



# THE END OF COAL

How should the next government respond?

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**The end of coal: How should the next government respond?**

**Published in 2016 by:** The Green Institute.

[www.greeninstitute.org.au](http://www.greeninstitute.org.au)

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ISBN: 978-0-9580066-3-7

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# THE END OF COAL

Coal—for decades one of the “certainties” of Australian politics—is in terminal decline.

This economic, environmental and geopolitical fact is now beyond dispute.

Whoever wins the coming Federal Election will have no choice but to deal with the beginning of the end of coal, with power stations and mines closing and companies walking away or going bankrupt. Yet the issue is barely on the political agenda.

This collated paper is an attempt to bring the issue to the attention of our politics, and pose a series of key questions that arise from it:

*How should governments respond to coal's rapid and terminal decline? How fast will it happen, and should it be held back or accelerated? How should the decline be managed? Who should pay to support workers left behind? And who should pay for rehabilitation of mine sites and power stations?*

*When it comes down to it, will governments and corporations act to protect people and the planet, or will they try to extract the last drops of profit from coal before it is left behind?*

The case set out in the following papers is not only that change is coming, but also that, if we embrace and accelerate that change, it brings with it tremendous opportunities to build a better, fairer democracy, economy and society.

**Tim Hollo, Editor, Executive Director, The Green Institute**

## Executive summary

How did we find ourselves here?

While Australian politics has been looking elsewhere, assuming that old realities will continue unimpeded, the coal industry has entered a phase of terminal and rapid decline.

According to the Institute for Energy Economics and Financial Analysis (IEEFA), the world passed peak coal in 2013/14. And this isn't a gentle curve. IEEFA projects a 25% drop in global demand for thermal coal by the end of the decade—a crash of a quarter in the next four years!

Let's dig into this, with some key facts and figures extracted from the papers in this collection.

The USA has closed or will close over 100GW (twice Australia's total grid) of coal plants this decade. The collapse of both domestic and export demand has led to all of the USA's major listed coal companies filing for bankruptcy, and stranded assets in the industry estimated by McKinsey at \$75billion.

China, long treated by Australia as an endless excuse for inaction, is shifting rapidly to efficiency and renewables, driven largely by air pollution concerns, but also by climate change and global economic drivers. China's coal use dropped 2.9% in 2014, 4% in 2015 and 6.8% to this point in 2016.

India's new government is taking huge steps, partly driven by environmental and social concerns, but largely by the simple economic fact that domestic solar already outcompetes imported coal on price alone. Despite the protestations of Australian coal spin-doctors, it is now irrefutably cheaper to lift people out of poverty in India with solar power than with imported coal. The Indian government's goal to cease all coal imports in three years is well on its way to being achieved, with a 15% drop in 2015/16 alone.

Here in Australia, the coincidence of increasing energy efficiency, falling demand and greater supply of renewables has led the Australian Energy Market Operator (AEMO) to belatedly recognise that our market has some 8–9000MW of excess capacity. Coal plants are being mothballed or closed from South Australia to



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*The Guardian, ABC Online, Crikey, The Huffington Post and elsewhere.*

Queensland, with Victoria's Hazelwood the latest to be under active consideration for closure. Meanwhile, the massive expansion of export coal mining planned for Queensland is stalled because the global markets are simply not there.

This did not happen by accident. It is thanks to a combination of the sudden affordability of renewable energy, massive public and private investments in energy efficiency, and market forces and political decisions in India, the USA and China making themselves felt. Critically, it should be recognised that all of these forces have themselves being driven by invigorated civil society demands for action across the globe, from widespread adoption of green technologies through the fossil fuel divestment movement to the increasing civil disobedience campaigns in the USA, Australia, Europe, India and South East Asia. It is impossible to ignore the conclusion that coal has lost its social licence. The arrival of affordable battery technology, the solar price crash, and ever-growing campaigns will only accelerate these trends.

The Paris Climate Agreement, while deeply flawed, has been read as locking in the end of coal, with its promise to reach zero net emissions in the second half of the century impossible to achieve without closing the coal sector. A strategic reading of Paris is that such a geopolitical agreement could not have been reached in the absence of the growing civil society and market signals that coal's demise was already happening.



**Hazelwood Power Station, Latrobe Valley, Vic**

Photo credit: CC by attribution—Flickr, Greenpeace/ Hunt

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It is a harsh indictment on our politics that this has taken Australia by surprise.

For years, experts from former Australian Coal Association chair Ian Dunlop to former Greens Leader Christine Milne to energy analyst Tim Buckley, have been pointing towards the beginnings of structural decline for coal. Because governments, business leaders and commentators have ignored the warnings, the price crash, stranded assets and bankruptcies of major coal companies such as Peabody are still being treated as an aberration. The attitude of governments has been at worst to deny that there is a problem and at best to conclude that this will be a slow, steady decline over decades. Either way, the response has been to attempt to hold back the tide with subsidies and support packages to keep the industry afloat.

But we can see the implications of such action in sectors like car manufacturing in Australia and coal in the USA. By keeping industries on life support, handing out ever more subsidies to continue business-as-usual, governments are laying the groundwork for workers, landholders and indigenous people being left on the scrap heap by corporations when they eventually close shop and skip town, as well as a mess of unrehabilitated sites and worse climate change. Time and again, we have seen this process repeating. Industries struggling to get by, ask for handouts, continue with stagnating practices as long as they can, then walk away, paying their directors large bonuses while abandoning any responsibilities to employees or the environment.

Governments—and oppositions—enabling this behaviour to continue while claiming that they are supporting workers are either delusional or dishonest.

In fact, the most honest approach, and the one that will be best for people and the planet, is to immediately prepare for a staged transition, facilitate a dignified exit from the coal industry for workers and communities, and ensure that the corporations which have caused this mess cover the costs.

Coal phase outs across entire jurisdictions are not, as caricatured by opponents, pipe dreams of environmentalists which would lead to economic devastation. They have been completed, and they are underway, in places comparable to Australia. Ontario, Canada, completed a full phase out of coal power in 2014.<sup>1</sup> New York State plans to phase out all coal power plants by 2020<sup>2</sup>, and the United Kingdom by 2025.<sup>3</sup>

And, of course, South Australia, while still connected to the coal-dominated National Energy Market, closed its last coal fired power station on May 9 this year.<sup>4</sup>

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1 <http://www.energy.gov.on.ca/en/ontarios-electricity-system/clean-energy-in-ontario/>

2 <http://www.bloomberg.com/news/articles/2016-01-15/new-york-is-the-latest-state-to-join-worldwide-war-against-coal>

3 <https://www.gov.uk/government/news/new-direction-for-uk-energy-policy>

4 <http://reneweconomy.com.au/2016/last-coal-fired-power-generator-in-south-australia-switched-off-88308>



## Coal reclaimer Newcastle port

Photo credit: CC by attribution—Flickr, Max Phillips (Jeremy Buckingham MLC)

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It is worth noting that this paper deliberately takes climate change as understood. But it does require an honest appraisal of the situation we find ourselves in.

There are positive signs that outright rejection of climate science is increasingly outside the norms our politics. However, what remains mainstream political consensus is a misguided idea that it is possible to tackle global warming without rapid and radical change. Liberal, Labor and National Party politicians, business leaders and commentators are able to simultaneously profess support for the Paris Climate Agreement and argue that coal has a long term future.

Set against this, a recent paper from the Climate Institute calculates that, in order to have a chance of hitting the Paris targets, Australia will have to phase out all coal power by 2030–35.<sup>5</sup> One of the world’s most respected climate scientists, Professor Michael Mann, goes further. He has concluded that “We have no carbon budget left for the 1.5°C target and the opportunity for holding to 2°C is rapidly fading unless the world starts cutting emissions hard right now.”<sup>6</sup>

The clear lesson from climate science is that all coal plants should be closed as swiftly as technically achievable. The decline that has already started will have to be accelerated as governments manage the exit.

5 The Climate Institute, A Switch in Time, 2016, [http://www.climateinstitute.org.au/verve/\\_resources/TCI\\_A-Switch-In-Time\\_Final.pdf](http://www.climateinstitute.org.au/verve/_resources/TCI_A-Switch-In-Time_Final.pdf)

6 As interviewed by David Spratt, Climate Code Red, <http://www.climatecodedred.org/2016/03/mind-blowing-february-2016-temperature.html>

There are, of course, a multitude of other reasons why we should be accelerating the phase out of coal, rather than simply waiting for the market to do its work, or holding back the tide and keeping it on life support.

The health impacts of coal mining and burning, and of climate change itself, have recently been brought to the fore by doctors and medical associations around the world. In May 2016, an open letter was published from “82 organizations from 30 countries who represent more than 300,000 doctors, nurses and public health professionals” calling on governments meeting at the G7 to accelerate the phase out of coal fired power.<sup>7</sup> They set out evidence of premature deaths and ill health caused by air pollution, mercury and climate change that can be traced to coal.

The disproportionate impact of coal mining on Indigenous peoples in Australia and overseas, on people in developing nations, and on vulnerable people within rich nations like Australia is another reason to accelerate its phase out. The recent Beyond Coal and Gas conference in Maitland, NSW, featured stark and passionate presentations from Indigenous leaders from central NSW,<sup>8</sup> Cape York,<sup>9</sup> Borroloola in the Northern Territory,<sup>10</sup> as well as visitors from India and the USA. All of them told of a coal industry, backed by governments, trampling the rights of local communities, destroying cultural heritage, and poisoning the water, the land and the people living on it.

But the reasons to phase out coal aren't just to stop bad things happening. Embracing the end of coal also opens up a whole range of possibilities that currently are closed off. Just as any menu limits our choices, our fossil fuel entrenched politics limits what we can imagine for ourselves. The opportunity now is to deliberately expand our horizons and think big. Here is just one example.

Whenever the end of coal is raised, our political debate very quickly—and quite rightly—focuses on what will happen to communities where coal is currently a big part of the economy. The problem is, our politics currently allows for only two perspectives.

The most common approach, epitomised by Deputy Prime Minister Barnaby Joyce in the Regional Leaders' Debate on ABC on May 25, is to proclaim that there are no alternatives to coal mining for people living in these communities and that those who want to close the mines want to leave them out of work. Aside from the fact that this is an offensive slur against thousands of skilled people, it has the impact of increasing depression and disenchantment in those communities, as Dr Amanda Cahill finds in her contribution below.

The second approach, epitomised by well-intentioned unions and community campaigners, is to insist that coal be replaced by similar, high-paying full time jobs. For many people, this will be important or necessary, and this should in no way be taken as suggesting every effort shouldn't be made to provide them.

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7 <https://cape.ca/wp-content/uploads/2016/05/Global-Health-Statement-on-Coal.pdf>

8 <http://www.abc.net.au/news/2015-02-26/aboriginal-group-fighting-coal-mine/6263304>

9 <http://www.abc.net.au/news/2016-04-13/wangan-and-jagalingou-plan-legal-action-carmichael-mine/7323728>

10 <https://news.vice.com/article/these-aboriginal-groups-are-trying-to-halt-a-natural-gas-boom-in-australias-northern-territory>





**Suttons Forest landscape, NSW**

Photo credit: CC by attribution—Flickr, Max Phillips (Jeremy Buckingham MLC)

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There is, however, a third way. Around the globe, there is increasing awareness that automation of jobs, ecological limits and growing post-consumerist behaviour are leading towards a world where we can finally free ourselves of the daily grind. After a three decade hiatus, we can return to the previous goal of both left and right politics—less work. In this context, alongside drives for a shorter working week and more affordable housing, health and education, there is a swiftly building push for the introduction of some form of guaranteed basic income for all people. Trials are already underway or planned in the Netherlands, Finland and Canada, simply providing regular payments to all people.<sup>11</sup>

What if we were to establish a trial of guaranteed basic income for all people in the Hunter and Latrobe Valleys, in Collie, Port Augusta and the Gladstone area? Alongside properly resourced community consultations, and investment in seeding new industries and supporting existing ones to grow, this would enable people in coal communities to move beyond coal with confidence, with hope, and with exciting visions for the future.

<sup>11</sup> <https://overland.org.au/2016/01/the-case-for-a-universal-basic-income/>

The climate, health and human rights drivers make it imperative that we phase out coal, and there are tremendous opportunities from doing so. But the message from the papers in this collection is that, whether we embrace it or not, the end of coal is happening now and the challenge the next government will face is how to respond.

These papers are an object lesson in strength in diversity. They take a wide array of angles and approaches to the question: technical and personal, economic and ecological, geopolitical and geological.

In the first two papers, IEEFA's Tim Buckley and the Climate Justice Programme's Julie-Anne Richards set out the context we're in.

In a commissioned paper, Buckley paints a picture of an industry in free fall: stranded assets, high profile bankruptcies, and capital flight from every part of the coal industry, from mines to ports to power generation. He shows us a global transformation underway, with major implications for the Australian coal sector. Around the world, thanks to various drivers, coal is being squeezed from both directions—on the one hand the successful decoupling of economic activity from energy use reducing demand and, on the other hand, coal rapidly losing market share of remaining demand, being outcompeted by other technologies and fuels. As noted above, Buckley concludes that the world passed peak coal in 2013/14 and projects a crash in global demand for thermal coal of 25% by the end of the decade.

Richards, meanwhile, examines the geopolitics leading up to and out of Paris, charting the political end of coal. In particular, she highlights the rise of loss and damage as a concept in global climate negotiations, next to mitigation and adaptation. Richards examines the growing threat of litigation against both governments and corporations, following the model of tobacco and asbestos litigation. In those cases, litigation was a precursor to governments pursuing corporations for liability for damages they caused. She notes that there is already momentum towards a levy on coal extraction so as to ensure that governments have funds to cover such liabilities.

Dr Nick Aberle, from Environment Victoria, then looks at the fact that falling domestic energy demand, increasing renewable energy penetration and affordability, and the climate reality, provide the perfect moment to accelerate the phase out of coal. He sets out the case for properly preparing for and planning this phase out or we risk leaving workers and the environment in the lurch. Noting that AEMO calculates that 30-40% of existing coal plants in Australia will need to be closed in order to meet even the current government's woeful climate targets, he follows the Climate Institute's recommendation of working to retire our entire coal fleet by 2030-35 at the latest. Canvassing the barriers to exit as well as entry to the energy market, Aberle sets out policy options for staging retirement, concluding with a plea to start preparing communities for transition now, instead of waiting until it's too late.

Dr Amanda Cahill of the Centre for Social Change contributes powerful personal reflections on working in and with communities in transition. She highlights the opportunities not just for climate action but also

for deep social and economic renewal that come with a swift and well-prepared transition away from coal. Unsurprisingly, she notes that responses from communities depend on the questions they are presented with. People swing from understandable depression and disempowerment when thinking only about coal's demise, to excitement and inspiration about future opportunities when prompted to consider the strengths of the local community, to anger at what governments and corporations have done. Cahill finds that the communities she has worked with begin to raise radical questions of their own, challenging the failings of our current economic system.

Lock the Gate founder, Drew Hutton, takes a different approach, starting with a call to action to broaden the movement fighting climate change and fossil fuels into one that builds a new economy and new democracy. He takes the huge task of mine rehabilitation as his example, noting the immense opportunities in rehabilitating mine sites covering some 94,600km<sup>2</sup> in Queensland's Bowen Basin alone. Seizing that opportunity means rewriting our current political economy, Hutton argues, since mining companies currently avoid their responsibilities in various ways, and are enabled to do so by governments. "Interventionist governments and regulatory enforcement", as well as a cultural shift in board rooms, are prerequisites to effectively tackling this challenge.

Finally, Charlie Woods, Campaigns Director of 350 Australia, brings the activist perspective. She articulates in plain language how deeply entangled politics and fossil fuels currently are, thanks to donations, subsidies and the revolving door of politicians and lobbyists, and sets out urgent steps we can and must take to disentangle them.

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### Liverpool Plains landscape

Photo credit: CC by attribution—Flickr, Max Phillips (Jeremy Buckingham MLC)

There is no simple answer to the question “how should the next government respond to the end of coal”. There is certainly no silver bullet. The contributors to this collection set out a broad range of recommendations pointing towards the kind of systemic shift that needs to occur if our politics is to truly face up to the challenge. In summary, the next government must:

1. **Publicly acknowledge that coal is on its way out and we need to manage its decline and replacement** in energy supply, in the economy and in employment, **phasing out coal power and mining as soon as feasible and no later than 2030–35**;
2. **Set a climate target in line with science**, and one which explicitly includes a **managed phase-out of coal in line with Paris commitments at a minimum**;
3. **Remove coal’s stranglehold on politics**, through donations reform, ending fossil fuel subsidies and closing the revolving door;
4. **Ensure that coal companies pay** for rehabilitation of sites and just transitions plans for communities, as well as contribute towards loss and damage, before they relocate or go bankrupt; and
5. **Engage communities thoroughly and honestly in questions about their future**, through properly funded consultations beginning immediately, and enable them to walk into the future with confidence through a mechanism such as a localised trial of a guaranteed basic income.

The end of coal doesn’t need to fill us with fear. We can embrace it as an exciting opportunity. But, frankly, regardless of how we approach it, we’d better get used to the fact that it is now upon us. After wasted years ignoring the signs that it was coming, it’s about time we made the end of coal work for all of us. ●

# The structural decline of coal markets

Global electricity markets are undergoing a rapid transformation, driven by changing technology and policy. The global coal mining, coal fired power and associated coal infrastructure sectors are facing unprecedented pressures, and the seaborne thermal coal market in particular is already structural decline. Capital markets are belatedly coming to grips with the rapidly rising risks of stranded assets, and capital flight is accelerating from coal mining, coal fired power generation and the associated rail and port infrastructure.

IEEFA analysis concludes that, due to greater energy efficiency and more diversified electricity generation, the world passed peak coal consumption in 2013/14.<sup>1</sup> We forecast global thermal coal demand will decline by more than 25% in volume terms by the end of this decade.

This review, commissioned from IEEFA by The Green Institute, examines the status of key global electricity markets—China, India, USA and Japan—to illustrate some of the many and diverse forces driving this transformation—a transformation which has major implications for the Australian coal sector.

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<sup>1</sup> <http://ieefa.org/past-peak-coal-in-china/>



**Tim Buckley** is Director of Energy Finance Studies, Australasia, Institute of Energy Economics and Financial Analysis (IEEFA). He has 25 years' financial markets experience, mainly in Australia, but also with time covering global and Asian equity markets. Tim provides financial analysis in the seaborne coal and electricity sectors for IEEFA, studying renewable energy, energy efficiency across Australia, China and India, and the resulting risk of stranded fossil fuel assets in Australia.

Tim has published numerous financial papers, including "Remote Prospects: A Financial Analysis of Adani's coal gamble in Australia's Galilee Basin" in November 2013, "Peak Thermal Coal Demand by 2016" in conjunction with the Carbon Tracker Initiative in September 2014, "Energy Markets in Transition" in January 2015, "Indian Electricity Sector Transformation" in August 2015 and "Indian Electricity Sector Transformation: Capacity Building" in November 2015.

Tim is a member of the Australasian Investor Group on Climate Change (IGCC).

Tim was co-founder of Arkx Investment Management, an investor in global listed clean energy companies (2009–2013) that invested in the opportunities of energy market transitions. Westpac Banking Group was a cornerstone investor and client.

From 1998 to 2007 he held the position of Managing Director at Citigroup, and was Head of Australasian Equity Research from 2001. Tim was Head of Research for Deutsche Bank based in Singapore for 1996–1998. Tim was a highly rated conglomerates equity analyst for a decade prior to Singapore, culminating in being rated Australia's top Industrial Analyst.

It is worth prefacing this review with a brief overview of the different aspects of the coal sector, as markets differ dramatically.

## Types of coal

There are three main types of coal. The global market by volume is split into coking coal for use in steel making (12%), lignite (12%) and thermal coal (76%). Lignite and thermal coal are both primarily used for electricity generation.

Coking coal is the highest energy and quality content coal and is used in steel production. Coking coal is Australia's second largest export by value behind iron ore. Australia's global market share of coking coal trade is over 50%,<sup>2</sup> explaining why coking coal gets a disproportionate share of focus in Australia.

Lignite (sometimes referred to as brown coal) is low energy content and hence is not high enough value to warrant transporting long distances. As such, lignite is primarily used at the "mine mouth", meaning the coal-fired power plant is built in close proximity to the lignite mine and the energy is converted at the source and transported via the grid as electricity. Australia is the fourth largest lignite producer globally behind China, USA and Poland.<sup>3</sup>

By comparison, thermal coal is of varying but higher energy content. High quality thermal coal is able to be cost effectively moved by rail and/or ship internationally, hence the seaborne thermal coal trade is a well established subset of total thermal coal use. Approximately 20% of thermal coal globally is internationally traded, with the balance of 80% used in a domestic context.

Australia is the second largest thermal coal export country (behind Indonesia), and thermal coal was the third largest Australian export by value in FY2015.<sup>4</sup>

NSW's coal exports are 80% thermal coal and 20% coking coal, while the profile is reversed in Queensland, with almost 80% of exports being coking coal. Queensland's interest in thermal coal would be dramatically expanded and even overtake NSW in global significance if the low energy, high ash thermal coal deposits in the Galilee Basin are developed. However, the only proponent still actively working on this currently is Adani Enterprises, but even this proposal is six years behind schedule and a long way from achieving financial close. As the following review demonstrates, the structural decline in the global coal sector leaves this development stranded.

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2 <http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Documents/req/REQ-March-2016.pdf>

3 <https://www.iea.org/newsroomandevents/pressreleases/2015/december/global-coal-demand-stalls-after-more-than-a-decade-of-relentless-growth.html>

4 <http://www.industry.gov.au/Office-of-the-Chief-Economist/Publications/Documents/req/REQ-March-2016.pdf>



**University of Queensland solar array**

Photo credit: CC by attribution—Flickr, GreensMPs

“  
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 ”

### **Global electricity markets in transformation**

The global electricity market is undergoing a rapid transformation, driven by a number of factors. These include uptake of energy efficiency and distributed rooftop solar that is decoupling grid-based electricity demand from economic activity. Additionally, this decade has seen a significant expansion in global installation rates of hydro electricity, gas fired power generation and utility scale renewable energy.

The single biggest driver is the growing efficiency of energy use and resulting decoupling of electricity demand from growing economic activity. The EIA highlights that US electricity consumption has flat-lined for the last six years, despite economic growth of 2–3% annually.<sup>5</sup> China has delivered increased energy productivity of over 4% annually for the last two decades,<sup>6</sup> and the move away from heavy industry and construction towards less energy intensive service industries has seen this trend accelerate in 2014–2016. In Japan, total electricity consumption has declined 12% in the five years post Fukushima.<sup>7</sup>

5 <http://www.eia.gov/forecasts/ieo/>

6 <http://data.stats.gov.cn/english/easyquery.htm?cn=A01>

7 <http://ieefa.org/wp-content/uploads/2016/03/Japan-Energy-Brief.pdf>

The rise of distributed rooftop solar power generation, and the widely anticipated explosion in home energy management systems (including battery storage) is expected to dramatically reduce electricity consumers' need for grid supplied electricity this coming decade.

At the same time as electricity demand globally has decoupled from economic activity, coal fired power generation has also lost significant market share to other generation sources, with the rate of share loss now accelerating. This decade has seen China commit to doubling its already world-leading position in hydro electricity capacity, with over 100 gigawatts (GW) already commissioned over 2011–2015. The USA has built or commenced construction of over 100GW of new gas-fired power generation capacity, driving the planned closure of a record 102GW of coal fired power plants across the country this decade.<sup>8</sup>

Global wind installations have averaged close to 50GW annually over 2011–2015, with a significant step-up expected in the next five years as technology improvements continue to make wind increasingly cost-competitive with fossil fuel generation.<sup>9</sup> Global solar installations are growing 15–20% annually, and exceeded 55GW in 2015 for the first time ever.<sup>10</sup> IEEFA estimates total cumulative solar installs reached 429GW in 2015. Again driven by double digit annual reductions in the cost of solar installations, 2016 solar installs are forecast to exceed 60GW, permanently overtaking wind in terms of annual installation rates.

### **What is driving the transformation?**

Each country exhibits different economic and policy drivers for this transformation. These range from the US and France taking a global leadership role in addressing climate change, culminating in the very successful COP21 in Paris in December 2015, to air pollution issues in China to pure economic drivers in India.

In the USA, President Obama has taken a global leadership position on climate change and introduced a raft of new regulatory measures being progressively implemented by the Environmental Protection Agency (EPA). In addition, at a time when a significant portion of the US coal fired power generation fleet is approaching the end of its useful life, the cost of domestic natural gas has dropped to a record low rate. The expectation is for this ultra-competitive supply to continue to expand, given drilling technology costs have dropped 70–80% over this decade to-date alone. While the climate implications of this shift are still being debated, the implications for the coal sector are clear.

In China, the Premier in 2014 declared a “war on pollution”;<sup>11</sup> a war which conveniently coincided with a strategic policy decision to gain global technology and manufacturing leadership in renewable energy industries.

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8 <http://content.sierraclub.org/coal/victories>

9 <http://www.gwec.net/publications/global-wind-report-2/global-wind-report-2015-annual-market-update/>

10 <http://www.greentechmedia.com/articles/read/gtm-research-global-solar-pv-installations-grew-34-in-2015>

11 <http://www.reuters.com/article/us-china-parliament-pollution-idUSBREA2405W20140305>



In India, a target to install 175GW of renewable energy by 2021/22 was driven by the need to reduce the exchange rate instability caused by the ballooning of fossil fuel imports and hence the widening current account deficit. This has combined with the fact that domestic Indian solar energy is a lower cost source of electricity than new imported coal-fired power generation.<sup>12</sup>

### A review of the four largest global electricity systems

It is illustrative to review in a little more detail the status of the four largest global electricity markets: China, USA, India and Japan. This will explain why even with divergent motives and drivers, the cumulative impact is an acceleration in the global transformation of the world's electricity market away from coal. Greater energy efficiency and a more diversified electricity generation fleet means China, and hence the world, passed peak coal consumption in 2013/14. Seaborne thermal coal markets concurrently passed their peak in 2014, and IEEFA actually projects a 25% global decline in seaborne thermal coal markets by the end of this decade. We will come back to this shortly.

12 <http://economictimes.indiatimes.com/industry/energy/power/solar-projects-continue-to-attract-bids-less-than-rs-5-per-unit/articleshow/52100359.cms>



**Coal train and coal loader, Newcastle, NSW**

Photo credit: CC by attribution—Flickr,Coal Terminal Action Group

“  
**Greater energy efficiency and a more diversified electricity generation fleet means China, and hence the world, passed peak coal consumption in 2013/14**  
 ”

## China: “In the last five years, everything has changed”

China is by far the world’s largest electricity market, and produces and consumes half the world’s coal. With economic growth running at 8–10% annually for the first decade of this century, coal consumption grew at more than 10% annually. However, in the last five years, everything has changed. The rate of economic growth has permanently slowed, with expectations for a more sustainable 6–7% p.a. going forward. Within this, the primary driver of economic growth is lower energy intensive service and consumer facing industries.

As mentioned above, electricity demand grew at only 3–4% p.a. in 2013 and 2014, and has flat-lined in 2015 and again to-date in 2016.<sup>13</sup> This decade is likely to see China add 165GW of hydro capacity, 30–40GW of nuclear capacity, plus 30–40GW of gas fired power generation.<sup>14</sup> In addition, China is forecast to add over 200GW of wind farms and possibly 120GW of new solar (adding 7GW of solar in just the first three months of 2016<sup>15</sup>). The signing of the China–US Climate Agreement in 2015<sup>16</sup> was instrumental in the successful COP21 outcome delivered in Paris. China reported that coal production in the first four months of 2016 was down 6.8% year on year, an acceleration on the 4% decline reported in 2015 (which itself built on a 2.9% decline reported in 2014).

13 <http://ieefa.org/coal-decline-steepens-2016/>

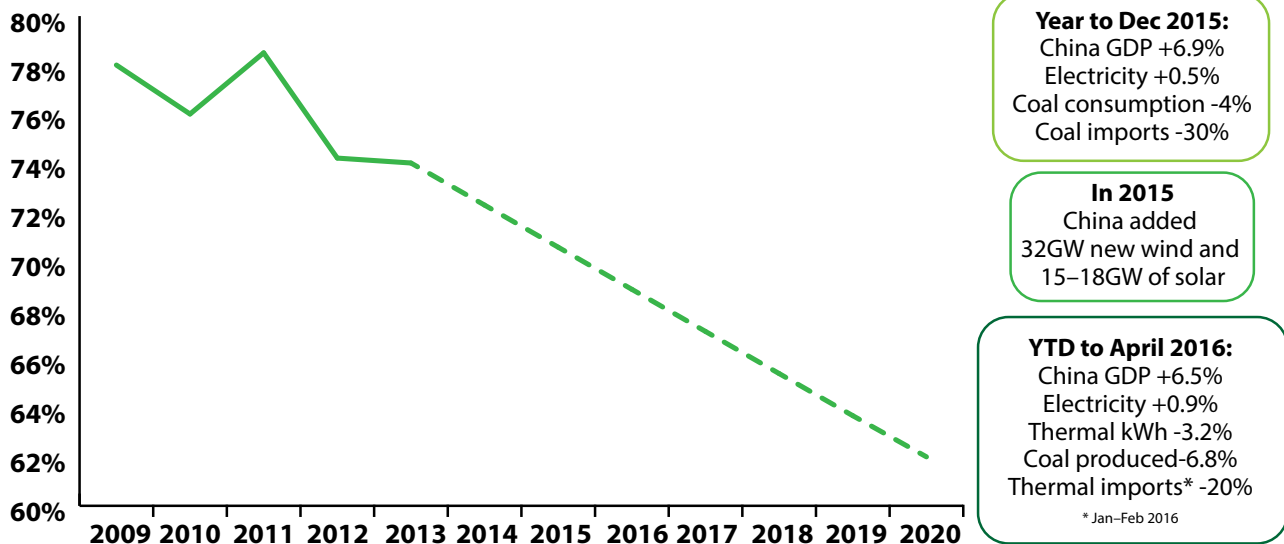
14 <http://www.lse.ac.uk/GranthamInstitute/publication/chinas-changing-economy/>

15 [http://www.chinadaily.com.cn/bizchina/2016-04/23/content\\_24780071.htm?platform=hootsuite](http://www.chinadaily.com.cn/bizchina/2016-04/23/content_24780071.htm?platform=hootsuite)

16 <https://www.whitehouse.gov/the-press-office/2015/09/25/us-china-joint-presidential-statement-climate-change>

## China’s Electricity Sector Transformation

Coal’s share of China’s electricity generation mix is set for a steep decline



Source: Citi Commodities, Tony Yuen, June 2014; “Energy Markets in Transformation”  
<http://uk.reuters.com/article/2015/07/15/china-economy-output-coal-idUKL4N0ZV1FX20150715>

### **The USA: “An orderly decline in coal consumption has turned into a rout”**

The USA started this decade as the second largest electricity market in the world, as well as the second largest producer and consumer of coal globally. In just a few years, both domestic demand and export have collapsed and all of its major listed coal companies have filed for bankruptcy.

The transformation of the U.S. electricity market this decade is just as staggering as that witnessed in China. With overall electricity demand entirely decoupled from economic activity, the ongoing expansion of U.S. gas-fired power generation and renewable energy is forcing an equivalent amount of retirement of aging coal-fired power capacity built largely in the 1950–1960s. Over 100GW of coal capacity is slated to retire this decade, net of a few coal fired power plant additions at the start of the decade. The USA is expected to install a record 10GW of wind and possibly 12–16GW of solar in 2016 alone, representing the largest ever annual expansion in renewable energy capacity achieved by the US<sup>17</sup> (to-date). The electricity being supplied by gas, wind and solar is now lower cost than new coal fired capacity, even without a price on carbon pollution.

The end result has been a collapse in demand for coal production across the USA. Having peaked in 2008, US coal consumption is down more than 20% through 2015. However, this somewhat orderly decline has turned into a rout, with year-to-date 2016 coal production and consumption down more than 30% year-on-year.<sup>18</sup>

McKinsey in May 2016 estimated that financial liabilities in the US coal mining sector of US\$100bn might have to be written down to just US\$25bn by 2020, representing a major realisation of stranded asset risk this decade. This is best illustrated by the May 2016 move into Chapter 11 by Peabody Energy, a company that had a market capitalisation of equity exceeding US\$18bn just five years ago. This is no isolated example; all five of the largest listed coal companies in the US have entered Chapter 11 in the last year.

Whereas the US coal mining industry planned to redirect this excess production capacity towards a lift in export volumes, instead US coal exports have collapsed 40% in volume terms since their peak in 2012.<sup>19</sup> Given the more than halving of the export coal price in this period, in value terms US coal exports are likely to be down 70% in 2016 from their peak.

### **India: “Solar now cheaper than imported coal”**

India exited 2015 as the third largest electricity market in the world, the third largest coal producing and consuming nation globally, and in fact overtook China to be the largest importer of thermal coal.

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17 <http://www.eia.gov/todayinenergy/detail.cfm?id=25432&src=email>

18 <http://www.eia.gov/coal/production/weekly/>

19 <http://www.eia.gov/coal/production/quarterly/pdf/t4p01p1.pdf>

A strong domestic economic growth profile gives credibility to the Indian Government's target for real economic growth of 7–8% annually over the coming decade. As a developing economy that is seeking to significantly expand urbanisation and grow its manufacturing sector faster than the economy overall, electricity consumption is likely to grow in line with economic activity, even assuming the increased focus on energy efficiency initiatives continues.<sup>20</sup>

The outcome of this is that India's energy policy has taken on a far greater global significance, particularly as it impacts the world's efforts to implement a global accord to limit carbon emissions and prevent excessive instability from climate change. This comes despite India's entirely understandable insistence that it should not be saddled with solving the world's growing carbon emissions problem, given it was not responsible for creating the problem in the first place.

Nevertheless, India's then new Energy Minister Piyush Goyal in mid-2014 embarked on a seven year electricity system transformation that is already proving remarkably successful. The core components of this strategy are to drive a dramatic grid and energy efficiency program that would have the combined effect to significantly lower the rate of growth in electricity production. Three key programs are to:

1. use electricity more efficiently (e.g. through a massive, nation-wide light bulb replacement program using LEDs);
2. cut the current grid distribution loss rates of 25% to below 15% within three years; and
3. cease electricity sector subsidies of over US\$10bn annually.

In addition, India has made strong progress in its target to cost effectively spend over US\$200bn in the seven years to 2021/22 to lift renewable energy installations fivefold to 175GW in total. This program is being done without any major renewable energy subsidy programs, relying on energy policy clarity and certainty.<sup>21</sup> In November 2015 a globally significant event occurred, that being the announcement that a US\$500m investment in a 500MW solar project was being undertaken at a wholesale tariff of just Rs4.34/kWh (US\$65/MWh).<sup>22</sup> Thus solar electricity is now cheaper than that at which new imported coal fired power can be generated.<sup>23</sup>

India will continue to use more coal in absolute terms each year over the next decade, notwithstanding a rapid diversification of the growing generation capacity base away from coal-fired power to more hydro, biomass, wind and solar power. However, this will soon come entirely from domestic sources. Minister Goyal in January 2015 set a target for India to cease thermal coal imports within three years. Given total coal imports fell 15% in the 2015/16 year, the success of this program is looking increasingly assured.

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20 <http://ieefa.org/india-electricity-sector-transformation/>

21 <http://ieefa.org/us100-billion-in-new-renewable-investments-in-2015-power-indias-energy-transition-2/>

22 [http://articles.economictimes.indiatimes.com/2016-01-19/news/69900231\\_1\\_power-tariff-sunedison-ntpc](http://articles.economictimes.indiatimes.com/2016-01-19/news/69900231_1_power-tariff-sunedison-ntpc)

23 <http://ieefa.org/energy-sector-advances-india-china/>

This has major, negative ramifications for Australian thermal coal export investments (refer below).

### **Japan: “An electricity system shaken to its core”**

Japan is the fourth largest electricity market globally, and has historically been almost 100% dependent on fossil fuel imports—oil, gas, uranium, coking and thermal coal. However, the Japanese electricity system was shaken to its core by the Fukushima nuclear disaster of 2011. This has led to a major transformation involving deep energy efficiency and diversification of supply towards solar and offshore wind.

The almost immediate closure and moth-balling of 43GW of nuclear capacity took out 30% of Japan’s electricity generation capacity in the space of two years. By mid-2016, only three of the 48 nuclear reactors have been brought back online, and this re-commissioning program is proving difficult and expensive, in large part due to the loss of a social licence to operate in the eyes of the voting public.

The immediate consequence of the closure of the entire Japanese nuclear power generation fleet was an electricity supply crisis. The result was a 20% lift in electricity prices and an enforced program of energy conservation. Five years on, the annual electricity sector demand is down more than 12% from levels seen prior to 2011. Energy efficiency initiatives have been implemented and enhanced across all areas of demand. This has accelerated innovation and entrenched as permanent the decoupling of electricity demand from economic activity.<sup>24</sup>

In addition, the Japanese government in mid-2012 announced a policy to rapidly diversify the electricity generation sector away from its reliance on imported fossil fuels. The immediate outcome was the signing of contracts to develop 70–80GW of new solar projects. Solar installations over 2013–2016 are running at close to 10GW annually, notwithstanding annual double digit tariff reductions.

In addition, Japan’s heavy industry has invested aggressively in the development of the offshore wind industry using an innovative but yet-to-be-commercially deployed floating wind turbine design. Plans are for commercial deployment at scale beyond 2020.

The combination of energy efficiency and renewable energy deployments, plus a gradual nuclear fleet restart means that Japan—the second largest importer of thermal coal globally in 2016—is likely to see a progressive reduction in imports over the coming decade.

### **The Seaborne Thermal Coal Market in structural decline**

China was by far the largest importer of thermal coal globally in 2013, importing 246 million tonnes (Mt) and representing 23% of the global total. However, thermal coal imports peaked in 2013, and the rate of decline has accelerated from a decline of 9% in 2014 to 30% in 2015. In the first two months of 2016,

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24 <http://www.smithschool.ox.ac.uk/research-programmes/stranded-assets/satc-japan.pdf>

China's thermal coal imports fell another 20% year on year. The world's largest coal mining company, China Shenhua Energy, returned to the position of being a net exporter of thermal coal in 2015, and set a target to lift its exports fivefold in 2016. This identifies a key strategic threat to the Australian thermal coal sector, that being that China could move from being the world's largest importer to return to being an opportunistic net exporter of coal again by the end of this decade.

The coal export industry has pinned its hope for growth on India to be the "next China" in terms of rapid growth in thermal coal imports. However, as detailed above, this hope increasingly looks to be in vain, with India's coal imports having peaked in mid-2015 and the rate of decline has accelerated with every month since. In March 2016, coal imports to India fell a record 27.4% year on year. Minister Goyal's target for India to cease thermal coal imports this decade is looking increasingly likely.<sup>25</sup>

While Southeast Asia has long harboured plans to build a massive electricity generation fleet based on imported coal, the wisdom of this plan is now being increasingly questioned. The fact is that most imported coal-fired power plants are now almost entirely reliant on tied coal finance from Japan, China, Korea or India. This state-sponsored finance is tied to the use of technology and equipment from sister companies of the country providing the finance. The evidence is growing that second rate technology is being exported and poor construction (again tied to companies relating to the provider of state financing) is the end result. These projects increasingly lack commercial viability, and the social licence of the proponents is questionable, as evidenced by the local resistance to forced land acquisition and community displacement.

The announcement by the Vietnamese Prime Minister in March 2016 that put a halt to a decade long program of new imported coal-fired power plant proposals was telling. The thermal coal industry has long trumpeted the prospects for rapid and sustained double digit growth in Vietnamese coal imports.

The evidence now increasingly supports the conclusion that the global seaborne thermal coal import market peaked in 2013 or 2014. Chinese imports peaked in 2013, Indian thermal coal imports peaked in mid-2015 and Japan is likely to have peaked in 2015 as well. As such, the three largest coal import nations globally have all passed peak thermal coal. Vietnam's surprise announcement strongly suggests Southeast Asia will not prove to be anywhere near sufficient a growth market for coal imports to offset the accelerating decline of the three largest global import markets.

IEEFA forecasts global thermal coal demand will decline by more than 25% in volume terms, and by more than 40% in US\$ value terms by the end of this decade. Stranded asset risk in the coal industry is substantial.<sup>26</sup>

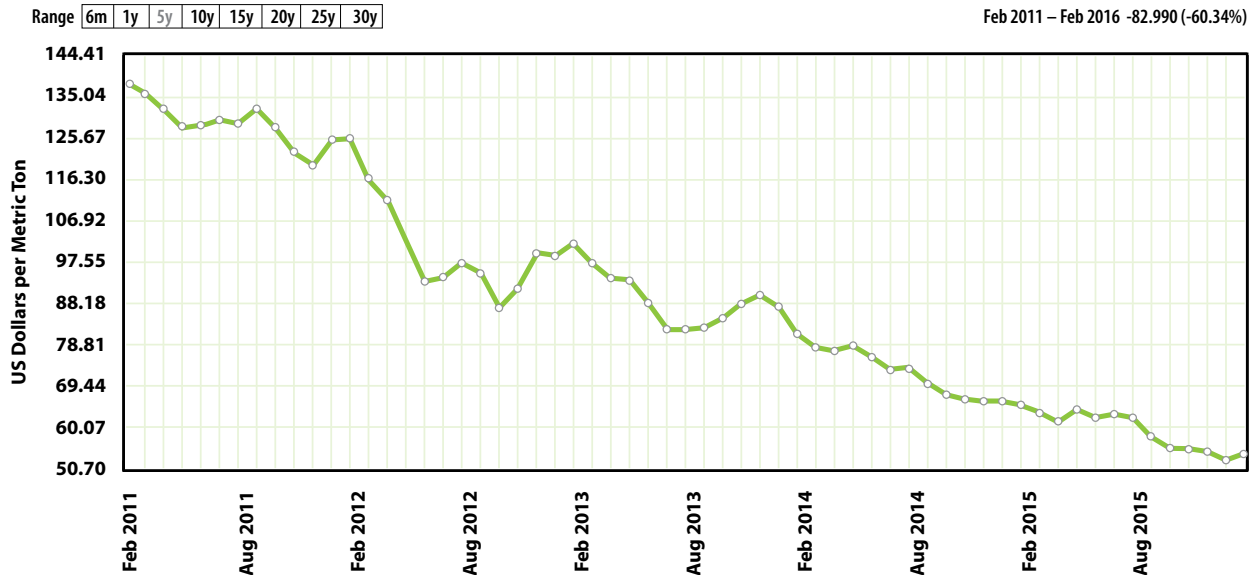
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25 <http://www.bloomberg.com/news/articles/2016-04-25/india-s-energy-minister-wants-to-cut-coal-imports-to-nothing>

26 <http://www.carbontracker.org/report/carbon-asset-risk-from-rhetoric-to-action/>

## Thermal Coal Export Price Collapse

### Newcastle Export 6,000kcal Thermal US\$/t—at decade low



Source: <http://www.indexmundi.com/commodities/?commodity=coal-australian&months=60>

### Structural decline of thermal coal

A decade ago it was considered possible that the world could progressively move away from coal fired electricity generation, but that this would involve trillions of dollars of investments annually and take many decades to achieve. For a decade Germany had led the world in driving this energy transformation, but at significant upfront cost. Its heavy investment drove technology innovation and economies of scale in manufacturing, as well as learning by doing in terms of plant construction and financing.

The global leadership shown by Germany has been taken up by the USA and China over the last five years. More recently still, the added impetus of both Japan and India has underpinned continued technology development and double digit annual cost reductions in a plethora of new, ever more effective low emissions technologies (LEDs, energy efficient appliances, solar modules, wind turbines and lithium ion batteries).

The coal industry seems to be pinning its hope on the now outdated thinking that the global energy market transformation will take many decades to emerge. An analysis of how quickly the mobile phone has superseded fixed line telecommunications, or how entrenched the internet is across all aspects of business within little more than a decade, should have been a clear warning. Now, the facts of the rapid transformation already underway speak for themselves.<sup>27</sup>

<sup>27</sup> <http://www.carbontracker.org/report/the-us-coal-crash/>

Forward looking fossil fuel companies are increasingly accepting that, in order to survive, they need to adapt, rapidly. Several recent examples include:

- in May 2016 China Shenhua Energy committed to a 1GW US\$2bn solar thermal development in China,<sup>28</sup>
- in May 2016, oil company Total announced the investment of US\$1bn to acquire Saft SA, a world leading manufacturer of batteries.<sup>29</sup> This follows Total's 2011 US\$2bn acquisition of SunPower, the manufacturer of the world's most efficient solar modules;
- also in May 2016, the Adani Group of India trumpeted its plans to build a US\$10bn 10GW solar industrial park in conjunction with the Rajasthan Government, at the same time as it commissioned the world's largest solar project to-date (a US\$650m, 648MW plant in Tamil Nadu);
- in April 2016, Statoil of Norway announced a US\$1.4bn investment in the German offshore wind industry; and
- in April 2016 Fortum OYJ of Sweden signed a 100MW solar PPA in Karnataka at US\$7c/kWh<sup>30</sup> following on from the award of a 70MW solar PPA in Rajasthan in January 2016 at an Indian record low of Rs4.34/Wh (US\$6.4c/kWh).

When Dubai in May 2016 announced that a new solar project had won an 800MW solar tender at world record low, unsubsidised price of just US\$30/MWh, down 50% in just one year, the world should take clear note.<sup>31</sup> In an ever growing number of markets, wind and solar are already the low cost source of new electricity generation. As such, when Origin Energy CEO Grant King in May 2016 stated that by the mid 2020s, "All new investment in generation is likely to be renewables",<sup>32</sup> this looks like an increasingly certain proposition.

## Conclusion

Coal companies, investors and governments would be ill-advised to ignore the multitude of clear signals. The combination of global policy action, unexpectedly rapid improvements in cost competitive low emission technologies and the increasing financial market momentum away from fossil fuels suggests an unstoppable momentum. The demise of Peabody Energy last month was highly symbolic—highlighting that this is not the business as usual cyclicity at play. The Chinese economy is clearly showing significantly slower growth, but that is only a small part of the structural changes evident. On the positive, the German energy market transition has driven wholesale prices down two-thirds to a decade low. Renewable energy is deflationary; a prospect the Australian public will welcome after a decade of domestic energy policy mismanagement. ●

28 [http://electrek.co/2016/05/03/worlds-largest-coal-supplier-building-one-of-worlds-largest-solar-power-plants/?utm\\_content=buffer6240&utm\\_medium=social&utm\\_source=twitter.com&utm\\_campaign=buffer](http://electrek.co/2016/05/03/worlds-largest-coal-supplier-building-one-of-worlds-largest-solar-power-plants/?utm_content=buffer6240&utm_medium=social&utm_source=twitter.com&utm_campaign=buffer)

29 [http://www.bloomberg.com/news/articles/2016-05-09/total-to-buy-french-battery-maker-saft-in-1-1-billion-deal?utm\\_medium=email&utm\\_source=flipboard](http://www.bloomberg.com/news/articles/2016-05-09/total-to-buy-french-battery-maker-saft-in-1-1-billion-deal?utm_medium=email&utm_source=flipboard)

30 <http://www.fortum.com/en/energy-production/solarpower/topical-solar-power/Pages/Wins-bid-for-100-MW-solar-park.aspx>

31 <http://renewables.seenews.com/news/analysis-how-low-did-solar-power-prices-just-go-524115>

32 <http://www.afr.com/brand/chanticleer/how-origins-ceo-went-from-solar-insolvency-to-the-sun-king-20160509-gog5hp#ixzz48CulH6Qj>



## The end of coal—international pressure

The political discussion on climate change in Australia is often held as though the rest of the world is not acting. However, the Paris Climate Agreement—and the significant actions many countries have recently stepped up to—demonstrate that Australia is a laggard on climate change and is risking damage to its reputation, to the Australian economy and irreparable damage to the environment.

The upcoming Australian election is an opportunity to bring Australia up to speed with the rest of the world.

### Paris Climate Agreement

2015 was a big year in climate diplomacy. Whilst far from perfect, the outcome from last year's Paris Climate Summit was greeted across the world as a sign that the fossil fuel era is drawing to a close. It was seen as nothing short of a miracle that over 190 countries could agree on something as complex as a thirty-two page Climate Agreement in an era of fractious multilateralism.

The Paris Climate Agreement was a “win” for vulnerable countries—including our own neighbours of Tuvalu, Kiribati and the Marshall Islands who face being wiped off the map from climate change. But Paris was ultimately successful because the “G2”, the United States and China, saw it as in their interest to take action on climate change and to ensure that other countries do likewise. The combination of these two elements, as well as the document's content, makes the Paris Climate Agreement hugely significant for Australia.

For Australia's climate action and for the future of Australia's export coal, the key elements of the Paris Climate Agreement are the agreed objective of ensuring global temperatures stay **well below** 2°C, to pursue efforts to “limit the temperature increase to 1.5°C above pre-industrial levels, recognising that this



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would significantly reduce the risks and impacts of climate change”, and that countries agreed to peak emissions “as soon as possible” and to “achieve a balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases in the second half of this century”.

This is, in essence, an agreement to phase out fossil fuels. Accounting for about 70%<sup>1</sup> of global emissions, there is no way to meet the objective of the Paris Climate Agreement without phasing out fossil fuels.

Coal in particular is on the chopping block post-Paris. As the biggest single cause of climate emissions,<sup>2</sup> and one of the most straightforward sources of pollution to replace,<sup>3</sup> with significant side benefits such as reduced air pollution and the subsequent damage to health, coal is being eyed as the weakest link standing between us and meeting the Paris goals.

A recent report from Climate Action Tracker shows that *current* coal burning must reduce by 30–90% in the next 15 years to keep global warming below 1.5°C. Any new coal plants added will make the effort required to reduce pollution even steeper.<sup>4</sup>

At Paris, countries recognised that the country-specific pledges made so far will not keep warming below 1.5°C. They instead add up to 3°C of climate catastrophe.<sup>5</sup> Therefore, governments of the world agreed to a review in 2018; that countries can increase, but not reduce, their targets; that countries must submit new targets every five years more stringent than previous targets and will be subject to a “global stocktake” to make sure we’re on track to hit the Paris target.

Hence the Paris Agreement should be seen as a floor, not a ceiling, to climate ambition. There is an expectation that existing targets will increase—especially Australia’s inadequate target of reducing emissions by 26–28% from 2005 levels by 2030. Climate Action Tracker calculates that this is equivalent to

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- 1 IPCC. Climate Change 2014 Synthesis Report, P46, [http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5\\_SYR\\_FINAL\\_All\\_Topics.pdf](http://www.ipcc.ch/pdf/assessment-report/ar5/syr/AR5_SYR_FINAL_All_Topics.pdf)
  - 2 Power generation from coal was responsible for 9.5 GtCO<sub>2</sub> in 2012. Three times as much as the next dirty form of power generation (gas). And larger than the next most highly emitting sector, transport, which accounted for 6.9Gt (8Gt including international transport). International Energy Agency (IEA) “World Energy Outlook 2014” in Oxfam (2015) Let Them Eat Coal, available: [https://www.oxfam.org/sites/www.oxfam.org/files/file\\_attachments/bp204-let-them-eat-coal-climate-g7-060615-en.pdf](https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/bp204-let-them-eat-coal-climate-g7-060615-en.pdf)
  - 3 Coal power plants can be replaced in a comparatively straightforwardly fashion with lower emission technology, such as renewable energy. Whereas other sectors with large emissions, such as transport and agriculture, are much more technically and sociologically difficult to address. See, for instance, Oxfam (2015) Let Them Eat Coal, available: [https://www.oxfam.org/sites/www.oxfam.org/files/file\\_attachments/bp204-let-them-eat-coal-climate-g7-060615-en.pdf](https://www.oxfam.org/sites/www.oxfam.org/files/file_attachments/bp204-let-them-eat-coal-climate-g7-060615-en.pdf) and E3G (2014) G7 climate agreement means coal phase out actions required, available: <https://www.e3g.org/news/media-room/g7-climate-agreement-means-coal-phase-out-actions-required>
  - 4 Climate Action Tracker report shows existing stock coal capacity as 22 EJ/year, and 2030 coal capacity consistent with 1.5°C pathway as between 2.5–15 EJ/year. Breevoort et al, December 2015. The Coal Gap: planned coal-fired power plants inconsistent with 2°C and threaten achievement of INDCs, p3–4, available: [http://climateanalytics.org/files/cat\\_coal\\_gap\\_briefing\\_cop21.pdf](http://climateanalytics.org/files/cat_coal_gap_briefing_cop21.pdf)
  - 5 Estimates vary from 2.7°C to 3.7°C, with an outlier at 5.2°C. More on the estimates for global temperature increase, and the assumptions driving the differences is available here: <http://www.wri.org/blog/2015/11/insider-why-are-indc-studies-reaching-different-temperature-estimates>.



## City-wide protests in Paris during COP21

Photo credit: CC by attribution—Flickr, Mark Dixon

“  
**At Paris,  
 countries recognised  
 that the country  
 specific pledges  
 made so far  
 will not keep  
 warming below  
 1.5°C**  
 ”

a range of 5% below to 5% above 1990 levels<sup>6</sup> and is inadequate to play Australia's fair share in meeting the goal of the Paris Climate Agreement. There will be heavy international pressure for the new Australian Government to increase this target well before 2018.

### Other countries already acting

The Paris Climate Agreement would not have been possible if countries weren't already pursuing ever increasing levels of action on climate change. And whereas once climate action was seen as the purview of wealthy European countries, it is now developing countries who are really leading the way.

**China**, for instance, is now a champion of climate action. Chinese support for their solar industry has contributed significantly to the 75% fall in cost of solar power since 2009.<sup>7</sup> This support has resulted in China having over 43GW<sup>8</sup> of solar installed, recently overtaking Germany as the world leader, and China

6 Climate Action Tracker judges Australia's target to be "inadequate" and calculates it as equivalent to a range of 5% below to 5% above 1990 levels of GHG emissions excluding LULUCF in the year 2030. Of developed countries only New Zealand and Canada rated so badly. See: <http://climateactiontracker.org/countries/australia.html>

7 For falling cost of solar see <http://www.computerworld.com/article/2877310/renewable-energy-costs-expected-to-drop-40-in-next-few-years.html> and for Chinese influence see <http://www.greentechmedia.com/articles/read/top-chinese-manufacturers-will-produce-solar-panels-for-42-cents-a-wat> and <http://www.conergy.com/en/blog/2015/china-making-big-switch-coal-solar-energy> .

8 <http://cleantechnica.com/2016/02/09/china-tops-world-in-total-installed-solar-pv-passes-germany/>

has plans to more than triple its solar power capacity to 143GW by 2020.<sup>9</sup> By comparison, Australia's entire National Electricity Market is 50GW.<sup>10</sup> It has also meant that China has indirectly helped other countries meet climate targets, as solar is now cost competitive (at 'grid parity') with other forms of electricity, including coal, in more than 50% of countries—and that percentage is increasing fast.<sup>11</sup> China has taken this action partly in response to international pressure, partly as it is a smart industrial move, and in large part to reduce the social and health costs of their excessive use of coal. Air pollution (largely from coal) cuts an average of 5.5 years off the life expectancy of northern Chinese.<sup>12</sup> This climate action has meant that China is now scaling back both its domestic coal mining and its imports of coal.<sup>13</sup> This is one of the drivers behind the falling global coal price.

**India** has embraced renewable energy and solar power in particular. Indian Prime Minister Narendra Modi has set a total renewable energy target of 175GW, of which 100GW is solar power by 2022.<sup>14</sup> This goal is expected to generate more than a million new jobs in India.<sup>15</sup> Whilst the official Indian Government policy is to continue to increase coal use as well, industry analysts such as KPMG expect that the rapidly falling costs of solar combined with solar scalability, and therefore its accessibility without large capital costs, could lead to solar displacing coal in the Indian market with 166GW of solar power expected to be online by 2025.<sup>16</sup>

The ancestral home of coal burning—the **United Kingdom**, the country that began the industrial revolution—announced in the lead up to Paris that it will shut down all of its coal fired power plants by 2025, with very limited capacity from 2023. Coal currently supplies roughly 30% of the UK's power from 11 power stations, so this is a significant change.<sup>17</sup>

The **United States** was, of course, a key player in driving for the adoption of the Paris Climate Agreement, including by initiating key bilateral climate agreements with China, India and the G7 in the lead up to Paris. Domestically, US coal use has been falling substantially—with 200 coal plants closing in the past five years. That's 40% of the 523 US coal plants that were in operation just five years ago.<sup>18</sup> The US Paris target is to reduce emissions by 26–28% below 2005 levels by 2025 (equivalent to 12–19% below 1990 levels).<sup>19</sup>

9 <http://www.bloomberg.com/news/articles/2016-03-21/china-to-more-than-triple-solar-power-capacity-in-five-years>

10 <https://theconversation.com/factcheck-does-australia-have-too-much-electricity-31505>

11 Deutsche Bank 2015. Solar: Crossing the chasm. 27 February 2015, p9, available: [https://www.db.com/cr/en/docs/solar\\_report\\_full\\_length.pdf](https://www.db.com/cr/en/docs/solar_report_full_length.pdf)

12 <http://www.theguardian.com/environment/2013/jul/08/northern-china-air-pollution-life-expectancy>

13 <http://www.carbonbrief.org/analysis-decline-in-chinas-coal-consumption-accelerates>

14 <http://www.livemint.com/Industry/t70byyuP6VrTzqjoBISJrI/India-to-add-nearly-4000-MW-of-solar-power-in-2016-Mercom.html>

15 <http://cleantechnica.com/2016/03/23/india-solar-power-push-may-produce-over-1-million-jobs/>

16 <https://www.kpmg.com/IN/en/Press%20Release/FINAL-PRESS-RELEASE-Nov16-2015.pdf> and <https://www.kpmg.com/IN/en/IssuesAndInsights/ArticlesPublications/Documents/ENRich2015.pdf>.

17 <http://www.carbonbrief.org/in-depth-uk-pledges-coal-phase-out-by-2025-but-uncertainty-remains>

18 <http://content.sierraclub.org/press-releases/2015/07/united-states-phases-out-200th-coal-plant-momentum-renewable-energy-grows>

19 <http://climateactiontracker.org/countries/usa.html>

**Canada**—a country that is similarly placed to Australia with its reliance upon fossil fuels<sup>20</sup> is facing challenges that can be seen as similar to Australia's. At time of writing it is in the grip of the Fort McMurray forest fires—fires that have caused 90,000 people to flee their homes, from a city at the very heart of Canadian tar-sands country. Canada's tar-sands are among the most polluting form of oil in the world. The newly elected Canadian Government is grappling with how to approach a desire for more climate action, the ultra low oil price and the tar sands industry. Much as Canada is choosing between an environmentally damaging fossil fuel industry and extreme climate impacts such as heat waves, less snowfall, droughts and forest fires, Australia is choosing between an environmentally damaging fossil fuel industry and maintaining its productive food land, and keeping the tourism industry reliant upon the Great Barrier Reef and other natural beauties healthy and profitable.

This is not to say that all of these countries—particularly Canada, the US and the UK—cannot and should not take more action. But it is to say that Australia is lagging behind in a world where climate action is a reality on the ground now with an expectation, and a necessity, for that action to ramp up.

Even **Saudi Arabia**—a country that currently generates 90% of its national revenue from oil, has released a Vision 2030 document with plans to diversify their economy and looks to a future “beyond oil”.<sup>21</sup> Australia, with less than 3% of its GDP from coal,<sup>22</sup> and so much to lose from climate damage, has no excuse for its current levels of inaction!

### Rise of climate damage

Another significance of the Paris Climate Agreement is that it signalled the “third era” of international climate policy. As damages from climate change have increased—including rising sea levels, more extreme storms, and the increasing severity of droughts and floods—the international community has shifted from focusing solely on mitigation, to include consideration of how to adapt to climate change and now to the “third era” of also considering “loss and damage” from climate change.

Loss and damage is when the impacts of climate change go beyond what it is possible to adapt to. One example is Cyclone Pam<sup>23</sup> that devastated Vanuatu, with total costs estimated at 64% of the Vanuatu GDP.<sup>24</sup>

20 Canada's tar sands provide roughly 2% of Canada's GDP, see: <http://www.vancouverobserver.com/blogs/climatesnapshot/tar-secret-2-what-percentage-canadas-gdp-comes-tar-sands>, and coal provides roughly 2.2% of Australia's GDP, based on ABS information. The mining industry contributed 8.4% of GDP in 2009–10, 26% of which was attributed to coal mining, therefore GDP attributable to coal is 2.2%. ABS information available here: <http://www.abs.gov.au/ausstats/abs@.nsf/Lookup/by%20Subject/1301.0~2012~Main%20Features~Mining%20Industry~150>

21 <http://www.climatechangenews.com/2016/04/25/saudi-prince-from-2020-we-can-survive-without-oil/>

22 ABS op cit.

23 Cyclone Pam was one of the strongest cyclones known to make landfall in the South Pacific: <http://www.theguardian.com/environment/2015/mar/16/climate-change-aggravating-cyclone-damage-scientists-say> and <https://www.wunderground.com/blog/JeffMasters/winstons-185-mph-winds-in-fiji-southern-hemispheres-strongest-storm>.

24 According to the Vanuatu Government's Post Disaster Needs Assessment, March 2015, available: [https://www.gfdrr.org/sites/default/files/publication/PDNA\\_Cyclone\\_Pam\\_Vanuatu\\_Report.pdf](https://www.gfdrr.org/sites/default/files/publication/PDNA_Cyclone_Pam_Vanuatu_Report.pdf)



**Funafuti, Tuvalu**

Photo credit: CC by attribution—Flickr, Global Environment Facility

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**Loss and damage is not always made up of economic cost but also includes things like loss of life, loss of homeland, loss of culture and loss of sovereignty**  
 ”

Loss and damage is not always made up of economic cost but also includes things like loss of life, loss of homeland, loss of culture and loss of sovereignty.<sup>25</sup>

The Paris Climate Agreement is the first international agreement to include loss and damage as a stand-alone element. A loss and damage mechanism was enshrined in the Paris Climate Agreement along with assurances that the international community will help vulnerable countries deal with the losses and damages they face from climate change, including by providing finance for loss and damage.

Loss and damage costs are already very high—a very conservative estimate is US\$50bn per year for the 48 least developed countries. Loss and damage for all vulnerable developing countries can conservatively be estimated as at least US\$100bn per year in the near term.<sup>26</sup> Climate Action Tracker, for Oxfam, estimates that loss and damage will cost all developing countries \$400bn per year by 2030 and over one trillion dollars each year by 2050.<sup>27</sup>

25 For more examples of loss and damage see: <http://climatejustice.org.au/making-a-killing/>

26 Julie-Anne Richards and Keely Boom, *Making a Killing: Who Pays the Real Costs of Big Oil, Coal and Gas?* (Climate Justice Programme, 2015) available at <http://climatejustice.org.au/making-a-killing/>.

27 <http://policy-practice.oxfam.org.uk/publications/impacts-of-low-aggregate-indcs-ambition-research-commissioned-by-oxfam-582427>

Someone has to pay these costs. At present it is the most vulnerable, who have done the least to contribute to the problem, who are paying, but that is clearly not fair. The international community is just beginning to grapple with who should pay.

If we consider how similar fields have progressed, tobacco or asbestos for instance, we see that in the end, after long and drawn out court cases against the industry responsible, governments have stepped in to make the industry pay for its damage. Sometimes this is done via increased industry-specific taxes, sometimes via the establishment of industry-funded but independently managed compensation funds.

An upcoming report from the Climate Justice Programme<sup>28</sup> surveys experiences from relevant fields and concludes that the most powerful climate litigation will likely be brought by governments against private corporations in order to recoup the costs that private corporations are forcing upon governments. Governments have sought to recoup the massive health costs of tobacco and, in the case of fossil fuels, governments might seek to recoup environmental, health and economic costs. Such legal action has already started in the US.

An inquiry into Exxon Mobil's climate change activities by New York's Attorney-General has been supported by 15 other states' Attorneys-General.<sup>29</sup> It aims to uncover whether Exxon Mobil deliberately lied to the public and investors about the risks of climate change and the links to fossil fuels. Many see parallels with the landmark tobacco industry hearings that were the nail in the coffin for the tobacco industry's campaign of denial on smoking causing lung cancer.

The Philippines suffered huge loss of life and property from Super Typhoon Haiyan in 2013. In December 2015, the Philippines' Commission on Human Rights announced that it will investigate whether big coal, oil and gas companies have violated the rights of Filipinos and can be held accountable for causing climate change and ocean acidification, including severe storms, changes to coral reefs and fisheries.<sup>30</sup>

Saul Luciano Lliuya, a Peruvian farmer, is suing a German company, RWE, for a portion of the costs associated with glacial lake flooding near his village associated with climate change.<sup>31</sup> Australian law allows such suits and is, in fact, more friendly to such an approach than German law.<sup>32</sup>

These kind of cases are likely to become common, as costs from climate change begin to mount and as cases are tested and learnt from in various jurisdictions around the world. A previous obstacle to successful

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28 Upcoming report from Climate Justice Programme, CLIMATE JUSTICE: The international momentum towards climate litigation, to be published May 2016 at [www.climatejustice.org.au](http://www.climatejustice.org.au)

29 [http://www.nytimes.com/2016/03/30/science/new-york-climate-change-inquiry-into-exxon-adds-prosecutors.html?\\_r=0](http://www.nytimes.com/2016/03/30/science/new-york-climate-change-inquiry-into-exxon-adds-prosecutors.html?_r=0)

30 [http://www.theguardian.com/sustainable-business/2016/may/07/climate-change-shell-exxon-philippines-fossil-fuel-companies-liability-extreme-weather?CMP=share\\_btn\\_tw](http://www.theguardian.com/sustainable-business/2016/may/07/climate-change-shell-exxon-philippines-fossil-fuel-companies-liability-extreme-weather?CMP=share_btn_tw)

31 <http://www.theguardian.com/environment/2015/mar/16/peruvian-farmer-demands-climate-compensation-from-german-company>

32 See upcoming report from Climate Justice Programme, CLIMATE JUSTICE: The international momentum towards climate litigation, to be published May 2016 at [www.climatejustice.org.au](http://www.climatejustice.org.au)

litigation, the attribution of emissions to specific companies, was surmounted in late 2013 when the Carbon Majors study was released. Through extensive, detailed and painstaking research, it showed that 90 fossil fuel entities (including for instance Exxon Mobil, BP, BHP, Rio Tinto) are responsible for fully two-thirds of emissions since the industrial revolution began.<sup>33</sup> Attribution of specific extreme events to climate change has also improved.<sup>34</sup> For instance, scientists have modelled that climate change increased the risk of recent extreme floods in the UK by 43%.<sup>35</sup> These two elements can be tied together convincingly in holding the big polluting companies—and governments that share responsibility—to account in the courts.

The implications for Australia of this nascent approach to climate loss and damage are many. Firstly—the Australian Government could reasonably expect its own citizens to consider litigation to force it to take more aggressive climate action, and could possibly expect other countries to be considering the courts as a way to force Australia to take more action.

33 <http://carbonmajors.org/>

34 It is possible to estimate the influence of climate change on some extreme events, such as heat waves, drought, and heavy precipitation, says a new report from the National Academies of Sciences, Engineering, and Medicine, see: [http://www.eurekalert.org/pub\\_releases/2016-03/naos-aoe031116.php](http://www.eurekalert.org/pub_releases/2016-03/naos-aoe031116.php)

35 <http://www.ox.ac.uk/news/2016-02-01-man-made-climate-change-helped-cause-south-england-floods-say-scientists>



**The People's Parliament, Australia**

Photo credit: CC by attribution—Flickr, 350.org

“  
**... the Australian Government could reasonably expect its own citizens to consider litigation to force it to take more aggressive climate action ...**  
 ”



Secondly—the Australian Government should consider ways to recover the costs of climate change from the coal industry. Why should Australian citizens, directly or via their taxes, pay for the new ‘normal’ of extreme heat waves, monster bushfires, intense droughts, loss of farm land, and loss of tourism jobs associated with the potential death of the Great Barrier Reef? The industry that caused the problem should pay. Much as the tobacco industry pays increased taxes to cover medical costs, the coal industry should be made to stop outsourcing the true costs of its product onto the Australian people and our neighbours in the Pacific, and should pay for the damage itself.

One approach to the fossil fuel industry paying for the climate damage from its products is to implement a global fossil fuel extraction levy—a Carbon Levy. The Levy could be paid into a compensation fund that vulnerable communities and countries could draw from. The advantages of this approach are myriad including that it could avoid significant litigation—avoiding lawyers being the main beneficiaries rather than communities. And it could more fairly share the compensation to communities that need it, rather than the ad hoc process of litigation that provides windfalls for some and leaves others without recourse. Even a low levy, at \$2 a tonne of CO<sub>2</sub>, could raise \$50 billion a year. This would clearly need to increase substantially each year, as costs of climate change are rising dramatically, and as fossil fuels are phased out there will be less extraction each year to apply the levy to. There are precedents from other fields that can be used in designing such a levy.<sup>36</sup> And, of course, such an approach would ensure that the industry responsible for causing climate damage pays—rather than vulnerable communities paying the cost. A Carbon Levy is now beginning to be discussed at an international level.<sup>37</sup>

### What does it mean for Australia?

Australia is not alone in dealing with the diabolical issue of climate change. With the Paris Climate Agreement, the international community has demonstrated it is taking action. And, whilst the commitments so far are not yet up to the scale of the challenge, there is widespread expectation they will increase and that we are only at the beginning of a revolutionary change.

Sadly, due to laggards like Australia, the international momentum away from fossil fuels has taken far too long, and the costs of climate change are already high and growing. Compensation from the fossil fuel industry is beginning to be explored diplomatically and within the courts.

36 One of the key examples is the IOPC (International Oil Pollution Compensation Fund), this precedent and other elements of the Carbon Levy are explored in a Climate Justice briefing paper available: [http://climatejustice.org.au/wp-content/uploads/2015/06/CJP-HBF-big\\_oil\\_coal\\_and\\_gas\\_producers\\_must\\_pay\\_for\\_their\\_climate\\_damage.pdf](http://climatejustice.org.au/wp-content/uploads/2015/06/CJP-HBF-big_oil_coal_and_gas_producers_must_pay_for_their_climate_damage.pdf)

37 A recent discussion paper from the UNFCCC Warsaw International Mechanism for Loss and Damage Executive Committee included a reference to: “currently available financial instruments ... fall short of ... growing requirements related to potential future losses and damages from climate change. Some submissions suggested the use of innovative instruments ... include a financial transaction tax, a fossil fuel levy (or Carbon Majors Levy), bunker fuels levy, auctioning of emission allowances, carbon pricing for international transportation (e.g. aviation and maritime), a global fossil fuel extraction levy, global carbon tax, using a share of revenues from domestic or regional carbon pricing/carbon markets for international solidarity, etc.” [http://unfccc.int/files/adaptation/groups\\_committees/loss\\_and\\_damage\\_executive\\_committee/application/pdf/information\\_paper\\_aa7d\\_april\\_2016.pdf](http://unfccc.int/files/adaptation/groups_committees/loss_and_damage_executive_committee/application/pdf/information_paper_aa7d_april_2016.pdf)

If the Australian Government to be elected in July wants to do justice to the Australian people, the Australian economy and to help safeguard Australia's climate for our and future generations, it should:

- Come forward with a significantly improved domestic emission reduction target, ahead of the 2018 global review of targets. The Climate Change Authority's recommended target of 40–60% below 2000 levels by 2030 should be seen as a minimum starting point.<sup>38</sup> Oxfam Australia has recommended domestic emission reduction targets of 45–65% by 2025 and at least 65–80% by 2030. In addition to these domestic reductions, Australia must support climate action overseas through international climate finance.
- Recognise that the Paris Agreement foretells the end of fossil fuels, and plan accordingly. A well planned shut-down of the Australian coal industry will put the overall Australian economy in the best position going forward. No new coal mines should be approved. Any further investment in coal infrastructure will only become an expensive white elephant and should be stopped in favour of investments in growing industries—such as renewable energy, tourism etc. An important part of this shut down should be a detailed plan for a transition for coal workers into other sectors.
- Recognise that soon the coal industry will be expected to pay for the climate damage it is causing. The Australian Government should learn from experiences with asbestos compensation and put in place a plan, including legislation, to ensure that coal companies are not able to flee to other jurisdictions or declare bankruptcy in order to avoid their responsibilities. Implementing a domestic Carbon Levy would help ensure that the fossil fuel industry pays for the damage it is doing—not ordinary Australians.

Australia can choose whether or not to continue to be a laggard, dragging its heels and denying the need for real action. This will disadvantage all, including Australians and our Pacific Island neighbours. The Australian economy will also suffer if the coal industry is kept in a state of denial, leaving the economy dangerously exposed and eventually blindsided by the change that is on the way. The clever choice is to embrace the present, put in place plans to transform the economy, step up willingly to do Australia's fair share, and ensure that costs fall upon the industry causing the damage—not upon vulnerable communities.

Even countries whose economies are almost totally reliant upon fossil fuels—like Saudi Arabia—are making plans to move away from fossil fuels. This doesn't really give Australia any realistic choice—certainly no clever choice involves clinging on to an obsolete and polluting technology like coal. ●

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38 <http://www.climatechangeauthority.gov.au/files/files/Target-Progress-Review/Targets%20and%20Progress%20Review%20Final%20Report.pdf>

## Managing the closure of coal-fired power stations in Australia

Ten years ago, Australia's electricity market was very different. Not in terms of components—supply was dominated by coal, as it remains today—but in terms of the direction it was heading. Forecasts for electricity demand, like economic growth, were up and up as far as the eye could see or the spreadsheet could calculate. Renewable energy was still a relative novelty, far from the widely popular option it is today. The expansion of the Federal Renewable Energy Target in 2009 created an enormous boost to the industry, though it coincided with an unexpected turn of events.

Driven by a combination of factors—such as falling demand from heavy industry, growing rooftop solar, improvements in energy efficiency—the perpetual growth trajectory did not materialise. Economic growth became, ever so slightly, disconnected from electricity consumption. Rather than clean, new renewable energy simply meeting the expected growth in demand, we were pumping in new generation capacity at a time when demand was falling.

Some used this as an opportunity to discourage the uptake of renewable energy—why build more generation capacity when we have enough already?—though this argument missed the obvious problem that renewable energy was designed to solve: burning coal for electricity is causing global warming. In Australia, it is the largest single source of greenhouse gas emissions, accounting for roughly one third of total carbon pollution. In Victoria, home to the world's second largest deposit of brown coal, four power stations were, and still are, responsible for 50% of the state's contribution to climate change.

The need to decarbonise the electricity sector has been obvious for a long time, but rising demand was making the task harder. Adding renewable energy to cover new demand was obvious, but could we add it fast enough to also withdraw polluting coal power stations? Falling demand in the early 2010s created an incredible opportunity that has yet to be taken: Australia's electricity system could be rapidly modernised by simultaneously pushing renewable energy in and phasing coal plants out.



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For too long, both public and policy discussions have focused solely on the first part of this equation. Energy market dynamics are making the second part of the equation far more possible than previously thought, and the current state of the climate demands that we act. The time is ripe for government intervention to accelerate the phase-out of coal-fired power stations.

### Putting a number on it

Every year, the Australian Energy Market Operator (AEMO) releases a document called the *Electricity Statement of Opportunities* (ESOO). Typically, this report quantifies how much additional generation capacity will be needed to meet the projected growth in demand.

In 2014, after several years of being criticized for not getting the demand forecasts right, AEMO made an about turn: rather than needing to build more, the ESOO revealed that Australia's eastern state electricity grid (the National Electricity Market, or NEM<sup>1</sup>) actually had more generation capacity than was needed. In fact, the NEM had significantly more capacity than was going to be needed for any time in the next ten years. In other words, we could remove existing generators—some 8000–9000 MW—with no short-term risk to the security of supply.<sup>2</sup>

AEMO is not typically a risk-taking organisation. It is their job to make sure Australians have electricity. I was once told by an AEMO employee that he'd "burn rubber tyres to keep the lights on"—and when keeping the lights on is your job description, that's an understandable stance. But it means that when AEMO says there's no risk to supply from removing 9000 MW of capacity—equivalent to around six large coal plants—you know they've really thought it through.

### Correcting an imbalance

Australia's energy market is by no means a perfect market. The absence of a price on carbon is the most egregious market failure, but there are other problems as well.

Some excess generation capacity has now been closed—several higher-running-cost coal-fired power stations and gas plants have been mothballed or decommissioned in the past few years—but energy analysts still believe there is at least 5000 MW more that could be retired.

The flooded market created barriers to entry (such as low wholesale prices making it difficult for new entrants to recoup construction costs), but within the system there also exist barriers to exit: factors that encourage incumbents to continue operating, to the detriment of renewable energy projects, and the detriment of having a stable climate.

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1 The NEM covers Queensland, NSW, Victoria, ACT, Tasmania and South Australia. The Northern Territory and Western Australia are each on separate grids.

2 AEMO, "2014 Electricity Statement of Opportunities" (2014). <http://www.aemo.com.au/Electricity/Planning/Archive-of-previous-Planning-reports/2014-Electricity-Statement-of-Opportunities>

The strongest barriers to exit include:<sup>3</sup>

- Lack of policy certainty: winding back the Renewable Energy Target and question marks over both the Clean Energy Finance Corporation and the Australian Renewable Energy Agency through Tony Abbott's Prime Ministership meant nobody could be certain what would be driving the electricity market even in the near-term.
- First-mover disadvantage: if one power station operator closes their plant, any upswing in wholesale prices will benefit those who remain. As a result, all parties keen borderline assets running in the hope someone else will blink first, helping to make the borderline asset a bit more viable.
- Unfunded rehabilitation liabilities: retiring generation capacity should involve appropriate site remediation. This could just be demolition of a power station (though not necessarily a trivial task—Victoria's Hazelwood power station has been described as "an asbestos box wrapped in asbestos"), but it could also include rehabilitation of a coal mine. Where governments hold only token securities for remediation work, operators try to avoid triggering a process that would lead to those decommissioning costs being incurred.

3 Clean Energy Council, "Briefing Paper: Australia's power sector at the crossroads" (2014). <https://www.cleanenergycouncil.org.au/policy-advocacy/renewable-energy-target/power-generation-sector-at-crossroads.html>



**Bayswater coal-fired power station, NSW**

Photo credit: CC by attribution—Flickr, Greenpeace/ Murphy

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**The time is  
ripe for  
government  
intervention  
to accelerate  
the phase-out  
of coal-fired  
power stations**  
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Not only are there incentives to stay in the market, the structure of the market puts least pressure on what happens to be the most polluting power stations. Victoria's brown coal plants have remarkably low short-run marginal costs: a function of abundant and easy-to-access coal, right next to the power stations, with no international export market to provide price competition. The less polluting black coal plants in NSW and Queensland have much higher costs. Due to the merit-order effect (which dictates that low-cost electricity is sold from the wholesale market first), these more expensive but relatively less polluting black coal plants could feel the pinch more and be pushed from the market. This creates scope for brown coal plants to *increase* their output, driving overall emissions *up*.

This problem and others are explored in a recent paper by the Institute for Energy Economics and Financial Analysis, which concludes that government intervention is necessary to avoid these "sub-optimal emissions outcomes".<sup>4</sup>

### The benefits of accelerating the coal phase-out

As noted above, coal-fired power stations are the major contributor to Australia's greenhouse gas problem. Other countries are in the same situation. Phasing out coal-fired power stations, in particular the highly inefficient sub-critical plants that dominate Australia's generation capacity,<sup>5</sup> is an essential component of successful climate action. Reducing the usage of old coal plants was identified by the International Energy Agency in early 2015 as one of the elements that would be needed for a successful outcome at the Paris climate talks.<sup>6</sup>

Closer to home, AEMO has indicated that 30–40% of Australia's coal capacity will need to be closed by 2030 if we are to meet even the modest targets of the Abbott/Turnbull Governments.<sup>7</sup> That is, closing a third of coal plants is barely enough to meet a 3°C pathway, let alone the Paris objective of +1.5°C of warming.<sup>8</sup>

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- 4 Institute for Energy Economics and Financial Analysis, "Sub-Critical Australia: Risk from imbalance in the Australian National Electricity Market" (2016). <http://ieefa.org/australias-east-coast-electricity-grid-dependent-sub-critical-coal-need-reform/>
  - 5 University of Oxford, Smith School of Enterprise and the Environment, "Subcritical Coal in Australia: Risks to Investors and Implications for Policy Makers" (2015). [http://www.smithschool.ox.ac.uk/research-programmes/stranded-assets/Subcritical%20Coal%20in%20Australia\\_Investors&Policymakers.pdf](http://www.smithschool.ox.ac.uk/research-programmes/stranded-assets/Subcritical%20Coal%20in%20Australia_Investors&Policymakers.pdf)
  - 6 International Energy Agency, "World Energy Outlook Special Report: Energy and Climate Change" (2015). <http://www.iea.org/publications/freepublications/publication/weo-2015-special-report-energy-climate-change.html>
  - 7 AEMO, "2016 Consultation Paper for the National Transmission Network Development Plan" (2016). <http://www.aemo.com.au/Consultations/National-Electricity-Market/2016-NTNDP-Consultation>
  - 8 A recent distillation of the latest climate science indicates that "committed" warming is already 1.7°C—that is, if all sources of greenhouse gases are turned off tomorrow, the inertia in the system will carry us to 1.7°C of warming. See D. Spratt, "Climate Reality Check: After Paris, Counting the Cost" (2016). <http://www.breakthroughonline.org.au/#!papers/cxeo>



## The Latrobe Valley

Photo credit: CC by attribution—Flickr, raider of gin

“  
**burning coal harms more than just the climate ... Victoria’s coal plants are responsible for air pollution ... a very localised impact, shouldered by the people of the Latrobe Valley rather than spread across the global commons**  
 ”

Other analyses have suggested that to meet more ambitious climate targets, all coal plants in Australia will need to have been retired by 2030 or 2035.<sup>9</sup> The Climate Institute emphasises that if a staged phase-out is not implemented now, many power stations will need to be removed almost simultaneously around 2030—clearly a less desirable outcome for both the energy market and for communities where those power stations are located.

Further, burning coal harms more than just the climate. Analysis by Harvard researchers, using models from the US National Academy of Sciences, found that Victoria’s coal plants are responsible for air pollution that creates an annual health burden over \$660 million<sup>10</sup>—this is a very localised impact, shouldered by the people of the Latrobe Valley rather than spread across the global commons.

9 The Climate Institute, “A Switch in Time: Enabling the electricity sector’s transition to net zero emissions” (2016) <http://www.climateinstitute.org.au/a-switch-in-time.html>; Teske, S., Dominish, E., Ison, N. and Maras, K. (2016) “100% Renewable Energy for Australia—Decarbonising Australia’s Energy Sector within one Generation”. Report prepared by ISF for GetUp! and Solar Citizens. <https://www.getup.org.au/campaigns/renewable-energy/homegrown-power-plan/the-homegrown-power-plan>

10 Jordan Ward & Mick Power, “Cleaning up Victoria’s power sector: The full social cost of Hazelwood power station” (2015). <http://environmentvictoria.org.au/newsroom/report/cleaning-victoria%E2%80%99s-power-sector>

## What governments can do

A range of policy options is available to governments to accelerate this energy transition. Importantly, there are options for both state and federal governments—neither level can truthfully claim it is not their responsibility or that they do not have the levers.

While the much-discussed carbon price introduced by the Gillard Government and the Greens was certainly effective at reducing Australia's emissions during its short operation—despite excessive compensation to polluters—credible modeling concludes that a carbon price alone will be insufficient to drive the necessary transformation in our electricity system. Even a politically unlikely carbon price of \$70–\$100 per tonne is inadequate to keep emissions within a 2 degree scenario.<sup>11</sup>

Specific policies that could be used to accelerate the retirement of power stations include:

- **Lifetime limits:** Simply requiring plants to close when they reach a pre-determined age, such as 45 years. This is the model now operating in Canada, and it has the effect of providing sufficient certainty for renewable energy investors to prepare the construction of zero-emissions replacement capacity towards a known timeframe. Applied in Australia, it would have the effect of spreading power station closures around different states, rather than concentrating closures in one geographic area, such as the Latrobe Valley.
- **Emissions intensity standards:** Unlike lifetime limits, setting emissions intensity standards is more likely to guarantee the most optimal emissions outcome—plants are closed in order of most polluting to least polluting per unit of electricity. A single standard that tightens over time, applied nationally, would affect all generators in Victoria's Latrobe Valley before causing retirements elsewhere, which potentially has implications for the stability of the grid. However, state-based standards could account for the different average emissions intensities in different states. This is the centerpiece of President Obama's Clean Power Plan in the US: requiring different states to meet overall emissions intensity standards, which have been set in recognition of state-by-state peculiarities.
- **Retirement auctions:** More recently, a new idea for driving power station retirement has emerged—one that relies on reverse auctions in which generators bid for the price at which they will retire capacity, which is then paid for by the remaining generators.<sup>12</sup> The attractiveness of this approach is that it largely resolves the first-mover disadvantage, noted above as a major barrier to exit. Precise details for how such a scheme might work are still being developed. One limitation is that the "winner" of the auction—the power station to be closed—is not known until the moment of the auction, arguably making the process less certain for communities and workers (compared to the two above methods, which follow a far more predictable path of retirements).

11 The Climate Institute, 2016 (cited above).

12 Jotzo, F. and Mazouz, S. (2015), Brown coal exit: a market mechanism for regulated closure of highly emissions intensive power stations. *Economic Analysis and Policy*, (Journal of the Economic Society of Australia (Queensland)), forthcoming. <https://ccep.crawford.anu.edu.au/publication/ccep-working-paper/6775/brown-coal-exit-market-mechanism-regulated-closure-highly>



Each of these options has pros and cons, and these can also be combined with various other policies to pull coal out of the market (eg. increasing mining royalties on coal, as recently occurred in Victoria)<sup>13</sup> and to push renewable energy into the market (such as contracts-for-difference, feed-in tariffs or certificate-based schemes such as the RET). Ultimately, no one single policy measure will achieve all the things that are needed to transition from coal to clean energy, but an effective combination must be found.

### **Energy transition, community transition**

Just as there is no single answer for driving the energy transition, nor is there one clear solution for the community transitions that will be needed across the country as coal-fired power stations are phased out.

Communities in Victoria's Latrobe Valley, Western Australia's Collie and NSW's Hunter Valley are currently closely entwined with coal generation. Until very recently, so was Port Augusta in South Australia. The inevitable decline of this industry will be disruptive for these communities, in the same way that the decline of car manufacturing has hurt a number of areas, and perhaps in a similar way to how sustained drought affects (and will continue affecting) farming regions.

As discussed above, there is an urgent need to accelerate the phase out of power stations if we are to reduce our carbon pollution and avoid the worst of climate change. There is concern, justifiably so, about job losses, but many in these "coal communities" are more ready for the challenge than we think. An interesting example of this was Michael Rossiter, Mayor of the Latrobe Valley, writing in an opinion piece following the announcement of Federal Labor's climate plans that "the transition away from brown coal is not the thing we fear. What we fear is being abandoned."<sup>14</sup>

Prior to that, the Mayor of Port Augusta, when interviewed on ABC Gippsland about the impacts of the Alinta announcement to close the Port Augusta power stations, was asked what his one message to the people of the Latrobe Valley would be. His answer: Start preparing now for the inevitable closures; don't wait until it's too late.

Where an industry is left to disappear at the whim of market forces, governments are often reluctant to contribute to the economic diversification process. But where governments are being asked to intervene to accelerate a move away from one industry, it stands to reason that they should also be involved in supporting the creation of replacement industries.

Leaving the fate of ageing power stations in the hands of corporate decision makers (often in foreign capitals like Paris and Hong Kong) denies the community any certainty and makes it harder for governments to be explicit about starting transition support early in the process—precisely when it is needed.

13 <http://www.abc.net.au/news/2016-04-23/victoria-to-raise-250m-by-increasing-brown-coal-royalties/7352526>

14 [http://www.heraldsun.com.au/subscribe/news/1/index.html?sourceCode=HSWEB\\_WRE170\\_a&mode=premium&dest=http://www.heraldsun.com.au/news/opinion/dont-keep-us-in-dark-on-coal-closures-says-latrobe-valley/news-story/1ceaa77fb1a6506f845df6bc2bbff8ae&memtype=anonymous](http://www.heraldsun.com.au/subscribe/news/1/index.html?sourceCode=HSWEB_WRE170_a&mode=premium&dest=http://www.heraldsun.com.au/news/opinion/dont-keep-us-in-dark-on-coal-closures-says-latrobe-valley/news-story/1ceaa77fb1a6506f845df6bc2bbff8ae&memtype=anonymous)

Exactly how this support would be provided is a work in progress. As is the broader question of what a community can do to help itself through the transition. Throwing money at the problem, alone, is unlikely to work. Grassroots exploration of the strengths of the community, and what they would like to achieve, needs to be a central part of the transition. Top-down support is important, but setting the direction from bottom-up is critical.

### **Effective climate policy needs a coal phase-out policy**

Investment in renewable energy has stalled, despite the reduced Renewable Energy Target nominally having bi-partisan support. Part of the reason for this stalling is the excess coal generation that remains. Even with the support of the RET, renewable energy projects seeking finance are finding it impossible to compete with fully depreciated incumbent generators.

This means that the decarbonisation of Australia's electricity supply, which is responsible for 30–40% of national greenhouse gas emissions, needs clear measures to remove coal capacity.

Federally, both the ALP and the Greens have announced specific plans to tackle this issue. Unfortunately, the Coalition has not shifted its position of relying on the Emissions Reduction Fund (ERF)<sup>15</sup> (which exerts no pressure on coal generators, and therefore plays no role in modernising our electricity supply). The ERF's safeguard mechanism is a safeguard in name only: it actually allows emissions from the electricity sector to increase by almost 20%.<sup>16</sup>

The Turnbull Government has said that, if re-elected, it would review how the safeguard mechanism works in 2017. This vague commitment, without further detail, will provide little confidence to the vast majority of Australians who support greater action on climate change, and the 56% of Australians who say they are more likely to vote for a party that has a plan to start the phase out of coal-fired power stations in the next three years.<sup>17</sup>

### **Time is not on our side**

Since humans first lit fires, energy has been a question of sourcing the fuel. It is now morphing into a technology rather than a fuel, and technology always gets cheaper. The supremacy of renewable energy is now unstoppable. What is at issue is whether that supremacy arrives in time to prevent catastrophic and irreversible damage to the climate and ecological systems that support our presence on this planet.

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15 <http://www.theguardian.com/australia-news/2016/may/18/greg-hunt-commits-to-direct-inaction-to-preserve-carbon-tax-scare-campaign>

16 Environment Victoria, submission to Emissions Reduction Fund Safeguard Mechanism consultation. (2015). <http://environmentvictoria.org.au/newsroom/report/submission-emissions-reduction-fund-safeguard-mechanism>; <http://www.smh.com.au/federal-politics/political-news/direct-actions-emissions-safeguards-designed-to-fail-grattan-institute-20150505-ggupb5.html>

17 <http://www.smh.com.au/federal-politics/federal-election-2016/election-2016-climate-change-policy-a-vote-winner-for-majority-of-australians-20160513-gouwbf.html>

Governments—Federal and State—no longer have the luxury of allowing this energy transformation to proceed gradually. Fortunately, we now have an energy market that is ready for change. We have diverse policy tools at our disposal. We have a population that supports action. We have affected communities who just want certainty and support, not false hope and platitudes.

Leading German climate scientist Hans Joachim Schellnhuber said at a conference in 2015: “In the end, it is a moral decision: do you want to be part of the generation that screwed up the planet for the next 1000 years?”<sup>18</sup>

There can be no excuse for inaction. We must deal with climate change, and that means dealing with the coal-burning power stations that are causing the problem. ●

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18 <http://www.theguardian.com/environment/2015/jul/10/fossil-fuel-industry-must-implode-to-avoid-climate-disaster-says-top-scientist>



**Gemasolar solar thermal power station, Spain**

Photo credit: CC by attribution—Flickr, Markel Redondo/Greenpeace

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**Governments ...  
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## Communities in transition— reflections from the coal face

Right now, across Australia, people are in different ways trying to come to grips with the fact that we are witnessing the end of coal.

While governments reassure us that the recent decline is only temporary and that projects will go on, investors continue to pull out of new projects and the legal and social foundations on which projects depend continue to fall away. Nowhere is this felt more keenly than in communities that rely heavily on the coal industry for jobs and regional economic development.

Across Australia, communities have long been divided around the local impacts of coal and what to do to address these impacts—in North Queensland, strong groups supported by tourism operators have mobilised to protect the reef against dredging and dumping; Hunter Valley community groups have highlighted the health impacts of coal dust; local people in Port Augusta have proposed innovative energy projects in the face of electricity plant closures; and, in the Latrobe Valley, there has been strong community mobilisation around the impacts of the Hazelwood mine fire.

Local issues have in turn been tied to broader, national campaigns around climate change, changes to environmental protection laws, the financing of fossil fuels, and the need for increased support for renewable energy. Consequently, coal ships have been blocked, banks have faced divestment campaigns,



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jobs myths have been busted, legal battles have been won, new mines continue to look uncertain, and, in the case of Queensland, state governments have been changed.

The environment movement has had some wins. But more significant than the victories themselves are the implications of moving our economy beyond our current dependence on fossil fuels. We have arrived at a new juncture, one that has the potential for broader and more radical transformation—not only in terms of transforming the energy sector, or seeing meaningful action on climate change, but in terms of catalysing a fundamental shift in the way our economy works.

This is a big claim. Yet it is a claim grounded in shifts I have had the privilege to witness across Australia, in communities that are quite literally ‘at the coalface’. One such shift is happening in the Whitsunday Region in North Queensland, where the Abbot Point Port expansion and rail project is planned in order to open up the Galilee Basin to coal mining.

Around a year ago, I was invited to present alongside Tim Buckley from the Institute for Energy Economics and Financial Analysis (IEEFA) in Mackay and the Whitsunday region. Tim presented the latest financial information indicating a structural decline in the demand for coal, while I presented on the steps communities could take to transition their regional economy away from coal.



**Abbot Point coal export terminal**

Photo credit: CC by attribution—Flickr, Tom Jefferson

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**Across Australia,  
 communities have  
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I drew on case studies from Kentucky and West Virginia in the United States, where communities have taken on the challenge of transitioning their regional economies away from coal mining by focussing on five areas: 1) Retraining, retiring and redeploying workers; 2) Ensuring the proper rehabilitation of mine sites as an opportunity to create jobs; 3) Investing in renewable energy and energy efficiency businesses; 4) Revitalising existing industries such as agriculture, tourism and education; and 5) Lobbying government to upgrade local infrastructure and provide assistance to attract new industries.

Before arriving in Mackay, we were warned that we would meet with a lot of opposition and scepticism, as most people were strongly in favour of the expansion of coal. But something strange happened—after each presentation, my phone started to ring and emails started to pour in. People wanted to know what they could do to build a future beyond coal. Curiously however, it was not the usual suspects who were calling, but a mix of local councillors, business owners and industry leaders who publically supported coal and were quick to assert they weren't 'a greenie'.

In response, I returned to Mackay and the Whitsundays to meet with interested groups about starting an economic transitions project. It surprised me how desperate people were to talk, many confiding that it was the first time they felt safe to question the future of coal. Many expressed that while they were concerned about existing and planned projects, they also did not have much hope for the economy beyond coal, as they could not imagine how jobs could be replaced and how investment would come in to support the regional economy. They also talked about the problems they were already facing because of the downturn. Parents worried about their children who had done their apprenticeships through the mines, or who were hugely indebted with over-inflated mortgages on the back of high incomes that no longer existed. Others talked about the closure of small businesses, and the number of families leaving the region. Everyone worried about the newest round of layoffs.

In each conversation, people were heavy with a sense of despair and profound disempowerment. The tone changed very quickly however when I asked them about other industries, employment options, resources, skills and infrastructure across the region. From despair, the tone shifted to one of curiosity, and then to excitement as they reflected on the range of opportunities tied to being the largest vegetable growing area in Australia; to the tertiary and vocational education institutions based locally; to the different types of tourism across the region; to being a large regional centre, and to the fishing industry.

As the excitement grew during each conversation about the economic alternatives to coal, so did the sense of anger and betrayal. Questions started to emerge such as:

- What has happened to all the royalties generated through the coal boom and how do we ensure that this money goes towards upgrading local infrastructure, training to transition workers into new areas, and to invest in new industries?
- What has happened to our local agriculture? Why is our government letting our best agricultural land be sold to the Chinese?

- When did everything become so centralised? Why do we truck our vegetables 1000 kilometres to Brisbane and back before we can buy them?
- What happened to our local cooperative that operated the sugar mill, ensured fair prices, and helped farmers to access expensive equipment?
- Where are the unions in all of this? What are they doing to help workers prepare for the end of coal?
- Why haven't those solar projects that were approved over a year ago started yet?

These are in essence radical questions that get to the heart of where our current economic system is failing us. Essentially, people were asking:

- What is our economy for, if we can't support our livelihoods in a way that ensures a future for our children?
- When did we give our power away and lose control of so many resources that used to be held in common?
- What is the role of the government, if it looks after the interests of companies before the wellbeing of ordinary citizens?

Interestingly, these questions are not unique to the Mackay and Whitsunday regions. The same types of questions continue to emerge in my conversations with people around Australia about the future of the fossil fuel industry more generally—from Port Augusta and the Latrobe Valley, where people are grappling with the implications of coal-fired plant closure, to Gloucester in New South Wales where the local council is exploring economic alternatives after community opposition saw the abandonment of a coal seam gas project, to Acland in Queensland where communities are battling further coal mine expansions in court.

In these questions lies a unique opportunity for economic transformation, as they demonstrate that people are ready for a transition—not just an orderly transition away from coal, but a transition towards a new economic system that tackles the injustices and environmental challenges we face across the country.

It is this kind of questioning that creates spaces for people to explore the alternatives. Some of the ideas that are helping communities around the world to reclaim their local economy and decide on a different future are exemplified by:

- Citizens in the US and Germany voting to take back public control of privatised utilities to ensure greener and more equitable services;
- Local governments like the Byron Shire Council committing to zero emissions plans, regulating to stimulate more ethical local production and adopting measures to reduce consumption and waste;
- Groups around Australia establishing Community Owned Renewable Energy initiatives; and
- Countries from Finland to Brazil experimenting with the concept of a Universal Basic Income.

Knowing about these options not only encourages hope and creative problem solving, but also helps to ignite our collective imagination about what a better world could look like.

Now is the time to build a movement to transition our economy to a post-fossil fuel future. In order to achieve this we need to build new alliances that span green, labour, business and community groups, and we need practical, grounded and context-specific interventions that offer economic alternatives and hope for the future. To paraphrase Quinton Sanfoka, it is not enough to oppose to fossil fuels, we need economic solutions in place to ensure that this transition is not just inevitable, but just as well.

For more information on how to join this movement and the work being done to support communities at a grassroots level, visit [www.centreforsocialchange.com.au](http://www.centreforsocialchange.com.au). ●



**Carmichael River**

Photo credit: CC by attribution—Flickr, Tom Jefferson

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**Knowing about these options not only encourages hope and creative problem solving, but also helps to ignite our collective imagination about what a better world could look like ...**  
”



## New economy, new democracy and coal mine rehabilitation

You have to feel sorry for pundits. Just when they think they have established their trend lines and factored in their variables, along comes a Donald Trump or Bernie Sanders or some Austrian neo-Nazi megalomaniac to disturb a well-established plot. The same thing has happened in the world of energy economics. A quiet revolution, one to rival the digital revolution three decades ago, has been occurring for years right under their noses and most pundits didn't recognise it. Not only did pundits fail to recognise it, but the business owners whose fortunes depended on reading the signs also did not. Perhaps this is the hallmark of any revolution: that those with vested interests in the Old Order, who frequent the same business and social bubbles that reinforce their prejudices and distort their capacity for reason, will not accurately read the signs and, consequently, will become the victims of cataclysmic events. They will keep repeating mantras like, "Renewable energy will never provide baseload power", or "Renewable energy is too expensive" as the liquidators move in.

Not that the only portents were technological. Certainly we have seen major advances in solar technology and with battery storage and electric cars, but it was also possible to predict the plunging demand for coal from China which has been insisting for years it was going to transition from an energy-intensive manufacturing country to one with a much higher services sector. Instead of taking stock of their basic assumption, many pundits belatedly moved their hopes for coal export markets from China to India, conveniently ignoring repeated assurances from Indian Government sources that they would phase out imported coal in a few years and they were going to put enormous efforts into renewables.<sup>1</sup>

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<sup>1</sup> Indian Energy Minister Piyush Goyal, quoted in Giles Parkinson, *Renew Economy*, 19 April, 2016.



**Drew Hutton** is a veteran environmental campaigner. He was a founding member of both the Queensland Greens and Australian Greens and was the main spokesperson for the Queensland Greens for many years. In 2010 he began the Lock the Gate campaign in Queensland. This brought farmers, environmentalists, traditional owners and others together to fight inappropriate coal and unconventional gas developments. In 2011 he became the president of the national Lock the Gate alliance that now has active campaigns all around the country. He is also currently co-coordinator of Lock the Gate's mine rehabilitation campaign. Drew has written widely on environmental history and politics and on social movements. He is currently working on a book entitled, *The Long March of the Generation of '68*.

Nevertheless, the fossil fuel industries are still powerful and capable of putting up a fight to the end and, even if significant transition is made over the next decade to renewables, it is still likely that we will simply see fossil fuel multinational corporations replaced by large, powerful renewable energy corporations with little or no community involvement or ownership of the process. To make the transition from fossil fuels to renewables as quickly and efficiently as possible there need to be mass movements that stop coal, oil and gas mining, drive divestment from fossil fuels, and pressure governments for radical policy changes. These social movements will, hopefully, merge over the next decade with other, more positive ones that mobilise around the call for economic development initiatives that emphasise the values of democracy, sustainability, community and fairness. Energy policy should have a strong focus on neighbourhood power systems, agriculture and tourism on sustainable practices and natural resource exploitation on the recognition of environmental limits and the needs of future generations. More broadly, a judicious mixture of government intervention and markets—a recipe detested by the neo-liberals—will be needed to bring fairness and accountability to the system. Such a system should be jobs-rich; have in-built flexibility to promote innovation and diverse family and social arrangements; provide welfare and other measures to ensure some in society are not left behind in a changing environment or by such events as disastrous climate change; and enable workers to have a strong say in the direction of their enterprises and communities—a strong involvement in determining their futures. We will have a “new economy”, but it should also be accompanied by a “new democracy”.

In the meantime there will also be many jobs fixing up the mess that the old economy left behind. Mining in Queensland is one such area—especially coal mining.

If we take the coal-rich Bowen Basin for example, there are over 40 coal mines with 94,600 square kilometres of land disturbed by mining. Rehabilitating such sites involves re-shaping and re-contouring spoil heaps and waste rock dumps, covering tailings dams to prevent leakage of often highly toxic material, and dealing with large voids left over after open cut mining has finished. These voids often contain high levels of acid, heavy metals or salt. Progressive rehabilitation of the sites is often specified in environmental authorities for the mines but this is rarely done in any sort of systematic way and experts estimate there would be less than 20% of all the sites in the Bowen Basin rehabilitated.

Estimates of the costs involved in rehabilitating these Bowen basin mines vary from \$8bn to \$16bn, depending on the assumptions made about the standards applied and the unit costs involved. Queensland governments have been notoriously lax about collecting adequate security bonds (now called financial assurances) from the companies and, over the years, many companies have been allowed to simply walk away from their mines without doing any or adequate rehabilitation. To the credit of the current Labor Government, the financial assurances for all mining in the state has been increased to \$4.6m, but this is still well short of a figure that would ensure taxpayers did not have to foot the bill. The Palaszczuk Government has also passed through the Parliament amendments to the *Environmental Protection Act* that enable it to trace back the chain of responsibility for any mine where the owners have walked away



**Typical mine spoil heaps and void**

Photo courtesy: Lock The Gate

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 ”

from their rehabilitation responsibilities. That is important because we already have something like 15,000 abandoned mines in the state, about 400 of which are “high risk”.<sup>2</sup>

Mining companies, especially those which do not have financial assurances lodged with government to adequately cover costs, can resort to several strategies to avoid having to do rehabilitation. The most common of these is putting the mine on “care and maintenance”. This is a term used by the mining companies to indicate the mine has stopped working for only a short while until, for example, the price of coal rises again. In reality, however, the mine is likely to stay closed indefinitely, if for no other reason than coal prices are never likely to rise to profitable heights again. Another recent development is that big mining companies sell out to small mining companies which, presumably, do not have the same high cost structures. Unfortunately, they usually do not have sufficient capital for an adequate financial assurance and so governments need to be alert for this.<sup>3</sup>

<sup>2</sup> Queensland Audit Office, Environmental regulation of the resources and waste industries. Report 15 : 2013–14

<sup>3</sup> <http://www.smh.com.au/business/mining-and-resources/half-a-dozen-ways-out-of-rehab-for-coal-companies-20160412-go4n8d.html>

It is important to know this background because we need to recognise that interventionist government and regulatory enforcement are essential to the creation of so many jobs in the new economy and certainly they are in the area of rehabilitating mine sites. Rehabilitation is not something that companies should be free to choose to do. It is part of the obligations they sign up to when they are given approval to extract minerals which belong to the people and are administered by the state. Now some of these regulations are weak and enforcement of them has been puerile but, nevertheless, they exist. They are just as much a part of the law of the land as prohibitions against assault and robbery, and they should be enforced.

If, like the regulations surrounding abortion, brothels and smoking marijuana in Queensland, the authorities are prepared to have a no-prosecution policy as long as the infringements are kept within certain bounds, then that should be publicly recognised. If the State Government has turned the system of mine site regulation into one of self-regulation, then this should be publicly stated.

In fact, we have the worst of all worlds. There has never been strong enforcement of regulations against mining companies, but governments keep asserting there is. "We have the strongest system of environmental conditions in the world on this project," Ministers will assert, knowing there is almost no political will at any level to enforce them. There has also never been a mine relinquished in total to the state by a company because no mine has ever been properly rehabilitated.

It is also important to remember that the financial assurances lodged by companies do not comprise the money that is supposed to be used for rehabilitation. It is there only to cover the possibility of a company going belly-up and leaving a substantial backlog. In fact, the companies should be using their own money and doing the rehabilitation progressively as operational areas become available. Therefore private money, backed by financial assurances and regulatory enforcement can create thousands of jobs in regional Queensland. The key to creating this situation is to motivate the companies to change their cultures so that chief financial officers no longer see environmental management issues as an optional extra but as an integral part of their operations that must occupy the front part of their brains along with other more purely profit-making concerns.

My colleagues and I have been working on a case study of Blair Athol, a very old mine in central Queensland which has not been worked since 2012. The mine has 1166ha still to rehabilitate and only 14 workers are left on site after 170 were sacked in 2012. The State Government has \$79m in financial assurances, but we estimate the real cost of doing the job properly would be more than twice that sum. No matter, the owners, Rio, have provisioning for about \$9bn for all their rehabilitation commitments so there should be enough money in their kitty to cover the cost for Blair Athol. If they started now, given they clearly have no intention of ever mining coal there again, they would, on our estimation, create about 40 full-time jobs for the next 6–10 years. Multiply that across the Bowen Basin and there would be something like 2000–3000 jobs created at a time when no one is being employed in mining in regional Queensland. For the first time I can remember, I can walk into a Government Minister's office and say, "I can show you how to protect the environment **and** create jobs."

It is important to appreciate that mining rehabilitation jobs in the present circumstances are what are often called “transition jobs”. They are not part of the “new economy” because they would primarily be fixing up a backlog of problems created by the mining industry’s reluctance to fulfil its obligations. After this backlog has been dealt with, say over the next decade or two, mine site rehabilitation should become what it was always supposed to be: an integral part of any mining operation, done progressively over the life of the mine and in line with world’s best practice so that, wherever possible, the land is returned post-mining to a productive, safe and non-polluting land use. Getting this far will involve, as it will with the whole “new economy, new democracy” direction, a combination of effective market mechanisms, a cultural change in the industry and the political will on the part of governments for economic intervention. ●



**Blair Athol**

Photo courtesy: Lock The Gate

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**It is also important to remember that the financial assurances lodged by companies do not comprise the money that is supposed to be used for rehabilitation. It is there only to cover the possibility of a company going belly-up and leaving a substantial backlog**

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## Two-way streets and revolving doors— disentangling governments from fossil fuels

Last month, 193 Governments began putting pen to paper to sign the world's most ambitious climate agreement. Yet, one cannot help feel that the Paris Accord will do little to stem the climate impacts that more than two decades of inaction has now locked in.

Governments, scientists, even fossil fuel companies like ExxonMobil<sup>1</sup> have known since the 1970s, if not earlier, that the mining and burning of fossil fuels was warming our planet in dangerous ways. Yet whilst scientists sounded the alarm bells at an ever-increasing pitch, instead of being listened to, they've received death threats<sup>2</sup> and been castigated by conservative media and politicians, played like puppets by big coal, oil and gas.

As the impacts of climate change have grown ever more frequent, intense and undeniable, rather than tackle this most pressing of crises head-on, governments have sat on their hands at best, or joined forces with the fossil fuel industry at worst.

They've accepted millions of dollars in political donations from fossil fuel companies and returned the favour in the form of billions of dollars of subsidies to feed the fossil fuel habit. This is a habit that is driving species to the edge of extinction, killing one of the greatest wonders of the natural world—the Great Barrier Reef, washing away our Pacific Island neighbours' cultural heritage, turbocharging devastating storms, and fuelling raging fires so ferocious they create their own weather systems.

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1 <http://www.scientificamerican.com/article/exxon-knew-about-climate-change-almost-40-years-ago/>

2 <http://grist.org/news-2/here-are-some-of-the-death-threats-sent-to-a-climate-scientist/>



**Charlie Wood** is a passionate advocate for the climate and social justice. She is Campaigns Director with 350.org Australia, having previously worked as a Parliamentary policy advisor on energy and the environment and as the Australian Youth Climate Coalition's National grassroots campaigner. In 2009, she coordinated the Australian youth delegation to the Copenhagen climate negotiations. Charlie has also worked for the ACT Commissioner for the Environment and the ANU's

Regulatory Institutions Network. She has published a book on food sustainability, was the 2010 ACT Young Environmentalist of the Year and 2013 inaugural Deni Greene Award recipient.

These are all impacts that we could have stopped if only we had cleaned up our polluted politics and the dirty cash that perpetuates it. Money speaks. It's not hard to understand why Australia's climate movement has found wins hard to come by when you examine the level of influence that the big polluters have over our politicians.

From an entrenched system of donations from Big Coal and Gas to multi-billion dollar taxpayer-funded hand-outs to big miners and a constantly revolving door between the fossil fuel industry and the most senior echelons of our Parliament and bureaucracy, the toxic relationship between our politicians and the big polluters is alive and well.

Let's look at donations for starters. The vast majority of donations to political parties in Australia come from the corporate sector and this is a trend that has been rising in recent years. Indeed, most of the companies who donate are the ones who stand to benefit from a sympathetic policy environment.

It should be no surprise that the fossil fuel industry is a major donor, with companies like Woodside Petroleum giving just shy of \$1 million in donations to the major parties between 2012–2015 and Santos giving over \$600,000. Indeed, it's not uncommon for donors to spend over \$1000 to get near an MP.<sup>3</sup>

<sup>3</sup> <http://www.theage.com.au/news/in-depth/are-our-politicians-for-sale/2006/05/23/1148150251862.html>



**Coal train**

Photo credit: CC by attribution—Flickr, Greenpeace/Andrew Quilty

“  
**... governments  
 have ... accepted  
 millions of dollars in  
 political donations  
 from fossil fuel  
 companies and  
 returned the favour  
 in the form of  
 billions of dollars of  
 subsidies to feed the  
 fossil  
 fuel habit.**  
 ”

Are we really ok with companies like these throwing their cash around in a way that influences who gets to govern Australia?

But it's not just the fossil fuel companies who are to blame. It takes two to tango. In a cash-constrained campaigning environment, some politicians will do anything they can to win a buck for their campaign. It's not uncommon for business figures to receive phone calls from political operatives demanding to know why they have yet to donate or why they have been so supportive of their rivals.

Of course, the players in this polluted game will swear until they are blue in the face that money doesn't buy influence. But you need only look at the scale of fossil fuel company donations (multiple millions of dollars per year) and the state of climate politics in Australia (dire) to see how weak that argument is. In fact, dig below the surface, and things get even murkier. The disclosure requirements of political donors in Australia are amongst the worst in the developed world, so what we know about is likely just the tip of the fast-melting iceberg.

Donation reporting delays can span up to 19 months—which means a big coal company could flog a tonne of cash at a pro-coal candidate and not have to tell the public until after the election. Parties needn't disclose whether corporate donors attend their fundraising events and, since reforms made by the Howard Government in 2005, the threshold under which companies must disclose their donations has been rising by \$200–\$300 every year, such that in 2016, you need only disclose a political donation if you give over \$13,000 as compared to \$1500 in 2005.

This means hundreds of thousands of dollars can be donated to parties in secret every year. We are devolving our political power to big business and willingly pulling the wool over our own eyes as we do so.

But as we know, money politics is a two-way street or, as we'll come to soon, a constantly revolving door. Having parted with millions of dollars of their cash, fossil fuel companies expect something in return. It's no surprise that not a single coal project has been knocked back at the federal level. Nor that our government hands over billions of dollars of taxpayer-funded handouts to the big polluters every year.

Indeed, when you compare the scale of subsidies that our Government will give the fossil fuel industry this year with the amount of donations given by fossil fuel companies since the last election, you quickly see why the donations flood in. For every dollar donated, fossil fuel companies will receive \$2000 in the form of subsidies in this year's budget.<sup>4</sup> Not a bad return on investment. And, our politicians say money doesn't buy influence?!

That's billions of dollars of our hard-earned money handed casually over to companies whose activities are radically altering the composition of the Earth's atmosphere and destroying the Great Barrier Reef. That's billions of dollars of our money that could be invested in clean energy solutions, healthcare and education

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4 <http://gofossilfree.org.au/wp-content/uploads/sites/4/2016/02/PFP-Polluted-Money-Report1.pdf>



but which is instead being used to give multi-billion dollar mining companies a discount on their petrol bill or a wad of free cash to look for yet more coal and gas, even though we know our future depends upon keeping fossil fuels in the ground.

When you grasp the scale of this farcical money exchange between our politicians and the big polluters, you understand why the revolving door between Government and the fossil fuel industry spins so prodigiously. Here are a few examples to give you a taste. Our lead negotiator on the Kyoto Protocol, Ralph Hillman, left public service to become the head of the Australian Coal Association. Our former Climate Change Minister, Greg Combet, is now an advisor to Santos and AGL. The current executive of the NSW Liberal Party, Charles Perrottet, is also BP's Government Affairs Analyst. Liberal Senator James McGrath undertook contract work with Santos between being elected to the Senate and taking his seat in Parliament. Malcolm Turnbull's current senior advisor Brad Burke came to him fresh from Santos. One of our richest coal barons, Clive Palmer, is a sitting parliamentarian.

It's ironic to think that there's a public register of lobbyists when many of our most senior parliamentarians and Government officials are themselves acting directly as lobbyists for the fossil fuel industry. Not to mention the dozens of conservative parliamentarians who take delight in selling doubt about climate change—the Dirty 30,<sup>5</sup> as we like to call them—and, in so doing, opening the floodgates to continued use of fossil fuels.

5 <http://gofossilfree.org.au/pfp-blockers/>



**Climate Blockers: Dutton, Christensen, Brandis**

Photo credit: CC by attribution—Flickr, 350.org

“  
**... dozens of conservative parliamentarians ... take delight in selling doubt about climate change ... and, in so doing, [open] the floodgates to continued use of fossil fuels**  
 ”

It's no surprise that Malcolm Turnbull appears to have no climate plan or is too afraid to articulate what little he does have when you see how firmly the fossil fuel industry and our conservative MPs are wedded to one another.

The system has been well hijacked, but that doesn't mean it can't be changed. There is a glimmer of hope buried beneath the terrible climate impacts we are now experiencing and that is that they have the potential to shake people into action like never before. Politicians can only pander to the big polluters so long as the people they were elected to represent remain idle. When we band together and organise in our communities, we can take back the power that our politicians have sold to the highest fossil fuel bidder.

And the good news is that we have precedents to draw upon and unlikely allies who we can enlist in this fight to get the dirty money out of our politics so that we can reclaim our power.

On donations, countries like Canada and US have already imposed limits on the amount of money that corporate donors can contribute. In Canada, that limit is \$1000.<sup>6</sup> In the UK, company directors must gain permission from shareholders before making political donations and they must disclose who they give money to and how much.<sup>7</sup> The UK<sup>8</sup> and Canada<sup>9</sup> also require parties to lodge quarterly reports on who has donated what, with weekly reports required in the UK during election periods.<sup>10</sup>

Some parties have even imposed out-right bans on taking money from certain sectors. For example, neither of Australia's major political parties accepts donations from tobacco companies.<sup>11</sup> What makes the tobacco industry any worse than the fossil fuel industry? After all, they're both guilty of covering up science and wrecking our health.

In fact, some think we should go further and ban all corporate donations. The Australian Shareholders Association considers donations a form of bribery and a bad use of shareholder's money,<sup>12</sup> and former Qantas boss John Menadue has said that "corporate donations are a major threat to our political and democratic system."<sup>13</sup>

And when the prospect of ending fossil fuel subsidies seems all too much, consider that a majority of Australians already want fossil fuel subsidies cut from the budget, with the money spent on more important areas like health and clean energy.<sup>14</sup> Or that the EU is already phasing out coal subsidies, with all of them due to be banned by 2018. That's right, the entire continent will stop subsidising coal.<sup>15</sup>

6 <http://www.elections.ca/content.aspx?section=res&dir=ces&document=part6&lang=e>

7 <http://uk.practicallaw.com/5-613-3685>

8 <http://www.electoralcommission.org.uk/find-information-by-subject/political-parties-campaigning-and-donations/donations-and-loans-to-political-parties/quarterly-donations-and-loans>

9 <http://www.elections.ca/content.aspx?section=res&dir=ces&document=part6&lang=e>

10 [http://www.electoralcommission.org.uk/\\_data/assets/pdf\\_file/0003/183045/Weekly-donation-report-PP-GB-expl-notes.pdf](http://www.electoralcommission.org.uk/_data/assets/pdf_file/0003/183045/Weekly-donation-report-PP-GB-expl-notes.pdf)

11 <http://www.smh.com.au/federal-politics/political-news/national-party-accepts-more-than-10000-in-tobacco-donations-20160201-gmipak.html>

12 <https://www.australianshareholders.com.au/node/38593>

13 <http://www.theage.com.au/articles/2004/02/07/1075854110070.html>

14 <http://350.org.au/news/diverse-coalition-calls-on-federal-government-to-end-fossil-fuel-subsidies-ahead-of-budget-week/>

15 <http://www.eubusiness.com/news-eu/energy-coal.7kt>

As for the revolving door, numerous jurisdictions overseas have imposed cooling off periods, in recognition that knowledge gained in one job could be detrimental to one's role in another.

Australia has a lot of ground to gain but the steps to clean up our polluted politics do exist. Consider the following as the beginnings of a checklist to get us there:

- **Restricting the big polluters' ability to buy political influence** by capping the amount of money a politician or party can receive from any corporate donor and capping the amount of money that lobbyists can spend. Ultimately, however, the major parties should apply the same logic that they've applied to tobacco donations to fossil fuel donations. Big coal and gas cause just as much if not more damage than big tobacco, so their money should be rejected.
- **Shining a light on the unhealthy influence of the big polluters over our democracy** by reducing the mandatory donation disclosure threshold to \$1000 as recommended by the Joint Standing Committee on Electoral Matters in 2011, requiring quarterly reporting of donations with more frequent report during election periods and disclosure of donations above \$100,000 within a fortnight.
- **Ending the revolving door between our politicians and the big polluters** by banning Members of Parliament from lobbying for three years after they leave office.
- **Cracking down on corruption between our politicians and the big polluters** by establishing a Federal Independent Commission Against Corruption (ICAC) to regulate the system and ensure that anyone who breaks the rules face consequences.
- **Requiring greater transparency around political lobbying** via reform of the Federal Register of Lobbyists<sup>16</sup> so that lobbyists are mandated to disclose the firm they work for, the amount they are paid, the issues they work on and which federal departments and politicians they communicate with.
- **Phasing-out fossil fuel subsidies** including the fuel-tax credit and exploration and prospecting deduction which function as payment for the big polluters to fuel dangerous global warming.

All of this would go a huge way towards cleaning up our broken and dirty political system, which currently favours the big polluters over the people it was meant to serve. It would make it harder for the fossil fuel industry to buy political influence and show up politicians whose political life rests upon pandering to industries that are hell-bent on wrecking the planet.

It will take a people-powered movement to demand this change and it won't happen overnight. But with tragic climate impacts like the mass bleaching of the Great Barrier Reef unravelling around us at an alarming rate, we have no time to lose. ●

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16 [http://lobbyists.pmc.gov.au/who\\_register.cfm](http://lobbyists.pmc.gov.au/who_register.cfm)



**The end of coal doesn't need to  
fill us with fear. We can embrace  
it as an exciting opportunity.**