

Time to focus on climate policy, not energy policy

The Paris accords, even if fulfilled, will not deliver us from the worst impacts of climate change. Most pledges relate commit to emission reductions by 2025 or 2030 and not thereafter. Broadly, the Intended Nationally Determined Contributions (INDCs) under Paris, if fully implemented, will maintain global emissions in 2030 at around their current level (57 Gtons CO₂-eq/year). After that, the respected US thinktank Climate Interactive¹, projects global emissions to increase to around 92 Gtons CO₂-eq/year by 2100. This would see atmospheric CO₂- eq concentrations of 725 ppm, and temperatures of 3.5 °C above preindustrial levels, way beyond the internationally agreed target of “well below 2 degrees Celsius” and the stretch target of “1.5 degrees Celsius”. In other words the Paris accords are an inadequate response to the challenges of human induced global warming.

Even more concerning, according to the Climate Action Tracker² (a joint initiative of Climate Analytics, Ecofys, the NewClimate Institute, and the Potsdam Institute for Climate Impact Research), only six countries have made pledges “compatible with the 2°C limit”. Unfortunately the efforts of these six countries (Costa Rica, Ethiopia, India, Philippines, Morocco, and The Gambia) will not save us. Another 12 countries are listed as having pledges that are “insufficient”, i.e. not consistent with limiting warming below 2°C. These countries include some of the larger G12 emitters including the European Union, Canada and Switzerland. All other countries are listed as having “highly or critically insufficient” pledges, i.e. if all governments put forward these positions warming would be likely to exceed 4°C. These countries include the Russia and the USA.

Australia is well and truly in the “insufficient” fold, with Climate Action Tracker finding:

There has been no improvement in Australia’s climate policy settings over the last year, and the 2017 CAT assessment confirms all previous assessments that its emissions are set to far exceed its Paris Agreement NDC target for 2030.

We rate the NDC target itself “insufficient,” with a level of ambition that—if followed by all other countries—would lead to global warming of over 2°C and up to 3°C. In addition, if all other countries were to follow Australia’s current policy settings, warming could reach over 3°C and up to 4°C.

While the Federal Government continues to maintain that “Australia’s effective climate change policies are working,” (Frydenberg, 2016) the Climate Action Tracker is not aware of any factual basis, published by any analyst or government agency, to support this.

Although we haven’t heard much about this recently, the Department of the Environment and Energy is presently conducting a review of Australia’s climate change policies. Rather than climate, the government’s focus is firmly on a ‘secure and reliable’ national electricity system. Cynics might think that the government is planning to develop a climate policy consistent with this energy objective, rather than the other way around, i.e. an energy policy consistent with our international obligation to keep temperatures “well below 2 degrees Celsius”. Of course it is possible to do both,

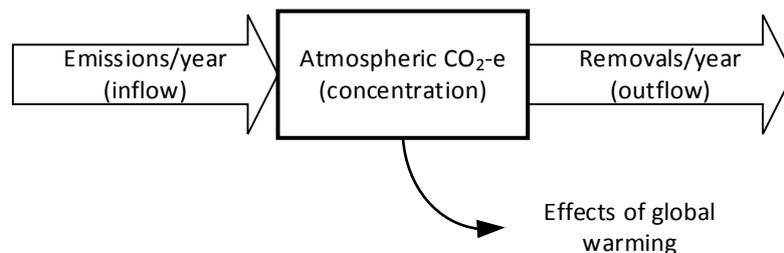
¹ <https://www.climateinteractive.org/>

² <http://climateactiontracker.org/countries.html>

as numerous commentators have said, including the Australian Energy Market Operator (AEMO)³. However, the government seems intent on confecting an energy crisis to undermine renewables and support coal, even trying to convince the public that baseload power generation (which operates constantly to provide a proportion of the every-day load) has something to do with dispatchable power (which tops up baseload as and when required to meet peak power needs). It is critically important that the focus returns to climate change, and the following analysis demonstrates why.

Climate Interactive’s C-ROADS software⁴ simulates climate policies and their impact on atmospheric CO₂, temperatures and sea level rise. Figure 1 sets out the annual emissions globally for two scenarios, the default (which is the IPCC’s RCP 8.5⁵, representing business as usual) and their projections for the Paris accords to 2030 and beyond.

Emissions are an ‘inflow’ (i.e. Gigatons per year) into the ‘stock’ of atmospheric CO₂-e. It is this stock (measured usually in parts per million (PPM)) that determines global temperatures, not annual emissions. The only way this stock can fall is if the ‘outflow’ of CO₂ is lower than the ‘inflow’ (think of a bathtub with water flowing in from the top and draining from below). The outflow, referred to as CO₂ removals, occur due to absorption of gases into the ocean and through photosynthesis.



Even under the Paris accords, additions continue to exceed removals (Figure 2) throughout the century, and accordingly atmospheric CO₂ continues to rise (Figure 3), and therefore so do temperatures (Figure 4). The reason this is important is that many people think atmospheric CO₂-e will drop when emissions start to reduce, and therefore it makes little difference whether we reduce emissions now or later. This conceptual error arises because they do not understand these basic stock and flow structures.

.... research has shown time and again that humans do not sufficiently understand the difference between stocks and flows, cannot deduce a system’s behaviour resulting from the existence of stocks and flows, or are unable to control a stock-flow system— a phenomenon summarized under the term “stock-flow failure” (Strohhecker and Größler, 2015).

Using C-ROADS I have constructed a policy that would meet the UNFCC objective of maintaining global temperatures at 1.5 °C above preindustrial levels. To achieve this requires global emissions to reduce from 2020, which would see removals exceed additions during the 2030s (Figure 5), thus

³ <http://reneweconomy.com.au/blackouts-baseload-debunking-myths-aemo-reports-liddell-16700/>

⁴ <https://www.climateinteractive.org/tools/c-roads/>

⁵ The Representative Concentration Pathway (RCP) 8.5 combines assumptions about high population and relatively slow income growth with modest rates of technological change and energy intensity improvements, leading in the long term to high energy demand and GHG emissions in absence of climate change policies.

ensuring atmospheric CO₂ reduces from that date (Figure 6), limiting temperature rise to 1.5 °C (Figure 7).

Now if we assume an emission trajectory reflecting Paris and then reductions do not occur until thereafter (i.e. after 2030), it will take until 2070 for removals to exceed additions (Figure 8) and for atmospheric CO₂ to begin to fall (Figure 9), resulting in a likely temperature rise of 2 °C (Figure 10), thus failing to achieve the Paris objective. In other words a delay of 10 years in reducing emissions leads to a delay in reducing atmospheric CO₂ of nearly 40 years, and a complete failure to keep temperatures near 1.5 °C.

Reducing emissions is urgent – the longer we take to do this the harder it gets to contain the worst impacts of global warming. The Climate Change Authority’s 2015 Targets Report says Australia must aim for zero emissions before 2050, which is borne out by Figure 5. Coal generation is only viable as constantly running baseload, which simply can’t be part of the generation mix by 2050, i.e. within the life of a new power station. This point must be made strongly and routinely to all politicians, including the Prime Minister, the Deputy Prime Minister and the Minister for Energy & Environment. As one of the highest emitters per capita of CO₂, and in the top fifteen in terms of aggregate emissions⁶, Australia must act, and act now. If we fail to do so, we should logically assume that every other country will fail to act too, and prepare the country for a 4°C+ future, one without coral reefs, with more heatwaves, stronger cyclones and storms, and more frequent and intense bushfires. Serious impacts are being seen now (e.g. Hurricane Irma) with warming of only around 1°C.

The government must be brought to account on the reality of climate change and the urgency of climate policy. If there are climate deniers / doubters in the cabinet room, make them speak up, so their opinions can be challenged by the science, not hidden under the fig leaf of “secure and reliable” energy policy.

Bill Grace

18th Sept 2017

⁶ <http://www.wri.org/blog/2017/04/interactive-chart-explains-worlds-top-10-emitters-and-how-theyve-changed>

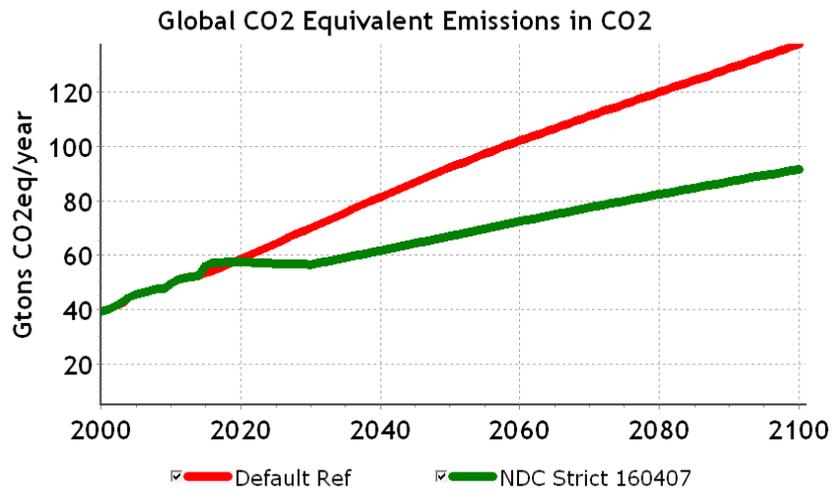


Figure 1 CO₂ emissions (RCP 8.5 and INDCs)

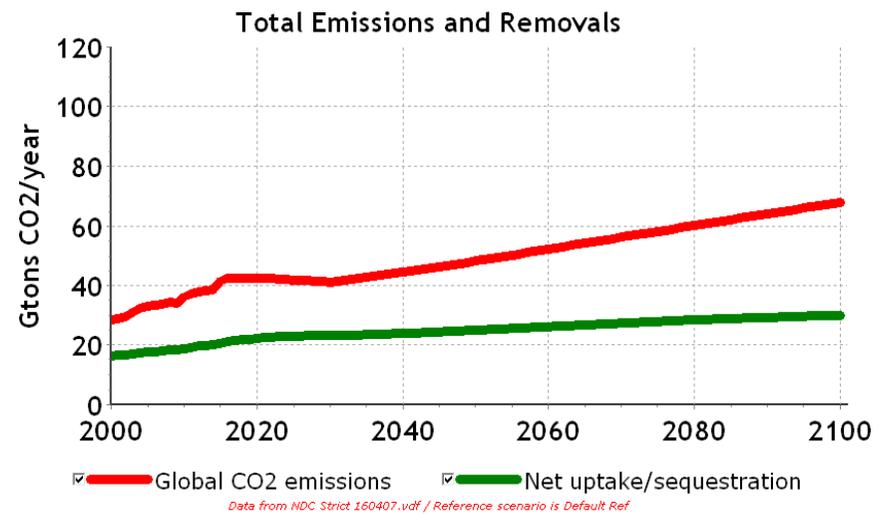


Figure 2 Emissions and removals (INDCs)

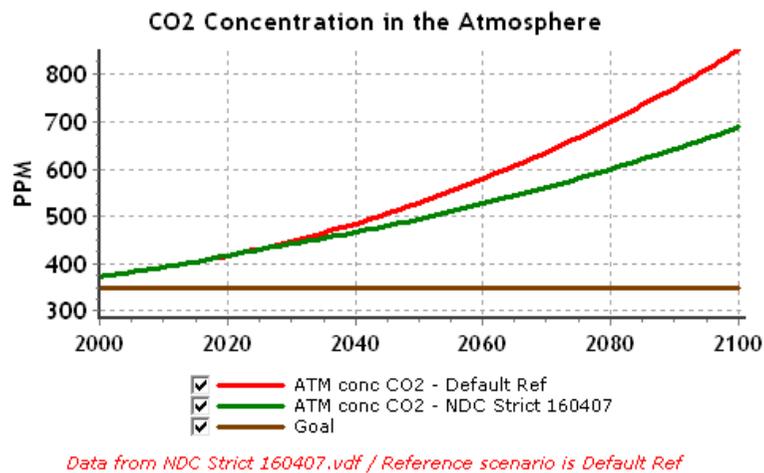


Figure 3 Atmospheric CO₂ (RCP 8.5 and INDCs)

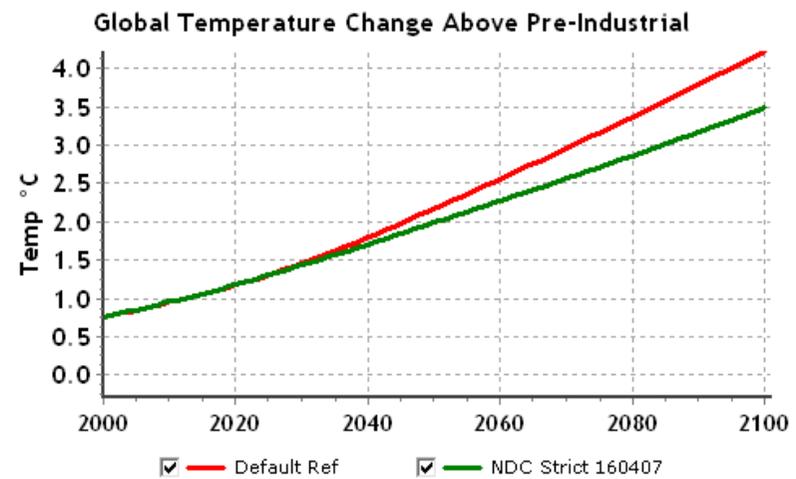


Figure 4 Global temperatures (RCP 8.5 and INDCs)

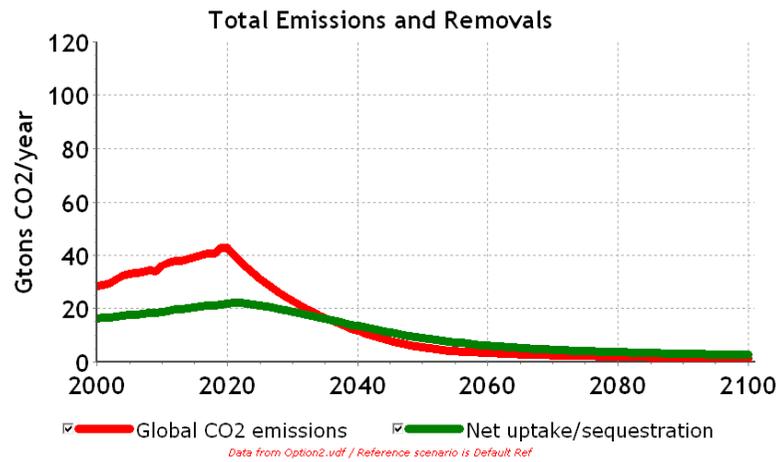


Figure 5 Emissions and removals (2020 reductions policy)

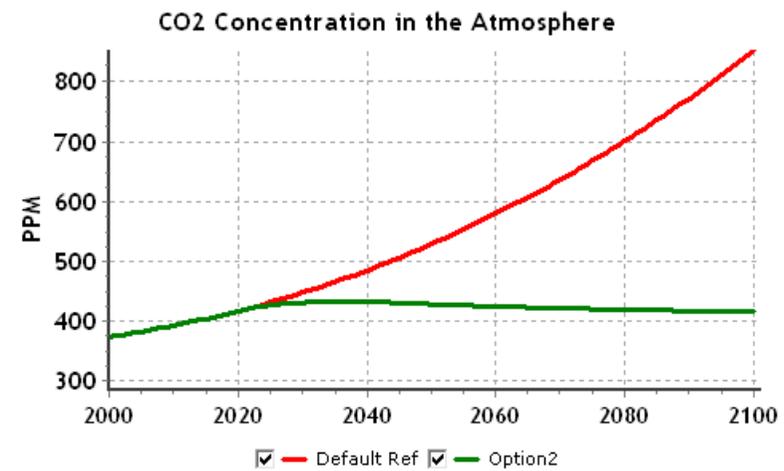


Figure 6 Atmospheric CO₂ levels (RCP8.5 and 2020 reductions policy)

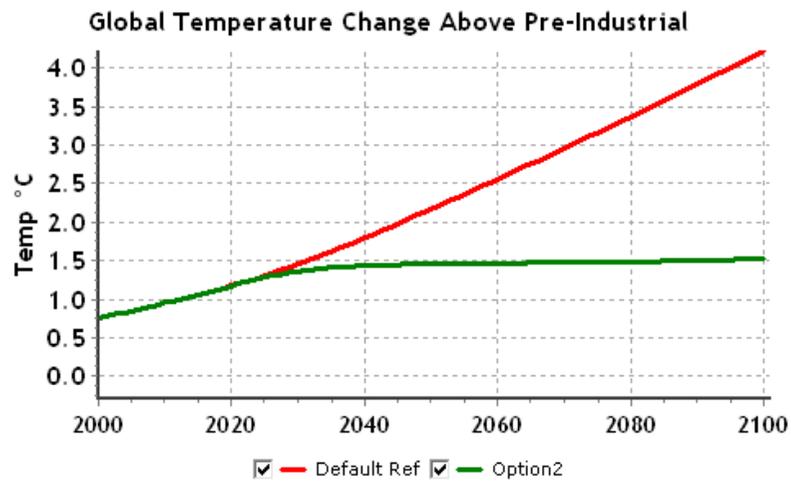


Figure 7 Global temperatures (RCP8.5 and 2020 reductions policy)

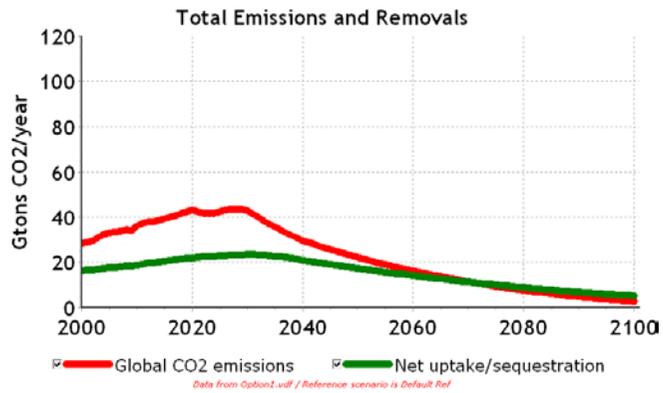


Figure 8 Figure 5 Emissions and removals (2030 reductions policy)

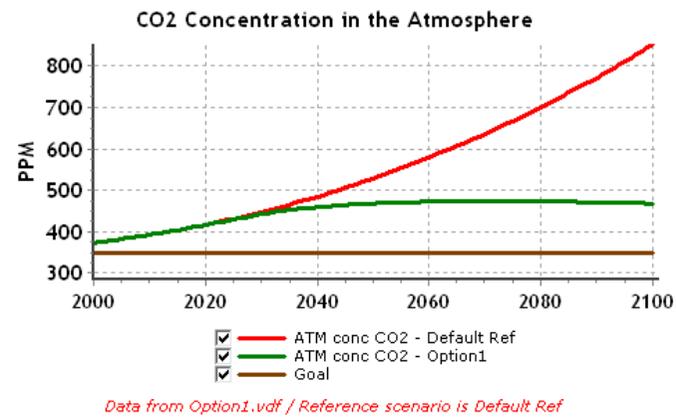


Figure 9 Atmospheric CO₂ levels (RCP8.5 and 2030 reductions policy)

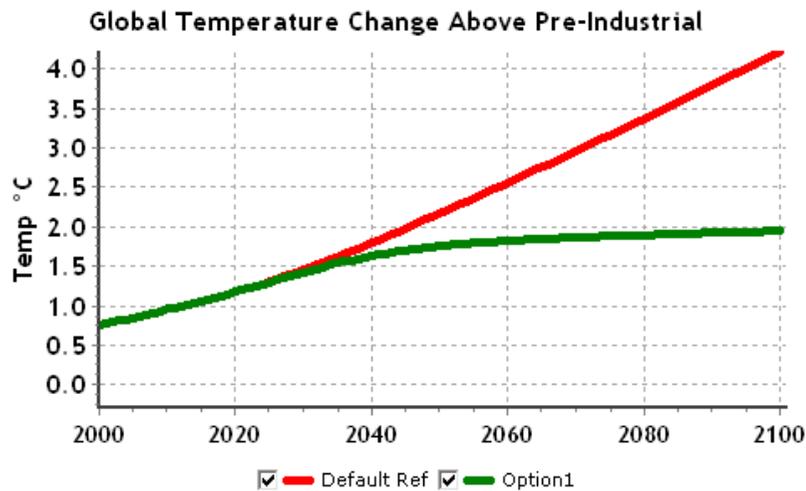


Figure 10 Global temperatures (RCP8.5 and 2030 reductions policy)