Minerals and energy

Major development projects – October 2008 listing

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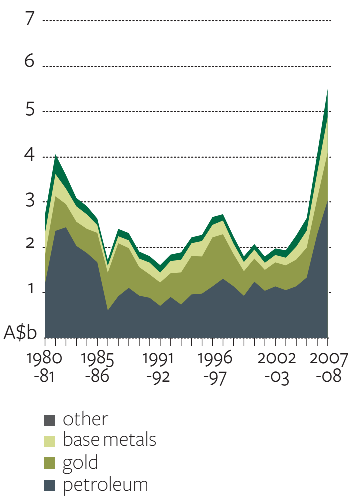
Trish Gleeson and Alan Copeland

- In 2007-08, expenditure on exploration in Australia's minerals and energy sector was $5.5 billion, the highest on record and more than twice the annual average expenditure of the past 25 years.
- In the six months to October 2008, 22 major minerals and energy projects with a capital expenditure of $10.8 billion were completed. A further 85 projects were at an advanced stage with projected expenditure of $67.3 billion.

Exploration expenditure

Investment in mineral exploration affects the ability of Australia's minerals and energy sector to grow and expand its contribution to national economic performance over the medium and longer term. It represents an investment in knowledge about the potential size, location and quality of mineral deposits and the decision to make this investment depends on the probability of discovering an economic deposit, or extending the resource base of a known deposit.

a Australian private minerals exploration expenditure
2007-08 dollars



Source: ABS

A range of factors influence the decision to invest in mineral exploration, including: current and expected future prices; mining and processing technologies; input costs; and the availability of, and access to, land. Government policies also have a role in providing overall economic, social and environmental foundations which determine the security and potential cost of the investment.

ABS data show that expenditure on mineral exploration in Australia (including petroleum) was $5.5 billion in 2007-08, and 39 per cent higher than in 2006-07. In real terms, this is the highest on record and more than double the average of the past 25 years. Expenditure on mineral exploration in Australia since 1980-81 (in real terms) is shown in figure a.

Higher expenditure on exploration has been a response to high and rising world prices for mineral and energy commodities as world supply has not been sufficient to meet rising demand. It is uncertain how recent declines in world mineral and energy commodity prices will affect exploration expenditure. Expected future prices are likely to be a more important determinant of current spending, hence, if explorers expect prices to remain low or fall further, expenditure on exploration is likely to decline.

Figure b shows the rising real cost of exploration. Costs can be influenced by the depth of drilling, the remoteness of the location, labour costs and equipment costs. Figure b, which provides a representation of average costs, indicates an upward trend in costs, escalating rapidly since 2004.

In recent years, brownfield exploration expenditure—exploration around existing or known deposits—has accounted for an increasing proportion of total exploration expenditure. There are two factors which have contributed to this trend. First, higher world prices have encouraged companies to reassess reserves previously considered uneconomic. Second, brownfield mining is attractive for companies because often infrastructure already exists which means extraction can start sooner and capital costs are lower.

In 2007-08, exploration expenditure on all major minerals and energy commodities increased. Petroleum exploration expenditure rose by 36 per cent to $3 billion, the highest on record, reflecting record global oil prices.

Exploration expenditure on iron ore was $450 million in 2007-08, almost 58 per cent higher than in 2006-07. This reflected significant increases in iron ore prices (both spot and contract prices) as well as expectations demand in China would continue to grow.

Exploration expenditure on base metals (copper, nickel, silver, lead, zinc and cobalt) was up 41 per cent in 2007-08 to more than $780 million, reflecting high global prices, while expenditure on exploration for gold increased by 30 per cent to more than $590 million, the highest since a decade earlier, in 1997-98.

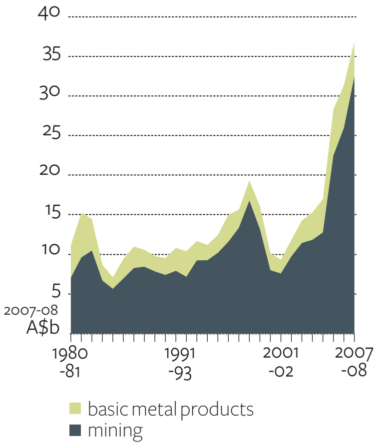
Uranium exploration expenditure more than doubled in 2007-08 to around $232 million, reflecting relatively high uranium prices and a heightened global interest in uranium for use in nuclear power.

Over the medium term, a common set of factors is expected to influence exploration expenditure in each sector of Australia's minerals and energy industry. These include the price outlook for each commodity; Australia's prospectivity; expected future costs of exploration and development (costs of labour, fuel and other inputs); and Australia's relative attractiveness as a destination for mineral exploration and extraction.

b Average cost of minerals and energy exploration per metre drilled

Source: ABS

C New capital expenditure



Source: ABS

Capital expenditure

New capital expenditure in mining and metal products industries provides a guide, in aggregate terms, of the pace and scale of development in the minerals and energy sector (figure c).

Capital expenditure in mining refers to spending on equipment, plant and assets directly related to mining or concentrating of ores or other raw materials. Expenditure on basic metals products refers to spending on equipment, plant and assets for basic processing of mine output. As Australia has a strong comparative advantage in mining, relative to that in basic metal processing, a larger proportion of capital expenditure is directed to mining rather than basic metal processing.

According to ABS survey data, new capital expenditure in the mining sector in 2007-08 was $31.1 billion. This represents an increase of 12.8 per cent from 2006-07, and is more than three times the average annual expenditure since 1980-81. The scale and pace of expenditure estimated by the ABS is consistent with recent trends shown in ABARE's full list of development projects.

In comparison, capital expenditure in the metals processing sector in 2007-08 is estimated to have been $3.8 billion, 19 per cent lower than 2006-07.

Recently commissioned projects

In the six months ended October 2008, 22 major minerals and energy projects, with capital expenditure totalling $10.8 billion, were completed (table 1).

Energy projects

Ten energy projects (including energy infrastructure projects) were completed at a total capital cost of $6.4 billion in the six months ended October 2008. Three of these were coal projects, at a combined capital cost of $245 million, while the other seven projects were related to petroleum which together cost $6.2 billion.

The largest petroleum project completed was the $2.6 billion North West Shelf project extension, adding a fifth (4.2 million tonne) LNG train on the North West Shelf, Western Australia. This project coincided with the completion of the $1.4 billion Angel gas and condensate field north of Dampier, Western Australia. Both projects are joint ventures between Woodside Energy, BHP Billiton, BP, Chevron Texaco, Shell, and Japan Australia LNG.

1 Major mineral resource developments -projects completed, May 2008 to October 2008

commodity	project	location	company	capital expenditure $m
Mining - energy projects				
Black coal	Liddell Coal (washplant upgrade)	NSW	Xstrata	91
	Abel underground	NSW	Donaldson Coal	84
	Broadlea to Wotonga duplication	Qld	Queensland Rail	70
Petroleum	North West Shelf project extension (fifth train)	WA	Woodside Energy/ BHP Billiton/ BP/ Chevron/ Shell/Japan Australia LNG	2 600
	Angel gas and condensate field	WA	Woodside Energy/ BHP Billiton/ BP/ Chevron/ Shell/Japan Australia LNG	1 400
	Vincent oil field (stage 1)	WA	Woodside Energy/Mitsui	1 000
	Perseus-over-Goodwyn project	WA	Woodside Energy	800
	Woolybutt Oil Field South Lobe	WA	Eni Australia/ Mobil Australia/ Tap Oil	143
	Kwinana LNG plant	WA	Wesfarmers	138
	Brooklyn–Lara Loop pipeline project	Vic	Australian Pipeline Trust	70
Mineral - mining projects				
Gold	Leonora (inc Gwalia Deeps)	WA	St Barbara Mines	144
	Higginsville Gold Project	WA	Avoca Resources	120
	Frog's Leg underground	WA	LaMancha Resources/ Dioro Exploration	80
	Hillgrove	NSW	Straits Resources	30
Iron ore	Pilbara Iron Ore project (stage 1)	WA	Fortescue Metals Group	3 100
Nickel	Cliffs	WA	BHP Billiton	160
	Avebury	Tas	OZ Minerals	120
	Copernicus	WA	Thundelarra	10
Copper	Browns Oxide project	NT	Compass Resources/ Guardian Resources	140
Zinc	Angas Zinc project	SA	Terramin Australia	70
Tin	Renison mine and Mt Bischoff development	Tas	Metals X Ltd	35
Other commodities	Kwinana Ammonium Nitrate Plant	WA	CSBP Chemicals (Wesfarmers)	400

Another major petroleum project completed was the Vincent oil field, north of Exmouth, Western Australia. The $1 billion project will produce 100 000 barrels of crude oil a day at full capacity and is a joint venture between Woodside Energy and Mitsui. Also completed were the Kwinana LNG plant in Western Australia, the Perseus-over-Goodwyn project and the Woolybutt Oil Field South Lobe expansion off the coast of Western Australia and the Brooklyn–Lara Loop pipeline project in Victoria.

In New South Wales, Donaldson Coal completed the Abel underground coal mine, north-west of Newcastle, ahead of schedule. The $84 million project will produce 4.5 million tonnes of run of mine semi-soft coking coal.

ABARE's list of major minerals and energy development projects

The full list

ABARE's list of major minerals and energy projects expected to be developed over the medium term is compiled every six months. Information contained in the list spans the mineral resources sector and includes energy and mineral commodities projects and mineral processing projects. The information comes predominantly from publicly available sources but, in some cases, is supplemented by information direct from companies. The list is fully updated to reflect developments in the previous six months and is released around May and November each year.

What's in the list?

The latest projects list contains information on 262 projects, providing the following details:

- project name
- location
- expected startup date
- capital cost of the project
- proponent company or joint venture
- project status
- additional output capacity
- additional employment, where available.

With one industry exception, ABARE's list provides details of each announced project for which total capital expenditure is expected to exceed $40 million. The exception is the gold industry, which typically has a relatively large number of smaller projects. For gold, the expenditure threshold for inclusion in the list is $15 million.

In general, included projects are at relatively advanced stages of planning. That is, for new projects, stage of planning categories range from 'prefeasibility study underway' through to 'under construction'.

Projects are listed by the principal mineral commodity to be produced, under the broad headings 'mining projects – energy', 'mining projects – minerals' and 'mineral processing facilities'. The listing includes new greenfields projects as well as expansions of existing projects.

Where to get the list

The list is available only as an electronic product.
The list can be downloaded from 'latest releases' at www.abare.gov.au
Enquiries: abareproducts@abare.gov.au
Phone +61 2 6272 2010.

Also completed in New South Wales was the Liddell Coal washplant upgrade, south-east of Muswellbrook, which will provide additional capacity of 1.4 million tonnes of thermal coal a year and Queensland Rail's $70 million Broadlea to Wotonga duplication.

Metal mining projects

In the six months to October 2008, 12 metal mining projects were completed at a capital cost of $4.4 billion. The largest project was stage one of Fortescue Metals Group's Pilbara Iron Ore project, capable of producing 45 million tonnes of iron ore annually, with further optimisation work under way to bring capacity to 55 million tonnes. The project included a mine, port and rail infrastructure and a handling facility costing $3.1 billion to complete.

Four gold projects, with total new capacity of more than 490 000 ounces of gold a year at a combined cost of $374 million, were also completed during the period. In Western Australia, St Barbara Mines' Leonora expansion will add 200 000 ounces to current capacity and cost $144 million. Also in Western Australia, Avoca Resources' Higginsville Gold Project and LaMancha Resources and Dioro Exploration's Frog's Leg underground were completed for a combined cost of $200 million. These projects are anticipated to have average outputs of 190 000 ounces and 83 000 ounces, respectively.

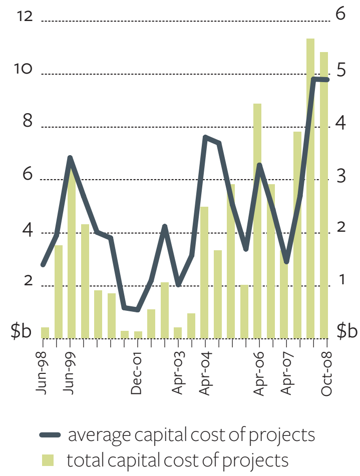
In New South Wales, Straits Resources started producing at the $30 million Hillgrove redevelopment, south-east of Armidale. The mine will produce 20 000 ounces of gold, 10 000 tonnes of antimony and 300 tonnes of tungsten a year, at full capacity.

In the Northern Territory, Compass Resources and Guardian Resources' Browns Oxide project commenced in September. The project cost $140 million and will be able to produce 10 000 tonnes of copper cathode, 900 tonnes of cobalt cathode and 800 tonnes of nickel annually.

In Tasmania, Metals X's Renison tin mine and Mt Bischoff development, and OZ Minerals' Avebury nickel mine were completed at costs of $35 million and $120 million, respectively.

Also completed were Terramin's Angas zinc project in South Australia and Thundelarra's Copernicus nickel project in Western Australia. CSBP Chemicals' Kwinana ammonium nitrate plant in Western Australia was completed at a cost of $400 million and will produce 235 000 tonnes of ammonium nitrate a year.

d Completed projects
June 1998 to October 2008



Mineral processing projects

No mineral processing projects were completed in the six months to October 2008.

2 Completed projects, June 1998 to October 2008

	number of projects	total capital cost of projects $m	average capital cost of projects $m
Six months ending			
June-1998	3	415	138
December-1998	18	3 500	194
June-1999	19	6 500	342
December-1999	16	4 300	269
June-2000	9	1 800	200
December-2000	9	1 700	189
June-2001	5	282	56
December-2001	5	262	52
June-2002	10	1 082	108
December-2002	10	2 110	211
Four months ending			
April-2003	4	400	100
Six months ending			
October-2003	6	937	156
April-2004	13	4 956	381
October-2004	9	3 328	370
April-2005	23	5 812	253
October-2005	12	2 012	168
April-2006	27	8 854	328
October-2006	24	5 824	243
April-2007	23	3 314	144
October-2007	29	7 795	269
April-2008	23	11 324	492
October-2008	22	10 805	491
Total	318	87 252	274

Advanced projects

At the end of October 2008, there were 85 projects at an advanced stage of development on ABARE's project list (table 3). Projects in this category are either committed or under construction. This is the lowest number since October 2005 and is down from 97 in April 2008 as more projects have been completed (22 projects) than have progressed to an advanced stage (10 projects) during the past six months. Total capital expenditure of the 85 advanced projects at the end of October 2008 comes to $67.3 billion, a decrease of 4 per cent from April 2008, but 16 per cent higher than a year earlier.

However, it should be noted that projects which have reached the advanced stage may be deferred, modified or even cancelled, particularly as the global economic outlook has recently changed significantly and global demand for commodities is expected to be weaker.

Energy projects

As at October 2008, energy project developments accounted for 45 of the 85 advanced projects on ABARE's list and around 57 per cent (or $38.2 billion) of committed capital expenditure. Estimated capital expenditure on energy projects has remained largely flat since April 2008.

In terms of capital expenditure, Woodside's Pluto LNG project, which has an announced capital cost of $12 billion, is the largest commitment to a single project in Australia's mining and energy industry. This project will have an annual production capacity of 4.3 million tonnes of LNG and is scheduled for completion in late 2010. The gas has been purchased under long-term contracts with Tokyo Gas and Kansai Electric in Japan.

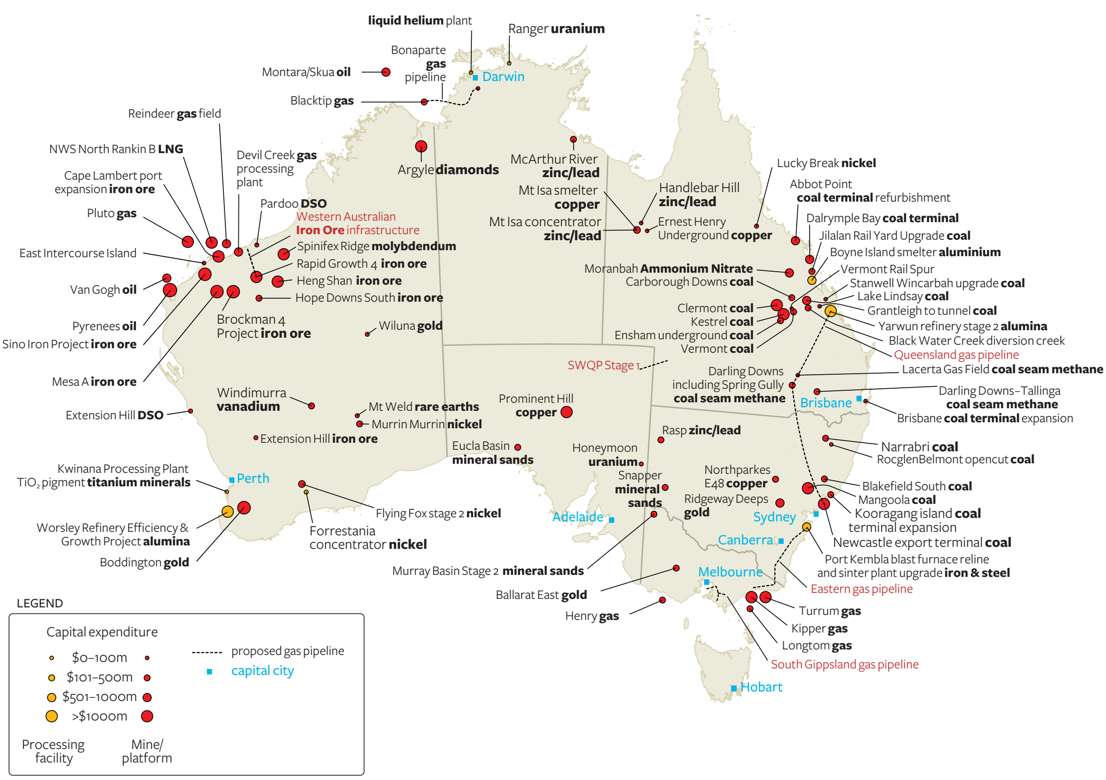
Eleven other petroleum developments account for a further $14.4 billion in capital expenditure. The largest of these is the $6 billion North West Shelf North Rankin B project in Western Australia. Others include the $2.2 billion BHB Billiton/Apache Energy joint venture Pyrenees oil field, 55 kilometres north of Exmouth in Western Australia which is scheduled for completion in early 2010; the $1.5 billion Turrum condensate field in Bass Strait, due for completion in 2011; and the $1.3 billion Kipper gas and condensate field off the coast of Gippsland also scheduled for completion in 2011.

As at the end of October 2008 there were five natural gas pipelines at an advanced stage. Epic Energy has committed to constructing the 180 kilometre QSN Link which will connect the existing south-western Queensland network to the Moomba gas hub in northern South Australia. When the $165 million pipeline is completed, gas will be able to be piped from Queensland into the southern and eastern Australian gas markets.

3 Advanced projects, April 2008 – number and estimated capital cost by state

	energy projects		mining projects		minerals processing		total	
	no.	cost ($m)	no.	cost ($m)	no.	cost ($m)	no.	cost ($m)
New South Wales	7	3 492	3	965	2	505	12	4 962
Victoria	5	3 373	2	329	0	0	7	3 702
Queensland	21	7 943	3	1 167	4	2 887	28	11 997
Western Australia	6	22 255	18	18 846	3	2 730	27	43 831
South Australia	1	89	2	1 500	0	0	3	1 589
Tasmania	0	0	0	0	0	0	0	0
Northern Territory	5	1 040	3	213	0	0	8	1 253
Australia	45	38 192	31	23 020	9	6 122	85	67 334

1 Advanced minerals and energy projects October 2008



In the Northern Territory, the Australian Pipeline Trust is constructing the 277 kilometres Bonaparte Gas Pipeline to connect Eni's on-shore gas plant at Wadeye with the Amadeus Basin to Darwin Pipeline (150 kilometres south of Darwin) at a cost of $150 million. Others include SP AusNet's Queensland Gas Pipeline from Wallumbilla to Gladstone (550 kilometres); Multinet Gas's South Gippsland natural gas pipeline in regional Victoria (250 kilometres); and SP AusNet's Eastern Gas Pipeline expansion connecting Wollongong in New South Wales to Longford in Victoria.

Coal mine and coal infrastructure projects account for 27 per cent (or $10.3 billion) of the estimated $38.2 billion capital cost of all advanced energy projects.

The largest coal mine development is Rio Tinto's $1.5 billion Clermont opencut mine in Queensland. The Clermont mine, due for completion in 2010, will contribute 12 million tonnes of thermal coal a year and is expected to replace production from the existing Blair Athol mine. Another Rio Tinto project, the $1.2 billion Kestrel project near Emerald in Queensland, is expected to produce 1.7 million tonnes of coking coal capacity from 2012. In New South Wales, Xstrata Coal's $1.1 billion Mangoola (Anvill Hill) opencut mine development near Muswellbrook is expected to produce 10.5 million tonnes of thermal coal each year from 2011.

Apart from those already listed, eight other advanced coal mine developments in Queensland and New South Wales are expected to raise coal production capacity by around 17 million tonnes a year over the next three to four years. The combined capital cost of these eight projects is $2.4 billion.

The large number of coal projects recently commissioned and scheduled for completion in the short to medium term has provided the impetus for expanded coal infrastructure (rail and port) capacity. At the end of October 2008, there were seven coal terminal expansions and four rail expansions either committed or under construction. In terms of capital expenditure, the largest of these projects is the first stage of the Newcastle Coal Infrastructure Group export terminal at the Port of Newcastle. When completed in early 2010, this $1.3 billion terminal will have a coal loading capacity of 30 million tonnes. Further upgrades to the terminal could increase annual coal handling capacity to 66 million tonnes a year. Also at the Port of Newcastle, Port Waratah Coal Services is expanding and refurbishing the Kooragang Island Coal Terminal. The $456 million project will result in an increased coal loading capacity of 11 million tonnes.

In Queensland, the Abbott Point Coal Terminal X50 expansion at Bowen is due for completion in mid-2010. At a cost of $818 million, this expansion will increase coal loading capacity from 25 million tonnes to 50 million tonnes a year. The Dalrymple Bay Coal Terminal 7X expansion project, due for completion in early 2009, is expected to expand coal loading capacity by 17 million tonnes to an annual capacity of 85 million tonnes at a project cost of $679 million. Major rail projects include the $500 million Jilalan Rail Yard upgrade, the Stanwell to Wycarbah upgrade and the Vermont Rail Spur and Balloon Loop.

In total, coal infrastructure projects have an estimated capital cost of $4.2 billion or 41 per cent of total committed capital expenditure in the coal industry.

Metal mining projects

At the end of October 2008 there were 31 advanced metal mining projects collectively valued at around $23 billion. Eleven iron ore projects account for 53 per cent (or $12.3 billion) of the total expected capital cost of advanced metal mining projects.

In the six months to October 2008, five metal mining projects were added to the advanced project list, with a combined capital value of $2.7 billion. The largest of these were Moly Mines' Spinifex Ridge molybdenum/copper project, valued at $1.3 billion, and Incitec Pivot's Moranbah Ammonium Nitrate project, valued at $935 million. Others new to the list included the Eucla Basin Mineral Sands (Jacinth and Ambrosia) project, Fortescue Metal's first stage of its Heng Shan iron ore expansion and Atlas Iron's Pardoo direct shipping ore project.

Other prominent iron ore projects on the advanced list, in terms of capital cost, include CITIC Pacific Mining's $5.2 billion Sino Iron project in Cape Preston, Western Australia, which will have a production capacity of 27 million tonnes of iron ore pellets and concentrates, and BHP Billiton's $2.5 billion Western Australian Iron Ore Rapid Growth Project 4, which will add 26 million tonnes of iron ore production. Rio Tinto's $1.8 billion Hammersley Iron Brockman 4 project in Western Australia is scheduled for completion in 2010. The Rio Tinto/Robe River joint venture Mesa A project in Western Australia is expected to produce 25 million tonnes of iron ore from 2010, with the project costing around $1 billion.

Two iron ore infrastructure projects are under construction in Western Australia, with a collective capital expenditure of $1.2 billion. The Cape Lambert port expansion and the East Intercourse Island wharf upgrade and shiploader replacement are due for completion in 2009 with the Cape Lambert expansion adding to capacity by 25 million tonnes. BHP Billiton's Western Australian Iron Ore infrastructure project is still subject to government approval but is expected to increase rail capacity to 300 million tonnes a year from 2011.

The largest advanced gold project is Newmont and AngloGold Ashanti's $3 billion redevelopment of the Boddington gold mine near Pinjarra in Western Australia. The redevelopment is scheduled to be completed in mid-2009 and is expected to provide new capacity of 600 000 to 700 000 ounces of gold. Other gold projects include three smaller developments: Newcrest's $545 million Ridgeway Deeps mine expansion near Orange, New South Wales; Lihir Gold's $120 million Ballarat East mine redevelopment in Victoria; and Apex Minerals' $62 million Wiluna mine expansion in Western Australia.

Two copper projects are currently under construction. The more significant is Oxiana's $1.1 billion Prominent Hill project located south-east of Coober Pedy in South Australia. The new project is due for completion in late 2008 and is expected to produce on an annual basis 90 000 tonnes of copper in concentrates, 115 000 ounces of gold and 420 000 ounces of silver.

Mineral processing projects

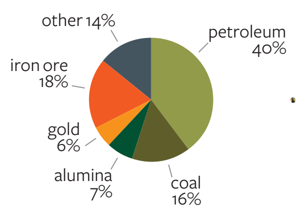
At the end of October 2008, there were nine advanced mineral processing projects with a combined capital expenditure of $6.1 billion. The projects are as listed in the April 2008 list, as no mineral processing projects were completed in the six month period and no additional projects have been added to the list.

The two largest projects in the list together account for 77 per cent of the expected capital expenditure on all the advanced mineral processing projects. The Worsley Refinery Efficiency and Growth project near Bunbury, Western Australia, is a joint venture between BHP Billiton, Japan Alumina and Sojitz Alumina. The expansion project, due for completion in 2011, has an expected capital cost of $2.6 billion and is expected to increase annual alumina production capacity by 1.1 million tonnes. Rio Tinto's Yarwun alumina refinery expansion, near Gladstone in Queensland, is due to be completed also in 2011 at a capital cost of $2.1 billion and is expected to add 2 million tonnes annually to production.

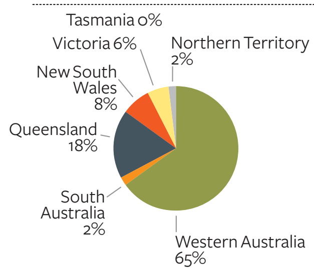
Figure e provides a breakdown of proposed capital expenditure on advanced projects, by major commodity grouping. Figure f shows the estimated capital cost on a regional basis.

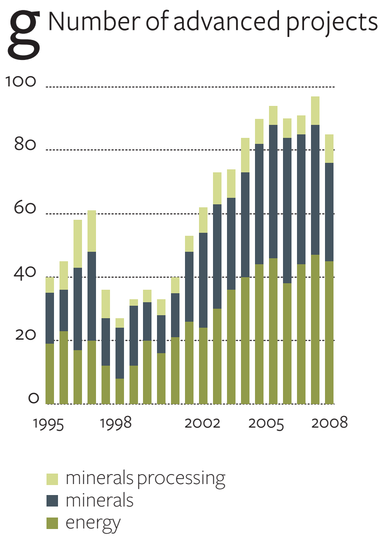
At the end of October 2008, while the number of advanced projects was lower (figure g), the total value of advanced projects (figure h) was at a historically high level, (in 2008 dollars). On average, the value of advanced projects, in real terms, at the end of October 2008 ($726 million) was well above the average for all years since 1995 ($439 million) as shown in figure i. This reflects a combination of higher input costs and the relatively large scale of projects being developed.

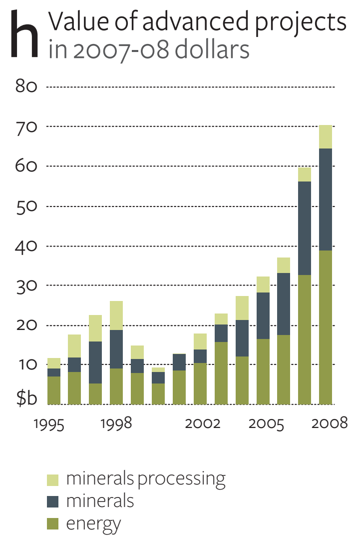
e Value of committed projects by commodity

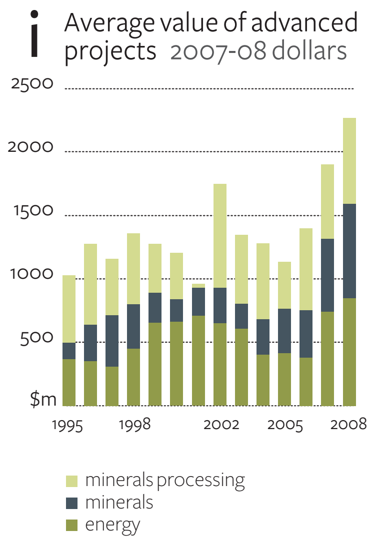


f Value of committed projects by state









Less advanced projects

Projects considered to be less advanced are either undergoing a feasibility (in some cases, pre-feasibility) study, or have not yet been subject to a final investment decision since the completion of a feasibility study. Some of these projects may not proceed for several years. Some may confront changes in economic or competitive conditions, or may be targeting the same emerging market opportunities which necessitates rescheduling. In addition, securing finance for project development, even for high quality projects with a high probability of success, is not guaranteed.

Despite the uncertainty inherent to projects at these earlier stages of consideration, the significant number of large scale projects at less advanced planning stages under consideration for development is expected to provide a firm platform for future growth in Australian mineral and energy production in the medium term and beyond.

Of the 347 projects in ABARE's October 2008 projects list, 76 per cent remain uncommitted. Table 4 contains a summary of the numbers and commodity distribution of the 262 uncommitted projects, together with the potential capital expenditure. The potential capital expenditure data should be used as an approximate guide only. Capital expenditure data for many early stage projects are either not available or, if available, likely to change significantly if these do proceed to development. In addition, changes in market conditions can often lead to significant variations in capital expenditure estimates.

4 Number of less advanced projects, April 2008

	NSW	Vic	Qld	WA	SA	Tas	NT	Aust	potential capital expenditure $m
Mining - energy projects									
Black coal	21	0	38	0	0	0	0	59	38822
Coal Seam Methane	3	0	2	0	0	0	0	5	710
Petroleum	2	3	12	12	0	0	7	36	101275
Uranium	0	0	3	2	4	0	2	11	1693
Sub-total	26	3	55	14	4	0	9	111	142500
Mining - minerals projects									
Bauxite	0	0	2	0	0	0	0	2	1900
Copper	1	0	5	0	7	0	0	13	16398
Gold	4	3	5	16	3	0	3	34	1786
Iron ore	0	0	0	30	4	0	0	34	32784
Lead-zinc-silver	6	0	3	1	1	0	1	12	2082
Mineral sands	2	3	0	3	0	0	0	8	375
Nickel	0	0	4	16	0	0	0	20	13312
Rare earths	0	0	0	0	0	0	1	1	630
Tin	0	0	1	0	0	1	0	2	280
Vanadium	0	0	0	1	0	0	0	1	256
Other commodities	3	0	2	5	0	1	2	13	2679
Sub-total	16	6	22	72	15	2	7	140	72482
Minerals processing									
Alumina	0	0	2	1	0	0	0	3	4700
Copper	0	0	0	0	1	0	0	1	na
Crude iron and steel	0	0	1	0	0	0	0	1	536
Magnesium	0	1	0	0	0	0	0	1	25
Nickel	0	0	0	2	0	0	0	2	na
Titanium minerals	1	0	0	1	0	0	0	2	555
Zinc	0	0	1	0	0	0	0	1	na
Sub-total	1	1	4	4	1	0	0	11	5816

However, most of the projects that will ultimately proceed to development in the medium term are included in ABARE's current list of 262 less advanced projects.

Among the more notable large scale projects in ABARE's October 2008 list still undergoing feasibility studies are 16 proposed LNG developments. These projects include the Browse, Gorgon, Icthys, Scarborough and Sunrise projects off the coast of Western Australia and two coal seam methane based LNG projects in Queensland.

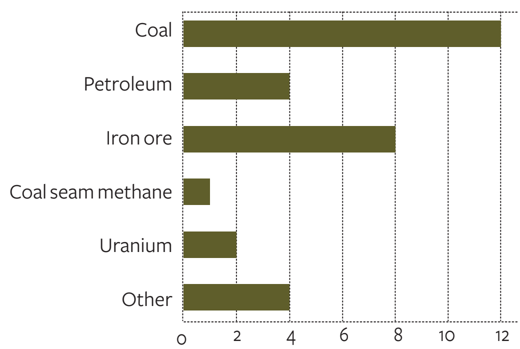
BHP Billiton's proposed Olympic Dam expansion in South Australia, currently undergoing pre-feasibility studies, aims to more than double the mine's current output of copper, uranium, gold and silver. Among the less advanced iron ore projects, six have an estimated capital expenditure of $1 billion or more. These are BHP Billiton's Western Australian Iron Ore Rapid Growth Project 5 ($8.3 billion); Aquila Resources' West Pilbara mine ($4.2 billion); Australasian Resources' Balmoral South magnetite project ($2.7 billion); Gindalbie Metals' Karara magnetite project ($1.6 billion); Atlas Iron's Ridley magnetite project ($1.6 billion); and Crossland Resources' Jack Hills Stage 2 mine ($1.5 billion).

Projects new to ABARE's list

There are 31 projects (at both advanced and less advanced stages) new to ABARE's list since April 2008. This compares with 58 projects added to the list in the six months to April 2008 and 46 in the six months to October 2007. Figure j provides a summary by commodity category of the newly listed projects in the six months ended October 2008. Of these, one iron ore project is already under construction—the Pardoo direct shipping ore project—and two coal projects are committed—the Blackwater Creek Diversion and the Ensham bord and pillar underground mine.

Among the more significant less advanced projects new to the list are two coal projects, both located in Queensland. Hancock prospecting is proposing to develop its Alpha Coal Project, located south-west of Clermont, which is expected to produce 30 million tonnes of thermal coal a year. At an estimated capital cost of $7.5 billion, the project will include development of a mine, a port and rail infrastructure. The $5.3 billion Waratah Galilee Coal Project, located west of Rockhampton, is expected to produce up to 25 million tonnes of thermal coal a year. Both projects are currently at the prefeasibility stage, but are nominally to commence operations in 2012. Besides these two projects, a further eight coal mining

j Projects added to list: six months to October 2008



projects have been added to the list at a combined expected capital cost of around $1.2 billion.

Also significant is the joint venture gas project between Woodside Energy, BHP Billiton, BP, Chevron, Shell and Japan Australia LNG—the North West Shelf CWLH expansion project. A feasibility study is underway for this project which is nominally to commence in 2010. At an estimated capital cost of nearly $1.8 billion, the project is expected to produce 60 000 barrels of oil per day and 35 petajoules of gas a year.

Also new to the list are eight iron ore production projects. The most notable of these, in terms of new capacity, is Fortescue's second stage expansion of its Heng Shan mine in the Pilbara region of Western Australia. When operating at full capacity, the project is expected to produce an additional 80 million tonnes of iron ore a year. A feasibility study is underway for the project and, as yet, a date has not been set for operations to commence.

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10.08

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Fisheries Resources Research Fund

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