

The Urgency and the Opportunity

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The Government fails completely to grasp the urgency of the climate situation, which must be seen in terms of dominos and tipping points. The first big domino seems to be tipping now, and there may soon be no way to prevent or reverse catastrophic warming.

The Government also fails completely to see the opportunities to rapidly reduce emissions while creating an economy that can secure Australians' wellbeing indefinitely.

This submission focusses on reframing the policy discussion. It is intentionally brief. Details are irrelevant unless the problem is properly framed.

The Threat

Recent climate-related developments suggest major action is required urgently, if not desperately, to avoid uncontrollable runaway warming. The first issue for policymakers is not whether global warming is proven, the issue is the collective professional judgement of climate scientists. That judgement is clear: our emissions are very likely to be causing global warming. The further issue, apparently not recognised at all in policy circles, is that there is a series of climate dominos poised to tip.

Others will have covered the science in some detail. I confine my comments to critical highlights, often obscured by scientists' penchant for detail and caution.

- We always knew we'd have to act before the science was settled, because there is a time delay of several decades between emissions and their full effects.
- Global climate has in fact been broadly following scientific projections from two or three decades ago, except recently it has begun to change much faster than expected.
- There are some powerful natural amplifiers of global warming. Melting of Arctic permafrost could release more greenhouse gases (GHGs) than all human emissions since the industrial revolution. As the Arctic sea ice melts the exposed water absorbs more solar heat. The ocean and soils absorb GHGs less efficiently as they warm. There are other amplifiers as well.
- These natural amplifiers are like poised dominos. As one tips, it pushes on the next.

- The near-total loss of Arctic sea ice in recent summers may be the first big domino. As Arctic warming accelerates in response, the release of permafrost GHGs accelerates.
- If big dominos start to fall, nothing humans do may be able to stop runaway warming to extreme conditions, up to 6°C or more of warming, with drastic consequences for all species and for our industrial civilisation.
- Credible arguments suggest we are close to or at the global tipping point right now.
- Credible geological evidence suggests the maximum safe level of GHGs is **350 ppm CO₂ or less**. At about 387 ppm CO₂, *we are already over that threshold*.
- We may have only a few years to cut emissions substantially.
- We may need to actively draw down the GHGs already in the atmosphere.
- Biological drawdown methods are likely to be the quickest and most effective, and the least disruptive of Earth systems.

Minister Wong said “It’s not a sprint, it’s a marathon”. The Minister got that exactly wrong.

The Means

The CPRS as proposed is pathetically inadequate, in fact counter-productive. It has been rendered ineffectual by misguided concessions to special interests, by a totally inadequate stated target, and it probably could not achieve even that. It must be given full strength, the target must be rapid reduction of emissions, and the larger goal must be to *transform* the economy, not to *fossilise* it. Furthermore even a strong market mechanism is only a part of what is needed. Institutional and social factors must also be addressed.

The quickest and most cost-effective way to reduce greenhouse gas emissions is to dramatically improve the efficiency with which we use energy. A McKinsey Australia study concludes Australia can reduce its emissions by 20% by 2020 *at no net cost to the economy*¹. Other studies and factors suggest we could do better than that, through a concerted effort involving economy-wide incentives for institutional and social innovation.

Our assault on the Earth, our life support system, is much broader than just global warming. Many big-tech climate mitigation efforts ignore or aggravate the broader assault. A resource-efficiency approach is required to address the broader problem, and bequeath a thriving planet to our grandchildren. It is also the only approach that will limit household energy bills.

Low-hanging fruit – save money and save emissions

Some emission reductions will actually *save* money. This is well documented, most recently by McKinsey Australia¹. The lowest-hanging fruit are ‘motor systems’ and ‘commercial air handling’, which can save \$170-200 per tonne of CO₂ equivalent. These refer, for example, to industrial and commercial motors and fans, and to air

ducts that are undersized and convoluted. The reasons for such waste seem to be market failure, habit (standard operating procedures), regulations and inattention. Contracts and practises that minimise up-front costs rather than medium-term costs are a market failure. Regulations are commonly about safety rather than cost-effectiveness. For example the required minimum electrical wiring thickness is about preventing fires, but thicker wiring reduces resistance and saves money.

Such examples show market incentives alone are often not enough – the market incentive is already there. Other action, like active education, even hand-holding to get new practices adopted, are required.

Cost-neutral emission reductions

Savings from eliminating the most wasteful of current practices can be applied to the next level of emission reductions, those that are a cost-effective investment even in present market conditions. The McKinsey study estimates Australia's emissions could be reduced by 20% by 2020 at no net cost to the economy.

This may seem startling, and apparently it is not credible to many people because the message, though very encouraging, is slow to gain traction. Part of the reason for this seems to be that many people hear 'efficiency' as 'doing without', when in fact it means doing more with less.

There are by now quite a few studies reaching this conclusion, mostly in the U.S. For example, McKinsey and Company, as part of a continuing Climate Change Special Initiative², estimate the US could reduce its emissions by 30% by 2030 at near cost neutrality and a marginal cost less than \$US50/t-e³. The Rocky Mountain Institute⁴ has long pointed to the advantages of energy-efficiency options. A prominent example is the report *Energy End-Use Efficiency*⁵.

Large reductions are technically feasible for modest cost

Even more conventional economic analyses, such as that in the Stern Report and by ABARE, show that even large reductions would not be so expensive on the scale of the GDP. McKinsey⁶ estimate the cost to be around 1% of GDP, and they note that global expenditure on insurance is around 3% of GDP. Given the potentially catastrophic effects of global warming, this seems like a sensible insurance policy.

Hatfield-Dodds and Adams⁷ go further, concluding that smart tax reform could significantly reduce the economic impact of emissions reductions, particularly in the initial years, and that the affordability of energy products improves over time despite marked increases in prices.

The estimates already mentioned, and others, assume existing technology or technology that is close to commercial application. This is in contrast, for example, to carbon capture and storage, which is still in a conjectural stage, and so-called "clean coal", which is yet to be commercially demonstrated and is inadequate anyway.

A no-brainer: get richer a little more slowly.

These arguments go from smart to totally compelling when we note that the real conclusion of these studies is that GDP growth would be marginally reduced, so that instead of GDP increasing by, for example, 70% by 2050, it increases by only 65% (or whatever). So these studies are really saying *we should get richer a little more*

slowly in order to save our civilisation. That should be, as they say, a no-brainer. (In fact it is quite doubtful that the Earth will support such GDP increases, because of all the other problems we are creating. However resource-efficient approaches can improve quality of life while actually reducing GDP.)

The Obstacles

The obstacles to large emission reductions are not technical and economic, they are institutional and political.

Standard operating procedure

Builders don't like to change their ways, because it costs them time and money. Yet we have known for decades how to build buildings that require only a fraction of the energy of even a five-star house. Governments can readily breach this barrier, by providing the information, both passively and actively, by subsidising changes of practise, and by requiring changes of practise. This would be a highly cost-effective use of tax-payers' money.

One of the key factors affecting building energy requirements is orientation, mainly relative to the sun, yet new suburbs continue to be built with no regard at all for this absolutely elementary requirement. Local authorities need simply to be compelled to do this. It costs nothing.

There is a morass of regulations governing buildings and many other energy-related areas. Most of them have to do with concerns other than energy efficiency, and many of them get in the way.

Major improvements in transport efficiency have been achieved in other places by carefully integrating employment, housing and public transport. Most European cities have much more efficient transport systems. Curitiba in Brazil has 70% daily ridership on a well-designed, well-integrated and well-run bus system of very modest cost. Yet our cities continue to sprawl across the countryside with little regard for where employment is and how people will get around.

These are but a few brief examples of institutional barriers. Given the will, they could be overcome quickly and without great expense. A combination of inducement and compulsion is probably required. Governments would be entirely justified in invoking emergency powers.

Jobs and exports

We are told over and over that reducing carbon emissions will be disastrous for the economy, for exports and for jobs. This is nonsense. It is the bleating of special interests.

There is a multibillion-dollar photovoltaic industry in China created by a Chinese-Australian using Australian technology. That industry could have been adding to Australian exports and jobs.

Australian solar-thermal technology is now being enthusiastically developed by California. Almost weekly innovative Australian technologies are lost to overseas

developers, for want of any significant development support from government and for want of local capital. Those are our future exports and jobs.

Instead we lavish subsidies on existing industries for options that are plainly inadequate ('clean coal') or entirely speculative (carbon capture and storage). These industries have no future. All the so-called emission reduction proposals to date have more to do with saving the coal industry than saving our civilisation.

There is a simple reason for this imbalance of attention and innovation. Governments are heavily under the influence of lobbyists for existing major industries. The developing new industries can't match that effort. It should be governments' role to take the larger and longer view, and to balance competing interests. Governments are signally failing to do this. This is a failure of leadership.

Governments have wrought great changes to the Australian economy over the past three decades, for better or worse. They have done it when it suited the prevailing ideology and when it did not cross major vested interests. There is therefore no excuse that 'it can't be done'. They now just need to have the guts to do what's needed for the sake of our grandchildren.

Energy efficiency tends to be labour-intensive. This means jobs. Many of the jobs could be in rural areas, which have suffered depression for decades from drought and misguided government policy. Political forces are gathering in the US promoting 'green jobs' as desirable in themselves, and as a highly effective stimulus to the sagging economy. We ought to be doing the same, instead of again making ourselves an international high-emissions pariah.

The Opportunity

Although global warming is the most threatening symptom of our affects on Earth systems, is it only one of many. These include overuse of available fresh water, degradation and loss of soil, loss of forests, loss of many other habitats, loss of pollinators, loss of ecological resilience, and pollution of the entire globe that affects many species, including humans. Through food, water and air, each one of us is intimately connected with the biosphere around us, and totally dependent upon it. Its health is our health. Our response to global warming will be of ultimate benefit only if we keep sight of this larger perspective.

Professor Ross Garnaut called global warming a diabolical policy problem. This is only true when it is viewed from within politics-as-usual, dominated by old issues, old habits and old interests.

This submission offers a quite different framing. It is much less pessimistic. In this framing the financial, global warming and broader environmental crises and many social problems can be ameliorated simultaneously by transforming our economy. The submission is kept brief and general so as not to obscure this larger perspective.

Anyone who seriously wants to pursue this path will readily find the information required. I have provided a few references that provide a good start. *Climate Code Red*⁸ gives an excellent summary of both the science and of policy options. There are scientists, energy experts, planning experts and others who are

trying desperately to be heard. You just have to step past the carbon whisperers and you will hear them. We need to stop all the talking and bickering and just get on with it.

There is a current fashion to label those bringing alarming news as ‘alarmists’, ‘extreme greens’, and so on. Regrettably the Prime Minister is among those who have so indulged themselves. This category evidently now includes the vast majority of climate scientists. To so label and dismiss those who can give us the best guidance on this critical problem is grossly irresponsible.

It is far from clear that we can still save the situation, but if we don’t try we are guaranteed to fail.

If we just knock those who spell out what is needed, and say ‘it can’t be done’, then we’ll be right.

On what basis would any responsible leader, upon hearing of the danger, and of feasible and affordable means to reduce or eliminate the danger, refuse to explore those means as a matter of urgency?

* I am an Earth scientist of four decades’ experience and unusually broad interests. As well as studying the Earth I have read and written extensively on economics and on energy and resource efficiency. I bring to this topic long experience in assessing fractious debates on difficult topics.

I am a Senior Fellow in geophysics at the Australian National University and have authored over one hundred scientific papers and a scientific book. In 2005 I was awarded the inaugural Augustus Love medal for geodynamics by the European Geosciences Union, and I was elected a Fellow of the American Geophysical Union in 1990. I am an occasional commentator on science, politics, economics and social issues, and the author of *Economia: New Economic Systems to Empower People and Support the Living World* (ABC Books, 2004).

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