According to BREE, 21 projects reached the expenditure ($3.4 billion higher than in the previous six months). Much of the reduction in the value of projects at the feasibility stage reflects projects being reverted. It should be noted that many of the projects that have reverted back to the publicly announced stage were already viewed as very unlikely to get off the ground. Nonetheless, it is clear that the degree of uncertainty surrounding the eventual commitment of these projects has risen.

Overview
The Bureau of Resources and Energy Economics (BREE) released its latest biannual Resources and Energy Major Projects report on 22 May, outlining the current state of mining, infrastructure and processing facilities projects in Australia. The report provides an update on project developments over the six months from October 2012 to April 2013, a period when concerns about the approaching peak in mining investment were intensifying.

According to BREE, 21 projects reached the completed stage in the six months to April 2013, representing $15.3 billion in capital expenditure ($3.4 billion higher than in the previous six months). The total number of committed projects fell from 87 in October 2012 to 73 in April 2013. The value of committed projects was broadly unchanged at $268 billion (17.9% of current annual GDP), largely reflecting cost overruns which do not necessarily add to the volume of activity or capacity. In April 2013, 174 projects were at the feasibility stage having an estimated investment value of around $232 billion, compared to 171 projects at the feasibility stage in October 2012 valued at around $281 billion. While the value of minerals and energy investment in the pipeline remains enormous – representing around 8% of GDP – there has been a sharp reduction in the value of projects at the feasibility stage, providing further evidence that the peak in mining investment is rapidly approaching. Much of the reduction in the value of projects at the feasibility stage reflects projects being reverted. It should be noted that many of the projects that have reverted back to the publicly announced stage were already viewed as very unlikely to get off the ground. Nonetheless, it is clear that the degree of uncertainty surrounding the eventual commitment of these projects has risen.

Bulk Commodity Projects
Iron Ore
Despite greater uncertainty over the outlook for commodity prices – as Chinese demand growth eases and operating costs rise – BREE continues to report a large pipeline of investment projects for bulk commodities. However, there has still been a degree of rationalisation of investment projects over the past year in response to demand concerns, spurred on by calls to increase returns to shareholders. As a result, a number of projects have been delayed, scaled down, and in some cases cancelled, but projects at an advanced stage of development have been left relatively unscathed. Large scale projects recently cancelled include the Cape Lambert Magnetite project (earmarked for completion in 2015) and the Weld range project (post 2017), with a combined value of $5.7 billion.

Pipeline of iron ore mining projects’

Overall, the value of committed iron ore projects has fallen by $4.2 billion relative to October 2012, representing the completion of five projects, to a total of $22 billion as at April 2013. There are currently 21 iron ore projects at the feasibility stage in the pipeline, with a combined value of $47 billion, up from $45 billion last October, and another $35-56 billion in less advanced projects (publicly announced), including two new projects: Fortescue’s Nyedinghu project (around $2 billion and 30 million tonne capacity), and Macarthur Minerals’ Moonshine project ($2.5 5 billion and 10 million tonnes capacity). However, delays have shifted the pipeline of uncommitted projects more heavily towards the out years of the outlook horizon – a reflection of the number of projects that have become ‘dead in the water’ as their viability is reconsidered. An example is the $7.4 billion West Pilbara project (expected to add 30 million tonnes to capacity) which is now unlikely to reach completion before 2018 (previously expected in 2014 and was downgraded from being at the feasibility stage to the publicly announced stage).

Nevertheless, major iron ore producers have maintained relatively ambitious iron ore expansion plans. The relatively low production costs of these firms – relative to current spot prices – has kept most expansion plans viable despite expectations for lower prices in coming years. But while we expect companies to become more
cautious about these expansion plans, they will also be wary of falling into the trap of ‘under-investing’ and potentially losing market share. For example, Rio Tinto appears to be on track to achieve total capacity of 290mtpa this year (from 230mtpa last year), while BHP Billiton is set to reach 220mtpa by mid-2014. Additional plans to boost Rio Tinto’s production capacity to 360mtpa (2015) and BHP to 240mtpa may come under pressure, but still appear likely, and will help to bolster revenues – even under a conservative price assumption (US$85 per tonne). However, producers will also need to be mindful of the rising costs of project development in Australia. BREE reports a total increase in post Final Investment Decision (FID) costs of $5.5 billion for iron ore (the second largest increase after LNG), which represents around one quarter of the current value of committed projects.

**Australian Iron Ore Production Forecasts**

The scale of the current pipeline of iron ore capacity is likely to have implications for iron ore prices once production eventually comes online, particularly if some of the larger projects at the early stage of development (such as Hancock Prospecting’s 55 million tonne Roy Hill project), get off the ground. Currently, there is more than 750 million tonnes of iron ore capacity in the pipeline for completion over the medium to long term, although not all projects are expected to progress to completion. Committed projects are expected to contribute 156 million tonnes of ore to the market over the next couple of years (representing around 20% of 2012 export volumes). The total pipeline of potential projects suggests a potential addition of 161 million tonnes to capacity, essentially doubling exports over the long run, although this is an unlikely scenario.

**Coal**

Conditions for coal investment have become less favourable, particularly for thermal coal where current prices have around a quarter of Australian producers operating at a loss (according to estimates from AME). Consequently, no additional coal projects progressed to the committed stage over the six months to April, and the value of committed projects declined by $166 million – largely due to the completion of a major project – to a combined value of $14.2 billion. Most of the remaining committed projects relate to coking coal and are scheduled for completion by end-2014, including BHP’s Caval ridge project ($1.9 billion) and Daunia project ($1.6 billion). Coal accounts for the largest number of projects at the feasibility stage, valued at $57 billion in April 2013, but this is down from $76 billion in October 2012 reflecting a shift in projects back to the publicly announced stage as well as some cancellations. However, there were a few projects announced in the six months to April, including Stanmore Coal’s Belview, Nucalco Resources’ Doyle Creek and Cuesta Coal’s Moorlands projects.

**Pipeline of coking coal mining projects**

With Australia accounting for around half of global seaborne coking coal supply, planned additions to Australian output are important to global coking coal markets as well as Australia’s investment pipeline. While the pipeline of new projects was relatively modest last year, committed projects are expected to bring an additional 30 million tonnes of capacity online over the next couple of years (representing around 20% of 2012 export volumes). The total pipeline of potential projects suggests a potential addition of 161 million tonnes to capacity, essentially doubling exports over the long run, although this is an unlikely scenario.

Australia is the world’s second largest exporter of thermal coal (behind Indonesia) contributing almost 20% of global seaborne coal. While the pipeline of new projects is relatively modest this year, later years are punctuated by significant potential capacity expansions, although very little has been committed. Also, there have been a number of delays announced which have pushed a significant proportion of ‘possible’ projects (either at the feasibility or publicly announced stage) back to 2016 and beyond.

**Pipeline of thermal coal mining projects**
Infrastructure

Bulk commodities underpin the majority of resource infrastructure projects. Consistent with changes to resource projects, a number of infrastructure projects have also been delayed, reflected in the rise of Publicly Announced projects. In terms of iron ore spending, FMG’s Anketell Point project, with new estimated capacity of 350 million tonnes, has been delayed (previously expected in 2015 and valued at $2.5-5 billion).

There have been no new committed infrastructure projects since last October, while the value of pre-existing projects fell $3.6 billion to $21.1 billion. Further to this, the bulk of the large committed infrastructure projects are scheduled for completion by end-2014. These include Rio Tinto’s Cape Lambert port and rail expansion ($5.2 billion) and Fortescue Metals Group’s port and rail projects ($4.6 billion). The Wiggins Island Coal Export Terminal ($2.4 billion) and BHP Billiton’s Hay Point Terminal 3 ($2.7 billion) are also scheduled for completion in 2014.

Natural gas, oil and petroleum

LNG, gas and petroleum projects continue to dominate the pipeline of current and future investment in Australia. With 18 projects in total, LNG, gas and petroleum projects currently make up $205 billion (76%) of the total $268 billion of committed projects (see Graph).

Gold

While gold projects tend to be at the lower end in terms of investment value, there are a large number of gold producing projects in the pipeline and their aggregate contribution remains significant. In the six months to April 2013, seven gold-producing projects with a combined value of $2.6 billion were completed, with Newcrest’s Cadia East mine ($1.9 billion) making up the lion’s share. A number of projects progressed from the publicly announced stage to the feasibility stage, and in some cases to the committed stage; the number of gold projects at the feasibility stage doubled between October 2012 and April 2013, from six to 12, with the 12 projects having a combined value of $1.6 billion. While the gold price remains elevated compared to history, it is likely that recent sharp price declines will put into question the viability of many of these possible projects over the remainder of this year.

BREE’s investment outlook: scenario analysis

In October 2012, BREE introduced a new framework used to analyse the ‘likely’ value of the future stock of mining investment at the committed stage. Based on historical outcomes, not all projects at the publicly announced and feasibility stages make it to the committed stage. To represent this uncertainty, BREE has undertaken analysis on the ‘likelihood’ of possible projects entering the committed stage. Projects are identified as ‘likely’, ‘possible’ or ‘unlikely’ and these ratings form the basis of BREE’s projections. While there are a number of projects currently at the committed stage which are expected to be completed by the end of 2013 (valued at $43 billion), BREE has assessed that there is around $31 billion worth of projects currently at the feasibility stage that are likely to enter the committed stage by the end of the year, providing some offset to the decline in committed projects. Overall, BREE’s scenario analysis suggests that the value of projects at the committed stage will decline by $12 billion to $256 billion at the end of 2013. Thereafter, the outlook for committed projects becomes less certain and the stock of committed investment is expected to fall away sharply, underpinned by the completion of a number of ‘mega’ projects already under construction (see Graph).
BREE projects that the value of committed projects in 2017 will be comparable to levels in 2007, implying a significant reduction in the flow of capital expenditure over the next five years. Of course, this analysis heavily discounts the probability of a number of currently ‘possible’ projects getting off the ground. Indeed, there is some upside risk to the outlook for committed projects if these ‘possible’ project are committed. Furthermore, this analysis does not take into account cost overruns. However, while these significantly boosted the stock of committed projects historically, they may not represent an increase in the volume of activity or capacity. In a world where cost overruns are more prevalent, projects that would otherwise have been committed may become unfeasible and therefore fail to reach the committed stage.

Outlook

BREE’s major project listings update combined with ABS data on capex and exploration expectations suggest that mining investment may be approaching a turning point. On the basis of past engineering construction commencements, there are reasons to believe that there is a risk of a decline in 2014 big enough to take 2 percentage points off GDP growth in that year unless another ‘mega’ project starts soon. Given NAB’s expectation for mineral and energy prices to fall further over the forecast horizon, the underlying trend in mining project commencements is likely to be negative (for more details see: Will mining investment fall off a cliff).

There are a number of challenges facing the resources sector that are expected to reduce the value of committed projects as well as the amount of future capital expenditure undertaken in Australia. Investment at the committed stage remains dominated by ‘mega’ projects with a valuation greater than $5 billion, with these projects accounting for around 80% of committed projects. ‘Mega’ projects promote economies of scale in the production process and reduce average costs of production. However, no new ‘mega’ projects were added to the list of committed projects over the six months to April 2013, there has been an emerging trend for ‘mega’ and large projects at the feasibility stage to be either cancelled or to revert back to the publicly announced stage. Given our projection for minerals and energy commodity prices to continue on their downward trajectory, the outlook for the commencement of additional ‘mega’ projects looks grim. As previously commenced ‘mega’ projects reach completion, the stock of committed projects is expected to become dominated by a larger share of smaller more costly projects, which will limit the amount of mining capital expenditure able to be undertaken and the rate at which construction can occur. While the investment pipeline remains enormous, there is a real risk that the rate of decline in capital expenditure will be more pronounced than previously anticipated, having a more severe impact on the Australian economy than currently forecast.

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