

# Not just polar bears

CLIMATE CHANGE AS A SOCIAL JUSTICE ISSUE

**Lesley Hughes**

Annual Evatt Dinner 2015



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Visit the Climate Council website: [climatecouncil.org.au](http://climatecouncil.org.au).

You can take Professor Hughes' free short online course on climate change through Open Universities Australia. The course runs over 4 weeks (repeating) and takes about an hour a week (each lecture is only 6 minutes). If you enrol in the last week, you can do the full course at once: [open2study.com/courses/climate-change](http://open2study.com/courses/climate-change)

*The Blue Mountains World Heritage Institute is a not-for-profit organisation that aims to meet the need for knowledge on the conservation and management of the Greater Blue Mountains World Heritage Area.*



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I feel very honoured to have been invited to speak at this event. I hope that Doc Evatt, as a person who fought against injustice and oppression of the poor and vulnerable, would have approved of the topic.

The year 2006 was a big year for climate change awareness. Two major things happened that catapulted concern into the national and international spotlight. One was the launch of Al Gore's documentary *An Inconvenient Truth*, bringing climate change to the movie-going masses. The other, drier in tone, was the publication of the Stern report, commissioned by the UK government to assess the economics of the issue.<sup>1</sup> It's 700 pages long, and I confess I haven't read the whole thing, but for me, the single most important quote is this:

*'Climate change is a result of the greatest market failure the world has seen. The evidence on the seriousness of the risks from inaction or delayed action is now overwhelming. We risk damages on a scale larger than the two world wars of the last century. The problem is global and the response must be a collaboration on a global scale.'*

The reason Stern described climate change as a market failure is the observation that those that have contributed the least to the problem will be those that pay the most. To be more precise, the developed industrialised nations contribute about 75 per cent of greenhouse gas emissions but will suffer the impacts far less than developing countries. This is the theme I want to explore (though I will stray beyond it from time to time).

But let me step back a bit from 2006, to put the whole theme into context. Let me go back, briefly, to 1824, when a brilliant man by the name of Jean Baptiste Fourier realized that the world, being a rock of a certain size 150 million kilometres from the sun, should actually be a lot colder than it was. The fact that it wasn't 33°C cooler than it should be by the laws of physics meant that it must be somehow insulated. He didn't coin the term 'greenhouse effect', but that was what he was actually talking about. About 70 years later, another brilliant man, Svante Arrhenius, actually calculated that if the then

concentration of atmospheric CO<sub>2</sub> were to double, the world would become 5-6°C warmer. He was pretty spot on! Incidentally, he actually thought this would be a good thing — staving off the next ice age.

One would have to say that the science of how human activity could affect the earth's climate has been around for a very long time. It's a pity that a large proportion of humanity appears to be rather slow learners.

Fast forward to 1988, when James Hansen, a NASA scientist, testified to the US Congress that the actions of humans in redistributing carbon from the earth's crust into the atmosphere was not only already changing the climate, but was creating great risks.

Now, here we are in 2015. Last year we reached a global milestone: the concentration of CO<sub>2</sub> in the atmosphere passed 400ppm, a figure higher than at any time in the past 800,000 years, possibly higher than at any time in the past two million years.<sup>2</sup> As a direct result, the earth has warmed about 1°C since pre-industrial times.<sup>3</sup>

*'Climate change is a result of the greatest market failure the world has seen.'*

Now, let's look forward. We're heading almost inexorably toward 2°C above pre-industrial levels by about

the middle of this century, regardless of the great efforts that will be made at the Paris climate summit to prevent this happening (more on that later). Indeed, if we keep emitting greenhouse gases at the current rate, the world is very likely to be at least 4°C warmer than it was in pre-industrial times by some time this century, a warmer world than for many millions of years, much warmer than at any time in human history.<sup>4</sup> We're heading for entirely unknown territory.

What does a one, two or four degree warmer world really mean? One of the great difficulties that we have as climate change communicators is that one, two or four degrees doesn't really sound like much. In any one day we all experience temperature differences considerably more than that. But if you consider that the temperature difference between being in an ice age and not being in an ice age is about 5°C, you can start to appreciate the magnitude of the issue. Moving into and out of an ice age in the

past has occurred over hundreds of thousands of years, not over decades, as is now occurring.

The other issue is that just talking about changes in average temperatures actually hides a lot of the problem. A rising average, even by a small amount, disproportionately affects the extremes of weather conditions. Indeed, we're already seeing, around the world, increasingly strong evidence that those extremes are increasing and having significant impacts on all systems. We are seeing longer and hotter heatwaves, extensions of bushfire seasons, longer hotter and drier drought, increases in the intensity of cyclones, increased coastal flooding, and more intense rainfall events.<sup>5</sup> A colleague often describes this as a climate on steroids.

What might we expect in the future? Let me start with sea levels. Sea levels are rising at about 3mm per year, up from about 2mm per year last century as a global average. This is highly variable depending on where you are. In some parts of western and northern Australia, sea levels are rising at several times the average. By the end of the century, the IPCC estimates that sea levels could be about a metre more than in the 1980s.

By 2050, the costs of the projected sea level rise — without adaptation measures — could reach US\$1 trillion per year, about the current size of the entire Australian economy. This is due not only simply to inundation of low-lying areas, but also the exacerbation of impacts from storm surges. By 2100, the losses from coastal flooding are projected to be 0.3–9.3 per cent of global GDP per year. The high-end projection is a scenario for global economic collapse. In Australia, more than \$200 billion worth of infrastructure has been estimated as at risk from a rise of about 1m.<sup>6</sup>

The human cost is potentially enormous. By 2030, about 880 million people will live in low coastal zones vulnerable to storm surges and sea-level rises, with 70 per cent of these living in Asia. Of the 20 most vulnerable countries, the top seven are in Asia, and twelve overall.<sup>7</sup> Other calculations suggest that these figures are underestimates due to poor data. The figure for the people at risk by the end of the century

could be many billions.

Our Pacific neighbours are especially at risk. Tuvalu and Kiribati both have an average height of only about 2m above sea level. The government of Kiribati, anticipating that the entire nation is under threat, has purchased land in Fiji, and is negotiating with the New Zealand government to accept people as their situation becomes increasingly untenable. The Maldives is in even more trouble — they are only 1.5m above sea level.

Estimates of the potential number of people that could be displaced by the rising sea level and coastal flooding in coming decades vary wildly, from tens of millions to hundreds of millions. But even the low end of the estimates, tens of millions, makes the current humanitarian crisis affecting the Syrian people appear relatively modest.

The term 'environmental refugee' is frequently used. I think it likely that the first environmental refugees that Australia has to deal with will be its own citizens.

*'The high-end projection is a scenario for global economic collapse.'*

At some locations in the Torres Strait, sea levels are rising at about twice the global average. Several of the inhabited islands are now

regularly inundated during high tides. Saibai and Boigu islands in particular are suffering increasing damage to infrastructure, freshwater supplies and agricultural production, and have been subject to serious outbreaks of malaria in recent years.<sup>8</sup>

Malaria segues to health and, in particular, the impacts of extreme heat. You may be surprised to know that heatwaves kill more people in Australia than any other extreme weather event. The reason, I think, that this statistic comes as a surprise is that, unlike events such as bushfires, floods and storms, heatwaves don't leave the violent physical scars on the landscape. But consider this. We all remember the Black Saturday bushfires in February 2009 in Victoria, when 173 people lost their lives and we saw whole communities devastated. What's less well known is that, in the week before the fires, about double that number are estimated to have died as a result of the heatwave that swept across the south-eastern states.<sup>9</sup>

These numbers pale into relative insignificance when we consider the impacts of some recent heatwaves in other parts of the world. If you were in Europe in July and August 2003 you will remember being uncomfortably hot. Indeed, it was the hottest period for well over 1000 years, with some areas experiencing sustained temperatures more than 12°C above average. Would anyone like to hazard a guess as to the death toll? It was an estimated 70,000.<sup>10</sup> Things were so bad in France that cold storage warehouses on the outskirts of Paris were commandeered to take the overflow of bodies from the city's morgues. The deaths occurred disproportionately amongst the very young and the elderly, especially older, poorer people living alone, with no recourse to air conditioning or other support, something to consider when we think of our ageing population.

Let me move on to some other extreme events. In 2013 in the Philippines, Typhoon Haiyan, one of the most intense cyclones ever recorded, left an estimated 10,000 dead and hundreds of thousands homeless.<sup>11</sup>

Current-day climate models suggest that, in the future, while the frequency of tropical cyclones is unlikely to change, the intensity is. That is, the cyclones that do occur will more likely be the category 4 and 5 events that cause so much damage. A reminder about unfairness: the annual carbon emission of the average Filipino is 0.9 tonnes of carbon. The figure for the average person in the US or Australia is about 20 times this.<sup>12</sup>

Another type of extreme event is floods. About 21 million people, mostly in developing countries, live under constant threat of floods.<sup>13</sup> Climate models predict an increase of about 20 per cent in the risk of flooding in Bangladesh by mid-century.

It's not just excess water that's an issue. Of even greater importance is the lack of it. About 200 million people rely on glacier melt for their water.<sup>14</sup> Despite what some climate denialists might think, most of us do realise that ice does melt when it gets warmer.

Most of the glaciers around the world are receding rapidly. In the Andes, glaciers have lost between 30 and 50 per cent of their ice since the 1970s.<sup>15</sup> The starkest example comes from Bolivia. The Chacaltaya glacier, at 5300m, had ice at its peak over 18,000 years old. Scientists predicted it'd disappear by 2015 but they were wrong: it only lasted until 2009.<sup>16</sup> Disappearance of the rest of the region's glaciers, estimated to occur within the next 20 years, threatens the water and power supply of 80 million.<sup>17</sup>

Even in parts of the world that don't have glaciers, water is a huge issue, now and for the future. Climate models indicate that the regions of the world that have traditionally experienced regular droughts will get even drier. During the 1984 drought in Burkina Faso, the income of the poorest third of rural households dropped by 50 per cent in some areas. During the 1991-92 drought in Africa, agricultural growth and total output slowed in Malawi, South

Africa, Zambia and Zimbabwe. In Zimbabwe, GDP declined by 9.5 per cent in 1992.

Closer to home, as I speak, 80 per cent of Queensland has been drought declared, and

this was before the arrival of the latest El Niño event (called by some at the Bureau of Meteorology, a 'godzilla' event).<sup>18</sup> El Niños generally bring hotter and drier conditions to eastern Australia, so it would appear that the current desperate drought conditions have no immediate end in sight.

Increased extreme heat, declining average rainfall over southern Australia, and more intense and longer droughts pose great risks for our rural production. Droughts in the past have reduced the value of our agricultural production by up to 30 per cent in a single year. Australia has often been touted by our politicians and others as the food bowl of Asia. This view is wildly optimistic. We currently produce enough food to feed about 60 million people, less than 1 per cent of the world, and less than a quarter of our nearest neighbour, Indonesia. With our own productivity potentially severely threatened by ongoing drying in regions such as the Murray Darling

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*'From 2006 to 2011, Syria experienced "the worst long-term drought and most severe set of crop failures since agricultural civilizations began in the Fertile Crescent many millennia ago".'*

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Basin, our future as a net exporter of commodities such as wheat looks increasingly in doubt.<sup>19</sup>

While on the subject of food, an estimated 850 million people experience chronic hunger, with a further 2 billion estimated to suffer from some sort of nutritional deficiency. By the middle of this century, the world's population is likely to be over 9 billion people and the global demand for food to have risen by 70-100 per cent of current levels.<sup>20</sup> The rate of growth in global yields of the world's most important crops, such as wheat, corn and rice, has been slowing, and will continue to decline as temperatures increase — yields of these crops significantly reduce at temperatures over 30°C.

Food shortages and increased food prices not only hit the poorest peoples and countries the hardest, they undermine global security. Barack Obama and many other leaders have described climate change as the greatest ever threat to national security. The tragedy that has been playing out in the Middle East for the past few years has a complex web of causes, but there is, to my mind, a convincing reason to believe that the climate has played a significant role.

Here's why. In the winter of 2010 and 2011, China, the world's largest wheat producer, was struck by a 'once-in-a-century' drought. At the same time, wheat production in Russia, Ukraine, and Canada also fell dramatically due to drought and wildfires. With global wheat supplies constricted, the Egyptian government failed to balance subsidies and market prices with public needs. At the time of the uprisings in early 2011, food prices had risen by 20 per cent, and 40 million Egyptians, about half the population, were receiving food rations.

In Syria, drought, crop failure and internal displacement helped mobilise the opposition movement to the brutal regime of Bashar al-Assad. From 2006 to 2011, Syria experienced 'the worst long-term drought and most severe set of crop failures since agricultural civilizations began in the Fertile Crescent many millennia ago'. Nearly 75 per cent of farmers in north-eastern Syria experienced total crop failure. Herders lost 85 per cent of their livestock. More than 800,000 Syrians 'lost their entire

livelihoods' due to the droughts.<sup>21</sup> The reduction of farm and herding land resulted in a rural-to-urban migration movement that put 'significant strains' on Syria's economically depressed cities. Displaced farmers also have to compete for jobs, housing and resources with over 260,000 Iraqi refugees residing in Syria — and now the more than 2.5 million Syrians displaced by the civil war.<sup>22</sup>

Finally, some stats on so-called natural disasters, events that are increasingly becoming not so natural. From 1990 to 1998, 97 per cent of all deaths related to natural disasters were in developing countries. More than 90 per cent of these were from droughts, floods and windstorms. In 1999, the US reported two to three times as many disasters as Bangladesh; yet in Bangladesh, disasters caused 34 times more deaths. The average cost of natural disasters as a ratio of GDP is 20 per cent higher in low-income countries than in the rich countries.<sup>23</sup>

My apologies for being so gloomy, especially as you've all come here for a good night out and paid quite a lot for dinner! There's no point sugar-coating the thing, but let me try and be a bit more

upbeat. It's not all gloom and doom. Many of us are hoping that 2015 will be a watershed on real climate change action. We're heading for the Paris Climate Summit with some degree of optimism about the level of ambition, at least by some countries, to bring about meaningful change. Many appear to have learnt some of the hard lessons from the Copenhagen meeting that ended in so much disappointment.

There are 195 countries, Australia included, that are parties to the United Nations Framework Convention on Climate Change. Each country is providing what is known as an INDC — Intended Nationally Determined Contributions — basically, their pledges on how much they intend to reduce their emissions. Many will be aware that Australia's pledge is to reduce our emissions by 26-28 per cent by 2030, compared to 2005. The government has made much of this, describing it as 'ambitious'. By 2030, China aims to lower carbon dioxide emissions per unit of GDP by 60-65 per cent from the 2005 level, and the

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*'Should Australia be aiming higher? Of course!'*

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world's largest emitter aims to peak its greenhouse gas emissions by 2030, possibly earlier. If all the pledges made thus far are actually kept, the world is still heading for about 2.7°C by the end of the century – a considerable improvement on 4°C but nonetheless seriously risky.<sup>24</sup>

Should Australia be aiming higher? Of course! Australia is one of the largest emitters per capita and the 13th largest greenhouse gas emitter, in absolute terms, in the world, ahead of 182 other countries.<sup>25</sup> Further, the emissions from Australia's coal resources alone, if developed, would consume two-thirds of the world's remaining carbon budget – that is, the amount of carbon the world can afford to emit to have about a two-in-three chance of staying below the 2°C above pre-industrial level.<sup>26</sup> The government's own advisory body, the Climate Change Authority, advises that, to do our fair share, Australia's targets should be 40-60 per cent below 2000 levels by 2030, a considerable difference from what's actually being promised.

But even the current pledge will be a considerable challenge. A recent report from PWC shows that Australia will need to nearly double its historic rate of decarbonisation to 4.4 per cent annually if it's to meet its goal of a 26 per cent decrease in emissions on 2005 levels by 2030.

We all hoped, I'm sure, that the recent change in identity of the prime minister would be more than just Tony Abbott in a better suit, but the initial signs aren't promising. Just a few days ago, Greg Hunt approved the Adani coal mine in the Galilee basin in Queensland, citing the economic benefits and jobs that will flow. If all of the Galilee Basin's coal was burned, about 705 million tonnes of carbon dioxide would be released each year.<sup>27</sup> That's more than 1.3 times Australia's entire national emissions every year. It remains to be seen whether the mine will ever start. Adani needs about \$16 billion just to build a rail line from the mine to the port at Abbott Point

— 14 banks have now stated that they won't provide capital. The mine, if it ever becomes operational, won't provide cheap power to India's poor, regardless of what Mr Hunt says. India's state utilities are already subsidising electricity for the poor by charging rates that are below cost and using very cheap Indian coal. Indeed, the world of coal is changing very fast, something that those calling for climate change action can take heart from. China's coal use dropped by 3 per cent in 2014 and is projected to fall a further 2.5 per cent in 2015.<sup>28</sup>

This is just as well. To come back to the carbon budget concept, it's now fairly well accepted that, to have a reasonable chance of staying below the 2°C cap, about 90 per cent of the world's fossil fuel reserves must stay in the ground, unburned.<sup>29</sup> Will renewables be able to fill this gap? Global investment in new renewable capacity is now greater than investment in fossil fuels, and the gap is expected to

widen as investment surges ahead.

Investment in renewables increased a massive 17 per cent, to \$270 billion, over the past year, largely in wind and solar, reversing the dip of the previous two

years.<sup>30</sup> This was not the case in Australia, where policy uncertainty, at least until recently, meant a 90 per cent drop in investment in the past year compared to the previous 12 months.<sup>31</sup> There are signs that this might now turn around. I applaud the Labor Party for its pledge of 50 per cent renewables by 2030, a not inconsiderable task given that the percentage currently stands at around 14 per cent. But if there's one thing we need now it is ambition, combined with commitment and hope.

In summary, climate change brings with it the prospect of stalling or even erasing many years of progress in the developing world. It could force many millions of people further into poverty, destabilising the world's economy and threatening global security. Australia has the opportunity to be a world leader, not a laggard. In the spirit of Doc Evatt, let's all work hard to make it so.

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