

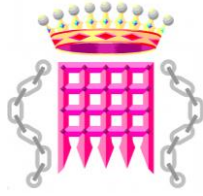
## Gillard's tax on 'carbon pollution': the facts

If the Australian Government's proposal to oblige 500 big "polluters" to engage in what the City of London calls "trading hot air" were to achieve its stated aim of cutting 5% of Australia's CO<sub>2</sub> emissions **by 2020**, and assuming HM Treasury's **3.5%** pure-rate-of-time-preference commercial discount rate for inter-temporal investment appraisals –

- By 2020, CO<sub>2</sub> in the air would be **411.987** parts per million by volume, compared with **412** ppmv if no action were taken.
- Global warming forestalled by 2020 would be **0.00007 C°**: i.e. **1/14,000 C°**.
- **0.00007 C°** is **1/700** of the threshold below which modern instruments and methods cannot detect a global temperature change at all.
- At this rate, total cost of the carbon tax/trade policy will be not less than **\$127 billion** between now and 2020, not counting gasoline and power price hikes.
- If all the world's measures to cut greenhouse-gas emissions were as cost-ineffective as the Australian Government's proposed policy, forestalling just 1 C° of global warming would cost the world **\$1.7 quadrillion**.
- Forestalling all of the **0.24 C°** global warming predicted by 2020 would demand **almost \$60,000** from every man, woman and child on the planet.
- That cost is equivalent to **almost 60%** of global GDP to 2020.
- That is **22 times** the maximum estimate of the welfare loss from doing nothing about the climate, which is just **2.7% of global 21<sup>st</sup>-century GDP**.
- It is **83 times** the minimum welfare-loss estimate of just **0.7% of GDP**.
- Garnaut's **1.35%** and **2.65%** inter-temporal discount rates are very low by usual economic standards, artificially making the cost of action seem less costly compared with the cost of inaction than it really is. However –
- Even at Garnaut's artificially low discount rates, the cost of the Gillard policy would be **7.6 to 15 times** the cost of doing nothing about climate change.
- At the **5%** discount rate recommended by President Dr. Vaclav Klaus of the Czech Republic for climate-related appraisals, the cost of doing what Gillard proposes would be **36 times** the maximum cost of doing nothing.
- For most Australian households, the **\$10.10/week** benefit from the Gillard scheme will exceed the **\$9.90/week** cost, providing no disincentive to emit.
- For 500 big "polluters" (CO<sub>2</sub> is not a pollutant, but plant-food to green the planet), compensation plus higher prices provide **no disincentive to emit**.
- Thus, all the above calculations **overstate** the scheme's cost-effectiveness.
- **Bottom line: It is many times more costly to try to prevent global warming by Gillard's methods than to adapt in a focused way to the predicted consequences of global warming.**

**Conclusion:** Mitigation policies cheap enough to be affordable will be ineffective: policies costly enough to be effective will be unaffordable. It is unlikely that any policy to forestall global warming by regulating, reducing replacing, taxing or trading greenhouse-gas emissions will prove cost-effective solely on grounds of the welfare benefit foreseeable from global-warming mitigation. No such benefit is discernible.

**High abatement costs**, and the **negligible returns** in warming forestalled, imply that **focused adaptation** to the consequences of such future warming as may occur will prove more cost-effective than any attempted mitigation. The **opportunity cost** of diverting trillions of dollars to mitigation is heavy. Therefore, the question arises whether mitigation should be attempted at all.



## Background information

The following pages of background information demonstrate how the above results were determined. For full references, caveats, and a thorough discussion, see –

Monckton of Brenchley, C.W., 2009, *Is CO<sub>2</sub> Mitigation Cost-Effective?*  
Lecture to the Prague School of Economics, May, 12 pp: obtainable from [vc@nd.edu.au](mailto:vc@nd.edu.au).

## Definitions

**Radiative flux** is a continuous flow of radiant energy at some surface, denominated in Watts per square metre ( $W m^{-2}$ ).

**Radiative forcing** is a change in the net radiative flux at the tropopause, the top of the climatically-active region of the atmosphere.

The **mitigation cost-effectiveness** of any policy intended to mitigate global warming by reducing CO<sub>2</sub> concentration in the air is the cost of forestalling 1 C° of CO<sub>2</sub>-induced global warming, on the *assumption* that all measures to mitigate that warming up to a target year are as cost-effective (or cost-ineffective) as that policy.

On the same *assumption*, the **global abatement cost** of a policy is the cost (expressed as a percentage of global GDP taken as increasing yearly at 3% real, and discounted at some inter-temporal discount rate) of forestalling all warming from CO<sub>2</sub> and other manmade climate influences up to the target year (in this case, 2020).

## Base data (with sources)

**3.4 C°**: cent.est. of 21<sup>st</sup>-century manmade warming: (IPCC, 2007, p.13, table SPM.3).

**8 W m<sup>-2</sup>**: cent.est. of 21<sup>st</sup>-century radiative forcing (IPCC, 2007, p. 803, fig. 10.26).

**5.35**: CO<sub>2</sub> radiative-forcing coefficient: (Myhre *et al.*, 1998; IPCC, 2001 & 2007: A2).

**280 ppmv**: Estd. CO<sub>2</sub> concentration in the air in 1750 (IPCC, 2001 & 2007: A2).

**390 ppmv**: Measured CO<sub>2</sub> concentration in 2010 (NOAA; ESRL).

**22 ppmv**: Projected CO<sub>2</sub> concentr. growth, 2011-2020 (IPCC. 2007, A2 scenario).

**836 ppmv**: Projected CO<sub>2</sub> concentration in 2100 (IPCC, 2007, A2 scenario).

**5%**: Proposed cut in Australian emissions by **2020**. (Gillard announcement, 2011).

**1.2%**: Australian CO<sub>2</sub> emissions as % world emissions (from Boden *et al.*, 2010ab).

**\$10.1 bn/yr**: carbon trading cost (23/26 x \$11.5 bn given in Garnaut, 2011).

**\$0.9 bn/yr**: renewable energy support (\$9.2 bn over 10 years: Gillard, 2011).

**\$1.6 bn/yr**: administration costs (Wong, 2010).

**\$0.3 bn/yr**: costs of coal & steel support averaged over 10 years (Gillard, 2011).

**\$60 trillion**: Global annual GDP (World Bank, 2011).

**51%**: CO<sub>2</sub> forcing as a proportion of all 21<sup>st</sup>-century manmade forcings (IPCC, 2007).

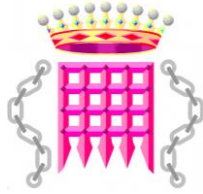
**0.1%**: Pure rate-of-time-preference inter-generational discount rate (Stern, 2006).

**1.35% & 2.65%**: Pure rate-of-time-preference discount rates (Garnaut, 2008).

**2.75% & 3.22%**: Pure rate-of-time-preference discount rates (HM Treasury).

**3.5%**: Standard pure rate-of-time-preference discount rate (HM Tsy Green Book).

**5.0%**: Pure rate-of-time-preference discount rate (President Dr. Vaclav Klaus).



## The true cost of putting a “price” on carbon dioxide

Using the base data and HM Treasury’s 3.5% discount rate, we determine –

First, the CO<sub>2</sub> concentration in 2020 if Garnaut’s proposal is fully implemented:

$$412 \text{ ppmv minus } 25\% \text{ of } 1.2\% \text{ of } 22 \text{ ppmv} = \mathbf{411.987 \text{ ppmv.}}$$

Secondly, the radiative forcing the policy forestalls over the 10-year period:

$$5.35 \times \text{the natural logarithm of } (412/411.987) = \mathbf{0.00017 \text{ W m}^{-2}}.$$

Thirdly, how much warming Professor Garnaut’s proposal will forestall by 2020:

$$3.4 / 8 \times 0.00017 = \mathbf{0.00007 \text{ C}^\circ}, \text{ or about } \mathbf{1/14,000 \text{ C}^\circ}.$$

Fourthly, the cost of the carbon-trading policy in year 1:

$$(\$10.1\text{bn} + \$1.6 \text{ bn} + \$0.9 \text{ bn} + 0.3 \text{ bn}) = \mathbf{\$13 \text{ bn.}}$$

Fifthly, the total cost of carbon-trading policy from 2011-2020:

$$\$13 \text{ bn increased by } 3\%/\text{year \& discounted at } 3.5\%/\text{yr: total } \mathbf{\$127 \text{ bn}/10\text{yr.}}$$

Sixthly, the amount of CO<sub>2</sub>-driven warming over 10 years if we do nothing:

$$3.4 / 8 \times 5.35 \times \text{the natural logarithm of } (412/390) = \mathbf{0.125 \text{ C}^\circ}.$$

Seventhly, the mitigation cost-effectiveness of Australia’s carbon trading policy:

$$\$127 \text{ bn} / 5\% \text{ of } 1.2\% \text{ of } 0.125 \text{ C}^\circ = \mathbf{\$1.7 \text{ quadrillion}/\text{C}^\circ \text{ forestalled.}}$$

Eighthly, total global GDP from 2011-2020:

$$\$60 \text{ trillion/year in } 2010, \text{ hiked by } 3\%/\text{year: total } \mathbf{\$708 \text{ trillion}/10\text{yr.}}$$

Ninthly, the global abatement cost of the policy:

$$(100 \times \$127 \text{ bn}) / 5\% \text{ of } 1.2\% \text{ of } 51\% \text{ of } \$708 \text{ trillion} = \mathbf{58.4\% \text{ of GDP.}}$$

Tenthly, the global abatement cost of the policy per capita of world population:

$$58.4\% \text{ of } \$708 \text{ trillion divided by } 7 \text{ bn world population} = \mathbf{\$59,000/\text{head.}}$$

Table 1 summarizes the effect of various inter-temporal discount rates. The action/inaction ratio compares the action cost with the upper-bound inaction cost.

TABLE 1	Stern	Garnaut #1	Garnaut #2	Treasury	Klaus
<b>ROTP discount rate</b>	<b>0.1%</b>	<b>1.35%</b>	<b>2.65%</b>	<b>3.5%</b>	<b>5.0%</b>
Policy cost	\$153 bn	\$142 bn	\$132 bn	\$127 bn	\$117 bn
Mitigation cost-effect.	\$2.1 qd/C	\$2.0 qd/C	\$1.8 qd/C	\$1.7 qd/C	\$1.6 qd/C
Abatement cost/head	\$71,500	\$66,500	\$62,000	\$59,000	\$55,000
Global abatemt. cost	\$499 tr	\$465 tr	\$433 tr	\$414 tr	\$383 tr
<b>Abatemt. as % GDP</b>	<b>70.4%</b>	<b>65.6%</b>	<b>61.1%</b>	<b>58.4%</b>	<b>54.0%</b>
<b>Global inaction cost</b>	<b>5-20%</b>	<b>2.2-8.6%</b>	<b>1.0-4.1%</b>	<b>0.7-2.7%</b>	<b>0.4-1.5%</b>
<b>Action / inaction</b>	<b>3.5x</b>	<b>7.6x</b>	<b>15x</b>	<b>22x</b>	<b>36x</b>

M of B: [monckton@mail.com](mailto:monckton@mail.com): 10 July 2011