

LAND COURT OF QUEENSLAND

Joint Experts Report

**Tim Buckley, Institute of Energy Economics and
Financial Analysis (IEEFA)**

Jon Stanford, Insight Economics Pty Ltd

REGISTRY: Brisbane

NUMBERS: MRA428-14, EPA429-14
MRA430-14, EPA431-14
MRA432-14, EPA433-14

Applicant: **ADANI MINING PTY LTD**
AND

First Respondent: **LAND SERVICES OF COAST AND COUNTRY
INC**

AND

Second Respondent: **CONSERVATION ACTION TRUST**

AND

Statutory Party: **CHIEF EXECUTIVE, DEPARTMENT OF
ENVIRONMENT AND HERITAGE
PROTECTION**

Energy markets and financial analysis

Main points of difference:

- Tim Buckley views the question of financial viability as of central importance. The whole project is dependent upon several private Australian subsidiaries owned by a web of offshore tax haven based companies ultimately owned by the Adani family of India. These Australian companies have a combined net equity of as little as A\$200m and net debts of in excess of A\$3bn. The need for Queensland Government subsidies ranging from free water allocations, to financial equity injections, royalty holidays and/or the contrived purchase of dredge spoils all point to the project's lack of commercial viability. Should Adani withdraw from the project, Tim questions who will be left in Australia to fund the rehabilitation and taxpayer based debt obligations, and this is central to the question of if the project is a net economic benefit to Australia.
- Jon Stanford has some difficulty in understanding the relevance of these issues to the matters before the Court. In a market economy like Australia, companies have the freedom to invest in risky projects subject to gaining the necessary approvals and complying with the relevant regulations and statutes applying to matters such as environmental degradation and safety. To invest in a project that may turn out not to be profitable is not against the law. Almost every new investment project faces significant risks, including market risks as this one does. To be sure, the market for thermal coal has seen a steep fall in prices recently, making some coal mines unprofitable at current prices. But the same is true of the markets for a range of other commodities, including iron ore and oil. This does not mean that investment in these industries should be prohibited provided proponents comply with their regulatory and statutory responsibilities.
- In terms of the future market for coal, Tim Buckley sees thermal coal hitting a global 2016 peak and thereafter structural decline in demand. This entails continuing domestic coal demand declines in Western Europe, America, Australia and Japan coupled with peaking demand out of China by 2016.¹ This view is accepted as a central forecast or an increasingly likely probability by major global financial institutions ranging from Bernstein Research, Citigroup, Deutsche Bank, Morgan Stanley, Morningstar and Goldman Sachs.
- In terms of the future market for coal, Jon Stanford has not undertaken his own projections or forecasts but relies on the recent work of the most authoritative independent body, the International Energy Agency (IEA) based in Paris, and the Australian government's research agency, the Bureau of Resources and Energy Economics (BREE).
- While Jon Stanford and Tim Buckley agree the rate of global coal demand growth has slowed, the question of when thermal coal demand globally peaks is a key difference. Jon Stanford cites the recent IEA *World Energy Outlook*

¹ Institute of Energy Economics and Financial Analysis – Carbon Tracker, September 2014:
<http://www.carbontracker.org/wp-content/uploads/2014/09/Coal-Demand-IEEFA.pdf>

report which suggests that coal demand will grow by 15 per cent to 2040, but with most of the growth coming in the next ten years.² Jon Stanford also notes from the same report that the IEA forecasts that in 2040 just under three-quarters of the world's energy demand will still be met by fossil fuels.³

- With respect to China's coal consumption, Tim Buckley sees this peaking by 2016, concurrent with his view of the global peak. Goldman Sachs in October 2014 made a dramatic 25% cut to their forecast of China coal demand by 2018, and now have their global house forecast showing China coal consumption actually peaked in 2013. Tim Buckley would also note that following a raft of government policy changes over 2014 to reduce China's coal dependence, in December 2014 the Chinese government announced it would cut China's coal export tariff from 10% to 3% in order to reinvigorate China's coal exports in the face of diminishing domestic demand.⁴ For the last year and a half Bernstein has forecast China would return to a net coal export position by 2016.
- Jon Stanford, on the other hand, notes the IEA report projecting China's coal consumption to peak by 2030. Importantly for the Carmichael mine, Jon Stanford notes the IEA's projection of increasing imports of coal by India out to 2040. In its most recent quarterly outlook, BREE notes that "coal-fired power is a major component of India's existing electricity generation capacity and this role is expected to expand with more than 100 gigawatts of new coal-fired capacity under construction".⁵
- Tim Buckley cites the Energy Minister of India as stating in November 2014 that due to economic necessity to rein in India's current account deficit: *"Possibly in the next two or three years we should be able to stop imports of thermal coal."*⁶ Tim Buckley sees the Indian government as pursuing an electricity sector reform program to replicate the scale undertaken of transition by China in the last five years. Tim Buckley's analysis shows the IEA has not yet incorporated this Indian electricity sector transformation into their view.
- In Tim Buckley's view, a key driver of India's electricity transformation is predicated on the needs for energy security through energy sector diversification and greater domestic self-sufficiency rather than relying on ever higher fossil fuel imports. India has rapidly cut fossil fuel import subsidies and is looking to double domestic coal production, and lift wind installations three to fourfold over the next five years, and lift solar installs tenfold at a combined cost of US\$100bn by 2019. A further US\$50bn is planned for electricity grid efficiency gains by 2019. All of which will reduce India's dependency on thermal coal imports.

² International Energy Agency (2014), *World Energy Outlook, 2014*, Paris, November, page 3; http://www.iea.org/publications/freepublications/publication/WEO_2014_ES_English_WEB.pdf.

³ *Ibid*, page 2.

⁴ <http://www.reuters.com/article/2014/12/16/china-economy-tax-idUSL3N0U01YJ20141216>

⁵ Bureau of Resources and Energy Economics (2014), *Resources and Energy Quarterly, September 2014*, <http://www.bree.gov.au/files/files//publications/req/REQ-2014-09.pdf>, page 49.

⁶ <http://in.reuters.com/article/2014/11/12/india-coal-imports-idINKCN0IW0FJ20141112>

- Jon Stanford considers the Indian Energy Minister's statement to be more aspirational than a firm statement of policy. First of all, he judges it to be impossible for India to develop its domestic coal industry to the extent that it would be able to meet rapidly growing demand for coal within two or three years. The recently announced strategic partnership between India and Australia was focussed on the energy security that imports of energy from Australia could provide. Secondly, the whole business plan of Adani, one of India's largest and most influential companies, for its proposed Carmichael mine, is to export coal to its power generators in India. Either the Indian government will permit this, as seems most likely, or it will not, in which case the project may not proceed. Again, this is a matter for the company to resolve before it takes its final investment decision (FID) on the Carmichael mine. Tim Buckley views seaborne thermal coal trade as a high marginal cost source of supply relative to domestic mine-mouth coal, and hence seaborne traded coal losing market share over time.
- With respect to Australian exports, Tim Buckley sees the global seaborne thermal coal market as entering structural decline. Australia is forecast to gain market share in this declining market segment.
- Jon Stanford is more optimistic about Australia's position to gain export market share, especially under a lower exchange rate. Jon Stanford argues that it is not the global market generally that is particularly relevant to this mine's fortunes but rather the India market, where imports of coal are forecast to continue to grow.
- The future commercial viability of carbon capture and storage technologies (CCS) is a key unknown. While Tim Buckley and Jon Stanford are both pessimistic about the future commerciality of the technology, the IEA continues to suggest CCS may eventually play an important role. If so, this would provide significant support for the ongoing viability of the global coal industry. In the absence of CCS reaching commercial viability, the IEA forecasts global climate policy actions will need to be significantly stepped up in order to limit global use of coal: "It is clear that the 2 degrees C objective requires urgent action to steer the energy system onto a safer path."⁷
- Tim Buckley views the IEA as representing the views of a particular body, so whilst authoritative in the depths of its analysis, the bearing of the governing body is clearly evident by their propensity to overestimate fossil fuel demand and underestimate the relevance of energy efficiency and renewable energy. One has to look no further than the page 5 acknowledgments of global coal companies who form the "Coal Industry Advisory Board" and Wood Mackenzie.⁸ The IEA talks very positively about the developments of renewable energy and energy efficiency rapidly gaining global market share, and the need for urgent and rapid global climate policy action, but then talks positively about the outlook for thermal coal.

⁷ International Energy Agency (2014,1), *World Energy Outlook, 2014*, Paris, November, http://www.iea.org/publications/freepublications/publication/WEO_2014_ES_English_WEB.pdf, page 24.

⁸ IEA, "Coal Medium Term Market Report 2014", December 2014, page 5.

- In response, Jon Stanford suggests that the IEA, which is part of the OECD based in Paris, is generally regarded as the most authoritative and independent international energy institution. The fact that it has an advisory board on which coal companies are represented does not traduce its independence; it maintains a dialogue with companies in all energy sectors and then its secretariat makes its own judgements on the basis of all available evidence. While banks and other for-profit agencies may make short-term forecasts from time to time, the IEA reports regularly on an annual basis and provides detailed, long-term forecasts, in this case for 25 years. The IEA has also demonstrated a high degree of concern about global warming and has used its resources extensively to develop scenarios of future energy supply consistent with limiting the average temperature rise to two degrees Celsius. Jon Stanford has not previously seen instances of the IEA being accused of a pro-fossil fuel bias.

The numbered points below represent Tim Buckley's preliminary notice of issues. Tim has expanded on each of these points and then Jon Stanford's responses follow.

Thermal coal markets

1. Seaborne thermal coal is currently experiencing a rapid deceleration in the rate of growth in aggregate global demand relative both to historic growth rates to be well below general market expectations of the last five years. This reflects an acceleration in the deployment of energy efficiency, plus new gas, hydro and renewable energy, including distributed solar electricity generation capacity, and slower than expected rates of global economic growth. The International Energy Agency has consistently and dramatically upgraded their expectations for the impact of solar on global electricity markets, and consistently curtailed their expectations for demand growth of thermal coal.

Tim Buckley views the peak of US coal consumption in 2007 and subsequent 20% decline as illustrative of the emerging structural decline of thermal coal.

US thermal coal demand has declined 20% since 2007 as a result of the combined impact of a number of factors, including: the aggressive and mounting Environmental Protection Agency (EPA) policy initiatives to reduce coal and coal-fired power plant pollutions into the air and water; the rapid expansion of wind and solar capacity installation programs; the shale gas revolution; and a continued drive to reduce electricity demand through energy efficiency initiatives. This illustrates the magnitude of the transition evident in the US electricity market away from thermal coal in the last eight years.

This structural decline of US thermal coal is expected to accelerate over the next decade with both the EPA and Bernstein Research forecasting the closure of over 30% of the remaining US coal-fired power plants.

Tim Buckley also notes the IEA has an inherent bias towards fossil fuels as is evidenced at the start of their reports in the acknowledgment of global coal companies who form the "Coal Industry Advisory Board" and input of coal industry cheerleader, Wood Mackenzie. In contrast, major public and private global financial institutions are increasingly accepting the structural decline of coal. For example, the World Bank is rapidly changing in policy framework to transition the world electricity markets away from coal.

Jon Stanford considers the main factors currently affecting the coal industry are the slowdown in rate of global economic growth, which is also affecting demand for a number of commodities, and, because of relative costs, a major shift away from coal in favour of shale gas in the United States. He also notes that the IEA projects continuing growth in the demand for coal out to 2040, albeit at a slower rate. The IEA's views on the global market for coal (November 2014) are summarised below:

"While coal is abundant and its supply secure, its future use is constrained by measures to tackle pollution and reduce CO₂ emissions. Global coal demand grows by 15% to 2040, but almost two-thirds of the increase occurs over the next ten years. Chinese coal demand plateaus at just over 50% of global consumption, before falling back after 2030. Demand declines in the OECD, including the United States, where

coal use for electricity generation plunges by more than one-third. India overtakes the United States as the world's second-biggest coal consumer before 2020, and soon after surpasses China as the largest importer. Current low coal prices have put pressure on producers worldwide to cut costs, but the shedding of high-cost capacity and demand growth are expected to support an increase in price sufficient to attract new investment. China, India, Indonesia and Australia alone account for over 70% of global coal output by 2040, underscoring Asia's importance in coal markets. Adoption of high-efficiency coal-fired generation technologies, and of carbon capture and storage in the longer term, can be a prudent strategy to ensure a smooth transition to a low carbon power system, while reducing the risk that capacity is idled before recovering its investment costs."⁹

2. Additionally, the seaborne thermal coal market is experiencing a significant level of global oversupply.

Tim Buckley sees significant oversupply in the face of a significantly lower than anticipated growth in demand for coal as key factors driving a 60% decline in coal prices over the last six years.

Jon Stanford agrees there is currently global oversupply in the thermal coal industry, but notes that other commodities are also experiencing oversupply post the resources boom, and it may be a temporary phenomenon that will shake out the higher cost producers.

3. The combination of these two factors has put downward pressure on the price of internationally traded coal that is forecast to be of a permanent impact given the electricity market transition away from coal.

Tim Buckley notes that the IEA continues to forecast China is a growth market for coal of 3% pa over 2013-2019, yet the statistics suggest otherwise. Having seen 10% compound growth for the first ten years of this new century, China's rate of growth has subsequently slowed to 3-5% pa over 2012-13 and year-to-date to November 2014 China's coal consumption is down more than 2% despite electricity demand growing 3.9% and real gross domestic product (GDP) growing 7.3%. This reflects the rapid diversification away from coal-fired power generation coupled with a decoupling of coal demand and China GDP growth.

Tim Buckley notes that subsequent to the IEA's latest report, China has proposed plans to end approvals for new coal to gas and coal to oil projects. The IEA assumed that these projects would continue, despite their dire water and carbon emission requirements, so this alone would cut 300Mtpa from China's coal consumption forecast by 2019 relative to the IEA's current forecast. Adjusting for this one policy proposal would suggest China's coal consumption peaked in 2013, given the more than 2% decline seen in 2014.

Jon Stanford suggests this may well be a short term phenomenon, and the coal price may bounce back consistent with a normal price cycle. He also notes that in calendar 2014, the prices of iron ore and oil have fallen by a greater amount than the price of coal, and by about the same amount since their peaks during the resources boom. A key finding from the IEA, quoted above, is that: "Current low coal prices have put pressure on producers worldwide to cut costs, but the shedding of high-cost capacity and demand growth are expected to support an

⁹ International Energy Agency, *op. cit.*, page 3

increase in price sufficient to attract new investment.” BREE also forecasts a recovery in coal prices.

Jon Stanford notes that the IEA’s latest report on the outlook for coal, published in December 2014, acknowledges that “lower economic growth and also a lower energy intensive economy and higher diversification will curtail coal growth in China in the coming years”. But the report also states that “China will be the coal giant for many years in the future. We project that coal demand annually grows at 2.6%, more than 100 Mt per year during our outlook period. China will add more coal demand than any other country ...”¹⁰

4. This rapid and sustained collapse in the price for internationally traded thermal coal has driven an almost unprecedented level of wealth destruction averaging an 80-90% loss in the last four years for most listed coal companies globally.

Tim Buckley would cite the example of Peabody Energy, the world’s largest listed private coal company, who’s share price having collapsed almost 90% over the last four years, cutting its market capitalisation from US\$17 billion to US\$2 billion in this timeframe. Also, a growing list of coal companies that have gone into administration, including Bandanna Energy, Patriot Coal and James River Coal. Further, an increasing number of diversified global mining majors have undertaken numerous moves to reduce, close and / or exit their coal operations. This includes BHP Billiton, Rio Tinto,¹¹ Vale, Anglo American,¹² Mitusbishi, Itochu and Marubeni Corp.¹³

In light of this, Tim Buckley would seriously question the financial viability of the Carmichael project. Adani’s financial close for the Carmichael project has been delayed multiple times and is now not expected until the end of 2015, five years after Adani acquired the project proposal. This is clear evidence that the project’s rationale is not accepted by the financial markets that are required to fund the project.

Jon Stanford suggests that this may not be unprecedented wealth destruction, as “boom and bust” has always been a feature of commodity cycles. As stated above, there is nothing unique about what has happened to the thermal coal market. Almost exactly the same price effects have been seen in other commodity markets, such as iron ore and crude oil. The cause is basically that demand has gone off the boil just as new suppliers have entered the market. Any response to climate change has very little to do with it. Jon Stanford reiterates the IEA view, with growth in coal demand projected out to 2040. If the world does take serious action against climate change, Jon Stanford agrees that coal is a threatened industry in the longer term unless CCS becomes commercially viable.

¹⁰ International Energy Agency (2014,2), *Medium Term Coal Market Report, 2014, Paris, December*, <http://www.iea.org/Textbase/npsum/MTCMR2014SUM.pdf>, page 13. ,

¹¹ <http://reneweconomy.com.au/2014/rio-tintos-fossil-fuel-exposure-is-rapidly-diminishing-62547>

¹² <http://www.bloomberg.com/news/2014-12-09/anglo-seeks-to-sell-stakes-or-exit-domestic-thermal-coal-assets.html>

¹³ <http://www.ft.com/cms/s/0/d925647e-1230-11e4-a581-00144feabdc0.html#axzz3MVEKIIgX>

Jon Stanford also notes, however, that we should not regard the global coal market as being homogenous. While developed economies are likely to reduce their dependence on coal, there will be less pressure for developing countries to do so. The availability of affordable electricity is a key factor in the ability of very low income households in developing countries to emerge from poverty, and, in the absence of subsidies, coal still offers perhaps the cheapest means of supplying electricity on a large scale. As Jon Stanford understands it, the Carmichael mine will primarily supply coal to India which, according to the IEA projections cited above, “overtakes the United States as the world’s second-biggest coal consumer before 2020, and soon after surpasses China as the largest importer”. In its latest outlook report, BREE states that “India’s coal imports are projected to increase at an average rate of 4.7 per cent a year to 182 million tonnes in 2019. Some of this will be secured through the development of foreign assets.”¹⁴

5. If the proposed Carmichael mine goes ahead it will add approximately 6% to annual global seaborne trade of thermal coal, putting significant further downward pressure on thermal coal prices. Further, the first mover in the Galilee will need to create all of the infrastructure for coal mining, covering new rail, port, airport, sealed roads, water sewerage and power. As such, this will facilitate the potential development of a further eight thermal coal mines, bringing in total the planned addition of up to 300Mtpa of capacity – which would expand global thermal seaborne supply by 30% from current levels from a single new coal basin. This will cause a further collapse in thermal coal prices.

Jon Stanford considers the six per cent number reflects a gross rather than a net figure. The supply of coal is governed by global demand, which will not change as a result of the commissioning of the Carmichael mine. Other things being equal, if this coal was not supplied by the Carmichael mine it would come from somewhere else. The supply of coal from the Carmichael mine will therefore have a minimal impact on the level of total shipments of coal globally. The development of other coal mines in the Galilee Basin is speculative at this stage. If these mines were developed, they would have little or no impact on the global demand for coal and so their new production would displace coal supplies from other, higher cost sources.

6. Lower thermal coal prices would normally increase consumption of thermal coal.

Tim Buckley considers that the Indian government is already well aware that air and water pollution in India already exceeds that evident in the major Chinese cities on the Eastern seaboard. As a result, the Indian Prime Minister and Energy Minister are highly unlikely to continue to pursue a long term energy policy that locks India into a sustained path of dramatically higher air and water pollution. The alternative the Indian government is now proposing is to accelerate measures they have outlined to diversify the Indian electricity sector rapidly away from coal by a dramatic improvement in electricity grid efficiency and improved domestic coal rail freight transportation capacity, plus a rapid expansion of electricity

¹⁴ BREE, *op. cit.*, page 50.

generation capacity across hydro, wind, solar, gas and nuclear, plus the development of off grid solar with storage based microgrids.¹⁵

Jon Stanford considers that lower coal prices would normally be expected to lead to an increase in the consumption of coal, although because of measures to address climate change in developed economies (and air pollution in China), this increase is likely to occur mainly in developing countries such as India. But he also notes, as quoted above, that the IEA considers that the current situation of oversupply will lead to a shake-out in the industry followed by an increase in the coal price.

7. Continued consumption of thermal coal even close to current levels will rapidly increase emissions of carbon dioxide into the earth's atmosphere, unless carbon capture and storage (CCS) becomes economically viable. The market expectations for commercialisation of CCS continue to be pushed out, and current CCS projects have experienced significant delays and / or cost overruns and remain prohibitively expensive.

Jon Stanford agrees that the outlook for CCS at this stage is not favourable. He also agrees that, in the absence of CCS, the continuing consumption of coal at current levels is not consistent with limiting global temperature increases to two degrees Celsius or less.

¹⁵ <http://webcasts.weforum.org/widget/1/india2014?p=1&a=59810>

Viability of the Project

Tim Buckley considers that the Carmichael mine proposal is not commercially viable and given its unbankability, nor will the project be likely to achieve financial close.

Jon Stanford does not have the information available to know if the project is commercially viable, but, as stated in the introduction to this report, he does not understand why this should be a relevant consideration in terms of the matters before the Court. Major resource projects such as this involve a variety of risks that need to be accounted for by the proponent. The risks for this project include:

- **Market risks.** Will the price in the market through the project's life enable a profit to be made?
- **Production risks.** Will the company be able to achieve the production costs on which it has based its investment appraisal?
- **Technical risks.** Over the life of the project, will another and superior technology become available at a lower cost?
- **Policy risks.** Will the nations of the world agree on an approach to addressing climate change that would make the project non-viable?

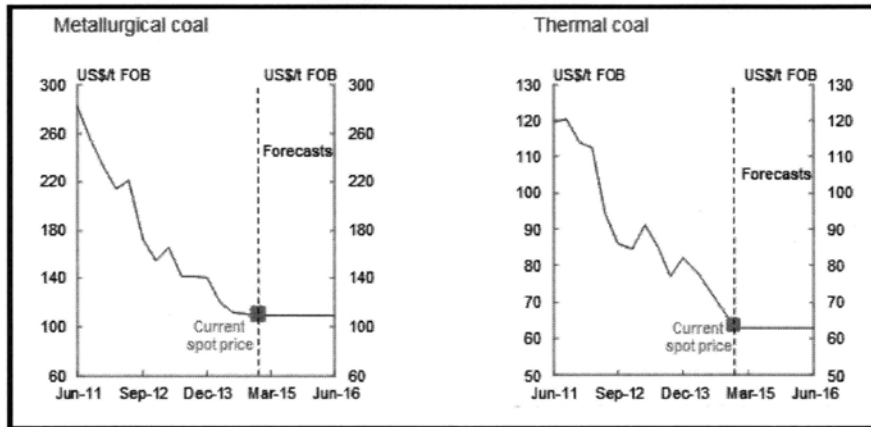
In a market economy, these risks are incorporated by investors in their financial appraisal of the project. If the estimated risk adjusted returns exceed the company's hurdle rate of return, the investment will generally go ahead. Provided the project proponent has complied with its regulatory or statutory responsibilities under the approvals process, it is difficult to see why this should be a matter for government or the courts.

8. The thermal coal market has entered structural decline. Global demand will peak by 2016 and decline steadily thereafter.

Tim Buckley sees seaborne coal markets shrinking from 2014/15 given that once rail, port and shipping charges are added in, seaborne coal is generally the higher cash cost source of supply in a shrinking global market. With a global peak in coal consumption by 2016 and subsequent decline, IEEFA forecasts as the higher marginal cost supplier, the seaborne coal market has entered structural decline which will mean continued oversupply as demand gradually deteriorates.

Tim Buckley would contrast the bullish forecast from BREE that Jon Stanford has cited with that of the most recent forecast by the Australian Treasury that incorporates into Australia's Federal Budget Mid-Year Economic and Financial Outlook (MYEFO) statement the prolonged collapse of coal prices since 2008 throughout its medium term forecast period – as per the figure below:

Coal Prices (US\$/t): Actual and Treasury Forecast

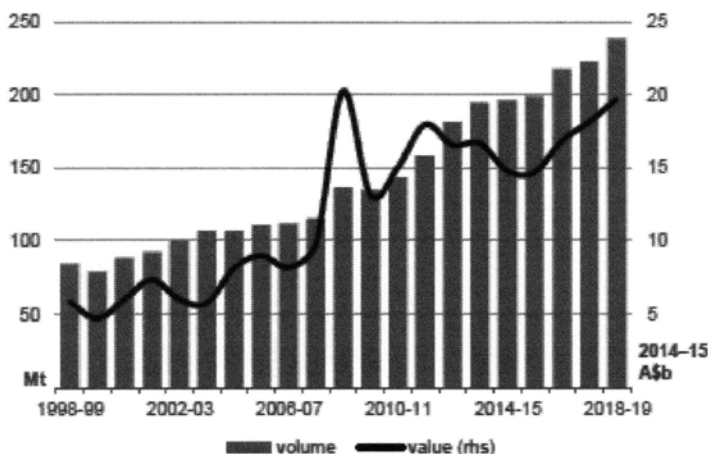


Source: Platts, Bloomberg and Treasury, Dec'2014¹⁶

Jon Stanford again cites the IEA projections that the overall demand for coal will be 15 per cent higher in 2040 than now, and that higher growth than this average figure will occur in Asia and particularly in India. Much of the coal from the Carmichael mine will be exported to India.

Jon Stanford notes that Tim Buckley's view of the future of the seaborne coal trade is not supported by official forecasts from the IEA or BREE. BREE's forecast period ends in 2018-19, but is much more positive than Tim Buckley, both on export volumes and prices: "Australia's thermal coal exports are projected to increase at an average annual rate of 4 per cent to 239 million tonnes in 2018-19. Export earnings are projected to increase by 6.7 per cent a year to around \$20.2 billion (in 2014-15 dollar terms) in 2018-19."¹⁷

Australia's Thermal Coal Exports



Source: BREE, *op. cit.*, page 54

Jon Stanford understands that Treasury does not generally make its own original forecasts of the prices of individual commodities. These graphs suggest that, for

¹⁶ http://www.budget.gov.au/2014-15/content/myefo/html/chart_data.htm#chart2.3

¹⁷ BREE, *op. cit.*, page 54.

the purposes of its revised budget forecasts in the context of the MYEFO statement, Treasury has assumed no change in the price of coal in the short term.

9. The Carmichael coal is considered very low quality when compared to the Newcastle 6,000kcal export benchmark index and as a result will be valued at a significant discount. The energy content is materially lower and the ash content materially higher than this index.

Tim Buckley views the Carmichael coal energy content at 4,950kcal net as received (NAR) and ash content at 25-30% as being well below the Newcastle benchmark. This will fundamentally challenge the economic viability of the Carmichael project, given the need to get an economic return whilst having to build all the required greenfield infrastructure from power, airports, rail to port and then move significantly higher tonnage of coal to generate a given dollar of revenue relative to existing Australian thermal coal export mines – yet even these existing mines are on average unable to cover their operating costs at current coal prices. Further, the need to transport the coal by rail 2-3 times as far as the average Australian export coal mine means the cost of the coal free-on-board will be higher than average (everything else being equal).

Tim Buckley notes that a number of financial analysts have forecast that the Galilee is not commercially viable. These include Macquarie Group and UBS. The most recent was Perret Associates Ltd who at the November 2014 Coal Trans conference in Asia stated: “We have serious doubts about the economic viability of the Galilee Basin.” Even the IEA in December 2014 has said they do not expect any Galilee mines to be operational in the 2014-2019 period given: “low coal prices as well and environmental and infrastructure concerns.”¹⁸

Jon Stanford doesn't have a particular view on the quality of the Carmichael coal. If the quality is relatively low in terms of calorific content, presumably this will be reflected in a lower price. Whether this affects the viability of the mine depends on (a) the future coal price and (b) the costs of production and transport. Nobody can be certain of (a). No doubt the project proponent has a good idea of the value of (b), but we do not because this is commercial-in-confidence information.

Jon Stanford doesn't know whether or not the mine is viable at the current coal price because, as stated above, he has not been apprised of the costs of production and transport.

10. The gross cash cost of coal production from the proposed mine are greater than the current price that this thermal coal would trade at. The fully costed transportation to the main target market of India is prohibitively high, being in the order of \$15-20/t for the rail, \$5-8/t for the port and \$10-15/t for the seaborne shipping. This is significantly higher than existing Australian export thermal coal export costs of transportation. This means a landed cost in India will in excess of US\$60/t relative to the current domestic cost of coal supplied by Coal India Limited in 2014 of less than US\$24/t.¹⁹

¹⁸ IEA, “Coal Medium Term Market Report 2014”, December 2014, page 101.

¹⁹ <http://www.coal.nic.in/annrep1314.pdf>

Tim Buckley does not consider the Carmichael mine as important for India's energy security. In fact, Energy Minister Goyal stated in November 2014 that allowing the importation coal would further undermine India's current account deficit, furthering the currency devaluation, lifting inflation and hence interest rates. Building domestic electricity generation and grid capacity will drive jobs, infrastructure investment and energy security. India has revised its electricity for all program and this will be achieved using microgrids, LED lighting, solar, run-of-river hydroelectricity and battery storage.

Again, **Jon Stanford** cannot comment on viability for the reasons he gives under Tim Buckley's point (9) above. It is possible, for example, that the production cost of coal from Carmichael will be in the lowest cost quartile for coal mines globally. If that is so, it is likely that the mine would be viable even at current coal prices. Tim Buckley states that the "gross cash cost of coal production from the proposed mine are greater than the current price that this thermal coal would trade at". Jon Stanford notes that this is important information and questions from where it is sourced.

Jon Stanford also considers that the Carmichael mine is important to India's future energy security in light of the rapid expansion of electricity generation projected for that country. As BREE states, Prime Minister Modi has announced that his government is seeking "to ensure that all Indian villages have 24 hour access to electricity by 2022. Coal-fired power is a major component of India's existing electricity generation capacity and this role is expected to expand with more than 100 gigawatts of new coal-fired capacity under construction."²⁰

11. There is a significant risk that thermal coal prices for the coal from this Project will remain below the costs of production, rendering the project unviable before or within the proposed life of the mine. Further, the probability of global regulatory action on climate change in the next coming decade or two will further curtail the commercial operating life of this project.

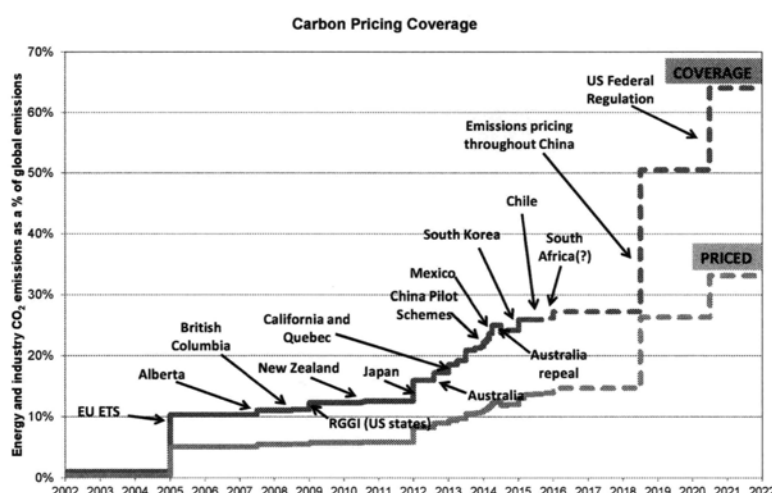
Tim Buckley would cite the alternative more current forecast from the Australian Treasury in December 2014 that coal prices will remain at their current lows of US\$63/t for the medium term to highlight the magnitude of change evident in the market in 2014 alone. Treasury has downgraded their own house medium term forecast for thermal coal by over 25% in the last twelve months.

Jon Stanford considers that this is a commercial risk for the proponent and potentially for the Queensland government if it subsidises the project. However, he has not seen evidence to prove that the project would be underwater at current coal prices and notes that, as previously stated, the price of thermal coal is projected, by both the IEA and BREE, to begin to recover in around 2016.

12. Global policy change with respect to limiting and/or pricing of carbon emissions are steadily rising, and will cover the majority of the global economy by 2020. This is likely to further curtail demand and profitability of this project before it has even reached peak production.

²⁰ BREE, *op. cit.*, page 49.

To cite a chart from RIO Tinto's global head of environment detailing the extent of policy progress globally, **Tim Buckley** references:



Source: www.onclimatechange.org

As before, Tim Buckley would cite the IEA also forecasts a steady decline in OCED coal demand over the forecast period. With China representing 50% of world coal consumption, any peak in coal in China and continued decline in the OECD will more than offset any growth in India.

Jon Stanford makes two points in response to this.

First of all, while we may hope that the nations of the world agree to take action in support of their aspirational goal of limiting global temperature rises to two degrees Celsius, there is no certainty that they will. Indeed, the offers to reduce emissions that are currently on the table, even if acted upon, would fall well short of achieving this objective.

Secondly, under any global agreement that is currently foreseeable, India and other developing countries may well be exempted from the level of emissions reductions required of developed economies. While China, which has achieved a higher level of development, may achieve a peak in its emissions by 2030, this is a very unlikely outcome as far as India is concerned. As before, Jon Stanford notes that the International Energy Agency foresees the use of coal for electricity generation in Asia as continuing to expand at least to 2030. Indian consumption of coal is likely to play a major part in this expansion.

Jon Stanford reiterates that the expected increase in demand for coal will mainly come from Asian countries that are not members of the OECD. The market for coal in the OECD and, indeed, in China is irrelevant to the coal market in India, which is central to the ambitions of the Carmichael mine.

Financial capabilities of the Applicant

Tim Buckley does not see the Indian Government according any strategic interest in the Galilee, nor the extension of any support beyond that commercially available in the private market. Energy security is paramount to every government and country globally, and as such India will do what is required to protect its national interest. Diversity of energy supply and lowest cost solutions are likely to drive India's energy policy, and a greater reliance on expensive imported coal does nothing to serve this end game.

Tim Buckley would note in the context of this project, Adani Power has a market capitalisation of US\$1.9bn (at Rs2.15ps and the Rs63/US\$), and against this has US\$7.5bn of net debt as at September 2014. Despite being the largest private owner of coal fired power generation capacity in India, debt funded asset size is no guarantee of value or success, and Adani Power is on track to report its fourth year of record losses. Adani is not a global player in the energy business. Beyond India, Adani Power has a single uncommercial proposal to build a coal mine in remote Australia, and a small, underperforming 2-4Mtpa coal mine in Indonesia.

As before, **Jon Stanford** does not understand why the financial capability of the applicant has any particular relevance to the matters before the Court. If the project satisfies the company's rate of return criteria and it can gain access to the necessary finance, the project will go ahead subject to final approval by the company and, in terms of the approvals process, by the Queensland government. If these conditions are not met, presumably the project will not proceed.

Jon Stanford notes that from a public policy perspective, Australian governments generally welcome foreign investors. The ability to supplement domestic savings by encouraging investment by foreign companies allows the Australian community to develop projects more rapidly and enjoy a higher standard of living. In this context, it is worth noting that India and Australia have agreed to develop a strategic partnership on energy. At a meeting in New Delhi in September 2014, Prime Ministers Modi and Abbott:

"agreed to deepen the cooperation between both countries on energy security through a Ministerial-level dialogue. They agreed to develop a strategic partnership on energy and resources based on long-term, sustainable and reliable supply of Australian resources based on India's energy needs. They agreed that cooperation on energy - extending to coal, LNG, renewables and uranium-and on resources such as iron ore, copper and gold were key elements of the relationship and committed to intensifying these links."²¹

Jon Stanford has not worked with Adani and is not qualified to comment in any detail on the company's financial standing. In that context, however, he notes that it is clear from the public record that Adani Enterprises is a very substantial transnational company based in India with a diverse range of businesses. According to its founder, Gautam Adani, the company's mission is based on "nation building" and it supports a strong corporate social responsibility program. It employs over 10,000 people, has operating income of over US\$1 billion and a profit of US\$447 million in 2014. Adani's growth since it was founded in 1988 has been strong. In 1998, Adani became India's largest foreign exchange earner.

²¹ Australian Government media release, <https://www.pm.gov.au/media/2014-09-05/joint-statement-prime-minister-modi-new-delhi-india>

Jon Stanford notes, in the context of this project, that Adani Power is the largest private electricity producer in India. It has a history of seeking to secure supplies of coal, and bought an Indonesian coal mine in 2008. It also built and operates the world's largest coal importing terminal. Adani clearly is a very substantial global player in the energy business.²² If, as Tim Buckley suggests, it is cheaper to buy coal from Indian mines rather than Australia, why would Adani, assuming it is a profit maximiser, not choose this option?

In terms of the substance of the issues raised by Tim Buckley below, Jon Stanford has no comment to make except on Point 19. If necessary, Adani is far better placed to comment on the details of its financial capability.

13. The Adani group does not have the financial resources in place - or likely to put in place - to successfully commence and continue the project over the life of the proposed mine. Adani is reliant on Queensland government subsidies to try to make this project appear commercially viable. The Adani group is excessively financially leveraged, with net debts of in excess of US\$14bn against an external market capitalisation of equity of less than US\$11bn.
14. The Australian mining company of Adani (Adani Mining Pty Ltd) has net debts of over A\$1bn as at 31 March 2014 and negative shareholders funds of \$44.9m, and has been loss-making for the last two years. While Adani Abbot Point Terminal Pty Ltd still has marginally positive shareholder funds, it likewise has been materially loss-making in each of the last two years due to excessive financial leverage (with loans in excess of A\$1bn).
15. Getting to full production of 60Mtpa peak coal from Carmichael to the export market requires the construction of a mine, rail and port facilities at an estimated total cost of A\$17 billion.
16. Approximately A\$14 billion remains to be funded. To-date, Adani has lined up non-binding proposals of A\$300-450m from the Queensland government and new loans of US\$200m from the State Bank of India, plus a non-binding offer of minority equity finance from POSCO E&C for each of the rail and port vehicles.

In **Tim Buckley's** view, Adani Enterprises does not currently have any material excess equity funding capacity in India. For the proposed financing of the construction of one of the largest greenfield coal export terminals in the world, the Adani family's private corporate structure is a web of offshore private companies spread across a range of tax havens with little transparency or visible source of funding. The Central Bureau of Investigation (CBI) is reported in the Indian press to have launched a Supreme Court of India sanctioned investigation into the siphoning off of US\$1 billion of monies from the listed Adani Enterprises by companies lead by associates of the Adani family.²³ Pending clarification of the status of this Indian CBI inquiry, financing of Adani's new coal port will be

²² Information on Adani is sourced from Wikipedia, http://en.wikipedia.org/wiki/Adani_Group

²³ <http://indianexpress.com/article/business/companies/sit-cbi-to-look-into-adani-group-case/#sthash.WHGYGX7t.dpuf>

problematic. The Adani family have also suggested funding is reliant on a proposed sale of its existing and already highly geared Abbott Point Coal Terminal to raise possible new capital.

17. The Adani group already has consolidated net debts estimated at US\$12.7 billion in the listed Adani Enterprises Ltd plus another US\$2bn off-balance sheet. In particular Adani Power Ltd has massive financial leverage with net debts approaching US\$8bn. Consequently the Project is unlikely to proceed without substantial new external investments of both debt and equity.
18. Possible Government subsidies remain unclear, including:
 - (a) A royalty free period granted in accordance with the Queensland Government 2013 Galilee Basin Development Strategy; and
 - (b) Any Infrastructure Enabling Agreement between Adani and the current State Government.
19. The Indian Government has recently articulated a plan to undertake a major overhaul of the Indian Electricity Industry and rapidly diversify the industry away from imported coal-fired power generation. As part of this, the Indian Energy Minister Piyush Goyal stated in November 2014 his expectation for India to cease thermal coal imports within 2-3 years. This dramatically reduces any strategic logic of the Indian financial market supporting huge remote greenfield thermal coal projects in foreign countries.

Tim Buckley does not see evidence that Indian government is going to materially assist Adani to pursue a commercially unviable greenfield proposal acquired at the peak in the coal market back in 2011. The Indian government has not been in the habit of assisting highly leveraged private Indian conglomerates in pursuing unviable overseas projects. As discussed before, the Indian government is expected to pursue an electricity sector transformation that improves India's energy security profile. This will be best served by rapidly reducing India's current excessive reliance on coal for 76% of its current electricity generation.

Further, Tim Buckley would note that it is economically logical for India to pursue the lowest cost sources of electricity generation. Electricity generated from imported coal is not only a drain on the country's excessive current account deficit, but it would be inflationary – requiring a cost of wholesale electricity of Rs6/kWh and potentially rising over time. By comparison, domestic Indian wind is available at Rs4-5/kWh, hydro electricity is Rs3-4/kWh, Indian solar is already seeing 25 year power purchase agreements (PPA) being signed at below Rs6/kWh and domestic coal fired PPAs have been signed recently at Rs1-3/kWh.²⁴

Jon Stanford believes that in relation to the Energy Minister's statement regarding coal imports, it is important to note that he qualified his intention with the word "possibly". Some analysts do not appear to take this objective very seriously and it is notable that only three weeks later the Minister issued a

²⁴ <http://www.ieefa.org/wp-content/uploads/2014/05/IEEFA-Briefing-Note-IndianElectricityCoalPricing-4-May-2014.pdf>

statement to the effect that coal imports would have to increase.²⁵ If the Minister's earlier comments were a statement of policy, it would seem to be at odds with the strategic partnership on energy agreed between the Prime Ministers of India and Australia in September 2014 and referred to above.

Jon Stanford also notes that, in its medium term market outlook for coal published in mid-December 2014, the IEA takes little account of the Minister's statement. The IEA suggests that, out to 2019, "annual coal consumption in India will grow 177 million tonnes of coal-equivalent, or over 250 Mt, at 5% annual growth on average, becoming the world's second-largest coal consumer". The IEA also identifies India's problems in ramping up domestic coal production and predicts that "India will become the second-largest coal consumer, surpassing the United States, ... and the world's largest thermal coal importer."²⁶

More importantly in Jon Stanford's view, the Indian government has demonstrated support for Adani's Carmichael project. In Brisbane on 17 November 2014, Prime Minister Modi said "the Carmichael project would 'set a new standard for India-Australia co-operation', and the rhetoric was backed up with a fistful of dollars: Adani was given a US\$1 billion line of credit by the majority government-owned State Bank of India."²⁷ Adani Power is the nation's largest private electricity producer and the Prime Minister has committed to a major expansion of power supplies. Adani has built the largest coal import terminal in the world. Jon Stanford does not consider it is in any way credible that the Indian government would prohibit or seek to restrict Adani's imports of coal from Australia.

20. There has been a suggestion that the State Bank of India was considering financing an extra US\$200m of debt for the Carmichael Project. No actual binding commitment has been made, the amount is a fraction of what is required and has been the subject of controversy in the Indian Parliament since it was made given consistent accusations of "crony capitalism".

Tim Buckley notes that the State Bank of India (SBI) has clarified a number of points from the initial Adani Enterprise's press statement. The bank has not undertaken due diligence and therefore no loan agreement has been reached, it is a non-binding memorandum of understanding (MOU). Further, SBI clarified the discussion of a total of US\$1bn of loans in fact includes the existing US\$800m loan SBI has already extended to Adani Abbot Point Terminal (T1), so that the MOU was for a possible extension of an additional US\$200m loan, subject to due diligence.

21. Nine major international banks who could provide finance to this project have publicly declined to invest in the Galilee Basin and Abbott Point port for reasons including:

²⁵ <http://www.coalweek.com/news/markets-a-competition/23632-coal-shortages-on-indias-power-sector>

²⁶ International Energy Agency (2014,2), *Medium Term Coal Market Report, 2014, Paris, December*, <http://www.iea.org/Textbase/npsum/MTCMR2014SUM.pdf>, page 13.

²⁷ Paddy Manning, *Crikey*, 18 November 2014, <http://www.crikey.com.au/2014/11/18/modi-talks-up-adanis-galilee-project-but-even-generous-subsidies-might-not-be-enough/>

- a) Conflict with their commitments as per the Equator Principles;
 - b) Excessive environmental, social and governance risks; and
 - c) Concerns over the financial viability of the project.
22. Considering the structural decline in seaborne thermal coal markets and the financial unviability of the Project there remains a significant risk that sufficient external investors for the project will not be found. In the absence of this new equity investment, it is Tim Buckley's contention that Adani will not have the financial resources to undertake the project.
23. The financial unviability of this Project is illustrated by the fact that Adani's expectations for financial close on this project have been delayed by 3-4 years since first involvement in 2011.

Statement of Compliance with Expert's Duty

A meeting of experts was held, on 9 December 2014, in the absence of the parties to discuss and attempt to reach agreement about the experts' evidence in relation to an issue in dispute in the proceeding as it relates to the experts' area of expertise; and to prepare a joint report as per rule 22A of the Land Court Rules 2000. We understand and have complied with the experts duty (rule 22C).

Prior to the preparation of the joint report, on 28 November 2014, the First Respondent delivered a notice containing a list of the specific issues in respect of which it is proposed to seek agreement. An amended notice of issues was delivered on 2 December 2014 (Preliminary Issues).

This joint report sets out the areas of agreement and disagreement of the Experts in relation to the issues in respect of energy markets and financial analysis as it relates to the Carmichael coal export proposal for the Adani Group.

Expert witness declarations

The Experts acknowledge that they have an overriding duty to assist the Court and have discharged that duty. The Experts have not received any instructions to accept, adopt or reject any particular opinion in preparing this joint report.

The Experts confirm that:

- (a) the factual matters stated in this report are, as far as we are aware, true;
- (b) we have made all the enquiries that we consider appropriate;
- (c) the opinions in this report are genuinely held by the Experts; and
- (d) the report contains references to all matters that we consider are significant.

Date: 30 December 2014

Names and signatures



Jon Stanford



Tim Buckley