

The double threat to the Great Barrier Reef:

Climate change and the Australian Government

July 2017

GREENPEACE

Bleached coral at Lizard Island on the Great Barrier Reef, March 2016.

©Greenpeace/Abram Powell

Cover image:
©Greenpeace/ Brett Monroe Garner

The Great Barrier Reef, UNESCO and the Australian Government

Australia's track record on protecting the Great Barrier Reef will again come under international scrutiny at the 41st meeting of the UNESCO World Heritage Committee in Krakow, Poland, on 2-12 July 2017.

The Great Barrier Reef was put on the UNESCO 'watch list' in 2015. Since then it has suffered two unprecedented mass coral bleaching events back-to-back and widespread coral die-off.

UNESCO has criticised the Australian Government for not doing enough to protect the Reef.

The government, however, maintains it is making 'good progress', and stands by its Reef 2050 Plan, which is mainly focused on improving water quality on the Reef. This is despite its own advisors saying the Plan won't work because it fails to address the biggest threat to the Reef—climate change.

Meanwhile, the Australian Government continues to heavily subsidise the fossil fuel industry and is considering a loan of up to \$1 billion to facilitate the construction of the Carmichael coal megamine.

This report shows how Australian Government policy has failed the Reef. Its purpose is to offer an unflinching view of the true state of one of the world's most precious natural wonders and throw into stark relief the only way forward to give the Reef a chance at survival—a fundamental shift in climate change policy by the Australian Government.

Reef on the brink: a warning and a call to action

In 2012, UNESCO warned Australia the Great Barrier Reef was under imminent threat and could be listed as “in danger”. Fears about the Reef were sparked by its deteriorating condition and the dangers posed by further coal expansion projects in the area. An ‘in danger’ listing allows the UNESCO World Heritage Committee to allocate assistance from the World Heritage Fund, but it can also be seen as an embarrassment for the government responsible. In the case of the Reef, it also has the potential to damage tourism.

In July 2015, after intense lobbying from the Australian Government, UNESCO placed the Great Barrier Reef on its ‘watch list’, narrowly avoiding an ‘in danger’ listing. The Australian Government committed to regular updates on its handling of the Reef’s health. Last December, it reported back with its first submission which maintained that the government was “making good progress”.

Although welcoming some progress made on the 2050 Plan, UNESCO’s response was to criticise the government for moving too slowly to protect the Reef and to strongly emphasise that the number one threat to the Great Barrier Reef is climate change.

Since 2015, the percentage of coral that died on the Great Barrier Reef in 2016 has been revised upwards from 22% to 29%, with a second mass bleaching event in 2017 resulting in an anticipated 19% mortality rate, according to preliminary reports. As the World Heritage Committee has warned, globally, we are likely witnessing the worst coral death ever observed.

The dire state of the Reef must act as a catalyst for a radical scaling up of Australia’s climate ambition, to give the Reef a chance of survival.

Instead, the Australian Government remains committed to policies that are fuelling climate change—and killing the Reef. Australia’s carbon emissions are increasing and the Australian Government continues to provide billions of dollars in support to the fossil fuel industry, as well as maintaining seemingly unconditional support for the proposed Carmichael coal mine.

The UNESCO World Heritage Committee is expected to consider the effectiveness of Australia’s Reef 2050 Plan in light of the escalating climate crisis at its meeting in July.

What has Australia done for the Great Barrier Reef since it was put on UNESCO's 'watch list'?

12 August 2015

Government announced emission reduction target of 26-28% from 2005 emissions

The Australian Government announced an emissions reduction target of 26-28% from 2005 levels, well below the government's own climate change authority's recommended target of a 40-60% reduction from 2000 levels¹

Emission reduction target:
~~40-60%~~
~~from 2000 levels~~
26-28%
 from 2005 levels

19 April 2016

93% of reefs on the Great Barrier Reef found to be affected by bleaching

93% of the Great Barrier Reef was hit by unprecedented coral bleaching and 22% was reported to have died³



18 August 2016

Land clearing legislation to protect the reef failed to pass

A bill to pass laws to prevent land clearing – a source of both carbon emissions and runoff pollution to the reef – failed to pass in Queensland's state parliament. The legislation was a key part of Australia's Reef 2050 plan.⁵



2015

2016



16 October 2015

The Australian Government approved the largest coal mine in Australian history²

27 May 2016

Mentions of the Great Barrier Reef were removed from a UNESCO climate change report after intervention from the Australian government

The Australian Government lobbied to have mentions of the Great Barrier Reef removed from a UNESCO climate change report⁴

Great Barrier Reef



9 October 2016

Proposed largest coal mine granted special status by Queensland state government

The proposed Carmichael coal mine was granted special 'critical' status by the Queensland government to speed up the approval process⁶

Since our last report, a number of key events have unfolded in the lead up to the 41st meeting of the UNESCO World Heritage Committee:

1 December 2016

Government update to UNESCO claimed “good progress” in protecting the Reef

Australia’s report on conserving the Reef conceded not enough had been done to address tree clearing, but claimed “good progress” over the first 18 months of its Reef 2050 Plan.⁷ The Reef had suffered the worst coral bleaching event in recorded history.



9 February 2017

Scott Morrison showed off a lump of coal in Parliament

The Federal Treasurer showed off a piece of coal in Parliament and criticised the Opposition’s call to phase out coal-fired power.⁹



February 2017

The goal of the Reef 2050 Plan was declared unattainable

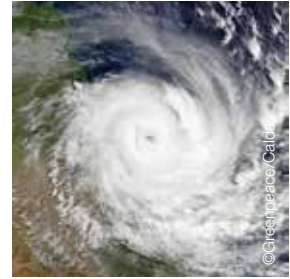
The Great Barrier Reef Independent Review Group reported that the goal of the 2050 Plan is “no longer attainable for at least the next two decades...” and asserted that “improving water quality can never climate-proof the Reef.”¹²



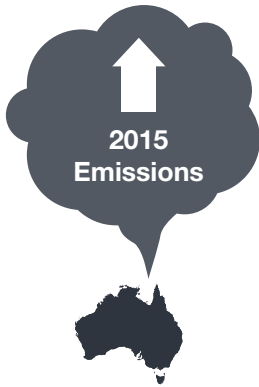
28 March 2017

Cyclone Debbie ravaged Queensland

A category four cyclone was both a blessing and curse for the Reef. 28% of the Reef was within the ‘catastrophic damage zone’ of the cyclone, but it also cooled water in other parts.¹⁵



2017



24 December 2016

Australia’s greenhouse gas emissions rose by 0.8%

A Department of Environment and Energy report confirmed that greenhouse gas emissions rose by about 0.8% for the year to June 2016.⁸



10 February 2017

A massive heatwave hit the east coast of Australia

A three-day heatwave hit the east coast of Australia ahead of the announcement of the mass coral bleaching event.¹⁰ Heatwaves are becoming more frequent and severe due to climate change, but the government used the opportunity to attack renewable energy.¹¹



10 March 2017

Two-thirds of Reef hit by mass coral bleaching for second consecutive year

The Great Barrier Reef Marine Park Authority confirmed the second widespread coral bleaching event in two years.¹³ The ARC Centre of Excellence for Coral Reef Studies later revealed the extent of coral bleaching and confirmed it was due to global warming-induced, record-breaking temperatures.¹⁴



29 March 2017

Carmichael coal mine granted unlimited access to groundwater

The Queensland government granted the Carmichael coal mine unlimited access to groundwater for 60 years.¹⁶

9 May 2017

Australian Government backtracked on Paris Agreement commitments

Federal Environment and Energy Minister Josh Frydenberg, conceded that Australia may not reduce its emissions to net zero until the latter half of the century.¹⁷ Achieving net zero emissions by 2050 is needed to keep warming to well below 2°C.



25 May 2017

2050 Plan declared no longer possible, risk of 'in danger' listing increasing

The government's Reef 2050 Advisory Committee advised that improving the natural heritage values of the Reef was no longer possible due to climate change. Environmental lawyers said this could mean the Reef would be listed as 'in danger'.¹⁹



29 May 2017

2016 coral death confirmed to be worse than first thought, 2017 mortality figures anticipated

The Great Barrier Reef Marine Park Authority confirmed that coral bleaching in 2016 was worse than previously reported, revising the figure upwards from 22% to 29%.²⁰ 2017 mortality figures are not yet known, but a figure of an additional 19% is anticipated.²¹

June 2017

UNESCO confirmed that tackling climate change is the only way to save the Great Barrier Reef

UNESCO reports criticised Australia's lack of progress towards achieving its 2050 water quality targets and failure to pass land clearing legislation; reiterated that climate change remains the most significant overall threat to the Reef²⁴ and warned that the Reef will "cease to exist" by 2100 unless climate change is tackled.²⁵



21 May 2017

Government advised Reef 2050 Plan needs to be re-written

The Australian Government's own expert advisors called for the 2050 plan to be re-written to address climate change.¹⁸



29 May 2017

The Australian Government directed the Clean Energy Finance Corporation to invest in coal

The Australian Government directed a body set up to invest in clean energy to fund coal projects, potentially creating another subsidy for the coal industry.²²



30 May 2017

The Queensland Government agreed a royalties deal with Adani for the Carmichael coal mine

The Queensland Government re-committed to giving Adani a \$320 million 'royalty holiday' to entice the company to build the Carmichael coal mine, after it had announced the project was in doubt.²³

The Reef experienced its second major bleaching event in 2 years. In March 2017, Greenpeace Australia Pacific witnessed this tragedy and has been calling on Governments everywhere to take action against coal.



© Greenpeace/Dean Miller

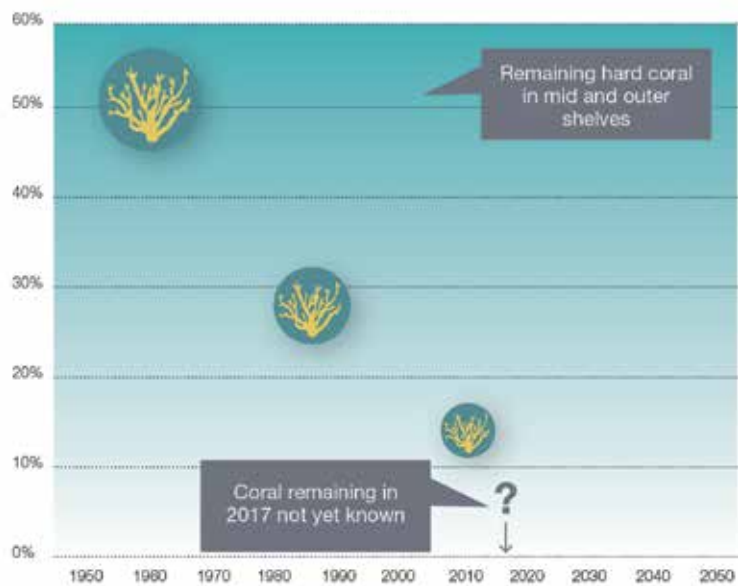
The Reef 2050 plan

The Australian Government released the Reef 2050 Plan in March 2015 as part of its response to UNESCO's threat to categorise the Great Barrier Reef as 'in danger'. Despite conceding that climate change is the "biggest long-term threat" to the Reef's health, the Reef 2050 Plan offered little action to curb the impacts of climate change. The report's main proposals include a ban on dumping dredge from new coal port developments in the Great Barrier Reef Marine Park, \$100m to improve water quality, and reductions in pesticide and sediment pollution.

In October 2016, the chief of the Great Barrier Reef Marine Park Authority admitted that climate change should have featured more heavily in the Reef 2050 Plan.²⁶

In February 2017, the Great Barrier Reef Independent Review Group released a report on progress in the implementation of the Reef 2050 Plan. The report noted that overall progress had been "less than anticipated in a number of important areas."²⁷ It also indicated that the 2016 bleaching event had set back the Plan's objective of improving the condition of the reef by at least two decades. Following the 2017 bleaching event, experts became even more pessimistic about the feasibility of the Plan. In May 2017, two representatives from government science agencies told the Reef 2050 Advisory Committee that the aim of the plan should be changed to "something more achievable".²⁸ They suggested that the goal be to "maintain the ecological function" of the Reef, arguing that the decline in health and viability of the Reef was now inevitable. The government-appointed Independent Expert Panel also called for changes to the Plan, arguing for the inclusion of climate change adaptation and mitigation actions.²⁹

An official mid-term review of the Reef 2050 Plan is expected in 2018.



Brodie, J. and Pearson, R. (2016) "Ecosystem health of the Great Barrier Reef: Time for effective management action based on evidence", *Estuarine, Coastal and Shelf Science*, Volume 183, Part B: 438-451|30

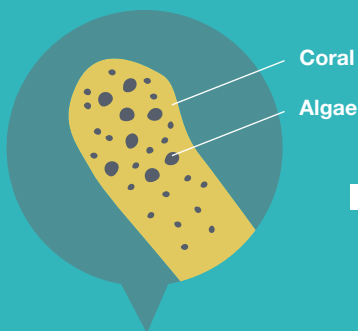
Coral bleaching and death

Much of the bright colour of coral reefs comes from marine algae known as zooxanthellae, which symbiotically inhabit the polyps and provide much of the nutrition that corals rely on to thrive. When corals experience stress as a result of changes in temperature, light levels, salinity or water quality, they expel the zooxanthellae. This is known as coral bleaching because the coral loses its colourful symbiont and appears pale or white. Bleached corals are still alive, but if stressful conditions continue for several weeks, they can die. When corals die, their skeletons are exposed, becoming vulnerable to erosion, and reducing habitat for marine life.³¹

The Great Barrier Reef experienced severe back-to-back bleaching events in 2016 and 2017. These events were caused by climate change. While other stressors such as pollution and overfishing can also affect the vulnerability of corals to bleaching events, recent research suggests that “even the most highly protected reefs and near-pristine areas are highly susceptible to severe heat stress.” Experts have concluded: “Securing a future for coral reefs, including intensively managed ones such as the Great Barrier Reef, ultimately requires urgent and rapid action to reduce global warming.”³²

How does coral bleaching occur?

1 Healthy coral
Coral and algae depend on each other to survive



Coral have a symbiotic relationship with the microscopic algae that live in their tissues. These algae are the coral's primary food source and give them their colour.

2 Stressed coral
If stressed, algae leaves the coral



When this symbiotic relationship becomes stressed due to increased ocean temperature or pollution, the algae leave the coral's tissue.

3 Bleached coral
Without algae, coral is left bleached and vulnerable



Without the algae, the coral loses its major source of food, turns white or very pale, and is more susceptible to disease.



What kind of reef will my son inherit?

I've been lucky enough to work on coral reefs around the world over the last 20 years. I can't wait until my son is old enough to come with me and be my dive buddy. He's only three now and he has to be ten years old and a good swimmer before he can SCUBA dive. I often think about where I will take him on his first dive — I want it to be a healthy reef with AMAZING underwater life, big fish, turtles, manta rays and even a friendly shark or two. But at this point, I honestly don't know what reefs, if any, will be in good condition in seven years' time.

Corals can recover from bleaching events such as the ones that the Great Barrier Reef has experienced over the past two years, but they need time and the right conditions (cooler and cleaner water)—something we don't seem to be giving them. Without the coral, the reef fish have nowhere to live. Without the fish, the sea birds and—yes, humans—go hungry in many places around the world. Without the reefs our shorelines won't be protected during storms, cyclones and hurricanes. The loss of the Great Barrier Reef is a collective loss for humanity, although I experience it in a very personal way.

So what am I doing to ensure that my son—as well as millions of others—has the opportunity to experience the same wonders that I have? I think the most important thing I can do is tell people what is happening, and let them know it's not hopeless. It is not too late for the Australian Government to take serious steps to respond to the number one threat to the Great Barrier Reef—climate change—and to give it a fighting chance.



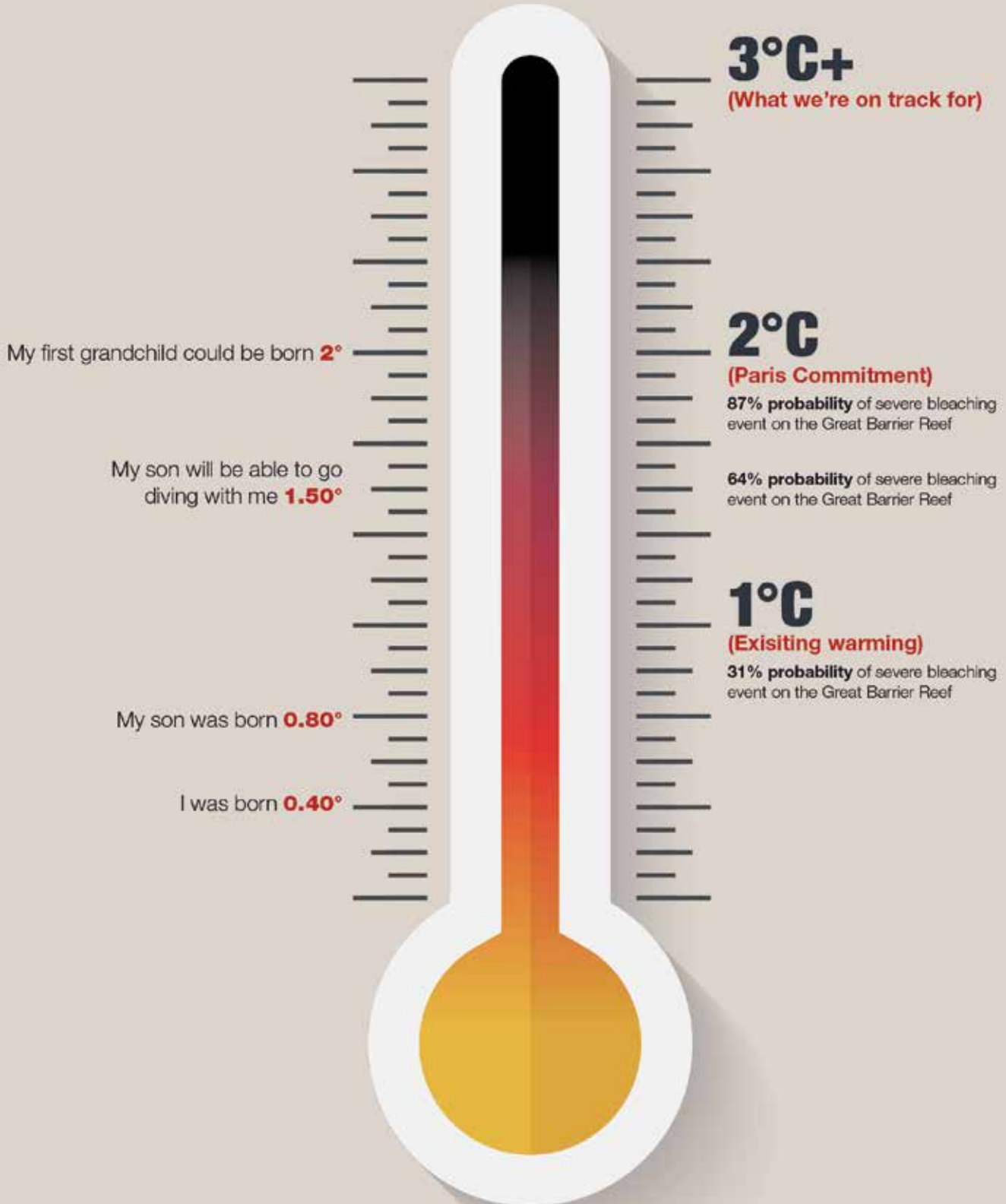
Dr Jennie Mallela is ARC DECRA Fellow at the Australian National University.

Her research focuses on reconstructing long-term environmental change and documenting effects on coral reef organisms on the Great Barrier Reef. She has two decades of experience in marine research, monitoring, conservation, marine protected areas, environmental monitoring and environmental education. Her son is eager to join her on a dive one day.

The thermometer below shows the increasing probability of coral sea heat temperatures reaching the same levels that occurred in 2016, resulting in unprecedented coral bleaching and severe coral die-off. As the world warms, the chance of these events occurring increases.

1.5 degrees Celsius may be the maximum level of global warming that can occur for coral reefs to still be able to recover.³³

There may only be a three year window left to reduce emissions to stay below 1.5 degrees of warming.³⁴



King, A. et al. Pursuit by the University of Melbourne, 'Heating Up: How rises in global temperature could damage the Reef', 16 May 2017, accessed 29 June 2017, <https://pursuit.unimelb.edu.au/articles/heating-up-how-rises-in-global-temperature-could-damage-the-reef>

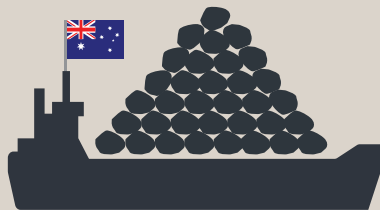
Hay Point Coal Terminal, Queensland is one of the largest coal export terminals in Australia and services coal mined from the Bowen Basin.

© Greenpeace/Powell



Additional facts

Highest per capita carbon emissions of developed nations



Australia is the largest exporter of coal in the world

Burning just a fraction of the oil in the Great Australian Bight

= 8x

Australia's current annual domestic emissions.



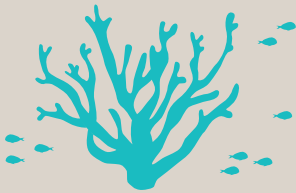
Reference: http://climateanalytics.org/files/ca_bp_great_australian_bight_final.pdf



Australia is expected to become the largest exporter of LNG by 2020

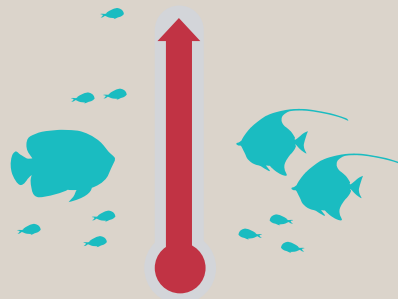
Reference: <https://www.rba.gov.au/publications/bulletin/2015/mar/pdf/bu-0315-4.pdf>



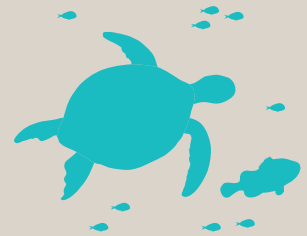


Largest living structure on the planet

The Great Barrier Reef is more than 2,300km long. It is roughly as large as Japan, Italy or Germany.



Climate change is the largest threat to the Great Barrier Reef

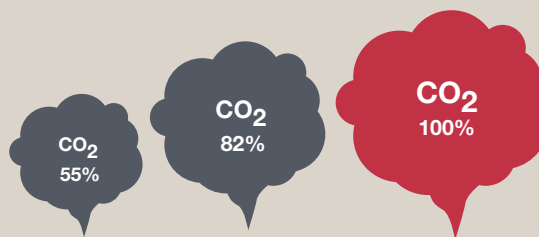


1981

The year the Great Barrier Reef was listed as a UNESCO World Heritage

>2°C

The potential carbon emissions from the world's existing oil, gas and coal fields would already exceed the Paris climate agreement upper target of a 2C temperature increase limit, making any new fossil fuel projects entirely incompatible with global climate targets.



Tokyo New York Carmichael

The proposed Carmichael coal mine the Australian government approved would be responsible for more CO₂ per year than cities such as New York and Tokyo.



The Carmichael coal mine

Planned by mining company Adani for the Galilee Basin in Queensland, the proposed Carmichael coal mine would be the largest coal mine in Australia. The scale of the proposed mine dwarfs many of the world's capital cities. At full production, the mine would produce 60 million tonnes of coal per year and its annual CO₂ footprint would be bigger than the cities of New York and Tokyo. The project has been plagued by funding withdrawals and subject to numerous legal challenges, but has received unprecedented support from Australian State and Federal Governments.

The Northern Australia Infrastructure Facility

The Northern Australia Infrastructure Facility (NAIF) is currently considering providing a taxpayer-funded loan of up to \$1 billion for a rail line to transport coal from the proposed Carmichael coal mine to the Abbot Point port for export. The Australian Government has emphasised that the NAIF Board is an 'independent' body, but senators have questioned whether Federal Resources Minister Matt Canavan's public support for the Carmichael project amounts to "directing NAIF through the media."³⁵ Even if the Board is technically independent of government, its members have clear ties to the mining industry, calling into question whether they are truly impartial. Five of seven NAIF board members have strong ties to the mining industry and the CEO, Laurie Walker, has previously held positions at ANZ and the Commonwealth Bank, where she led a team "working across project and corporate lending in oil & gas, natural resources."³⁶

Fewer than 7% of Australians believe that funding this rail project would be a good use of public money.³⁷



Recommendations

The only way to give the Great Barrier Reef a fighting chance is to urgently address climate change.

The Australian Government's Reef 2050 Plan must be redrawn to include ambitious climate commitments. Tackling local impacts alone will never be enough.

A range of policy measures could be taken to achieve this, including:

- Ruling out funding the Carmichael coal mine
- Halting all new coal mining or drilling for oil and gas
- Adopting an emissions and climate change policy consistent with the Paris Agreement which would ensure that over 90% of known Australian coal reserves remain in the ground
- Increasing Australia's climate policy ambition to a 40-60% reduction in emissions by 2025 from 2000 levels, followed by a 60-80% reduction by 2030 from 2000 levels, and
- Adopting a plan to transition rapidly away from a reliance on coal which includes an end to mining, phasing out coal-fired electricity generation and the promotion of new renewable energy solutions.



References

- 1 Hasham, N. and Macdonald-Smith, A., Sydney Morning Herald, 'Emissions target leaves Australia trailing pack, say critics', 11 August 2015, accessed 4 November 2016, <<http://www.smh.com.au/federal-politics/political-news/emissions-target-leaves-australia-trailing-pack-say-critics-20150811-giw7gm.html>>
- 2 Milman, O., The Guardian, 'Adani Carmichael mine in Queensland gets another green light from Coalition', 15 October 2015, accessed 28 June 2017, <<https://www.theguardian.com/business/2015/oct/15/adani-carmichael-mine-in-queensland-gets-another-green-light-from-coalition>>
- 3 Normile, D., Science, 'Survey confirms worst-ever coral bleaching at Great Barrier Reef', 18 April 2016, accessed 28 June 2017, <<http://www.sciencemag.org/news/2016/04/survey-confirms-worst-ever-coral-bleaching-great-barrier-reef>>
- 4 Slezak, M., The Guardian, 'Australia scrubbed from UN climate change report after government intervention', 27 May 2016, accessed 28 June 2017, <<https://www.theguardian.com/environment/2016/may/27/australia-scrubbed-from-un-climate-change-report-after-government-intervention>>
- 5 Burke, G., ABC, 'Queensland tree clearing laws fail to pass Parliament in blow to minority Labor government', 19 August 2016, accessed 4 November 2016, <<http://www.abc.net.au/news/2016-08-19/queensland-parliament-tree-clearing-laws-fail-unesco-fears/7765214>>
- 6 ABC, 'Adani coal mine gains 'critical' status as Queensland government moves to kick-start project', 10 October 2016, accessed 28 June 2017, <<http://www.abc.net.au/news/2016-10-10/adani-coal-mine-gains-critical-status-queensland-kick-start-move/7917506>>
- 7 Commonwealth of Australia, 'Reef 2050 Plan—Update on Progress', 2016, accessed 22 June 2017, <<https://www.environment.gov.au/system/files/resources/d12a31fc-7dac-42ae-a8c9-b39898cbfa26/files/reef-2050-update-progress.pdf>>
- 8 Government of Australia, Department of the Environment and Energy, 'Quarterly update of Australia's National Greenhouse Gas Inventory June 2016', 2016, accessed 22 June 2017, <<http://www.abc.net.au/news/2016-12-22/australia-greenhouse-gas-emissions-increasing-environment-report/8143110#report1>>
- 9 Butler, J., Huffpost Australia, 'Scott Morrison Brought A Lump Of Coal And Waved It Around In Parliament', 9 February 2017, accessed 19 June 2017, <http://www.huffingtonpost.com.au/2017/02/08/scott-morrison-brought-a-lump-of-coal-and-waved-it-around-in-par_a_21710206/>
- 10 Colgan, P., Business Insider, 'MAPS: A 'horrifying' three-day heatwave continues on Australia's east coast', 10 February 2017, accessed 22 June 2017, <<https://www.businessinsider.com.au/maps-a-horrifying-three-day-heatwave-is-coming-for-australias-east-coast-2017-2>>
- 11 Barlow, K., Huffpost Australia, 'The Turnbull Government Can't Stop Blaming Renewables', 13 February 2017, accessed at 22 June 2017, <http://www.huffingtonpost.com.au/2017/02/12/the-turnbull-government-can-t-stop-blaming-renewables_a_21712385/>
- 12 Great Barrier Reef Independent Review Group, 'Reef 2050 Long-term Sustainability Plan Progress on Implementation Review', February 2017, <<http://apo.org.au/system/files/73975/apo-nid73975-79101.pdf>>
- 13 Great Barrier Reef Marine Park Authority, 'Second wave of mass bleaching unfolding on Great Barrier Reef', 10 March 2017, accessed 20 June 2017, <<http://www.gbrmpa.gov.au/media-room/latest-news/coral-bleaching/2017/second-wave-of-mass-bleaching-unfolding-on-great-barrier-reef>>
- 14 ARC Centre of Excellence, 'Two-thirds of Great Barrier Reef hit by back-to-back mass coral bleaching', 10 April 2017, accessed 22 June 2017, <<https://www.coralcoe.org.au/media-releases/two-thirds-of-great-barrier-reef-hit-by-back-to-back-mass-coral-bleaching>>
- 15 Great Barrier Reef Marine Park Authority, 'Reef Health', 29 May 2017, accessed 27 June 2017, <<http://www.gbrmpa.gov.au/about-the-reef/reef-health>>
- 16 Link to water licence, courtesy of Sydney Morning Herald: <<http://www.smh.com.au/cqstatic/gvdane/adaniawl.PDF>>
- 17 Parkinson, G., RenewEconomy, 'Coalition backtracks on Paris deal, ABC cuts corners on energy', 9 May 2017, accessed 27 June 2017, <<http://reneweconomy.com.au/coalition-backtracks-on-paris-deal-abc-cuts-corners-on-energy-60654/>>
- 18 Morton, A., Sydney Morning Herald, 'We can't be passive bystanders': Advisers call for dramatic re-think on Great Barrier Reef', 21 May 2017, accessed 27 June 2017, <<http://www.smh.com.au/federal-politics/political-news/we-cant-be-passive-bystanders-advisers-call-for-dramatic-rethink-on-great-barrier-reef-20170519-gw8yb7.html>>
- 19 Slezak, M., The Guardian, 'Great Barrier Reef 2050 plan no longer achievable due to climate change, experts say', 25 May 2017, accessed 26 June 2017, <<https://www.theguardian.com/environment/2017/may/25/great-barrier-reef-2050-plan-no-longer-achievable-due-to-climate-change-experts-say>>
- 20 Great Barrier Reef Marine Park Authority, 'Reef Health', 29 May 2017, accessed 27 June 2017, <<http://www.gbrmpa.gov.au/about-the-reef/reef-health>>
- 21 Transcript of Senate Environment and Communications Legislation Committee - Estimates., Monday, 22 May 2017, <http://parlinfo.aph.gov.au/parlInfo/download/committees/estimate/0335ea0e-37f5-43ad-b439-2b24c10e2acd/toc.pdf/Environment%20and%20Communications%20Legislation%20Committee_2017_05_22_5041.pdf?fileType=application%2Fpdf> p. 50
- 22 Murphy, K., The Guardian, 'Coalition votes to allow Clean Energy Finance Corporation to invest in carbon capture', 30 May 2017, accessed 20 June 2017, <<https://www.theguardian.com/australia-news/2017/may/30/coalition-votes-to-allow-clean-energy-finance-corporation-to-invest-in-carbon-capture>>
- 23 Unattributed, ABC News, 'Adani and Queensland government reach agreement over royalties for Carmichael coal mine', 30 May 2017, accessed 20 June 2017 <<http://www.abc.net.au/news/2017-05-30/adani-coal-mine-back-on-track-after-royalties-agreement/8573558>>
- 24 UNESCO World Heritage Committee, Provisions Agenda Item 7B (WHC/17/41.COM/7B.Add), <<http://whc.unesco.org/archive/2017/whc17-41-com-7BAdd-en.pdf>>
- 25 UNESCO World Heritage Committee, 'Assessment: World Heritage coral reefs likely to disappear by 2100 unless CO2 emissions drastically reduce', 23 June 2017, accessed 20 June 2017, <<http://whc.unesco.org/en/news/1676/>>
- 26 AAP via 9 News, 'Call for more climate focus in reef plan', 16 October 2016, accessed 4 November 2016, <<http://www.9news.com.au/national/2016/10/17/13/40/call-for-more-climate-focus-in-reef-plan>>
- 27 Great Barrier Reef Independent Review Group, 'Reef 2050 Long-term Sustainability Plan Progress on Implementation Review', February 2017, <<http://apo.org.au/system/files/73975/apo-nid73975-79101.pdf>>
- 28 Slezak, M., The Guardian, 'Great Barrier Reef 2050 plan no longer achievable due to climate change, experts say', 25 May 2017, accessed 26 June 2017, <<https://www.theguardian.com/environment/2017/may/25/great-barrier-reef-2050-plan-no-longer-achievable-due-to-climate-change-experts-say>>
- 29 Independent Expert Panel, Communiqué 5 May 2017 - Reef 2050 Plan, 5 May 2017, <<http://www.environment.gov.au/system/files/pages/abf10d5e-b94d-4495-b79b-90dc52274f69/files/expert-panel-communiqu-5may2017.pdf>>
- 30 Brodie, J. and Pearson, R. (2016) 'Ecosystem health of the Great Barrier Reef: Time for effective management action based on evidence', Estuarine, Coastal and Shelf Science, Volume 183, Part B: 438-451
- 31 UNESCO World Heritage Committee, 'Assessment: World Heritage coral reefs likely to disappear by 2100 unless CO2 emissions drastically reduce', 23 June 2017, accessed 20 June 2017, <<http://whc.unesco.org/en/news/1676/>>
- 32 Hughes, T. et al. Nature 543, 373–377 (16 March 2017) doi:10.1038/nature21707
- 33 Hunte, E., The Guardian, 'Paris agreement's 1.5C target 'only way' to save coral reefs, Unesco says', 24 June 2017, accessed 25 June 2017, <<https://www.theguardian.com/environment/2017/jun/24/paris-agreements-1-5c-target-only-way-to-save-coral-reefs-unesco-says>>
- 34 Harvey, F., The Guardian, 'World has three years left to stop dangerous climate change, warn experts', 29 June 2017, accessed 29 June 2017, <<https://www.theguardian.com/environment/2017/jun/28/world-has-three-years-left-to-stop-dangerous-climate-change-warn-experts>>
- 35 Transcript of Economics Legislation Committee Estimates - Estimates, 2 March 2017, <<http://parlinfo.aph.gov.au/parlInfo/search/display/display.w3p;db=COMMITTEES;id=committees%2Festimate%2F7be3e295-c546-44fb-901a-7df92174ce62%2F013;query=id%3A%22committees%2Festimate%2F7be3e295-c546-44fb-901a-7df92174ce62%2F0000%22>>
- 36 Greenpeace Australia Pacific, Off-Track: Why NALF can't approve the Carmichael Rail Project, December 2016, <[http://www.greenpeace.org/australia/PageFiles/293385/Off%20Track%20-%20Why%20NALF%20can't%20approve%20the%20Carmichael%20Rail%20Project%20\(web%20version\).pdf](http://www.greenpeace.org/australia/PageFiles/293385/Off%20Track%20-%20Why%20NALF%20can't%20approve%20the%20Carmichael%20Rail%20Project%20(web%20version).pdf)>
- 37 Gartell, A., Sydney Morning Herald, 'Just 7 per cent of voters want the government to invest in Adani mine: poll', 22 May 2017, accessed 20 June 2017, <<http://www.smh.com.au/federal-politics/political-news/just-7-per-cent-of-voters-want-the-government-to-invest-in-adani-mine-poll-20170521-gw9k4g.html>>





© Gary Bell / oceanwideimages.com

**Media and Great Barrier Reef
photos / video enquiries:**

Rachael Vincent
Mobile: +61 413 993 316
media.au@greenpeace.org

Published July 2017:

Greenpeace Australia Pacific
Level 2, 33 Mountain Street
Ultimo NSW 2007
Australia

© 2017 Greenpeace
greenpeace.org/australia

GREENPEACE