

NCWQ Environment Adviser's Report, November 2018

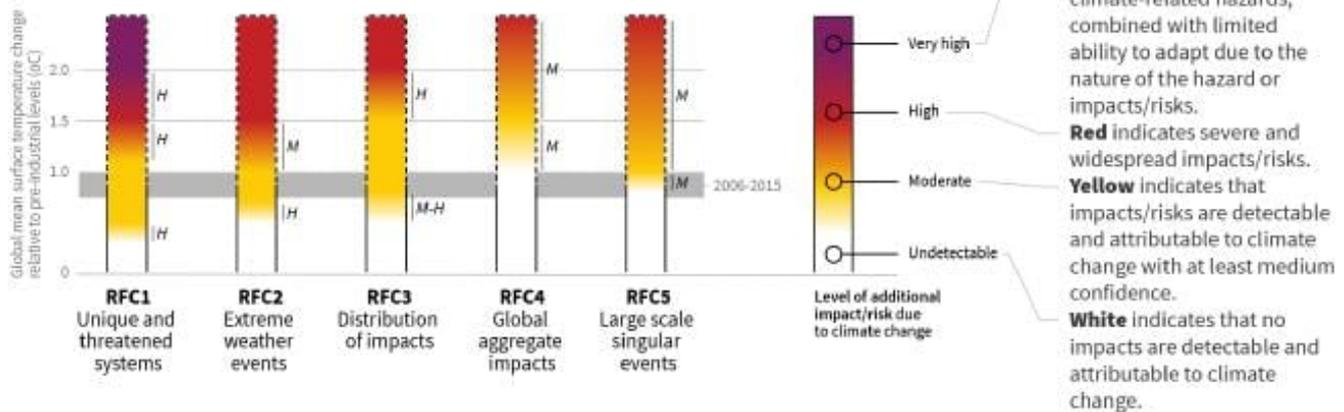
Update on Climate Change - Intergovernmental Panel on Climate Change (IPCC) Special Report:

Under the Paris Agreement 197 nations agreed to reduce global warming emissions and limit the increase in global temperature to well below 2°C relative to 1850-1900, with an aspirational 1.5°C target to avoid dangerous climate effects such as sea level rise, extreme weather and droughts. If the planet continues to warm at the current rate of 0.2°C per decade, the 1.5°C increase is likely around 2040. Impacts are already being felt around the world, with declines in [crop yields](#), [biodiversity](#), [coral reefs](#), and [Arctic sea ice](#), and increases in [heatwaves](#) and [heavy rainfall](#). Communities and ecosystems around the world have already suffered significant impacts from the 1°C of warming so far, and the effects at 1.5°C will be harsher still. Small island states, deltas and low-lying coasts are at risk of increased flooding, and threats to freshwater supplies, infrastructure, and livelihoods. Warming to 1.5°C also poses a risk to global economic growth, with the tropics and southern subtropics potentially being hit hardest. <https://theconversation.com/new-un-report-outlines-urgent-transformational-change-needed-to-hold-global-warming-to-1-5-c-103237> October 8, 2018 Mark Howden & Rebecca Colvin ANU ; [NCWA Hot Habitats 2018 Report Wendy Rainbird](#)

The IPCC Summary for Policy Makers (SPM) illustrates climate-related risks are higher for global warming of 1.5°C than at present, but lower than at 2°C. These risks depend on the magnitude and rate of warming, geographic location, levels of development and vulnerability, and on the choices and implementation of adaptation and mitigation options

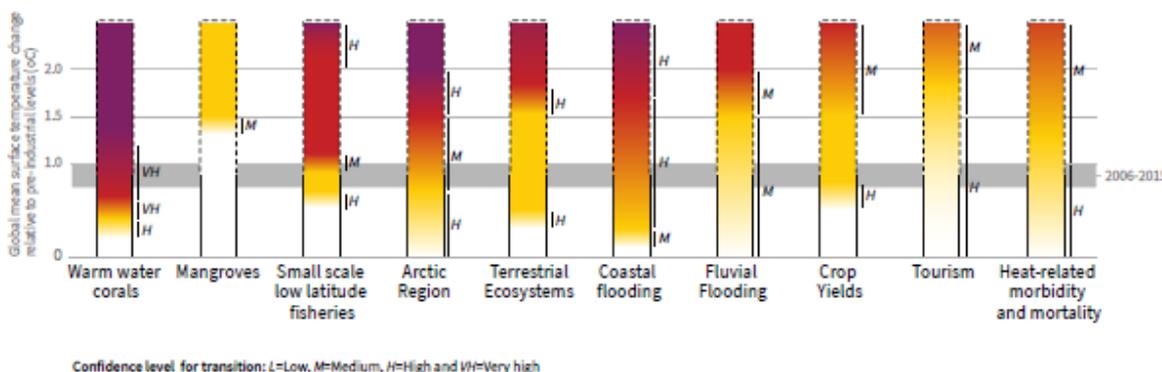
Five Reasons for Concern (RFCs) illustrate the impacts and risks of different levels of global warming for people, economies and ecosystems across sectors and regions.

Impacts and risks associated with the Reasons for Concern (RFCs)



- e.g. coral reefs heat waves vulnerability global scale disintegration
 biodiversity flooding exposure degradation of icesheets
 hot spots monetary damage

Impacts and risks for selected natural, managed and human systems

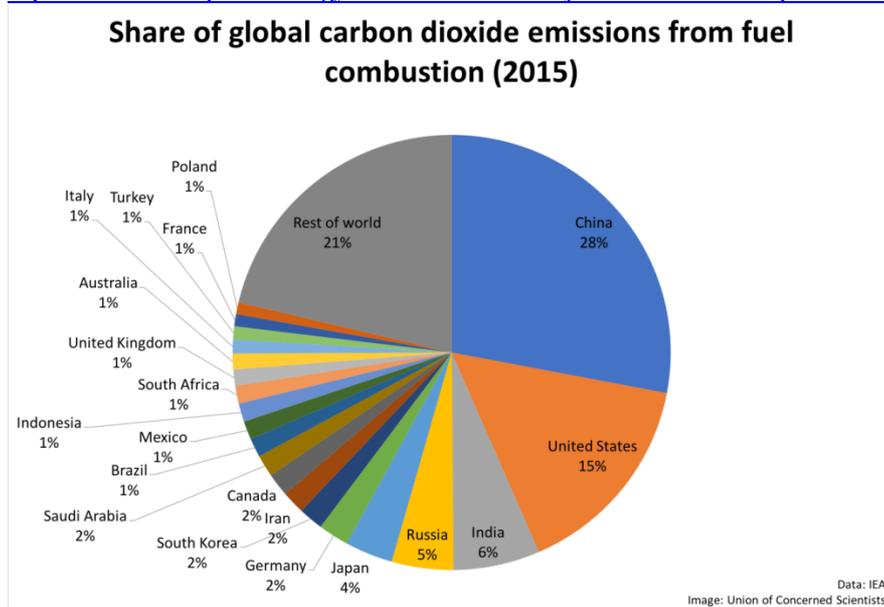


Warming greater than the global annual average is being experienced in many land regions and seasons, including two to three times higher in the Arctic. Warming is generally higher over land than over the ocean. [sr15_spm_final.pdf](#); <https://www.theaustralian.com.au/national-affairs/climate/unprecedented-changes-in-all-aspects-of-society-needed-to-meet-global-warming-target-ipcc-report/news-story/ecd1791a8d0cc99960525715ad9e0dc7>

To limit warming to 1.5°C, carbon dioxide emissions must be reduced by 45% by 2030, reaching near-zero by around 2050. However current national pledges under the Paris Agreement are not enough to remain within a 3°C temperature limit, let alone 1.5°C. Many economists advocate putting a price on emissions to do this. <https://theconversation.com/new-un-report-outlines-urgent-transformational-change-needed-to-hold-global-warming-to-1-5-c-103237> October 8, 2018 Mark Howden & Rebecca Colvin ANU

The argument against carbon tax has been put that for many countries a carbon tax it would have no detectable impact on global temperatures or climate but impose financial disadvantage. In the U.S. which has withdrawn from the Paris agreement, coal-fired generation fell from 2,000 TWh in 2007 to 1,200 TWh in 2017 - without a carbon tax. Three decades ago, coal-fired power plants produced 38 percent of the world’s electricity or about 3,700 terawatt-hours (TWh) per year. It was over 9,700 TWh in 2017. In 2017, U.S. carbon emissions were around 5,100 billion metric tons from all sources, an almost 20 percent drop below emissions in 2007.

In contrast, world carbon emissions have kept increasing: by an average of more than 300 gigatons each year for the last decade, driven primarily by China’s and India’s increasing demand for energy. The USA questions whether it should burden itself with a carbon tax when its competitors do not. <https://thehill.com/opinion/energy-environment/413394-flaw-in-un-climate-report-china-india-will-never-impose-carbon-tax>



<https://www.ucsusa.org/global-warming/science-and-impacts/science/each-countrys-share-of-co2.html#.W9a8js8Uncs>

Similarly, some Australians are questioning why Australia which only contributes about 1% of global dioxide emissions should phase out fossil fuels. They claim the only way to have reliable baseload power is through coal and gas. While the traditional approach of steady, constant ‘baseload’ generation from coal augmented by flexible, dynamic ‘peaking’ generation from gas is one way of ensuring reliable electricity supply, today there are alternatives to this model. These systems have:

- Flexible generation that can quickly vary its output, like the wind and solar sources.
- ‘Demand management’ techniques that can vary electricity demand to match supply. For example, electricity loads such as hot water or pool pumps can be turned on/off, matching the available supply.
- Energy storage (e.g. batteries or pumped hydro) to fill in any short-term gaps between supply and demand.

<https://www.energymatters.com.au/renewable-news/baseload-energy-generation-expose-myth/>

[HTTPS://10.WP.COM/BLOGS.CSIRO.AU/ECOS/WP-CONTENT/UPLOADS/SITES/12/2018/02/ISTOCK.COM_XIJIAN.JPG?SSL=1](https://10.wp.com/blogs.csiro.au/ecos/wp-content/uploads/sites/12/2018/02/istock.com_xijian.jpg?ssl=1) POSTED IN: Issue 240 - Energy issue Carbon emissions, Energy, Renewables ‘Baseload’ power and what it means for the future of renewal BY GLENN PLATT

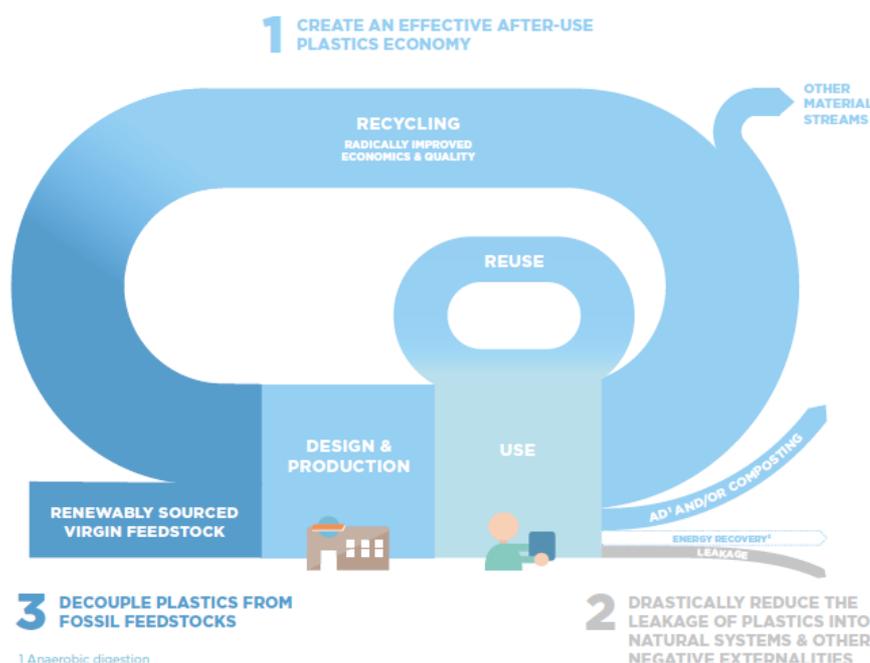
In addition to the environment issues there are other issues to consider. Small island states like Marshall Islands (an Australia’s neighbour) were pivotal in the inclusion of the 1.5°C goal. Increasing warming amplifies the exposure of small islands, low-lying coastal areas and deltas to the risks associated with sea level rise for many human and ecological systems, including increased saltwater intrusion, flooding and damage to infrastructure (high confidence). Populations at disproportionately higher risk of adverse consequences of global warming of 1.5°C and beyond include disadvantaged and vulnerable populations,

some indigenous peoples, and local communities dependent on agricultural or coastal livelihoods (high confidence). [sr15_spm_final.pdf](#) International cooperation is paramount.

Australia's Chief Scientist, Alan Finkel, recommends working towards zero-emissions while maximising Australia's economic growth. This will require an orderly transition to be managed over several decades. An alternative to fossil fuels could be hydrogen since Australia has the resources to produce clean hydrogen for the global market at a competitive price, on either of the two viable pathways: splitting water using solar and wind electricity, or deriving hydrogen from natural gas and coal in combination with carbon capture and sequestration. Building an export hydrogen industry will be a major undertaking. But it will also bring jobs and infrastructure development, largely in regional communities, for decades <https://theconversation.com/the-science-is-clear-we-have-to-start-creating-our-low-carbon-future-today-104774>

Update on the impact of plastic on the environment and health: Previously I have reported that packaging was the major source of plastic waste with 40% ending up in landfill and 32% as litter in the environment. Four to 12 million tonnes of plastics leaked into the oceans in one year. [NCWO Environment Adviser's Report, May 2018](#); The plastics industry is highly reliant on finite stocks of oil and gas, which make up more than 90% of its feedstock. Four to eight % of the world's oil production is used to make plastics with roughly half of this is used as material process. Considerable greenhouse gas emissions are associated with the production and sometimes the after-use pathway of plastics. In 2012, these emissions amounted to approximately 390 million tonnes of CO₂ for all plastics. Thus the circular economy which aims to conserve resources, reduce pollution and promote efficiency would appear highly relevant to the plastic industry.

FIGURE 6: AMBITIONS OF THE NEW PLASTICS ECONOMY



[World Economic Forum, Ellen MacArthur Foundation and McKinsey & Company, The New Plastics Economy — Rethinking the future of plastics\(2016, http://www.ellenmacarthurfoundation.org/publications\)..](http://www.ellenmacarthurfoundation.org/publications)

The potential health threats of plastics have previously been reported. [Supporting information for submissions on micro and nano plastics from NCWA & NCWO Environment Adviser, NCWO Environment Adviser's Reports, May 2018, September 2018](#); Phthalates is used as plasticizers to convert polyvinyl chloride (PVC) from a hard plastic to a flexible plastic. PVC is a widely used material, including extensive use in toys and other children's products such as chewy teethers, soft figures and inflatable toys. Phthalates can be released from soft PVC by surface contact, especially where mechanical pressure is applied e.g. during chewing of a PVC teether. Phthalates are also used as additives in ink, perfumes etc. [Neeti Rustagi, S. K. Pradhan,¹ and Ritesh Singh Indian J Occup Environ Med. 2011 Sep-Dec; 15\(3\): 100–103](#)

In the Consumer Product Safety Improvement Act of 2008 (CPSIA), USA Congress permanently prohibited children's toys or child care articles containing concentrations of more than 0.1 percent of three types of phthalates: di-(2-ethylhexyl) phthalate (DEHP); dibutyl phthalate (DBP); or, benzyl butyl phthalate (BBP). The CPSIA also established an interim prohibition on children's toys that can be placed in a child's mouth

or child care articles that contain concentrations of more than 0.1 percent of diisononyl phthalate (DINP), diisodecyl phthalate (DIDP), or di-n-octyl phthalate (DNOP), On October 27, 2017, the Commission issued a final phthalates rule (16 CFR part 1307) effective April 25, 2018 making the interim prohibition on DINP permanent in addition to similar prohibition of diisobutyl phthalate (DIBP), Di-n-pentyl phthalate (DPENP), di-n-hexyl phthalate (DHEXP), and dicyclohexyl phthalate (DCHP). but lifting the interim prohibition on DIDP and DNOB. The rule applies to products manufactured or imported on or after April 25, 2018. <https://www.cpsc.gov/Business--Manufacturing/Business-Education/Business-Guidance/Phthalates-Information>

From 2 March 2010, certain children's plastic products that contain, or have a component that contains, more than 1 per cent by weight DEHP, are intended for use by children up to and including 36 months of age and can readily be sucked and/or chewed were banned from supply in Australia. [SupplierGuide-Children's plastic products with more than 1percent diethylhexyl phthalate.pdf](#) Should Australia be concerned about the other phthalates which have more than 0.1 percent in children's toys that can be placed in a child's mouth or child care articles and which the USA have banned?

To address public concern about chemicals migrating from packaging into food FSANZ undertook a project to assess whether there were any unmanaged risks from packaging chemicals migrating into food. FSANZ has determined that estimated dietary exposure to these chemicals is low and not of concern for human health.

There has been an ongoing dispute about Bisphenol A (BPA) in the literature. Several epidemiological studies and controlled animal (mainly rodent) experiments found associations between exposure to plastic compounds such as BPA and di-(2-ethylhexyl) phthalate DEHP and destructive effects on health and reproduction, such as early sexual maturation, decreased male fertility, aggressive behavior. [Halden Rolf U., *Plastics and Public Health Ann. Rev. Public Health 2010. 31:179-94.*](#) The U.S. Food and Drug Administration (FDA) banned the use of polycarbonate plastics made from BPA in baby bottles. Canada and the European Union followed suit. However FDA's current perspective, [based on its most recent safety assessment](#), is that BPA is safe at the current levels occurring in foods.

<https://www.fda.gov/food/ingredientspackaginglabeling/foodadditivesingredients/ucm064437.htm#summaryr>

In June 2010, the Australian Government announced the voluntary phase-out by major Australian retailers of polycarbonate plastic baby bottles containing BPA. This was reported to be in response to consumer preference and demand and not an issue about product safety. In 2016 *Food Standards Australia New Zealand* (FSANZ) published the 2nd phase of the 24th Australian Total Diet Study, which screened food for packaging chemicals. BPA wasn't found at all in many samples and where it was detected levels were well below safety level. With regard to the several epidemiology studies where apparent associations between BPA exposure and adverse health effects. The FSANZ found that none of these studies had demonstrated a causal link between BPA and adverse effects in humans.

<http://www.foodstandards.gov.au/consumer/chemicals/bpa/Pages/bpa-response-to-studies.aspx> Despite the occurrence being below critical threshold values in many cases, exceedances in certain susceptible populations, such as pregnant women and children, are known to occur in some instances. If BPA and DEHP have endocrine-disrupting properties, there is cause for concern. [Halden Rolf U., *Plastics and Public Health Annu. Rev. Public Health 2010. 31:179-94*](#)

Surely it is safer to err on the side of precaution?