Climate Change Authority Targets and Progress Review Draft Report: David Arthur Submission

Author: David Arthur
[redacted]

The most recent interglacial warm period within the Pleistocene epoch (2.6 million years ago to ~12,000 years ago was the Eemian period (~130-114 millennia ago). During that period, atmospheric CO_2 peaked around 290 ppm sea levels were perhaps 4-8 metres higher than present, and temperatures were up to 2 degrees Celsius higher than present.

The major reason that Eemian conditions have not been replicated over the last century, in which time atmospheric CO_2 has risen from ~290 ppm to ~400 ppm is that earth's climate system responds to changes in atmospheric CO_2 on a time-scale of centuries to millennia (The projected timing of climate departure from recent variability).

Comparison of temperature-CO2 ice core data from the Eemian period suggests that atmospheric CO2 at 400 ppm means that global average temperature rise of 2 degrees Celsius temperature is already unavoidable. However, this temperature rise may be delayed by several centuries due to heat transfer to oceans (Continued global warming after CO2 emissions stoppage).

To minimise losses due to this sea level rise over the next few centuries it is necessary to completely cease recycling geologically immobilised (geosequestered) carbon (fossil fuels, and the carbon content of limestone) to the atmosphere as rapidly as our economy can be changed to stop using such geosequestered carbon. In turn, this means that all interim "targets" are essentially meaningless ("moot points").

I have formed the view that the optimal carbon pricing mechanism is an escalating consumption tax on the carbon content of fossil fuels, the revenue from which may be applied to broad reductions in other taxes for the couple of decades that it may take to completely 'decarbonise' the economy. The remainder of this submission is drawn from two recent webpage discussions in which I have been involved.

1) Discussion following Prof Jack Pezzey's 'The Conversation' article "**To cut more emissions, a carbon tax needs to raise less revenue**

2) Discussion following journalist Graham Readfearn's 'The Guardian' blog article, "**How rich countries dodged the climate change blame game in Warsaw**'

NOTE: this document includes hyperlinks to referenced documents., generally

indicated by use of blue font colouring; however, there is no hyperlink in this NOTE.

To cut more emissions, a carbon tax needs to raise less revenue

27 November 2013, 2.15pm AEST, Jack Pezzey (Senior Fellow, Fenner School of Environment and Society , Australian National University),

Carbon (emissions) taxes have proved unpalatable world-wide, compared to (carbon) emissions trading schemes. But taxes give stable carbon prices while prices in emissions trading schemes yo-yo, plunge, and sometimes do little to cut emissions. In a Nature Climate Change paper out* today, Frank Jotzo and I propose a more palatable tax: charge it at a sizeable rate, but only on emissions above fixed thresholds. Emissions would be lowered, but less revenue raised. …

[The remainder of Dr Pezzey's article set out the reasoning in the Nature Climate Change article co-authored by himself and Prof Jotzo.]

The following exchange between myself, one "Trevor S", and a Mr Doug Hutcheson sets out my argument in response to Profs Pezzey & Jotzo's argument, and then goes on to discuss my preference for a consumption tax on fossil fuels that may be unilaterally implemented in Australia through modification of the Goods and Services Tax.

[For present purposes, please do not construe reference to any persons in the following discussion as implying any sort of criticism].

David Arthur comment:

Thanks for this article, Dr Pezzey.

Regarding climate, however, I have a fundamental problem with any concept of "threshold emissions", and that is that our climate problem requires complete (ie 100%) cessation of fossil fuel use. Actually, it's been that way since 1988, when atmospheric CO2 first moved past the safe upper threshold of 350 ppm (ref Hansen et al, "Target CO2: where should Humanity Aim?").

The second aspect of your work with which I have a problem is

that you seem to not discern between all CO2 emissions and CO2 emissions due to burning fossil fuels. This is important, pay attention: the reason Earth developed the climate in which human civilisation developed and to which civilisation (and the entire biosphere) is adapted is the geological burial ("geosequestration") of excess carbon over the preceding hundreds of millions of years.

Strictly speaking, a bit too much carbon had been geosequestered, which is why the earth was dipping into and out of ever-colder, more severe, Ice Ages. By digging up some geosequestered carbon, humanity put a stop to that, but since 1988, we've been taking it too far: we need to totally cease using fossil fuels, as rapidly as we can.

Logically, this means it is not possible to make a case for the "threshold" of fossil fuel use at which a tax cuts in to be any value other than ZERO.

Biofuels, for which CO2 is drawn down from the atmosphere by photosynthesis, then processed into fuels and returned to the atmosphere, are okay - in fact, they are a big part of the solution to fossil fuel use. Therefore, what ever carbon price we put on should not penalise biofuel use.

So here's my proposal: how about a "no regrets" policy such as one with which Nick Minchin reckoned he could live? A Pigovian consumption tax with revenue used to fund cuts in other taxes might be a start.

It so happens that Australian governments raise about $900 in taxes (incl GST), levies and charges for every tonne of CO2 emitted by burning fossil fuel. Therefore, one possibility would be to replace all these taxes (incl GST), levies and charges with a fossil fuel consumption tax (FFCT) of $900 per tonne emitted CO2. Strictly speaking, this would be a tax rate of $3300 per tonne carbon contained in a fossil fuel.

Would this change behaviour? Well, it would put the price of electricity through the roof, so everybody would be covering their roofs with solar panels.

Fuel excise at 38.14 c/L is equivalent to a fossil fuel consumption tax of ~$630/per tonne CO2 (~$2300 per tonne fossil carbon), so that fuel excise would be cancelled (negating the Diesel Fuel Excise Rebate

Scheme) with this FFCT. This would instantly drive creation of biofuel industries (based an algae, biologically digested wastes from wood, urban waste water sludge and solid organic urban wastes), all of which would not be subject to the FFCT because biofuels are not fossil fuels.

... and so on, and so forth. In time, the rate at which FFCT is imposed would have to be increased to make up lost revenue due to declining fossil fuel use, until total fossil fuel use decreases to the extent required to stop further climate change (as it happens, this is already 100% decrease in fossil fuel use, as explained by James Hansen in "Dreams of my Grandchildren"). Once fossil fuel consumption has decreased as required, "normal" taxation can be resumed.

Now, this sudden change of taxation regime might be a bit disruptive, so it would be better to phase it in over a decade or so. In the first year, a $90 per tonne CO2 ($330 per tonne fossil carbon) FFCT would be imposed in return for a 10% decrease in rates of all other taxes (incl GST), levies and charges. In the second year, FFCT goes to $180 per tonne CO2 with commensurate further decreases in all other taxes (incl GST), levies and charges.

... and so on, and so forth, until this mess is sorted out. No regrets.

Trevor S reply to David Arthur

As David states, Threshold Emissions ? Just about every "Climate Plan" to date insists there will be zero CO2e emissions at some future specified date :) Presumably the reason for this is to allow is to keep emitting now. That aside,

"To cut more emissions, a carbon tax needs to raise less revenue"

To cut emissions we need to ... stop emitting. It is as simple as that.

As Professor Kevin Anderson states, simply ploughing a field releases Methane.

David Arthur reply to Trevor S

"To cut more emissions, a carbon tax needs to raise less revenue".

I'd argue that to cut emissions, a carbon tax needs to be set at an ever-escalating rate until all emissions have ceased, with ongoing offsetting adjustments to all other taxes.

Trevor S reply to David Arthur

There are several problems with this strategy

1. You need massive land clearing to do biofuels, look to the US ethanol program for an indication of the vast tracts of land given over to corn mono culture. Are we to cut down the Amazon rainforest to plant corn/sugar cane ? Currently we cut it down to plant palm oil and soy beans etc Land clearings a huge GHG emitter. In Australia the Beattie Labour Government banned land clearing ostensibly because of environmental devastation. Taxes are even liked by many of the rich (CEO's etc), while their is an impost, there is no cap on growth.

2. No recognition of the damage done by other forms of industry emissions, eg concrete. All that industry you propose will emit carbon, smelting of bauxite uses vast amounts of energy, mining of iron ore and coking coal to produce steel and shipping it "bunker fuel" is incredibly polluting.

3. No recognition of the other impending massive problems of resource depletion. The World Bank states,the top 20 percent accounts for more than 76 percent of global consumption, whereas the bottom 40 percent of the world's population account for just 5 percent. Even the bottom 70 percent of the world's population accounts for barely 15.3 percent of global consumption expenditures.
http://data.worldbank.org/sites/default/files/wdi08.pdf

So what happens when we move them up because sure as hell they want to consume like we do, or do we just keep holding them down like we do now, so we can consume like crazy ?

If you're successful, you may buy a decade, even two with this strategy. In the interim you will have forseen unintended consequences eg species decimation and not actually achieve anythign substantive and emissions will still roll on on a large scale albeit not as big. Building ethanol plants won't help, the steel and concrete alone to build the thousands of plants necessary will be massive. Solar on the roof, from panels transported from China ! The payback from the CO2e used is

what, 4 years or so ? but that's still 4 years worth of emissions and in 20 they will need replacing and you want to do this all over the Planet ? The amount of mining to do this would be massive, the number of solar panel plants would be huge. Convert a billion cars to electric instead ? Where does all that Aluminium for the construction of the cars come from ? The lithium, the rare earth metals that are so toxic we won't refine then in Aus ? Where do the tonnes of steel for the wind turbines come from ?

We need to cut emissions by 80 -90% of 1990 levels by 2050 or there abouts, probably more by now, this won't achieve that goal, it can't. You can't do it with the current greed based system we work under where GDP is the yardstick of success.. Until low CO2e emissions are the new yardstick and people are rewarded for that and punished for emitting, as they would be now if they dumped acid in a creek, then you will not "solve" AGW.

I personally don't see how anything short of a total change in the way the world works as being able to ensure AGW is halted and I don't see that happening. That doesn't mean we haven't cut back considerably personally because we couldn't live with ourselves otherwise but I am pragmatic enough to realise most others don't want to reduce CO2e emissions or consumption substantively, because if they did... they would, they mostly hand wave and blame politicians, which is what we see on here and other fora. That doesn't even count those who continue to deny the Science, or those that do and are scared of the changes necessary so bluster about not doing anything.

David Arthur reply to Trevor S

"You need massive land clearing to do biofuels" err, no. Perhaps you're assuming "biofuel" is corn or sugar cane for ethanol? I agree, that is the moron way of getting something that might be classed as "biofuel". The following contains plenty of links to preferable biofuel technologies underdevelopment.

In Australia's case, < 10,000 sq km of algae ponds could provide enough oily feedstock to completely replace our entire petroleum demand. http://www.futuredirections.org.au/publications/associate-papers/1044-food-and-fuel-forever.html

Then there are all the biofuel possibilities from plant wastes.

Breakthrough for biofuel production from tiny marine algae
www.sciencedaily.com/releases/2013/11/131120192147.htm

Wood chips to biofuel in hours - Science Daily
www.sciencedaily.com/releases/2013/10/131023090804.htm

New possibilities for efficient biofuel production - Science Daily
www.sciencedaily.com/releases/2013/08/130815145034.htm

Enzyme from wood-eating gribble could help turn waste into biofuel
http://www.sciencedaily.com/releases/2013/06/130603164156.htm

Lignin-feasting microbe holds promise for biofuels - Science Daily
www.sciencedaily.com/releases/2013/11/131113143604.htm

Microbial team turns corn stalks and leaves into better biofuel
www.sciencedaily.com/releases/2013/08/130819162517.htm

David Arthur reply to Trevor S

"No recognition of the damage done by other forms of industry emissions, eg concrete. All that industry you propose will emit carbon, smelting of bauxite uses vast amounts of energy, mining of iron ore and coking coal to produce steel and shipping it "bunker fuel" is incredibly polluting."

Regarding cement, limestone may be classed as a non-combustible geological sink for carbon. For the sake of brevity I've not included it in any of my discussions, but lime calcination should be treated in exactly the same manner as combustion of any fossil fuel under an FFCT. As it happens, there are alternative cements that don't involve CO2 emissions in their manufacture.

Regarding industrial processes, it is perfectly feasible to combust no CO2 in the process of smelting bauxite; the French have been doing so for decades. What's more, similar processing is under development for iron ore smelting; Donald Sadoway's group at MIT is working on Molten Oxide Electrolysis, for which all you need is oodles of electricity.

I'd be happy to see nuclear reactors at Weipa and at Port Hedland to implement these processes, value-adding to Australia's mineral

exports to such extent that it would more than compensate for loss of Qld's coal industry.

David Arthur reply to Trevor S

"No recognition of the other impending massive problems of resource depletion."

To solve the climate problem, you devise the optimal strategy to address that problem. That's what I'm doing.

To try and solve every other problem at the same time, and try to have no child going without a Mr Whippy ice-cream every few weeks in the bargain, you invite the ALP in to come up with its usual dogs' breakfast of a package.

To try and solve every other problem once you've got (what I consider to be) the optimal solution to the climate problem underway, you develop appropriate policies as and when required. I expect that ceasing fossil fuel use may have many beneficial side-effects that impact upon severity of some of these other issues.

For example, engineering rhizobia into non-leguminous food crops will eliminate any need for chemical nitrogen fertiliser, greatly improving food supply, its nutritional value, eliminate a major user of fossil fuel (ammonia production), and massively clean up degraded waterways (cessation of nitrate pollution and ocean 'dead zones', so can get more seafood).

David Arthur reply to Trevor S

"So what happens when we move them up because sure as hell they want to consume like we do, or do we just keep holding them down like we do now, so we can consume like crazy ?"

Err, by then, technological advances developed in the course of decarbonising our economy will go a long way to decreasing per capita environmental demand. Note also that as living standards improve, reproduction rates decline.

"We need to cut emissions by 80 -90% of 1990 levels by 2050 or there abouts, probably more by now" As of 1988 (350 ppm CO_2) we needed

to decrease fossil fuel use by 100% as soon as technologically and economically feasible. Sadly, there's been a politico-religious delay.

Doug Hutcheson reply to David Arthur

David, "Logically, this means it is not possible to make a case for the "threshold" of fossil fuel use at which a tax cuts in to be any value other than ZERO." I agree, but the problem is getting such a scheme started. Political will comes from the will of the people, who are generally not terribly logical, so we need a scheme that is politically acceptable. Starting low and ratcheting up the caps over time has more chance of being accepted by the mythical "Average Bloke", than a fully blown attack from day 1.

David Arthur reply to Doug Hutcheson

Thanks Doug.

Have you noticed the expression "revenue-neutral" anywhere in my proposal? Allow me to explain what it might mean.

My estimate is that at present rates of consumption, roughly 10% of all government revenue in Australia can be replaced by a FFCT ~$330 per tonne carbon contained in fossil fuel (equivalent to $90 per tonne CO2).

With border adjustments on carbon embodied in imports and decreases in fossil fuel use subsidies, there may be an even larger plus to public coffers than that.

So what to do with all that revenue?

Let's say, of the non-government share of that consumption ~15% of fossil fuel consumption is down to individuals who pay Personal Income Tax, and 85% is down to companies that are subject to

Company Tax.

The obvious thing then is to apply 15% of the revenue from the FFCT to raising the tax-free margin for Personal Income Tax, and the other 85% goes to decreasing the rate of Company Tax.

My guess is, that'll win a few people over.

Where you suggest that "Starting low and ratcheting up the caps over time has more chance of being accepted by ...", one of my major points throughout my commens at 'The Conversation' is that the FFCT starts at a moderate price per tonne, and is then ratcheted up year by year.

My other major point is that "caps" should not be imposed at any point, that the entire exercise be guided purely by price (ref Martin Weitzman's 1974 seminal paper on optimal pollution reduction techniques, "Prices vs. Quantities" http://scholar.harvard.edu/files/weitzman/files/prices_vs_quantities.pdf).

How rich countries dodged the climate change blame game in Warsaw

The steps in Warsaw towards a new global climate change deal looked more like shuffling of feet. Graham Readfearn blog “Planet Oz”

[In the following exchange with one “Andrew Jones”, I discuss my proposal for an escalating consumption tax on fossil fuels (FFCT) in further detail; note that my ‘userID’ is ‘DavidFTA’.

For present purposes, please do not construe any reference to any particular politicians in the following discussion as intending any criticism.]

Comments

DavidFTA

25 November 2013 11:05am

Dear Mr Readfearn, TAbbott is correct to say that the carbon tax that ALP brought in is a job-DESTROYING carbon tax.

However, now that we're rid of KRudd (good intentions, stupid policy design) maybe we can have a job-CREATING carbon tax instead - like they've got in British Columbia.

Taxing production of CO2 emissions is not the best way to enable decrease in CO2 emissions, as explained by Oxford Energy Policy Professor Dieter Helm in an online opinion piece for Yale's Environment 360 site: "Forget Kyoto: Putting a Tax on Carbon Consumption" (http://e360.yale.edu/feature/forget_kyoto_putting_a_tax_on_carbon_consumption/2590/).

Then there's Dana Nuccitelli & John Abrahams "Can a carbon tax work without hurting the economy? Ask British Columbia", http://www.theguardian.com/environment/climate-consensus-97-per-cent/2013/jul/30/climate-change-british-columbia-carbon-tax, which sets out how you can have a job-CREATING carbon tax.

Perhaps British Columbia's consumption tax is the job-CREATING carbon tax that TAbbott doesn't want to know about, as explained in a Sustainable Prosperity report (http://www.sustainableprosperity.ca/article3685):

"BC households and businesses now pay the lowest income taxes in Canada, due to the tax shift, and use the least amount of fuel per capita

of any Canadian province.

"BC is also decoupling its economic growth from fuel consumption (and GHG emissions) faster than the rest of Canada.

"In other words, it is building a low carbon economy – which should position it well for future success if global markets continue to evolve in that direction.

"It will also help to shelter the BC economy from future petroleum price increases and volatility."

I wonder if we'll need to get rid of TAbbott before we get this tax in?

Andrew Jones reply to DavidFTA 25 November 2013 11:33am

Hmmm - higher energy costs and lower income taxes - seems like a formula to help the rich and hurt the poor. Canada is not a very equitable society compared to Australia so I am highly skeptical - Canadians do not have anything like Medicare for example - no health insurance and they leave you to die on the street.

DavidFTA reply to Andrew Jones 25 November 2013 12:10pm

"Hmmm - higher energy costs and lower income taxes ...". With all due respect, lower income taxes CAN assist low income earners, by raising the tax-free threshold.

Also use some of the money for benefit increases for aforementioned low-income earners - it's not hard. There'd even be money for cutting company taxes.

Another issue would be cancelling fossil fuel subsidies - since they all go to companies, that would allow for further across the board company tax cuts.

Andrew Jones reply to DavidFTA 25 November 2013 12:27pm

If this problem is to be solved it must be solved by technology and not money. Give people more money to spend - spend on what - fossil fuel produced energy?

DavidFTA reply to Andrew Jones 26 November 2013 1:33am

Thanks for that, Mr Jones. Your comment understand how a price signal works in terms of affecting consumer choice, company technology choice, or of how price signals might guide

technological innovation. That is, you d
innovation and transformation occur in a liberal (ie non-command)
economy. "If this problem is to
technology ..." Correct.

Increasing the price of fossil fuel use creates a quantitative guide for

1) people to seek alternatives to fossil fuel use;

2) service providers (companies etc) to gain a marketing edge by implementing non-fossil fuel technologies to meet a demand;

3) inventors and innovators to develop products and techniques.

"Give people more money to spend - spend on what - fossil fuel produced energy?" - Err, not fossil fue
priced (due to the escalating fossil fuel consumption tax - FFCT) alternatives to fossil fuel produced energy.

Andrew Jones reply to DavidFTA 26 November 2013 2:27am

And this is not going to have a negative impact on poor people?

DavidFTA reply to Andrew Jones 26 November 2013 3:15am

"And this is not going to have a negative impact on poor people? "
Correct, it won't have a negative impact.

Matter of fact, through the border adjustment provisions of all consumption taxes, CO2 emissions of imports of manufactured goods will for the first time be taxed. Domestic manufacturing will start improving instead, and there'll be less poor people because more people will have jobs, and increasing domestic economic activity will grow the taxable economy to better support welfare beneficiaries.

Talking of growing the economy, there's a relevant report on the business case for the Clean Energy Fund, soon to be scrapped by TAbbott: "Culling 'giant green hedge fund' will hit Abbott budget, body says"

Andrew Jones reply to DavidFTA 26 November 2013 4:36am

Fair enough - sounds too good to be true but I have not done the research.

DavidFTA reply to Andrew Jones 26 November 2013 5:21am

Ref 1) Dieter Helm, Economics, Oxford University "The Carbon Crunch: How We're Getting Climate Change Wrong--and How to Fix It"

Ref 2) Oxford Energy Policy Professor Dieter Helm

Ref 3) Thomas L Friedman NYT op-ed, 17 March 2013

Ref 4) Geoff Carmody's description of the trade consequences of climate policy, but because Carmody's an economist, doesn't understand that his consumption tax should be applied to fossil fuel consumption (FFCT) - note that FFCT can be easily established using GST framework]

Ref 5) "Cap and Fade", JAMES HANSEN, NY Times, 6 December 2009

Ref 6) Dana Nuccitelli & John Abrahams "Can a carbon tax work without hurting the economy? Ask British Columbia", which sets out how you can have a job-CREATING carbon tax.

Ref 7) Perhaps British Columbia's consumption tax is the job-CREATING carbon tax that TAbbott doesn't want to know about, as explained in Sustainable Prosperity's report.
