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On the wrong track

The case for abandoning the promised $7 billion subsidies to Australia's dirtiest coal-fired power stations

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Policy Brief

Introduction

The Gillard Government is committed to introducing a price on carbon pollution by July 2012 however the details of the price, the sectors of the economy that will be covered by the scheme and the design features of the compensation package that is likely to accompany the carbon price are currently being negotiated by the Government, the Greens and the Independents involved in the Multi-Party Climate Change Committee (MPCCC).

While the details of the compensation package are yet to be finalised, the Government has made it clear that its preferred starting point is the compensation arrangements proposed to accompany the Carbon Pollution Reduction Scheme (CPRS). The final version of the CPRS was negotiated between Malcolm Turnbull, the then Leader of the Opposition and the former Prime Minister, Kevin Rudd. In addition to substantial household compensation, the final version of the CPRS also included generous compensation to:

- Emission intensive trade exposed industries (EITEs) who would receive up to 94.5 per cent of the pollution permits they required for free
- Coal-fired power stations with particularly high levels of emissions were to be eligible for the Electricity Sector Assistance Scheme (ESAS) which would have provided an estimated $7.3 billion worth of free permits to Australia's dirtiest coal-fired power stations
- Coal mines with particularly high levels of methane emissions were to be eligible for the Coal Sector Assistance Scheme (CSAS) worth $1.5 billion
- Medium and large manufacturing and mining firms were eligible for $1.1 billion through the Transitional Electricity Cost Assistance Program.

The political compromise that represented the final version of the CPRS was described by the Government's own climate change adviser, Professor Ross Garnaut, as "one of the worst cases of public policy making" that he had ever seen.

Just why a low point in Australian policy development should serve as the starting point for the latest round of carbon price negotiations has been left unsaid by the current Government.

This paper provides a detailed critique of one of the largest elements of the compensation arrangements proposed by Kevin Rudd and Malcolm Turnbull, the $7.3 billion ESAS scheme designed to assist the owners of Australia's dirtiest coal-fired power stations.

Having described, and critiqued, the case for the provision of ESAS the paper then argues that the money saved from scrapping the ESAS scheme could make a substantial contribution to the provision of new investment in renewable energy in Australia.

The principles for the provision of such funding to stimulate the further expansion of the Australian renewable energy industry are provided in the final section.

What is the Electricity Sector Assistance Scheme?

The Electricity Sector Assistance Scheme is designed to reduce the impact of the carbon price on the owners of coal-fired power stations. In particular the aim is to stop the asset values of emission intensive coal-fired power stations from decreasing.

While ESAS was proposed under the now abandoned CPRS, the Government has not ruled out providing ESAS under the new carbon pricing mechanism currently being negotiated with the MPCCC.

The final version of the CPRS allowed for the provision of 228.7 million free permits to the owners of emission intensive coal-fired power stations under ESAS over 10 years. The permits were expected to be worth $7.3 billion. The permits would be allocated based on the emissions intensity of each coal-fired power station.

The emissions intensity of a power station is calculated by measuring how many tonnes of greenhouse gasses are generated per megawatt hour of electricity each power station produced. The more greenhouse gas they produce per megawatt hour of electricity, the more compensation the power station would get under ESAS.

Not all coal-fired power stations have the same emissions intensity. As with most capital equipment the older it is the less efficient it is and power stations are no different. But the most important factor in determining the emissions intensity of a coal-fired power station is the type of coal it burns. Black coal-fired power stations on average produce approximately one tonne of CO2e per MWh. While brown coal power stations produce about 1.3 tonnes of CO2e per tonne of MWh. Hazelwood brown coal power station in Victoria has the dubious distinction of being the most emissions intensive power station in the world. Hazelwood produces 1.6 tonnes of CO2e per MWh.[1]

It was proposed that ESAS would be allocated by a formula weighted by the extent to which the emissions intensity of an individual generator exceeded a threshold emissions intensity of 0.86 tonnes of CO2e per MWh. This approach would mean that a significant portion of assistance would go to privately owned emissions-intensive brown coal-fired generators in Victoria and South Australia. A report by Innovest in 2008 found the four dirtiest brown coal-fired power stations in Victoria would receive over 70% of the allocated ESAS funds.[2]

Why have a carbon price?

A carbon price reduces emissions in two ways. It increases the relative price of more emissions intensive goods and gives an incentive to consumers to buy less of these goods. This is known as the demand effect. A carbon price also increases the costs of firms that emit greenhouse gases. This creates an incentive for firms to reduce the quantity of emissions by changing how they produce their product. This is known as the supply effect.

Consumers of electricity are relatively insensitive to changes in price. Economists measure consumers' sensitivity to changes in price with what is called price elasticity. Household demand for electricity in Australia has a price elasticity of about -0.3. That means that a 10% rise in electricity prices will result in a fall in demand for electricity by households by about 3%. This means that consumers' sensitivity to changes in electricity prices is relatively low. The reason for this is because the main determining factor of how much electricity a household consumes is the size of their house. This is not something that can be changed easily or quickly. If consumers are less sensitive to changes in electricity prices then the demand effect of the carbon price is going to be relatively weak.

The supply effect of a carbon price in the electricity market will be driven primarily by switching generation methods. Currently in Australia the majority of electricity is made by

[1] http://www.wwf.org.au/articles/feature34/

[2] http://www.responsibleinvestment.org/files/MV5PNVBYUQ/Innovest_Recipients_of_CPRS_assistance_White_Paper_update_Dec08.pdf

burning coal. In Australia it is the cheapest way to produce electricity because of large coal deposits located near major population centres. Coal is also one of the most emissions intensive ways to produce electricity. Electricity produced using other fossil fuels such as natural gas is less emissions intensive than coal but in Australia producing electricity from natural gas is more expensive. Electricity produced using renewable sources such as wind and solar has no emissions but is even more expensive than burning fossil fuels. A carbon price should increase the price of electricity from emissions intensive sources and so make less emissions intensive sources as well as zero emissions sources of electricity relatively cheaper. If the carbon price is sufficiently high then it will switch the order of what is the cheapest form of electricity generation from coal to gas and other less emissions intensive sources.

Who pays the carbon price on electricity?

A price on carbon pollution represents an increase in costs for firms that make emissions intensive products, including electricity generators. When a firm's cost of production increases it has two choices: it can pass on the costs in the form of higher prices or it can absorb the cost by decreasing its profit. In most instances a firm is likely to respond in both ways; that is, pass on some of the cost and absorb some cost increase as a reduction in profit.

The reason that firms cannot always pass on the whole of the cost increase in the form of a price increase is because they are constrained by either competition or the price sensitivity of their consumers. As the sensitivity (or elasticity) of consumer demand to increases in electricity prices is quite low it is likely that electricity generators would find it relatively easy to pass on the cost increases associated with a carbon price to consumers.

The second constraint of competition is also unlikely to restrict electricity generators passing on the cost increase since all the coal generators will face a carbon price and less emissions intensive generation options are still not likely to be cheaper than coal even with a carbon price. The only other competition that can constrain a producer putting up their price is international competition. This is not relevant to Australian power generation since the electricity grid is not connected to any other country and so it is impossible to import electricity.

To summarise, the economics of the Australian electricity industry suggest that coal-fired power stations will be able to pass on most, if not all, of the cost of a carbon price to their customers. The reasons that they will be able to do so are the relative insensitivity of consumer demand to changes in electricity prices, the fact that a carbon price in the $20 to $30 range will be insufficient to make renewable energy cost competitive with coal-fired electricity and the fact that it is impossible to import 'foreign' electricity as the Australian distribution grid is not connected to any other countries electricity retailers.

The ability of coal-fired generators to pass on the costs of any carbon price to consumers is made clear by the expectation that compensation for households will be necessary to insulate them against rising electricity prices.

So if electricity generators will be able to pass on the cost of a carbon price why do they deserve $7 billion worth of compensation?

Why compensate coal-fired power stations?

In the case of the so called EITEs we can provide compensation to prevent 'carbon leakage' where the introduction of a carbon price in Australia, but not in other countries, potentially causes emissions intensive firms to close down in Australia and set up in countries that don't have a carbon price and then import their product, carbon price free, back into Australia.

Compensation can also be granted for transitional reasons where the introduction of sudden large scale changes cause firms to shut down that might otherwise be viable if given some time to adjust.

It is challenging to see how compensation for Australia's coal-fired generators could fit into either of these categories of assistance. It is not physically possible to import electricity into Australia so carbon leakage is impossible. If electricity generators can pass on the whole or at least the vast majority of the carbon price to their customers then it is unlikely that they need transitional assistance. It is true that brown coal power stations would face higher carbon costs than black coal power stations. Could it be possible that the brown coal power stations be driven out of business and this cause a shortage of electricity in the market? This claim requires closer consideration.

The Department of Climate Change and Energy Efficiency commissioned economic modelling to look into this issue. ROAM Consulting provided a report to the department in December 2008. It concluded:

> "Although the earnings of existing generators will be significantly affected by the introduction of an emissions trading scheme, the generators should still be able to provide sufficient earnings to cover operating costs and annual maintenance expenditure under the introduced scheme."[3]

Most economists writing in this area agreed, including Ross Garnaut who stated explicitly that there was no justification for any compensation for lost asset values to electricity generators. He repeated this in his 6th update paper entitled "Carbon pricing and reducing Australia's emissions" released in 2011.

Professor Garnaut states:

> "Any fall in asset value stemming from the internalisation of the carbon externality (through pricing carbon) creates no greater case for compensation than other government reforms to reduce other externalities, such as the introduction of measures to discourage smoking or control the use of asbestos, lead in petrol or tighter safety or general environmental requirements."[4]

The Government's reasons for ESAS

[3] ROAM Consulting (2008) "Modelling of carbon pricing scenarios" piv http://www.climatechange.gov.au/government/initiatives/cprs/cprs-progress/esas/~/media/publications/esas/roam-report.ashx

[4] http://www.garnautreview.org.au/update-2011/update-papers/up6-carbon-pricing-and-reducing-australias-emissions.pdf

Given the absence of any coherent economic rationale for the provision of $7.3 billion in compensation the Government's stated justification for ESAS is necessarily opaque. The government attempts to justify ESAS with vague references to supply security, investor confidence and supporting a smooth transition. Many of these justifications can be found on the Department of Climate Change website, the Treasury website and speeches by the former minister for Climate Change Penny Wong. A typical example is:

> "The most emissions intensive generators may be constrained in their ability to pass on these costs, leading to a decline in their asset values. Recognising these effects, the Government established the ESAS to manage a smooth transition to a lower carbon electricity generation sector while maintaining security of supply, promoting stable energy contracting markets and supporting investor confidence in energy markets."[5]

The interesting part of these justifications is that they don't directly talk about power station closure and they often include statements about investor confidence and declining asset values. Given that a carbon price is unlikely to lead to an electricity price that will drive the most emissions intensive generators out of business, why is the Government concerned that the carbon price will cause disruptions to supply?

The answer concerns the way power stations and their owners structure their debt. Power stations are fairly highly geared. This means they have a high level of debt compared to the value of their assets, in this case the power station. Financial institutions have lent money against the value of the power station and on the condition that the debt does not go above a certain threshold. This threshold is based on the ratio of the value of the debt compared with the value of the asset. If at any time the money owing does go above the threshold then the financial institution can at its discretion call in the debt. If a carbon price is introduced then the value of brown coal power stations will decrease but the debt will stay the same. The concern appears to be that the debt will exceed the relevant thresholds and that financial institutions will move in and demand their loans repaid which, it is argued, could cause the power station to close. This is why the Government talks about maintaining investor confidence and asset values.

If this chain of events is considered likely then the rationale of ESAS is to maintain the value of the most highly emissions intensive power stations in the country. The problem is, therefore, not that the power station will close because they are unable to supply electricity at the market price but that their current owners may be in breach of undertakings about the ratio of debt to asset values that they have made to their financiers.

The Government's solution to this problem is to give the most emissions intensive power stations $7.3 billion to ensure that the current owners of coal-fired power stations do not find themselves in this situation.

Even if it is true that power stations were in breach of their undertakings they had made to their financiers, it is not necessarily the case that a power station will close. If we assume the worst case scenario and the financers did call in the loan and the power company was unable to pay and went broke, a receiver would be called in. The receiver's job is to get the most money from the assets. A power station that has closed down is almost worthless. As discussed above the brown coal-fired power station would still be profitable so no receiver is going to shut it down. Rather, they would attempt to sell it as a going concern. This would give the financiers the greatest return on the asset. The result would be that the power station would be sold and would continue to operate. The previous owners of the power station and the banks that backed them could well lose money but there would be no

[5] http://www.climatechange.gov.au/government/initiatives/cprs/cprs-progress/esas.aspx

disruption to power supply. A similar situation happened with the Cross City Tunnel in Sydney. The company that constructed the tunnel could not make a profit given the amount they had paid for it and went broke. This did not result in the tunnel being closed off and filled in. It was sold to a new company at a lower price than the original company had paid and they were able to run it profitably.

In addition to ESAS the Government also proposed to provide additional assurance by establishing an Energy Security Assurance Mechanism under the guidance of an Advisory Board that will advise the Treasurer on whether there are any remaining low probability systemic risks to electricity market security and, if so, actions necessary to address these risks. Assistance could be in the form of loan guarantees or indemnities and would only be provided where financial distress would cause a significant systemic risk to physical electricity supply, existing market and regulatory mechanisms are not able to address this risk and the applicant had taken all reasonable action to mitigate their exposure to such risks.

This additional proposed assistance means that if the power station was about to close and that closure was going to mean that electricity demand could not be met then the Government could step in and provide a loan guarantee to prevent the closure.

This form of assistance would effectively solve the problem of any financial institution foreclosing on a power station. If this is the case the $7.3 billion in assistance from ESAS is completely unnecessary.

What else could the Government do with $7.3 billion to increase the security of Australia's energy system?

The irony of the ESAS scheme is that while the rationale for the provision of an enormous amount of taxpayers' money is to increase the security of Australia's electricity supply the end result delivers not a single additional kilowatt of generation capacity. That is, in providing enormous amounts of assistance to incumbent polluters to compensate them for the potential loss of financial value of their physical assets the Government is foregoing the opportunity to actually invest in additional generation assets.

An alternative approach would be to take the advice of ROAM consulting, Professor Garnaut, and the vast majority of independent economists and revisit the proposal to provide more than seven billion dollars of taxpayers' funds when there is no plausible threat to the security of electricity supply in the absence of these payments.

Abolishing the ESAS scheme and instead diverting $7.3 billion towards investments in new renewable energy capacity would ensure that Australia was better placed to meet more ambitious emission reduction targets in the future.

The benefits of substantially investing in additional renewable energy capacity

In the words of the Prime Minister, Julia Gillard:

> "I don't want us to wake up in ten years' time lumbered with a high carbon economy, when the rest of the world has moved on, and then scramble to catch up."[6]

However, while the Prime Minister is committed to the introduction of a carbon price it is not inevitable, or even likely, that the introduction of a modest carbon price (for example, a carbon price in the $20 to $40 range) will drive any significant switching in the fuel mix used in the Australian energy market. That is, a modest carbon price is likely to be insufficient to close the cost difference between coal-fired power stations and renewable energy. While such a price is desirable as it will raise significant revenue, reduce demand for energy, and send a signal to investors in new energy projects that they should no longer make long run investments on the assumption that pollution will be free, a modest carbon price alone will not be sufficient drive the 'transition to a low carbon economy' desired by the Prime Minister.

If Australia is to avoid being 'lumbered with a high carbon economy' it follows that it must begin to invest in:

- Decarbonising our energy generation
- Transforming our electricity distribution system which currently favours large coal-fired power stations
- Creating a culture that pursues energy efficiency as assiduously as we pursue labour market efficiency; and
- The research and development needed to rapidly achieve all of the above.

Diverting more than $7 billion away from existing coal-fired power stations and towards the development not just of additional renewable energy capacity, but the system redesign required to accommodate even greater investment in renewable energy in coming decades will deliver both short and long term benefits.

Using $7 billion to compensate the owners of existing coal-fired power stations will not either create any additional jobs or, given that there is no plausible risk that they will shut down in response to a modest carbon price, protect any existing jobs.

Investing that same amount of money in new renewable energy, as well as the requisite research and development, will inevitably create tens of thousands of direct and indirect jobs.

Diverting the proposed ESAS assistance package towards renewable energy will also help to improve Australia's energy security as it will directly result in the construction of new sources of energy. While ESAS is designed to provide financial security to the current owners of coal-fired power stations it will, as discussed above, do nothing to improve the capacity of the Australian energy system to supply energy to Australian consumers.

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[6] http://news.smh.com.au/breaking-news-national/carbon-tax-needs-faith-says-gillard-20110316-1bwzq.html

Finally, and most importantly, to the extent that new investment in renewable energy displaces coal-fired electricity generation it will directly reduce Australia's greenhouse gas emissions. Put simply, it is impossible to pursue a low carbon economy without pursuing significant investment in renewable energy.

Principles for the design of additional renewable energy funding

The abolition of ESAS provides a unique opportunity to secure additional funding for investment in renewable energy capacity, research and the requisite distribution infrastructure. This funding could be efficiently and equitably augmented through the abolition of more than $10 billion per year in subsidies to fossil fuel use in Australia.

That said, while additional funding is necessary to achieve the transition to a low carbon economy desired by the Prime Minister, it is important that these funds are spent efficiently and equitably if the promise of such a transformation is likely to be achieved.

To that end, new funding for additional investment in renewable energy should be designed in such a way that it is consistent with the following principles:

1) The funding must deliver investment that is over and above the investment currently required to meet the statutory obligations of electricity retailers under the Renewable Energy Target (RET). That is, given that electricity retailers are already obliged to purchase 20 per cent of their electricity from renewable energy generators by 2020 it is important to ensure that additional public funding for renewable energy delivers additional capacity over and above the current obligations. The easiest way to achieve this would be to exempt any renewable energy generation capacity funded from this pool of funds from the RET.

2) One of the outcomes of the RET is the dominance of wind generation in renewable energy generation. While this investment pattern is a result of the relatively low cost of wind, compared to other renewable energy, there are concerns that other forms of renewable energy are not benefiting from the RET and, in turn, that other renewable energy technologies are struggling to achieve economies of scale.

3) To the greatest extent possible new investment in renewable energy should be pursued in such a way that it helps to develop both Australian research and Australian employment.

Conclusions

Proponents of the plan to provide more than $7 billion to the current owners of Australia's most emission intensive coal-fired power stations have provided virtually no justification for the need to do so. The main argument that is relied on to support this largesse is that it will help provide stability and security to the electricity industry can be criticised in two distinct ways.

First, the advice of leading economists and a number of independent reports suggests that there is no real threat of Australia's coal-fired power stations ceasing their generation as a result of the introduction of a carbon price. Similarly, if the 'problem' is that the existing owners of these assets may be susceptible to their current financiers withdrawing their

funding such a problem can be overcome at much lower cost via the provision of loan guarantees by the Government to the existing owners.

Second, if energy security is the issue of concern it is inconceivable that spending $7 billion dollars in exchange for no new generation capacity could be considered to be the answer.

Diverting the funds from ESAS towards investment in renewable energy investment, research and supporting infrastructure would provide a double dividend of reduced greenhouse gas emissions and increased employment.