

# Climate change – what does the science demand?

## THE CLIMATE IS CHANGING

- Since the beginning of the 20<sup>th</sup> Century, the global average temperature has risen by 0.74°C. This average increase masks some large changes in regional temperatures, for example temperatures in the Arctic are increasing at twice the global rate. 11 of the past 12 years rank within the 12 hottest years on record.<sup>1</sup>
- A further 0.6° temperature increase is already committed, making an average global warming of about 1.4° above pre-industrial unavoidable<sup>2</sup>.
- This rise in temperature, and the consequent changes in weather and sea-levels, have already had severe impacts on humans and other species. For example:
  - × Droughts, cyclones, and other extreme weather events are increasing in frequency and/or intensity, causing massive loss of life and livelihoods around the world.<sup>3 4</sup>
  - × Residents of low-lying island nations are increasingly inundated by rising sea levels and stronger storm surges. In late 2006 it was reported that for the first time, an inhabited island – India's Lohachara – had disappeared beneath the sea. The island was previously home to 10,000 people.<sup>5 6</sup>
  - × The European heatwave of 2003, which resulted in 26,000 premature deaths and US\$13.5 billion in direct costs, has been attributed to anthropogenic climate change.<sup>7 8</sup>
  - × Plankton distribution has shifted in the North Sea, with massive knock-on effects for the rest of marine ecosystem, including breeding failure for seabirds, and starvation of porpoises.

## AVOIDING CATASTROPHE: WE MUST ACT NOW

- Since major impacts of climate change are already being felt, efforts must focus on avoiding dangerous, or catastrophic climate change. **A broad consensus has emerged that 2° warming must be avoided<sup>9</sup>.** Predicted impacts of a 2° warming are<sup>10</sup>:
  - × Decline of agriculture in the developed world.
  - × Up to 2.8 billion people without enough water.
  - × 25 million people displaced by rising sea levels and cyclones.
  - × Millions more people exposed to malaria.
  - × 50% chance of complete collapse of the Atlantic thermohaline current, sending Europe into an ice age.
  - × 97% of the world's coral reefs dead.
  - × Many species driven to extinction, and many others suffering major contractions. 50% of Australia's World Heritage -listed Kakadu Wetlands are lost forever.
- **A temperature increase of 2 – 3° has an unacceptable risk of pushing the climate over a “tipping**

1 Intergovernmental Panel on Climate Change, *Climate Change 2007: The Physical Science Basis, Summary for Policymakers*

2 David Spratt (2007), *Avoiding Catastrophe*, Friends of the Earth Australia and the Carbon Equity Project. Calculated using figures from Hanson (2005), *A slippery slope*, *Climatic Change* **68**: 269-279

3 Intergovernmental Panel on Climate Change, *ibid*

4 *Avoiding Dangerous Climate Change* (various chapters), Cambridge University Press (2006).

5 “Keeping their heads above water”, *Sydney Morning Herald* 31.03.07, by Nick Galvin

6 “Disappearing world: Global warming claims tropical island”, *The Independent* 24.12.06, <http://news.independent.co.uk/environment/article2099971.ece>

7 Rt Hon Margaret Beckett (2006), Ministerial address prefacing *Avoiding Dangerous Climate Change*, Cambridge University Press.

8 Stott, P.A., Stone, D.A. and Allen, M.R. (2004). Human contribution to the European heatwave of 2003. *Nature* **432**, 610–14.

9 This is the stated target of the European Union for example, and it has been acknowledged by the NSW Government.

10 Rachel Warren (2006), *Impacts of Global Climate Change at Different Annual Mean Global Temperature Increases*, *Avoiding Dangerous Climate Change* Chapter 11, Cambridge University Press.

point”, where the forests and oceans turn from carbon sinks into carbon sources. This would trigger a runaway greenhouse effect that could all but extinguish life on earth<sup>11</sup>.

## WHAT NEEDS TO HAPPEN?

- The highest concentration of greenhouse gases in the atmosphere that can be considered “likely” to avoid a 2° warming is 400 parts per million by volume (ppmv) of equivalent carbon dioxide (CO<sub>2</sub>-e)<sup>12</sup>. Levels are currently at 425 ppmv, but we can bring this figure back down to a safe level if we reduce emissions deep and fast enough to allow the oceans and forests to absorb more carbon than we emit.
- In order to avoid a global warming of 2°, **global greenhouse emissions need to be reduced by something in the order of 90% by 2050**<sup>13</sup>.
- Since Australia's per capita greenhouse emissions are among the highest in the world, and since everyone on earth is entitled to an equal per capita share of emissions, Australia's emissions must be reduced much faster than the global requirement. **Australia's greenhouse emissions need to be reduced by 95% by 2030.**<sup>14 15</sup>
- Since it is the cumulative emissions of greenhouse gases that are important (rather than the long-term target), the majority of greenhouse emissions cuts need to take place sooner, rather than later<sup>16 17</sup>. Therefore, **Australia must immediately halt growth in greenhouse emissions, and set an interim greenhouse reduction target of 80% by 2020.**
- Australia's coal exports are our biggest contribution to climate change, generating more greenhouse emissions than all sources within our borders combined. Coal exports are also increasing much faster than our domestic emissions, for example Newcastle Harbour – the world's biggest coal port – will double in capacity if expansion plans are approved by the NSW Government. **It would make no sense for Australia to cut its domestic emissions without making commensurate reductions in our coal exports.**

## WHAT POLICIES ARE NEEDED IN AUSTRALIA

Australian governments, State and Federal, must lead a national public mobilisation on the scale of the war effort in order to avert dangerous climate change. Governments must:

- ✓ Immediately stabilise greenhouse pollution levels. This requires a ban on new coal-fired power stations.
- ✓ Stop the expansion of coal exports. This requires a ban on new coal mines and new coal export facilities.
- ✓ Commit to reducing greenhouse emissions by 95% by 2030, with an interim target of 80% by 2020.
- ✓ Commit to reducing coal exports by the same amount: 95% by 2030 and 80% by 2020.
- ✓ Take action to immediately halt growth in energy demand, and emplace mechanisms to achieve yearly reductions in energy demand.

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11 Hansen, J.; *The Threat to the Planet: How Can We Avoid Dangerous Human-Made Climate Change?* Remarks on 21 November 2006 on acceptance of WWF Duke of Edinburgh Conservation Medal at St. James Palace, London, <http://www.columbia.edu/~jeh1/>

12 Malte Meinshausen (2006), What Does a 2°C Target Mean for Greenhouse Gas Concentrations? A Brief Analysis Based on Multi-Gas Emission Pathways and Several Climate Sensitivity Uncertainty Estimates, *Avoiding Dangerous Climate Change* Chapter 28, Cambridge University Press.

13 Paul Baer and Michael Mastrandrea (2006), High Stakes – Designing emissions pathways to reduce the risk of dangerous climate change, The Institute for Public Policy Research. The figure of 80% is based on 1990 levels of greenhouse pollution.

14 George Monbiot, *Heat – How To Stop the Planet Burning* (2006), published by Penguin.

15 *The War Effort – What Australia must do to avoid catastrophic climate change*, Rising Tide Newcastle (2007)

16 Bows, Mander, Starkey, Bleda, and Anderson (2006), Living Within a Carbon Budget, Friends of the Earth.

17 George Monbiot, *ibid.*