Challenges for Thermal Coal Investment

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Comments limited to US & Australia to conserve time:
Recent dynamics in US thermal & metallurgical coal markets
Comments on Australia thermal & metallurgical coal markets
Investment Implications
Recent Dynamics in US thermal & metallurgical coal markets

Export metallurgical & thermal coal price spreads 2010-2011 (‘typical CAPP high volatile mine’)

- The difference between the ICE CSX weekly avg. prompt thermal price on the OTC and:
  - The API 2 weekly avg prompt price (red/green line)
  - The Energy Publishing HR HV weekly met coal price (blue line)
- The ‘take away’: CAPP producers have a strong incentive to ship met coal
  - Met coal prices $60 - $140 more profitable than domestic thermal
  - Export thermal ~ about $20 more profitable than domestic thermal since November

- Investors and analysts know this too—publicly traded companies are ‘punished’ if they are not expanding their metallurgical operation portfolio
Total US and Appalachia coal production are down

- Total US coal production is off due to economic crash and challenge from natural gas; but will recover
  - Appalachia coal production is down; and has been falling since 2001; (-15.4% t, -25.1% th, +46% met)
    - Reserve depletion is ending production
    - Low prices for alternatives lowers demand
    - Government regulation is limiting access to remaining reserves
  - Appalachia is a traditional supplier of metallurgical and thermal coal to the Atlantic Market and has served as a backup to the Asia-Pacific Market in times of constraint
- Appalachian thermal coal production has decline 110 mm tonnes
  - At the same time, metallurgical coal production has increased 31 mm tonnes
  - Higher met prices have pushed producers to switch from thermal to met production
  - Low thermal prices have forced closure (or transition) of higher cost mines
  - The trend will continue as investors push Appalachian producers away from thermal towards metallurgical coal
- The competitive US thermal plays are in other regions
Appalachia cash costs push production towards metallurgical supply

- Only limited remaining reserves of thermal coal can be mined at international thermal prices: weighted avg. FOB Mine cost = US$65/tonne
- Metallurgical coal production costs—though significantly higher—continue to return high profits: weighted avg. FOB Mine cost = US$87/tonne
- Central Appalachia especially is transitioning to a major metallurgical supplier but a small thermal supplier

As Appalachia production declines and moves to the metallurgical sector, other regions become more important for export thermal coal supply
Wide export metallurgical & thermal coal price differentials exist in Australia

- The Newcastle weekly average thermal price and Queensland hard coking coal prices favor coking coal
- Hard coking coal has commanded revenue premiums of $50 to $100 per tonne for the past three years
- Premiums transfer to lower quality metallurgical coals as well
- In periods of constraint, revenue premiums reach $150 per tonne
- Investors and analysts know this too—publicly traded companies are ‘punished’ if they are not expanding their metallurgical operation portfolio
Australia has great further potential…but at a cost

- Much near term investment in QLD is targeted to improve metallurgical coal supply
- Huge additions to rail, port and social infrastructure are necessary to expand thermal coal supply from QLD and NSW
- Australia operating costs will also increase as haulage distances, ratios, materials and labor costs increase

Australia cash costs and supply conditions push production towards metallurgical supply

- Remaining thermal coal reserves are large but profits at international thermal prices are smaller: weighted avg. FOB port cost = US$61/tonne
- Metallurgical coal reserves are large but limited and costs are high but profits at international prices are higher: weighted avg. FOB port cost = US$86.25/tonne
- Australia producers have a strong incentive to develop metallurgical coal reserves given profit differentials and reserve conditions

![FOB Port Cash Costs: Australia](image-url)
Dynamics for higher metallurgical production will not change soon!

Global pig iron production projected to increase 30% to 40% in the next 5 years.

Metallurgical coal demand projected to increase robustly.

Global metallurgical coal trade will grow to meet existing and new demand.

Although new sources are under development, traditional sources need to expand.

INVESTORS are looking for metallurgical plays.

Investment Implications

- There are stronger incentives for publicly traded companies to invest in metallurgical coal capacity than thermal coal capacity.
- Strong incentive to focus on metallurgical coal may impede the pace of investment in new thermal coal capacity.
- In traditional global thermal coal sources, new production capacity must be supported by vast investments in transportation, ports and other infrastructure to access new reserve areas.
- Countries relying on global thermal coal sources may need to increase participation in production capacity and infrastructure investment in supplying countries.
- Countries supplying global markets may need to improve the climate for foreign investments in order to attract the capital they need to expand supply.