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The Secretary
Senate Standing Committee on Economics
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CARBON POLLUTION REDUCTION SCHEME

The proposed CPRS Act sets up a 'scheme to reduce pollution caused by emissions of carbon dioxide and other greenhouse gases.'

The objects of the Act include:

- giving effect to Australia's obligations under:(a) the Climate Change Convention; and (b) the Kyoto Protocol.
- supporting the development of an effective global response to climate change, and
- to take action directed towards meeting specific greenhouse gas reduction targets in a flexible and cost-effective way.

Rationale for the Carbon Pollution Reduction Scheme

The nomination of climate change as the greatest social, economic and environmental challenge of our time and carbon's central role in climate change is based on four simple cause-effect assumptions:

- human activities will cause increased carbon dioxide levels in the earth's atmosphere,
- increasing atmospheric carbon dioxide levels will cause significantly increased global temperatures
- increased global temperatures will cause significant negative impacts,
- increased global temperatures will not cause significant positive impacts,

and that all four assumptions have been confirmed by diligent scientific and economic evaluations.

Increased atmospheric carbon dioxide

Human activities are certainly one of the significant sources discharging carbon dioxide into the atmosphere, and in increasing amounts due particularly to fossil fuel burning. Other major sources include volcanic discharges, vegetation burning due to wildfires, land clearing, and vegetation and crop management as well as gas dissolution interchange with the oceans which cover 70 percent of the earth's surface.

Vegetation and sea water dissolution are the major 'sinks' for atmospheric carbon dioxide, with vegetation estimated to absorb about half of the human activities-sourced carbon dioxide. It is relevant to note that carbon dioxide gas dissolution in the oceans is temperature dependent - increased sea temperatures release carbon dioxide while lower temperatures dissolve and absorb more carbon dioxide.

Carbon dioxide's global temperature role

Global warming and global cooling periods are confirmed by the geological and historical records. Many theories have been developed in attempts to explain why they occurred, but that is all they are and can be - theories. Untested and untestable theories.

Contemporary life activities, business and agriculture tend to be significantly affected by weather conditions, with the result that weather forecasting has become an important modern scientific activity. Seven day advance weather forecasts are nowadays the norm in Australia, with a number of forecasting businesses making longer range predictions up to months ahead, but with diminishing outcome probability.

Atmospheric climate scientists have attempted to identify the factors underlying particular climatic episodes and their potential significance by using powerful computing resources. The resultant mathematical models involve assumptions about the variable factors and their relative significance. The accuracy of the models is tested against reported climate estimates. Theoretical models which fail the 'past data' reality check are modified to improve their correlation with past realities. Climate models considered to have accurately represented past climatic conditions have been employed to model future climate. It is however important to recognise that acceptable modelling correlation with past events does not guarantee correlation with future climate outcomes. The '*deus ex machina*' limitation must always be kept in mind to avoid the 'if that's what the computer is telling us, then it must be true' syndrome of overlooking the human assumptions built into the software.

In this context, it is appropriate to examine the modelling and assumptions underlying the conclusions of the Intergovernmental Panel on Climate Change (IPCC) 2007 Fourth Assessment Report, which form the basis for the proposed Australian Carbon Pollution Reduction Scheme. The key IPCC cause-effect conclusion is very clear - that "most of the observed increase in global average temperatures since the mid-20th century is *very likely* due to the observed increase in anthropogenic greenhouse gas concentrations" with 'very likely' defined as 'greater than 90 percent probability having occurred.' The bases for the IPCC conclusion are (briefly) that:

- there was an apparent correlation during that limited period between their estimate of increased global atmospheric carbon dioxide concentration and their estimate of increased global temperature,
- their mathematical climate simulation modelling could only develop an acceptable similar correlation during that period by including estimated factors for global anthropogenic greenhouse gas concentrations,
- the climate modellers were unable to explain the correlation by any of the physically-plausible alternatives they considered, and
- the '*most of the observed increase*' and '*greater than 90 percent probability*' conclusions were unvalidated estimates developed from climate modellers' personal opinions rather than evidence-based science.

Negative impacts associated with increased global temperatures

This assumption has been addressed by many well-funded Australian and international studies. Suffice to say, there are significant potential adverse outcomes associated with *significant* global temperature increases, however caused.

Some relevant issues include:

- the non-uniform geographical distribution of any global temperature increase (or decreases, for that matter)
- the associated and non-uniformly distributed range of temperatures across affected geographical areas, and
- the ability of the population in each area to progressively adapt to the associated climate changes

We have been told that ‘dangerous climate change’ poses substantial threats to Australia’s economy, particular national treasures and our way of life and that the ‘consequences ... would haunt humanity until the end of time.’ Headline-grabbing, apocalyptic claims have been employed to market the ‘save the world from climate change catastrophe’ campaigns initiated by Al Gore to publicise his book. Recent similar ‘scare’ campaigns about infant inoculation have posed adverse consequences for an increasing number of families in Australia. Scare campaigns against water fluoridation have had adverse dental health consequences. The ‘*caveat emptor*’ maxim poses the need for ‘second opinions’ before the major social and economic surgery proposed for Australia, particularly when it is supported by ‘apocalyptic’ scare campaigns rather than evidence-based science. As Lord Lawson has noted ‘*The new religion of global warming is a great story, and a phenomenal best seller. It contains a grain of truth and a mountain of nonsense. And that nonsense could be very damaging indeed. We appear to have entered a new age of unreason, which threatens to be as economically harmful as it is profoundly disquieting. It is from this, above all, that we really do need to save the planet.*’

Positive impacts associated with increased global temperatures

Most if not all international and Australian climate change-associated reports have almost totally *excluded* consideration of potential positive effects associated with increased temperatures. While arguably consistent with the IPCC ‘reverse onus of proof’ and ‘risk averse’ risk management, this unbalanced approach is not consistent with proper scientific method or with appropriate economic modelling. As a result, the major climate change-associated reports fail to provide the basic and essential information necessary for prudent formulation of policies on climate change.

Despite the negative impacts included in recent climate change-related reports, the health and well-being of most if not quite all humans would improve with increased temperatures. Far more humans die due to cold conditions than due to hot conditions. The higher mortality and morbidity rates in hotter climates are caused by poverty, inadequate living standards, deficient food and water supplies, poor sanitation and lack of access to medical care - *not* by higher temperatures. Negative claims that cholera and mosquito-borne diseases would adversely affect greater numbers of people ignore the lessons of history - malaria and yellow fever were rife in Europe and North America until the last century before modern insecticides, anti-malarial drugs, improved sanitation and public health controls were adopted. Similar public health controls in Australia have eliminated deaths due to bubonic plague (‘Black Death’ epidemic in Sydney in 1900), polio and smallpox, among other diseases. The estimated \$50 billion spent world-wide on climate change-associated activities in recent years could have achieved significant global benefits if it had been diverted to water, public health and economic development projects in developing nations.

But despite reported negative estimates, global agriculture would benefit significantly with increased average temperatures *and* with increased atmospheric carbon dioxide levels, with plant growth enhanced by longer growing seasons and improved agricultural productivity at higher carbon dioxide concentrations in the atmosphere.

Diligent scientific and economic evaluation and confirmation of all assumptions

Diligent evaluation involves concepts familiar to all parliamentarians - pro-active awareness and objective consideration of the magnitude and probabilities of potential beneficial and adverse outcomes posed by acts and omissions together with consideration of available alternatives. In this context, the *Carbon Pollution Reduction Scheme* White Paper includes a Disclaimer in its front matter stating that ‘While reasonable care has been taken in preparing this White Paper, the Commonwealth provides no warranties and makes no representations that the information contained in the White Paper is correct, complete or reliable. The Commonwealth expressly disclaims liability for any loss, however caused and whether due to negligence or otherwise, arising directly or

indirectly from the use or reliance on information contained in the White Paper by any person' which poses questions about the credibility and relevance of its content and recommendations.

The IPCC, Garnaut and consequent downstream Australian government reports fail at this first 'diligence' hurdle for a number of reasons, some of which are noted below, despite the Garnaut report claiming that 'it is entirely appropriate that the science underpinning such an important global issue as climate change should be thoroughly tested and questioned' and 'the climate change debate needs to be based on a fair assessment about what science knows about the current situation.'

The most obvious failure is acceptance and adoption of the IPCC's improper and unscientific 'reverse onus of proof' 'attribution' technique, which is reported as establishing 'the influence of human activities on regional temperatures ... for every continent except Antarctica.' The IPCC technique presumes that observed temperature changes are caused by human activities - and carbon dioxide emissions - unless they can be proved innocent, with nobody allowed to represent the defendants! 'Reverse onus attribution' was apparently the only technique consistent with the UN Framework Convention on Climate Change definition that "*Climate change means a change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is in addition to natural climate variability observed over comparable time periods.*" (my emphasis) While the UN definition does not specify that human activity must necessarily be the most significant factor influencing climate variability, subsequent IPCC reports appear to assume this as a religious dogma.

Carbon dioxide is a recognised 'greenhouse' gas and its role in global average temperature is well-known. While its estimated global average temperature effect is roughly 3°C in total at the estimated present 380 ppm CO₂, half of that 3°C resulted from the first 20 ppm CO₂. As carbon dioxide's 'greenhouse' absorption declines logarithmically, an increase to the proposed maximum level of 550 ppm would add only 0.2°C to global average temperature. If atmospheric carbon dioxide is rising at the reported 2 ppm per year, the global average temperature increase due to the projected (assuming no change in vegetation absorption and sea water dissolution rates) 560 ppm CO₂ would be less than 0.2°C by 2100 - well within human adaptability limits.

There is also clear evidence that prospective 'defending counsel' scientists and knowledgeable commentators are actively discouraged from criticising the IPCC conclusions and proposals for 'carbon reduction' by a wide range of direct and indirect means, both internationally and in Australia. In a recent example, the ABC 'Four Corners' program described 'polluter' spokesmen as 'lobbyists' but made no similar statements about WWF, Climate Institute and ANU advocates. While Garnaut noted the possible influence of vested interests in his report with the comment that 'it is easy, indeed natural, for vested interests to capture policy, and for the national or international interest, and the ultimate reasons for policy, to be forgotten,' his report failed to identify the significant vested interest of the 'science' lobby in soliciting continuing major funding flows toward climate change-associated research. The 'climate change' industry has created major employment and publication funding opportunities on the back of the IPCC apocalyptic report 'projections' to the point where universities, consultants, businesses and others cannot allow anyone to put at risk their continuing and prospective funding flows from government, or have the prospect of adverse publicity from the media with their own special interests. Groups and individuals perceived as opposing the 'official line' are labelled as 'deniers,' 'heretics,' 'in the pay of Big Oil,' 'flat earth believers,' 'suffering from a psychological disorder' and the like. Similar 'deviance' labelling was employed in attempts to discredit Galileo, Darwin and Semmelweis, among many other scientists who were proved correct by history.

The second diligence failure results from apparent unscientific bias and selective referencing of consequences favourable to the IPCC advocacies while failing to diligently evaluate significant and appropriate alternatives and consequences. While the IPCC and Garnaut reports refer to global climate ‘energy balance’ effects, their authors appear unaware of the need to report scientific or economic ‘consequence balance’ effects resulting from their presumed climate changes. The failure to report any potential positive impact outcomes is a serious diligence deficiency.

It is noteworthy that the reported warming period (1976-1998) was associated with the highest rate of economic growth across most of the world, contrary to the Garnaut report assumption of declining world GDP associated with global warming. Australia recorded major economic growth during the 1990-2000 decade, said to be the hottest period on record.

The third failure follows the unscientific prediction - euphemistically relabelled as ‘projections’ - of future climate and climate consequence ‘scenarios’ decades ahead from mathematical climate models derived from a very limited and untypical period of less than 25 years, which was assumed without evidence to form a suitable base for comparison.

It is significant to report that the IPCC climate modelling ‘projections’ failed to predict global average temperatures for any year since 1998. Garnaut claimed that this was merely an ‘assertion’ by ‘dissenters,’ quoting an ANU report that ‘there is no significant evidence for a break in trend in the late 1990s.’ As the trend change was not obvious until 2001, their response does not address the question. It is also relevant to note that the land-based temperature monitoring stations preferred by IPCC to estimate global average temperatures yield different average temperature estimates to satellite sensors with more comprehensive global coverage.

The failure of the climate modelling ‘projections’ to correlate with actual global temperature estimates since the models were constructed is probably mainly due to the inherent weakness of all mathematical models that rely on calculating small differences between large numbers. The climate models involve assumed absorptions and ‘feedbacks’ of direct and ‘reflected’ solar radiation between the earth’s surface, clouds, ‘greenhouse gases’ in the atmosphere and other variables with the final ‘average global temperature’ estimate calculated as ‘the bit left over after all the other estimated numbers have been added and subtracted’ to put the model in simple words. While the IPCC reports that ‘an important source of uncertainty arises from the incomplete knowledge of some external factors, such as human-sourced aerosols,’ the implicit presumption is that the IPCC models cannot err!

A fourth diligence failure lies in the selective exclusion of well-known, well-researched and appropriate alternatives from the IPCC assumptions and model construction. This failure is particularly significant when it is recognised that the IPCC climate models which underlie the proposed Australian Carbon Pollution Reduction Scheme were developed to correlate with a limited period of less than 25 years when average global temperatures were estimated to be rising at a rate which had not been experienced during the periods immediately before or after that period. The 30 year period beforehand experienced a cooling global temperature trend, while the period afterward (since 1998) global temperature estimates have not risen and fell during 2008, despite continuing drought and apparent warming in Australia. Climate scientists were even discussing the possible onset of another Ice Age in 1972-74 before the IPCC ‘global warming model test’ period commenced!

Plausible alternative explanations for the rapid warming reported during the ‘test’ period include progressive affluence-related expansion of fossil fuel heating and energy use, particularly in First World countries where the majority of the temperature measurements used by the IPCC modellers are located. Another is the well-demonstrated ‘urban heat island’ effect, where reported

temperatures are biased upward by urban area thermal effects, due to bitumen paving, building heating and air conditioning and reduced air mixing. A third well-researched alternative is the impact of solar radiation variations due to sunspots and other solar perturbations. As our sun is the earth's majority heat source with a minor heat flow contribution from the earth's molten core and radioactive isotope decay of minerals in the earth's mantle, solar radiation variations have a significant impact on global climate. The word 'climate' even comes from the Greek '*klima*,' referring to the inclination of the sun. The IPCC conclusion that 'temperature increases since about 1970 cannot be explained *solely* by natural causes such as solar activity' (*my emphasis*) begs the question about IPCC's scientific rigour. A fourth alternative which is the subject of scientific studies - and there are many more - is the impact of cosmic radiation on earth's cloudiness with downstream modification of global temperatures.

The IPCC and following reports nominate the so-called 'El Niño' and 'La Niña' events as 'internal' or 'natural' events with an impact on climate - but do not attempt to explain how or why these events occur or incorporate their projected impacts into their mathematical climate modelling, posing significant questions about the predictive utility of their models. The global impact of the 1997–98 El Niño event has been estimated to include 24,000 deaths, 533,000 people suffering illness, 6 million persons displaced, 111 million persons adversely affected and a direct loss of US\$34 billion, significant enough to warrant scientific scrutiny of potential causal factors and means for mitigation of adverse consequences rather than just labelling the events as 'naturally-occurring' with the presumption that there is nothing we can do about them. 'El Niño-Southern Oscillation' events are thought to be associated with naturally-occurring changes, such as heat flow variations from the earth's molten core through areas of reduced earth mantle thickness, such as the Galapagos spreading center and the Chile Rise as well as the marginal basins of the western Pacific, which overlie active subduction zones. Research funding and activity in these and many other areas of arguably greater human health and welfare significance appear to have diminished in inverse proportion to the focus on atmosphere-based 'climate change.'

A fifth failure lies in the adoption of opinion 'consensus' rather than evidence-based science as the basis from which to recommend major international political and economic policies. This failure is compounded when the asserted 'consensus' involved the opinions of a strictly limited subset of scientists and bureaucrats with significant career and funding interests in their contributions proving successful. The IPCC conclusions, 'projections' and 'scenarios' assumed 'that models with higher skill scores are likely to give more reliable projections of future climate,' in contrast to their acknowledgement 'that uncertainties are often under-estimated by experts.'

In the same context, Garnaut reported that 'on the balance of probabilities . . . the majority opinion of the Australian and international scientific communities that human activities resulted in substantial global warming from the mid-20th century, and that continued growth in greenhouse gas concentrations caused by human-induced emissions would generate high risks of dangerous climate change' - another unvalidated opinion supported only by the prior IPCC opinion-based estimates but presented as factual evidence for justifying major national economic upheavals. The assertion of 'the majority opinion of the Australian ... scientific communities' is mere conjecture as the Australian scientific community members have not been asked for their opinions on the topic.

There have also been claims that 'Public opinion polls show that the overwhelming majority of Australians believe that global temperatures are rising and these increases are wholly or partly the result of human activity.' If 'public opinion' on the issue *was* actually polled as claimed and the poll was validly constructed, the quoted conclusion is evidence only that continuous government, media and lobby group marketing have had some impact, nothing more - particularly when the supposed polling queried ill-defined 'increases ... or *partly* the result of human activity.' Does 10 percent of the supposed temperature rise qualify as 'partly'? Or 1 percent, or 0.1 percent? Polls

about ‘global warming’ during a prolonged period of drought affecting major areas of Australia associated with continuing media marketing can only be described as improper and unscientific ‘leading the witness’ exercises and cannot legitimately be employed to justify major political and economic policy changes.

What conclusions arise from the foregoing analysis?

- Carbon dioxide is one of a number of identified ‘greenhouse’ gases in the earth’s atmosphere
- The minor concentration of carbon dioxide is very slowly increasing and probably due to human activities
- Carbon dioxide makes a minor contribution to global warming
- The increasing carbon dioxide level in the earth’s atmosphere is unlikely to significantly affect global temperatures
- Defining carbon dioxide as a ‘pollutant very likely to cause dangerous climate change’ is not supported by evidence-based science.
- The reasons underlying global temperature fluctuations are not yet adequately understood.
- Nomination of climate change as ‘the greatest social, economic and environmental challenge of our time’ is not appropriate.
- Funding of climate change-associated activities would have been better targeted toward identified rather than hypothetical human needs
- The proposed Carbon Pollution Reduction Scheme in Australia does not appear justified by any rational grounds.

Analysis of the Carbon Pollution Reduction Scheme proposals

Greenhouse gases

Reported ‘greenhouse gases’ of significance in the atmosphere are water vapour, carbon dioxide, methane, nitrous oxide, ozone, some halocarbon compounds and sulphur hexafluoride. The climate impact of the human-sourced ‘greenhouse gases’ in the atmosphere, such as methane, nitrous oxide and halocarbons, is essentially similar in kind to carbon dioxide but of less potential temperature change significance due to their small concentrations. Their potentially greater temperature effects are incorporated into the mathematical climate change models - and the proposed CPRS - as ‘carbon dioxide equivalents.’ The preceding analysis of the climate impact of atmospheric carbon dioxide includes the impact of these other ‘anthropogenic’ gases.

Economic restructuring

Reliance on fossil fuel combustion to power most of the global economic activities results in significant greenhouse gas (carbon dioxide and water vapour) emissions which are expected to rise with economic development worldwide. Deforestation and agriculture have also been identified as greenhouse gas emission sources. The key objective of the CPRS is to force progressive reductions in Australian emissions of greenhouse gases down toward Government-mandated year 2020 and year 2050 targets. The legislated mechanism for achieving the mandated targets is a progressively reducing emission cap-and-trade scheme. The Government anticipates that the CPRS will substantially restructure Australian economic infrastructure, economic activity, energy generation and utilisation, and personal lifestyles at the mandated rates at minimal cost and without significantly adverse impacts on overall national economic growth, emigration of manufactures and skill resources or provoking adverse responses from our international competitors. Whether all these changes can be encompassed in the envisaged time periods is questionable.

CPRS administration costs and complexity

The proposed CPRS will necessarily involve a large but presumably unbudgeted bureaucracy to handle the administration of its commitments to use every cent it receives from the sale of pollution permits to help households and businesses adjust and move Australia to the low pollution

economy of the future.’ It is not clear whether this commitment is in addition to the planned expenditures under the \$2.45 billion Climate Change Action Fund as well as the costs of the Department of Climate Change, World Climate Research Program, Global Atmosphere Watch, the International Geosphere-Biosphere Program, the Global Climate Observing System, the Australian Climate Change Science Program, the Centre for Australian Weather and Climate Research and downstream CSIRO, Bureau of Meteorology, university and consulting firm studies.

While the CPRS confidently presumes that ‘firms will ... take the cost of carbon pollution into account in their investment and production decisions’ without recognising the administrative workload implied for all businesses, not just the larger firms. The following Nelsonian ‘everyone needs to do their bit to tackle climate change by reducing carbon pollution’ exhortation is unlikely to persuade reluctant businesses to fully comply.

Assumptions associated with CPRS

The CPRS and its supporting reports incorporate a number of global assumptions of optimal legislative and administrative arrangements ranging from ‘simple and obvious’ through to ‘wishful thinking.’ The presumptions include the ‘*ceteris paribus*’ tool of economic theory, which assumes that desired changes can be made without any beneficial or adverse impacts on issues beyond the desired change target.

The CPRS proposals and upstream climate change-associated reports include assumptions such as ‘*at some time, there will be breakthroughs that fundamentally lower the costs of producing goods and services,*’ ‘agriculture being difficult *unless, as is possible,* there are transformative developments in biosequestration,’ ‘there is considerable technological upside. This *could* leave Australian energy costs *relatively low*, so that it remains a competitive location for metals processing,’ ‘the introductory impact of the Australian emissions trading scheme will not be inflationary *if permit revenue is used judiciously* to compensate households,’ ‘the costs of *well-designed* mitigation, substantial as they are, would not end economic growth in Australia,’ ‘ambitious emissions reductions goals will have *limited* impacts on global and national economic growth *if they are achieved* using *broad-based, market-oriented* policies,’ and ‘with *efficient policy settings*, Australia and the world continue to prosper while making the emission cuts required.’ (*my emphases*)

Downstream climate change-associated reports have followed the lead with examples such as ‘that *with a strict domestic emissions-reduction target and a raft of other government incentives and regulations*, the (extra 500,000 jobs by 2030 in six "green" industries) jobs could be created ... *predicated on government incentives* for retrofitting housing to make it more energy efficient, *extra depreciation and tax benefits* for "green" industry, *preference for green products* in government purchasing, and specific "green" jobs training places in the Government's \$2 billion training package.’ (*my emphases*)

The CPRS scenarios assume that China (from 2015) and India with others (from 2020) will adopt similar carbon emission pricing measures. As agricultural productivity in China (and North America, Europe and Russia) would be advantaged by the longer growing seasons associated with the predicted global warming, this assumption appears premature. As a net global creditor, China is in a good position to determine its own policy without advice from other countries. And if China does not fall into line, it is likely that India would adopt the same policy. In any event, there should by 2015 and 2020 be ample evidence on whether the IPCC’s ‘projections’ of continuing rapid global warming with major adverse consequences are fact or fiction.

One ‘wishful thinking’ scenario predicted that ‘one or more of these will be “backstop technologies” that become commercially viable at one or two or three or four hundred dollars per

tonne of carbon dioxide equivalent ... (and) will take carbon dioxide from the air at some cost, without relevant limit, and so end the inexorable rise in the carbon price.’ Another reported that ‘Australia ... is well placed to provide the necessary financial services to support developing carbon markets in the Asia-Pacific region.’ No justifications for hypothesising future \$100 to \$400 carbon prices or presuming that Asia-Pacific region countries will adopt carbon pricing at some future time were provided.

Human expectations drive economic reality, not computer models

All the climate change economic modelling presented to date presume a high level of human compliance with the modelled scenarios. Compliance is presumed as the only possible outcome resulting from CPRS legislation with enforcement together with government and lobby group marketing. A cursory glance at the history of most legislation - and of election voting patterns - gives a rather different impression of the range of responses generated by human expectations. Human expectations are arguably more sensitive to ‘hip pocket’ issues such as stability of employment prospects and income together with family and social group maintenance, all of which become ‘at risk’ issues under the scenarios associated with the proposed CPRS legislation.

We are also told that ‘this transformation will shift investment and employment between sectors,’ which poses a wider range of options than depicted by the CPRS documentation. Human expectations play a vital role in determining future investment and employment actions by governments, businesses and individuals alike. While few individuals and small business operators would be likely to include moving offshore as an option for them, the evidence is that medium and particularly larger businesses would do so - not necessarily immediately, but over time. With a substantial proportion of investment capital in Australia being directly or indirectly sourced from overseas, the economic expansion depicted in the Treasury and CPRS documentation could also be an ‘at risk’ issue, with the necessary overseas-sourced investment funding being directed to more amenable prospects.

Commodity exports

An important conclusion in the CPRS documentation is that ‘rising per capita incomes in developing economies are expected to result in more of the world’s population spending a larger share of their income on more energy-intensive goods and higher-value food. These forces will create strong demand for Australia’s commodity exports.’ It is implied that a significant proportion of the increased global demand for ‘energy-intensive goods and higher-value food’ will be met from Australian production and export. But during the same period, Australia is forecast to be significantly reducing its energy generation and use with a ‘structural shift ... towards low-emission goods, technologies and processes,’ together with gloomy predictions of increasing drought from an already minimal water supply base available for agricultural production. The issue of redeployment of employment resources back from urban areas to agricultural locations is another issue of major significance. It would be prudent to examine more closely whether the claims of expanded export revenue can be justified, with particular consideration to the issues of arable land, irrigation water and workforce relocation and availability.

With Australian economic growth significantly dependent on export commodity revenues from coal, iron ore, alumina, aluminium, copper, gold, lead, zinc and nickel, the reported minimal domestic economic impacts arising from major changes in those exports does not appear consistent with Australian economic realities associated with the current ‘global financial crisis’ or Garnaut’s prediction that ‘coal mining would lose a quarter of its business by mid-century as demand fell in a lower-carbon world.’ The *‘deus ex machina’* risk of accepting as truth computer-generated predictions poses the need for prudent checking against known and probable reality, particularly when major economic restructuring is being proposed on the basis that Australia ‘can achieve substantial emission reductions with relatively small reductions in economic growth.’

Energy production

Electrical energy generation emissions are expected to grow strongly with predicted population and GDP growth. With Australian GDP forecast to triple during the 2000-2100 century, Garnaut's prediction that 'coal-fired electricity generation would be cut by more than half as Australia shifted to cleaner energy forms' begs the question on replacement electrical energy sources. Natural gas-fired electrical energy is expensive, particularly on an opportunity cost basis, and generates significant carbon dioxide and nitrogen oxides emissions. Australian hydro-electric resources are fully occupied already, geothermal sources are unlikely to make a major contribution and the potential contributions from solar and wind energy production are only a small fraction of the requirement and are both highly variable over time, requiring continuous back-up (coal- or gas-fired) generation. As a result, the nuclear energy option adopted in other countries appears to be the only way to bridge the credibility gap implied by the CPRS-associated reports.

The majority of Australian carbon dioxide emissions result from energy production, particularly from coal burning. The 'low-emission technology' proposal for electricity generation to utilise carbon capture and storage (CC&S) begs the question on a number of issues. The most obvious are the major electrical energy requirements and capital and operating costs associated with separating carbon dioxide from hot exhaust flue gases and for compressing the gas into exhausted natural gas fields. These costs would be much higher for the Victorian brown coal-fired generators, as the nearly 70 percent water in raw brown coal requires to be evaporated in their boilers before the coal can be burned to generate electricity, resulting in much larger emissions of exhaust gases, carbon dioxide and water vapour per electricity unit generated, with corresponding increases in capital and operating costs for CC&S.

Forestry and carbon sequestration

Garnaut predicted that 'forestry would grow ... by at least 166% (with) revenue .. increase by an extraordinary 875%' associated with a cut in Australian emissions by 25%. However, the report did not identify how these forests were to grow, to whom the forest products might be sold or how to dispose of the carbon in the non-marketable tree components, while also assuming no competitive actions by other forest product source countries. In this context, planned bushfire risk reduction burning would release something like 14 million tonnes CO₂ each year in Victoria alone.

Establishment of sequestration forests as a response to emission pricing was reported to provide 'relatively low-cost mitigation.' While that proposition might *sound* logical, it fails to recognise that suitable land for sequestration forests is limited, that forests 'turn over' their carbon over time with age, bushfires and bushfire reduction measures. In short, forestry is a one-time, relatively short-term carbon sequestration measure.

Industrial energy efficiency

The Treasury report assumption of significant industrial energy efficiency improvement needs closer scrutiny. The key base electrical power load in several States is metal electrolysis - aluminium, copper and zinc - continuous industrial processes which operate at maximal energy efficiency levels. The commercial and domestic ventilation and air conditioning power load lies at the other end of the energy efficiency and power factor spectrum and is maximised during weekday daylight periods. While there will be scope for industrial energy efficiency improvement, the probability of achieving the Treasury estimate is not great. On the other hand and without regard to purported climate change-associated imperatives, there is a significant need to improve commercial and domestic energy efficiency and demand patterns, which is being addressed by the progressive adoption of 'smart power metering' in some jurisdictions.

Uncertainty

The CPRS statements that ‘scheme cap numbers for the first five years of the Scheme are made before 1 July 2010. The purpose of this requirement is to provide market *certainty*’ and ‘The draft bill is designed to provide the maximum feasible level of *certainty* over future scheme caps’ contrast sharply with the Garnaut report that ‘climate change mitigation decisions in 2008, and for the foreseeable future, are made under conditions of great *uncertainty*. There is great *uncertainty* about the climatic outcomes of varying concentrations of greenhouse gases; about the impact of various climate outcomes; and about the costs and effectiveness of adapting to climate change.’ (*my emphases*) While these CPRS statements may refer to market certainty, there has not been any verifiable sequence justifying the conversion of ‘uncertainty’ through the IPCC’s ‘most ... greater than 90 percent probability’ into the ‘certainty’ incorporated in the CPRS documentation.

‘*Australia’s Low Pollution Future: The Economics of Climate Change Mitigation*’ recommends that ‘in the face of uncertainty, strong coordinated global action has an insurance benefit: it keeps open the option of pursuing lower stabilisation levels in the future. Weaker global action may prove more costly in the longer term.’ The report fails to recognise the other side of the coin - that alternatives, such as the ‘do nothing until the key uncertainties are resolved’ option would keep open the option of identifying and pursuing more appropriate alternative actions in the future.

Economic evaluation of CPRS

Garnaut reported that ‘the overall cost (of the proposed measures) to the Australia economy is manageable and in the order of one tenth of one per cent of annual economic growth.’ The Treasury modelling reached similar conclusions to Garnaut by adopting essentially similar assumptions. The validity and probability of some of the assumptions - export revenue, electrical power generation and CC&S and industrial energy efficiency - have been questioned in this submission.

Other questionable assumptions include the prospective economic growth rates and future event discount rates employed in the Garnaut and Treasury modelling. Some of the reported growth rate estimates are mutually inconsistent, while the growth and discount rates do not appear to recognise any downside economic impacts of major economic restructuring. One basic example is the economic impacts associated with financing the closure of existing businesses in what is - and due to the CPRS will continue to be - a falling market, relocation of capital and workforce participants, development and acquisition of new processes and skills and the establishment of the new ‘green’ industries envisaged by the CPRS. Another is the economic impact of financial market uncertainty associated with prospective new enterprises which would increase the ‘risk premium’ cost of borrowing.

CPRS timing

The CPRS Act is scheduled to come into effect on 1 July 2010, the middle of next year. That date appears to have followed a number of reports and publications stressing the ‘urgency’ of promptly addressing the challenges of the predicted ‘dangerous climate change’ together with reports claiming that early ‘mitigation’ action would be less expensive than any later similar actions.

Stressing a need for urgent action is perceived as a means for advocates to keep their topic in the headlines, particularly since the brief 1976 to 1998 warming period ended and average global temperature is now cooling in the face of progressively increasing emissions world-wide. The proposition that early changes will be less expensive than later alternatives presumes that ‘mitigation’ activities at any time are essential and is also not consistent with the earlier *Supplementary Report* nomination that ‘the optimal level of Australian mitigation effort – the level that maximized the income and wealth of Australians – is easily calculated. It would be zero.’

With the global financial crisis presently diverting national focus toward issues of economic activity, employment prospects and export revenue, the additional social and economic disruption and uncertainties associated with the proposed CPRS timing do not appear politically tenable. This submission recommends that the proposed CPRS Act and associated 'mitigation' activities should be deferred until the global economic situation has stabilised and a clearer picture of Australia's economic prospects is available. With reported global temperatures substantially constant for the past ten years, later adoption of the CPRS would not materially affect the predicted impact outcomes. There is also the probability that a deferred decision on climate change legislation might prove better informed than is apparently the situation with the proposed CPRS. The CPRS White Paper advises that 'in delivering this significant economic reform, the Australian Government is focused on getting the balance right.' Present economic circumstances are not consistent with achieving that objective through what is now arguably premature legislation.

Recommendation

The foregoing analyses lead to the respectful recommendation to defer commencement of the CPRS Act and associated 'mitigation' activities until the global economic situation has stabilised and a clearer picture of Australia's economic prospects is available.