

NATIONAL PEAK MINERALS FORUM: WORKSHOP AGENDA and BACKGROUND DOCUMENT

Australia too reliant on resources: Tanner

By Michael Janda and Rebecca Hyam
Posted 5 hours 15 minutes ago

The Federal Finance Minister says Australia has become too reliant on resources and needs to expand its export base.

Lindsay Tanner, the federal finance minister, has warned that Australia's heavy reliance on resource exports is a long-term problem. He says the country needs to diversify its economy, particularly in the manufacturing sector, and he says there are no easy solutions. "We had a boom in tourism, in education, in specialised manufacturing, in wine, in pharmaceuticals that helped us to diminish our enormous reliance on minerals," he told ABC radio 774 in Melbourne. "That's kind of almost gone into reverse in recent times. So it's not so much that there's one we're dependent on, it's that we have, I think."

A leading economist says mining for about 3 per cent of GDP

Ore price rise bonanza set to fuel growth

Clancy Yeates

THE economy is set to receive a \$25 billion boost from a China-led bonanza in Australia's biggest export, iron ore, wiping up to \$7 billion off the budget deficit. The mining giants BHP Billiton and Rio Tinto are widely expected to gain from a near doubling in their ore prices after the world's biggest producer, Brazil's Vale, yesterday won a 90 per cent rise in a three-month deal with Asian customers.

The spectacular price jump sets the scene for a surge in mining wealth coming into the country. It comes months after analysts tipped price rises of 40 per cent. It also underscores the challenge facing the Reserve Bank, which is trying to keep inflation under control as the economy embarks on a resources-led recovery.

SLAG HEAPS

1.75% Boost to GDP

\$7b Government revenue (budget deficit forecast for 2009-10 is \$55 billion)

\$18b To mining companies and back into the economy through new investments and dividend payments to shareholders

A \$25 BILLION IRON ORE WINDFALL CREATES

Inside

Rio Tinto has turned to the controversial former US secretary of state, Henry Kissinger, to help rebuild its iron ore business following

other top commodity export, is also expected to rise as much as 55 per cent after China last year. When combined, surges in the prices of coal and iron ore could cause the government's company tax windfall to balloon by \$11 billion, Mr Davies said.

SELLING COALS FROM NEWCASTLE Counting the cost of the new black magic bonanza

Jessica Irvine
ECONOMICS WRITER

A TRAIN heading nearly 100 carriages through a water-ragging rain through the hills as if straining from the effort. As each carriage reaches a trigger point, its belly breaks open in a spout of black coal into a conveyor belt beneath the train. The sound of the train heaves as it descends into the valley, a chugging rhythm on the tongue. About 50 trains a day pass through this "lumpy station" at the Kooragang terminal in the Kooragang Island, near Newcastle, and a similar facility in the nearby Carrington terminal. Soon, Newcastle's long-awaited third coal export terminal will also begin receiving trains.

The coal industry in the Hunter is booming again, thanks to higher prices and expanding port capacity. Coal exports from Newcastle—already the world's largest coal export port—are expected to double over the next decade.

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RESOURCES

'Momentous day' hailed

Barry Fitzgerald

BHP BILLITON has the Brazilian iron-ore industry running scared after revealing more than half of its iron ore exports from the Pilbara, in Western Australia, are now being struck on a short-term "landed" price basis.

It was what Macquarie Equities research desk called a "momentous day" for the global seaborne trade in iron ore.

BHP's assault on the 40-year-old annual benchmark system of iron-ore pricing is well known, but its revelation that the shift to short-term pricing mechanisms is being achieved on a landed price basis means that for the first time Australian iron ore is capturing the so-called freight differential that applies to iron ore in Asian markets.

Under BHP's new way of selling iron ore, Asian steelmakers would have the choice of buying Pilbara iron ore or paying an additional \$10514 a tonne in freight charges to get iron ore from Brazil's Vale. Recognising the change in its competitive position in Asia, Vale is reported to have agreed on a 50 per cent new pricing mechanism, is doing better than that.

BHP said it had reached agreement with a "significant number of customers" throughout Asia to move existing iron-ore contracts that were previously priced annually onto a

shorter-term landed price equivalent basis, and that the agreements represented most of its iron-ore sales volume—up from about 30 per cent a year ago.

The structural change that these settlements represent is consistent with BHP achieving market clearing prices, the company said. BHP did not reveal what price it

Macquarie said it was unusual for the pricing terms for one of the core commodities in world trade to change. "BHP's announcement suggests that, unequivocally, we are in a transitional phase which sounds the death knell of the old benchmark system," Macquarie said.

BHP did not reveal what price it

National Peak Minerals Forum

Where: Australian Museum

The Terrace

6 College Street, Sydney

When: April 29, 2010

10.00am – 4.00pm

Coffee and free registration from 9.30am

Hosted by:

Institute for Sustainable Futures

University of Technology, Sydney

<http://www.isf.uts.edu.au/>

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National Peak Minerals Forum:

Workshop agenda

The National Peak Minerals Forum is being organised by the Institute for Sustainable Futures at the University of Technology, Sydney (UTS). It forms part of the three year Mineral Futures Collaboration Cluster program of research. The research is funded by CSIRO's Minerals Down Under Flagship, and the university partners include: The University of Queensland; Curtin University of Technology; CQUniversity; and Australian National University.

About the research

The Institute for Sustainable Futures is conducting research asking:

- what should we as Australians be doing with our mineral endowment this century to underpin long-term national benefit?
- how does the phenomenon of peak minerals change the spectrum of impacts, benefits and opportunities for the Australian minerals industry in a global context?
- what strategies can deliver a vision for an industry embedded within a more sustainable Australia across a range of future scenarios?

Research by other universities in the cluster is focussing on technology futures and mineral-rich regions in transition.

Objectives for workshop

The National Peak Minerals Forum brings together stakeholders from government, industry, research and community organisations to:

- discuss the current state of Australian peak minerals awareness and responses from different stakeholder perspectives.
- deliberate on potential impacts, challenges and opportunities for the future of the minerals industry and the Australian economy in light of peak minerals.
- deliver a plan of action and draft an approach to addressing research and policy gaps identified by participants over the course of the day.

It is proposed that following the forum, a Peak Minerals Reference Group be established with interested participants to offer targeted input to ongoing research.

Later in the year, a Future Scenarios workshop will be held to examine the impact of peak minerals for Australia across a range of future global scenarios.

10.00-10.10	Introduction / overview / purpose of workshop	
10.10-11.20	Presentations and Q&A	
	What is peak minerals?	Dr. Gavin Mudd / Dr. Damien Giurco Lecturer, Monash University / Institute for Sustainable Futures, UTS
	Mineral discoveries	Dr. Ian Lambert Group Leader, Onshore Energy & Minerals, Geoscience Australia
	Technology and peak minerals	Dr. Ralph Hackl Science Director, Minerals Down Under Flagship, CSIRO
	Minerals in the Australian Economy	David Richardson Research Fellow, The Australia Institute
11.20-11.40	Morning tea	
11.40-13.00	Small group discussion: implications and opportunities	
13.00-13.45	Lunch	
13.45-15.00	Workshop discussion: future strategies and challenges	
15.00-15.15	Afternoon tea	
15.15-16.00	Closing summary: evaluation, being involved and future research	

National Peak Minerals Forum:

Background document

For detailed information refer to:

Giurco, D., Prior, T., Mudd, G.M., Mason, L. and Behrisch, J. (2009). [Peak minerals in Australia: a review of changing impacts and benefits](#). Prepared for CSIRO Minerals Down Under Flagship, by the Institute for Sustainable Futures (University of Technology, Sydney) and Department of Civil Engineering (Monash University), March 2010.

Summary

As Australia's largest export industry, mining brings financial benefits to the nation and whilst our vast endowment of minerals will not be exhausted soon, extraction and production are becoming more challenging. Declining ore grades are indicative of a shift from 'easier and cheaper' to more 'complex and expensive' processing – in social and environmental terms as well as economic. 'Peak minerals' marks the point in time when the largest national production of a mineral will occur, with production declining in subsequent years. This peak is a symbolic marker of a continuing transition from cheap and easy extraction to complex and expensive. How well are these impacts pre- and post-peak understood for the Australian industry and economy? What role will technology play in moderating current peaks, unlocking the next generation peak? What role will rising oil prices and carbon constraints or other social and environmental constraints play in bringing forward the peak? How is Australia placed to respond? To what extent will the minerals sector underpin our national platform for prosperity in years to come?

What is 'peak minerals'?

The concept of peak minerals provides a framework within which the economic, social and environmental trajectories of the mining industry can be explored. It focuses consideration on the change in costs and impacts associated with processing easily accessible, lower cost ores before peak production for a given mineral. It also outlines how we might respond as processing becomes characterised by higher costs as the peak is approached and passed.

Issues associated with the concept of peak minerals, include:

1. Ore grades are in decline for most minerals, yet production is increasing
2. Mines are becoming deeper
3. Easily processed ores are becoming exhausted

Peak minerals and peak oil

The concept of peak minerals is an extension of Hubbert's model of peak oil (Figure 1). Although widely cited for his predictions of peak oil, Hubbert intended to explore an appropriate response to the finite supply of oil, and framed this work within the context of increasing global population and rapidly growing consumption of oil.

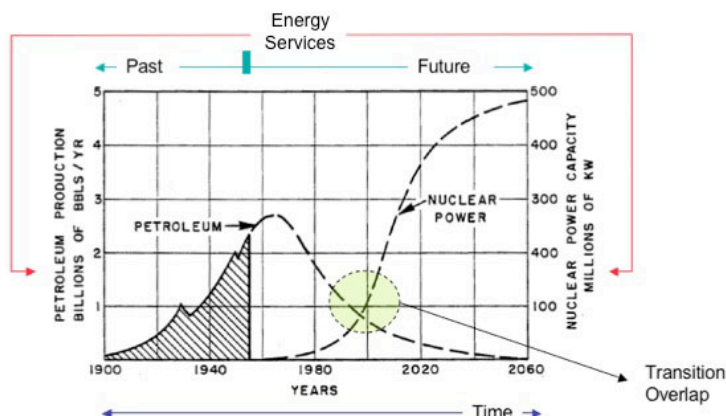


Figure 1: *The Hubbert peak oil curve. A resource is finite, and adequate management requires a planned transition.*

More importantly than focussing on *when* oil would run out, Hubbert demonstrated that as production approached a peak, it would become increasingly difficult and ultimately unfeasibly expensive, favouring alternatives. In establishing the peak oil model, Hubbert was primarily focussed on arguing that a *planned transition* was required to ensure future energy services.

When applied to some minerals (as for the example of copper, figure 2), Hubbert's peak curve fits well, however gold has experienced multiple peaks due to new discoveries and the uptake of new technologies. Notwithstanding, peak minerals provides a suitable metaphor in which to consider the future of the industry and its role in the Australian economy.

Cheap & easy then, costly & difficult in future

While most minerals are unlikely to be exhausted in the near future, they are becoming more difficult and costly to produce, and will reach a point when Australia's comparative advantage in the global resources sector is diminished.

The costs of mining, once primarily reflected in economic terms, are increasingly being considered in social and environmental terms, although these are yet to meaningfully inform long-term decision-making in the sector.

Such consideration is particularly important if

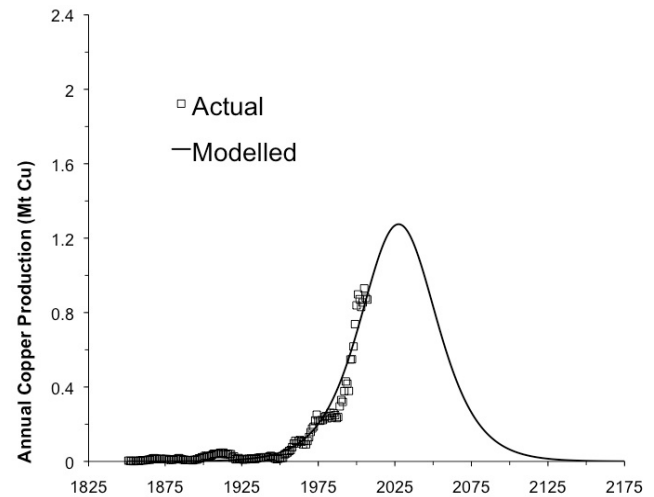


Figure 2: Australian copper production matches projected production, and is consistent with a Hubbert curve. (Mudd & Ward, 2008)

the industry is seeking to operate in a socially, environmentally *and* economically sustainable manner into the next 30-50 years.

Figure 3 provides a graphical illustration of the peak minerals concept. Production follows the typical Hubbert curve. Well before peak production, mining operations start to become characterised by lower costs (with high ore grades, simple ores and low mine waste), but as the peak is approached and passed, the costs associated with production increase (because of falling average ore grades, deeper mines, complex ores and greater mine waste).

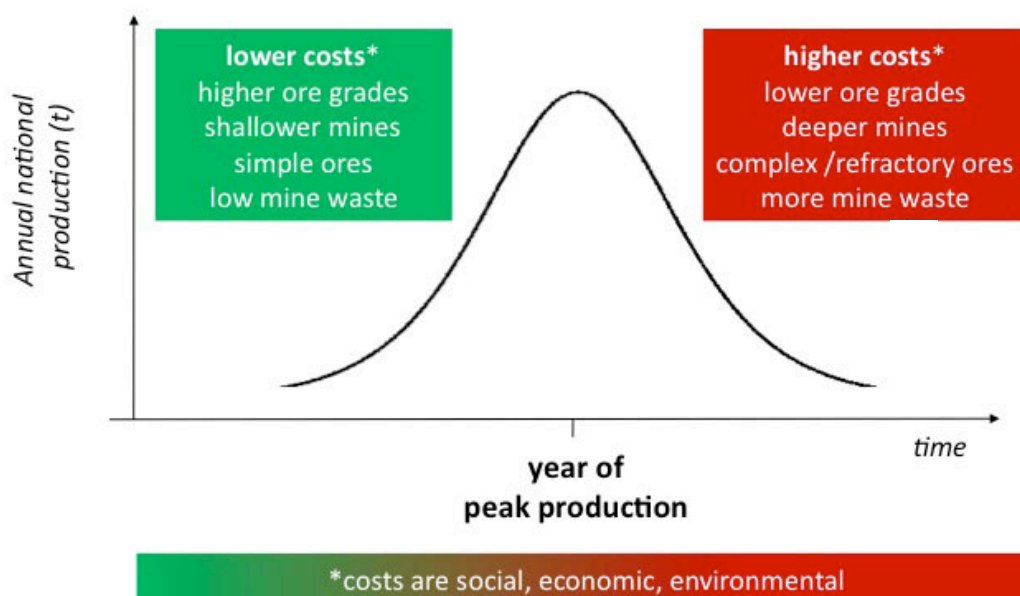


Figure 3: The concept of peak minerals. Although most minerals are unlikely to become exhausted in the near future, production that was once considered to be cheap and easy, is now characterised by difficult and expensive operations.

Future production: difficult & expensive?

There are a variety of indicators that show production is becoming more difficult and more expensive.

Key environmental indicators that reflect increasingly expensive production are primarily associated with the decline in average ore grades of many minerals (figure 4, inset). This has consequences in mineral exploration, for mine depth, the energy intensity of mining (figure 4), and the increasing quantity of waste rock (figure 5).



Ranger uranium mine and tailings dam.

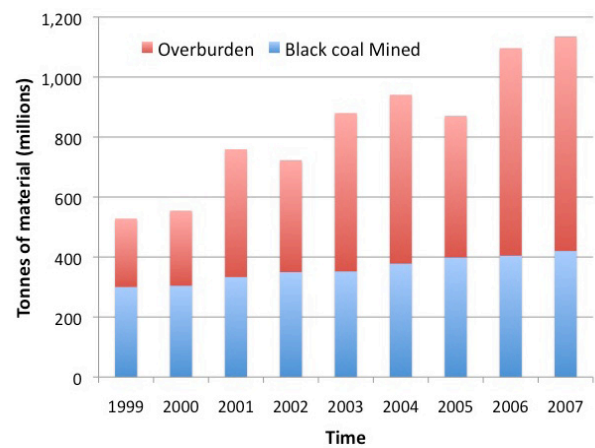


Figure 5: The quantity of waste rock is rising considerably faster than the quantity of the commodities produced.

Adjusting to a higher energy intensity is challenging for the industry in light of peak oil and rising energy costs in a carbon constrained future. New deposits in remote locations will also be constrained by rising energy costs.

Although new mineral deposits are still being discovered, and reserves are increasing for some minerals, these are of lower quality and are less accessible. This reduces the competitiveness of new Australian deposits in the global sector, and necessitates the development of new technology to remain competitive.

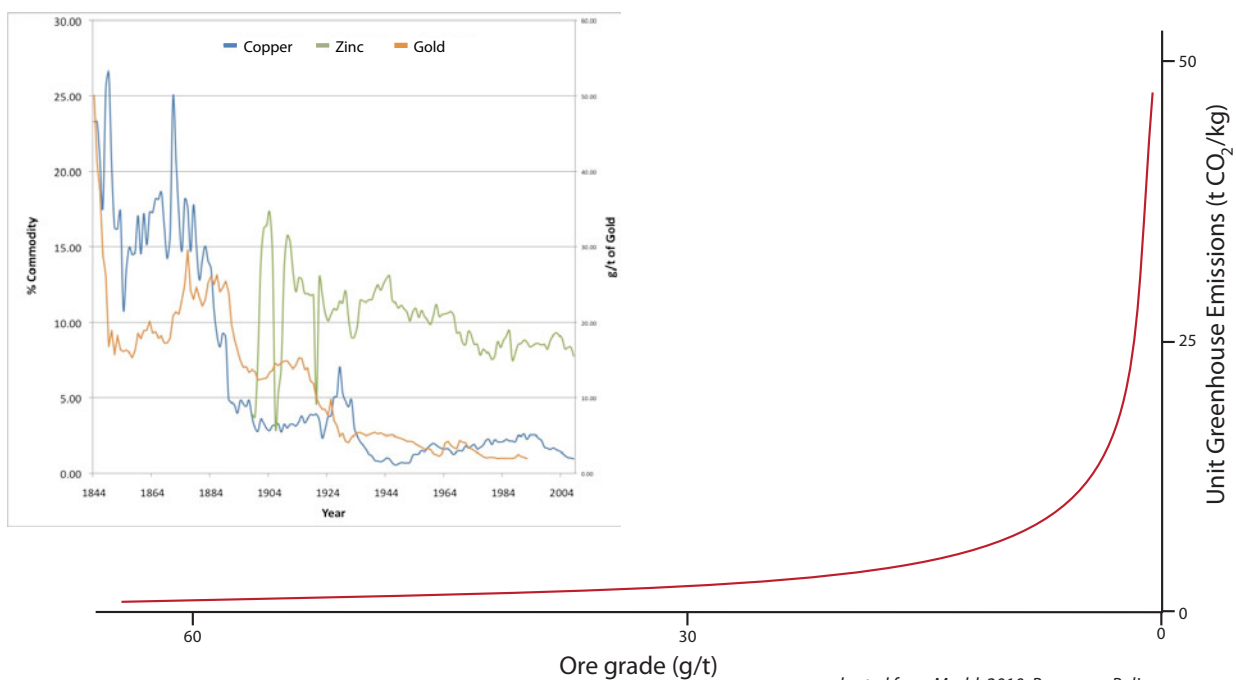


Figure 4: As ore grades are declining (inset), the energy intensity of mining production is increasing at an alarming rate.

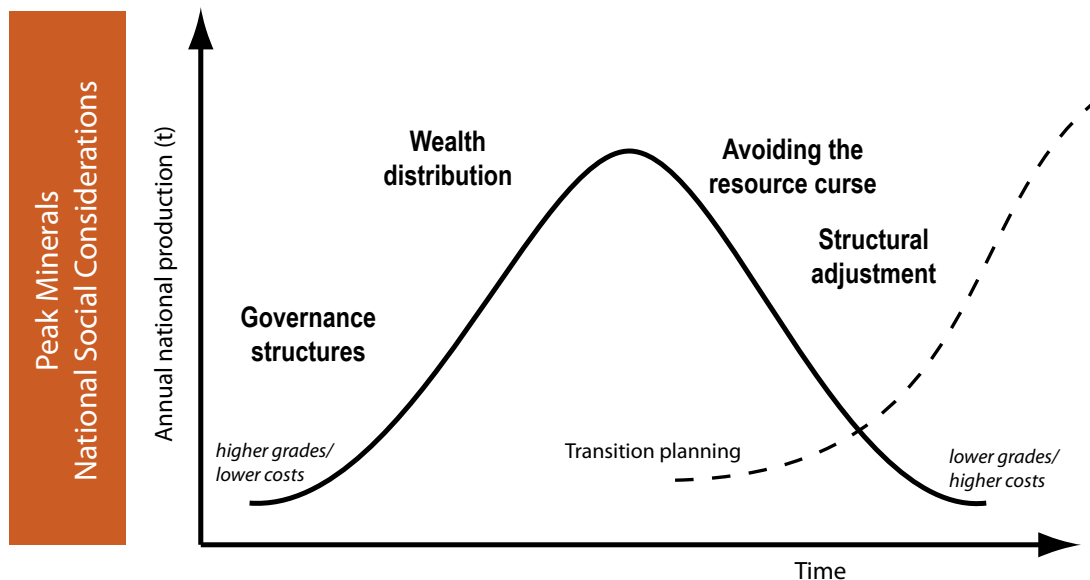


Figure 6: *Establishing appropriate governance structures, and wealth distribution mechanisms (for example) prior to the peak will help to manage adaptation to post-peak social impacts.*

The social context of peak minerals

Different social issues must be addressed through time in relation to peak minerals at a national scale (figure 6) other issues manifest on the local scale.

As global mining companies seek to expand operations to access larger mining areas, competition with farmers for land and for scarce water is becoming increasingly intense. Negative relationships with near neighbours influence companies' ability to establish and maintain a 'social license to operate' within the community.

Access to identified resources is becoming harder as questions are asked about the benefit from the regional economic development mining is reputed to bring.



Protesting expansion of coal mining activities in the Illawara, 2009. Photo: Alice Cooper.

What does this mean for Australia?

The minerals sector is currently one of the pillars of the Australian economy. The challenges for the industry are therefore challenges for Australia.

Future opportunities through transition

The concept of peak minerals highlights the need to identify and transition to new opportunities in the way we produce, use and reuse minerals in our society. What opportunities will come from new technologies for terrestrial or deep sea mining, from recycling? How should we invest to gain most benefit from these opportunities?

Long-term wealth from minerals?

Australia cannot rely on minerals for its wealth indefinitely.

This raises several questions:

- how can the negative effects of a strong mining sector be managed in relation to other sectors of the economy?
- how does the way wealth is conceptualised relate to mineral resources and the value derived from them?
- what adjustments are needed if Australia wishes to maintain its market share in the sector for the next 30 years?
- in what initiatives should today's benefits be invested to support long-term national wealth?