Worshipping the Temple of Doom

My response to the letter from Dr. Martin Parkinson, Secretary of the Australian Department of Climate Change, is available, along with this note, on my web site.

Thanks to the many people who provided comments on my draft response, including Steve Hatfield-Dodds, a senior official within the Australian Department of Climate Change. I appreciate the willingness of the Australian government to engage in this discussion. I believe that you will find the final letter to be significantly improved over the draft version.

Several people admonished me for informal language, which detracts from credibility, and attempts at humor with an insulting tone (e.g., alligator shoes). They are right, of course – these should not be in the letter. So I reserve opinions with an edge to my covering e-mail note.

My frustration arises from the huge gap between words of governments, worldwide, and their actions or planned actions. It is easy to speak of a planet in peril. It is quite another to level with the public about what is needed, even if the actions are in everybody's long-term interest.

Instead governments are retreating to feckless "cap-and-trade", a minor tweak to business-as-usual. Oil companies are so relieved to realize that they do not need to learn to be energy companies that they are decreasing their already trivial investments in renewable energy. They are using the money to buy greenwash advertisements. Perhaps if politicians and businesses paint each other green, it will not seem so bad when our forests burn.

Cap-and-trade is the temple of doom. It would lock in disasters for our children and grandchildren. Why do people continue to worship a disastrous approach? Its fecklessness was proven by the Kyoto Protocol. It took a decade to implement the treaty, as countries extracted concessions that weakened even mild goals. Most countries that claim to have met their obligations actually increased their emissions. Others found that even modest reductions of emissions were inconvenient, and thus they simply ignored their goals.

Why is this cap-and-trade temple of doom worshipped? The 648 page cap-and-trade monstrosity that is being foisted on the U.S. Congress provides the answer. Not a single Congressperson has read it. They don't need to – they just need to add more paragraphs to support their own special interests. By the way, the Congress people do not write most of those paragraphs – they are "suggested" by people in alligator shoes.

The only defense of this monstrous absurdity that I have heard is "well, you are right, it's no good, but the train has left the station". If the train has left, it had better be derailed soon or the planet, and all of us, will be in deep do-do. People with the gumption to parse the 648-pages come out with estimates of a price impact on petrol between 12 and 20 cents per gallon. It has to be kept small and ineffectual, because they want to claim that it does not affect energy prices!

It seems they would not dream of being honest and admitting that an increased price for fossil fuels is essential to drive us to the world beyond fossil fuels. Of course, there are a huge number of industries and people who do not want us to move to the world beyond fossil fuels – these are the biggest fans of cap-and-trade. Next are those who want the process mystified, so they can make millions trading, speculating, and gaming the system at public expense.

The science has become clear: burning all fossil fuels would put Earth on a disastrous course, leaving our children and grandchildren with a deteriorating situation out of their control. The geophysical implication is that most of the remaining coal and unconventional fossil fuels (tar shale, etc.) must be left in the ground or the emissions captured and put back in the ground. A corollary is that it makes no sense to go after every last drop of oil in the most remote and

pristine places – we would have to fight to get the CO_2 back out of the air or somehow "geoengineer" our way out of its effects.

A more sensible approach is to begin a rapid transition to a clean energy future, beyond fossil fuels – for the sake of our children and grandchildren, already likely to be saddled with our economic debts, and to preserve the other species on the planet. Such a path would also eliminate mercury emissions, most air pollution, acid rain and ozone alerts, likely reversing trends toward increasing asthma and birth defects. Such an energy future would also halt the drain on our treasure and lives resulting from dependence on foreign energy sources.

What is it that does not compute here? Why does the public choose to subsidize fossil fuels, rather than taxing fossil fuels to make them cover their costs to society? I don't think that the public actually voted on that one. It probably has something to do with all the alligator shoes in Washington. Those 2400 energy lobbyists in Washington are not well paid for nothing. You have three guesses as to who eventually pays the salary of these lobbyists, and the first two guesses don't count.

I get a lot of e-mails telling me to stick to climate, that I don't know anything about economics. I know this: the fundamental requirement for transition to the post fossil fuel era is a substantial and rising price on carbon emissions. And businesses and consumers must understand that it will continue to rise in the future.

Of course, a rising carbon price alone is not sufficient for a successful rapid transition to the post fossil fuel era. There also must be efficiency standards on buildings, vehicles, appliances, electronics and lighting. Barriers to efficiency, such as utilities making more money when we use more energy, must be removed.

But the essential underlying requirement is a substantial rising carbon price. Building standards, especially operations, for example, are practically unenforceable without a strong cost driver. The carbon price must be sufficient to affect lifestyle choices.

648 pages are not needed to define a carbon fee. It is a single number that would be ratcheted upward over time. It would cover all three fossil fuels at their source: the mine or port of entry. Consumers do not directly pay any tax, but the fee's effect permeates everything from the price of fuel to the price of food (especially if it is imported from halfway around the world).

As a point of reference a fee equivalent to \$1/gallon of gasoline (\$115/ton CO_2) would yield \$670B in the United States (based on energy use data for 2007). That would provide a dividend of \$3000/year to legal adult residents in the United States (\$9000/year to a family with two or more children).

A person reducing his carbon footprint more than average would gain economically, if the fee is returned 100 percent to the public on a per capita basis. With the present distributions of income and energy use, it is estimated that about 60 percent of the people would get a dividend exceeding their tax. So why would they not just spend their dividend on expensive fuel? Nobody wants to pay more taxes. They prefer to have the money for other things. As the price of fossil fuels continues to increase, people would conserve energy, choose more energy efficient vehicles, and choose non-fossil (untaxed) energies and products.

Hey, does anybody know a great communicator, who might level with the public, explain what is needed to break our addiction to fossil fuels, to gain energy independence, to assure a future for young people? Who would explain what is really needed, rather than hide behind future "goals" and a gimmick "cap"? Naw. Roosevelt and Churchill are dead. So is Kennedy.

4 May 2009

Dr. Martin Parkinson
Secretary
Department of Climate Change
Government of Australia

Re: Australia's Response to Climate Change

Dear Secretary Parkinson:

Thank you for your letter of 6 April, in which you provided reasoning behind the Carbon Pollution Reduction Scheme (CPRS) announced in your Government's White Paper[1] and the updated plans, with more ambitious reduction targets, announced today[2].

The White Paper is forthright about the "need for action on climate change", stating:

> Carbon pollution is causing the world's climate to change, resulting in extreme weather, higher temperatures, more droughts, and rising sea levels.
>
> Eleven of the past 12 years rank among the 12 warmest years since records began and Australia had warmer-than-average mean annual temperatures for 16 of the past 18 years.
>
> As one of the hottest and driest continents on earth, Australia will be one of the nations hit hardest and fastest by climate change if we don't act now.

This kind of straight talk is admirable, as is the statement in your 6 April letter that "We strongly agree with you that climate change requires urgent and significant changes in human activity."

I am also encouraged by the policy proposed in the White Paper to return 100 percent of revenue from permit auctions to Australian households and businesses. Unless the tax is fully returned to the public, in a transparent fashion, they will almost certainly not consent to having the carbon fee rise to the needed level.

However, I note that your plan is still based on the disastrously ineffectual cap-and-trade approach. Below I point out principal flaws in this approach based on empirical evidence. I hope you will reconsider your plan – such an ineffectual cap-and-trade approach would waste another decade at a time when the threat of passing climate tipping points makes it unconscionable to waste another year.

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[1] *Carbon Pollution Reduction Scheme: Australia's low pollution future, White Paper*, downloaded from http://www.climatechange.gov.au/whitepaper/report/pubs/pdf/V100eExecutiveSummary.pdf.

[2] http://www.environment.gov.au/minister/wong/2009/pubs/mr20090504c.pdf
http://www.environment.gov.au/minister/wong/2009/pubs/mr20090504.pdf
http://www.climatechange.gov.au/emissionstrading/pubs/carbon_pollution_target.pdf

Australia's GHG Reduction Targets

Your plans announced today include more ambitious "targets" for emission reductions. Debating the adequacy of "targets" would be a mistake. We must not obfuscate the real issue. The basic fact is that there is not the slightest chance that your plans could achieve anything approaching the reduction path needed to avoid climate disruption, to preserve a planet resembling the one that we inherited from our elders, and to allow continued existence of the remarkable species that co-habit Earth with humanity.

Your plan resembles the Kyoto Protocol. It is larded with caveats and escape valves. In contrast, a successful plan must recognize geophysical constraints and economic reality.

The geophysical fact is that most of the remaining fossil fuels must be either left in the ground or used only where the CO_2 is captured and put back underground.

The economic reality is that we will not move to the era beyond fossil fuel emissions until a substantial rising price is applied across-the-board to all carbon fuels, such that efficiency and carbon-free energies rapidly ascend[3]. In addition, I will contend, public acceptance of the needed rising carbon price demands complete transparency and fairness. An approach that allows and rewards gaming and speculation will not be acceptable.

In this letter I will address the need for a carbon price. But, preceding that discussion, please allow me to note two closely related topics: population policies and per capita carbon emission.

Human population growth is a root cause of the stress that humanity is placing upon the global environment and upon the other species sharing our planet's resources. A deliberate policy of population growth is inconsistent with preservation of climate and nature.

Per capita emissions are relevant to your assertion that Australia's emission reduction targets are "on par with" those of other countries. Authoritative data show that *Australia's per capita emissions of carbon dioxide from fossil fuel combustion, although comparable to those in the United States and Canada, are twice as high as per capita emissions in Western Europe*. The countries listed in the following table span a wide range of climate conditions, potential wind and solar resources, and use of nuclear energy. They all have robust per-capita incomes, high life expectancies, and desirable quality of life. While it is true that important segments of Australia's economy are based on resource extraction and are inherently more carbon-intensive, the fact that overall per capita emissions in each country are roughly half of Australia's suggests that there is room for large cuts in Australia's emissions.

[3] A rising carbon price is necessary, but not sufficient – efficiency and building standards are needed, as well as policies that remove barriers to efficiency and spur development of carbon-free energies.

CO_2 Emissions from Fossil-Fuel Burning

Country	Tonnes per capita (2005)
Australia	18.2
Germany	9.5
France	6.2
Denmark	8.5
Spain	7.9

Source: National CO_2 Emissions from Fossil-Fuel Burning, Cement Manufacture, and Gas Flaring: 1751-2005, downloaded from http://cdiac.ornl.gov/trends/emis/top2005.cap
Carbon emissions rates converted to CO_2 via factor 44/12.

How can emissions be reduced? With policies similar to those being promoted elsewhere: mileage efficiency standards for vehicles; power-usage standards for appliances and electronics; retrofitting of residential and commercial buildings for efficient heating and cooling; urban revitalization promoting walkable and bikeable communities; land-use policies encouraging proximity over sprawl; and wholesale conversion of the electricity energy source from fossil fuels to carbon-free sources – including Australia's massive solar and wind resources.[4]

All of these measures will penetrate deeper, wider, and faster with carbon emissions pricing, as your letter recognizes. Indeed, if the carbon price is sufficient, the public will move rapidly to replace fossil habits and fossil infrastructure – once the tipping point is passed. With economic incentives, change will occur far more rapidly than is possible with mandated "goals" or "caps".

A rising carbon price is needed to transform consumer and life style choices, to make zero-carbon energy and energy efficiency cheaper than fossil fuels, to spur business investment, innovation and associated economic activity, and to move the nation to the cleaner environment beyond the fossil fuel era. The carbon price will need to be significant, and the public and businesses must understand that it will increase in the future. It should be applied to all fossil fuels – oil, gas and coal – uniformly at the source (the first sale at the mine or port of entry).

Will the public accept a rising carbon fee? Surely – if the revenue is distributed 100% to the public, and if the rationale has been well-explained to the public. More than half of the public (those who do better than average in limiting their direct and indirect carbon emissions) will receive a dividend larger than the amount they pay in carbon fee via higher energy prices. The revenue should not go to the government to send to favored industries.

Will the public just turn around and spend the dividend on the same inefficient vehicle, etc.? Probably not for long, if there are better alternatives and if the public knows the carbon price will continue to rise. And there will be plenty of innovators developing alternatives. Of course, cost incentive alone is not sufficient – efficiency and building standards also must be improved.

[4] Original and secondary sources describe Australia's wind and solar resources as "excellent by world standards", as adequately summarized at http://en.wikipedia.org/wiki/Wind_power_in_Australia.

As a U.S. citizen, I am well aware that implementing such policies is easier said than done. My country's per capita CO_2 emissions stood at 19.5 tonnes in 2005,[5] about 10% greater than yours. Marshaling public opinion and political will is a tremendous task, given the forces aligned for business-as-usual. In Washington there are four energy lobbyists for every Congress-person.

Political leadership is desperately needed. It is easiest to give in to business-as-usual. That was the approach to the automobile industry by politicians in the United States. It cost our country world leadership in that industry. We must recognize our fiduciary responsibility to our children and grandchildren, as well as our moral obligation to them and the millions of species that will be affected by our choice to take, or not to take, needed actions.

Cap-and-Trade: A Circuitous, Ineffectual, Inefficient Path to a Carbon Price

I'm gratified to read in your letter that "The Australian Government agrees that a rising forward carbon price is an essential part of effective and efficient national and global responses to climate change." But you go on to state:

> We do not accept … that a carbon tax will be the best mechanism to deliver such a price in all countries and circumstances. In particular, we consider that ... well designed quantity-based approaches have some significant advantages over price-based approaches.

First, we need a level playing field in terminology. If "fee and dividend" is to be called "tax and dividend", then the pseudonym "cap and trade" must be replaced by "tax and trade". One is no more a tax than the other – they both raise the price of energy for the consumer.

The consumer does not directly pay any tax or fee in the "fee and dividend" – the fee is paid at the fossil fuel mine or port of entry. It is transparent, uniform, honest, and fair – and it adheres to the fundamental morality of 'polluters must pay'. The fee is a single number per tonne of carbon. No large bureaucracy is needed, no traders, no speculators.

Contrast this carbon fee (tax), a single number applied uniformly to all oil, gas and coal at the source, to the morass of cap-and-trade, illustrated by the European experience: they spent $50B on carbon trading, their CO_2 emissions actually increased, and the largest payment went to a German coal-burning utility! Cap-and-trade is fraught with opportunities for special interests, political trading, obfuscation from public scrutiny, accounting errors, and outright fraud.

Orszag[6] discusses the merits and drawbacks of cap-and-trade and a carbon tax. Either needs to become gradually more stringent over time to produce a smooth transition to a less carbon-intensive economy, allowing firms and households time to gradually replace capital equipment. Either tax or cap is more efficient than command and control policies, i.e., they yield greater

[5] CDIAC, http://cdiac.ornl.gov/ftp/trends/emissions/usa.dat. (Carbon converted to CO_2 via factor 44/12)

[6] P.R. Orszag, Issues in Climate Change, Congressional Budget Office, 16 November 2007, 15 pp.

benefits per unit cost. However, Orszag concludes that a well-designed and appropriately set tax would yield higher net benefits than a corresponding cap-and-trade approach.

Please let me address specific points you raise, which in fact strongly disfavor cap-and-trade:

On Certainty. You assert that "robust quantity-based approaches can achieve specified emissions reduction with a high degree of certainty." Yet the Kyoto and European experiences demonstrate that certainty of emissions reductions under cap-and-trade is a myth. As to the concern that "quantity of emissions reduction will be uncertain under price-based approaches," I refer you to legislation recently introduced in the U.S. Congress that provides for periodic, automatic upward adjustments in carbon tax levels as needed to ensure that specific quantity-reduction targets are met.[7]

In fact, uncertainty is inevitable with either approach. Moreover, our scientific knowledge and political wisdom will likely improve over the next 40 years. A merit of the carbon fee (tax) is that it can be ratcheted up as needed to optimize carbon phase-out and economic performance.

Cap and trade is not robust. It has a great number of flaws, which I am sure you will agree should not be ignored in our analyses.

1. Realistic caps are incomplete and do not control what matters – total emissions.
2. Offsets are usually allowed and often poorly substantiated and verified, creating more uncertainty.
3. As with any law, caps can and will be changed, many times, before 2050.
4. National caps have been and are widely rejected, so the global cap will be far too high.
5. When caps are accepted, they are often set too high – as happened, e.g., with Russia.
6. If a complete set of tight caps were achieved, global permit trading would likely result in a Gresham's-Law effect – "bad money drives out good." Some countries will issue too many permits or fail to enforce requirements. These permits, being cheapest, will find their way into the world market and undermine the world cap.
7. Caps are extremely hard to enforce, as demonstrated by the Kyoto Protocol. In some cases, even with highly respected countries such as Canada, the extent of failure to meet commitments was enormous.

The view that we will have a "robust" cap is an illusion based on looking at rules for an ideal cap instead of the politics of real caps. Problem #4 above will cause trouble, e.g., because permit trading has characteristics that will likely provoke popular backlash. For example:

1. Consumers may discover, as they did in Europe, that they are charged for "free permits."

[7] A bill authored by Rep. John B. Larson, the fourth ranking Democrat in the U.S. House, called America's Energy Security Trust Fund Act of 2009, may be downloaded from http://www.govtrack.us/congress/bill.xpd?bill=h111-1337. A helpful summary of the bill has been posted as http://www.carbontax.org/blogarchives/2009/03/06/new-larson-bill-raises-the-bar-for-congressional-climate-action/. Another bill with an upward-adjustable carbon tax level, authored by Rep. Jim McDermott, the Clean Environment and Stable Energy Market Act of 2009, may be downloaded via the link, < http://www.house.gov/mcdermott/The%20Clean%20Environment%20and%20Stable%20Energy%20Market%20Act.pdf>.

2. Some permit traders will become millionaires by speculating on carbon prices – this money does not come out of thin air – it comes out of consumer pockets.
3. An effective cap will eventually cause a high implicit tax rate. As Nordhaus (see below) notes, volatility of this tax may become "extremely unpopular with market participants."

Such problems would cause repeated changes, or abandonment, of a global cap-and-trade system. If that system attains only limited coverage, as is now the case, worse problems will arise in the global offset markets. For these reasons, and because they believe a cap-and-trade approach will continue to stymie international negotiations, many of the top American economists from across the political spectrum vigorously oppose cap and trade. Notable among these are William D. Nordhaus, Joseph E. Stiglitz (*Making Globalization Work*, Chp. 6), and N. Gregory Mankiw.

On Permit Price Volatility. You say, [Emission permits] "will generally provide greater security and improved risk management for firms and market participants than a tax or administratively set prices."

Actually, volatile permit prices are almost universally considered to be an unavoidable deficiency of cap and trade relative to a carbon tax. Nordhaus, in *A Question of Balance* (2008), examines the volatility of SO_2 permit prices in the United States under the SO_2 cap and trade program and finds they have been twice as volatile as the S&P 500 index and nearly as volatile as oil prices. He then concludes (p. 155):

> Such rapid fluctuations are costly and undesirable, particularly for an input such as carbon whose aggregate costs might be as great as those of petroleum in the coming decades. An interesting analogue occurred in the United States during the monetarist experiment of 1979-1982, when the Federal Reserve targeted quantities (monetary aggregates) rather than prices (interest rates). During that period, interest rates were extremely volatile. In part because of this increased volatility, the Fed changed back to a price-type approach after a short period of experimentation. This experience suggests that a regime of strict quantity limits might have *major disruptive effects on energy markets and on investment planning, as well as on distribution of income across countries, inflation rates, energy prices, and import and export values. Quantity limits might consequently become extremely unpopular with market participants and economic policy makers.* [emphasis added]

We now have data on EAU futures that were unavailable to Nordhaus when he made his study of volatility. Using futures with settlement date December 2012, which now have a four year time series, we find they are 2.9 times as volatile as the S&P 500 from the opening of the EU market on 22 April 2005 until 27 April 2009.

On Price Discovery. The hope that futures and options markets will "reveal" future carbon prices under a cap and trade system is a case of whistling past the graveyard – with the gravestones bearing names like "securitization," "derivatives," and "credit-default swaps" that have brought the global economy to the brink of ruin. It would be less than prudent to give license to institutions in Australia and elsewhere to construct new, potentially toxic financial instruments, particularly ones that will help decide the fate of essential investment in zero- and

low-carbon technologies.[8] I also have to question the capacity of millions of Australian households and small-business owners to employ price discovery to guide their decisions to purchase low-carbon cars and houses and to move generally to climate-sustainable lifestyles. Why not just give them the future carbon price straight-up?

On Progressively Rising Tax Rates. You note that you are "unaware of instances where countries have committed to, and delivered, a program of progressively rising tax rates." Yet pollution taxes have rarely been tried under the traditional mindset favoring command-and-control regulations. Nevertheless, two examples of progressively rising pollution taxes come to mind: the tax on chlorofluorocarbons and other ozone-destroying chemicals implemented by the United States beginning on Jan. 1, 1990 to support the Montreal Protocol[9]; and the carbon tax that took effect in British Columbia, Canada's third largest province and roughly the same population as your state of Victoria, last July 1.[10] Your concern that "a price-based approach [such as a carbon tax] may not be capable of achieving the political mandate required to deliver the ambitious emissions reductions called for by the science, over the long run," surely depends upon whether 100% of the carbon fee is returned to the public. Certainly, the nation should and will have the option of deciding whether the carbon fee will continue and how fast it will rise. My guess is that, as they see the benefits and consequences, and as many receive more in dividends than they pay in increased fossil energy cost, they will encourage continuation of this simple, honest, transparent system. In contrast, when cap-and-trade problems associated with "securitization," "derivatives," "credit-default swaps", and speculator millionaires arrive, there is likelihood of public outrage and demise of support for emissions reduction.

On implementation. The carbon tax in British Columbia took only months from announcement, in February 2008, to implementation, in June 2008. Cap and trade schemes have taken an order of magnitude longer to craft and introduce.[11] The difference arises from the complexity of cap and trade vs. the simplicity of a carbon tax or fee. It is this contrast that helps account for the shift in opinion that has become palpable in the U.S. business community, the political commentariat and, now, in the U.S. Congress.

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[8] I commend the recent (March 2009) report by Friends of the Earth, USA, *Subprime Carbon? Re-thinking the World's Largest New Derivatives Market*, http://www.foe.org/subprimecarbon, for clearly and soberly "connecting the dots" between carbon emission permit trading and carbon derivatives.

[9] According to a retrospective analysis by the Arthur D. Little consulting firm for the Alliance for Responsible Atmospheric Policy, the tax on CFC's began in 1990 at $3.00/ODP-kg (ODP denotes ozone-depletion units) and automatically increased each year by $1.00/ODP-kg, finally reaching $18.80/ODP-kg in 2002. See http://www.arap.org/adlittle/2.html.

[10] The British Columbia carbon tax began at $10 per metric ton of carbon dioxide on 1 July 2008 and is scheduled to increase annually by $5/tonne, reaching $30/tonne on 1 July 2012.

[11] A case in point: "RGGI," the most ambitious cap and trade scheme in the U.S., the northeast states' Regional Greenhouse Gas Initiative, was announced in 2003 and started in 2008. It is minimalist and covers only electricity. Its allowances have been trading at a pathetically low value of about $3 per tonne.

The dividend, which you presumably would choose to give to all adult legal residents, can be implemented just as quickly, delivered electronically to bank accounts every month. It could be added to debit cards of anybody who does not have a bank account.

In closing, I note the recent comment of New York Times columnist Thomas L. Friedman:

> [S]simplicity matters. Americans will be willing to pay a tax for their children to be less threatened, breathe cleaner air and live in a more sustainable world with a stronger America. They are much less likely to support a firm in London trading offsets from an electric bill in Boston with a derivatives firm in New York in order to help fund an aluminum smelter in Beijing, which is what cap-and-trade is all about. People won't support what they can't explain.[12]

I believe Friedman is right about Americans and that the same applies to Australians. People are hungry not just for a sustainable climate, and cleaner air and water, but for political openness and honesty. They want their leaders to level with them. I hope that you will provide leadership, and encourage other nations, toward a path that can achieve these ends.

Thank you for your openness to my information and point of view. I look forward to your reply.

Sincerely,

James E. Hansen

[12] Thomas L. Friedman, "Show Me the Ball," The New York Times, http://www.nytimes.com/2009/04/08/opinion/08friedman.html.