Australian Mining and Exploration
A National Perspective

Dr Andrew Heap
Chief of Resources Division
Geoscience Australia
Federation Australia
Established Resources Sector

2015-16

GDP 6% A$1617 billion

Exports 64% A$160 billion

Japan accounts for 11.7% of Australia’s total exports
## World leading resources and production

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Resources</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black Coal</td>
<td>5</td>
<td>4</td>
</tr>
<tr>
<td>Iron Ore</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Gold</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Bauxite</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Copper</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Lead</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Zinc</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Nickel</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td>Lithium</td>
<td>4</td>
<td>unknown</td>
</tr>
<tr>
<td>Manganese</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Phosphate</td>
<td>10</td>
<td>minor</td>
</tr>
<tr>
<td>Rare Earths</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Tungsten</td>
<td>2</td>
<td>minor</td>
</tr>
<tr>
<td>Uranium</td>
<td>1</td>
<td>3</td>
</tr>
</tbody>
</table>

Geoscience Australia, Australia’s Identified Mineral Resources 2016
World leading resources and production

- **Base metals**: Cu (Zn, Pb, Ag, Au)
- **Base metals**: Cu, Au, Uranium
- **Base metals**: Zn, Pb (Cu, Ag)
- **Coal**
- **Diamond**
- **Heavy Mineral Sands**
- **Iron Ore**
- **Light metals**: Al, Li, Mg
- **Other metals**: Sn, Sb, W, Ta
- **Phosphate**
- **Precious Metals**: Au, Ag
- **Rare earth elements**
- **Steel making metals**: Ni, Cr, V, Co, Mo, Mn
- **Uranium**

*Australia Minerals*
Australia’s geological context

- Outcrop and subcrop of limited extent (bright colours)
- Extensive regolith cover (~80%, pale colours)
- Major mines and deposits in bedrock dominated areas
- Geological features (e.g., aeromagnetics) continue under cover

Australia is largely unexplored at depth and has significant greenfields potential.

Source: Geoscience Australia and State/NT Geological Surveys
National innovative exploration strategy

2017–2022
NATIONAL MINERAL EXPLORATION STRATEGY

AMIRA Roadmap for Exploration Under Cover

An Industry Roadmap - STAGE 1

http://www.amirainternational.com/
Best geoscientific information – free!

- 1:1M Surface Geology
- Gravity
- Radiometrics
- Magnetics
- Onshore Seismic Lines
- Nd Two-stage Depleted Mantle Model
- National Geochemical Survey
- National MT

Data from Geoscience Australia and State/NT geological surveys
Analysis – mineral potential mapper

Mafic-related Ni-Cu-PGE

Nickel deposits

*Tholeiitic intrusion-hosted*
Increasing exploration expenditure

Expenditure by commodity (June 2017)
Better value exploration

Exploration expenditure versus metres drilled (June 2017)

Expenditure by quarter (Au $Million)

Period

Drilling by quarter (1000s metres)

Expenditure
Drilling

AUSTRALIA MINERALS
New Resource Announcements & Developments

- Carapateena Cu: Lowest quartile costs
- Dugald River Zn: Top 10 mine
- Fosterville Au: High grade ore shoots
- Mt Marion
- Pilgangoora
- Tabba Tabba
- Greenbushes
- Cattlin Creek
- Bynoe field
- Earl Grey
- Grey Mt Marion
- TAS
- SA
- WA

Commodity Type:
- Copper
- Gold
- Graphite
- HMS
- Base Metals
- Lithium
- Cobalt
- Potassium
- Silver
- Vanadium
Web services

Online Mapping

- Geoscience Australia
  - Interactive Maps
  - Data and Publications Search
- New South Wales
  - Geoscientific Data Warehouse
  - GeoView Application
  - Geological & Metallurgical Maps
- Northern Territory
  - STRIKE
  - Geophysical Image Web Server
- Queensland
  - Geoscience Data and Tenures
  - MyMinex Online portal
  - Queensland Digital Exploration (QDEX) Data
- South Australia
  - SARID - South Australian Resources Information GeoServer
  - Other online systems
- Tasmania
  - BRT Map Viewer
  - Digital Minerals/Tenement Data
  - Published Geoscience Maps
- Victoria
  - GeoView - Explore Victoria Online
  - Download reports, maps and data
- Western Australia
  - GeoVIEW/WA
  - TENORPH Atlas - WA mining tenements and petroleum titles
  - Other online systems
Confidence to invest in Australia – prospectivity

Mineral potential

Exploration success

World-class expertise

Vast untapped greenfield potential

Unrivalled pre-competitive information

Innovation

Confidence to invest in Australia – support

- Supportive governments
- Established services sector
- Supportive investment market
- Legal protection
- Streamlined processes
- Skilled workforce
- Safe and secure

Source: http://trekforkids.com.au
Australia –
a minerals innovation powerhouse

For free national and regional geoscientific datasets visit:


Source: https://upload.wikimedia.org