


CLIMATE CHANGE IS DESTROYING OUR REEFS.

WE MUST PHASE OUT COAL.

A diver is seen swimming in clear blue water above a coral reef. The coral appears severely bleached, showing a pale, white, skeletal appearance. The diver is positioned in the upper right quadrant of the frame, looking down at the reef. The background shows the surface of the water with some ripples.

We, the undersigned, have collectively devoted over 1200 years studying climate change, marine ecosystems and the reef. We know that the burning of fossil fuels is severely damaging our Great Barrier Reef. This is directly threatening a major economic resource. The World Heritage listed Great Barrier Reef earns multiple billions for the economy and provides jobs to tens of thousands of Australians.

As you read this, the Great Barrier Reef is currently experiencing the worst mass coral bleaching event in its history. Whilst the full extent of the damage is still unfolding, the current bleaching is far worse than previously expected, with large portions of the reef severely bleached and likely to die. Warmer ocean temperatures, driven by the burning of coal, oil and gas, are increasing the occurrence of severe coral bleaching events like the one we're witnessing now. Over the past 30 years the Great Barrier Reef has lost 30-50% of its coral cover from bleaching and other stressors, and at this moment even more of the Reef's coral is being destroyed. One of the most visible Australian icons is under threat and we must act now to save it.

Record breaking ocean heat has triggered a global coral bleaching event that is devastating the Great Barrier Reef. Since March 2016, the weekly average sea surface temperature over the northern Great Barrier Reef has been around 1-1.5°C above the recent decadal average (2002-2011) for this time of year, with higher anomalies in some localised waters. This has resulted in coral bleaching across the Great Barrier Reef, particularly the most pristine and isolated reefs in the far north. Aerial surveys of more than 500 coral reefs from Cairns to Papua New Guinea reveal that the overwhelming majority of reefs in this section are ranked in the most severe bleaching category.

The science is clear. The current bleaching would not be occurring without the influence of climate change. The increase in carbon dioxide in the atmosphere from the burning of coal, oil and gas is warming the oceans, causing these devastating bleaching events that are threatening the survival of coral reefs worldwide. Australia has weathered El Niño events for centuries but it was only from the early 1980s that the Great Barrier Reef began to experience repeated coral bleaching events, after global warming began in earnest. The burning of fossil fuels is also increasing the amount of carbon dioxide in the oceans, increasing ocean acidity and slowing the ability of reefs to recover from impacts such as bleaching, cyclones and predatory starfish.

Australia is the custodian of one of the seven wonders of the natural world. Not only is the reef incredibly beautiful, it's also a billion dollar economic asset. The value-added economic contribution of the Great Barrier Reef World Heritage Area to the Australian economy in 2011-12 was \$5.7 billion and it supported 69,000 jobs.

The future of the Great Barrier Reef, and reefs around the world, depends on how much and how quickly we can reduce greenhouse gas emissions and limit ocean warming. Small-scale actions such as culling predatory Crown-of-Thorns starfish on a handful of reefs and improving water quality in the southern reef will not prevent ongoing damage from climate change. If the world, including Australia, continues to burn coal, oil and gas and warm the climate at current rates, corals worldwide will be subject to increasingly frequent and severe bleaching events. This will overwhelm the ability of corals to recover and reefs like the Great Barrier Reef will disappear by mid-century if not sooner. This will directly threaten the livelihoods of over 500 million people worldwide.

As scientists we have a duty of care. We understand that one of the most biologically diverse and economically valuable ecosystems on Earth is being destroyed, and we know the steps we have to take to prevent even more damage. We have a responsibility to speak out about the facts, especially when the stakes are so high. At the Paris conference on climate change in December 2015 the world came together to agree that strong efforts must be made towards limiting global warming to well below 2°C with a target of 1.5°C in the long-term. Now is the critical time to make this pledge a reality.

Australia has a critical role to play in the global effort to reduce fossil fuel emissions. We are the largest emitter per capita of the developed countries and the 13th largest worldwide in absolute terms. Our fossil fuel emissions continue to increase.

We, the undersigned, are calling for the end of the fossil fuel era. Australia must rapidly phase-out existing ageing and inefficient coal-fired power stations. In addition, there can be no new coal mines. No new coal-fired power stations. The transition to a renewables-led energy system, already underway, must be greatly accelerated.

This must be the number one priority if we are to protect what remains of the Great Barrier Reef and other reefs around the world.

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