

Pre-Publication Draft of Paper to be published in *Energy Policy*

Online version at: <http://www.sciencedirect.com/science/article/pii/S030142151630283X>

The coal question that emissions trading has not answered

Pre-publication draft. Submitted to *Energy Policy*, accepted 31 May 2016.

<http://dx.doi.org/10.1016/j.enpol.2016.05.053>

Author details

Rebecca Pearse

Faculty of Arts and Social Sciences, University of Technology Sydney

Email: rebecca.pearse@uts.edu.au

Abstract

Can emissions trading assist with the task of placing a limit on coal production and consumption in Australia? This paper outlines a critical political economy perspective on coal and a flagship ‘market mechanism’ for emissions reduction. The prospects for an effective emissions trading scheme in coal-dominated economies are considered in light of its theoretical justifications as well as recent attempts to price carbon in Australia. Emissions trading is a weak instrument that does not address real-world failures of coal governance. At their theoretical best, carbon prices produce marginal changes to the cost structure of production. In practice, the Australian case demonstrates emissions trading is an attempt to displace the emissions reduction task away from coal, through compensation arrangements and offsetting. In light of the urgent need to rapidly reduce global emissions, direct regulation and democratisation of coal production and consumption should be flagship climate policy.

Key words

Coal governance; emissions trading; Australia

Introduction

The extraction and combustion of coal is the single largest source of global emissions (Heede, 2014; IEA, 2015). There is a very clear imperative to place a limit on the exploitation of coal and other fossil fuels. However, existing climate mitigation efforts have not done so. Since 1990, when international climate policy and law was first developed, world coal production has increased by 73 per cent to 2014 (Table 1.1, IEA, 2015). Australia's coal production has increased 140 per cent in the same period (ibid.).

Existing climate change policy responses have failed to limit the exploitation of coal. There are other reasons for trebling coal production in recent times, including the rise of China, the non-binding nature of the United National Framework Convention on Climate Change (UNFCCC) agreements, and the overall absence of climate mitigation policy in coal sectors across the world. However, I argue that there is good reason to question the political status of emissions trading as a 'flagship' of climate policy in light of the political economic realities of coal markets and patterns of decision-making associated with the Australian, and other emissions trading schemes (Pearse and Böhm, 2015).

Using a case study of Australia, I show that emissions trading schemes (ETS) at best produce marginal change in the cost structure of coal production. This is written into the economic theory underpinning market instruments. In addition, the economic rationale for emissions trading is based on a questionable assumption of equivalence between fossil fuel sources and 'carbon sinks'. The real-world practice of emissions trading does not deal with the failures of coal governance which perpetuate coal reliance. In Australia, the brief institution of emissions trading and offset law and policy has served as a means to avoid placing a limit on carbon-intensive coal production and consumption. The current Liberal/National Party (LNP) government has repealed the ETS legislation, with no plans to reinstate it. However, emissions trading is likely to return with a Labor government, and remains a part of international trends in climate law and policy. For this reason, it is important to reflect upon the limitations of emissions trading as it has been practiced so far.

This paper proceeds in three steps. First, I outline a critical reading of today's coal question and the political and economic rationale underlying the turn to 'market mechanisms'. I then describe Australia's export-oriented coal mining and the national electricity market, focusing

on longstanding failures of governance in these sectors which perpetuate coal reliance. The final section illustrates that Australia's emissions trading scheme relied heavily on carbon offsets and it redistributed public wealth to coal companies. I conclude that better answers to the coal question involve direct regulation of coal and more broadly there is need to expand and redefine climate policy beyond the fixation with carbon trading.

Today's coal question and marketised climate governance

In the 19th century Stanley Jevons, one of the founders of neoclassical economics, was concerned that British economic power would decline with increasing scarcity of coal resources. He argued that there was nothing that could resolve a paradox - that increased efficiency leads to greater aggregate consumption of coal. Improvements in efficiency make coal more cost effective per unit of production. In a chapter of *The Coal Question*, Jevons (1906[1865]) argued that efficiency gains incentivise overall growth and hastens the depletion of resources, and in turn social ruin.

Of course this dystopic future did not arrive. Jevons saw the association between efficiency gains and growing aggregate demand for coal as an inevitable, natural phenomenon. He had under-estimated the potential of replacement sources of energy like petroleum, and hydroelectric power. In contrast to Jevon's narrow concerns about scarcity and coal, environmental political economy inspired by the work of Marx and Polanyi reminds us that fossil fuel production must be explained historically and in terms of society-nature relations in market society. Fossil fuels are an integral feature of capitalist social organisation (Altvater, 2007; Foster et al., 2010). With 150 years of further capitalist development and climate change, Jevon's original coal question has been replaced with a different kind of question about fostering alternative modes of production and consumption that do not breach 'planetary boundaries' (Steffen et al., 2015).

Today's coal question is not about depleting coal reserves, but the risk of climate change induced social disruption if a limit is not imposed on the production and consumption of coal is not put into place. We are now faced with the consequences of coal and other fossil fuels. Carbon dioxide (CO₂) concentrations have increased by 40% since pre-industrial times (IPCC, 2013). Current rates of fossil fuel combustion imply a long-term temperature increase of 3.6°C or more (IEA, 2013), and coal is necessarily a key target if this is to be avoided. The

combustion of coal currently contributes nearly half (44 per cent) of world CO₂ emissions (IEA, 2014). Massive redirection and dissolution of coal capital would be needed if we are to stay below a 2°C global temperature increase (Leaton, 2014). Importantly, dealing with the issue of carbon limits is not singularly a technical problem; it goes to the core of how energy-society relations are institutionalised under capitalism. More specifically, climate change raises fundamental questions about the social and political organisation of markets for fossil fuels like coal.

The centrality of coal combustion as a driver of climate change is an integral part of capitalist development. Sixty three per cent of world anthropogenic greenhouse emissions are traceable to only 90 private and state-owned fossil fuel enterprises (Heede, 2014). Twenty two per cent of historical fossil fuel emissions come from 36 coal enterprises (p. 235). Coal and other fossil fuels are an integral part of the transformation of global capitalism since industrialisation (Clark and York, 2005). The global ‘energy shift’ from human reliance on biological (wind, water, muscle) to fossil energy contained in the Earth coincided with the generalisation of capitalist social relations (Altvater, 2007).

Wage labour was facilitated by the huge expansion in productive capacity associated with large-scale, fossil fuel-based industrial production (Malm, 2013). Fossil energy allowed production to be organised relatively independently of other social patterns; it could be used 24 hours every day with constant intensity (Altvater, 2007). More broadly, the combustion of fossil fuels combined with an ensemble of social transformations, including European rationality, colonisation of the majority world, the dynamics of money as capital’s social form, and the disembedding of the market from society, producing what Polanyi (2001[1944]) called ‘the Great Transformation’. Transition to non-fossil sources of energy then, implies an equally profound social transformation that will not come easily.

When fossil fuels are seen as internal features of capitalism we can appreciate the uneven power relations that shape control and access to the world’s energy systems (Huber, 2009). There are considerable resistances from energy companies to any efforts to limit fossil fuel production (Newell and Paterson, 1998; Pearse, 2007), and the governance of energy has developed historically with strong path dependence toward fossil fuel reliance (Goldthau and Sovacool, 2012). The extraction and combustion of coal deposits for energy involves incredible throughput and mobility of capital flows. At the same time, capital requires

reliable access to coal reserves, infrastructures, legislative and regulatory arrangements. In the case of coal, national legal regimes regulating coal have operated to ‘fix’ ancient stores of carbon in place to aid processes of capital accumulation (Huber and Emel, 2009).

Importantly, these arrangements are not static, and over time the governance of coal has shifted into hybrid formations of public and private agencies.

In section 4 I illustrate the ways in which governance arrangements have facilitated the entrenchment of coal-based electricity and mining export market in Australia. Governance is broadly understood as an ongoing process of managing human affairs, inclusive of public and private entities operating at multiple scales. The term governance takes us away from the idea that emissions from coal industries are simply the result of corporate manipulation of a captured state. Coal governance develops historically, in the context of capitalism, through shifting and contested modes of regulation.

Governance is a heterarchic mode of coordination, characterised by self-organisation as opposed to singular state (hierarchical) or market coordination (Jessop, 2000). The term governance does not describe a neutral third thing beyond the state and market, and in practice the turn to governance has not resolved contradictions of capitalism. Rather governance describes the often incoherent mix of public and private entities that regulate coal and shape the distributive outcomes and problems associated with fossil fuels in capitalist societies. In the case of coal mining and electricity governance in Australia, I will demonstrate that coal-related greenhouse emissions reflect failures of governance.

This is important, because to date, climate policy has been informed by a much narrower definition of what problems must be addressed by climate mitigation law and regulation. The dominant way of conceiving the climate problem, and policy solutions, has been derived through the work of neoclassical economists (e.g. Garnaut, 2008; Stern, 2007). This intellectual tradition conceives of greenhouse gases as un-intended ‘externality’ to otherwise efficient markets. To deal with these externalities, new methods of environmental valuation and market-based solutions to protect the environment have been introduced across the world (Markandya and Barbier, 2013).

There are three main types of market-based climate policy pursued since the 1990s: voluntary carbon abatement programs; carbon taxation; and emissions trading. Emissions trading

schemes involve creation of a market in tradeable credits. Emissions trading schemes and offsets have become ‘flagship’ policies (Passey et al., 2012) against which other policies for emissions reduction are conceived as complementary (e.g. efficiency programs) or contradictory (e.g. traditional regulation such as mandatory standards). Australian senior advising economist Ross Garnaut (2008, 2011b) proposed a framework for emissions trading coupled with complementary measures to incentivise efficiency and technologies like carbon capture and storage. He also asserted that emissions trading and other market instruments are always more efficient than direct regulation without empirical evidence to support this claim (Spies-Butcher, 2010).

In theory, a ‘cap-and-trade’ ETS create scarcity and efficient allocation of emissions rights. The ‘cap’ sets the emissions limit and is instituted through legislated trading periods with increasingly scarce carbon rights. Cost-efficiency comes from permits for CO₂e being tradable. In perfectly functioning markets, polluting firms facing high costs for emissions reduction may buy excess permits from firms with low costs, which in turn profit from sale of their excess permits. The use of ‘carbon offsets’ produced in other sectors, and other national jurisdictions through schemes like the UN Clean Development Mechanism (CDM), is another source of low cost credits. Carbon offset credits are derived from emissions reduction or sequestration projects in different industries and nations, which are sold in to cap-and-trade schemes through regulated linkage arrangements.

In most compliance schemes, credits are traded within the ‘cap’ and arbitrage (the bids and offers) between buyers and sellers is theorised to produce net gains for all involved (‘welfare’) creating an equilibrium carbon price at the margin. That is, carbon prices are understood to reflect the ‘optimal level of the externality’ where marginal net benefits enjoyed by polluting firms are equal to marginal external costs to society (Pearce and Turner, 1990). However, there are major flaws in this thinking, particularly when we consider power inequalities that define emissions-intensive industries.

Economic theory and the models underpinning carbon price design often ignore the considerable concentrations of power in any given marketplace, particularly in the fossil fuel-based energy sector (Perry et al., 2013; Spash, 2010). Theoretically, firms are treated as price takers who operate according to marginal production costs. On the other hand, consumers are assumed to be making decisions that can shape patterns of energy production. In reality,

powerful energy sectors firms are able to mark-up pricing, engage in price discrimination and monopsony. Consumer demand for energy is inelastic, particularly for electricity where substitutions are unavailable or costly. And it will be shown that the governance of coal reinforces these inequities and inefficiencies.

Another key simplification in the economic theory of emissions trading and offsetting relates to fungibility between carbon units traded. The economics of carbon trading assumes physical equivalence between diverse points in the carbon cycle. However serious non-equivalence prevails (Spash, 2010). The most obvious example of this is the difference between pools of fossil, terrestrial, oceanic, and atmospheric carbon (Dooley, 2014; Lohmann, 2005). Fossilised carbon in fuels, such as coal and oil, is produced over millions of years, and is effectively inert. Other types of carbon in terrestrial and ocean carbon cycles have far less stable properties, making permanent 'sequestration' difficult, if not impossible.

These theoretical flaws in the economic rationale for emissions trading have real-world material and political consequences. For instance, the intellectual case for emissions trading frequently made by economists has naturalised carbon prices at the margin as a focal point of climate policy. Meanwhile, the governance arrangements enabling coal expansion and greenhouse gas emissions go unaddressed. The discussion that follows uses examples from Australia to illustrate the limitations of carbon trading to reduce coal-based emissions in practice.

Method

In order to illustrate the political economy of coal in Australia, I give a review of coal mining and coal-dominated National Electricity Market. In the first stage of research I calculated the concentration of emissions at firm-level showing the dominance of coal in Australia's national emissions profile. Figure 1 shows the state-owned and private companies producing the largest volume of direct emissions are utility level (scope 1) during the second and final year of the Australian ETS (2013-2014). Data was taken from the Clean Energy Regulator's Liable Entities Public Information Database. The data were calculated by tracing utility level emissions data to parent companies and adding them up.

Climate policies and related legislation were analysed in terms of their stated goals, design and anticipated distributive impacts. The focal point of analysis was the national compliance ETS and offset scheme developed in 2008, and then briefly legislated for two years, 2012-2014. These were:

1. The *Carbon Pollution Reduction Scheme* debated 2008 - 2009, shelved in 2010.
2. The *Carbon Farming Initiative* announced August 2010, legislated in July 2011.
3. The *Clean Energy Act* announced September 2010, legislated November 2011, repealed in July 2014.

In addition to climate policy and law, I consulted reports on the National Electricity Market, coal exports, Energy White Papers, and public submissions made to the government, comparing them against the government's final policy design decisions. These documents helped me identify the key claims made by coal industry groups in the policy design process.

Coal governance and the brief institution of an ETS in Australia

In 2010, the Australian Labor Party (ALP) formed a minority government in coalition with the Greens and two independent Members of Parliament, and they struck a deal to install a carbon price. The *Clean Energy Future (CEF)* package, legislated on the 8 November 2011, had an ETS at its centre. The ETS was the product of a close election outcome in 2010, and in the two years before that an intense debate occurred over a similar ETS called the *Carbon Pollution Reduction Scheme (CPRS)*. After a difficult political debate, the Abbott LNP government in 2014 repealed the ETS.

The ETS that operated between 2012 and 2014 covered 300 hundred firms (down from 1000 in the CPRS), and 50 per cent of the national economy's emissions in total. Emissions from coal were the largest single source of emissions covered by the former Australian ETS (see Figure 1). Coal dominates Australia's emissions profile through the electricity and mining sector, as well as heavy industry. Thirty four per cent of Australia's overall emissions come from largely coal-fired electricity generation, and emissions from this sector have grown faster than any other sector over the past two decades (DCCEE, 2012b). Coal mining and heavy industrial users (e.g. steel and aluminium) are the next largest emitters.

Ten corporations and governments are responsible for close to two-thirds of emissions regulated by the ETS. They were, in order: AGL, CLP Group (Energy Australia), the NSW Government (Macquarie Generation),¹ GDF Suez, Origin, the Queensland government (Stanwell Corporation), Rio Tinto, Woodside, the WA Government and BHP Billiton. In electricity generation, over half of emissions covered by the carbon price come from 20 large coal-fired power stations in five 5 regions within NSW, Queensland, Victoria, and Western Australia.

A closer look at the political economy of coal in Australia reveals structural barriers to change, and a range of governance failures that are bound up with the entrenched coal economy that an ETS would not budge to any significant degree. I illustrate below that governance failure is distinct from market and state failure (see Jessop, 1998, 2000). ‘Market failure’ is a procedural concept mainstream economists use to describe a situation where economic exchanges do not produce what a ‘perfect’ market would theoretically deliver i.e. when scarce resources are not allocated efficiently through the pursuit of profit. ‘State failure’ is a substantive phenomenon. The concept is used in social science when the state does not realise its own political projects, for instance, in regard to its own operating rules and procedures, and in democracies when the state fails to renew popular mandates.

Governance failures are multidimensional; they are constituted through a complex of global/local, public/private institutional arrangements and political-ideological relations (Bakker et al., 2008). Following Jessop (1998), we can define governance failures as situations when the substantive outcomes of a given governance arrangement do not meet the publicly stated aims of agents involved, or when there is no stable agreement on the goals and techniques of governance. Governance failures are also shaped by the contradictions of capitalism (p. 39). The ‘ecological’ contradiction of capitalism is expressed as the tension between capital’s historical need for ever-increasing profits from fossil fuels and the threat of dangerous climate change that must be managed somehow (O’Connor, 1998). When we look at the regulation of coal under capitalism, failures of governance are evident. In the case of coal mining and electricity, longstanding State laws serve the goal of trebling Australian coal production. However, coal governance continues to stand at odds with the Federal

¹ The NSW government recently sold Macquarie Generation to AGL, making that firm the largest contributor to greenhouse emissions at firm level.

government's commitment to emissions reduction and over time, existing social and environmental protections are subject to dissent.

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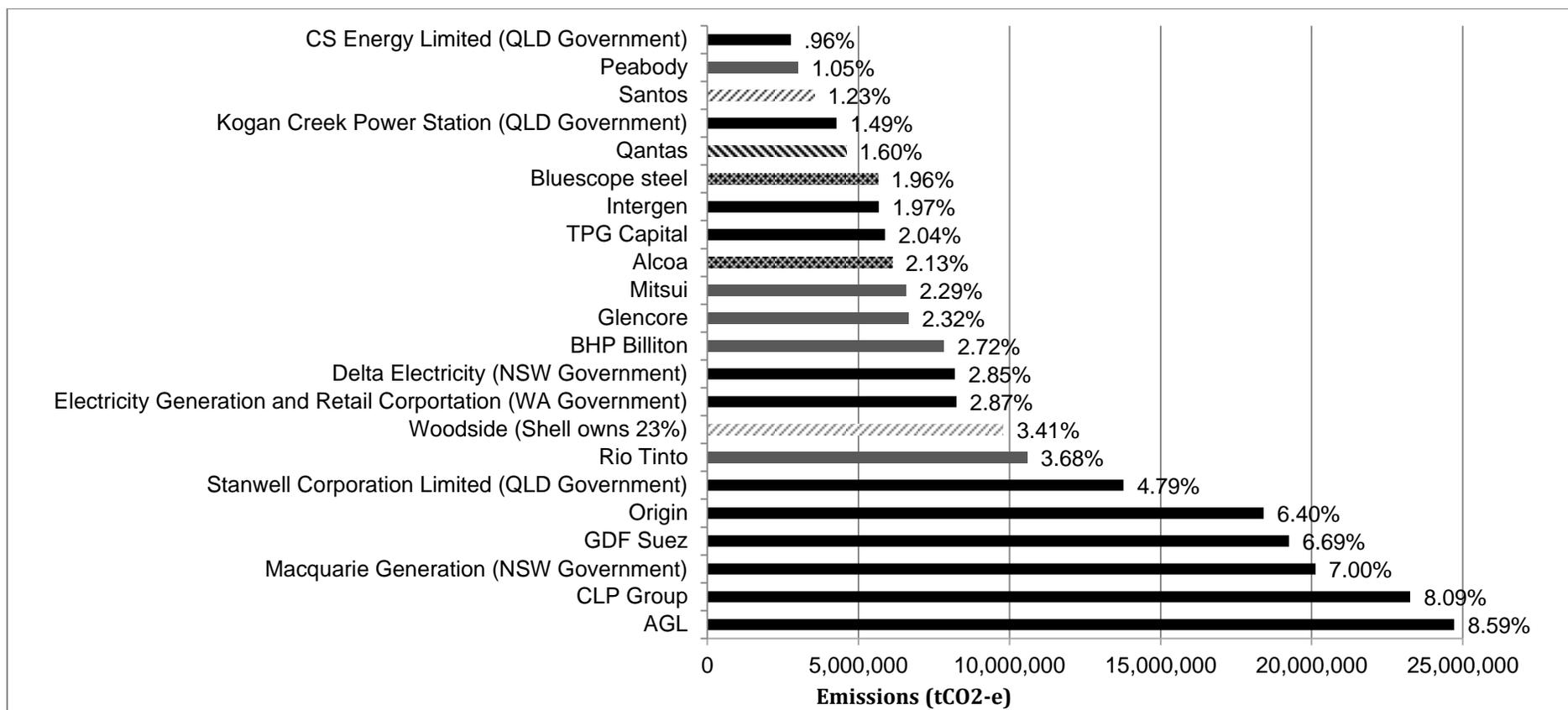
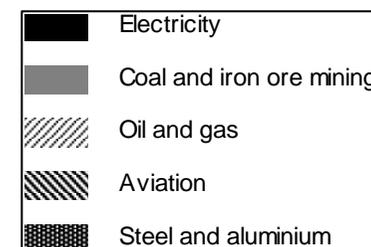


Figure 1. Scope 1 emissions for 22 highest emitting firms participating in the ETS

Source: (Liable Entities Public Information Database (LEPID, 26 July), Clean Energy Regulator, 2014)



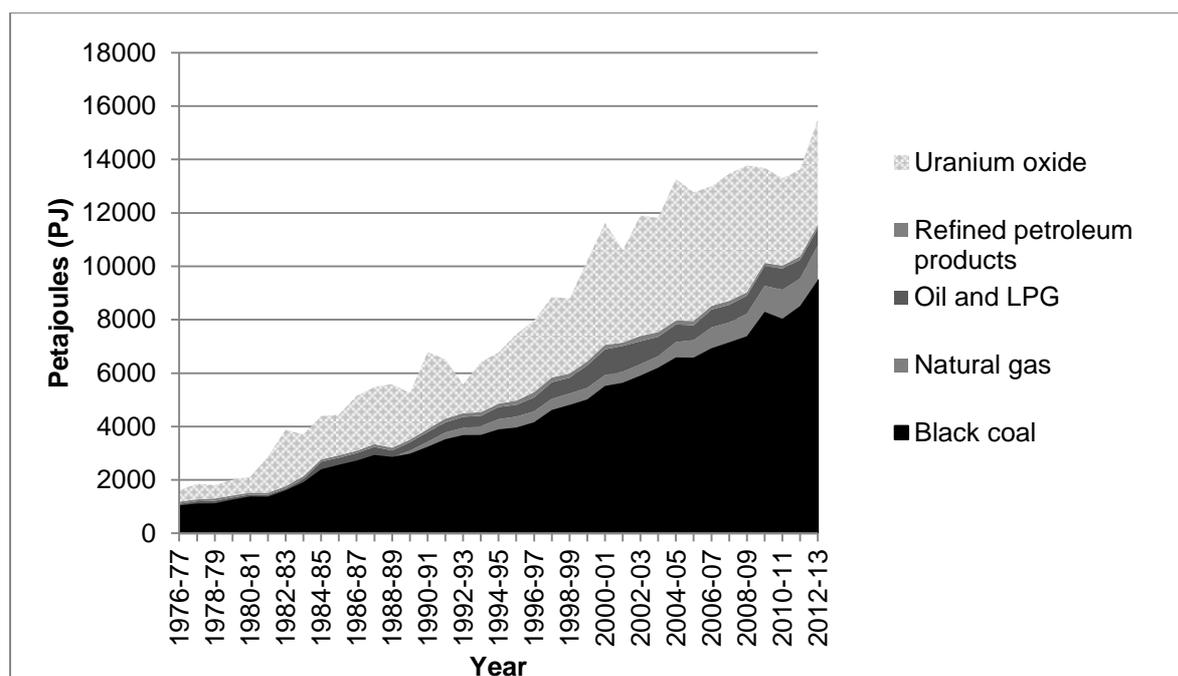


Figure 2. Energy exports by fuel type, 1976-77 to 2012-13

Source: (Data sheet figure 8, BREE, 2014)

4.1 Coal exports and problems carbon pricing can't address

Coal has been a key feature of settler society in Australia. Apart from agriculture, the coal industry is the oldest major industry in the country. In 1799 the first commercial mining venture in Australia began in Newcastle which became the world's largest coal exporting port, mostly to East Asia. In a century of booms and busts, two bursts of mining expansions occurred in 1970-1988 on the back of the 1970s oil shock, increased foreign ownership, new and more efficient techniques, removal of export controls and increased Japanese demand (ABS, 2000; Gibson, 1990). The most recent boom kicked off in 2004 in response to new demand from China and India. Mining investment rose from approximately 1% of GDP in 2004 (also an historical average) to 8% of GDP in 2013 (Downes et al., 2014). Between 2001 and 2011, coal exports nearly doubled in volume and tripled in value (DFAT, 2011).

The Australian state's support for fossil fuels is evidenced by the scale and number of new coal mines that were approved during the boom (Greenpeace, 2013). The Crown owns nearly all minerals. In the 1980s State governments introduced legislation to establish that the States

held the power to explore for and extract minerals on private land. Licences for exploration and mining are managed by State resource and planning departments, with additional Federal governmental oversight if the environmental impacts are of ‘national significance’ under the 1999 *Environmental Protection and Biodiversity Conservation Act*.

The state’s role in enabling intensive coal mining coincides with a turn to neoliberal modes of governing, through centralisation of State planning decisions combined with increasing recourse to private expertise through independent panels and consultancies (see Williams, 2014). A lack of codified goals in this arena has created new risks. Following corruption findings in NSW coal allocation governance in 2013, the Independent Commission Against Corruption found that there is no overarching policy or plan for the development of coal and different State agencies which have contradictory roles in mine approvals (ICAC, 2013).

There is also significant explicit state support for fossil fuel capital in Australia, which contradicts the goal of least cost abatement named in the Federal Government’s ETS legislative package (Denniss et al., 2012). The ACF (2014) estimates that Federal budget subsidies between 2014-15 to 2017-18 amount to amount to \$47 billion. This is constituted by \$35 billion through tax expenditure (fuel and asset tax breaks) and \$12 billion as foregone revenue from the carbon price. Approximately \$18 billion has been contributed by State governments over the last six budgets (Peel et al., 2014). This assistance comes in many forms, from direct payments, access to discounted state services (e.g. rail), or State funded infrastructure or mining projects that benefit e.g. a \$76 million coal project in NSW that the State government originally developed as secure supply for soon to be privatised power stations. Assistance is also provided to domestic and overseas fossil fuel projects through the Australian Export Finance and Insurance Corporation (\$374 million between 2010 – 2013), and \$16 million through Australia’s shares in the World Bank Group and the Asian Development Bank (Bast et al., 2014).

Coal is Australia’s largest energy export (see Figure 2). Emissions estimated to result from the overseas consumption of Australia’s fossil fuel exports now exceed the national emissions year on year (BZE, 2014; Pearse, 2010). The export market for coal then is a vital global climate governance issue. However, because UN carbon accounts take stock of emissions from production and consumption within national borders, the responsibility for the emissions that flow from Australia’s export coal goes largely under the radar of

international climate governance. International organisations such as the International Energy Agency (IEA) and policy discussions in the Group of 8 are also insufficient mechanisms for the coordination of energy policy and diplomacy for reducing coal-based emissions on a global scale (Florini and Sovacool, 2009).

Under the former ETS, fugitive emissions (8 per cent of national total) that occur at the sites of ‘gassy’ mines were subject to compliance obligations (discussed in section 5). However, a carbon price cannot address the failings of the diffused coal allocation and planning process on the matter of climate change (Christensen et al., 2011). The greenhouse implications of new coal mines continues to be neglected in the current system of planning approvals, which provides consent for nearly all new coal developments and extensions proposed. There is scope within existing mining regulations for greenhouse emissions to be considered under existing provisions for Ecologically Sustainable Development in Environmental Impact Assessments and Planning Assessment Commission hearings. Courts have recognised the relevance of climate change to coal mine approvals. However, to date the claimed economic benefits have outweighed environmental and social impacts. Reform of coal mining governance is imperative if any national emissions targets are to be realised, and would involve a more targeted re-regulation of the coal commodity than is achieved in emissions trading.

Importantly, broader political and socio-ecological issues intersect with the coal and emissions problem. The continued state support for coal mining and the arrangements for managing the social and environmental impacts of coal have been hotly contested in recent years. Climate change, food security, clean water, indigenous land rights, and democratic rights of affected communities are now the focus of a broadening anti-coal politics (Connor et al., 2009). Flashpoints of conflict have ignited in a number of locations across the country where green field coal and gas projects have been rolled out. There has been a re-orientation of environmental and rural social movements to coal governance (Pearse, in-press). As a result new demands have been placed upon Federal and State government regulators as well as coal capital itself through divestment campaigns.

These issues express the integral connections between the ‘local’ and planetary implications of continued coal developments and existing modes of coal governance. More broadly, the case of coal mining in Australia illustrates the enduring contradictions between the state’s

commitment to fossil fuels and its responsibilities to address climate change and related social/environmental issues. The coal-fired electricity sector in Australia also confirms this.

4.2 Inefficiencies and inequities in the national electricity market

Since the 1990s, the Australian electricity sector has undergone neoliberal reform and ongoing mis-management. Electricity market restructure has involved: commercialisation, corporatisation and gradual increase in private ownership across the States; changed regulatory arrangements; inappropriate patterns of investment; and higher consumer prices.

Electricity industries are commonly understood as ‘natural monopolies’. Since the 1990s, the view that electricity should remain as a natural monopoly in government hands has been placed with ideals of greater competition and less government involvement (Beder, 2003; Chester, 2007). Advocates for an electricity industry restructure argued that private ownership would incentivise more efficient production. In 1993, the National Competition Policy Review Committee advised that changes to the *Trade Practices Act 1974* be extended to unincorporated businesses and State and Territory government businesses (Hilmer et al., 1993). The Council of Australian Governments in April 1995 adopted this advice with little public discussion, and large state-owned utilities in Australia were vertically integrated, except for NSW and Queensland, where distributors were nominally separate from generators (Diesendorf, 1996).

In 1998 the National Electricity Market (NEM) began operating in southern and eastern Australia. The NEM is made up of a continuous time auction market operated by a private limited liability company, the Australian Energy Market Operator (AEMO). As the NEM was set up, States went about disaggregating electricity utilities, and a gradual process of commercialisation, corporatisation and privatisation. There were 34 government electricity companies in 1990, and today there are 322 registered generators in the NEM (AER, 2014; NEMMCO, 1999).

The increasing global integration of Australia’s economy, through international trade, investment and finance, was a key dimension of restructuring of the electricity sector. Nearly 75% of the proceeds from privatisation came from foreign capital, particularly Asia (Chester, 2007). Whilst private firm participation has been enabled, overall the electricity sector

restructure has created the exact antithesis of the perfectly competitive market that was intended in the reforms (Chester, 2006). A small number of companies dominate generation capacity in the NEM. Because of the concentration in ownership, re-bidding rules in the market, and limited inter-regional connections (due to Australia's large geographical area covered) generators have been able to manipulate spot prices (Short and Swan, 2002) and drive up wholesale prices.

A further contradiction of electricity industry restructuring pertains to productivity and inefficiency. Output per worker in the sector has fallen by 24.9 per cent between 1995 and 2012,² when it has increased by 33.6 per cent in the wider economy (Richardson, 2013). One explanation is that the breakup of the industry into separate entities has led to the rapid increase of staff employed who are indirectly involved in energy production. Between 1997 and 2012, the number of managers employed in the sector increased from 6,000 to 19,000. The manager to worker ratio rose from 1:13 in 1997 to 1:9 in 2012 (Richardson, 2013).

In the period since privatisation began, the costs of electricity have increased markedly. Between 1995 and 2012, electricity prices in Australia increased by 170 per cent. This increase is four times higher than the rise in consumer price index over the same period (Richardson, 2013). Rising network costs are by far the largest factor behind rising electricity prices. Increased prices have been highest in NSW and Queensland. In NSW the average annual household electricity bills more than doubled from \$1,013 in 2007-08 to \$2,073 in 2013-14 (NSW Auditor-General, 2013). Fifty five per cent of that rise was due to increased costs for the network of poles and wires. The carbon price added approximately 16% (ibid.). Since a peak in 2009, there has been a 4.3 per cent reduction in electricity consumption across the national electricity network.

It has been revealed that there has been major over-investment in transmission infrastructure in NSW and Queensland (Martin, 2011). Large amounts of capital have been put into upgrading transmission lines in the NEM under the assumption that demand for energy would increase. The NEM regulatory arrangements allowed transmission companies to borrow money to build the new infrastructure, and then pass on the estimated cost of repaying the loan to consumers.

² This figure is an average for electricity, gas and water sectors.

For instance in 2009, the national Australian Energy Regulatory (AER) allowed for NSW distribution networks to pass on the cost of capital to consumers at 8.78% per annum. This was assumed to be equivalent to private borrowing costs at the time, but in actuality the NSW corporation borrowed from State Treasury at rates of around 4–5% (Mountain cited in Hill, 2014). Between 2007–08 and 2010–11, electricity industry's profits rose by 67%. The national AER has taken 34 cases over the investment allowance to the Australian Competition Tribunal, but 22 were decided in favour of the network companies (Hill, 2014). This has occurred at the highest rates in NSW and Queensland, when State governments owned most of the generators. Beder (2013) observes that this over-investment was undertaken by state-owned companies as part of preparations for privatization. Inefficient and iniquitous outcomes of coal governance are products of the state's commitment to deregulation and privatization.

The over-investment in transmission infrastructure contradicts the National Electricity Objective to: 'promote efficient investment in, and efficient operation and use of, electricity services for the long term interests of consumers of electricity with respect to – (a) price, quality, safety, reliability, and security of supply of electricity; and (b) the reliability, safety and security of the national electricity system' (Government of South Australia, 1996). It also creates a systemic barrier to emissions reduction and renewable energy transition. There is also an important implication here for the coal and climate issue. These investments reinforce Australia's centralised network of emissions-intensive coal-fired power generators. The enforced public spending in this area (through electricity tariffs) benefits coal generators at the expense of competing renewable energy technologies, which require new transmission grid infrastructure and policy support (e.g. wind, roof top solar).

The contradiction in objectives between the electricity sector and emissions reduction which has become more pronounced since industry restructure. In contrast to legislation governing previously state-owned electricity companies and infrastructure, the National Electricity Objective governing the NEM currently does not include environmental protection illustrating the institutional culture of externalising environmental issues (Wright, 2013). There is some evidence for this in the following quote from the AEMC Chairman in response to questions about his views on the potential insertion of an environmental objective in a Senate Select Committee.

The way I think about it is with a football team analogy: everyone on the team has the same objective; it is just that we have different positions and different roles... if the bonehead thinks that the five-eighth is not doing a good job, the worst thing he can do is try and do the five-eighth's job for him. Our role in relation to rules that relate to economic efficiency is part of one role in what people expect out of this sector. There are other manifestations of government that obviously deal with environmental issues in a systemic sense, such as climate change and, in a local sense, land use planning and emissions... You could make the same comment about suggestions around social objectives. Again, there are other parts of government that address that. (Pierce, 2012)

Given the regulatory logic of the NEM outlined here, carbon pricing is effectively treating a symptom of a larger structural flaw. The governance of electricity in Australia is highly inefficient and iniquitous. The electricity market has been shaped by pre-existing governance issues, and in this context the effects of carbon pricing have been weak. To this we need to add that the design of the ETS involved generous compensation and allowed too many opportunities for offsetting for coal power and export mining to be affected.

5. Carbon pricing as a displacement strategy

The analysis below demonstrates that emissions trading is a means to displace the emissions abatement task spatially and temporarily away from fossil fuel industries. The national compliance ETS was short-lived in Australia, however because there is ongoing political commitment to this instrument for emissions-management in the Labor and Green Parties, it is important to reflect on the way emissions trading was designed when in place. The ETS aimed to displace the task of placing a limit on coal production in two principle ways: 1) through generous grandfathering arrangements in the initial allocation of carbon rights, and 2) through the promise of cheap carbon offset abatement. The political work of these two design features of emissions trading is frequently recognised by economists (e.g. Fankhauser and Hepburn, 2010a, b). Experts and policy makers hope that emissions trading can foster support from reluctant energy producers with promises of minimal regulatory burden, and new avenues for profit. However, the substantive outcomes are often undesirable. Grandfathering and offset arrangements in the Australian ETS compromised the scheme's integrity.

5.1 The politics of rent-seeking and transfers of wealth to coal companies

Emissions trading has developed in Australia and elsewhere in ways that have entrenched a pattern of favourable compensation arrangements (Passey et al., 2012). Rent-seeking campaigns by coal industries in particular have produced this outcome. Coal mining and electricity companies waged successful campaigns for exemptions and compensation in the ETS design process. As a result of corporate-government negotiations between 2008 and the 2012, the CEF package involves major transfers to the largest polluting firms. These costs were a considerable fiscal burden borne by wider society through the tax system, illustrating that far from being cheap, carbon trading can be costly to the public and consumer purse (Rosewarne, 2010).

The coal industry lobbied against the original CPRS design, which included compliance obligations for coal mining operations emitting methane - so-called 'gassy coal mines'. After the 2008 Green Paper was released, the coal industry was pushing for exemption, or compensation at the rate of 60 per cent free permit allocation (Hillman, 2009). The Australian Coal Association (ACA) consistently reminded the government of the centrality of coal in the domestic electricity production and energy export market.

Coal .. underpins the security, reliability and comparatively low cost of Australia's electricity supply. In turn, this supports the competitiveness of Australian industry and provides affordable power for Australian households. (Beasley, 2009)

ACA Executive Director Ralph Hillman reported to the Federal Senate 'We are forecasting mine closures, shortened mine lives and job losses' (Hillman, 2009). Rio Tinto spelt this out as a threat to regional Australia:

By our analysis, the [CPRS] before 2020 risks the following: closure of coalmines; halting expansion of value-adding alumina refining; putting aluminium smelters into survival mode; and stopping the demonstration of emerging industrial scale low emissions technologies. Most of these impacts will be felt in regional Australia. (Hodgson, 2009)

The Australian Coal Association (ACA) launched an advertising campaign in September 2009 targeting regional Labor seats with heavy industry or mining operations (Maher, 2009). The ads ran on local television, radio and newspaper with the slogan 'let's cut emissions, not

jobs' (ACA, 2009). In November 2009, assistance to 'gassy' coal mines was doubled in value from \$740 million to \$1.5 billion, in the form of free permits and grant funding (Combet, 2009).

Job losses figured strongly in the campaigns of mining and emissions-intensives industries. The Minerals Councils of Australia (MCA) commissioned Concept Economics for two influential pieces of work. Their review of the Treasury modelling of the CPRS argued that assumptions about international action and the cost of transition in electricity and energy-intensive sectors were highly optimistic (Fisher, 2009). The next report on the impacts of the carbon pricing argued that if the CPRS went ahead, then employment in the minerals industry (including smelting) would be 23,500 jobs less in 2020 (Fisher et al., 2009). Using these analyses, the MCA pushed for 100 per cent free permits and further phased auctioning, insisting that it did not undermine the environmental integrity of the scheme (Hooke, 2009).

The coal-fired electricity generators were among the most vocal industries seeking a doubling of compensation. The National Generators Forum (NGF) wrote to all MPs painting a bleak picture of systemic failure (Wilkinson et al., 2009). A Director from International Power (GDF Suez), owner of one of the largest brown coal power generators in Victoria, repeated these claims in representations to the Federal Senate:

We envisage a systemic failure of the electricity market as a result of damage to balance sheets and loss of creditworthiness; we see increased price volatility and increased short-term contracting, which will impact on all electricity customers; and the CPRS is exacerbating an already difficult capital raising environment.. (Concannon, 2009)

International Power asked on a number of occasions to be bought out and closed down rather than compensation (Caldwell, 2009). CEO of the Energy Supply Association of Australia Clare Savage claimed that the future of the energy market would be jeopardised without further compensation. She argued that governments would have to step back into the largely privatised electricity sector.

What is at stake here is the future of the energy market. If nothing is done, power stations are likely to be bankrupted, and if they closed, then there would be problems with electricity supply, or more likely governments would have to step in to take them over, and that would

unravel the last 10 years' hard work to set up a national electricity market. (Savage cited in Taylor, 2009)

The generators were seeking increased compensation from \$3.9 billion over 5 years to \$10 billion. By November 2009, the volume of free permits under the Electricity Sector Adjustment Scheme (ESAS) more than doubled in value, from \$3.3 to \$7.3 billion, and from 5 to 10 years in duration. The CEF package finally agreed in 2011 dedicated compensation at the value of \$5.5 billion over 5 years to the generators over 5 years.

Free allocation of emissions units is the primary mechanism for industry compensation in the package costing AU\$9.22 billion up to 2014-2015 (Treasury, 2011a). Firms received between 50% and 94.5% of their emissions permits for free, reducing 1.3% per annum (MPCCC, 2011). A pattern of more 90% free permit allocation to major emitters is now discernible e.g. the EU, Australia, New Zealand, Switzerland, Norway, California, and Quebec (see Passey et al., 2012).

The industry compensation package not only undermined the emissions reduction potential of the scheme, it also increased the wealth of some of Australia's coal corporations. There were significant flaws in the justification for coal export mining industry compensation under the CEF package. The CEF legislation had a weak definition of carbon leakage. The goal of the 'Jobs and Competitiveness Program' in the *Clean Energy Act* is:

.. to reduce the incentives for such an activity to be located in, or relocated to, foreign countries as a result of different climate change policies applying in Australia compared to foreign countries. (Section 143, Commonwealth of Australia, 2011)

The 'Jobs and Competitiveness Program' was not based on a legal definition of carbon leakage that would test whether production did in fact move offshore in response to the carbon price, nor what impact that movement might have on emissions (Wood and Edis, 2011). Even with a \$40/tonne carbon price, coal mining would have faced a significant cost factor threatening jobs, or market expansion given Australia's existing cost advantages as a producer of high quality coal in the Asia-Pacific region (p. 22).

Under the ‘Energy Security Fund’ (cash payment and free permits), the brown coal generators enjoyed windfall profits from the ETS. CME analysis for Environment Victoria estimated that over the first three years of the ETS between \$2.3 and \$5.4 billion in windfall profits would have gone to brown coal generators that passed on more than the full costs of the carbon price to consumers (CME, 2013). The case of over-compensation illustrates compounded failures of governance. When we consider public transfers of wealth associated with the ETS alongside the over-investment in electricity transmission networks, it became apparent that public subsidization of private fossil fuel capital has continued with the introduction of emissions trading. In fact the ETS exacerbated the inequities already embedded in the governance of coal.

5.2 Offsets and coal protection

Further, emissions trading has developed historically as policy focused on providing avenues to displace the abatement task spatially and temporally through carbon offsetting law and regulation. Reliance on carbon offsets to compensate for continued fossil fuel emissions is a long standing preference of Australian governments (Pearse, 2013). As far back as 2007, the Howard government recommended international carbon market linkage on the basis that it served the national interest (PMC, 2007). The *Garnaut Review* also argues that rules to permit linkage to carbon offsets would create ‘efficient’ distribution of costs (Garnaut, 2011a).

The offset regulations under the former ETS put Australia’s emissions targets into question. Minimal domestic reductions in emissions were forecast in Treasury’s 2011 modelling of the carbon price, which estimated domestic emissions would increase and peak in 2028 and reduce marginally by 2050 (Treasury, 2011b). The long-term prediction for net domestic emissions in 2050 is 545 Mt CO₂-e, which is equal to only a 2 per cent reduction on 2000 levels. This is possible because of the rules for international carbon trading.

The quantity of offset credits allowed into the ETS was constrained somewhat. International trading was scheduled to begin in 2015,³ and up to 50% of emissions units retired are allowed to come from international credits. The Gillard government also introduced a domestic land

³ However, the Rudd government announced in 2013 that it would bring these forward to 2014.

sector offset scheme. The *Carbon Farming Initiative* (CFI) was linked to the ETS when it began in 2012. The CFI was a voluntary baseline-and-credit offset scheme which became linked to the national ETS in 2012. It covered a range of novel land management techniques in forestry, agriculture and waste sectors, using both UN-compliant methods to reduce emissions such as tree plantations, as well as wide variety of novel offset methodologies, including the application of biochar to soil and feral animal culling. The scheme produced offsets for both compliance buyers under the Clean Energy Bill and buyers in voluntary markets.

Up to 5% of emissions units retired by firms with obligations under the ETS could come from CFI each year. A 12.5 per cent sub-limit was placed on emissions credits that can be sourced through offsets recognised under the Kyoto Protocol. These exclusions did demonstrate a degree of learning from the well documented problems for offsets under the UN CDM program. However, in 2013 EUAs became a ‘prescribed unit’ in the ETS (Clean Energy Regulator, 2013). Carbon market participants could use EUAs in up to 37.5% of the retired units in a given year. No limits were placed on the use of domestic land-based offsets from 2015 onwards. This highlights the logic of displacement embedded in the ETS design.

The offset regulations instituted in 2012 are an improvement upon the previous CPRS which had no restrictions on carbon units recognised. However, Government documents illustrate the role international offsets were anticipated to play in the national carbon accounts. The former Federal government’s *National Emissions Projections* report expected ‘abatement’ with a carbon price would come from the purchase of international carbon credits (DCCEE, 2012a). The domestic emissions projected for 2030 is 630.97 Mt CO₂-e. This is above the 2000 level of 565.49 Mt CO₂-e. International units are anticipated to provide all of the abatement needed to reach the goal of 395.84 Mt CO₂-e (-5% below 2000 levels). Meanwhile, coal was projected to continue to dominate electricity production, with a decline in the decade to 2050 offset by the anticipated arrival of carbon captures and storage technologies (Treasury, 2011b).

The Treasury projections illustrate that emissions trading can help serve to protect coal and other energy-intensive industries against major change. Rather than place a limit on coal production onshore in Australia, the ETS allowed for displacement of the abatement task to other industries and nations through the trade in offsets and international carbon rights.

Two principle weakness of emissions trading are visible here. Firstly, the false assumption that all sources and ‘sinks’ for carbon can be rendered equivalent promotes problematic ETS design decisions like those made for carbon offsets and EU market linkage. Second, the use of offsets and international credits as sources of ‘flexibility’ for emissions-intensive firms is most likely to continue whilst ever carbon trading remains the preferred climate mitigation policy in Australia. Overall, there is good reason to reconsider ongoing commitment to emissions trading, particularly as the urgency of climate change increases.

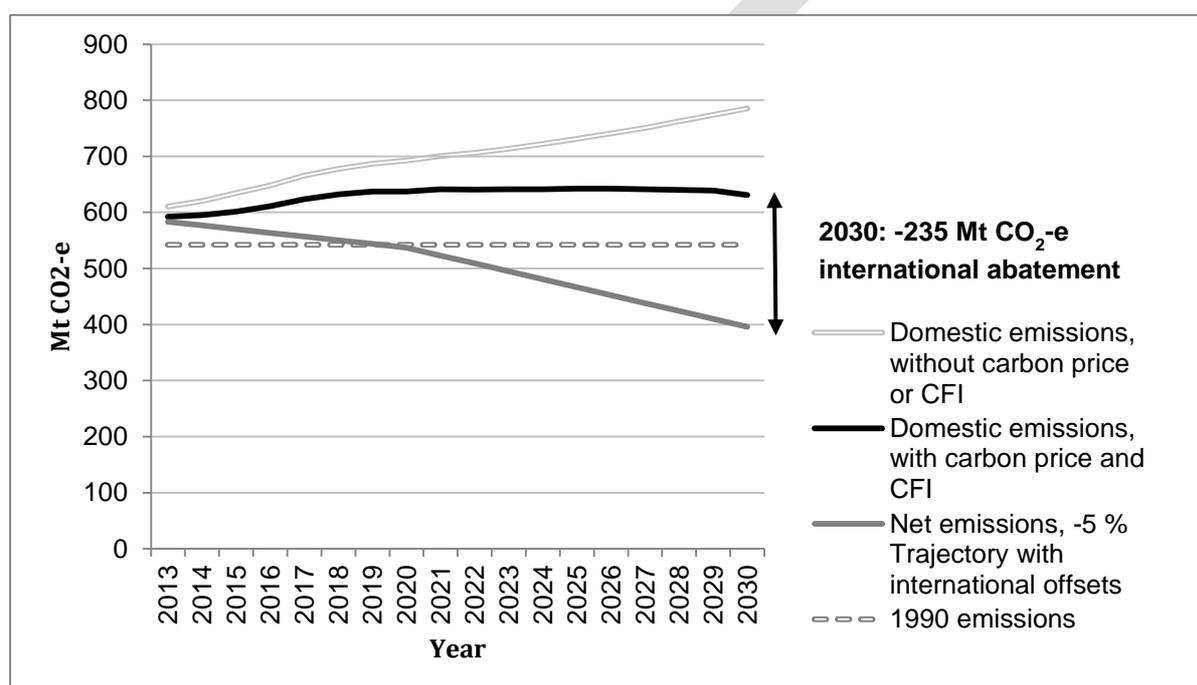


Figure 3. Projected domestic emissions in Australia with an ETS 2013-2030

Source: (Data sheet figure 10, DCCEE, 2012a)

Conclusions and policy implications

This paper has provided a critical account of the political economy of coal governance and emissions trading. Carbon prices are instruments of gradual change at best. They provide weak market signals explicitly theorised and designed to create only marginal changes to the cost structure of production. The prospects for an effective ETS in coal-dominated economies like Australia are slim. In practice, emissions trading does not address failures of coal

governance. The Australian ETS was an attempt to displace the emissions reduction task away from coal, through excessive compensation and offset mechanisms.

A closer look at the political economy of coal governance shows that mitigation policy must address problems that are not discretely ‘market failures’ but rather governance failures associated with the complex of local/global, private/public and political-ideological relations associated with coal dependence in capitalist society. This case study has demonstrated that the historical development of law and policy to support coal reliance in Australia has entrenched coal reliance. While governance arrangements have become increasingly complex (and inefficient in the case of the NEM) the underlying tension between fossil fuel-based capital accumulation and climate and environmental protections remains un-resolved. In light of the many problems with coal governance, carbon prices at the margin are wholly insufficient tools to begin dealing with these issues. Further, the problems associated with grandfathering permits and carbon offsets mean that *increased* coal reliance can result from the installation of emissions trading schemes.

The tendency for emissions trading to be figured as a flagship climate policy against which other mechanisms for reform are deemed ‘complementary’ or ‘contradictory’ is further reason to go back to the policy drawing board. The results of this research point to an urgent need to redefine and expand the definition of climate policy to include broad-based reform and energy market re-regulation. In the first instance, this means moving away from carbon regulation at the end-of-the-pipe, in favour of direct regulation of the commodities driving climate change. More broadly, it will involve doing away with ideological commitments to ‘market mechanisms’ and major reform to existing agencies governing coal (Pearse and Böhm, 2015).

In the case of coal, direct regulating key sites of production (mining, electricity networks) and consumption (industry and household efficiency measures) is imperative, as is democratisation of the coal allocation, planning and environmental protection law and regulations. At present the complex of coal governance arrangements are enabling continued coal expansion in the name of Australia’s commitment to serve global export markets. In addition to substantive change to coal mining and electricity market governance, there is also potentially a role for progressive carbon taxation, targeting the profits of major coal companies.

To be clear, a move away from emissions trading in favour of more direct reforms to coal markets will not happen easily. An expanded agenda for climate policy will be resisted by industry and conservative opponents. No doubt a return to traditional forms of regulation will involve new contradictions and limitations. Rent-seeking will continue as a problem, as will public anxieties about the costs of households and risks to the national economy if multilateral agreements for deep emissions cuts don't eventuate. However, the urgency of climate change requires much more transformative change in coal-dependent economies than emissions trading can deliver.

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