Redefining Australian mining

Understanding the new global footprint

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Ian Satchwell and Jim Redden
The International Mining for Development Centre was established to promote the more sustainable use of minerals and energy resources in developing nations by assisting governments and civil society organisations through education and training, fellowships, research and advice. Its focus was on three core themes—governance and regulation, community and environmental sustainability, and operational effectiveness.

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<th>Definition</th>
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</thead>
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<tr>
<td>AAMEG</td>
<td>Australia-Africa Minerals &amp; Energy Group</td>
</tr>
<tr>
<td>ABS</td>
<td>Australian Bureau of Statistics</td>
</tr>
<tr>
<td>APEC</td>
<td>Asia Pacific Economic Cooperation</td>
</tr>
<tr>
<td>ASX</td>
<td>Australian Securities Exchange</td>
</tr>
<tr>
<td>DFAT</td>
<td>Department of Foreign Affairs and Trade</td>
</tr>
<tr>
<td>FDI</td>
<td>Foreign direct investment</td>
</tr>
<tr>
<td>FTA</td>
<td>Free trade agreement</td>
</tr>
<tr>
<td>GIZ</td>
<td>German Institute for International Cooperation</td>
</tr>
<tr>
<td>GVC</td>
<td>Global value chain</td>
</tr>
<tr>
<td>IM4DC</td>
<td>International Mining for Development Centre</td>
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<tr>
<td>IPO</td>
<td>Initial public offering</td>
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<tr>
<td>LNG</td>
<td>Liquefied natural gas</td>
</tr>
<tr>
<td>MCA</td>
<td>Minerals Council of Australia</td>
</tr>
<tr>
<td>MCI</td>
<td>Mining Contribution Index</td>
</tr>
<tr>
<td>METS</td>
<td>Mining equipment, technology and services</td>
</tr>
<tr>
<td>MGI</td>
<td>McKinsey Global Institute</td>
</tr>
<tr>
<td>NGO</td>
<td>Non-government organisation</td>
</tr>
<tr>
<td>OECD</td>
<td>Organisation for Economic Cooperation and Development</td>
</tr>
<tr>
<td>R&amp;D</td>
<td>Research and development</td>
</tr>
<tr>
<td>RBA</td>
<td>Reserve Bank of Australia</td>
</tr>
<tr>
<td>RCEP</td>
<td>Regional Comprehensive Economic Partnership</td>
</tr>
<tr>
<td>SSA</td>
<td>Sub-Saharan African</td>
</tr>
<tr>
<td>TPP</td>
<td>Trans Pacific Partnership</td>
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</table>
1 Introduction and overview

1.1 Australian capability; global impact

For many decades, Australia has been one of the world’s major producers and exporters of minerals and energy products. Through its ASX-listed companies, Australia is now also one of the world’s major investors in exploration and mining globally. In 2013, mining shared the mantle of Australia’s highest value sector for offshore investment with financial services and has the highest proportion of enterprises investing overseas of any sector.

Large Australian-listed mining companies have operated both in Australia and other resource-rich nations for many years. During the past decade, they have been joined by junior and mid-tier Australian explorers and miners, which have helped to open up new, largely untapped resources regions.

Australia has also built world-class capability in mining equipment, technology and services, (METS), which both enables mining in Australia to compete globally and has grown to be a major new export sector in its own right, as well as an investor in many countries.

This has led to rapid globalisation of the Australian exploration and mining sector, transforming it in under a decade from being predominantly domestic in focus to being one of the globe’s leading mining investors. Australian mining is now a formidable global enterprise operating in all of the world’s resources regions, and is a world-leading and competitive sector across the value chain, from exploration, to financing and development, to mining and processing, and to METS.

As Austrade notes, however, there is little data and recent analysis of Australia’s outbound foreign direct investment (FDI) profile across all sectors. This is hampering understanding of, and policy focus on the rapidly expanding global interests of Australian companies operating in all sectors, and in particular in the mining sector.

By contrast, Canada, the other major developed global mining investor nation, collects detailed data on both its domestic mining investment and outbound FDI by Canadian companies abroad. It publishes an annual summary of Canadian mining investment globally.

This Action Research report seeks to quantify and define the global reach of the Australian mining sector in order to inform better those associated with the sector.

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3 Austrade (2015), Overseas Investment of Australian Companies: Trade and Investment Note, April 2015
1.2 Data sources and limitations

Data in this chapter has been derived from a variety of sources over various time periods. This has been necessary in order to build a detailed picture of the scale, footprint and other characteristics of Australian mining around the world. The data has limitations but the authors believe that it provides an authoritative case for their contention of Australia’s position as one of the leading investor nations in mining globally.
2 Australian mining investment at home and abroad

2.1 Australian mining is a global powerhouse

The past decade has seen unprecedented expansion of Australia’s mining sector, both in Australia and around the globe. Australian minerals, energy and METS companies now operate in all of the world’s resource-rich regions. Australia is second only to Canada in terms of number of publicly-listed companies operating in exploration and mining for minerals and coal globally and is also number two in global exploration expenditure.

Since 2008, minerals and energy companies have committed historically high levels of investment in mining and associated infrastructure. This investment wave, while now subsiding as mining moves to a phase of much-increased production, was estimated as the largest in real terms since the 1800’s gold rushes. At the same time, activity by ASX-listed resources companies in other nations has been rising to unprecedented levels. Mining and METS companies have been deploying capabilities that have been developed in Australia to enable them to be very successful globally.

The rapid transition by the mining industry from a predominantly domestic focus to a larger global presence generally has been under-recognised by commentators and policy-makers. This is thought to be largely due to lack of timely data about the nature of outbound FDI by exploration and mining companies, and as Austrade points out, about details of FDI in general. The rise of global trade in Australian METS and associated investment by METS companies was also under-appreciated until recent years when the growth of this diverse sector began to be recognised and survey-based data was produced about its impressive global footprint and technical capability.

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6 Glen Stevens (2011), Address to The Anika Foundation, Glen Stevens, Governor, Reserve Bank, July 2011
2.2 Mining’s leading position in the Australian Securities Exchange

Figure 1  Number of listed companies and market capitalisation by sector, ASX Nov. 2015

The resources sector (minerals, metals and energy companies) is the largest industry sector on the Australian Securities Exchange by number of companies and second largest by market capitalisation (Figure 1). Some 800 ASX listed companies are involved in mineral exploration, development and production in more than 100 countries. Another 250 energy companies are also listed on the ASX. Through the ASX, investors have supported 250 new resources floats since 2010 (Table 1).

Table 1   ASX new resources listings, 2010 – 2015

<table>
<thead>
<tr>
<th></th>
<th>2010</th>
<th>2011</th>
<th>2012</th>
<th>2013</th>
<th>2014</th>
<th>2015</th>
<th>Totals</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metals &amp; mining</td>
<td>67</td>
<td>74</td>
<td>35</td>
<td>14</td>
<td>8</td>
<td>0</td>
<td>198</td>
</tr>
<tr>
<td>Energy</td>
<td>9</td>
<td>15</td>
<td>9</td>
<td>14</td>
<td>4</td>
<td>1</td>
<td>52</td>
</tr>
<tr>
<td>Resources (total)</td>
<td>76</td>
<td>89</td>
<td>44</td>
<td>28</td>
<td>12</td>
<td>1</td>
<td>250</td>
</tr>
</tbody>
</table>

Source: ASX (2015)

As Figure 2 and Figure 3 show, follow-on capital raisings add far more to the level of total capital raised by the resources sector.

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7 Follow-on or secondary capital raising is conducted by companies after initial capital raising to raise funds for investment in exploration, mine development or expansion.
Energy companies as well as minerals companies feature on the ASX, which has the largest number of listings in the Asia-Pacific region (Figure 4).
Figure 4  Number of energy sector listings on major exchanges

Legend: TSX = Toronto Stock Exchange; TSX-V = TSX Venture Exchange; ASX = Australian Securities Exchange; LSE = London Stock Exchange; AIM (formerly Alternative Investment Market) - sub-market of LSE; SGX = Singapore Exchange; HKEx = Hong Kong Exchanges

Source: ASX (2015)

The ASX has a leading position amongst exchanges in the region and globally. Resources are a key to this success. The strong presence of resources listings help to build scale, liquidity and credibility. In turn, this assists other sectors to raise capital on the ASX, consolidating their situation and the position of the ASX in the region and the world (Figure 5).

Figure 5  Size of stock markets in Asia-Pacific region (ex-Japan, US$b)

Note: Japan market capitalisation April 2015 US$4,023

While IPO capital raisings for resources fell to just 12 companies in 2014, the experience of ASX during the mining investment wave of the prior eight years and the reputation the ASX built helped to keep it in the top five exchanges for capital raising for other sectors (Figure 6).
Notwithstanding of the current slump in minerals and energy prices, it is clear that the mining industry will remain fundamental to the Australian economy and to Australia’s global investment profile. With support, mining has the potential to not only recover but to further expand operations into Asia, Africa and other regions of the world in the years to come.

### 2.3 Sector trends in the face of prices downturn

The downturn in prices of minerals, coal and oil have led to a reduction of investment from historically high levels, as is to be expected. Data on minerals investment provides some indication (Figure 7).
Exploration expenditure is following a similar trend, as shown in Figure 8.

Figure 7  Global minerals and coal industry capital expenditure, all companies 2005–2015

Source: SNL Metals and Mining (2015), The Outlook for Mining Industry Capex, BAUMA Africa Conference, Mark Fellows, SNL Metals and Mining, 17 September 2015

Figure 8  Global nonferrous exploration, 1993–2014

Source: SNL Metals and Mining (2015)
3 Australian exploration and mining activity in global regions

3.1 Global footprint of Australia’s mining companies

What is extraordinary is that while Australian mining has pursued the greatest wave of domestic investment in real terms in more than 100 years, investment by Australian miners in other countries in 2013 reached a peak never before experienced.

The current slump in minerals and energy prices has led to curtailment of investment, closure of some resources operations, and shrinking of METS markets, but the footprint of Australia’s global investment and trade activities largely remains intact. When the resources cycle returns to a positive phase, Australian firms and the well-governed nations that host them are well positioned to take advantage of increased prices and commercial opportunities.

Analysis by SNL Metals and Mining, Austmine, Austrade and the ASX illustrates the global footprint of the Australian mining sector (not including oil and gas).

Figure 9 shows the number of ASX-listed companies with exploration and/or mining operations in each major mining region of the world as at end 2013. It is noteworthy that there are 599 Australian companies with operations outside Australia, compared with 662 with operations in Australia. Many companies have operations in several regions. Of note is that the continent of Africa hosts the highest number of ASX listed companies operating outside of Australia.

---

8 Glen Stevens (2015), After the Boom, Address to Australia-Israel Chamber of Commerce (WA) Corporate Breakfast, Glen Stevens, Governor, Reserve Bank of Australia, 2 December 2015
Figure 9  Number of ASX-listed mining companies operating in major global mining regions, 2013

Figure 10 highlights the dominant role played by mining in the mix of outwards foreign direct investment. Austrade notes that Australia’s stock of outbound FDI was AU$495 billion in 2013. By total value of investment, the largest industries were mining (29 per cent or AU$143 billion); finance and insurance (28 per cent); and manufacturing (13 per cent).

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Figure 10 Australia’s outbound foreign direct investment by industry, 2013 (AU$)

Note: ‘Mining’ in this chart includes minerals, coal, oil and gas. ‘Other’ includes non-published data (20 percent of total), in industries including professional, scientific and technical services.


Mining’s important role in outbound FDI is given further weight by analysis of company level data on FDI by Australia’s top 2,000 public and private companies.

Table 2 shows that Australian mining companies topped the ranking of all sectors with 53 per cent holding direct investment in at least one foreign company, compared with a still-creditable average of 33 per cent of all companies.

Mining is also a major contributor to inbound FDI and economic growth. Austrade says:

Inbound foreign direct investment into Australia over past decades, for example in the mining and food manufacturing industries has been a key driver of growth for Australia’s exports, as well as growth of the domestic economy.

Australia is second to Canada as the largest explorer for minerals and coal globally, albeit by a large margin. Together they dominate global exploration.

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10 Overseas Investment of Australian Companies: Trade and Investment Note, Austrade, April 2015 citing IBISWorld company database February 2015, counting companies where an Australian company has a 10 per cent or greater stake in a foreign company.

11 Christina Goodman (2015), op. cit.
Table 2  Direct investments of top Australian companies by industry, 2015, top five highlighted

<table>
<thead>
<tr>
<th>Industry</th>
<th>No. companies with o/s investment</th>
<th>No. companies analysed</th>
<th>Share with o/s investment (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manufacturing</td>
<td>146</td>
<td>334</td>
<td>44</td>
</tr>
<tr>
<td>Wholesale Trade</td>
<td>64</td>
<td>298</td>
<td>21</td>
</tr>
<tr>
<td>Professional, Scientific and Technical Services</td>
<td>68</td>
<td>137</td>
<td>50</td>
</tr>
<tr>
<td>Financial and Insurance Services</td>
<td>49</td>
<td>211</td>
<td>23</td>
</tr>
<tr>
<td>Mining</td>
<td>58</td>
<td>109</td>
<td>53</td>
</tr>
<tr>
<td>Retail Trade</td>
<td>38</td>
<td>140</td>
<td>27</td>
</tr>
<tr>
<td>Construction</td>
<td>26</td>
<td>115</td>
<td>23</td>
</tr>
<tr>
<td>Information Media and Telecommunications</td>
<td>34</td>
<td>69</td>
<td>49</td>
</tr>
<tr>
<td>Rental, Hiring and Real Estate Services</td>
<td>26</td>
<td>64</td>
<td>41</td>
</tr>
<tr>
<td>Transport, Postal and Warehousing</td>
<td>34</td>
<td>91</td>
<td>37</td>
</tr>
<tr>
<td>Education and Training</td>
<td>27</td>
<td>52</td>
<td>52</td>
</tr>
<tr>
<td>Administrative and Support Services</td>
<td>17</td>
<td>35</td>
<td>49</td>
</tr>
<tr>
<td>Electricity, Gas, Water and Waste Services</td>
<td>24</td>
<td>73</td>
<td>33</td>
</tr>
<tr>
<td>Health Care and Social Assistance</td>
<td>13</td>
<td>70</td>
<td>19</td>
</tr>
<tr>
<td>Accommodation and Food Services</td>
<td>7</td>
<td>26</td>
<td>27</td>
</tr>
<tr>
<td>Arts and Recreation Services</td>
<td>7</td>
<td>39</td>
<td>18</td>
</tr>
<tr>
<td>Agriculture, Forestry and Fishing</td>
<td>8</td>
<td>20</td>
<td>40</td>
</tr>
<tr>
<td>Public Administration and Safety</td>
<td>2</td>
<td>97</td>
<td>2</td>
</tr>
<tr>
<td>Other Services</td>
<td>5</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td><strong>Grand Total</strong></td>
<td><strong>653</strong></td>
<td><strong>2000</strong></td>
<td><strong>33</strong></td>
</tr>
</tbody>
</table>

Note: Mining in this table includes minerals, coal, oil and gas. Counts are of companies where an Australian company has a 10 per cent or greater stake. Industry classification is by parent company, as per ABS FDI data. Where data on a company’s subsidiaries was not available, it was assumed that a company had none.


3.2  Australian exploration around the world

Australia is one of the world’s leading nations in exploration activity for minerals and coal.

Table 3 is drawn from analysis by Natural Resources Canada of global exploration activity. It shows that in 2010, Australian companies in aggregate were second by a large margin to Canadian companies, but that together, Canadian and Australian companies generated more than 58 per cent of exploration expenditure globally.

Australia’s exploration position is confirmed by later analysis in Australia\(^\text{12}\), which finds that capital raised for asset acquisition and exploration in the two years to June 2013 was:

- North American listed companies US$2,758,045,000
- Australian listed companies US$1,797,115,600
- European listed companies US$140,720,000.

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\(^{12}\) SNL Metals and Mining (2015), SNL Metals and Mining analysis for IM4DC
Table 3  Value of exploration programs expected to be undertaken worldwide in 2010 for precious metals, base metals, and diamonds

| Type             | Canada (US$ millions) | Australia (US$ millions) | Africa and the Middle East (US$ millions) | Europe and the FSU (US$ millions) | United States (US$ millions) | Latin America (US$ millions) | Other Asia-Pacific (US$ millions) | Total (US$ millions) | Proportion of Total (%)
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Larger companies</td>
<td>3 606.4</td>
<td>1 466.7</td>
<td>585.7</td>
<td>1 231.4</td>
<td>658.1</td>
<td>970.7</td>
<td>721.0</td>
<td>9 240.0</td>
<td>86.53</td>
</tr>
<tr>
<td>Smaller companies</td>
<td>798.9</td>
<td>370.0</td>
<td>27.8</td>
<td>91.3</td>
<td>61.3</td>
<td>28.1</td>
<td>61.5</td>
<td>1 438.9</td>
<td>13.47</td>
</tr>
<tr>
<td>Total</td>
<td>4 405.3</td>
<td>1 836.7</td>
<td>613.5</td>
<td>1 322.7</td>
<td>719.4</td>
<td>998.8</td>
<td>782.5</td>
<td>10 678.9</td>
<td>100.00</td>
</tr>
</tbody>
</table>

Note: "Larger companies" are defined here as those with budgets for mineral exploration in 2010 of US$3 million or more.


Figure 11 shows the distribution of global exploration expenditure in 2013 and indicates the ranking of ASX-listed companies in exploration in each region. It reinforces the fact that Australia is an exploration leader in all regions of the world, along with North America (mostly Canada).
Figure 11 Regional share of global non-ferrous exploration expenditure and ranking of ASX-listed companies in exploration expenditure, 2013

Source: SNL Metals and Mining, World Exploration Trends 2014 and other SNL analysis for IM4DC
Figure 12 shows the trends in exploration activity in major mineral and coal regions. It shows that Latin America is not only the region of largest exploration expenditure but that it has also had the fastest rising expenditure.

![Figure 12 Regional share of global non-ferrous exploration expenditure 2005–2014](image)

Source: SNL Metals and Mining (2015)

Figure 13 and Figure 14 show the trends in offshore exploration activity by Australian companies between 2009 and 2013. The charts graph an outbound activity index\(^{13}\) for exploration versus advanced exploration activity by Australian listed companies for each of the mining regions shown. The charts have been broken down into two scales to avoid overpopulating one chart.

The charts show trends in the amount of exploration, split into exploration (target drilling and resource drilling), and advanced exploration (resource estimation and infill or extension drilling). Again, to avoid overpopulation and to avoid data distortion, grass roots exploration has been excluded from these two charts.

A solid line converging down towards a dotted line of the same destination colour indicates that destination is becoming more of a focus towards early stage exploration. A solid line

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\(^{13}\) To calculate activity indices, an analysis of data from the IntierraLive / SNL Metals and Mining global exploration database was undertaken of exploration properties which had, during the past five years, different levels of exploration, covering grass roots activity through to the commencement of feasibility studies. Data associated with each property, covering commodity types, company data, and records of activity were extracted to allow calculation of an index to represent the amount of activity for each project, in each of the study years.
diverging upwards away from a dotted line of the same destination colour indicates that advanced exploration is accelerating at a faster rate than early stage exploration.

**Figure 13** Exploration by Australian (ASX) companies 2009-2013: outbound exploration investment, larger scale destinations

Source: SNL Metals and Mining analysis for IM4DC

**Figure 14** Exploration by Australian (ASX) companies 2009-2013: outbound exploration investment, smaller scale destinations

Source: SNL Metals and Mining analysis for IM4DC
Figure 15 summarises where in 2013 Australian companies were exploring and for what commodities. The vertical scale is an activity index for ASX listed companies derived from the IntierraLive/SNL Metals and Mining global exploration database.

Figure 15 Exploration by Australian (ASX) companies: advanced exploration, 2013 index by commodity and investment destination

Note: Major metals include gold, copper, zinc and nickel
Source: SNL Metals and Mining analysis for IM4DC

3.3 Minerals and coal discovery by Australian companies

Exploration by Australian companies has been very successful, in large part due to the skills and technologies deployed. Figure 16 shows the location of the 651 mineral and coal resource deposits discovered and/or delineated by ASX-listed companies in the five years 2008 to 2013.

Aggregate in-ground value of these resources, at August 2014 prices, is US$2,100 billion ($2.1 trillion). Even after discounting substantially for what may not be recoverable, and costs of mining and processing, these resources represent massive latent value for companies and nations.

Of course, deposits can only be monetised if they are commercially viable and the investment climate in their locations is conducive to their development. Australia has a high value role to play in supporting the development of such discovered resources. This is in the interests both of Australian companies and the nations that host them and the minerals and energy deposits these companies have discovered.
Figure 16 Mineral and coal resources discovered and/or defined by ASX-listed companies 2008-2013

Source: SNL Metals and Mining analysis for IM4DC from company resource announcements to ASX
As the table within the Figure 16 map shows, while 293 deposits were discovered or delineated in Australia, 358 were discovered elsewhere in the world – 109 in Africa, 42 in North and Central Asia and the Middle East, 31 in South East Asia, 39 in North America, 51 in South America and 86 in Europe.

Figure 17 shows the in-ground value, based on August 2014 prices, of discovered and defined resources by ASX-listed companies, by region in the five years between 2008 and 2013. The value of new resources in the rest of the world is almost four times higher than those discovered or defined in Australia. The aggregate value of new resources discovered by ASX-listed companies in Africa is 24 per cent higher than value of discoveries in Australia.

Figure 17 Value (US$) as at August 2014 of ‘maiden resources’ announced by ASX-listed companies 2008-2013, by region

The footprints of Australian exploration and mining by region provide further compelling evidence of the globalisation of the sector. The following sections discuss the activities by Australian companies in each major mineral region.

3.4 A new export sector rises: mining equipment, technology and services

The success of Australian explorers and miners globally has been a key to the success of Australia’s mining equipment, technology and services (METS) sector and the growth of its exports and offshore investment. Figure 20 shows the principal markets for Australian METS suppliers in 2015.

Australian METS firms compete successfully with firms from around the world, while METS providers based in other countries (particularly equipment manufacturers) have invested in Australia and/or used Australia as a regional base.
The majority of METS companies (66 per cent) export their goods and services. Of those that are not currently exporting, 16 per cent plan to export in the next 1-2 years. Oil and gas is an important METS market, with 64 per cent of METS firms working in both minerals and oil and gas sectors. In 2012, export value of METS products from companies responding to a survey totalled AU$15 billion, out of AU$27 billion total exports by METS companies (many are diversified) and AU $90 billion total revenue\textsuperscript{14}.

Of those companies exporting, 52 per cent have offices and/or operations in other countries. This indicates a strong commitment to international growth and the necessity of adopting an integrated investment and trade model, recognising the need to be close to customers and business partners.

In a second survey conducted in 2015\textsuperscript{15}, the majority of METS firms reported negative impacts on their business due to the mining downturn. Impacts include decreases in revenue, falls in employee numbers and reduced profitability. Despite this, the METS sector is quite resilient, as firms are involved in several phases of the mining lifecycle, work across a number of commodities, have diversified into other industries, and service markets around the world.

Figure 18 Percentage of Australian-based METS companies identifying each market region as a key export market

Note: Number of responses = 930


\textsuperscript{14} Austmine (2013), Australia’s New Driver for Growth: Mining Equipment, Technology and Services, Austmine July 2013

The results of the Austmine 2015 survey align broadly with the results of Australia’s International Business Survey 2015 for the METS sector\textsuperscript{16}. This survey identified the top 10 markets for Australian METS firms, shown in Table 4.

### Table 4  Main overseas markets – Mining equipment, technology and services

<table>
<thead>
<tr>
<th>Rank</th>
<th>Country</th>
<th>No. of responses</th>
<th>Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>United States</td>
<td>23</td>
<td>10%</td>
</tr>
<tr>
<td>2</td>
<td>Indonesia</td>
<td>21</td>
<td>9%</td>
</tr>
<tr>
<td>3</td>
<td>PNG</td>
<td>19</td>
<td>8%</td>
</tr>
<tr>
<td>4</td>
<td>China</td>
<td>16</td>
<td>7%</td>
</tr>
<tr>
<td>5</td>
<td>Canada</td>
<td>16</td>
<td>7%</td>
</tr>
<tr>
<td>6</td>
<td>South Africa</td>
<td>13</td>
<td>6%</td>
</tr>
<tr>
<td>7</td>
<td>Chile</td>
<td>12</td>
<td>5%</td>
</tr>
<tr>
<td>8</td>
<td>Malaysia</td>
<td>7</td>
<td>3%</td>
</tr>
<tr>
<td>9</td>
<td>New Zealand</td>
<td>6</td>
<td>3%</td>
</tr>
<tr>
<td>10</td>
<td>United Kingdom</td>
<td>5</td>
<td>2%</td>
</tr>
</tbody>
</table>

Note: the sample consists of companies that identify above countries as either top 1 or top 2 country from which they have earned international revenue in the past year. Number of responses = 233

Source: Export Council of Australia (2015)

The Austmine 2015 survey found that Indonesia is currently the number one METS export market, but there has been a shift in focus to the Americas. The United States, Canada and Chile are seen as important export and investment destinations, an indicator the world-competitiveness of Australian METS goods and services.

The Export Council survey found that 83 per cent of respondent companies were planning to do business in additional countries in the next two years. Indonesia was identified as the most important future market, followed by the United States and India.

The Export Council survey found that despite difficult trading conditions, close to 60 per cent of companies expected the performance of their international operations to be better in 2015 compared to 2014. Thirty-three per cent expected their international performance to be the same, while 9 per cent expected their performance to be worse.

METS companies are keen to work cooperatively and with governments to access markets. When asked “what would assist your company to commence exporting or expand your export business?”, 54 per cent nominated introductions to contacts, 37 per cent said

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assistance in international marketing and promotions, and 23 per cent nominated expansion of Export Market Development Grants.

As mentioned earlier, the globalisation of the Australian mining and METS sector is often understated so a quick tour of activity across the regions is instructive.

### 3.5 Australian mining and METS activity in Africa

#### 3.5.1 Exploration and mining

Australian exploration and mining activity in Africa has expanded from very low levels 10 years ago to where Australian companies collectively make up is the largest mining investor group in Africa (Figure 19 and Figure 20). Analysis conducted in 2013 by SNL Metals and Mining for the International Mining for Development Centre found that there were 220 companies operating 1,100 exploration and mining projects across 38 African countries.

While the downturn has led to rationalisation of projects, Australian involvement has held reasonably steady relative to companies from other nations. Analysis undertaken in 2015 for the Australia-Africa Minerals & Energy Group (AAMEG)\(^\text{17}\) found that:

- 769 mining projects in 35 countries across sub-Saharan Africa are either majority owned or partly owned by Australian companies – defined as companies that are either listed on the ASX or headquarter in Australia. Of these projects, 707 are majority owned by Australian companies.
- 216 Australian companies have equity in one or more of these projects; with 208 having majority or controlling interest in at least one project.
- Of the above projects 769 projects there are: 80 mines or processing facilities in Sub Saharan Africa in which Australian companies have equity; a further 12 in the pre-production stage; 168 advanced exploration projects undergoing feasibility or scoping studies; and another 501 less advanced exploration projects.

In January 2016, AAMEG reported that 190 ASX listed Australian companies were now operating or exploring 590 projects across 38 countries in Africa\(^\text{18}\).

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\(^\text{18}\) AAMEG (2016), Africa: making a big difference, article by Trish O’Reilly, Chief Executive Officer in MiningNews.net, January 2016
Sub Saharan Africa remains the region with the highest concentration of Australian mining projects, with 36 per cent of the total number outside Australia. This compares with the Asia-Pacific (22 per cent), Latin America (17 per cent) and the US / Canada (14 per cent). Sub Saharan Africa also accounts for 48 per cent of all Australian mining projects in developing countries.

SNL 2015 data shows the following metrics for other major mining investor countries in Sub Saharan Africa:
• **Canada:** there are 640 projects in Africa in which Canadian companies have equity, of which 76 are operating mines. It should be noted there is some duplication as a few companies are listed on both the ASX and Toronto or Vancouver exchanges, or are listed on one of the Canadian exchanges but have Australian headquarters.

• **United Kingdom:** the number of UK projects in Africa is not far behind Canada – 564 projects, of which 159 are producing mines – suggesting a much higher level of UK capital investment than by Australian companies. The latter figure includes a number owned by London-listed majors including BHP Billiton and Rio Tinto, which investments are duplicates in the Australian list.

• **China:** the SNL database records 71 Chinese projects (including 19 operating mines) in Africa, perhaps fewer than some might expect. This may be in part due to some Chinese projects simply not being given sufficient transparency, although SNL believes that most are captured.

The map in Figure 21 shows the location of the projects identified in 2013. Clusters of investment in West and West Central Africa, and Southern Africa are apparent, reflecting both prospectivity and relatively stable systems of governance.

The 2015 data shows that projects are located in 35 countries across all regions of sub-Saharan Africa. South Africa has by far the biggest concentration, with 138 projects followed by Tanzania (69), Burkina Faso (65), Zambia (51), Botswana (43), Namibia (42), Ghana (40) and Cote d'Ivoire (37). By sub-region, West and Central Africa hosts 42 per cent of projects involving Australian companies, Southern Africa hosts 47 per cent; and East Africa 11 per cent.

Estimating the value of Australian mining investment in Africa is tricky, given the lack of data on Australian FDI by industry and region. In 2008 the Lowy Institute estimated a total of around AU$20 billion for all Australian resources investment in Africa, including oil and gas. In 2011, DFAT estimated that the value of mining investment in Africa by Australian companies was about AU$24 billion. In the light of the extent of Australian investment in Africa and the ABS estimate of total outbound mining FDI of AU$143 billion, these estimates appear conservative. ASX data indicates that AU$6.83 billion has been raised through follow-on raisings by ASX listed companies for projects in Africa over the 5 years to 2013.

The analysis by SNL Metals and Mining for IM4DC found that the in-ground value of discovery in Africa in the five years 2008-2013 was US$687 billion or 26 per cent of the value of global discoveries by ASX companies in the period.

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19 Roger Donnelly and Benjamin Ford (2008), *Into Africa: How the resource boom is making Sub-Saharan Africa more important to Australia*, Lowy Institute for International Policy, August 2008

20 Valued at August 2014 prices
Figure 21 Location of Australian-operated exploration and mining operations in Africa, 2013

Source: SNL Metals and Mining analysis for IM4DC

Figure 22 shows the range of commodities being sought through exploration or mining. Gold is dominant but numerous other commodities are of obvious interest, reflecting the expertise of Australian companies across commodities, developed from Australia’s diversity in minerals and coal.
Further evidence of the knowledge- and technology-driven Australian dominance in exploration in Africa can be seen in Figure 23, Figure 24 and Figure 25. These charts have been derived from analysis of the exploration database of IntierraRMG / SNL Metals and Mining. The charts show inbound activity indices for each three stages of exploration activity by domicile of listed companies.

Figure 23 Investment in exploration in West Africa region, by region of investor, 2009-2013

Key map

Grass roots (prospecting – target definition)
Redefining Australian mining

Exploration (target drilling – resource drilling)

Advanced exploration (resource estimation – infill/extension drilling)

Source: SNL Metals and Mining analysis for IM4DC

Figure 24 Investment in exploration in Central Africa region, by region of investor, 2009-2013

Key map

Grass roots (prospecting – target definition)
Redefining Australian mining

Australian exploration and mining activity in global regions

Exploration (target drilling – resource drilling)

Advanced exploration (resource estimation – infill/extension drilling)

Source: SNL Metals and Mining analysis for IM4DC

Figure 25 Investment in exploration in Southern Africa region, by region of investor, 2009-2013

Key map

Grass roots (prospecting – target definition)
3.5.2 Mining equipment, technology and services

In the Austmine 2015 survey, 33 per cent of METS companies identified Sub Saharan Africa as a key market, while 26 per cent regard North Africa as important. The Austmine 2013 survey found that 21 per cent of Australian METS companies have invested in Sub Saharan Africa through establishing operations there.

3.6 Australian mining and METS activity in South East Asia and the Pacific

Australian companies are dominant in exploration in South East Asia and the Pacific region, and to a lesser extent, in mining. South East Asia is also a key market for METS firms.

3.6.1 Exploration and mining

In 2013, nine countries in South East Asia and the Pacific hosted 47 Australian-operated mining and development projects and 357 exploration projects. Australia is a dominant investor in the region. Figure 26 indicates the proportion of ASX and non-ASX companies with operations in the region.
Figure 26 Operations of ASX and non-ASX listed mining companies in South East Asia and the Pacific, 2013

Source: SNL Metals and Mining analysis for IM4DC

Figure 27 shows the locations of these projects. The nations and sub-regions with the heaviest concentrations of exploration and mining operations are Papua New Guinea and Indonesia – notably Kalimantan. Figure 28 indicates that activities are spread across a range of commodities, dominated by gold, nickel and silver, with copper a keen interest for explorers.

Figure 27 Location of Australian-operated exploration and mining operations in South East Asia and the Pacific, 2013

Source: SNL Metals and Mining analysis for IM4DC
Redefining Australian mining

Figure 28 Australian-operated exploration projects (left) and mining operations (right) in South East Asia and the Pacific, by commodity, 2013

Source: SNL Metals and Mining analysis for IM4DC

The relative strength of Australian exploration activity South East Asia and the Pacific is underlined by the charts in Figure 29. Given the intensity of exploration, it is somewhat surprising that the value of discovery by Australian explorers in the five years to 2013 has been relatively modest at US$25 billion, probably reflecting the challenging policy and social environments in many of the countries in the region.

Figure 29 Investment in exploration in South East Asia and Pacific regions, by region of investor, 2009-2013

Key map

Grass roots (prospecting – target definition)
Redefining Australian mining

3.6.2 Mining equipment, technology and services

Indonesia is regarded as Australia’s single most important market for the METS sector. The Austmine 2013 and 2015 surveys identified Indonesia as the number one market for Australian METS firms. In the 2015 survey, 49 per cent of METS firms identified Indonesia as highly important to them. Australia’s International Business Survey 2015, using a smaller sample, identified Indonesia as the number two market to the US, by a narrow margin.

South East Asia more generally is a major METS market, with the 2015 Austmine survey finding that 67 per cent of firms regarding this region as highly important. The next most important region was Oceania (including Australia) with 50 per cent.

3.7 Australian mining and METS activity in North, Central and South Asia

3.7.1 Exploration and mining

Australian exploration and mining activity has grown rapidly in North, Central and South Asia, with concentrations of activity in Mongolia, Kyrgyzstan and Turkey (Figure 30). China and India are also growing mining investment destinations. While in the minority, ASX listed companies are still significant in exploration and mining in this vast region (Figure 30, Figure 32, Figure 33 and Figure 34).
Data on exploration activity was analysed for separately Central Asia, and for North and South Asia combined. Error! Reference source not found. shows data for inward investment in Central Asia (see key map). Figure 34 shows data for inward investment in North and South Asia.

Figure 30 Operations of ASX and non-ASX listed mining companies in North, Central and South Asia, 2013

Source: SNL Metals and Mining analysis for IM4DC

Figure 31 Location of Australian-operated exploration and mining operations in North, Central and South Asia, 2013

Source: SNL Metals and Mining analysis for IM4DC
3.7.2 Mining equipment, technology and services

North, Central and South Asia are growing markets for the Australian METS sector. In the Austmine 2015 survey, 23 per cent of companies identified North East Asia as a key market, and 27 per cent identified Southern and Central Asia. In Australia’s International Business Survey 2015, respondents ranked China as within the top five global markets for METS, and as one of the most important new markets, alongside India. China and India, however, were also ranked as amongst the most difficult markets to operate in.
Redefining Australian mining

Advanced exploration (resource estimation – infill/extension drilling)

Source: SNL Metals and Mining analysis for IM4DC
Figure 34 Investment in exploration in North and South Asia, by region of investor, 2009-2013

Key map

Grass roots (prospecting – target definition)

Exploration (target drilling – resource drilling)

Advanced exploration (resource estimation – infill/extension drilling)

Source: SNL Metals and Mining analysis for IM4DC
3.8 Australian mining and METS activity in Latin America

3.8.1 Exploration and mining

Latin America is probably the fastest growing destination for Australian mining investment and for METS investment and exports. In 2013 there were 96 ASX-listed mining companies with 465 projects across 16 countries. Total capital raised for Latin American projects by ASX listed companies over the five years to 2013 was AU$2.56 billion.

Key countries for Australian investment, as identified by Austrade are:

- Chile: 115 Australian companies total, including 28 juniors
- Brazil: 110 companies, including 20 juniors
- Peru: 88 companies total, including 20 investors/juniors.

As Figure 35 and Figure 36 show, while Australia is a substantial investor in exploration and mining in Latin America, ASX companies in aggregate come a long second to Canadian companies, given their obvious proximity to that region. Nevertheless, the strong Australian presence in this non-traditional investment destination for Australia is testament to the ability of Australian explorers and miners to invest successfully in diverse destinations.

The strength of the Australian METS sector in Latin America, as discussed below, is further evidence of Australia’s competitiveness in all facets of the mining value chain.

Figure 37 shows the location of Australian-operated exploration and mining properties in Latin America.

Australia’s number two position in exploration, by some margin, is indicated in Figure 38.

Figure 35 Operations of ASX and non-ASX listed mining companies in Latin America, 2013

Source: SNL Metals and Mining analysis for IM4DC

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21 Austrade (2015), presentation on Overview of Latin America, Latin America Mining Video Conference, January 2015
Figure 36 Number of listed exploration and mining companies in Latin America, by stock exchange, 2013

<table>
<thead>
<tr>
<th>Stock Exchange</th>
<th>Number of Companies</th>
</tr>
</thead>
<tbody>
<tr>
<td>TSX-V</td>
<td>347</td>
</tr>
<tr>
<td>TSX</td>
<td>116</td>
</tr>
<tr>
<td>ASX</td>
<td>95</td>
</tr>
<tr>
<td>AIM</td>
<td>19</td>
</tr>
<tr>
<td>LSE</td>
<td>15</td>
</tr>
<tr>
<td>HKEx</td>
<td>10</td>
</tr>
<tr>
<td>JSE</td>
<td>5</td>
</tr>
</tbody>
</table>

Source: Australian Securities Exchange, SNL Metals and Mining
Figure 37 Location of Australian-operated exploration and mining operations in Latin America, 2013

Source: SNL Metals and Mining analysis for IM4DC
Figure 38 Investment in exploration in Latin America, by region of investor, 2009-2013

Key map

Grass roots (prospecting – target definition)

Exploration (target drilling – resource drilling)

Advanced exploration (resource estimation – infill/extension drilling)

Source: SNL Metals and Mining analysis for IM4DC
3.8.2 Mining equipment, technology and services

Key countries in Latin America for METS trade and investment, as identified by Austrade\textsuperscript{22} are:

- Chile: 59 Australian METS companies with registered offices
- Brazil: 30 METS companies with registered offices
- Peru: 60 METS companies with registered offices.

Australia is regarded by the Government of Chile as a role model in development of a strong METS sector that supports mining industry competitiveness and broadens its economic footprint\textsuperscript{23}. Knowledge transfer and learning from Australia is being applied to industry initiatives to develop world class supply chains in Chile\textsuperscript{24,25}.

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\textsuperscript{22} Austrade (2015), presentation on *Overview of Latin America*, Latin America Mining Video Conference, January 2015

\textsuperscript{23} CSIRO (2014), *The Future of Mining in Chile*, CSIRO Futures 2014

\textsuperscript{24} BHP Billiton (2015), *World Class Supplier Program*, http://www.bhpbilliton.com/society/ourcontribution/world-class-supplier-program accessed November 2015

4 Summary of Australia’s global mining footprint

Overall, it is clear that the outreach and globalisation of the Australian mining industry this century has been significant with the growth of the METS sector being particularly impressive.

The data underline the ongoing importance of integration and partnerships with our nearest trading neighbours and in particular the future importance of trade and investment in Indonesia, China and India. Of note though is that a number of companies also identified these countries as ‘difficult markets’ and so the role of government diplomacy and facilitation remains paramount.

More revealing perhaps is the growing importance of Africa and South America, especially Chile, Brazil and Peru in the latter, while Australia’s strongest investment destination per company is in the African continent. Both these facts would suggest the vital importance of ongoing economic diplomacy and capacity building support from Australia to key countries in these continents in support of Australia’s long-term mining interests.

Throughout the paper, the spectacular growth and globalisation of Australia’s mining value chain have been documented and analysed based on recent trends and available data.

A more comprehensive understanding of the Australian mining sector, wherever it operates, will be enhanced by refinement of data collection and further analysis. High quality and timely data on mining trade, and in particular, investment, can underpin policy decisions and economic diplomacy priorities. The global reach and scale of Australian mining sector investment warrants greater attention by governments and the industry itself to understanding one of the nation’s largest business sectors operating both domestically and internationally. As a consequence of better understanding of the mining sector footprint, Australia’s economic diplomacy efforts may require adjustment to respond better to Australia’s economic interests.

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