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The devolution of the social licence to operate in the Australian mining industry

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ABSTRACT

The aim of this paper is to present a brief historical analysis of the Australian mining industry and the development of its social licence to operate. Commencing with the discovery of coal in the 18th century, to gold and copper and base metals in the 19th century, to the world class iron ore, mineral sands and diamond mines of the 20th century to the current day, the paper will attempt to determine how and why an industry, formerly well-respected by the public, is considered to be a pariah in the eyes of many sections of society. The theory of social licence and its use in the Australian minerals industry is briefly described and a working definition of "an honest, transparent engagement resulting in a beneficial outcome to all parties before, during and after mining" is adopted throughout the paper. Case studies illustrating examples where mining operations were, and continue to be sustained for decades, provide clear evidence of having a social licence to operate. On the other hand, examples are provided illustrating where poor environmental management practices, tailings dam failures, disputes with landowners, and/or government intervention have resulted in the loss of the social licence and early, unplanned closure. The paradox is that despite the industry’s acknowledged contribution to the Australian economy, particularly in times of global ructions such as the GFC and the current coronavirus pandemic, there is considerable antipathy towards the industry by the public. Furthermore, the Australian mining industry’s approach to environmental management and sustainable development is regularly used as a model for emerging mining economies. The industry has pioneered remediation and rehabilitation on challenging sites, including prime agricultural land, forests, riverine and beach environments. Successes are rarely acknowledged however but failures are highlighted, by the media, opponents of the industry, and governments. Clearly, the business as usual approach is not enough. Mining industry leaders need to take strong measures to ensure the industry is sustainable and maintains its social licence including eliminating all fatalities and serious injuries, ensuring the safety and stability of tailings storage facilities, accelerating progressive rehabilitation particularly on open cut coal mines, successfully closing mines, and lifting the environmental performance of all mines, not just a few.

1. Introduction

The mining industry is at the crossroads in Australia and increasingly, internationally. A recent industry survey has confirmed that the greatest risk to the mining industry is its loss of social licence to operate (Ernst and Young, 2018). Industry associations have reached out to the public-at-large for decades with the message that, despite advances in technology, and changes in society, the world needs minerals as necessary component of smartphones, wind turbines, solar cells and so on (Minerals Council of Australia, 2019; World Bank, 2017). However, the message is often treated with distrust or simply ignored (Oxfam, 2020). A partial result of this distrust is that student enrolments in mining courses at universities have dropped dramatically, at the same time that demand from the industry was dropping. Although industry demand has picked up, enrolment numbers continue to flatten. From a peak of 100 new first year enrolments in mining engineering in 2012, enrolments at UNSW dropped to 12 in 2019, with similar numbers in 2020 (Canbulat, 2020). Although some sectors of the industry are doing very well, unless and until the industry gains credibility, respectability and the trust of the community, the future of mining industry as we know it, is problematic. The paper provides an historical account of the mining industry’s role in society and compares that with the current situation, suggesting that it should on balance be a good news story. It will examine how attitudes towards the industry started to change and how opposition to mining became organised, well-funded and supported in some cases by the community-at-large, but in others, rejected by the local community.

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In some cases, these actions in opposing new mining developments, were well justified.

2. Social licence to operate and the Australian mining industry

The term “social licence to operate” (SLO) has been part of the mining lexicon for over 20 years, particularly in the academic, NGO and government spheres (Thomson and Boutilier, 2011; Prino and Slocombe, 2012). It describes the evolving relationship between the mining (and other industries) and its stakeholders and encompasses the concepts of procedural and distributional fairness, trust and acceptance (Zhang et al. 2015; Moffat et al., 2016; Bice 2014). Although the concept is widely used in certain sectors of the Australian mining industry itself, companies such as BHP are using other terms including “social value”, reflecting more of a partnership and business relationship with its stakeholders (BHP, 2019). Large companies such as BHP dominate minerals production in Australia and are often members of the Minerals Council and the ICMM, and are committed to adhering to its standards and guidelines relating to SLO. However, there is no such commitment from most operations, which are generally small-medium scale (ICMM 2020). This paper will use SLO to describe an honest, transparent engagement resulting in a beneficial outcome to all parties before, during and after mining.

3. It was a good news story

Mining has been a significant part of Australia’s modern history since European settlement began in the late 1700s. In 1790, the first coal was discovered, reportedly by escaped convicts in Newcastle, 200 km north of Sydney (Geoscience Australia – Australian Mine Atlas – History n.d.; Cottle and Keys 2014). The subsequent exploitation of these deposits resulted in the first export industry in this country. Newcastle is the world’s largest exporter of coal and the Hunter Valley continues to host world-class coal mines.

In 1851, gold was discovered near Bathurst in New South Wales, resulting in an industry worth $18.7 billion in 2018/19, second only to iron ore at $77.5 billion (Resources and Energy, 2020). Gold mining resulted in the development of regional areas in Australia such as Ballarat, Bendigo, Kalgoorlie, and the central west of New South Wales. Copper and tin mining brought in large numbers of migrants to Australia, and Australia has continued to be a successful multicultural country. Broken Hill, which has continuously produced silver lead and zinc since the 1880s, is still known as a training ground for some of the world’s leading mining professionals (Australian Mine Atlas – Geoscience Australia, n.d.).

In the 1900s, geologists explored and found significant deposits of iron-ore, thermal and metallurgical coal, mineral sands, diamonds and uranium. These discoveries resulted in the establishment of significant mining towns including Mount Isa and Kalgoorlie as well as the establishment of infrastructure and regional development including railways, airfields and ports (Blainey, 1993). The last of the mining towns was built in the late 1970s at Roxby Downs in South Australia. Since that time, fly in fly out (FIFO) operations have become the norm in all remote mine sites throughout the country. Although there were safety and environmental concerns until the 1970s, the local communities were supportive of the mining industry and national and international communities were, at a time before the communication revolution, generally unaware and disinterested in the activities of mining companies. In many respects, miners and mining companies who employed them, were considered the quintessential Australians, who were prepared to take risks and leave the comfort of the cities to earn a living and to create wealth for the country (Blainey, 1993). An example of a mining operation that exemplified a company that was a welcomed corporate citizen using open cut methods for over 15 years in some of Australia’s most productive farmland is described below.

Nunan Sapphires Pty Ltd, was a privately owned, vertically integrated, gemstone exploration, mining, sorting and cutting and polishing operation that operated in Inverell for 20 years from 1975. At its peak, it employed around 700 people globally with 200 employed at its five Australian mines and around 500 at its cutting and polishing centre in Sri Lanka. It used conventional truck and shovel open cut, strip mining techniques to extract the sapphire-bearing “wash” that was subsequently processed in a series of gravity-fed jig and tables (Coldham, 1985). At 30 million carats a year it was by far the world’s largest and most sophisticated sapphire operation. After sorting by hand and a diamond colour sorter, the rough gemstone was sent to Colombo, Sri Lanka, for value adding by cutting and polishing (Laurence, 1990). It was the largest private employer in the Inverell and Glen Innes districts.

Sapphires were concentrated in ancient riverbeds situated on prime agricultural land, that was used for cropping as well as the raising of cattle and lambs. The company leased the land from local farmers and when mining was finished on a particular block, the land was handed back to the farmer. The company pioneered progressive rehabilitation and it was an integral part of the strip-mining techniques employed. In the 1990s, farmers had the power of veto over miners on agricultural land. Nunan Sapphires was invited to prospect and subsequently mine on this private land because landowners knew that their land would be protected and in many cases left in better condition than when the mining company commenced mining. The company received a government Award for Environmental Excellence in 1991 by the State government (Dept. of Mineral Resources, 1995). This is one of the few operations known where any Australian (State) government has returned to the company its security deposit and cancelled the lease once mining and rehabilitation was successfully completed. It provides an excellent example of a mining company having a social licence to operate.

4. It should still be a good news story

In the 2000s in Australia, of the 10 top export earning commodities, 9 were minerals. Mining saved Australia from recession during the Global Financial Crisis and continues to be its biggest export earner (Knox, 2013). Australia is a top coal exporting nation, the leading iron ore exporter, and a significant exporter of uranium, gold, diamonds and mineral sands. The mining Industry is a global leader in technology including automation (Rutherford, 2014) and is recognised for its leading practices in safety, risk and environmental management (Department of Resources, Energy and Tourism, 2011; Jones and Boger 2012). It is supported by a highly competitive service industry employing hundreds of thousands. From the early-1990s, Australian companies began to diversify into offshore operations, due to tightly held prospective ground in Australia, increasing environmental and regulatory burdens, and the increasing recognition of world-class deposits existing in developing countries (Deans, 1991). Most Australian companies transferred their leading practices in sustainable development to their offshore operations and are often considered to be models for local companies to follow (Department of Resources, Energy and Tourism, 2011).

Along with Canada, Australia was a leader in introducing sustainable mining practices with its emphasis on safety, community engagement, environmental management, economic development and resource optimisation (Laurence, 2011). Numerous examples can be found where the Australian mining industry has provided international leadership in mine rehabilitation and mine closure techniques including mineral sands revegetation, acid rock drainage remediation, subsidence management in longwall coal mining (Audet et al., 2013; Lewis 1986; Li et al., 2018).

The Australian minerals industry, and the Australian government partnered to produce the leading practice sustainable development in mining series of handbooks, 1st published in 1995, with the latest revision appearing in 2016. These handbooks are being translated into numerous languages and distributed throughout the mining world.
5. Community attitudes towards mining begin to change

Australia’s post-war, stable society began to change in the 1960s as its citizens “woke up” politically and students in particular, questioned the Conservative status quo. At university campuses across Australia, there were protests against the Vietnam War, apartheid in South Africa and the restrictions on gay/lesbian rights. Environmental awareness and activism, and indigenous activism began to make its presence felt particularly in the media (Hunt, 2003). In 1967, Aboriginal Australians earned the right to vote.

In the 1960s, there were also protests against mining developments including bauxite mining in the Northern Territory as well as uranium exploration and mining. In 1969, there were objections to limestone quarrying in sensitive, bat habitats including the Colong caves. In 1975 this area was protected by the creation of a national park (Osborne, 2019).

Other land uses attracted the ire of environmentalists including the logging of the eucalypt forests of south-eastern Australia in the early 1970s in places such as Terania Creek (Whitehouse, 1991). The island state of Tasmania was a focal point for environmental activism particularly against the powerful hydro-electric company of Tasmania and its practice of constructing dams for electricity generation. The 1972 “Save Lake Pedder” campaign failed to protect Lake Pedder from destruction but future opposition campaigns a few years later did protect several wild rivers in the western part of Tasmania (Bandler, 1987).

5.1. Anti-mining momentum builds

Arguably the first successful campaign to stop a mining operation in Australia was on Fraser Island in Queensland in 1977, when the Federal government refused Dillingham-Murphysore an export license for its rutile, ilmenite and zircon. This action was taken after a long and protracted campaign by local environmentalists against mineral sand mining that had commenced in 1950 (Hookey and Hicks, 1975; Coaldrake, 1979)). This had a domino effect on other beach sand operations throughout southern Queensland and northern New South Wales and no new mining leases for mineral sands were granted in New South Wales after 1980 (Morley, 1981). In 1984, the New South Wales government created 80 new national parks including many along the coastal strip from Newcastle to the Queensland border, thus forcing the closure of most of the remaining operations. In Australia, mining and even exploration for minerals is banned in national parks. In 1987, a proposal by Currumbin Minerals to use an idle factory in northern New South Wales to process monazite, an important beach sand mineral to extract rare earths, was defeated by local opposition, including dairy farmers and green activists (Geoscience Australia n.d.).

Queenstown, Tasmania, was the site of bitter campaigns in the 1980s to stop the mining company Mt Lyell, from discharging its tailings directly into the Queens river and thence into Macquarie Harbour. This practice has now ceased, and acid drainage contamination diminishes year by year, but damage to the riverine and estuarine environment has been enormous (Keefe at al, 2003). The Tarkine wilderness area on the west coast of Tasmania continues to be a source of friction between environmentalists and the few remaining mining companies on the West Coast (Robertson, 2014).

Australia also hosted a flourishing post-war asbestos mining industry to supply both domestic needs, to meet the building demands of an increasingly prosperous nation and for export. The largest operation, at Woodroffe, NSW, extracted chrysotile or white asbestos, which was used in building and construction products and automobile brake pads (Soeberg et al., 2018). In the early 1980s, the mining company, partnered with the CSIRO, the federal government scientific body, in response to concerns over dry processing of asbestos ore, to develop a revolutionary wet beneficiation process. Laboratory, bench and production trials indicated that the existing, unstable tailings could be safely processed resulting in the recovery of chrysotile fibre. Apart from the development of large cracks in the walls, the 25 million tonne tailings storage facility was a hazard to the community through airborne dust, especially during summer months. The bankable feasibility study indicated that the new tailings from the wet process would be placed in the abandoned open pits. Letters of intent to purchase the wet product had been signed with international manufacturers, however in 1983, the State government denied the company an export license, effectively closing the operation. Revenue from the tailings retreatment would have funded the rehabilitation of the site including two open pits, large waste dumps and removal of any infrastructure. This opportunity was lost and the site continues to be rehabilitated at public expense, at a cost of over $8 million to date (Resources and Geoscience, 2018).

The 1980s proved to be a watershed decade for mining and the environment, as a result of both economic and government intervention, as well as increasing community awareness and concern. In 1985, the price of tin crashed on the London metal exchange, resulting in the unplanned closure of most tin mines throughout the world. It had particularly devastating outcomes for the small-scale miners of the New England region in New South Wales. Virtually all mines ceased operations, leaving a legacy of un-rehabilitated open cut mines throughout the historic tin mining fields of Tingha and Emmaville (Brown, 1992; Laurence, 1987). The miners, who usually operated in family partnerships or syndicates, mostly leased their mining equipment including hydraulic excavators, elevating scrapers, dump trucks and loaders. The equipment was either repossessed or used in road or other constructions sites around the country. Local communities dependent on tin mining, became ghost towns. The legacy mines were added to the inventory of government-funded un-rehabilitated sites and some remain that way 35 years later (Duffy, 2012).

Other examples of 1980s government intervention forcing early mine closures include the 1983 decision to create an enlarged Kakadu National Park in the Northern Territory resulting in the sterilisation of the Coronation hill resource, Australia’s only identified resource of platinum group metals. Compensation claims by Pancontinental the company that had explored and was planning to develop the site, have failed (Asian Wall Street Journal, 1992).

5.2. Opposition to mining becomes more sophisticated

The uranium story provides a seminal example of losing the social licence to operate in Australia. In the decade or so after the ending of the Second World War, mining took place at Rum Jungle in the Northern Territory, Mary Kathleen in Queensland and Radium Hill in South Australia, at the same time as atomic bomb testing was taking place in the South Australian outback (Mudd, 2005). It wasn’t until the early 1970s with French testing of nuclear weapons in the Pacific that sections of the Australian community became sensitised to the threat of nuclear war and nuclear power. In 1983, the Australian government, to restrict the proliferation of uranium mining, introduced a policy of only 3 mines operating at any one time. This policy was overturned 30 years later. Anti-uranium protests began at Olympic Dam in 1983 and continues sporadically at that mine. However, probably more notorious or well-known focus of opposition to uranium in the nuclear fuel cycle is at the Ranger mine in the Northern Territory, that adjoins the Kakadu National Park. A particularly bitter and protracted protest took place in 1997 at the Jabiluka mine development near the Ranger operation (Graetz, 2015). ERA, a subsidiary of Rio Tinto, after developing the underground workings at Jabiluka to the point of commencing production, decided in 2007 not to mine until it received the consent of the traditional owners to start mining (The Age, 2007).

Coal mining in Australia continues to attract opposition from various groups including NGOs, farmers, activists and even state governments themselves. Regarding the latter, Australian society has certainly changed from that of the late 1800s, when the Premier of New South
Wales and much of his cabinet publicly declared financial interests in the sector and in fact some owned coalmines. In the early 1900s, the state government itself owned four coalmines (Wilkinson, 1995). Although the line between thermal and metallurgical coal is often blurred, particularly in the media, court judgements, including the recent Rocky Hill development, the proposed Bylong mine and the Mangoola (formerly Anvil Hill) mine in NSW have ruled against future thermal coal mines. The rulings by the judiciary indicate that although the specific environmental impacts on site are manageable, the climate change impacts of burning the coal, even though this activity will take place offshore, is unacceptable (Bonyhady and Christoff, 2007).

The recent decision to allow the Adani coal mine to proceed to production in the Galilee basin in Queensland was surprising to many Australians, especially environmental activists and city-based dwellers unfamiliar with mining activities. This decision was supported by many regional communities, particularly those where mining is a significant part of the local economy, particularly in rural Queensland. The case demonstrates that Australia is not homogeneous in its opposition or support of mining and that the social licence is very contextual (Beresford, 2018; The Weekend Australian, May 2/3 2020).

Closer to Sydney, the impact of underground longwall mining and subsequent cracking of overlying strata and the alleged loss of surface water in creeks and rivers in the coal mining district of Wollongong, has created significant opposition to the continuation of mining operations in that region (Jankowski et al., 2008). Although the mines extract coking and not thermal coal and much of it is supplied to the local steelworks, it appears as if mining in that region is losing its social licence (ABC News, 2019).

Gold mining tends to occur in less populated parts of Australia than coal mining and tends to attract less criticism in this country than in others. It may be that Australia is also a very stable, dry continent and tailings storage facilities have generally been well constructed and managed. This has resulted in very few failures and therefore contamination of waterways by cyanide or heavy metals (DFAT, 2016). However there have been cases of opposition including the Cowal mine in New South Wales, which was shut down before it was started by the New South Wales government in the mid-1990s, due to 2000+ bird deaths on the tailings dam of its sister mine at North Parkes (McGregor, 1998).

6. Australian miners offshore

Australian miners have been involved in offshore operations for decades, dating back to tin mining in the 1950s in the then Malaya and Thailand (Birch, 1976). In more recent times, Australian-owned or managed companies have been active in all continents except Antarctica. There are many examples of mining operations that have resulted in overwhelming positive benefits to communities but there are examples where it is reasonable to suggest that the company lost its social licence to operate. Although it could be argued that these operations resulted in positive benefits, the negative impact on the community and the environment have overshadowed the positives. In the light of the definition in 2.1 of “a beneficial outcome to all parties before, during and after mining”, clearly the companies have lost or failed to gain the social licence to operate. Operations where there have been challenges, particularly in the area of community support and/or environmental management include:

- OK Tedi, Papua New Guinea – waste and tailings disposed by riverine tailings disposal (Zorn, 2018)
- Bougainville copper mine – islanders fighting for independence (Ellis, 1989)
- Baia Mare, Romania – failure of tailings storage facility (TSF)
- Tampakan copper project, the Philippines – community unrest and agitation against mine development (Anonymous, 2012)
- Anvil Mining, the Democratic Republic of Congo - allegations that it provided logistical support to the Congolese military as it moved to crush a rebel uprising in 2004 (The Canadian Press, 2012)
- BHP-Vale bauxite Brazil – numerous fatalities of workers and residents after TSF failure (Saunders, 2015)

The Chatree gold mine operated in the Pichit province of Thailand from 2001 until it was closed by government decree in December 2016. The mine was operated by Akara Resources, wholly owned by Kingsgate resources, a publicly owned Australian mining company (Kingsgate Resources, 2020). It was the biggest metalliferous mine in Thailand, employing over 1000 people, 95% of whom were Thais, and was recognised as one of the safest gold mines in the world as well as having a demonstrated environmental management record. It had large undeveloped reserves and the reasons given for its closure was contamination of surface and underground water resulting in adverse health issues for the local community. There was a media and NGO-driven campaign against the mine and despite independent monitoring which proved there was no heavy metal or cyanide contamination, the mine was closed. The impact on investment in mining in Thailand was significant (Asia News Monitor, 2019).

The Dominican Republic hosts one of the most productive nickel laterite deposits in the world, in a belt 5 km wide and 95 km long. The largest nickel miner in the country was Falconbridge Dominicana, S.A. also known as Falcindo, a subsidiary of Glencore. The company operated a centralised smelter that was fed by several smaller satellite deposits and had operated since the 1960s until its premature closure in 2016. The smelter was running out of ore and needed the higher quality ore from a satellite deposit situated at Loma Miranda, approximately 20 km from the smelter. Geologists had identified additional high-grade ore at Loma Miranda, that would guarantee a mine life of 20 years with an additional 250 jobs created. Furthermore, the additional revenue would allow the dated smelter to be upgraded, particularly to reduce emissions. Although there was some local support particularly from those who understood the economic potential of the project, a campaign was mounted against the mine by local politicians, local religious leaders, large-scale agricultural enterprises and NGOs (BBC Monitoring Americas, 2014). The result was that the Dominican Republic government did not grant the company a mining lease over the deposit. The campaign was based on potential water contamination and loss of jobs in the agricultural industry as well as interference with long held cultural beliefs (Anonymous, 2013; BBC, 2013). Once again, this case study shows that social licence is very contextual and its withdrawal is not just based on technical issues but in this case cultural and religious beliefs.

7. The role of government in maintaining a social licence

In Australia, mining is generally regulated by each State but the Federal or Commonwealth government has an overarching role in matters of national significance. Governments receive the revenues and surpluses that the industry provides as well as royalties and taxes. Governments have an important role in developing the legislative environment, including the sensitive issues of air and water quality, in which miners can operate to the high standards demanded by the public (Gorey et al., 2016; Department of Planning, 2019). A strength of Australian environmental legislation is that, generally, the rules are clear, transparent and enforceable, which is not the case in many countries. Miners look for certainty and guidance in the preparation of EIAs, SEIAs as well as rehabilitation and closure standards.

Unlike the situation in the 19th century, politicians now rarely publicly support the industry, and energy and resources portfolios are usually the responsibility of junior ministers. It has been said that there are “no votes in mining” and the mining industry, due to its legacy of abandoned mines, has to shoulder much of the blame. Furthermore, many companies do the bare minimum in their environmental management efforts. To change the paradigm of political antipathy, the
industry must do more.

Governments enact legislation which enable or disable the activities of mining companies; they provide export permits for strategic minerals such as mineral sands; they can place policy restrictions on mining such as the 3 uranium mine policy; and, as has been demonstrated in the historical account above, they can sterilise large areas of land from mining through the creation of national parks, reserves and other land categories. A November 2018 headline in the Australian newspaper illustrates the power of government - "Wrecking ball through mining sector - Job risk from $100 billion mine rehab charge". The article went on to say that all open pits are to be backfilled retrospectively with the loss of 2500 jobs.

8. What has changed or influenced community opposition to the mining industry?

The mining industry is not alone in being affected by changes in society at large and many of the reasons for community opposition are multifactorial. They include the fact that Australia is heavily urbanised, with 90% of the population living in 0.22% of its surface area. Therefore, most of its citizens will never see a working mine. The Internet has provided instantaneous information and connectedness resulting in companies being unable to hide or disguise their operations from the public view. The opposition to mining is now well-funded, often by wealthy philanthropists and their operations are extremely well organised. Political parties such as the Greens party in Australia are publicly committed to closing the coal industry (Central Coast Express Advocate, 2013) while the majors, the Labor party and the Coalition are equivocal about the industry (SMH, 2014). The subject of climate change has become mainstream in both the media and the community and rarely does the media portray mining in a favourable light. Populist movies such as Avatar, stigmatised the industry as avaricious and brutal. Alliances have formed between green and farming groups, formally antagonists, in opposing new mining developments (Lock the gate, 2020).

Mining of thermal coal is seen as anathema to many as it directly contributes to greenhouse gas emissions and thus anthropogenic climate change.

There has been significant changes in the corporate world with a more diverse representation of interests amongst board members; boards are divesting from fossil fuel investments led by CEOs sensitised to the impact that activists have on share prices; and large pension and superannuation funds are also divesting from fossil fuel investments. Finally, whereas mining traditionally was a priority land use and mining companies are influential in preventing new mines opening and existing operations encountering Indigenous and other community opposition from time to time, demonstrating that they have their social licence to operate. Despite the massive economic and social dislocation caused by Covid19, the end of chrysotile mining and the reduction in limestone quarrying.
suggested that certain actions need to be taken. Mine operators must prove to the community that the industry is safe, by eliminating all fatalities and serious incidents. Community concerns over the safety and stability of tailings storage facilities must be allayed. Rehabilitation processes must be accelerated to demonstrate to the community that mines can be successfully closed with neutral or positive environmental outcomes. The industry should continue to engage with and continue to employ increasing numbers of Indigenous Australians. The industry needs to collectively embrace the opportunities provided by a greater awareness of climate change. These initiatives alone would attract positive publicity and might be the beginning of a more constructive relationship with the media to ensure that the community is aware of these good news stories.

Finally, the industry needs courageous leaders to make tough decisions that may not be popular in the short term, but in the long-term, will be beneficial for Australia and Australians. These decisions may involve the development of energy resources for local consumption, particularly strategic rare earths and other minerals required for renewables but also uranium and even thermal coal. Together with the measures listed above, the industry may be able to step back from the brink and win back its social licence to operate.

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