Equities

12 March 2012 | 26 pages

# India Coal Industry

## India Key for the Global Seaborne Market

- **Thermal coal demand-supply gap to widen** — India's reliance on imported coal is on the rise given structural issues: 1) clearances, 2) logistics constraints, 3) production disruptions. With thermal coal demand expected to grow at a CAGR of 13% (FY11-15) and supply at a 5% CAGR, imports would need to grow at 49%. Our demand/supply analysis suggests the shortfall in domestic thermal coal production could be 120mt in FY12, 140mt in FY13 (assuming CIL can de-stock 30mt of inventory) and 290mt by FY15. This would account for ~20% of India's consumption in FY12/13; 33% in FY15.

- **Imports unlikely to meet shortfall** — While imports are viable at current levels of pricing/costs/blending, and port capacity may not be a constraint, we think imports will likely be capped at lower than expected levels due to 1) SEB losses, 2) internal logistics constraints, 3) coal blending limitations, 4) limited global supply. A more realistic estimate for thermal coal imports is likely 85mt in FY12, rising to 180mt in FY15 – a 32% CAGR (FY11-15). India's thermal coal imports are thus likely to account for ~12% of the sea-borne market in FY12E, 14% in FY13E, rising to 20% by FY15E.

- **Coal India (CIL) unlikely to import near term** — Despite the directive asking CIL to sign FSAs/meet the shortfall on contracted volumes using imported coal, our analysis suggests that CIL is unlikely to resort to coal imports over the next couple of years. If adequate rakes are made available, CIL would be able to meet its contractual commitments by enhancing production and de-stocking. CIL is likely to import long term. Our sense is that imports in FY17 by CIL could be ~50mt. A large proportion of our estimated imports are likely to be made by coal consumers directly.

- **Something has to give** — Our power analysts believe that 61GW of coal based thermal power capacity is likely to be added during FY11-15. To sustain power production at estimated levels, something would have to give: 1) faster clearances; 2) better evacuation logistics; 3) raising power tariffs and reining SEB losses; 4) perhaps pooling of coal prices to help make imports more lucrative.

- **India is key for the seaborne market** — We do not expect domestic supplies to solve the coal shortage problem imminently i.e. we do not expect thermal coal production to grow at a 13% CAGR. Our best-case assumption for domestic supply growth would be at a 6% CAGR currently. Thus despite the constraint on imports, India has a key role in determining global thermal coal demand and prices.

- **Global seaborne coal demand should improve in 2H12** — 2012 has started slowly for AP thermal coal markets. Seaborne prices are ~10-15% below 2011 with India and China largely absent from the market. Stocks are discounting low expectations for Indian imports in particular, which we think will prove an opportunity ahead of improvement in fundamentals we expect in 2H12. Top regional picks are Harum, Adaro, Coal India, Whitehaven and China Shenhua.

- Industry Overview

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**See Appendix A-1 for Analyst Certification, Important Disclosures and non-US research analyst disclosures.**

# Contents

# India needs to import 20% coal now and more in the future…

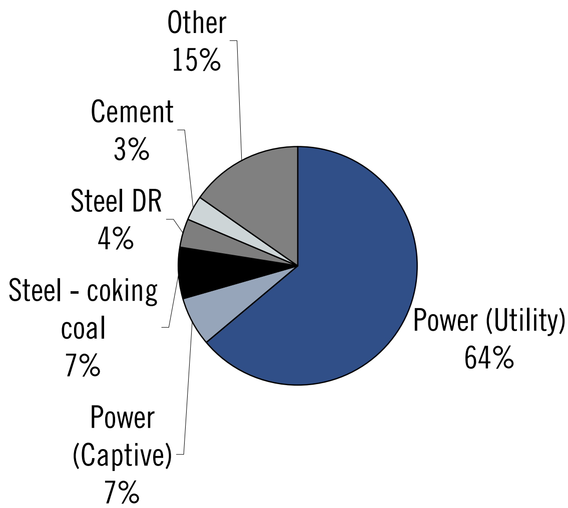
## Demand

**We expect thermal coal demand to grow at a 13% CAGR.**

Underlying demand for coal in India looks favorable. Our bottom-up analysis suggests that India's thermal coal demand should grow a CAGR of 13% (FY11-15E), driven by rising demand from the power sector (expected to grow at a 14% CAGR). Our power analysts believe that 61GW of coal based thermal power capacity is likely to be added during FY11-15. We expect India's total coal demand (including coking coal) to grow at 12% CAGR.

We expect thermal coal demand to be 608mt in FY12 (+14% yoy) and 686mt in FY13 (+13%) and total coal demand (including coking coal) to be 686mt (+12% yoy) in FY12 and 770mt in FY13 (+12%).

**Figure 1. Coal Consumption Breakdown (FY10)**




Source: Ministry of Coal

## Supply – Trailing demand

**We expect thermal coal production to grow at a 5% CAGR.**

India is the third-largest coal producer globally with annual output of ~533mt in FY11 (thermal coal 484mt) from a large resource base of ~286bn tonnes. India's thermal coal production has grown at a CAGR of 5% through FY06-11 and total coal production has grown at a CAGR of 5.5%. Despite the large resource base, we expect domestic supply growth of 4.7% CAGR (FY11-15E) for thermal coal and 4.4% for total (including coking coal) to trail underlying demand. We expect thermal coal production to be 486mt in FY12 (flat yoy) and total coal production to be 534mt (flat yoy).

### Sources of domestic supply

**CIL accounts for 80% of India's coal production. We expect CIL's production to grow at 4% CAGR.**

- **Coal India (CIL):** CIL has ~65bn of coal resources and accounts for ~80% of India's coal production. CIL's total coal production has been flat at 430mt through FY10 and FY11 and we expect no growth in FY12. Our demand-supply thesis going forward is based on the premise that CIL's production will grow at a CAGR of 4% (FY11-15) and that it would be able to de-stock ~30mt of inventory in FY13. Issues mentioned below could have an adverse impact on our forecasts if they continue to play out.

**Currently, our best-case scenario would be a 6% CAGR.**

However, we feel that the Prime Minister's Office (PMO) directive asking CIL to sign Fuel Supply Agreements (FSAs) with power plants that have entered into long-term PPAs and commissioned by 31 Mar 2015; and setting a penalty trigger level at 80% could lead to faster clearances and hence improved production.

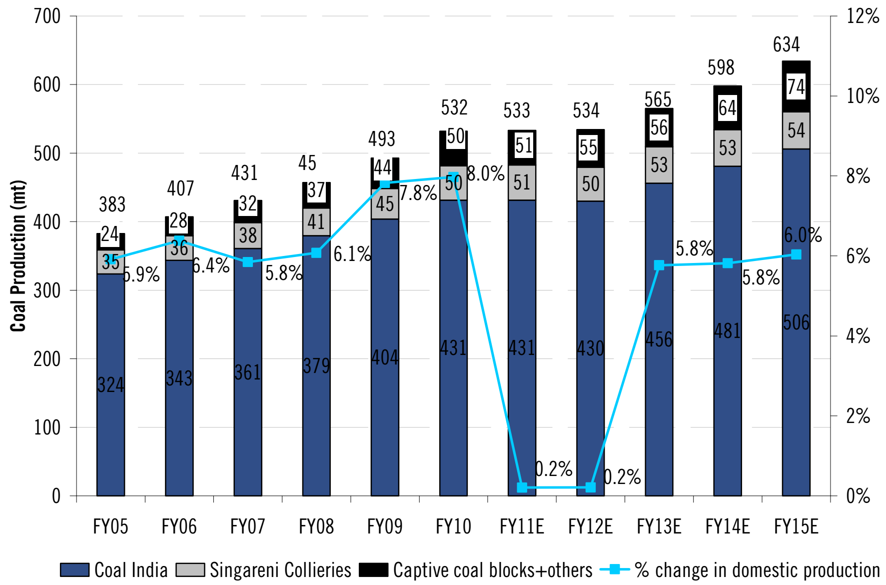
- **Singareni Collieries (SCCL):** SCCL is jointly owned by the Government of Andhra Pradesh and the Government of India. It has ~9bn tonnes of reserves and accounts for ~9-10% of domestic production.
- **Captive producers:** The Coal Mines (Nationalization) Act 1973 was amended in 1993 to allow coal mining for captive consumption of end users in the private sector – power, cement, steel. 195 blocks have been allotted so far, with reserves amounting to 43.3bn tonnes, ~15% of the estimated coal resources in India (Source: Ministry of Coal). Captive coal blocks account for 7% of coal production.
- **Others:** Tata Steel and other PSU companies account for the remaining production.

**Domestic supply has been lagging demand due to the following issues:**

**Clearance hurdles and logistic issues continue to constrain domestic supply.**

- **Delays in environmental/forest clearance:** Forest clearance approvals take several years. The Ministry of Environment and Forests (MoEF) ensures that coal producers take into account adequate environmental safeguards.
- **Restrictions imposed on coal projects in highly polluted clusters:** Coal projects in ~40% of the initially impacted 43 highly polluted clusters remain under moratorium.
- **Shortage of rakes (trains each with 3,500 tonne capacity) in India:** Around 50% of India's coal is transported via rail. Rake availability has been a severe constraining factor in making coal available to the end user. To put it in perspective, CIL's inventory at the beginning of FY11 was 70mt vs total despatches of 425mt.
- **Heavy rainfall; strikes; agitation in Andhra Pradesh:** Coal availability has been affected by heavy rainfall; strikes by contract workers and employees; agitation in the state of Andhra Pradesh (Singareni Collieries, 8% of India's production, impacted) in FY12.

**Figure 2. India's Total Coal Production (thermal + coking coal)**




Source: Company Reports, CIRA estimates

**Figure 3. Thermal Coal Demand/Supply Table**

| | FY07 | FY08 | FY09 | FY10 | FY11E | FY12E | FY13E | FY14E | FY15E |
|---|---|---|---|---|---|---|---|---|---|
| Coal Production | 399 | 423 | 458 | 488 | 484 | 486 | 515 | 546 | 581 |
| Change in stock | -11 | -3 | -5 | -17 | -9 | 1 | 30 | 0 | 0 |
| Domestic despatches | 388 | 420 | 453 | 471 | 474 | 487 | 545 | 546 | 581 |
| -% chg | 6% | 8% | 8% | 4% | 1% | 3% | 12% | 0% | 6% |
| **Shortfall in domestic supply** | **25** | **28** | **38** | **44** | **60** | **121** | **141** | **231** | **291** |
| -% chg | 16% | 10% | 37% | 17% | 35% | 102% | 16% | 64% | 26% |
| **Domestic demand** | **413** | **448** | **491** | **515** | **534** | **608** | **686** | **778** | **872** |
| **-% chg** | **7%** | **8%** | **10%** | **5%** | **4%** | **14%** | **13%** | **13%** | **12%** |
| **Shortfall as % of demand** | **6%** | **6%** | **8%** | **9%** | **11%** | **20%** | **21%** | **30%** | **33%** |

Source: Ministry of Coal, CIRA estimates

**Figure 4. Total Coal Demand/Supply Table**

| | FY07 | FY08 | FY09 | FY10 | FY11E | FY12E | FY13E | FY14E | FY15E |
|---|---|---|---|---|---|---|---|---|---|
| **Coal Production** | **431** | **457** | **493** | **532** | **533** | **534** | **565** | **598** | **634** |
| -% chg | 6% | 6% | 8% | 8% | 0% | 0% | 6% | 6% | 6% |
| Change in stock | -10 | -2 | -2 | -17 | -10 | 1 | 30 | 0 | 0 |
| Domestic despatches | 420 | 454 | 490 | 515 | 523 | 535 | 595 | 598 | 634 |
| -% chg | 6% | 8% | 8% | 5% | 2% | 2% | 11% | 0% | 6% |
| **Shortfall in domestic supply** | **43** | **50** | **59** | **68** | **89** | **151** | **175** | **271** | **337** |
| -% chg | 12% | 16% | 18% | 15% | 31% | 70% | 16% | 55% | 24% |
| **Domestic demand** | **464** | **504** | **549** | **582** | **612** | **686** | **770** | **869** | **971** |
| **-% chg** | **7%** | **9%** | **9%** | **6%** | **5%** | **12%** | **12%** | **13%** | **12%** |
| **Shortfall as % of demand** | **9%** | **10%** | **11%** | **12%** | **15%** | **22%** | **23%** | **31%** | **35%** |

Source: Ministry of Coal, CIRA estimates

## …But imports unlikely to meet the shortfall

**For imports to be able to meet the entire domestic shortfall, issues such as high global coal prices vs low power tariffs and SEB losses, domestic logistics constraints and limit to the proportion of imported coal that can be blended; shortage of coal globally - need to abate.**

With thermal coal demand expected to grow at a CAGR of 13% and supply at a 5% CAGR, imports would need to grow at 49%. Our supply/demand analysis suggests Indian thermal coal imports would need to rise to ~120mt in FY12 and 140mt in FY13 (assuming CIL can de-stock 30mt of inventory in FY13) and 290mt by FY15. This would account for ~20% of India demand in FY12/FY13 and 33% in FY15. Reports indicate that during Apr-Nov11, thermal coal imports into India were ~55mt.

***While imports are viable at current levels of pricing, costs and blending, and port capacity may not be a constraint, we think imports are likely to be capped at lower than expected levels due to factors such as 1) SEB losses; 2) internal logistic constraints; 3) a limit to the amount of imported coal that can be blended; 4) limited global supply. A more realistic assumption for thermal coal imports is likely to be 85mt in FY12 rising to 180mt in FY15 – implying a 32% CAGR (FY11-15) vs our calculated shortfall of 120mt in FY12 and 290mt in FY15. This would imply imports account for ~12% of the sea-borne market in FY12 and 20% by FY15.***

**Figure 5. Thermal Coal Imports**

| | FY11E | FY12E | FY13E | FY14E | FY15E |
|---|---|---|---|---|---|
| Required Thermal Coal Imports | 60 | 121 | 141 | 231 | 291 |
| -% of Domestic Demand | 11% | 20% | 21% | 30% | 33% |
| Realistic Thermal Coal Imports | 60 | 85 | 111 | 156 | 181 |
| -% of Domestic Consumption | 11% | 15% | 17% | 22% | 24% |

Source: Citi Investment Research and Analysis estimates

**Figure 6. Coking Coal Imports**

| | FY11E | FY12E | FY13E | FY14E | FY15E |
|---|---|---|---|---|---|
| Required Coking Coal Imports | 29 | 30 | 34 | 40 | 46 |
| -% of Domestic Demand | 37% | 38% | 40% | 44% | 46% |
| Realistic Coking Coal Imports | 29 | 30 | 34 | 40 | 46 |
| -% of Domestic Consumption | 37% | 38% | 40% | 44% | 46% |

Source: Citi Investment Research and Analysis estimates

**Figure 7. Total Coal Imports**

| | FY11E | FY12E | FY13E | FY14E | FY15E |
|---|---|---|---|---|---|
| Required Total Coal Imports | 89 | 151 | 175 | 271 | 337 |
| -% of Domestic Demand | 15% | 22% | 23% | 31% | 35% |
| Realistic Total Coal Imports | 89 | 115 | 145 | 196 | 227 |
| -% of Domestic Consumption | 15% | 18% | 20% | 25% | 26% |

Source: Citi Investment Research and Analysis estimates

## Imports viable at current coal, merchant power prices in India

Merchant power prices are currently ~Rs4/Kwh. Calculations suggest that using imported coal (6,200 kcal/kg) at $105/t (Rs/$ at 49), the average cost of power should be Rs3.7/kwh (including 5% import duty). This implies that the breakeven price in the current scenario would be $120/t (6,200kcal/kg).

**Figure 8. Approximate Cost of Generation of Electricity**

| | Imported Coal | Domestic Coal | Comments |
|---|---|---|---|
| Coal price (Rs/t) | 5,145 | 800 | Imported coal cost @ US$105/ton |
| Coal price including import duty (Rs/t) | 5,402 | - | Import duty @ 5% |
| GCV (kcal/kg) | 6,200 | 3,600 | |
| Heat Rate (kcal/kWh) | 2,400 | 2,400 | |
| Avg Distance Travelled (kms) | | 600 | From Indian Railways – Avg Distance Of Coal Hauled |
| Freight (Rs/km/t) | | 1.2 | From Indian Railways |
| Freight Cost/t (@ US$20/t) | 980 | 713 | Freight cost of US$20 ( includes shipping + port handling + some inland transportation) |
| Total Coal Cost (Rs/t) | 6,382 | 1,513 | |
| Coal required per unit (kg/kWh) | 0.39 | 0.67 | |
| Fuel cost/unit generated (Rs/kWh) | 2.47 | 1.01 | |
| Fuel cost/unit Sold (Rs/kWh) | 2.66 | 1.10 | |
| Fuel Oil Cost (Rs/Kwh) | 0.04 | 0.04 | |
| Total Fuel Cost (Rs/kWh) | 2.70 | 1.14 | |
| Fixed Cost (ex. Taxes/RoEs) (Rs/Kwh) | 1.00 | 1.00 | |
| **Total cost Rs/ kWh (ex. Taxes/RoEs)** | **3.70** | **2.14** | |

Source: Citi Investment Research and Analysis; Rs/$ rate at 49.

## Port capacity may not be a constraint

Data from the Ministry of Shipping shows that the thermal coal capacity at major ports is estimated at 66mt in FY12. While we don't have forecasts for all the non-major ports, we know the Mundra port (non-major port) capacity is 60mt making the total available coal capacity ~125mt vs our thermal coal import estimate of 85mt in FY12.

In FY15, major ports capacity for thermal coal is estimated to be 91mt (Ministry of Shipping). Capacity addition and port handling facilities at the non-major ports are less clear, besides Mundra which is estimated at 100mt, but data from the Ministry of Shipping suggests port capacity may not be a constraint (if delays are not significant).

Total coal traffic at the non-major ports is estimated at 244mt and for the major ports at 146mt, taking the total to 389mt in FY15. This compares to our import estimate of 180mt for thermal coal and ~230mt for total coal (including coking coal).

**Note:** India has 12 major ports and ~200 non-major (minor) ports. This classification is a reflection of regulatory oversight, rather than size of the traffic handled. Major Ports currently handle ~65% of total port traffic.

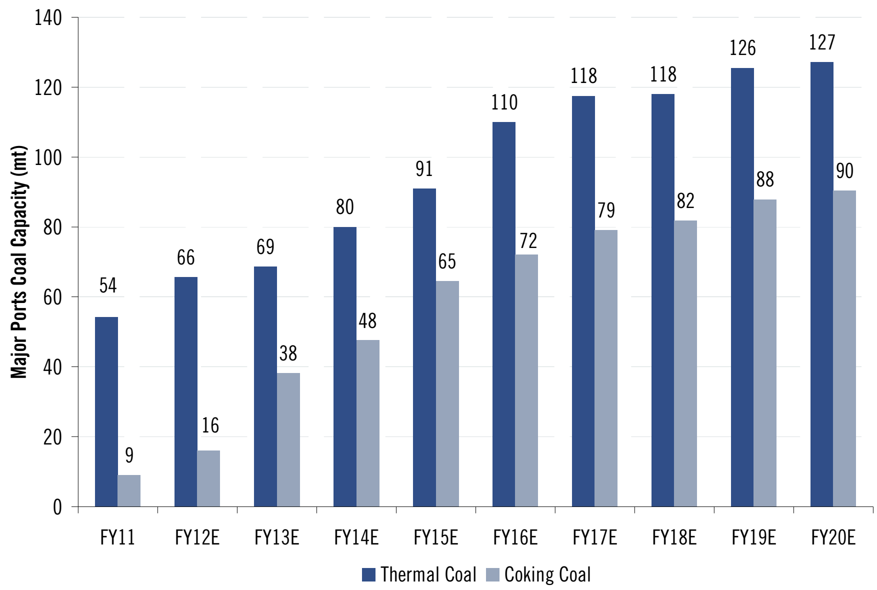
**Major Ports** are managed by Port Trusts which are regulated by the Central Government. They manage 11 out of the 12 Major Ports. The Ennore Port is run by a company named Ennore Port Limited registered under Companies Act, 1956.

**Thermal coal capacity at major ports is expected to be 91mt in FY15. Total coal capacity at the major ports is likely to be 156mt. According to the Ministry of Shipping, total coal traffic at the all the ports (major+ non-major) is expected to be 389mt in FY15. This compares to our calculated total import estimate of 230mt.**

**Currently major ports account for 48% of total coal traffic. In FY15, this proportion is expected to decline to 37%.**

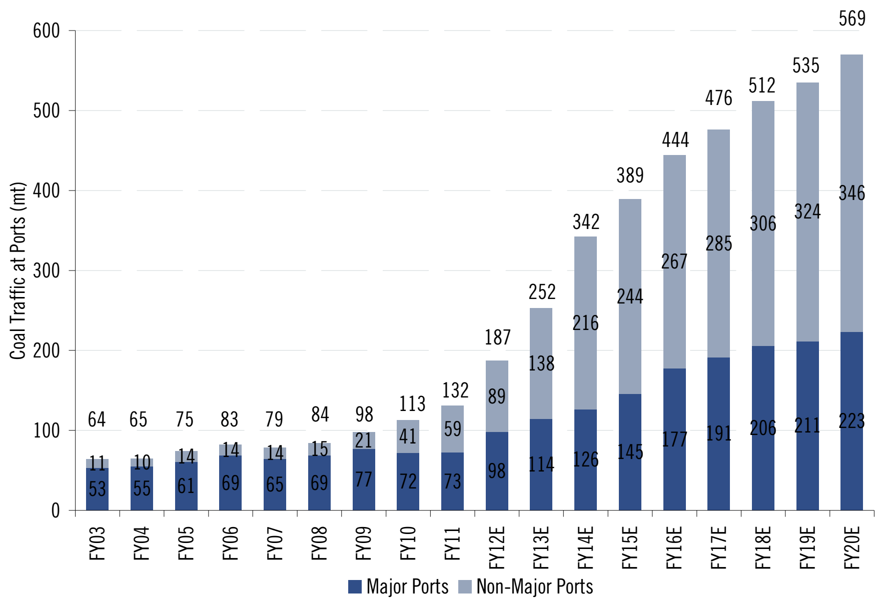
**Non-major Ports:** Of the ~200 non major ports, only ~60 handle traffic as per the Ministry of Shipping. Minor ports are regulated by the State Governments and many of these are private or captive ports. Only a few of these ports are well developed and provide all-weather berthing facilities for cargo handling.

**Figure 9. Thermal and Coking Coal Capacities at Major Ports (million tones)**




Source: Ministry of Shipping, Indian Ports Association

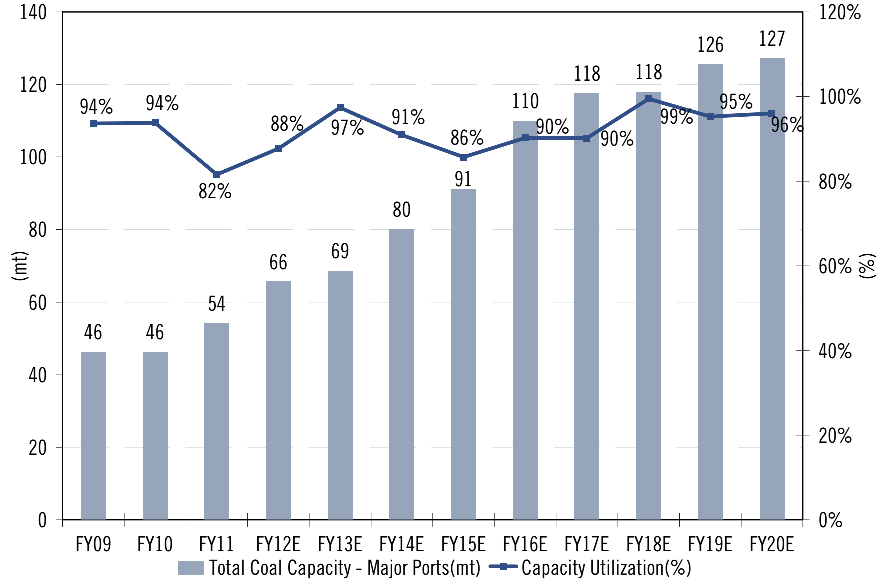
**Figure 10. Total Coal traffic at Major Ports and Non-Major Ports (million tones)**




Source: Ministry of Shipping, Indian Ports Association

**Capacity utilization for major ports is expected to be in excess of 85%.**

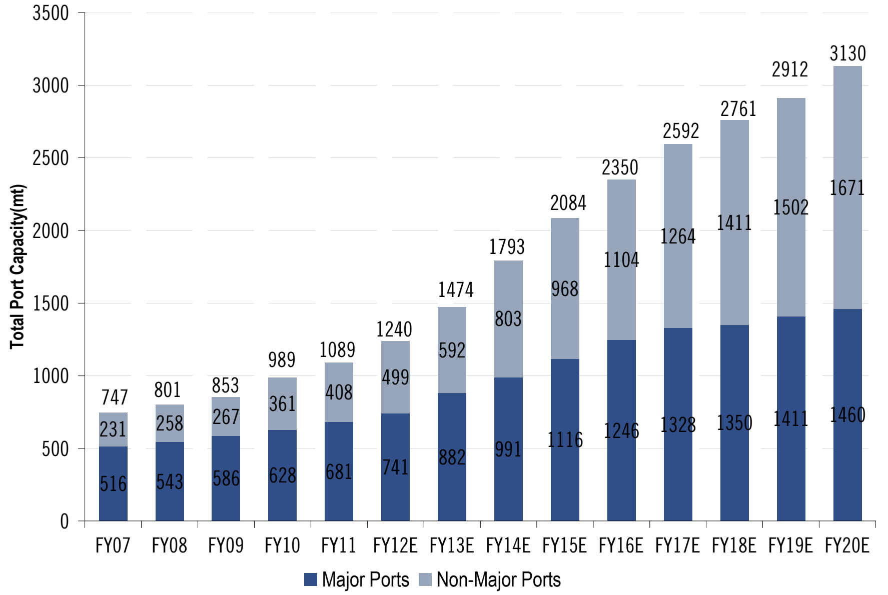
**Figure 11. Major Ports – Total Coal Capacity and Utilization (million tones, %)**




Source: Ministry of Shipping, Indian Ports Association

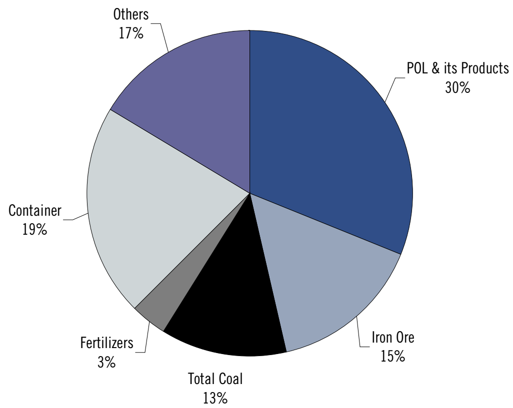
**Total port capacity in India is expected to rise 3x from 989mt in FY10 to 3,130mt in FY20.**

**Figure 12. Total Port Capacity – Major and Non-Major Ports (million tones)**



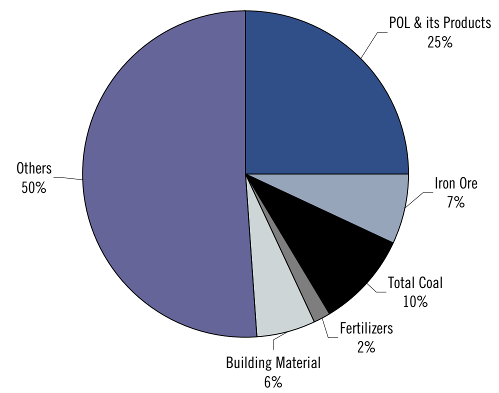

Source: Ministry of Shipping, Indian Ports Association

**Figure 13. Commodity-wise traffic breakdown for major ports (FY10)**



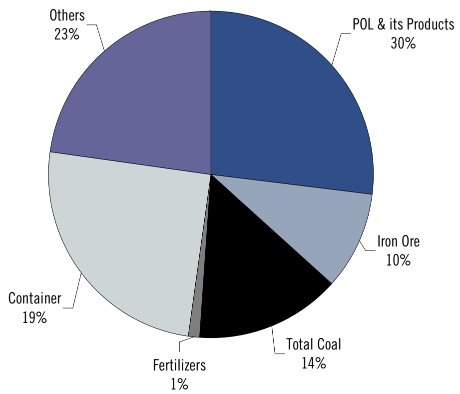

Source: Indian Ports Association

**Figure 14. Commodity-wise traffic breakdown for non-major ports, FY10**



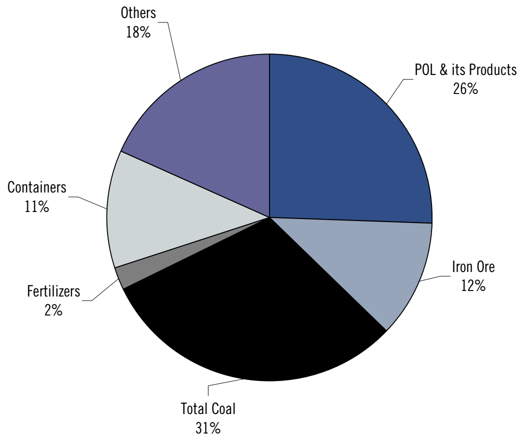

Source: State Maritime Directorate/Boards

**Figure 15. Commodity-wise traffic breakdown for major ports (FY15E)**




Source: Ministry of Shipping

**Figure 16. Commodity-wise traffic breakdown for non-major ports FY15E**




Source: Ministry of Shipping

## Factors that could limit imports

- **SEB losses**

Poor financial health of the SEBs makes it difficult for merchant prices to sustain at high levels. Distribution companies have accumulated losses of ~$17bn over 2006-2010. According to our power team, losses have been rising due to 1) inefficient operations; 2) high cost of short term power purchases; 3) absence of timely tariff increases. According to report of High Level Panel on Financial Position of Distribution Utilities, tariffs are not determined regularly as distribution utilities either do not file their ARRs (Annual Revenue Requirement) in time or don't back them with audited accounts. In many cases, State level regulators do not exercise autonomy and are influenced by their State governments.

**Figure 17. SEBs P&L accounts (Rs bn)**

| | FY06 | FY07 | FY08 | FY09 | FY10 | Total |
|---|---|---|---|---|---|---|
| Revenue | 900 | 1,070 | 1,190 | 1,340 | 1,500 | 6,000 |
| Subsidies | 120 | 130 | 170 | 250 | 300 | 970 |
| Other Income | 50 | 50 | 60 | 60 | 70 | 290 |
| Total | 1,070 | 1,250 | 1,420 | 1,650 | 1,870 | 7,260 |
| % subsidy/revenue | 14% | 12% | 14% | 19% | 20% | 16% |
| Total Expenditure | 1,120 | 1,350 | 1,560 | 1,910 | 2,140 | 8,080 |
| Net loss before subsidies | -170 | -230 | -310 | -510 | -570 | -1,790 |
| Net loss after subsidies | -50 | -100 | -140 | -260 | -270 | -820 |

Source: Report of High Level Panel on Financial Position of Distribution Utilities

- **Internal logistics constraints**

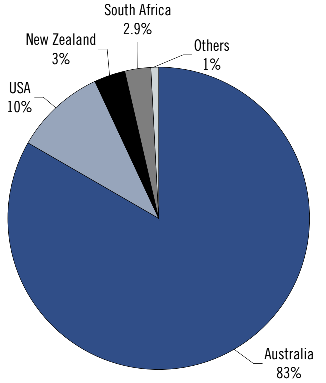
Rake availability has been a severe constraining factor in making coal available to the end user. Around 50% of India's coal is transported via rail. ~1.6 rakes/day are needed to transport 2mtpa of coal as each rake (train load) has a capacity of 3,500 tonnes.

Even if port capacity can support a high level of imports, moving the coal from the ports to the end consumer would require adequate railway capacity. To put it in perspective, CIL was mandated to import 6mt of coal in FY10 but could find customers for only 0.4mt. The target was to import 6mt in FY11 again – but CIL has been unable to conclude terms and conditions. CIL was seeking to deliver coal at the port but customers have not agreed to it as arranging for railway wagons is a major constraint.

- **Blending domestic and imported coal**

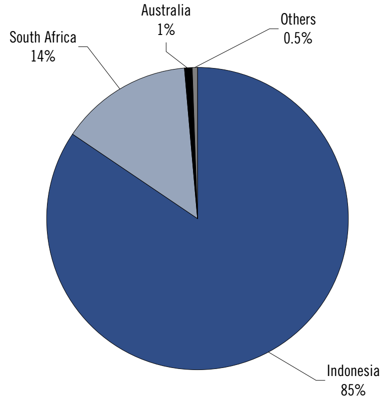
Current levels of coal imports can easily be blended with Indian coal and in fact help improve the calorific value of coal. However, technology used at many power stations prevents them from going beyond a certain limit for blending imported coal with domestic coal. The plants likely to be commissioned over the next 4-5 years are likely to be able to blend 20-30% of imported coal. Data from India Coal indicates that 85% of the thermal coal imported into India through the major ports during Apr-Oct11 was from Indonesia.

**Figure 18. Country wise coking coal imports at major ports**




Source: India Coal Market Watch

**Figure 19. Country wise thermal coal imports at major ports**




Source: India Coal Market Watch

- **Tight market**

India relies heavily on low-rank Indonesia coal, but it may be forced to pay more or even look elsewhere as well as Indonesia presses on with its plan to ban the export of low-rank coal.

A draft of an Indonesian Energy and Mineral Resources Ministry decree states that overseas sales of coal with a heating value of less than 5,700 kilocalories a kilogram will be banned. It aims “to generate economic, social and cultural benefits” by mandating local processing of all raw minerals by 2014, according to the draft.

Indonesia has emerged as the world’s largest exporter of thermal coal supplying 33% of the seaborne market. The ability of Indonesian exports to continue to increase is critical to the thermal coal market outlook.

Low rank coal is forecast to have the fastest production growth and accounts for 50% of Indonesia’s marketable reserves. This indicates that the downward shift in Indonesia’s coal quality will continue.

Our current model has thermal coal exports rising to 323 million tonnes in 2015 and 374 million tonnes in 2020.

We estimate that 70% of current Indonesia mines produce coal below proposed limit of 5700Kcal. Assuming that this ratio stays the same, this export ban could wipe out over 220Mt of thermal coal in 2014.

**Though the PMO's directive suggests that CIL should meet its shortfall using imported coal, our analysis indicates that CIL is unlikely to resort to coal imports over the next couple of years. If adequate rakes are made available, CIL would be able to meet 80% of the ACQ (Annual Committed Quantity) under the new FSAs (still to be signed) and 90% of the ACQ under the old FSAs by enhancing production and de-stocking.**

**Figure 20. CIL despatch breakdown**

| (mt) | FY10 | FY11 | FY12 | FY13 |
|---|---|---|---|---|
| Old FSAs | 293 | 290 | 290 | 275 |
| New MOUs/FSAs | 5 | 14 | 19 | 66 |
| Non-power sector | 118 | 121 | 122 | 122 |
| Total despatches | 416 | 425 | 434 | 464 |

Source: Citi Investment Research and Analysis

# CIL unlikely to import in the near term

The Prime Minister's Office (PMO) asked Coal India (CIL) to sign FSAs with power plants that have entered into long-term PPAs and commissioned by 31 Mar 2015. For plants set up by 31 Dec 2011, FSAs will be signed before 31 Mar 2012. CIL will have to pay compensation if they supply less than 80% (vs 50% earlier) and will earn a premium for supplying more than 90%. For any shortfall, CIL will arrange for imports or through State/Central PSUs who have been allotted coal blocks.

- According to the Ministry of Coal, 172 LoAs have been issued as of 25 Jan 2012 for a power capacity of 108,900MW – the quantity of coal being 424mt (in addition to the 305mt committed for plants commissioned before 31 March 2009).

- Of the 109GW of capacity; 19,800MW has been commissioned upto Dec11 with a coal requirement of ~83mt. Another 8,450MW is likely to be commissioned by March12 with an additional coal requirement of 36mt.

- According to the PMO's directive, CIL will have to sign FSAs for the 19,800MW of capacity commissioned between Apr09 and Dec11 by March12 (assuming the entire 19,800MW has long term PPAs). This implies that in addition to 305mt (for plants commissioned before 31March 2009), CIL would have to provide an additional 66mt in FY13 (80% of 83mt).

- Imports unlikely in FY13: Our analysis suggests that CIL is currently supplying ~19mt to the new power plants (commissioned after Mar09). To meet the additional 47mt, CIL could use 1) incremental production of 26mt expected in FY13; 2) divert ~14mt from existing FSAs (currently 95% is being supplied vs 90% of the 305mt committed); 3) divert ~30mt of inventory − if enough rakes were made available.

- As CIL can divert some quantity (~14mt) from existing contracts FSA contracts and already supplies ~19mt to new power plants, incremental rail/road capacity would only be required for 33mt of coal in FY13 to meet the new FSA commitment (80%). If we assume railways are used for ~75% of the volumes, CIL would need additional 18-19 rakes per day vs FY12 (3,500 tonnes per rake). Average rake availability in FY12 is estimated at ~170-175 per day. Hence, if rake availability is not a constraint in FY13, CIL is not likely to import coal.

  **Media reports indicate that if CIL is able to supply the coal; but rake availability is a constraint; CIL is not likely to be penalized. Note that under its current agreements with the buyers, CIL makes the coal available at the pit head and transporting the coal is the responsibility of the buyer. The hike in rail freight (~20%) announced on 7 March12 due to reclassification will have to be borne by buyers.**

## Long term: CIL likely to import

- Of the total108,900MW for which CIL has signed FSAs for ~424mt of coal, 273mt pertains to the 12$^{th}$ 5-year plan (FY13-17) according to CIL. This implies roughly 70,000MW (for which FSA's have been signed) are likely to be commissioned by FY17. CIL does not expect all the capacities to come on-stream as planned. If we assume 80% of these capacities are commissioned by FY17 (making the requirement ~220mt), then CIL would have to supply 175mt of coal by FY17 (80% of the ACQ) for the new plants assuming the entire 70,000MW has signed long term PPA's. Our estimates suggest CIL's production should rise by ~120mt on a conservative basis by FY17 (from FY12). CIL believes if all clearances are in place its FY17, production could rise to 615mt ie an increase of 185mt over FY12. **Our sense is that imports in FY17 by CIL could be ~50mt**.

**This implies that a large part of our estimated imports are likely to be made by coal consumers directly. These would include:**

- Some amount by power producers which get 80% of their requirement from CIL
- Power plants built to use imported coal
- Captive power plants unable to source coal indigenously
- Sponge iron/cement producers; steel producers (coking coal)

# Something has to give…

## Domestic coal availability needs to increase

The government is focused on enhancing coal availability indigenously. The recent appointment of a Committee of Secretaries, headed by the Principal Secretary to the PM, is a positive development. The Committee is due to meet every week to review the progress made.

**Based on the recommendations of the Committee:**

**CIL to meet 80% of the quantity committed quantity to the new power plants.**

- CIL will sign FSAs with power plants that have entered into long-term PPAs with power distribution companies and have been commissioned/would get commissioned on or before 31st March 2015. CIL would need to supply at least 80% of the ACQ to avoid a penalty. In case of any shortfall in fulfilling its commitment under the FSAs from its own production, CIL will have to arrange for supply of coal through imports or through arrangement with State/Central PSUs who have been allotted coal blocks.

**Other key proposals of the Committee:**

- CIL to fast track investments
- Fast track clearances for power and coal projects
- 25% expansion in coal production of existing mines without fresh clearance
- State owned captive coal mining companies to increase output beyond licensed capacity
- Allow private captive mining firms to sell surplus coal through e-auction/CIL prices

**Auctioning of coal blocks**

**We await more clarity on the clearance process.**

An amendment to the Mines and Minerals (Development and Regulation) Amendment Bill, 2010 has paved the way for auctioning of coal blocks for captive use through competitive bidding. The government has notified rules for allocation of coal blocks through competitive bidding process. However, we await clarity on the process of obtaining clearances.

**Better logistics/ rail connectivity**

- Efforts are being taken to improve rake availability for the coal sector. CIL's rake availability has improved considerably to ~200rakes/day currently vs 167rakes/day during 9MFY12. Continued increase in rail capacity would help better domestic supply.
- In addition, CIL is making investments in rail lines. According to press reports (Business Standard), CIL plans to construct ~500km of railway lines spread across Orissa, Chattisgarh and Jharkhand to link the primary coal belts of India. These railway tracks will be constructed over 4-5 years and would be able to handle 300mtpa of coal.

***We do not expect domestic supplies to solve the coal shortage problem imminently ie we do not expect thermal coal production to grow at a 13% CAGR. Our best case assumption would be for domestic supply to grow at a 6% CAGR. Thus despite the constraint on imports, India is likely to play a significant role in determining global thermal coal demand and prices.***

## Imports may appear more financially lucrative if:

- **Coal prices are pooled:** Blending the price of domestic and imported coal would help lessen the impact of high imported coal prices. On the contrary, it would benefit power producers using a high proportion of imported coal at the cost of the others. If pooling is permitted, imports are likely to be channelized via CIL to take advantage of subsidized pricing (upto the quantity required to make up the shortfall in FSA commitments). We are not clear about how the pooling process is likely to work (if it were implemented) for the entire quantity imported into India.

- **Import duty on coal withdrawn:** Power producers and cement producers have asked for the reduction of import duty on thermal coal from 5% to Nil in the upcoming budget (16Mar12).

- **Power tariffs are raised/ Improved financial heath of the distribution utilities:** The PM's active involvement in assessing the coal and power situation have also led to (1) Renewed commitment by the state power ministers' conference to rein in distribution losses and suggestions for differential pricing of peak power (2) Review of competitive bidding guidelines to allow pass-through increase in fuel costs in tariffs (3) Tariff increases by SEBs. Given the mounting SEB losses, a number of states/Union territories have implemented tariff hikes. While inadequate to cover revenue requirements, they are incrementally positive.

**Figure 21. SEB Tariff Revisions (over the last 6-10 months)**

| State | Tariff Hike |
|---|---|
| Rajasthan | 24% |
| Karnataka | 22% |
| Delhi | 21% |
| Orissa | 20% |
| Bihar | 19% |
| Jharkand | 16% |
| Chhattisgarh | 14% |
| Andhra Pradesh | 12% |
| Punjab | 9% |
| West Bengal | 9% |
| Gujarat | 8% |
| Assam | 6% |
| Madhya Pradesh | 6% |
| Uttarakhand | 5% |
| Maharashtra | 5% |
| Haryana | 3% |

Source: Citi Investment Research and Analysis

SEBs have outstanding bank loans of ~Rs519bn. Over 70% of SEB losses have been financed by public sector banks and 42% of these loans are backed by State government guarantees. A High Level Panel has proposed setting up an SPV which would be entitled to purchase loans of Banks and RBI would provide a credit line to the SPV.

## Adaro Energy
(ADRO.JK; Rp1,960; 1)

**Valuation**: Our target price for Adaro Energy of Rp2,250 is based on a 2012E EV/EBITDA of 5.5x. We use the stock's mean multiple since its listing. We have opted to use EV/EBITDA as our valuation metric to avoid distortions caused by differences in tax rates between Indonesian companies and their regional peers.

**Risks**: Risks that could prevent the shares from reaching our target price include: a) coal price volatility; b) fluctuating crude oil prices; c) poor weather conditions that might hamper coal production; and d) overpriced acquisitions.

## Coal India
(COAL.BO; Rs334.25; 1)

**Valuation**: Our TP is derived using a combination of two scenarios: #1 assumes no profit sharing - derived price Rs388; #2 assumes 26% profit sharing in FY14 and beyond (based on our interactions with the Secretray, Ministry of Mines) - derived price Rs362; with a 50:50 weighting. CIL does not have a long valuation history since it listed in Nov 2010. We arrive at our TP of Rs375 using: (1) a valuation based on DCF+30% premium (Rs479) and (2) 9x FY13 PE based valuation (Rs218); with a 60/40 weighting. The 9x multiple lies within the current trading range (8-11x) of the Indonesian and Chinese coal producers. At our TP, CIL would trade at 13.4x FY13PE (excl OBR adj).

**Risks**: Key downside risks to our investment thesis on CIL are: risks of restrictions imposed by regulators related to forest clearance and environmental safeguards; difficulties in obtaining reserves/resources; a proposed 26% profit-sharing requirement contained in the New Mining Bill; land acquisition; ban on e-auction coal; logistical constraints including rail transport bottlenecks; restricted ability to raise coal prices; coal imports without a pass through; unrelated investments; disruption of operations in politically unstable areas; auction for future reserves; and non-availability of critical equipment.

## Harum Energy
(HRUM.JK; Rp8,600; 1)

**Valuation**: Our target price for Harum of Rp10,900 is based on 2012E EV/EBITDA of 6.7x, at par with PTBA's current valuation. This is justified in our view given Harum's faster earnings growth.

**Risks**: Risks that could prevent the shares from reaching our target price include: a) coal price volatility; b) fluctuating crude oil prices; and c) poor weather conditions that might hamper coal production.

## Whitehaven Coal Ltd

(WHC.AX; A$5.37; 1)

**Valuation**: Our target price of $6.50/share is based upon DCF-derived NPV analysis, set to ~1.0x premium to our NPV. Our NPV is derived from DCF methodology using a 10.5% nominal discount rate for their Australian operations.

**Risks**: The key risks surrounding WHC are:

**Commodity price**: Coal prices have become more volatile over the past 5 years as the historically bulk traded market has moved to a more terminal market approach.

**Port**: Access to port remains a risk in an infrastructure constrained world. WHC's ownership in NCIG mitigates this risk

If the impact on the company from any of these factors proves to be greater/less than we anticipate, the stock will likely deviate from our target price.

## China Shenhua Energy

(1088.HK; HK$34.45; 1)

**Valuation**: We set a target price on China Shenhua of HK$40.7. With a long-term coal price of Rmb474/tonne, we get to an NPV/s of HK$23.14 for the coal business. We value the rail segment at HK$9.02/s, the power segment at HK$7.48/s and the port segment at HK$0.66/s, assuming a perpetual growth rate of 3% for all the 3 businesses. The company has net cash of HK$3.33/s and minorities at HK$2.97/s.

**Risks:** The key downside risks to our investment thesis on China Shenhua are: 1) Near term downside for spot coal prices; 2) Macro economy weakens and power demand growth disappoints; and 3) Energy saving policy may evolve into new measures, i.e. quota system for power consumption, carbon emission. This would likely dampen coal consumption. Upside risks may come from parent asset injection and volume growth through M&A. If any of these risk factors has a greater downside/upside impact than we anticipate, the share price will likely have difficulty attaining our target price.

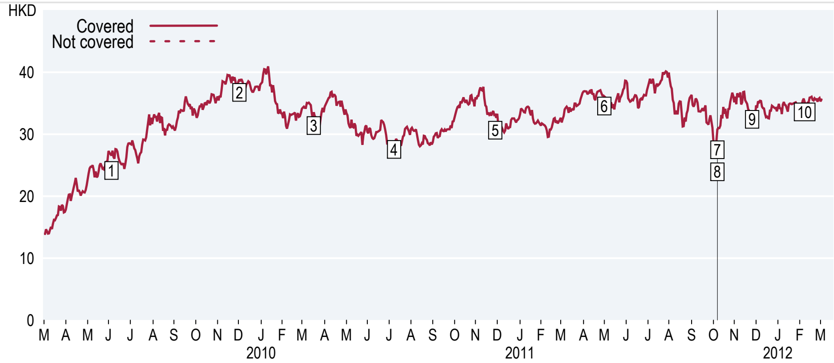
# Appendix A-1

## Analyst Certification

**The research analyst(s) primarily responsible for the preparation and content of this research report are named in bold text in the author block at the front of the product except for those sections where an analyst's name appears in bold alongside content which is attributable to that analyst. Each of these analyst(s) certify, with respect to the section(s) of the report for which they are responsible, that the views expressed therein accurately reflect their personal views about each issuer and security referenced and were prepared in an independent manner, including with respect to Citigroup Global Markets Inc and its affiliates. No part of the research analyst's compensation was, is, or will be, directly or indirectly, related to the specific recommendation(s) or view(s) expressed by that research analyst in this report.**

## IMPORTANT DISCLOSURES

**China Shenhua Energy (1088.HK)**
**Ratings and Target Price History**
**Fundamental Research**
Analyst: Scarlett Y Chen, CFA
Covered since November 29 2010

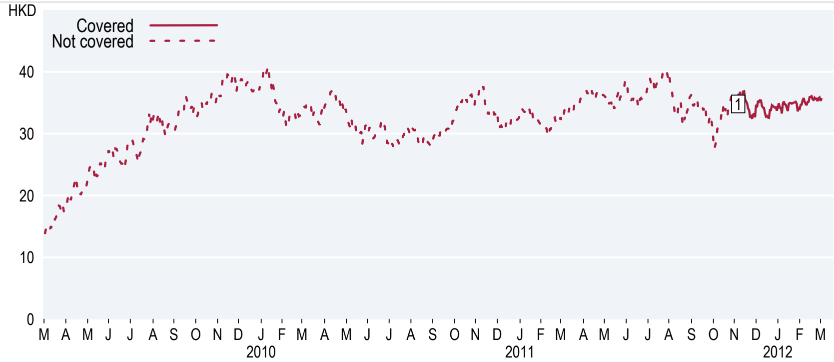



| | Date | Rating | Target Price | Closing Price |
|---|---|---|---|---|
| 1 | 4-Jun-09 | *2M | *29.90 | 26.55 |
| 2 | 2-Dec-09 | *2L | *40.70 | 38.85 |
| 3 | 17-Mar-10 | 2L | *35.00 | 33.55 |
| 4 | 8-Jul-10 | *1M | *33.70 | 28.20 |
| 5 | 29-Nov-10 | 1M | *43.71 | 33.15 |
| 6 | 2-May-11 | *1L | *41.39 | 36.25 |
| 7 | 7-Oct-11 | Stock rating system changed | | |
| 8 | 7-Oct-11 | *1 | 41.39 | 30.80 |
| 9 | 25-Nov-11 | 1 | *43.00 | 32.40 |
| 10 | 8-Feb-12 | 1 | *40.70 | 35.20 |

* Indicates change

Rating/target price changes above reflect Eastern Standard Time

**China Shenhua Energy (1088.HK)**
**Ratings and Target Price History**
**Best Ideas Research**
**Relative Call (3 Month)**
Analyst: Scarlett Y Chen, CFA
Covered since November 29 2010




| | Date | Rating | Target Price | Closing Price |
|---|---|---|---|---|
| 1 | 6-Nov-11 | *ADD MP | - | 36.60 |

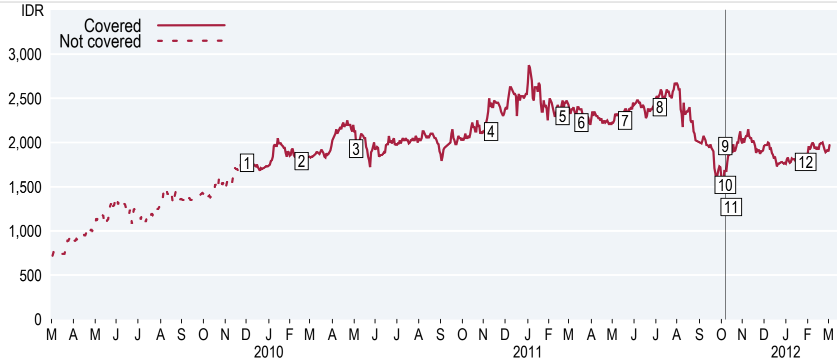
* Indicates change

Rating/target price changes above reflect Eastern Standard Time

## Adaro Energy (ADRO.JK)

### Ratings and Target Price History
### Fundamental Research

Analyst: Kim Kwie Sjamsudin, CFA
Covered since December 2 2009




| # | Date | Rating | Target Price | Closing Price |
|---|---|---|---|---|
| 1 | 2-Dec-09 | *1M | *2,500.00 | 1,730.00 |
| 2 | 17-Feb-10 | 1M | *2,850.00 | 1,860.00 |
| 3 | 5-May-10 | 1M | *2,750.00 | 1,980.00 |
| 4 | 11-Nov-10 | 1M | *3,200.00 | 2,450.00 |

| # | Date | Rating | Target Price | Closing Price |
|---|---|---|---|---|
| 5 | 21-Feb-11 | 1M | *3,650.00 | 2,475.00 |
| 6 | 18-Mar-11 | 1M | *3,200.00 | 2,375.00 |
| 7 | 19-May-11 | 1M | *3,550.00 | 2,375.00 |
| 8 | 7-Jul-11 | 1M | *3,850.00 | 2,550.00 |

| # | Date | Rating | Target Price | Closing Price |
|---|---|---|---|---|
| 9 | 7-Oct-11 | Stock rating system changed | | |
| 10 | 7-Oct-11 | *1 | 3,850.00 | 1,680.00 |
| 11 | 17-Oct-11 | 1 | *2,650.00 | 1,960.00 |
| 12 | 30-Jan-12 | 1 | *2,250.00 | 1,820.00 |

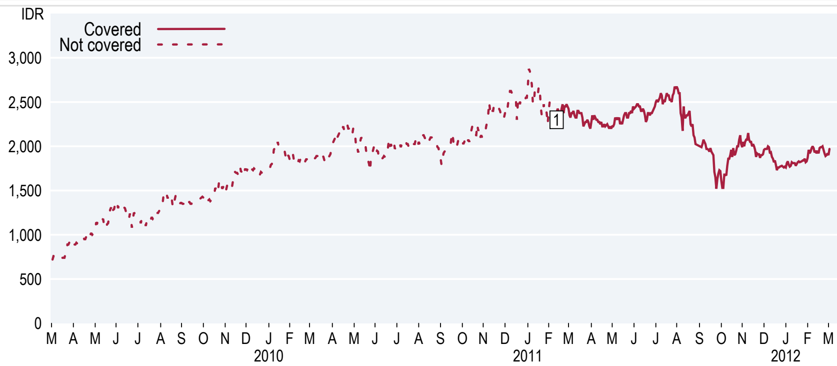
* Indicates change

Rating/target price changes above reflect Eastern Standard Time

## Adaro Energy (ADRO.JK)

### Ratings and Target Price History
### Best Ideas Research
### Relative Call (3 Month)

Analyst: Kim Kwie Sjamsudin, CFA
Covered since December 2 2009




| # | Date | Rating | Target Price | Closing Price |
|---|---|---|---|---|
| 1 | 11-Feb-11 | *ADD MP | - | 2,375.00 |

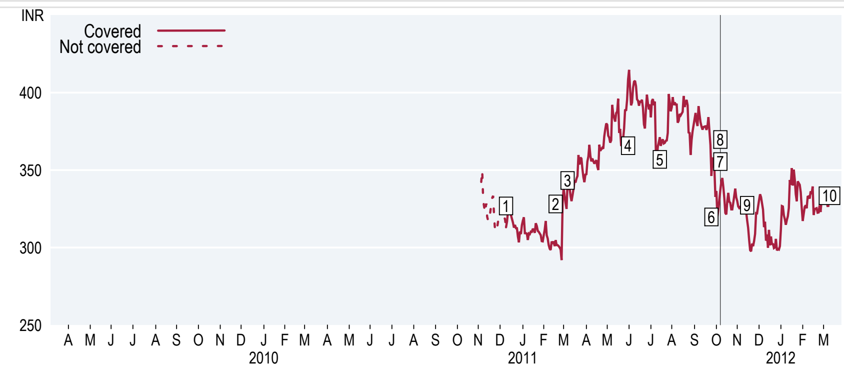
* Indicates change

Rating/target price changes above reflect Eastern Standard Time

## Coal India (COAL.BO)

### Ratings and Target Price History
### Fundamental Research

Analyst: Raashi Chopra, CFA
Covered since December 9 2010




| # | Date | Rating | Target Price | Closing Price |
|---|---|---|---|---|
| 1 | 9-Dec-10 | *1L | *358.00 | 313.10 |
| 2 | 17-Feb-11 | 1L | *350.00 | 304.80 |
| 3 | 7-Mar-11 | 1L | *395.00 | 340.95 |
| 4 | 31-May-11 | 1L | *471.00 | 408.45 |

| # | Date | Rating | Target Price | Closing Price |
|---|---|---|---|---|
| 5 | 14-Jul-11 | 1L | *430.00 | 371.20 |
| 6 | 26-Sep-11 | 1L | *418.00 | 346.20 |
| 7 | 7-Oct-11 | Stock rating system changed | | |
| 8 | 7-Oct-11 | *1 | 418.00 | 337.25 |

| # | Date | Rating | Target Price | Closing Price |
|---|---|---|---|---|
| 9 | 15-Nov-11 | 1 | *380.00 | 317.60 |
| 10 | 9-Mar-12 | 1 | *375.00 | 326.85 |

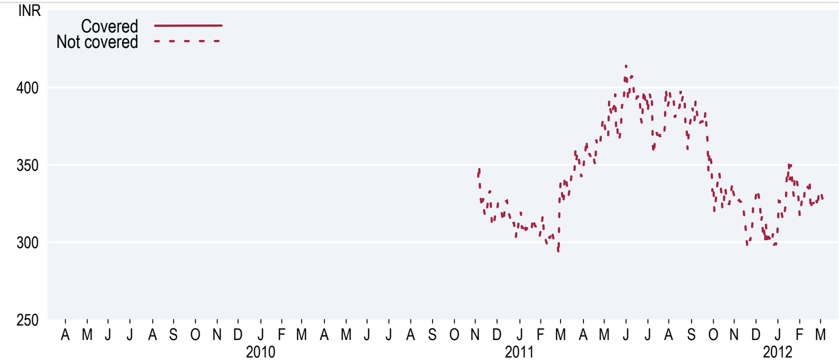
* Indicates change

Rating/target price changes above reflect Eastern Standard Time

## Coal India (COAL.BO)

**Ratings and Target Price History**
**Best Ideas Research**
**Relative Call (3 Month)**

Analyst: Raashi Chopra, CFA
Covered since December 9 2010



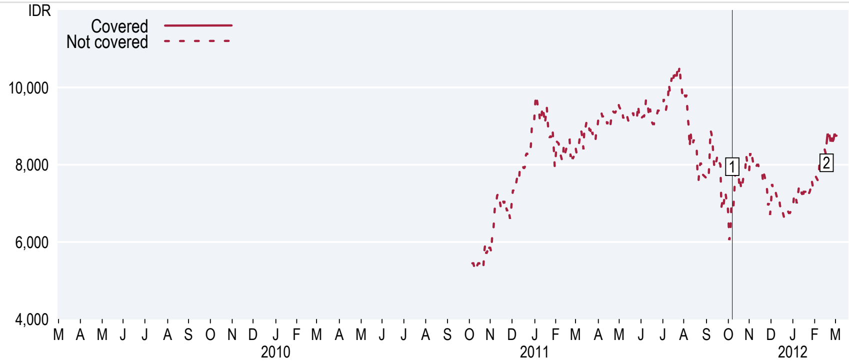

* Indicates change

Rating/target price changes above reflect Eastern Standard Time

## Harum Energy (HRUM.JK)

**Ratings and Target Price History**
**Fundamental Research**

Analyst: Kim Kwie Sjamsudin, CFA
Covered since February 17 2012




| | Date | Rating | Target Price | Closing Price |
|---|---|---|---|---|
| 1 | 7-Oct-11 | Stock rating system changed | | |

| | Date | Rating | Target Price | Closing Price |
|---|---|---|---|---|
| 2 | 17-Feb-12 | *1 | *10,900.00 | 8,550.00 |

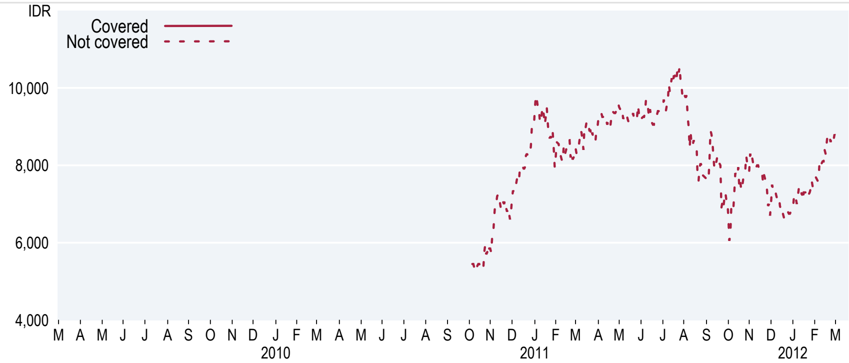
* Indicates change

Rating/target price changes above reflect Eastern Standard Time

## Harum Energy (HRUM.JK)

**Ratings and Target Price History**
**Best Ideas Research**
**Relative Call (3 Month)**

Analyst: Kim Kwie Sjamsudin, CFA
Covered since February 17 2012



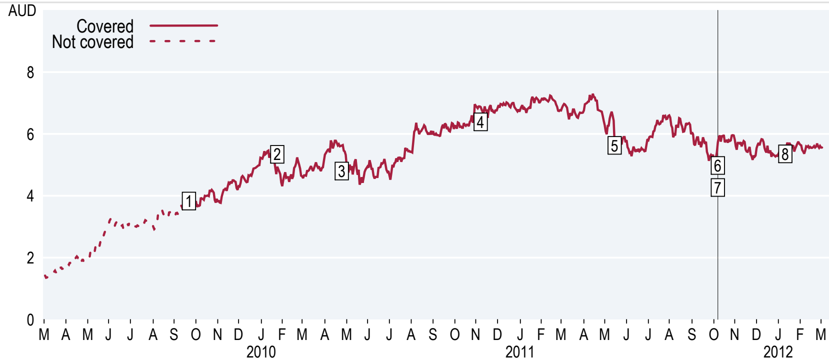

* Indicates change

Rating/target price changes above reflect Eastern Standard Time

## Whitehaven Coal Ltd (WHC.AX)

**Ratings and Target Price History**
**Fundamental Research**

Analyst: Craig Sainsbury
Covered since September 22 2009




| | Date | Rating | Target Price | Closing Price |
|---|---|---|---|---|
| 1 | 22-Sep-09 | *1M | *4.50 | 3.58 |
| 2 | 25-Jan-10 | 1M | *6.00 | 4.94 |
| 3 | 26-Apr-10 | 1M | *6.50 | 5.61 |
| 4 | 8-Nov-10 | *2M | *7.00 | 6.87 |
| 5 | 16-May-11 | *1M | 7.00 | 5.63 |
| 6 | 7-Oct-11 | Stock rating system changed | | |
| 7 | 7-Oct-11 | *1 | 7.00 | 5.73 |
| 8 | 11-Jan-12 | 1 | *6.50 | 5.57 |

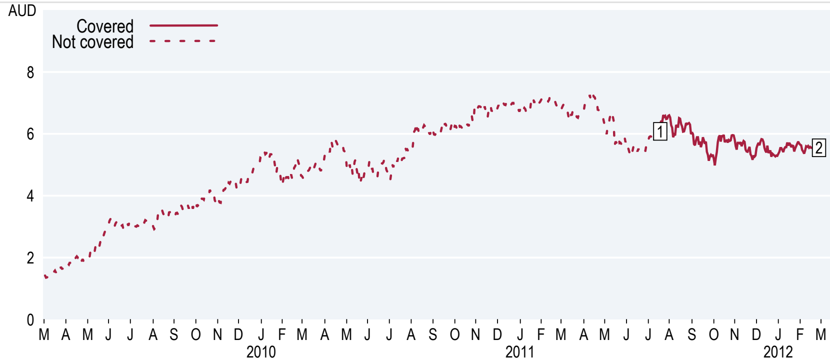
* Indicates change

Rating/target price changes above reflect Eastern Standard Time

## Whitehaven Coal Ltd (WHC.AX)

**Ratings and Target Price History**
**Best Ideas Research**
**Relative Call (3 Month)**

Analyst: Craig Sainsbury
Covered since September 22 2009




| | Date | Rating | Target Price | Closing Price |
|---|---|---|---|---|
| 1 | 19-Jul-11 | *ADD MP | - | 6.33 |
| 2 | 28-Feb-12 | *REM MP | - | 5.55 |

* Indicates change

Rating/target price changes above reflect Eastern Standard Time

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The Firm is a market maker in the publicly traded equity securities of China Shenhua Energy.

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**Citi Investment Research & Analysis Ratings Distribution**

***12 Month Rating*** ***Relative Rating***

| *Data current as of 31 Dec 2011* | Buy | Hold | Sell | Buy | Hold | Sell |
|---|---|---|---|---|---|---|
| Citi Investment Research & Analysis Global Fundamental Coverage | 57% | 34% | 9% | 10% | 79% | 10% |
| *% of companies in each rating category that are investment banking clients* | 45% | 41% | 40% | 49% | 43% | 41% |

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CIRA's stock recommendations include an investment rating and an optional risk rating to highlight high risk stocks.
**Risk rating** takes into account both price volatility and fundamental criteria. Stocks will either have no risk rating or a High risk rating assigned.
**Investment Ratings:** CIRA's investment ratings are Buy, Neutral and Sell. Our ratings are a function of analyst expectations of expected total return ("ETR") and risk. ETR is the sum of the forecast price appreciation (or depreciation) plus the dividend yield for a stock within the next 12 months. The Investment rating definitions are: Buy (1) ETR of 15% or more or 25% or more for High risk stocks; and Sell (3) for negative ETR. Any covered stock not assigned a Buy or a Sell is a Neutral (2). For stocks rated Neutral (2), if an analyst believes that there are insufficient valuation drivers and/or investment catalysts to derive a positive or negative investment view, they may elect with the approval of CIRA management not to assign a target price and, thus, not derive an ETR. Analysts may place covered stocks "Under Review" in response to exceptional circumstances (e.g. lack of information critical to the analyst's thesis) affecting the company and / or trading in the company's securities (e.g. trading suspension). As soon as practically possible, the analyst will publish a note re-establishing a rating and investment thesis. To satisfy regulatory requirements, we correspond Under Review and Neutral to Hold in our ratings distribution table for our 12-month fundamental rating system. However, we reiterate that we do not consider Under Review to be a recommendation.
**Relative three-month ratings:** CIRA may also assign a three-month relative call (or rating) to a stock to highlight expected out-performance (most preferred) or under-performance (least preferred) versus the geographic and industry sector over a 3 month period. The relative call may highlight a specific near-term catalyst or event impacting the company or the market that is anticipated to have a short-term price impact on the equity securities of the company. Absent any specific catalyst the analyst(s) will indicate the most and least preferred stocks in the universe of stocks under consideration, explaining the basis for this short-term view. This three-month view may be different from and does not affect a stock's fundamental equity rating, which reflects a longer-term total absolute return expectation. For purposes of NASD/NYSE ratings-distribution-disclosure rules, most preferred calls correspond to a buy recommendation and least preferred calls correspond to a sell recommendation. Any stock not assigned to a most preferred or least preferred call is considered non-relative-rated (NRR). For purposes of NASD/NYSE ratings-distribution-disclosure rules we correspond NRR to Hold in our ratings distribution table for our 3-month relative rating system. However, we reiterate that we do not consider NRR to be a recommendation.

Prior to October 8, 2011, the firm's stock recommendation system included a risk rating and an investment rating. **Risk ratings,** which took into account both price volatility and fundamental criteria, were: Low (L), Medium (M), High (H), and Speculative (S). **Investment Ratings** of Buy, Hold and Sell were a function of CIRA's expectation of total return (forecast price appreciation and dividend yield within the next 12 months) and risk rating. Additionally, analysts could have placed covered stocks "Under Review" in response to exceptional circumstances (e.g. lack of information critical to the analyst's thesis) affecting the company and/or trading in the company's securities (e.g. trading suspension). Stocks placed "Under Review" were monitored daily by management and as practically possible, the analyst published a note re-establishing a rating and investment thesis. For securities in developed markets (US, UK, Europe, Japan, and Australia/New Zealand), investment ratings were:Buy (1) (expected total return of 10% or more for Low-Risk stocks, 15% or more for Medium-Risk stocks, 20% or more for High-Risk stocks, and 35% or more for Speculative stocks); Hold (2) (0%-10% for Low-Risk stocks, 0%-15% for Medium-Risk stocks, 0%-20% for High-Risk stocks, and 0%-35% for Speculative stocks); and Sell (3) (negative total return). For securities in emerging markets (Asia Pacific, Emerging Europe/Middle East/Africa, and Latin America), investment ratings were:Buy (1) (expected total return of 15% or more for Low-Risk stocks, 20% or more for Medium-Risk stocks, 30% or more for High-Risk stocks, and 40% or more for Speculative stocks); Hold (2) (5%-15% for Low-Risk stocks, 10%-20% for Medium-Risk stocks, 15%-30% for High-Risk stocks, and 20%-40% for Speculative stocks); and Sell (3) (5% or less for Low-Risk stocks, 10% or less for Medium-Risk stocks, 15% or less for High-Risk stocks, and 20% or less for Speculative stocks).

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