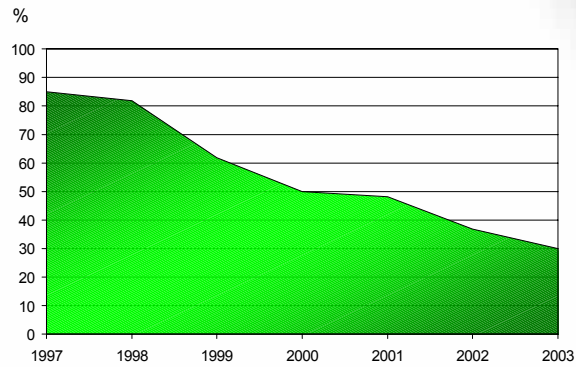


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Palladium demand

Electronics

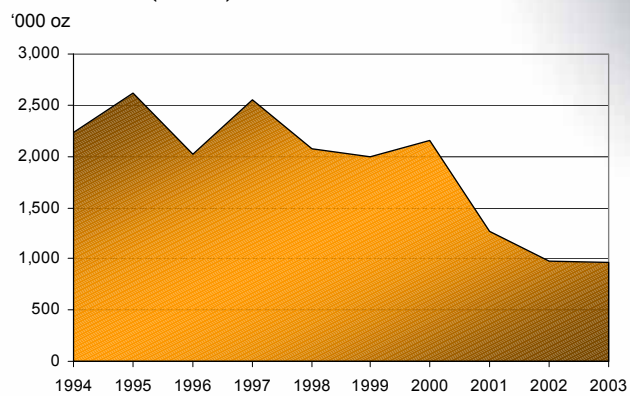
- Substitution by nickel in MLCC's



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Palladium demand

Electronics (cont)

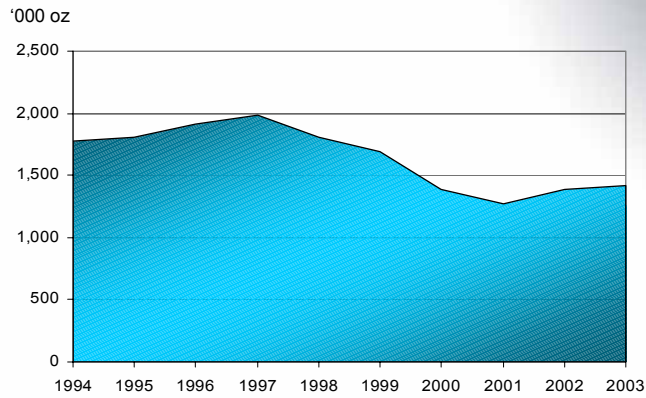


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Palladium demand

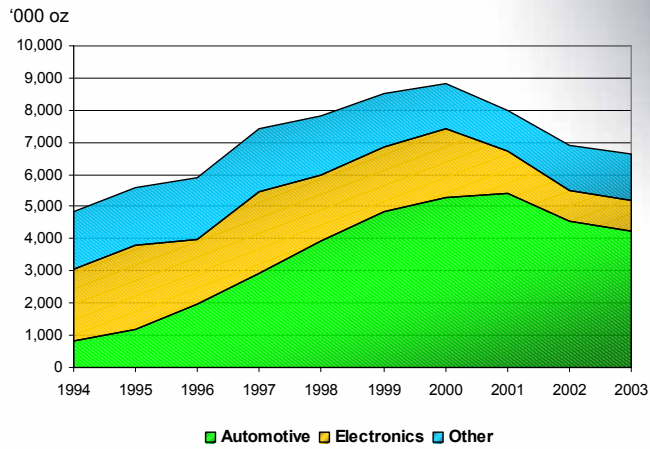


Other



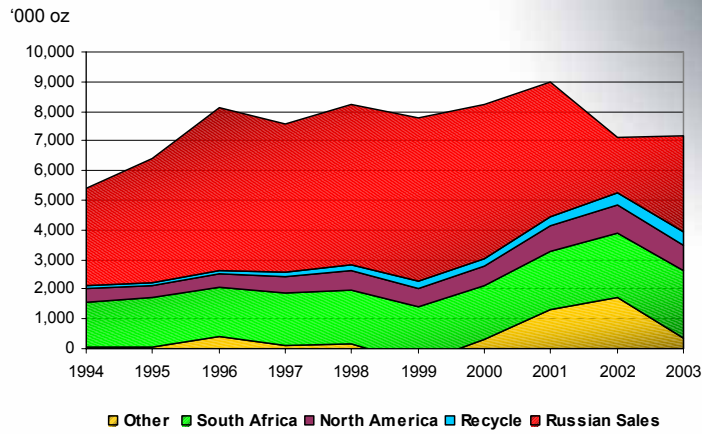
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Palladium demand



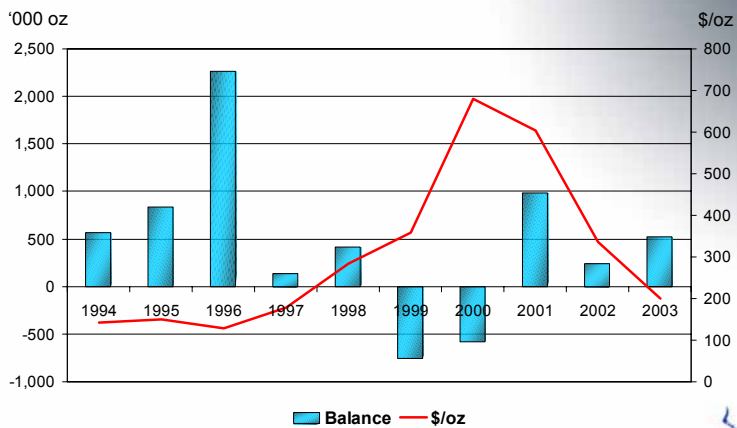
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Palladium supply



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Palladium supply/demand balance



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Outlook for platinum demand



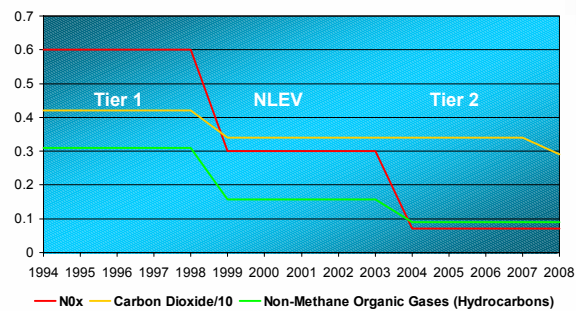
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Outlook for platinum demand

Automotive

- Adoption of stricter legislation

Emission Limits (g/m)



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Outlook for platinum demand



Automotive (cont)

- Ongoing expansion of light duty diesel market
- New legislation covers heavy duty vehicles - mainly diesel
- Growth in rest of world vehicle sales



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Outlook for platinum demand



Jewellery

- Resilient market underpinned by strong consumer demand
- New market development
 - India
 - South East Asia
 - Middle East
- Bridal



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Outlook for platinum demand

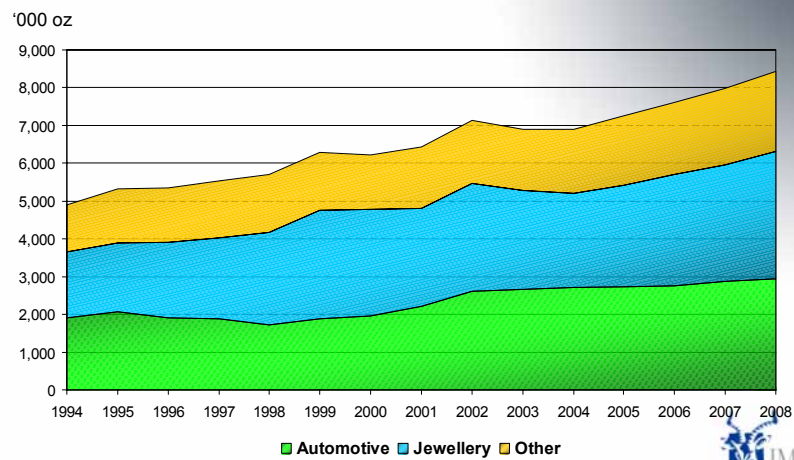
Fuel cells

- Commercialisation starting



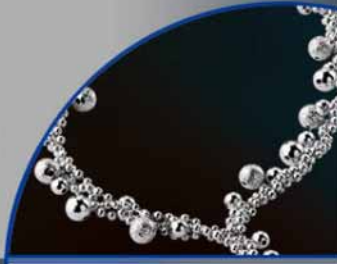
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Platinum demand



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How will growing platinum demand be met?



by Southern African expansions



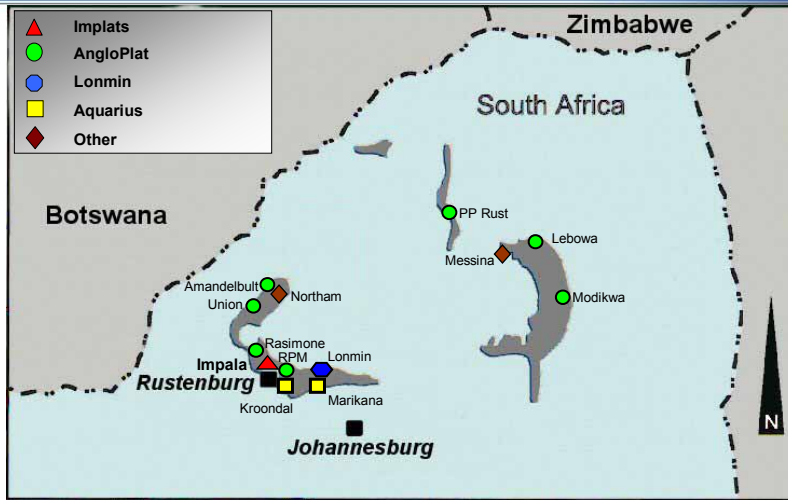
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South Africa/Zimbabwe operations



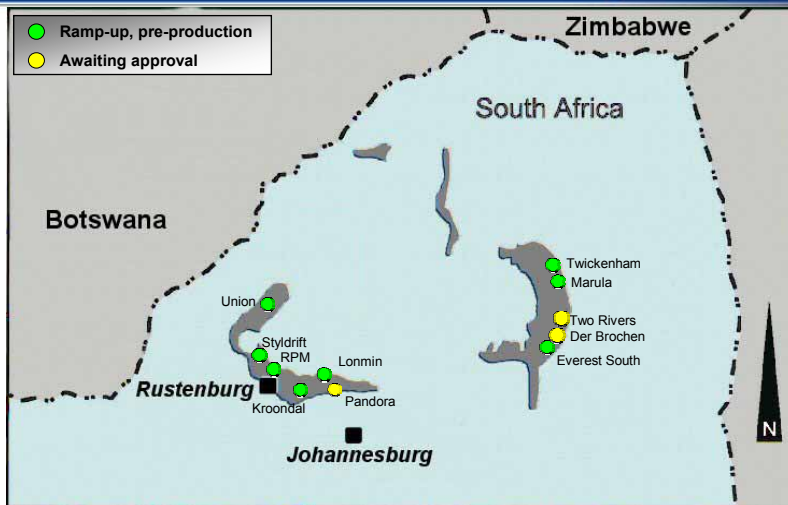
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Bushveld Complex South Africa - existing operations



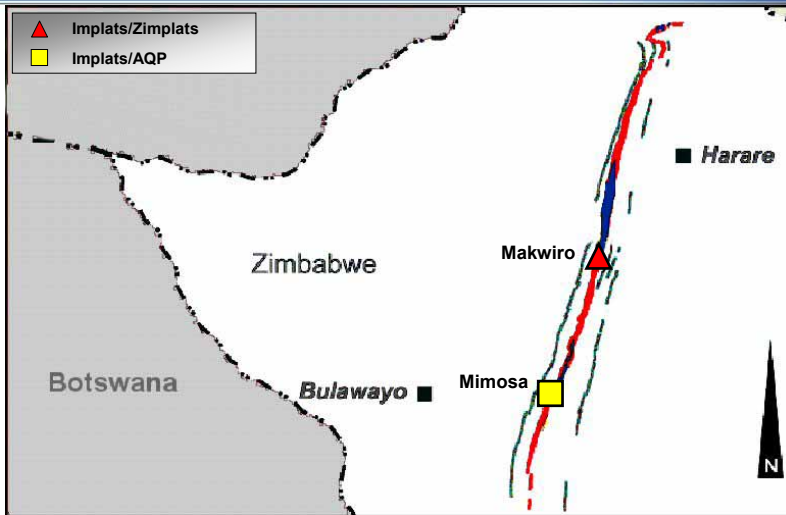
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Bushveld Complex South Africa - expansion projects



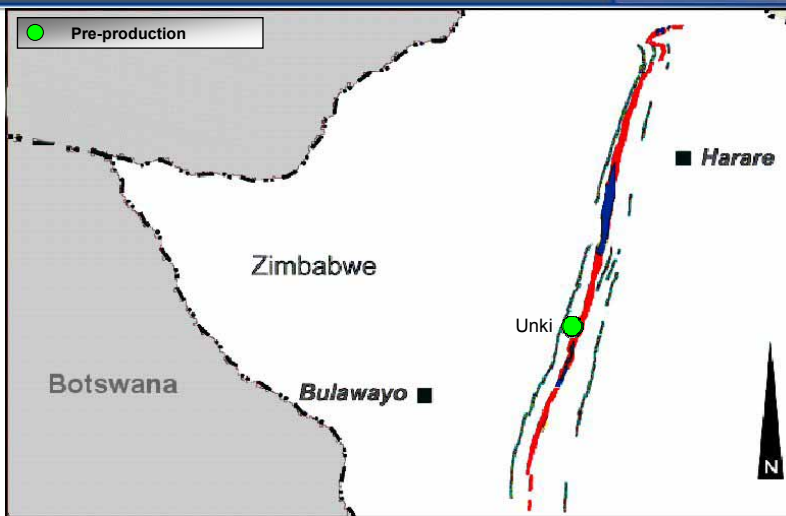
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Great Dyke Zimbabwe - existing operations



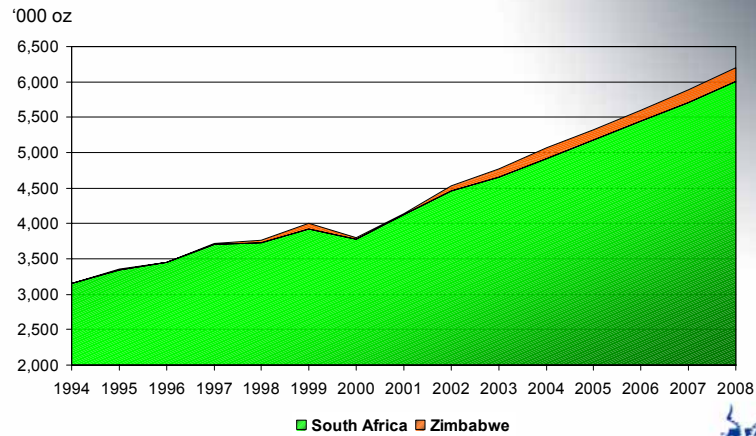
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Great Dyke Zimbabwe - expansion projects



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Southern African platinum supply



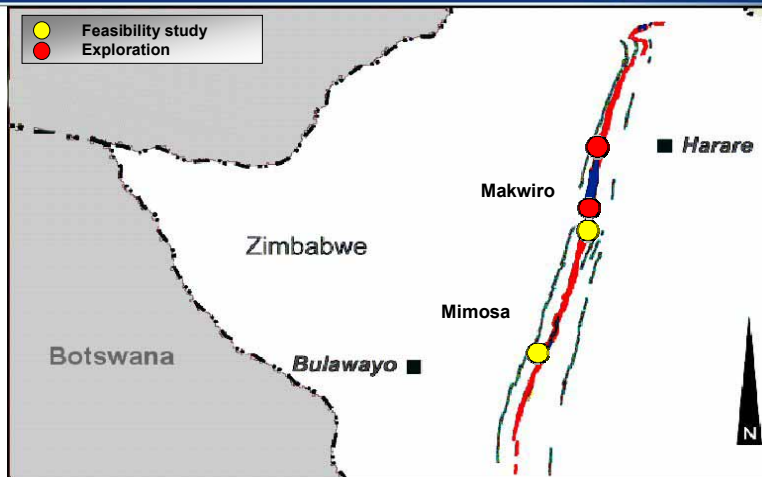
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Bushveld Complex South Africa - expansion projects



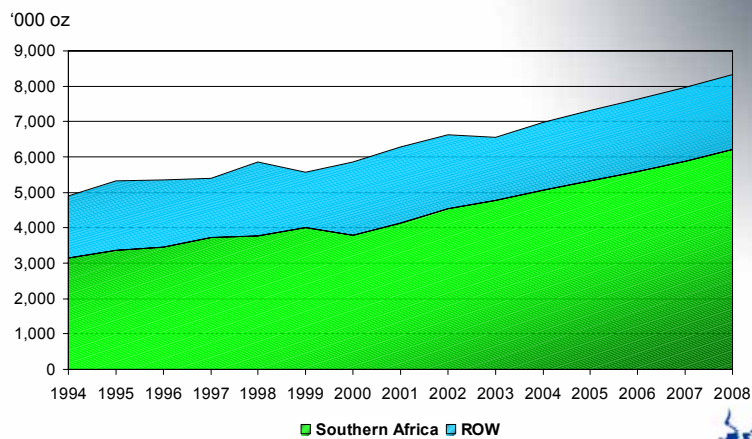
40

Great Dyke Zimbabwe - expansion projects



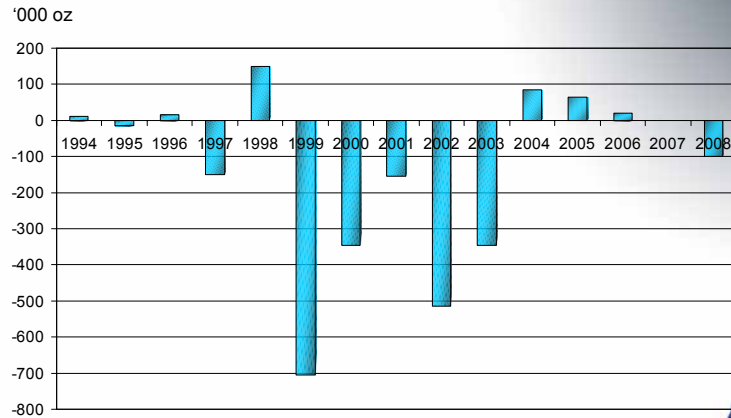
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Global platinum supply



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Platinum supply/demand balance



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Outlook for palladium demand

Automotive

- Legislation
- Substitution of platinum

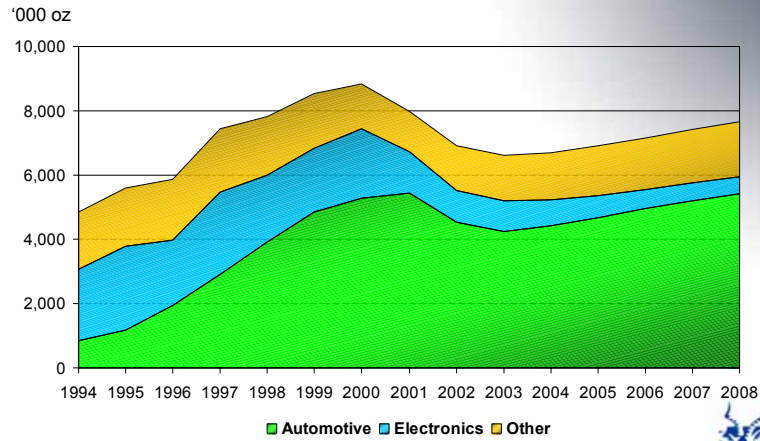
Electronics

- Ongoing miniaturisation and thrifting



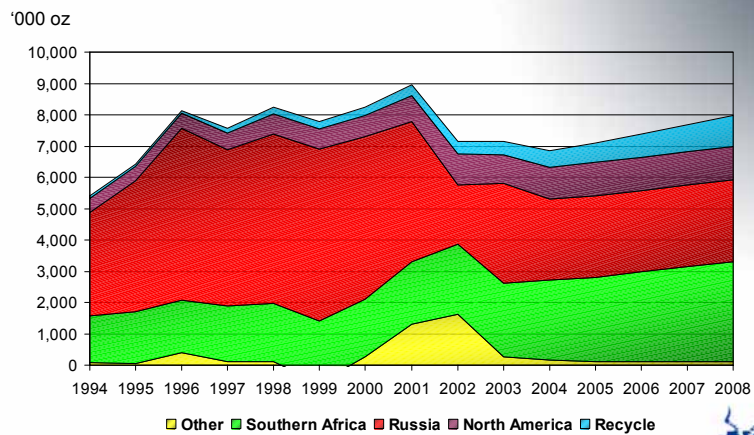
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Palladium demand



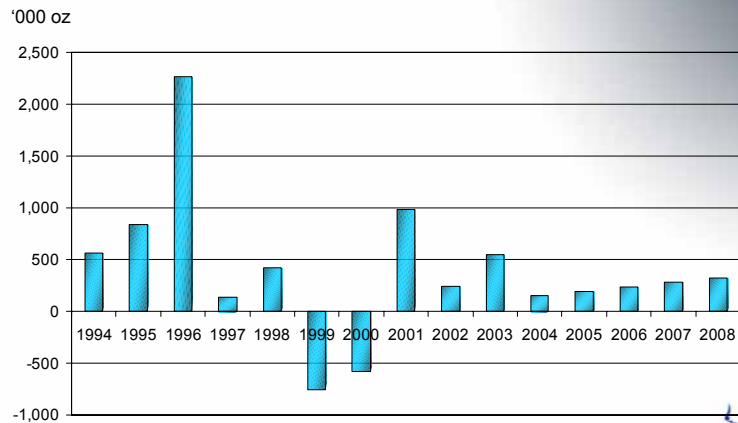
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Palladium supply



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Palladium supply/demand balance



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Conclusion

Platinum

- Fundamentals remain firm
- Growing demand met by Southern African expansions

Palladium

- Increasing demand in automotive industry and new applications provide positive longer term outlook



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