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Australian mineral exploration peaks

Lynton Jaques and Mike Huleatt

Australian and global mineral exploration reached record highs during 2008 but appear set to drop. Expenditure on Australian mineral exploration reached a record $2461.4 million in 2007-08 according to the Australian Bureau of Statistics (ABS). This was an increase of nearly 44% on the previous year and a record in both current and constant dollars, significantly exceeding the last three exploration peaks including the peak associated with the broad-based commodity boom of 1981-82 (figure 1). However the end of the commodity boom—a consequence of the global economic downturn—is likely to see a sharp drop in future exploration expenditure.

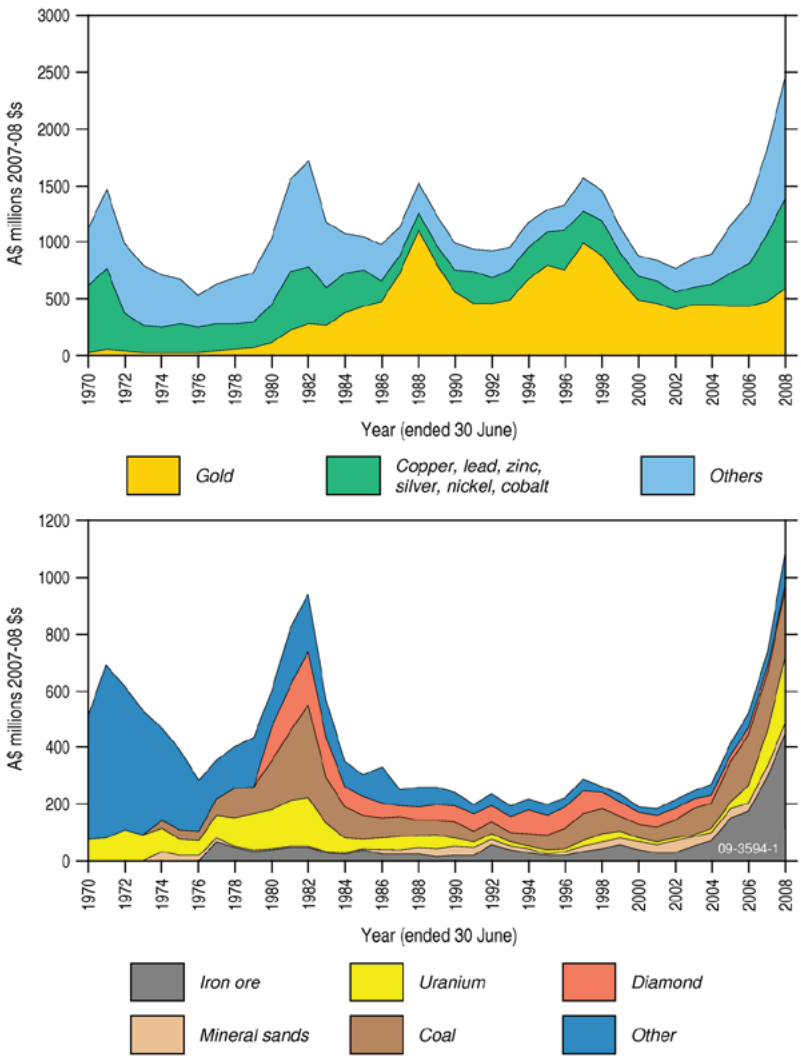

Figure 1. Australian mineral exploration expenditure in constant 2007-08 dollars (Based on Australian Bureau of Statistics data deflated by Consumer Price Index).

Australian mineral exploration

Base metals were again the major exploration target in 2007-08, having overtaken gold in 2006-07, as spending rose 41% to $783.4 million with nickel up 67% to $303.3 million, zinc-lead-silver up 34% to $186.6 million, and copper exploration expenditure rising 25% to $293.5 million. This was a record in constant dollar terms, exceeding spending at the peak of the 'nickel boom' in 1970-71 and the peak in base metal (and other) exploration in 1981-82. Iron ore exploration spending rose 58% to reach a record $449.8 million. Coal exploration was up 21% to $234.8 million, the highest in real terms since 1981-82 and the third highest ever recorded. Uranium exploration spending doubled in 2006-07 and more than doubled again in 2007-08 to reach a record $231.6 million, significantly exceeding (in constant dollar terms) the last peak in uranium exploration in 1981-82.

Gold remained the dominant commodity targeted in 2007-08 but, in contrast to the last two major peaks in exploration which were based on gold exploration, gold's share of total exploration spending fell to 24% ($592.7 million), its lowest level since the peak of the last broadly-based mining boom in 1981-82 (figure 1). This fall, despite recent high gold prices and increased gold exploration, is due to growth in spending on base metals, iron ore, coal and uranium in the recent broadly-based mineral commodity 'boom'.

Spending increased in each state and the Northern Territory. Western Australia remained the dominant destination attracting $1259.8 million, an increase of 50%. In Queensland spending rose by 46% to $397.8 million while in South Australia an increase of 36% saw spending rise to $355.2 million. The increases in other states and the Northern Territory were: New South Wales up 32% to $189.9 million, Victoria up 14% to $93.7 million, Northern Territory up 44% to $132.7 million while spending in Tasmania rose by 37% to $32.4 million.

Exploration drilling

Exploration drilling totalled 9.756 million metres in 2007-08, an increase of 1.301 million metres (15%) from 2006-07. This continued the trend of increased exploration drilling evident since the trough in mineral exploration in 2001. Drilling levels remain below the peak in 1996-97 which was associated with large amounts of shallow drilling for gold. The 2007-08 drilling data show a continuing strong emphasis on brownfields exploration that has become most pronounced since 2003 with only 40% of drilling last year targeting new deposits (figure 2).

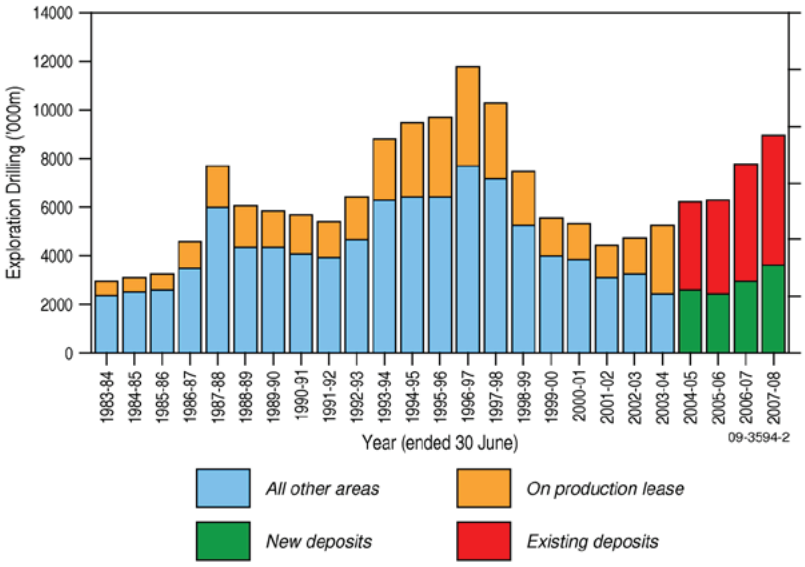

Figure 2. Mineral exploration drilling in Australia in thousands of metres (Source: Australian Bureau of Statistics. Note the change in ABS definitions in 2003 from 'on production lease' and 'all other areas' to 'search for new deposits' and 'exploration at existing deposits').

The peak in exploration expenditure

The September quarter 2008 survey by the ABS showed a continued increase in Australian mineral exploration expenditure with a 22% increase over the September 2007 quarter. This increase–half of that recorded for the 2007-08 financial year–is reflected in the modest growth (up 2.6%) in the ABS trend estimate which maintains the growth that began in the June quarter of 2002 but at a much slower rate. In contrast with recent years, the 2008 September quarter exploration expenditure was down (about 6%) on June quarter figures, further indicating a slowing in exploration. A slowing in exploration is also evident in the exploration drilling data where, unlike recent years, the number of metres drilled in the September quarter drilling was down slightly on that for the June quarter.

Exploration spending in the September quarter was either in progress or committed well before the full impact of the global financial crisis and the decline in mineral commodity prices was realised in the latter months of 2008. Nevertheless, the slowing in exploration already evident is likely to mean that the September quarter represents the peak of exploration in the current cycle.

These high levels of exploration spending, although focussed on brownfields (see below) and diluted by high costs of exploration services, staff and fuel in recent years, have resulted in a significant number of new drill intersections of mineralisation being reported by companies. Many of these are of economic grade and are the focus of ongoing exploration programs. These and other highlights of mineral exploration are contained in Geoscience Australia's annual review of mineral exploration for 2008 (see link below).

Record world mineral exploration

The latest annual survey by the Metals Economics Group of Canada (MEG) estimates that world non-ferrous mineral exploration budgets reached a record US$13.2 billion in 2008, an increase of 26% on 2007 figures. MEG estimates world budgets for non-ferrous mineral exploration, including uranium, was US$14.4 billion. However, MEG noted that cut-backs in exploration late in 2008 as the global financial crisis gathered pace and metal prices fell heavily may result in actual expenditure over the year being less than budgeted.

The MEG survey, which covered 2 085 companies, indicates that global base metals exploration (41% of non-ferrous mineral exploration) rose significantly in 2008 to overtake gold exploration (39%) for the first time since the MEG surveys began in 1989. Copper again was the dominant commodity, accounting for 57% of base metal exploration budgets in 2008. World uranium exploration budgets in 2008 totalled US$1.2 billion, about 8% of total world mineral exploration budgets and a 23% increase over 2007. Canada and Australia accounted for 38% and 23% of uranium exploration budgets, respectively.

Australia's share of global non-ferrous mineral exploration budgets rose to 13.6%, up from 11.9 % in 2007. This growth in Australia's share of world non-ferrous mineral exploration budgets in 2008 continues the recovery (commenced in 2007) from levels that had almost halved over the previous 10 years (figure 3). Including uranium, Australia's share of world non-ferrous mineral exploration budgets was 14.4% (US$2080.9 million), reflecting the high levels of uranium exploration in Australia. Australia retained its position as the country with the second highest share of exploration budgets after Canada. On the world regions basis used by MEG, Australia was again ranked fifth after Latin America, Canada, Africa, and the 'Rest of the World'. According to the survey, 56% of the non-ferrous mineral exploration budgets for Australian-based companies in 2008 was for exploration in Australia. The survey included 519 companies with non-ferrous exploration budgets of more than US$100 000 which were exploring in Australia. This compares with 512 companies in the 2007 MEG survey.

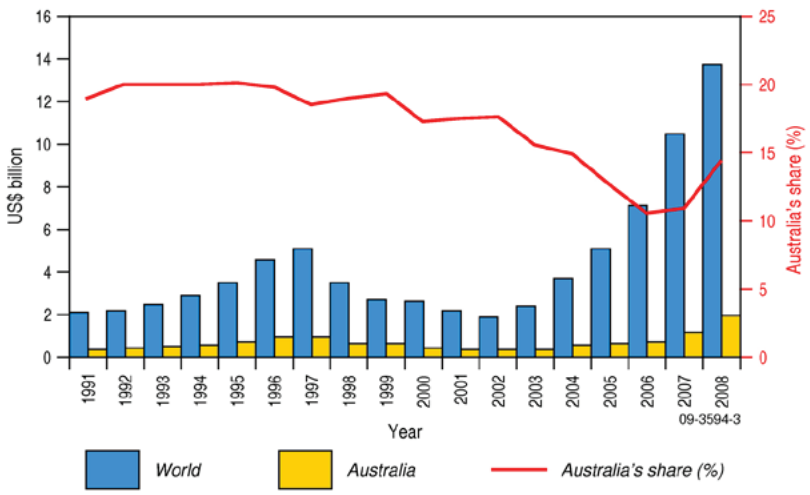

Figure 3. World non-ferrous mineral exploration budgets (in US dollars) and Australia's estimated share as a percentage (Source: Metals Economics Group. Note that only the 2007 and 2008 MEG surveys include uranium).

Focus on brownfields exploration

Both globally and in Australia the increase in mineral exploration since 2003 has been strongly focussed on brownfields projects. The 2008 MEG survey highlighted the continuing dominance of brownfields exploration world-wide, especially late-stage exploration which accounted for about 42% of budgets. Grassroots exploration

fell to a new low of 36% of exploration budgets, down from around 50% of budgets in 2003. This strong focus on exploration at known deposits since the upturn in mineral commodity prices is evident in the ABS drilling data (figure 2) and in total mineral exploration expenditure (figure 4). The focus on brownfields has been driven by the strong demand and shortfall in supply stemming from under-investment in exploration and mine development in the previous decade which pushed mineral prices to record highs. The ABS data for 2007-08 show a modest increase in exploration for new deposits with 41% of total spending, up from 36% in 2006-07. An increased commitment to greenfields exploration is needed to discover the next generation of mineral deposits and new mineral provinces that will underpin future production.

Exploration outlook

Underpinning the recent boom in world mineral exploration has been the high commodity prices, largely driven by demand from China. The record level of world investment in mineral exploration in 2008 reflects the earlier prevailing high prices and, hence, probably marks the peak of the current cycle.

Since then mineral prices have fallen substantially (commonly more than 60%) from the peaks reached over the last several years as a consequence of increased supply and lessening demand during 2008. Gold is the exception as gold prices have remained high and world production has fallen. Further falls in mineral commodity prices are widely anticipated in early 2009 as a consequence of the world economic downturn precipitated by the global financial crisis

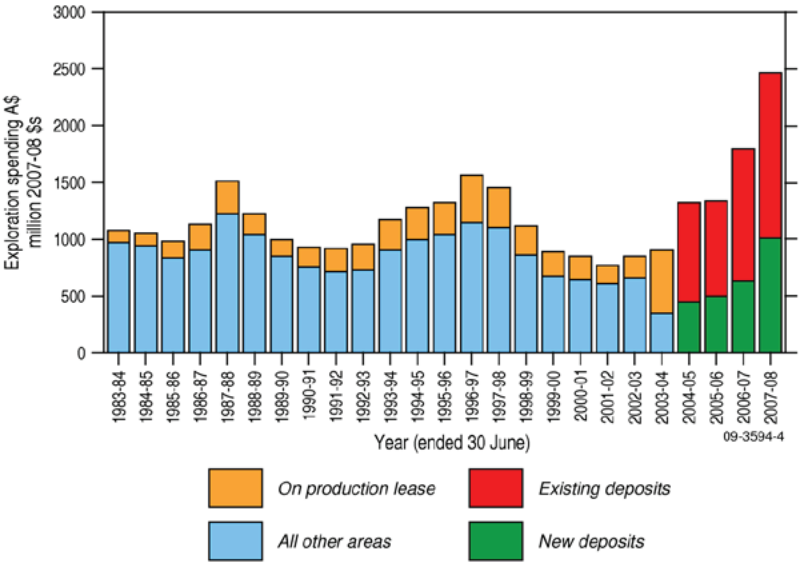

Figure 4. Mineral exploration expenditure in Australia according to category (Source: Australian Bureau of Statistics. Note the change in ABS definitions in 2003 from 'on production lease' and 'all other areas' to 'search for new deposits' and 'exploration at existing deposits').

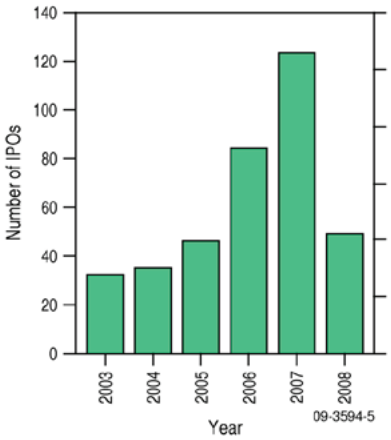

Figure 5. Number of Initial Public Offerings (IPOs) for mineral exploration in Australia each year since 2003 (Source: Company reports to the Australian Securities Exchange).

(ABARE 2008, World Bank 2009). Falling demand for minerals has seen reductions in mine output at a number of mining operations, mine closures, and deferral of new and/or expanded mining projects world-wide. More than 20 mines were closed in Australia in 2008 and many others reduced output resulting in substantial job losses.

There has also been a reduction in the ability of companies to raise equity capital for mineral exploration. In 2008 there were only 49 initial public offerings (IPOs) raising some $490 million on the Australian Securities Exchange for mineral exploration. Though this is half the number of successful IPOs in 2007 (122) the total amount raised was close to that of 2007 ($520 million) mainly as a consequence of one unusually large raising in 2008 of $125 million. Figure 5 shows the steady increase in the number

of IPOs for mineral exploration in Australia over the past 5 years followed by the sharp reduction in 2008.

The combined impact of lower commodity prices and reduced availability of equity capital is likely to result in a reduction in exploration activity in the immediate term. Gold may be the exception as high gold prices and the devaluation of the Australian dollar have renewed interest in gold projects. Beyond that, however, the outlook for mineral commodities is more positive. ABARE (2008) forecasts a gradual strengthening of world economic growth and increased demand for energy and mineral commodities commencing in the second half of 2009. The World Bank suggests that 'ongoing shortages in the sectors that provide exploration and exploitation services, and the long lags between initial investments and the coming on-stream of new production, mean that supply conditions may remain relatively tight in the oil and metals sectors and that prices, although declining, are unlikely to fall to their 1990s levels' (World Bank 2009, page 65).

The long lead times to discover new mineral deposits and develop new mines mean that exploration requires a longer term view. Effective exploration–especially greenfields exploration and discovery of new deposits–is needed to maintain and grow Australia's resource base to support future mineral production when demand returns, recognising that the bulk of Australia's current mineral production comes from deposits found more than 20 years ago.

For more information

phone Lynton Jaques on +61 2 6249 9745
email lynton.jaques@ga.gov.au

phone Mike Huleatt on +61 2 6249 9087
email mike.huleatt@ga.gov.au

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