

The Future of Thermal Coal Mining in Australia

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Abstract

The last decade has featured a large swing in the worldwide coal demand supply balance.

The unexpected shortfall early in this century led to the commissioning of a large number of new projects and existing producers scrambling to expand production.

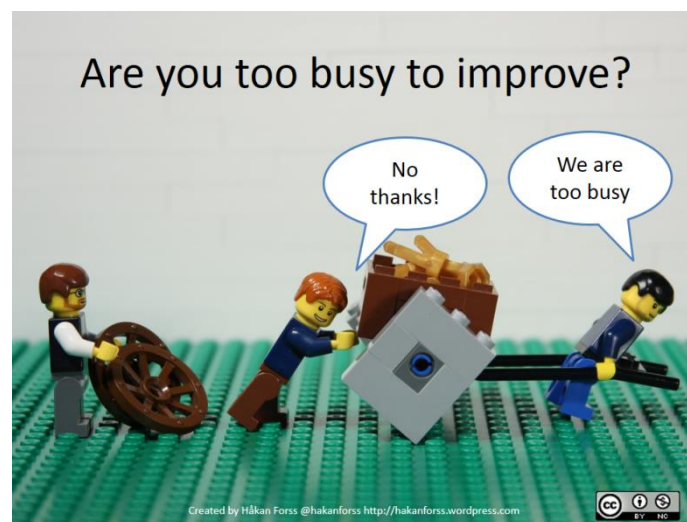
As an inevitable result, supply has overshot demand and prices have retreated from historical highs.

The medium term supply-demand forecasts clearly show that prices will not rise significantly from current levels. They may even fall further to balance the market.

Short-term cost cutting measures have helped limit the price impact. To return to true economic profitability producers must make sustainable and underlying changes to their operations.

Many Australian mining operations are able to gain an advantage over international competitors by restructuring their operations.

This paper describes the macro issues faced by coal producers, and lays out a clear path for producers wanting to transition to significantly more profitable and sustainable mining operations.



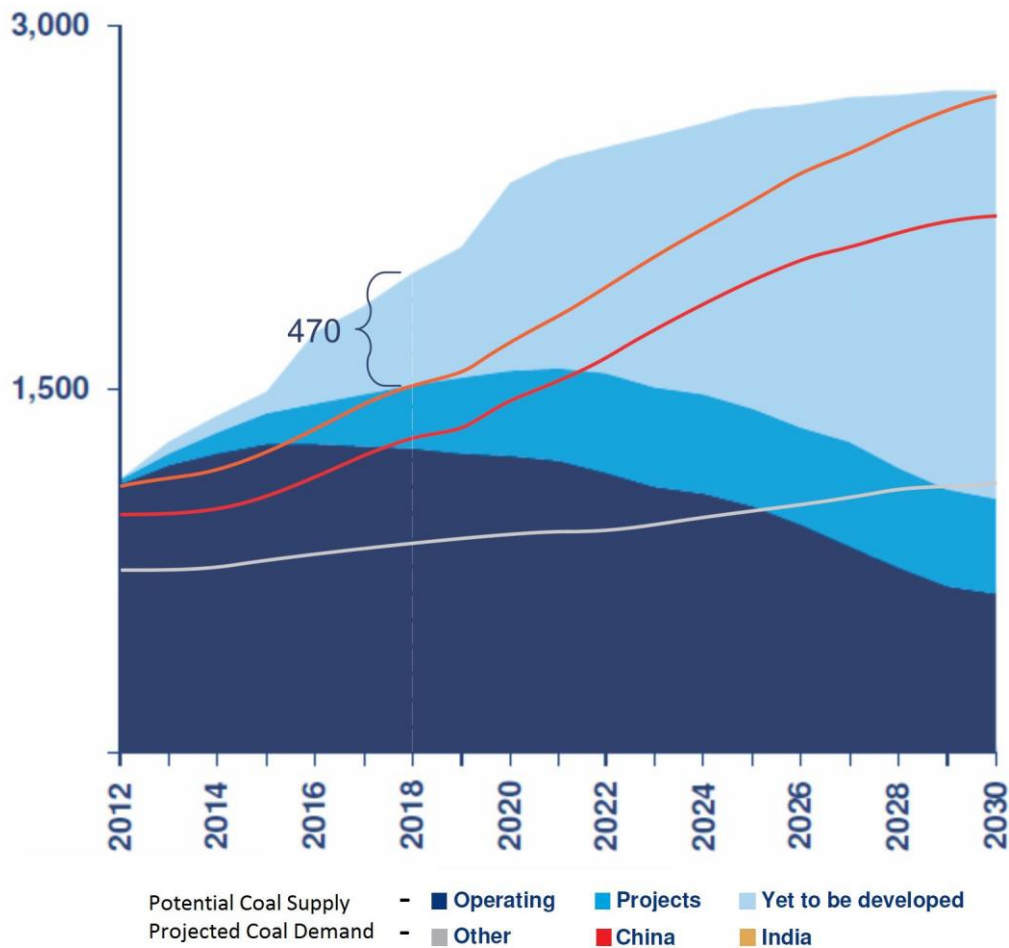
Market Setting

The industry recently emerged from a severe global coal production shortfall lasting from 2004 to 2012. China's rapid change from net exporter to large importer exceeded production capacity.

Demand was largely met by a massive increase in export capacity from Indonesia. Many Australian producers also expanded production to take advantage of the market situation.

The current market is in over-supply. Existing and committed projects are likely to keep the market in over supply until at least 2018. Ewart (2013), the head of global coal market research for Wood Mackenzie, indicated that global supply will outstrip demand until well past 2020, as shown in Figure 1 below.

Figure 1 - Demand and Potential Supply Forecasts (from Ewart 2013)



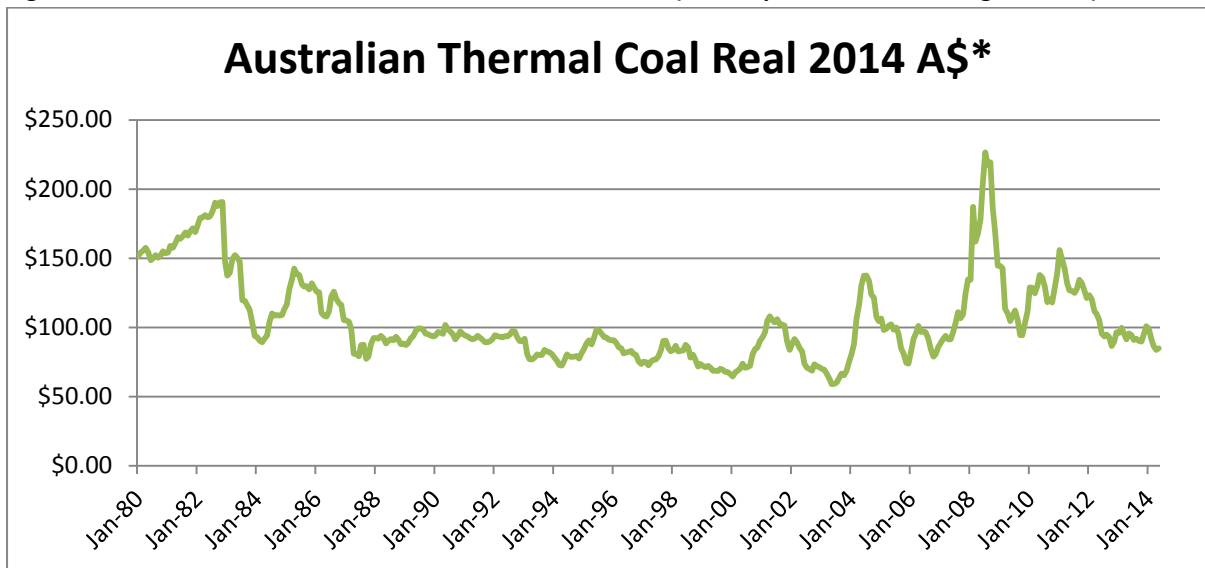
Thermal coal is not a scarce commodity. Significant new projects from Indonesia and Colombia are viable at current price levels.

This pricing situation is not unprecedented. It is very similar to that which existed in the 1980s, during the major expansion of the Australian export thermal coal industry.

Real A\$ prices in the late 1980s were very similar to those in existence today, as shown in Figure 2 below. For the following 15 years, real floor prices followed a slow downward trajectory, mirroring productivity gains and reduction in costs. The downward price movement was punctuated by price

spikes on approximately a three year cycle. These fluctuations, of up to 50%, were responses to short term market conditions.

Figure 2 – Real A\$ Australian Thermal Coal Prices from 1980 (www.opendataforafrica.org and ABS)



*Adjusted for mining labour indices, cost of materials used in coal mining indices and exchange rates. CPI was used as a proxy for materials indices prior to Aug 1987.

There is no reason to expect future coal prices to follow a different trajectory. Successful mining companies will adjust to the new paradigm, as they did in the period following the late 1980's.

Current Responses to the Downturn

The initial response was similar to that taken in past downturns - reduce contractors, reduce overheads, cut exploration and development, reduce work in progress and reduce shifts.

These are the easy first steps. Many of the actions have only short term consequences, and several defer costs into the future.

They do not generally address any fundamental problems with the business.

What Comes Next?

The next stage of business improvement is to change the fundamentals.

Over the past decade coal mines have followed the approach of generating additional production, at high marginal cost, to cash in on the boom. The production levels and marginal costs inherent in these decisions must be re-evaluated. Relatively low cost production will satisfy market demand for the medium term.

Mine plans must be revised and mining technologies and techniques selected to meet the low cost challenge. For an operating mine, selecting the correct strategy and mine plan are the most important and high value decisions executives and senior management teams can make.

High cost operations that are unwilling or unable to change will close. New low cost mines, or existing operations able to reduce costs, will meet demand.

Case Studies

A couple of case studies of changes to mines in the 1980's and 1990's are instructive.

Warkworth Mine

In the late 1980s the mine faced the likelihood of becoming cash-flow negative for a period of over two years due to:

- reducing prices;
- increasing strip ratios and costs; and
- changing markets (Hunter Valley metallurgical coals losing market share, increasing thermal coal specific energy requirements).

The mine engaged a consultant to work with planning staff to review long term plans.

Major changes were made to the mine layout, resulting in a 40% real reduction in FOB costs. Simultaneously, with no additional equipment, production was increased by 20%.

The modifications resulted in a significant increase in reserves and mine life, which allowed future expansion and economies of scale not possible with the original mine plan. The product mix was changed to suit the future market direction.

The revised plan included an implementation phase of approximately three years. The operation increased profitability throughout the implementation.

Mount Thorley Mine

In the late 1990s the mine was likely to become cash negative and close within two years due to the following issues:

- thermal coal prices were low;
- high-grading the deposit had already extracted low strip ratio areas; and
- the mine plan strip ratios increased significantly.

The mine engaged a consultant to work with planning staff to review long term plans.

Significant modifications were made to the mine plan to reduce the workforce and mining costs by about 10% while maintaining saleable production. No additional equipment was required to achieve the changes. Higher cost fleets were placed on reduced shifts.

Mining extents were modified, and a significant reduction in prestrip haulage was achieved by changing mining techniques and accesses to the mining areas.

The revised plan included an implementation phase in which operations personnel were invited to contribute to changes. The operation increased profitability throughout the implementation and remained profitable out to the revised mine limit.

Requirements for an Operational Review

The highest impact mining executives and senior managers can undertake to profitably grow their operations is the redevelopment of the mine plan. However, this high value action is also the most difficult and time-consuming to implement.

A high level option study is a cost and time effective approach to determining the value of undertaking a detailed redevelopment of an operating mine plan. This approach is analogous to the concept phase of a new project and has the same aims – quickly determining the most suitable strategy for further work.

Two considerations are vital to this process.

Approaching the exercise with an open mind is the only way to maximise value – sacred cows must be challenged to ensure that the best outcome is achieved.

The selection of a high quality team to conduct this work is paramount to success. Necessary skills and attributes of the team are multi-disciplined, expansive vision, experienced in operational improvement, experienced in projects, and excellent financial understanding.

High quality consultants have inherent strengths to assist in these areas.

They bring an objectivity that is generally impossible with on-site staff alone. Site personnel rarely have the required range of experience coupled with financial and project skills necessary for a successful operational review. Consultants are also able to concentrate on the task, unencumbered by daily operational concerns.

The review of alternative options must include site personnel – this improves implementation success due to ownership of the revised plan.

Only after a clear strategy is chosen, can detailed planning turn the idea into an implementable plan, with measures of success which management can utilise to track progress.

This is the second most important decision point in the life of the mine. The most important being the initial investment decision. It is worth some expense and effort to arrive at the best decision. In our experience, investment in a good operational review returns over 100 fold in improved profitability.

What Does this Mean for Projects?

Increasing global demand for coal will require the industry to continually grow over the coming decades. Additional supply will come from locations which require significant infrastructure capital to link with users, implying significant additional tonnages will be required to make the financing of that infrastructure competitive.

The industry will likely face a period of gradually decreasing prices interspersed with spikes in prices as demand catches up with additional supply – the normal situation.

To minimise financial risk, any project must be mined in a manner which allows it to survive in low price periods.

Exploration and development will need to continue to find low cost projects, a process which generally takes in excess of 10 years. Shutting down this core business activity, whilst attractive from a short term cash-flow perspective, places the company in a position of stagnancy and places at risk development of projects able to supply demand from positions low on the cost curve.

What about Technology?

Throughout the 1990s and early 2000s increased equipment scale, improved equipment reliability and enhanced utilisation all led to significant cost reductions that managed to maintain competitive advantage.

Technological improvements are likely to contribute significantly to maintaining cost competitiveness of the Australian mining industry. While some economies of scale are possible, improvements in automation and control are also likely to give significant benefits.

Other areas that may be significant for some Australian operations include:

- conveyor waste transport to reduce costs and environmental impact; and
- modern, improved continuous surface miners to increase coal recoveries and reduce environmental impacts associated with CHPP reject material.

What are the Immediate Challenges?

Over the coming years a new skills shortage will emerge as many baby boomers take early retirement. Maintaining access to professionals with experience of operating in a low price environment will give companies an advantage.

Without appropriate strategies, accessing the enormous intellectual property built up by this cohort and maintaining sufficient numbers of suitably experienced personnel will be difficult. Flexible employment arrangements are required to maintain access to this knowledge. Consulting companies can assist in this process.

The biggest challenge is to take action in changing the mining strategy. There is always a first mover advantage. Followers will always be playing catch-up.

The opportunities for the future of coal mining in Australia, now depend more on the capability of its professionals and management than at any time over the last decade...

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Coal Price information, Australian thermal coal, 12,000- btu/pound, less than 1% sulfur, 14% ash, FOB Newcastle/Port Kembla, US\$ per metric ton. Units: US Dollars per Metric Ton. Note: This data is sourced from www.opendataforafrica.org/IMFPCP2014Jan where it is offered under an open data licence (www.opendataforafrica.org/legal/termsfuse).