Inquiry into Clean Energy Amendments

Submission to the Senate Economics Legislation Committee

Alan Moran

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by Alan Moran, Institute of Public Affairs

1. Introduction and Summary

Measures to force a reduction in carbon dioxide and other greenhouse gas emissions have become progressively more prominent within Australian economic and political discourse over the 25 years that the possibility of human induced global warming achieved some currency.

A commonly accepted fault line in Australian environmental politics is between the Government and its Green/independent allies who favour a cap-and-trade carbon tax system and the Opposition Parties. The latter share the same medium term goal as the government, a five per cent reduction on a standardized version of emissions in 1990, but wish to pursue this through "Direct Action" measures that select the most promising sources to target for reductions.

The carbon tax clearly adds costs as evidenced by the revenue it raises but the "Direct Action" approach suffers from its very selectivity. Thus, while it might be cheaper to target a particular source of emissions, emissions tend to be fungible – closing down one source may see something very similar replacing it.

Moreover, the costs are sometimes far in excess of those estimated; for example the replacement by a gas station of the "highly polluting" Hazelwood Power brown coal station at a cost of $3 billion might halve the current facility's annual 16 million tonnes of carbon dioxide; if the life of the existing facility is 20 years, this would mean a cost of around $50 per tonne of carbon dioxide. This is above the mooted levels of carbon tax but the $50 per tonne cost understates the likely outcome since this would also see a higher price for all electricity because a low cost facility is replaced by a higher cost one; moreover, the reduced carbon dioxide effect might also be offset by expanded output of other coal fired generators.

For such reasons, putting a price on carbon through taxes or via tradable rights is normally favoured because this allows markets to arrange the selection of the more expensive emission sources rather than "winner-picking" by officials with all the deficiencies this entails.

Aside from a carbon tax and its direct action equivalent, three other families of measures to combat emissions of greenhouse gases are in place. There is an apparent broad consensus in support of these. They comprise the Renewable Energy Target (RET), subsidies and other budget expenditures, and energy efficiency standards for buildings and various appliances.

Political positions on all of these might change (as, in the case of the Government, has already occurred with the current bills). Changes in policy can be brought about by an improved recognition of cost effects, including as a result of policy developments overseas. In the latter respect outside of the EU there has been a retreat from emission restraint measures and a Romney victory in November would intensify this.

Other factors influencing political support for restraint measures include public perceptions of human induced climate change. In this respect, contrary to climate alarmists' predictions, the earth has failed to warm over the past 15 years and a forecast increase in extreme events has not materialized. And, while there has been a reduction of ice in the Arctic over recent years such a pattern is to be expected as a result of long term temperature changes as the world "recovers" from the Little Ice Age. It is also noteworthy that reduced Arctic Ice has occurred at the same time as record levels of sea ice have been measured in the Antarctic. Developments like these might be construed as evidence contrary to the catastrophic global warming prophesies on which political positions were based.

The carbon tax, building on a series of other measures targeting emissions, has a severely economically debilitating effect. The aggregate costs of these different measures as they currently stand is at least $15 billion a year and possibly over $20 billion.

The Amendments' proposals in linking the Australian carbon price to that of the EU probably means accepting a carbon price that is less than half of the level currently set by Australian legislation. This is because the EU prices are likely to remain low as a result of the intractable nature of the recession in Europe.

A lower carbon price means the harm imposed by greenhouse mitigation policies will be somewhat reduced. However the EU is an economic entity in relative decline and has an economic structure very different from Australia's. The EU would gain, at Australia's expense, revenues of approximately $1 billion a year by the linkage and the trading measures proposed.

IPA would therefore recommend the Senate reject the current proposals and seek a non-political examination of the present policies, their costs, and any useful benefits they might entail. Illuminating these costs would be a meaningful step in allowing the Parliament to conclude that the harm they cause is considerable.

2. Issues

The immediate matter covered in these bills is the change in the carbon tax regime to one that links Australia's price to that of the EU and allows a limited amount of emission rights to bought in Europe by Australian liable parties (it does not allow European liabilities to be acquitted in Australia). This however is only a relatively minor aspect of the environmental, energy and general economic issues embedded in the policy approach. That approach is engulfed in issues that include:

- Whether or not global warming and increased extreme climate events are occurring as a result of human activities;
- The place for Australia in reacting to these matters, including the costs and benefits entailed in the possible actions that might be undertaken;

In support of its position in favour of emission reduction measures, the Government has commissioned many reports, including a notoriously one by Vivid Economics, to convince itself and the electorate that Australia is doing nothing more – in fact rather less – than other countries in reducing its carbon dioxide emissions. These reports have been rebutted, notably by the Productivity Commission, which showed that even without the carbon tax and excluding the many government subsidies provided to emission reductions, Australia was doing rather more than countries other than those in the EU.

Much is also made of the assertion that Australia has higher emissions of these gases than countries other than some in the Middle East, Singapore and a handful of others. This is seen as building the case that Australia should do more than other countries.

In fact, Australia's emissions based on our consumption of goods and services embodying greenhouse gases are at similar levels to those of most other countries once the differing profiles of energy availabilities and choices is considered. Logically, it is clear that no reduction in greenhouse gas emissions is entailed by a nation simply ceasing to produce but continuing to use the goods and services embodying these emissions.

Whereas most other developed countries, Singapore has already been noted as an exception, tend to import goods that embody greenhouse gases, Australia is a not exporter of those goods. Table 1 below reproduces UN data to illustrate that though Australia is a relatively high emitter of carbon dioxide, once trade is taken into consideration, Australia is about average.

Table 1 Production and Consumption of Carbon Dioxide Emissions

Country	Production	Production per head	Consumption	Consumption per head
Singapore	63	14.1	178	40.1
Luxembourg	11	22.7	17	33.1
Belgium	115	10.7	234	21.9
United States of America	5674	18.5	6153	20.0
Canada	563	16.6	600	17.7
Ireland	43	9.5	72	15.9
Finland	56	10.6	80	15.2
Norway	40	8.3	71	14.9
Switzerland	41	5.3	108	14.0
Australia	353	16.0	297	13.5
Netherlands	169	10.3	215	13.1
Germany	772	9.4	994	12.1
Austria	72	8.5	100	11.9
Japan	1311	10.2	1516	11.8
United Kingdom	546	8.8	704	11.4
Denmark	46	8.4	60	10.8
Greece	99	8.8	122	10.8
Portugal	57	5.4	111	10.4
Italy	458	7.6	611	10.2
Spain	346	7.5	441	9.6
New Zealand	31	7.1	38	8.8
Sweden	48	5.1	80	8.6
France	381	5.9	536	8.3

Among other factors to be adjusted in order to make comparisons are the availabilities and choice of energy sources. Australia has rejected emission free nuclear power which accounts for 20-77 per cent of electricity production in countries ranging from the France, Belgium, Spain, Sweden, Switzerland, the US and Korea. In fact most high and medium income countries have some nuclear powered electricity generation. In addition, Australia is relatively poor in hydro-electricity potential and has also taken political action to prevent further large scale development.

3. The Regulatory Array

The carbon tax/cap-and-trade is one of a family of policy interventions that are ostensibly designed to reduce carbon dioxide and other greenhouse gas emissions. Whatever their provenance, these measures bring negligible reductions in global greenhouse gas emissions while imposing considerable cost on the economy and on consumers directly.

The family of measures to restrain emissions is fourfold.

3.1 Product Standards

First, we and other countries have a long-standing and increasing range of standards for goods that are designed to reduce energy usage, a motive that has been reinterpreted to mean reduce CO2 emissions. Among the products these cover are houses and domestic appliances. Producers are obliged to meet the standards, always at some cost and irrespective of the preferences of consumers.

The mandatory nature of the standards' energy saving attributes is clothed in an arrogant bureaucratic belief that elites understand the preferences of consumers. Those supporting such standards are arguing that consumers, if properly informed and sharing the wisdom of the regulatory developers, would willingly pay the premium up-front costs to offset future on-going energy costs.

The house building requirements – 5/6 Star Energy and so on - have been estimated to cost over $5,000 per new house by the building industry, a figure broadly accepted by the regulatory agencies like the VCEC. In its report, *The Housing Industry in Victoria*[1], the VCEC said, "It is not clear to what extent the cost estimates reflect the incremental costs faced by the whole industry", but it concluded "the Regulations will impose additional costs where consumers would otherwise choose a lower standard of energy efficiency.

At a cost of $5,000 per new house the 5/6 Star energy rating requirements alone bring an economy-wide imposition of $0.5 billion a year. Other standards like those covering fridges and domestic appliances and those covering commercial buildings would add considerably to this.

3.2 Renewables Regulations

Secondly, we have the renewables regulations. These are based on a requirement for electricity supply to comprise 20 per cent "exotic" renewables. The renewable policy has a long pedigree, starting with John Howard in 2001 agreeing to these exotics being required to supply "2 per cent of additional energy". This was quantified at 9,500 GWh, a level far in excess of the stated "2 per cent of additional energy". A review in 2004 recommended the target be increased to 20,000 GWh, a recommendation rejected by the (Howard) Government which however then raised the target to the current 45,000 GWh 20 per cent level in 2007.

[1]http://www.vcec.vic.gov.au/CA256EAF001C7B21/WebObj/VCEChousingfinalreport/$File/VCEC%20housing%20final%20report.pdf

The Rudd Labor Government split the scheme into its present large scale and small scale categories, with the latter now set at 4,000 GWh.

Renewable energy is defined to include wind, small and large scale solar, some forms of bio-energy, wave, geothermal and small scale hydro. The various costs of these and other sources are estimated in Table 2.

Table 2 Australian Energy Supply Costs

Energy type	Cost per megawatt hour[a] ($)
Gas (open cycle gas turbine)	65–96[c]
Hydro-electricity	60–150
Solar (utility scale photovoltaic)	190
Wave and tidal	unknown[e]
Wind	80–120
Geothermal	70–87[f]
Brown coal	35
Biomass	70–158

(e) The cost per megawatt hour is unknown as the technology is still being developed, and there is no single type in use.
(f) This technology has not been deployed in the state and transmission infrastructure costs are likely to be substantial
Vic Auditor General

Wind is the least cost renewable and likely to remain so. For generating electricity, however, its costs are around three times those of coal, black or brown, and it suffers from an unpredictability which devalues its worth (and results in wind actually obtaining a lower return than other sources of electricity in the National Electricity Market because of its reduced availability during high priced – normally windless – events).

Without the carbon tax, a subsidy of around $5 billion per year would be required in order to achieve the 41,000 GWh of large scale renewable energy and the 4000 GWh of small scale supplies. These figures are based on large scale wind requiring a subsidy of $88 per MWh based on its costs of $120 per MWh plus some additional back-up costs, compared with coal at less than $40 per MWh. Added to this is the even more expensive solar with a cost of perhaps $360 per MWh[2]. All this adds around 5 per cent to the retail cost of electricity to households and much more than this to the business users.

The annual estimate of the costs is shown in Table 3. To these should be added some back-up costs because of the inherent unreliability of wind and other renewables. To the degree that the wind facilities are sited in dispersed locations located away from existing transmission capacity, renewable capacity may also require additional costs for line augmentation.

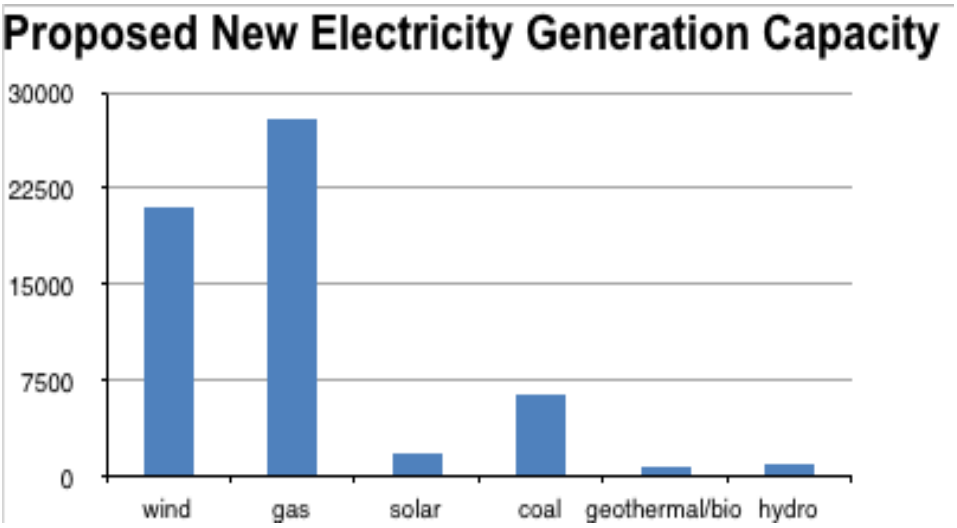
[2] According to the Clean Energy Regulator SRES's were traded three or four to one for large scale certificates. http://ret.cleanenergyregulator.gov.au/EventViewTrainingDetails.aspx?Bck=Y&EventID=19&DisplayType=C

Table 3 Annual Costs of Renewables

	LRET	SRES	Total	LRET costs ($M)	SRES costs ($M)	Total costs ($M)
2012	16,338,000	1,593,951	18,756,024	1,438	574	2,011
2013	18,238,000	1,779,317	20,937,224	1,605	641	2,245
2014	16,100,000	1,570,732	18,482,800	1,417	565	1,982
2015	18,000,000	1,756,098	20,664,000	1,584	632	2,216
2016	20,581,000	2,007,902	23,626,988	1,811	723	2,534
2017	25,181,000	2,456,683	28,907,788	2,216	884	3,100
2018	29,781,000	2,905,463	34,188,588	2,621	1,046	3,667
2019	34,381,000	3,354,244	39,469,388	3,026	1,206	4,233
2020-2030	41,000,000	4,000,000	45,000,000	3,608	1,440	5,048

It has been suggested that new renewable investment worldwide is now exceeding investment in conventional electricity supply. Whether or not this is true, proposed Australian new generation investment in terms of megawatts of capacity rivals that of gas and coal (note: wind is only about one quarter the likely output of many thermal plants). This is illustrated in Chart 1.

Chart 1



Source: ESAA

Most developed countries have some form of renewable energy incentives. And although some estimates are that this is resulting in more investment in renewable sources than conventional, this cannot be because the former are more competitive; it simply reflects the degree of assistance renewables receive across a great many countries. Wind and other exotic renewables account for 27 per cent of the market in Spain and 12-15 per cent in the UK and Germany. Overall in Europe non hydro renewables are approaching 10 per cent of supply. The objective is to reach 20 per cent by 2020.

In the US, non-hydro renewable energy accounts for 4 per cent of the total. Mr Romney has said he will not renew the Production Tax Credit which is to expire in December and which presently provides a subsidy of 50-70 per cent for renewables.

Renewable penetration is much lower in Asia.

The non-hydro renewables share in Australia presently stands at 4 per cent on its march to the 20 per cent target (which may be exceeded on present policy quantifications more if demand stays suppressed as now expected).

These figures are illustrated in Table 3.

Table 3

Total Non-Hydro Renewable Electricity Net Generation (Billion Kilowatthours)

	2006	2007	2008	2009	2010	share of electricity supply
North America	128.823	137.92	157.518	176.585	200.96	4.0
Europe	182.209	216.13	241.001	274.468	311.952	9.7
Asia & Oceania	76.541	85.836	100.48	119.059	147.697	2.3
World	418.384	475.119	537.593	615.417	713.814	
Growth						
North America		7.1%	14.2%	12.1%	13.8%	
Europe		18.6%	11.5%	13.9%	13.7%	
Asia & Oceania		12.1%	17.1%	18.5%	24.1%	
World		13.6%	13.1%	14.5%	16.0%	

The RET scheme is being progressively ramped up to its 2020 target date. At maturity it is estimated to entail costs of $5 billion per annum[3].

3.2 Direct Government Expenditures

The third class of emission reducing measures comprise interventions and subsidies directly from the budget, to which is now added the $10 billion Clean Energy Fund. According to the latest Commonwealth budget some $3 billion is to be spent this year, mainly through the DCCEE, Sustainability and Energy Departments in administration, subsidies for water buybacks, clean coal, solar demonstration projects, Green Cities and other measures.

Major identified expenditures are shown in Table 4.

[3] Based on the Large Scale Renewable Energy requirement at 41,000 GWh with a premium cost over coal at $88 per MWh amounting to $3.6 billion; and the 4,000 GWh SRES component at a premium of $360 per MWh amounting to $1.4 billion.

Table 4 Major Budgeted Expenditures on Greenhouse Policies

Department	Budgeted Spending 2012/3 ($M)
Agriculture	96
Climate Change	988
Foreign Affairs	140
Infrastructure	9
Industry	293
Energy & Resources	627
Sustainablility & Water	589
Total	**2742**

Many of the programs financed by these expenditures and those comprising regulations of housing and appliances originated in energy efficiency programs inspired by the fallacies promoted by the Club of Rome[4] that the world was rapidly running out of resources, especially fossil fuels. Schemes were introduced to require energy producers to save on these fuels, schemes which naturally entailed considerable costs to consumers and to taxpayers.

Even though the hysterics about resource depletion were disproved, government inertia meant they left in their wake a raft of policies, many of which morphed into measures to address the Next Big Thing, climate change. Energy saving became synonymous with carbon dioxide emission saving.

As with the greenhouse abatement measures, those targeting energy saving were sold as relatively costless, indeed many people said to be experts claimed that the policy measures would bring net benefits by allowing Australia to obtain a position on the crest of a wave the riding of which would pay rich dividends. Of course, such benefits did not materialize. Similar disappointments will be the likely outcome of subsidies to technologies under the current greenhouse programs.

3.4 The Carbon Tax

The fourth type of greenhouse abatement measure is the cap-and-trade emission control/carbon tax.

Australia is the only country with a fully-fledged carbon tax. Several countries like Sweden and New Zealand have some form of tax but their measures are much less established and less comprehensive on that which Australia has introduced. Switzerland, which has a predominantly hydro and nuclear electricity supply industry, has a carbon tax at around $11 per tonne but this does not apply to fuels used in energy production. Switzerland also has a cap and trade system but the cap is set so high that prices and trades are insignificant.

Other countries including Japan and Korea are considering setting a tax but have not put one in place. They, like China, appear to have a carbon tax policy, the commencement of which

[4] See Meadows et al

is constantly receding like a desert mirage. Some countries have a tax that is claimed to be a carbon tax – India for example. On examination, in many such cases this proves not to be the case. India's turns out to be a form of coal levy not dissimilar in magnitude to the royalties in place in Australia.

Some US states, notably California, and the Canadian province of British Columbia have carbon taxes at a rate similar to Australia's (though most BC energy is hydro). But most such jurisdictions, having announced agreement to a tax in 2006, have now pulled out. The US Congress has overwhelmingly rejected a carbon tax and though the Obama Administration has followed regulatory policies that prevent new coal fired power stations, as previously indicated candidate Romney has made it clear that he will reverse such policies.

The EU has the cap and trade form of a tax to which Australia would be linked under the current bills. The EU price has been highly volatile and is presently at under $10 per tonne compared to the $23 per tonne tax in Australia. If the EU price stays at its current level, the impost on Australian consumers will be more than halved from that presently to be imposed.

Other outcomes would be a halving of the $8 billion estimated to accrue to the Treasury from the carbon tax. There is also likely to be a leakage of firms' carbon trading expenditures to Europe, an outcome which would entail Australia providing the EU approximately $1 billion a year in revenues and denying itself that same amount.

4. Carbon Taxes and Electricity Costs and Economic Implications

The political debate on the carbon tax and its many variations must keep in mind the intent of the tax. The Government has said that Australia must implement the tax in order to drive down emissions of carbon dioxide and other greenhouse gases by 80 per cent. The 5 per cent reduction by 2020 is only an interim step.

That reduction of 80 per cent in emissions would take Australia back to the global per capita average as of 2007. It should be noted that Chinese emissions are already considerably above – in fact double – the 2007 world average emission levels.

Short of (unanticipated) breakthroughs in new non-fossil fuel energy sources, or carbon capture and storage (or a renewed support for nuclear power) this is possible only with a vast reduction in energy consumption. Even a total replacement of coal plants by those using gas would allow only a 50 per cent reduction in emissions from stationary energy sources (which is itself only half of total emissions, the others comprising transport, waste, agriculture and land use changes).

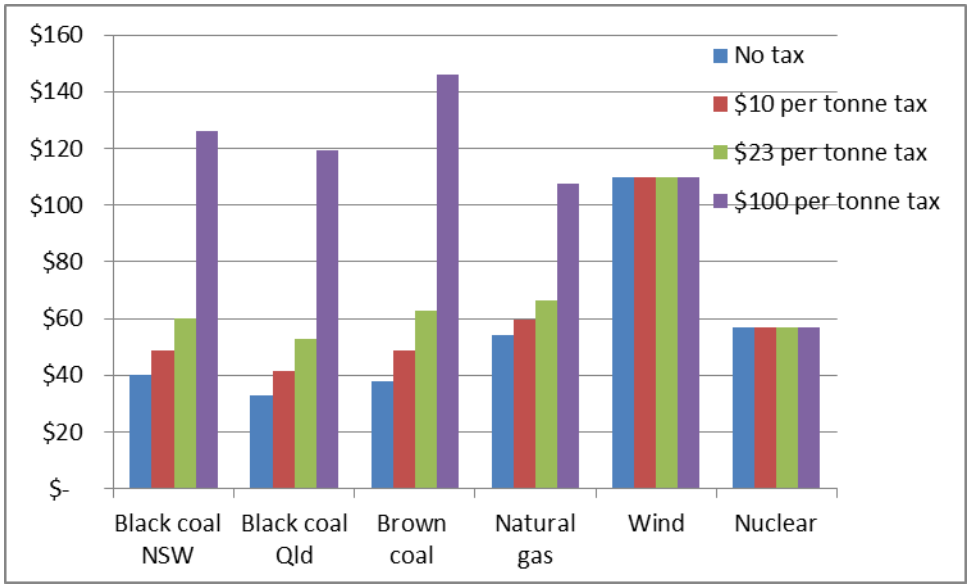
Wind is the generation source of choice by environmental activists. It has some inherent limitations as a result of its episodic nature and is unlikely to be able to comprise over 30 per cent of electricity, even if such a share were affordable, and other renewables remain even higher cost at the energy tax levels that the government has mooted.

To achieve the emission reductions the government has targeted would require a very much higher tax rate than is currently contemplated – at least $100 per tonne and possibly $200 per tonne. At $100 per tonne, the price of electricity ex-generator would be 3-4 fold the current price.

While natural gas approaches competitiveness with coal at a $23 per tonne tax, it is not so with the $10 price presently prevailing in the EU.

Chart 2 shows that at the $23 per tonne tax wind remains uncompetitive and even at $100 per tonne does not match gas (still less does it match gas at the somewhat cheaper prices likely in the future if politics does not prevent the development of CSG). New natural gas fuelled plants would prove competitive with coal at a tax of $23 per tonne (a tax which raises the price of electricity ex-generator by over 50 per cent).

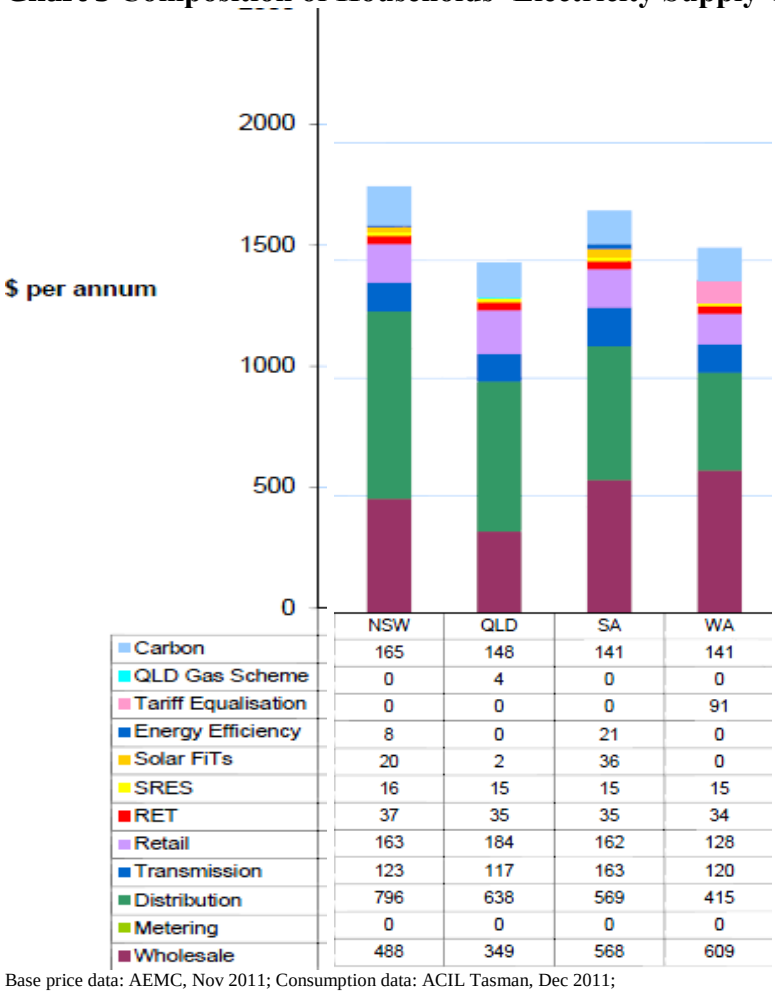
Chart 2 Price of Different Electricity Fuels under Different Tax Rates



At a $10 carbon price there is no change in the merit order between different fuel source costs. The price on carbon then simply becomes a transfer mechanism/tax collection that does not affect emission levels but raises ex-generator electricity costs by 25 per cent. A 25 per cent cost increase for generated electricity is likely to bring a 10 per cent increase in electricity bills paid by households and a 12-15 per cent increase for businesses.

The aggregate effects of current measures as at 2012 are estimated in Chart 3. For Queensland specific measures on electricity raise household prices by 14 per cent. Further imposts are involved because of higher retail costs caused by retailers having to search out and incorporate renewable energy and as a result of tax increases to pay for the budgetary disbursements on R&D, demonstration projects, Green Cities and other programs.

Chart 3 Composition of Households' Electricity Supply Costs



	NSW	QLD	SA	WA
Carbon	165	148	141	141
QLD Gas Scheme	0	4	0	0
Tariff Equalisation	0	0	0	91
Energy Efficiency	8	0	21	0
Solar FiTs	20	2	36	0
SRES	16	15	15	15
RET	37	35	35	34
Retail	163	184	162	128
Transmission	123	117	163	120
Distribution	796	638	569	415
Metering	0	0	0	0
Wholesale	488	349	568	609

Base price data: AEMC, Nov 2011; Consumption data: ACIL Tasman, Dec 2011;
Carbon costs: Commonwealth Treasury, 2011;

Australia's advantage in low cost energy is changing with the carbon tax and other policy impositions on fossil fuels. These costs will progressively force energy intensive businesses to abandon their investments in Australia, a position already being observed with aluminium smelting. Unfortunately, the domestic businesses that are intensive users of Australian energy are also the most productive and so, even if their demise were not to lead to a net loss of jobs, the replacement jobs are almost certain to provide less output. As a community, Australia will therefore be poorer.

Not only do current energy/environment policies raise prices throughout the economy, but requiring electricity production from renewable sources, we are substituting a source of electricity which has one third of the productivity of the supplies displaced. The various market interventions in energy supply have been important in the overall decline in productivity that Australia has experienced in recent years.

This places particular importance on the notion that, irrespective of whether human induced climate change is taking place, it can only be addressed by global action and Australia alone can have only the most trivial direct effect on global emissions. Some argue that Australia's effect is most important as a demonstration to other nations that taking action is necessary and economically feasible. So far, the response of other nations in following Australia's lead must have disappointed those with such views.