



Mining and the economy

by Daniel Montoya

1 Introduction

The [Henry Tax Review](#) was publicly released by the Commonwealth Government in May 2010.¹ The Review recommended significant reforms to the taxation system, including reform of the taxation of mineral resources. According to the Review:

Australia has the world's largest economically demonstrated resource reserves of brown coal, lead, mineral sands (rutile and zircon), nickel, silver, uranium and zinc, and the second largest reserves of bauxite, copper, gold and iron ore (contained iron). The current charging arrangements distort investment and production decisions, thereby lowering the community's return from its resources. Further, they fail to collect a sufficient return for the community because they are unresponsive to changes in profits, particularly output-based royalties.²

The Review made 6 resource tax-related recommendations, including the replacement of current taxation arrangements by:

... a uniform resource rent tax imposed and administered by the Australian government that: (a) is levied at a rate of 40 per cent, with that rate adjusted to offset any future change in the company income tax

rate from 25 per cent, to achieve a combined statutory tax rate of 55 per cent; ... (c) measures rents as net income less an allowance for corporate capital, with the allowance rate set at the long-term Australian government bond rate; and ... (f) is allowed as a deductible expense in the calculation of income tax, with loss refunds treated as assessable income.³

In response to the Henry Review, the Commonwealth Government announced the adoption of a [Resource Super Profits tax](#).⁴ The proposed tax has been met with fierce criticism from the mining industry.

This E-brief does not elaborate on the arguments put forward by Henry and the Commonwealth response. Instead, it summarises the contribution mining makes to the Australian and NSW economies. Particular attention is given to coal given its status as NSW's largest export. The negative externalities produced by coal-fired power generation in NSW are also briefly detailed.

2 Mining in Australia

Mining comprised 8% of GDP in 2008-09 (\$87.6 billion), as it did in 1998-99. 167,00 people were employed in the mining sector in 2008-09, an increase of 71,000 since 2003-04. Australia

exports a variety of energy and mineral resources. These include oil, LNG, coal, uranium, iron ore, gold, alumina, aluminium, nickel, copper and zinc.⁵

The main export markets for energy resources in 2008-09 were Japan, the Republic of Korea and India. These countries bought 42%, 14% and 9% of energy resource exports respectively. Total energy resource exports amounted to \$77.9 billion in 2008-09 (see Table 1 for major exports).

Table 1: Export values for major resource exports in Australia in 2008-2010⁶

Resource	Export value 2008-09 (\$m)	Export value 2009-10 (\$m) (projected)
Energy resources		
Crude oil	8,757	8,973
LPG	1,044	1,107
LNG	10,079	7,169
Coal	54,698	34,628
Uranium	990	981
Sub-total	75,568	52,858
Mineral resources		
Aluminium	10,931	8,518
Copper	5,863	6,174
Gold	16,146	14,702
Iron and steel	35,602	30,239
Nickel	2,656	3,035
Sub-total	71,198	62,668
Total	146,766	115,526

The main export markets for mineral resources in 2008-09 were China (33%), Japan (13%) and India (8%). Total mineral resource exports amounted to \$83.6 billion in 2008-09 (see Table 1 for major exports).⁷

Mining companies made \$67,402 million profit in 2008-09, an increase of \$27,218 million from 2007-08.⁸ Much of this increased profit was due to increased demand from China and other emerging economies, and occurred despite price falls in late 2008 and early 2009.⁹ There was a corresponding increase in Federal tax receipts collected from mining

companies and mining company employees from \$8,587 million in 2007-08 to an estimated \$13,357 million in 2008-09.¹⁰

3 Mining in NSW

The NSW minerals industry accounts for 2% of NSW's GSP.¹¹ 29,649 people were employed in mining in 2009, up from 13,813 in 2000. Minerals mined in NSW include coal, gold, copper, silver, lead, zinc, rutile, zircon and antimony.¹²

NSW's major mineral exports in 2008-09 were: coal (\$12,898 million); aluminium (\$2,058 million); copper ores and concentrates (\$1,460 million); and refined petroleum (\$1,403 million).¹³ Total NSW mineral exports amounted to \$19,036 million in 2008-09.¹⁴ Major export destinations for NSW minerals include China, Japan, the Republic of Korea, Malaysia and Taiwan.

Net mining royalties in NSW in 2008-09 were \$1,280 million, an increase of \$706 million from 2007-08. This increase of 220 per cent resulted from higher coal prices and changes to the coal royalty regime. Non-coal royalties decreased by 32 per cent in 2008-09 as a result of the fall in base metal prices.¹⁵

4 Coal mining in NSW

Black coal is NSW's biggest export. In 2008-09, coal exports were worth \$12,898 million, whereas the next largest export (aluminium) was worth \$2,058 million.¹⁶ Coal exports were worth \$8,185 million in 2007-08. 77% of the coal produced in 2008-09 was exported. Of the remaining 23%, 21% was used to produce electricity. 54.5% of coal exported from NSW was bought by Japan. Other large

importers of NSW coal include the Republic of Korea (16.5%), Taiwan (12%) and China (4.7%).¹⁷

There are currently 29 underground and 31 open cut coal mines in NSW. These mines are located in the Gunnedah, Hunter, Newcastle, Gloucester, Southern and Western coalfields, which stretch from south of Bombaderry to north of Newcastle, and inland to Lithgow and Narrabri. 29 development projects are also located within these coalfields, and a further development is located in the Oaklands coalfield, which is located south west of Wagga Wagga.¹⁸ \$105 million was expended on coal exploration in 2008-09.¹⁹

The Hunter coalfield is by far the largest producer of coal. 80.44 Mt of saleable coal was produced in 2007-08 in the Hunter coalfield, whereas the next largest production area was the Western coalfield, which produced 22.24 Mt of saleable coal (see Table 2). Correspondingly, employment in coal mining is greatest in the Hunter coalfield, with 8384 people employed there in 2008 (see Table 2).

Table 2: Coal production (saleable) and employment in NSW in 2007-08²⁰

Coalfield	Production (Mt)	Employment (2008)
Gloucester	1.89	152
Gunnedah	4.03	325
Hunter	80.44	8384
Newcastle	16.11	1984
Southern	10.44	2636
Western	22.24	1865
Total	135.15	15346

Under the [Mining Act 1992](#) (NSW), the NSW Government charges royalties on mineral production, including coal production. There are three different base rates for Ad Valorem royalties payable on coal mining:

- (1) 8.2% of the value of coal recovered by open cut mining;
- (2) 7.2% of the value of coal recovered by underground mining; and
- (3) 6.2% of the value of coal recovered by deep underground mining

A coal reject royalty is also payable on any coal sold for use in energy production. Of the \$1,280 million paid in mining royalties in 2008-09, \$1,226 million came from coal mining.²¹ Table 3 details the coal royalties by region.

Table 3: 2008-09 NSW coal royalties by region²²

Region	Royalty payable (\$m)
Gloucester	20.8
Gunnedah	46.6
Hunter	810.6
Newcastle	86.0
Southern	141.2
Western	127.6
Total	1,232.8

5 Coal externalities

Coal mining is an issue that, at times, attracts controversy.²³ Newspaper coverage has been given to potential negative environmental and health impacts in places such as the Hunter and Illawarra.²⁴ Most recently, the NSW Government rejected the Bickham Coal Company's open cut mine proposal in the Upper Hunter due to potential impacts on: the Pages River; the region's thoroughbred industry; and the 'unique rural characteristics' of the area.²⁵

The NSW Parliamentary Library Research Service Briefing Paper [Mining and the Environment](#) covers the environmental impact of coal mining.²⁶ Whilst some coal, predominantly from the Southern coalfields, is used for steel making, coal is predominantly used for power generation in NSW. The associated

environmental and health impacts of coal-fired power generation are explored in this e-brief.

5.1 Externalities of power generation

Five studies have been completed in Australia on the negative externalities of power generation. The most recent and comprehensive [study](#) was released by the Australian Academy of Technological Sciences and Engineering (ATSE) in March 2009.²⁷ ATSE adopted the methodology used by the [ExternE Project](#), the largest study of its kind on the health and greenhouse impacts of power generation.²⁸ The ATSE study calculated the greenhouse impacts and health damage costs of the following power stations and technologies: coal, gas, wind, solar photovoltaic, solar thermal, geothermal, carbon capture and storage and nuclear. Primary focus was given to those emissions that make the greatest contribution to external costs, namely, particulate material (PM₁₀) and the gaseous combustion products carbon dioxide (CO₂), sulphur dioxide (SO₂) and nitrogen oxides (NO_x).²⁹

Coal-fired power stations produce more greenhouse gases (such as CO₂) per unit of energy than any other type of power station. The damage cost of CO₂ emissions associated with a particular generation technology, in terms of a unit of power generated, is given by:

$$\text{Damage cost (\$/MWh)} = \text{Emissions (kg CO}_2\text{/MWh)} \times \text{Unit damage cost (\$/kg CO}_2\text{)}$$

According to this formula, the cost of damage done by CO₂ emissions from black coal-fired power generation was calculated to be \$29/MWh.³⁰

PM₁₀, SO₂, and NO_x can increase the incidence of respiratory and cardiovascular diseases. The health impact of these emissions was calculated with reference to population density around power stations and through attributing a monetary cost to the impact of each emission on human health. The mid-range figure for health damage costs for all three emissions (PM₁₀, SO₂ and NO_x) was found to be \$13.2/MWh. The total externality cost for black coal is therefore \$42/MWh. In comparison, brown coal (which is not used for power generation in NSW) has a total externality cost of \$52/MWh and natural gas has a total externality cost of \$19/MWh (see Table 4).³¹

Table 4: Externality cost estimates for various electricity generating technologies³²

Technology	Externality cost (\$/MWh)
Brown coal	52
Black coal	42
Natural gas (combined cycle)	19
Black coal (post-combustion Carbon Capture and Storage)	11
Nuclear	7
Solar photovoltaic	5
Solar thermal	5
Wind	1.5

The aggregate health cost burden in Australia of power station emissions from coal-fired power stations, with the mid-range estimate of \$13.2/MWh and an annual coal-fired output of 197TWh, is therefore approximately \$2.6 billion.³³ The health cost burden from coal-fired power stations in NSW for 2007-08 was \$947.5 million.³⁴ The total externality cost from coal-fired power stations in NSW for 2007-08 was approximately \$3 billion.³⁵ The total externality cost from coal-fired power stations in Australia for 2007-08 was approximately \$8.3 billion.³⁶

- ¹ Ken Henry, [Australia's future tax system. Report to the Treasurer, Part One – Overview](#), December 2009.
- ² Ken Henry, December 2009, n1, p47.
- ³ Ken Henry, December 2009, n1, p89.
- ⁴ The Hon Wayne Swan with the Hon Kevin Rudd, [Stronger, Fairer, Simpler: A Tax Plan For Our Future](#) (Media Release), 2 May 2010.
- ⁵ ABARE, [Australian Commodities: Statistical Tables](#), Volume 17 No 1, March Quarter 2010.
- ⁶ ABARE, n5, March 2010.
- ⁷ ABARE, n5, March 2010.
- ⁸ ABARE, n5, March 2010.
- ⁹ ABARE, [Australian Commodities](#), Volume 17 No 1, March Quarter 2010.
- ¹⁰ Minerals Council of Australia, [Minerals Council of Australia 2010-2011 Pre-Budget Submission](#), February 2010.
- ¹¹ NSW Minerals Council, [NSW Minerals Council Submission to NSW Opposition – Planning for Prosperity](#), 1 July 2009.
- ¹² NSW Minerals Council, [Key Industry Statistics 2009](#), 2009.
- ¹³ Department of Foreign Affairs and Trade, [Australia's Trade by State and Territory 2008-09](#), January 2010.
- ¹⁴ NSW Minerals Council, n12, 2009.
- ¹⁵ Department of Primary Industries, [Annual Report 2008-2009](#), October 2009.
- ¹⁶ Department of Foreign Affairs and Trade, n13, January 2010.
- ¹⁷ NSW Minerals Council, n12, 2009.
- ¹⁸ Department of Primary Industries, [New South Wales Coal Industry Profile 2009](#), 2009.
- ¹⁹ NSW Minerals Council, n12, 2009.
- ²⁰ Department of Primary Industries, n18, 2009.
- ²¹ Department of Primary Industries, n15, October 2009.
- ²² Matthew Gagen, Department of Primary Industries, Personal Communication, 1 February 2010.
- ²³ See for eg. Singleton Argus, [Common fight not over yet](#), 7 May 2010.
- ²⁴ See for eg. SMH, [Counting the cost of the new black magic bonanza](#), 17 March 2010; SMH, [Life in the shadow of coal central](#), 19 March 2010; and St George & Sutherland Shire Leader, [River system under threat](#), 4 March 2010.
- ²⁵ Mudgee Guardian, [Government blocks Scone mine proposal](#), 17 May 2010.
- ²⁶ Stewart Smith, [Mining and the Environment](#), Briefing Paper No. 6/09, July 2009.
- ²⁷ Australian Academy of Technological Sciences and Engineering, [The Hidden](#)

- [Costs of Electricity: Externalities of Power Generation in Australia](#), March 2009.
- ²⁸ ExternE, [Externalities of Energy: A Research Project of the European Commission](#), January 2008.
- ²⁹ The emissions excluded from the study include lead, arsenic, cadmium, nickel, chromium, ozone, hydrocarbons, diesel particles, methane and carbon monoxide.
- ³⁰ Australian Academy of Technological Sciences and Engineering, n27, March 2009.
- ³¹ Australian Academy of Technological Sciences and Engineering, n27, March 2009.
- ³² Australian Academy of Technological Sciences and Engineering, n27, March 2009.
- ³³ Australian Academy of Technological Sciences and Engineering, n27, March 2009.
- ³⁴ NSW generated 71,783.6 GWh from coal in 2007-2008 (Energy Supply Association of Australia, [Electricity Gas Australia 2009](#), 2009). This figure was multiplied by \$A13.2/MWh to calculate the health cost burden in NSW from coal-fired power stations.
- ³⁵ This figure was calculated by multiplying the total energy produced by coal-fired power stations in 2007-2008 (71,783.6 GWh) by the total externality cost per MWh (\$42).
- ³⁶ This figure was calculated by multiplying the total energy produced by black coal (129,418.8 GWh) by the total externality cost per MWh (\$42) and adding it to the total energy produced by brown coal (55,315.5 GWh) multiplied by the total externality cost per MWh for brown coal (\$52). Figures for total energy produced by black and brown coal were obtained from: Energy Supply Association of Australia, [Electricity Gas Australia 2009](#), 2009.

Information about Research Publications can be found on the Internet at the [NSW Parliament's Website](#)

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