Submission in relation to WA Climate Issues Paper

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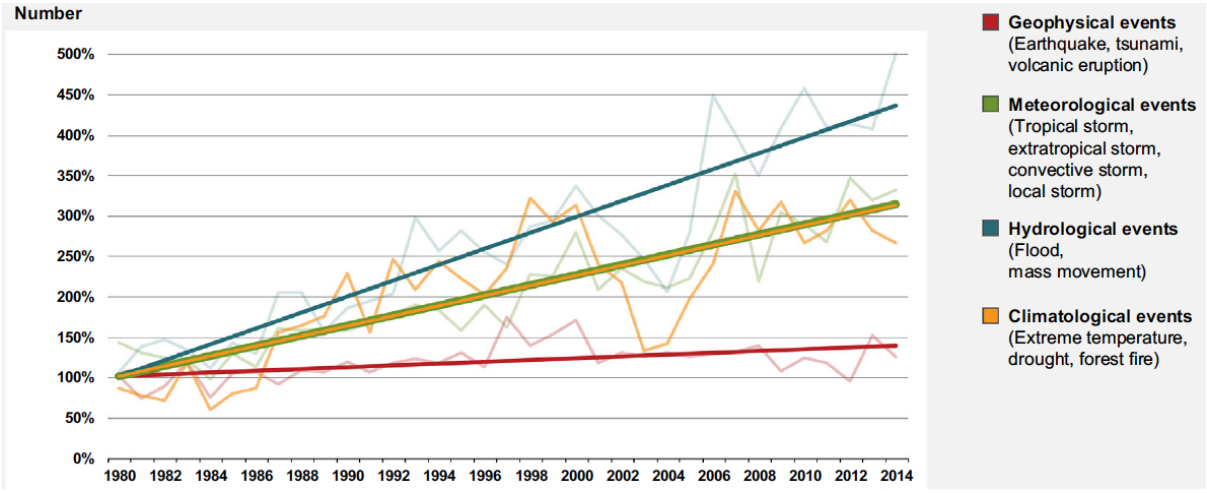
It is critical that Australia makes a globally equitable contribution to limiting its greenhouse gas emissions and, likewise, that WA makes an equitable contribution to Australia's contribution in achieving or, much preferably, exceeding its Paris Agreement targets. This action is not just locally and globally equitable, it is very much in WA's interest because we will suffer more from the hazardous impacts of global heating than, on average, will the rest of the World.

While the Paris Agreement is aimed at limiting the rise in global average daily maximum temperature to 1.5° Celsius or less, average annual daily maximum temperatures in Perth have already reached 1.5° C above the 1949-58 average and, at their present rate of rise, will reach 2°C in 2051 (actual average over 2005-19 of 1.63° C with linear projection to 2051 from decennial averages from 1949-58 to 2009-18 – raw monthly data from Bureau of Meteorology observations made at Perth Airport). WA is set to suffer more from the hazardous impacts of global heating than much of the rest of the World.

The greatest impact of global heating will undoubtedly come from the increase in weather-related natural disasters that it is already causing (principally bushfires, windstorms, storm surges, rain and hailstorms). Such events have been increasing globally since at least 1985.

Figure 1: Loss events worldwide 1980 – 2014 (Munich Re NatCatService database)

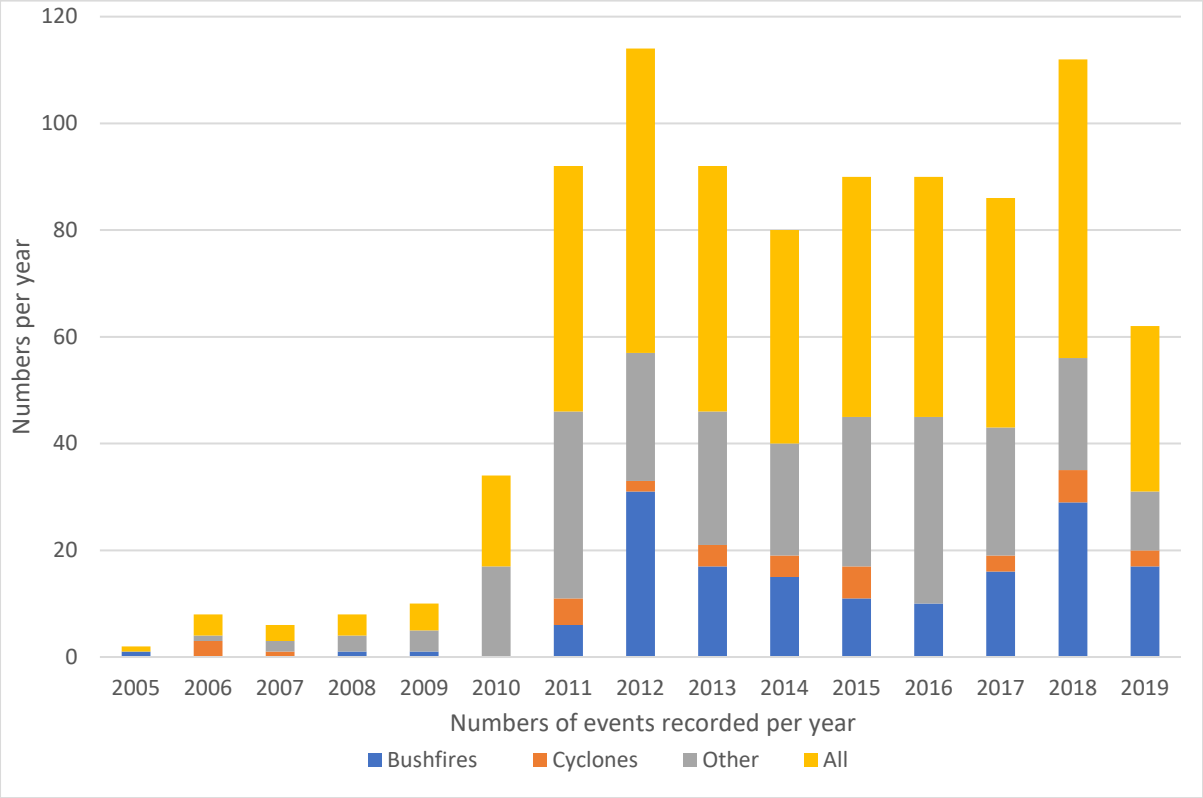


(https://www.munichre.com/en/solutions/for-industry-clients/natcatservice.html)

The information in Figure 1 is taken from that systematically collected by Munich Re, one of the World's largest reinsurance agencies. The data Munich Re collects is critical to its estimates of risk of these events that are made for the purposes of setting insurance premiums. It is notable that all categories of weather-related natural disasters are increasing except geophysical disasters, which are increasing minimally if at all.

Australian data on natural disasters are collected for the purposes of disaster assistance, not for statistical purposes (https://www.disasterassist.gov.au/Pages/home.aspx). They show, nonetheless, that natural disasters are highly prevalent in Australia (Figure 2).

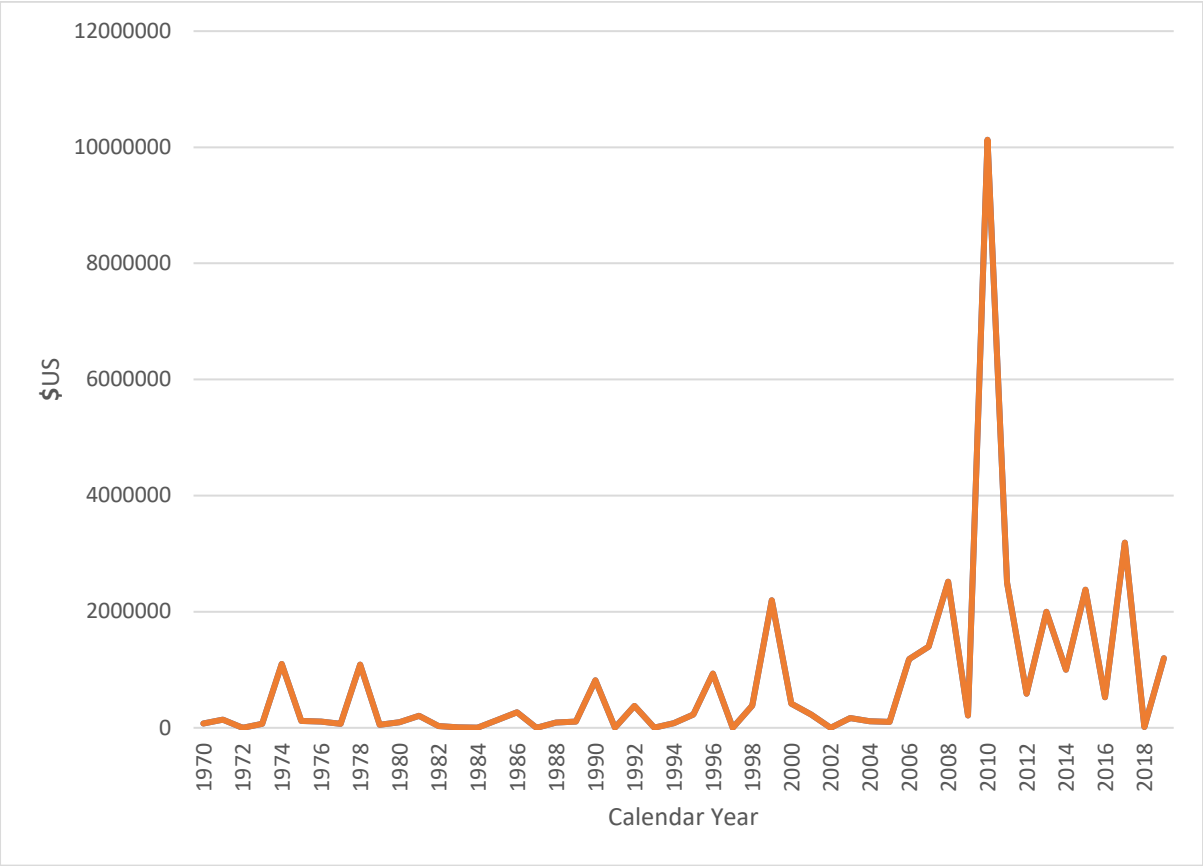
Figure 2: Annual numbers of natural disasters recorded in Australia from 2005 to 2019 (incomplete)



https://www.disasterassist.gov.au/Pages/home.aspx

The occurrence of weather related natural disasters in Australia appear also to be increasing. The data in Figure 3 are published by the Centre for Research on the Epidemiology of Disasters (CRED), which, in 1988, launched the Emergency Events Database (EM-DAT - https://www.emdat.be), with initial support from the World Health Organisation (WHO) and the Belgian Government. Data from before 1988 are incomplete and the accuracy of later data are of uncertain accuracy. Notwithstanding these deficiencies, natural disasters appear to be increasing in Australia, at least since 1988, and becoming more intense in recent years (Figure 3).

Figure 3: Estimated cost of damage from natural disasters – Australia 1970 to 2019



https://www.emdat.be

While it is logically impossible to attribute with certainty any specific natural disaster to global heating, it is reasonable to do so when a particular weather-related disaster has unusual characteristics that are consistent with effects of global heating.

American Meteorological Society scientists, in the seventh annual edition of the report, *Explaining Extreme Events in <year> from a Climate Perspective* (https://www.ametsoc.org/ams/index.cfm/publications/bulletin-of-the-american-meteorological-society-bams/explaining-extreme-events-from-a-climate-perspective/), concluded, among other things, that:

- Climate change has made the chances of heatwaves in the Euro-Mediterranean region that are at least as hot as 2017's three times more likely than they were in 1950. The chance of such a heatwave recurring is now 10 percent in any given year.
- Heatwaves like the record-breaking 2017 event in central and eastern China were once rare. They are now one-in-five-year events due to climate change.
- Climate change made the 2017 Northern Great Plains drought 1.5 times more likely by shifting the balance between precipitation and evapotranspiration of soil moisture.
- Extreme, 6-day pre-monsoon rainfall that inundated northeast Bangladesh was made up to 100 percent more likely by climate change.

- Climate change has made chances of the extreme rain that collapsed thousands of houses in south-eastern China in June 2017 twice as likely.
- Peru's flooding rains of March 2017 were influenced by a natural cycle of warm coastal waters, but human-caused climate change on top of that made such extremes at least 1.5 times more likely.
- Scientists found that the record sea surface temperatures in the Tasman Sea in 2017 and 2018 were virtually impossible without global warming.
- Extremely warm sea surface temperatures off the coast of Africa doubled the probability of 2017's East Africa drought, which left more than 6 million people in Somalia facing food shortages. An analysis found the extreme ocean warmth could not have occurred in a pre-Industrial climate.
- Record-low Arctic sea ice due to climate change influenced record-breaking precipitation deficits across a large part of western Europe in December 2016.

It is now clearly evident that climate change due to global heating is the underlying cause of the rapidly rising toll of weather-related natural disasters.

This Climate Inquiry must acknowledge this reality and state firmly and clearly what WA's obligations are to its own population, the rest of the people of Australia and all people of the World what it will do to mitigate this climate emergency and how and when it will discharge these obligations.