

DON'T MENTION THE EMERGENCY?



**MAKING THE CASE FOR
EMERGENCY CLIMATE ACTION**

JANE MORTON



“THIS IS AN EMERGENCY AND FOR EMERGENCY SITUATIONS WE NEED EMERGENCY ACTION.”

United Nations (UN) Secretary-General Ban Ki Moon, 2007.¹

“WE’VE REACHED A POINT WHERE WE HAVE A CRISIS, AN EMERGENCY, BUT PEOPLE DON’T KNOW THAT. THERE’S A BIG GAP BETWEEN WHAT’S UNDERSTOOD ABOUT GLOBAL WARMING BY THE SCIENTIFIC COMMUNITY AND WHAT IS KNOWN BY THE PUBLIC AND POLICYMAKERS.”

James Hansen, 2008, then Director of NASA’s Goddard Institute for Space Studies.²



“WE MUST FULLY ADOPT THE LANGUAGE OF IMMEDIATE CRISIS AND EXISTENTIAL DANGER. WE MUST TALK ABOUT CLIMATE CHANGE AS THREATENING TO CAUSE THE COLLAPSE OF CIVILISATION, KILLING BILLIONS OF PEOPLE AND MILLIONS OF SPECIES... THIS IS NOT A MATTER OF ‘PROTECTING THE PLANET FOR FUTURE GENERATIONS’ BUT PROTECTING OUR OWN LIVES AND THOSE OF THE PEOPLE WE CARE ABOUT.”

Margaret Klein Salamon, Research Director of The Climate Mobilization, 2016.³

“UNDER-REPORTING ON [THE EXTREME RISKS REPRESENTED BY TIPPING POINTS] IS IRRESPONSIBLE, CONTRIBUTING TO THE FAILURE OF IMAGINATION THAT IS OCCURRING TODAY IN OUR UNDERSTANDING OF, AND RESPONSE TO, CLIMATE CHANGE.”

David Spratt, Research Director for Breakthrough, 2018.⁴



“PEOPLE WHO UNDERSTAND THAT THEY ARE LITERALLY FIGHTING FOR THEIR CHILDREN’S LIVES MAY WELL LOSE ALL FEAR AND BECOME THE KIND OF ‘IRRESISTIBLE’ NON-VIOLENT FORCE THAT CHANGES EVERYTHING. IF WE CONTINUE NEGOTIATING WITH THE POWERS THAT BE FOR LESS BAD OPTIONS, WE CEDE OUR VISION OF WHAT IS POSSIBLE BEFORE THE FIGHT EVEN BEGINS.”

Anya Grenier, lead author of ‘Blueprint for an emergency climate movement’, 2017.⁵

“CLIMATE CHANGE IS NOW REACHING THE END-GAME, WHERE VERY SOON HUMANITY MUST CHOOSE BETWEEN TAKING UNPRECEDENTED ACTION OR ACCEPTING THAT IT HAS BEEN LEFT TOO LATE AND BEAR THE CONSEQUENCES.”

Professor Hans Joachim Schellnhuber, Founding Director (1992-2018) of the Potsdam Institute for Climate Impact Research, 2018.⁶



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Contact us at DarebinCAN@gmail.com. We also welcome your comments and invitations to work with groups to adapt the emergency message to reach various audiences.

Darebin Climate Action Now acknowledges the traditional owners and custodians of the land upon which this publication was created, the Wurundjeri people of the Kulin Nation. We pay our respects to their Elders, past, present and emerging. Aboriginal and Torres Strait Islander people are at the forefront of action on the climate crisis in Australia and we acknowledge the pivotal role they continue to play in protecting and caring for Country.

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INTRODUCTION

Scientists are sounding the alarm

Recently, climate experts have started talking about a new category of threat: not just ‘dangerous’, or even ‘catastrophic’, but ‘existential’ – a threat that could annihilate most people on earth.⁷

In 2017, Professor Veerabhadran Ramanathan and thirty-two colleagues from the Committee to Prevent Extreme Climate Change examined scenarios relating to the Paris agreement to limit global temperature increases to “well below 2°C”.⁸ **They found that only the strongest possible emergency emissions reductions, together with the drawing down of greenhouse gases from the atmosphere, gives any real chance of remaining below 1.5 degrees of warming by the end of the century.**

The “well below 2°C” scenario (represented by the green line in the diagram) requires us to pull hard on three ‘levers’: (lever 1) rapidly reduce carbon dioxide emissions to zero; (lever 2) dramatically reduce short-lived climate pollutants like methane, hydro-fluorocarbons and black soot; and (lever 3) draw down up to one trillion tonnes of the carbon dioxide already in the atmosphere (about half what we have emitted to date). Low-to-moderate emissions reduction scenarios (represented by orange and brown lines in the diagram) would likely take us well into the catastrophic and existential risk zones.⁹

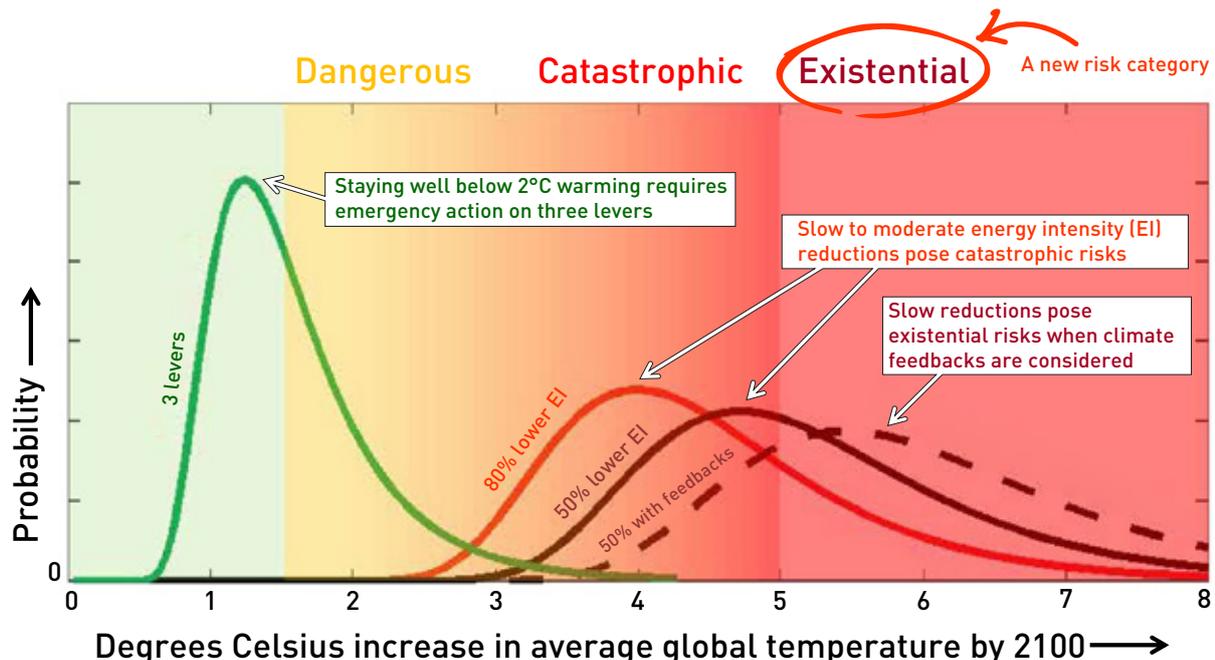
We could be heading for ‘Hothouse Earth’

A paper by Australian climate scientist Professor Will Steffen, founding director of the Potsdam Institute for Climate Impact Research, Professor Hans Schellnhuber, and 13 others found that “**even if the Paris Accord target of a 1.5 °C to 2.0 °C rise in temperature is met, we cannot exclude the risk that a cascade of feedbacks could push the Earth System irreversibly onto a ‘Hothouse Earth’ pathway**”.¹⁰

These authors urge consideration of the use of solar radiation management, in addition to the three levers described by the Committee to Prevent Extreme Climate Change, to minimise the risk of triggering tipping points.

Current warming is not safe

Even the current level of warming (just over one degree) is clearly far from safe: extreme weather is increasing, ice caps are melting, and coral reefs are dying. To return to below one degree of warming would require still stronger action than that outlined by Ramanathan and colleagues.¹¹



A simplified version of a diagram from Ramanathan et al. (2017) showing the range of probabilities of various temperature outcomes by 2100. It illustrates four scenarios (from left): a “well below 2°C” scenario with strong action on the three levers described above; a scenario in which the energy intensity (EI- the ratio of energy use to economic output) decreases by 80% (compared with 2010); a scenario in which EI decreases by only 50%; and a 50% EI decrease scenario that includes carbon cycle feedbacks.

The emergency message is not reaching the public

Time is running out to address the climate emergency, but there remains a vast gulf between what political leaders and the media say, and the truth. The most frequently heard message is that staying under two degrees of warming will keep us safe, and that gradual emissions reductions of around 26% (Coalition) or 45% (Labor) represent 'our fair share' of the challenge. The catastrophic risks are not explained and the speed and scale of action required is massively understated.

A number of forces make it difficult for an honest appraisal of the situation to reach the public.

Vested interests are running the biggest disinformation campaign in history. They have a corrupting influence on politicians and the media and are prepared to spend millions of dollars to block action.¹²

Climate scientists are pressured to understate the risks. They are threatened and harassed and risk losing research funding for making strong statements.¹³ The Intergovernmental Panel on Climate Change (IPCC) reports **"tend towards reticence and caution, erring on the side of 'least drama', and downplaying the more extreme and more damaging outcomes."**¹⁴

Climate scientist Kevin Anderson, of the Tyndall Centre for Climate Change Research, says: **"We simply are not prepared to accept the revolutionary implications of our own findings, and even when we do we are reluctant to voice such thoughts openly."**¹⁵

There is a widespread but baseless view that 'fear doesn't work'¹⁶ and unfounded confidence in 'bright-siding' (positive-only messages).¹⁷ Scientists and journalists who use emotional language or talk about worst-case scenarios are shot down as 'alarmists',¹⁸ criticised for too much 'doom and gloom'¹⁹ or accused of 'peddling disaster porn'.²⁰



IMAGE: SEED

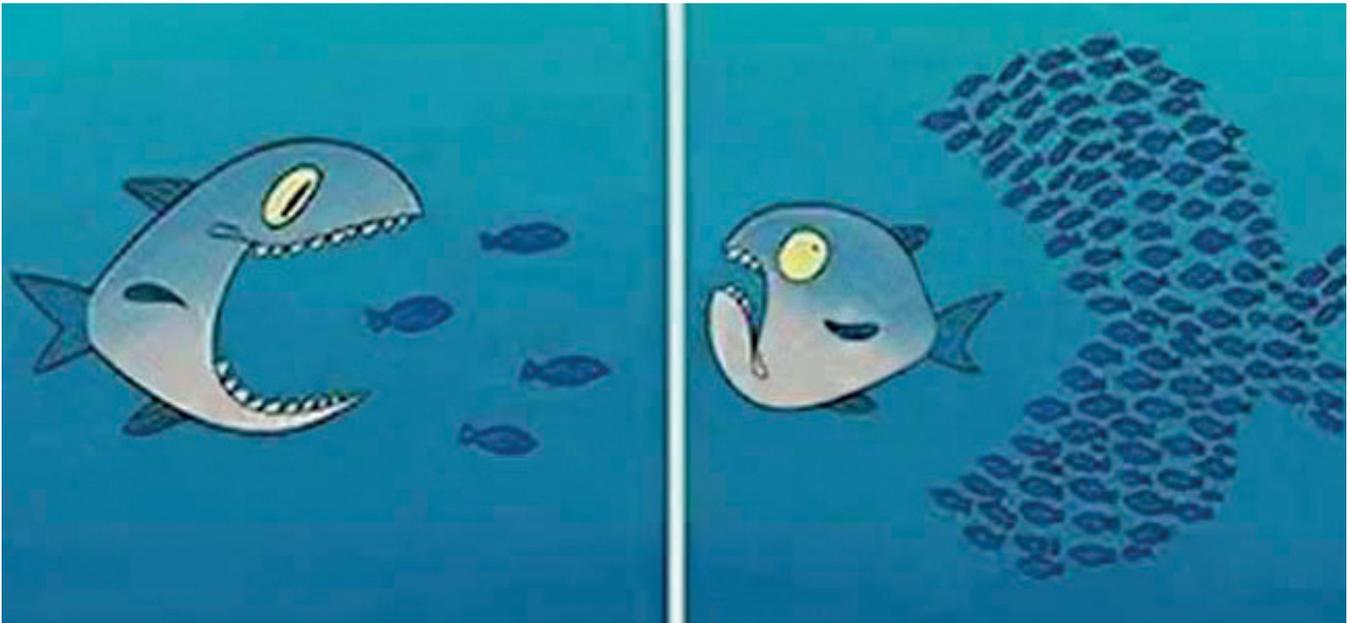
Leaders must lead

We need leaders to step up, but they must hear a clear, strong emergency message coming from all sides before they will be willing to lead the public on emergency action.

This handbook describes the message that is increasingly being taken up by scientists, commentators and campaigners, and must eventually be taken up by leaders if we are to achieve a safe climate future in the time that remains.



THE PSYCHOLOGY OF STRONG ACTION



Facts are not enough to move people to action

Effective messages speak to universal values and are conveyed via powerful images, evocative language and engaging stories.²¹ They evoke high arousal emotions like fear, anger, courage and determination, prompting a state of activation and readiness to act.²² And yet, campaigners and commentators are often urged not to talk in ways that arouse one key activating emotion: fear.²³

The following sections outline relevant research on emotions, including public health research on the use of fear in 'high-threat high-efficacy' campaigns.

Honesty is important

The 'doom and gloom' debate came to a head recently when deputy editor and senior journalist, David Wallace-Wells wrote a controversial *New York Magazine* cover story, *The uninhabitable earth*.²⁴ The article was read more than two million times, even though it focused exclusively on worst-case outcomes of global warming, with no mention of solutions.

In replying to critics, who labeled him as alarmist,²⁵ David Wallace-Wells argued that fully informing the public is important: **"It just so happens that people seem much less aware of those sorts of [worst-case] risks than they are of the positive [possibility] that life will continue much like it is now ... It didn't seem**

plausible to me that there was more risk of scaring people too much than there was of not scaring them enough ... If there's a one per cent chance that we've set off a chain reaction that could end the human race, then that should be something that the public knows and thinks about."²⁶

Joe Romm, founding editor of Climate Progress, a climate science blog, came out in support, pointing out that the most serious risks of global warming are generally not explained: **"The true worst-case scenario is so bad that scientists simply assume humanity is too rational and moral to let that happen ... The IPCC ... has never plainly laid out what that worst-case scenario is and what it would mean for human society."**²⁷

All people have the right to know the truth and make informed choices in what has been referred to as 'the age of consequences'.²⁸

'High-threat high-efficacy' messages work

Decades of advertising and public health initiatives show that a very effective way to move people to action is to provide moving and graphic descriptions of a personally relevant threat, together with clear advice about how to address it. The Quit anti-smoking campaign follows this format, as do those on speeding, seat belts, drink driving and AIDS. These are sometimes referred to as 'high-threat high-efficacy' campaigns and they all make extensive use of fear to catch the audience's attention and prompt action.²⁹

A 2015 meta-analysis of 127 public health research studies concluded: **"Fear appeals are effective at positively influencing attitudes, intentions, and behaviors; there are very few circumstances in which they are not effective, and there are no identified circumstances under which they backfire and lead to undesirable outcomes"**.³⁰

A review by the World Health Organisation concluded that an initial tendency to avoid an anxiety-provoking message is not necessarily a bad sign: **"Those smokers who engaged in avoidant behaviors were no less likely to intend to quit or to attempt to quit ... such reactions are actually indicators of positive impact."**³¹ Fear appeals are no less effective with anxious individuals³² and strong fear appeals are more persuasive than weak fear appeals.³³



Evoke anger and courage not guilt and helplessness

Anger can be useful for motivating people to act, as we can see from looking at successful campaigns around social justice issues. It can also counter feelings of depression or helplessness associated with a history of powerlessness.³⁴ Researchers Daniel Chapman, Brian Lickel and Ezra Markowitz argue that **"contrary to a simplistic view of anger as destructive, research shows that anger is typically the emotion most strongly associated with motivating individuals to rectify social injustices"**.³⁵

Guilt and shame are used quite deliberately by opponents of environmental action to reinforce people's identities as consumers rather than citizens³⁶ and divert them from taking up their power as citizens.

For example, when the food industry wanted to defeat laws to limit packaging waste and charge a deposit on bottles and cans, they launched the Keep America Beautiful campaign – soon cloned here as Keep Australia Beautiful. This aimed to shift public concern about over-production of waste by industry to a focus on individual responsibility and guilt about littering.³⁷

Messages calling for action by government have been found to receive more support than those calling for individual action. In one study, people who were less certain that climate change is a serious threat were found to be unresponsive to messages calling for individual action but more supportive of an active climate policy by government.³⁸

It is not fair to blame individuals for the climate crisis. Nor should we blame campaigners or scientists for a failure to get the message through. Yes, well-crafted messages are needed, but genuine action on climate would have succeeded long ago if it were not for the vast wealth and power of those opposing action.

Climate scientist Kate Marvel says that she is often asked to talk about hope, but she believes what is needed is courage.³⁹ **In a crisis, courage and determination can move people to acts of self-sacrifice and heroism, even when success is not certain.**

Leaders and trusted messengers are persuasive

A considerable part of the problem in getting the climate emergency message to the public is the failure of most of our political representatives to speak up and assume a leadership role. Research shows the strong effects of pressure from peers and leaders.⁴⁰ According to Professor of Psychology Noam Shpancer: **“Human beings are herd animals. We survive only in highly coordinated groups. Individually, we are designed to pick up social cues, coordinate and align our behaviour with those around us. Recent research has shown that social disapproval provokes the brain’s danger circuits. Conformity soothes.”**⁴¹

It is hard for people to believe that the climate crisis poses a catastrophic risk and emergency action is required while politicians bicker and score points, and commentators assert that the completely inadequate emissions reduction targets agreed to under the Paris climate agreement will be enough to keep us safe.⁴² (See more on page 18.)

It is sometimes argued that right-leaning voters are less willing to acknowledge the need for strong climate action because of their reluctance to interfere with the free market;⁴³ but if right-wing political leaders show support for ideas like subsidies for the fossil fuel industry, or tougher regulation of energy retailers, then it becomes clear that the views of leaders are more potent than ideology.⁴⁴

Members of the public often underestimate the extent to which compassionate values are shared and may be unaware of the wide support for climate action policies. **Finding out that many share their values and views can decrease cynicism and increase political engagement.**⁴⁵

Campaigners are often told to reach out to various audiences using narratives that appeal to their world-views. However, political ‘tribal’ identities can be strong, and the signals used to pick a fellow member are subtle and hard to fake. Farmers trust farmers, defence experts trust defence experts.⁴⁶ Climate campaigners need to put at least as much effort into finding and supporting trusted messengers as they do into crafting the messages. **A well-chosen messenger will know what works with their audience.**

Activate empathy and appeal to values

Remember the effect that the picture of the drowned Syrian boy and his father had on sympathy for refugees?⁴⁷ If we want people to care about those who are already suffering, we need to tell the stories of people and use pictures that show faces and emotions.

Humans tend to respond with compassion to individuals, or small numbers of people, not to ‘faceless masses’ (a well-documented phenomenon, known as the ‘identifiable victim effect’).⁴⁸ **“When an identifiable person is at risk of death, the media tell us a lot about them, and we may come to feel that we know them. Research on ‘vividness’ has shown that specific, concrete examples have far greater influence on what people think and how they behave than more comprehensive but pallid statistical information.”**⁴⁹ When we see another person suffering, or hear a compelling story, similar feelings are evoked in the observer, but this only works if we know enough about the person to feel an emotional connection.

There are ways of talking about conflicts and mass migration that evoke empathy rather than xenophobia, including **re-framing global challenges as ‘human security’ issues rather than ‘national security’.**⁵⁰

In their hearts, most people value the same things: health and happiness for themselves and their loved ones; good relationships with friends and family; leaving a positive legacy; and a safe climate future for their children. The apparent difference between conservative and progressive world views tends to dissolve when a crisis threatens a community. The Lock the Gate campaign against gas mining has shown that, even in conservative farming areas, if neighbours are approached by neighbours, over 90% will support Lock the Gate’s call to take a stand for **“our land, our water and our future”.**⁵¹



Use three-word slogans and strong messages

Do three-word (or two-word) slogans work? Of course they do! Opponents of climate action use them ('Axe the tax', 'Stop the boats') and so does the climate movement ('Stop Adani', 'Lock the Gate', '100% renewables').

A climate emergency message will only survive in the babble of information overload if it is conveyed via simple and memorable phrases. As communications expert David Fenton explains, **"the brain only absorbs messages that are simple and that are repeated."**⁵²

Our brains unconsciously average: we have a strong tendency to assume that the best buy lies somewhere in the mid-price range and that the truth lies somewhere in between two strongly argued points of view.⁵³ When a shop wants to sell a \$600 TV, they are careful to place it between one that is less expensive and another that is more expensive. Similarly, audiences will tend to assume that climate reality is somewhere between what climate scientists say and what they have heard from climate sceptics.

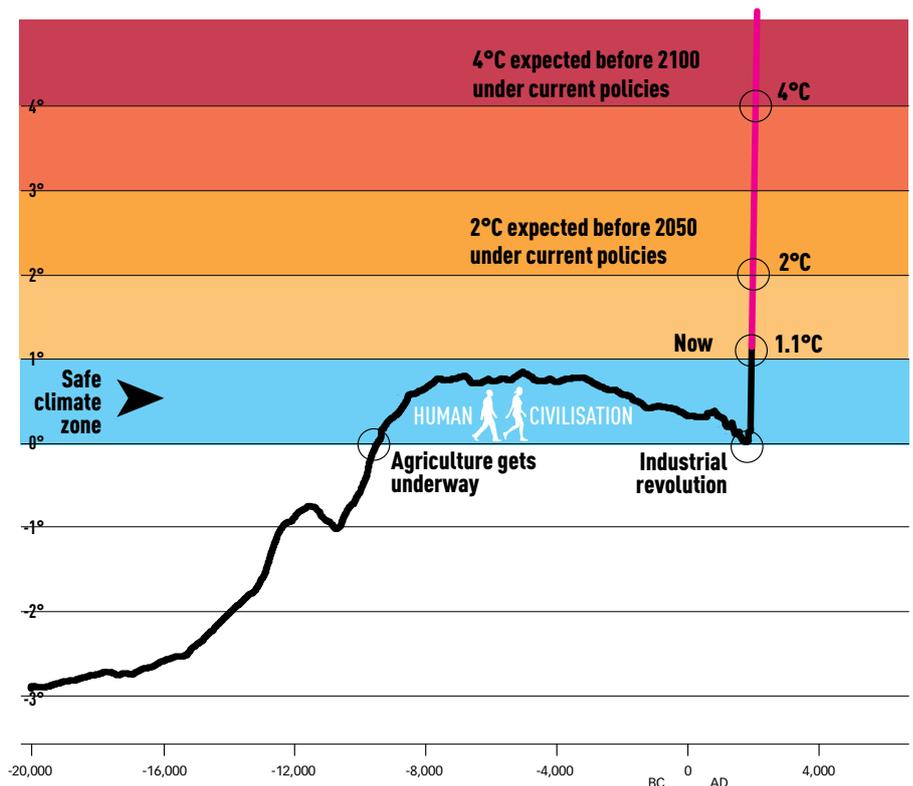
As messaging expert George Lakoff has pointed out: **"Political ground is gained not when you successfully inhabit the middle ground, but when you successfully impose your framing as the 'common-sense' position."**⁵⁴



The debate we need to have

The climate movement has spent much of what was sometimes referred to as 'the critical decade' arguing with disinformation experts whether climate change is real. It was not made clear to decision makers and the public that this was the critical decade for reaching zero emissions, not, as widely believed, the decade to reach peak emissions and start a gradual decline.

As founding director of the Potsdam Institute for Climate Impact Hans Schellnhuber points out, humanity is **"now reaching the end-game."**⁵⁵ There is now not enough time for a long debate about whether the current climate trajectory is an emergency or can be addressed with gradual change. The forecasts are compelling and the scenarios are devastating. It's time to move straight to the most important question of our times: **how to restore a safe climate at emergency speed.**



Average global temperature from 20,000 BC. Based on a graph by Jos Hagalaars (2013) drawing on data from a number of scientific papers.⁵⁶

TALKING ABOUT THE THREAT



IMAGE: RERU

The first part of the climate emergency message is describing the threat. To move leaders and the public to action, use strong terms like ‘climate emergency’ and clearly describe the risks we face.

The earth is already too hot

Explaining that **the earth is already too hot** is an approach that is more readily understood than referring to global temperatures. Saying that ‘we need to stay under two degrees of warming’ makes it sound as though the danger is somewhere far in the future. And referring to the threat as ‘two degrees of warming’ can make it sound like just a few more beach days. A concerted campaign to ‘connect the dots’ between global warming and droughts, floods and fires has helped raise public awareness that **global warming is dangerous and happening now**, rather than being a vague threat in the future.

Media attention on the bleaching and subsequent death of large parts of the Great Barrier Reef, including emotional responses from David Attenborough⁵⁷ and coral scientists,⁵⁸ seems to have helped shift public understanding beyond this towards awareness that **global warming is causing irreparable harm.**⁵⁹

People are suffering as well as the natural world

Heat wave deaths: The heatwave in the lead up to the Black Saturday fires in Victoria killed twice as many people as the fires did⁶⁰ and the 2003 European heatwave killed 35,000,⁶¹ but images of the people affected are difficult to find. Audiences connect more with stories than with statistics.⁶²

Food and water shortages: If current patterns of use continue, two-thirds of the world’s population will be facing water shortages by 2025. **“What’s happening bit by bit is that water scarcity is becoming increasingly common all around the world, no matter where you look, as country after country hits the limit of what it can use,”** says Professor Mike Young, specialist in water policy at the University of Adelaide, **“whether that’s in Australia, California, China, India, Pakistan, or right throughout Africa.”**⁶³

Sea-level rise: Many of the people who are suffering first and worst are those who have done nothing to contribute to the climate crisis. Low-lying islands in the Pacific, and Torres Strait islands like Masig and Boigu, are at the forefront of forced displacement; so are large and densely populated countries such as Bangladesh.⁶⁴ Joseph Billy, a fisherman from Masig Island (shown in the picture) says: **“Every year we see the land disappearing. Last five years, every year I have moved my shed back from the beach another few metres.”**⁶⁵

Human security: In the same way that climate commentators now say that global warming is ‘loading the dice’ for extreme weather, there is increasing awareness that global warming is a **threat multiplier for conflict and mass migration.**⁶⁶

A severe drought in Syria is thought to have increased instability before the outbreak of fighting with 1.5 million driven off their farms and moving into cities.⁶⁷

Bangladesh is the ‘ground zero’ of climate impacts. India has built what is sometimes referred to as a ‘climate refugee fence’ along the border, patrolled by 80,000 troops. Read more in Ian Dunlop and David Spratt’s report *Disaster Alley*.⁶⁸

We risk the collapse of human civilisation

A four degrees warmer world is now a likely outcome if we continue our current path, not a worst-case scenario.⁶⁹ Scientists are increasingly speaking out about the risk of catastrophic outcomes, including the deaths of billions of people and the collapse of human civilisation. According to Professor Kevin Anderson: **“A 4°C future is incompatible with an organised global community, is likely to be beyond ‘adaptation’, is devastating to the majority of ecosystems, and has a high probability of not being stable.”** He says: **“If you have got a population of nine billion by 2050 and you hit 4°C, 5°C or 6°C, you might have half a billion people surviving.”**⁷⁰

These are important components of the emergency message because they describe impacts that will affect everyone. The relatively well-off may assume that they can buy themselves food and shelter despite extreme weather and sea-level rise, but if human civilisation breaks down, everyone will suffer.



IMAGE: OXFAM



We are running out of time to act

The story of tipping points is central to making the case for emergency action. It’s not just that global warming is worsening, it may soon move beyond our capacity to influence. **Going over a cliff slowly is not that much different from going over a cliff fast. We need to apply the brakes not just take our foot off the accelerator.**

Recently we have seen slowing of the Atlantic Ocean currents including the Gulf Stream, a phenomenon associated with abrupt temperature changes in the last Ice Age.⁷¹ As oceans are becoming more acidic and circulation of nutrients slows, the number of phytoplankton is decreasing at 1% per year, affecting the aquatic food chain and the production of the oxygen we breathe.⁷² Other tipping points of concern include:

- Thawing of the Arctic permafrost, with an associated release of carbon dioxide and methane.
- Large-scale die-back of forests, leading to a reduced capacity for natural drawdown.
- Melting of large ice sheets, resulting in heating due to decreased albedo (the proportion of the heat from the sun’s rays that is reflected).⁷³

How many people understand what such tipping points mean for our future?

TALKING ABOUT SOLUTIONS



The second part of the climate emergency message is describing a path to proportionate solutions that fully address the threat. It is too late for gradual incremental steps to protect what we care about: we must move outside business-as-usual and politics-as-usual into emergency mode, launching a coordinated society-wide climate mobilisation.

It's time to move into emergency mode

If we are to make an emergency transition at the speed and scale that is required, we need a psychological and political shift into emergency mode. However, this transition is seldom mentioned. Margaret Klein Salamon from The Climate Mobilization in the United States, describes emergency mode like this: **“Imagine there is a fire in your house. What do you do? What do you think about? Your senses are heightened, you are focused like a laser, and you put your entire self into your actions. You enter emergency mode.”**⁷⁴

Emergencies can bring out the best in people – or the worst. So the framing of the emergency message needs to include words and images linked to collaborative effort and a re-ordering of community priorities. One way to approach this is to say that **we need to move into emergency mode as we do when faced with a cyclone, fire or flood, working**

with others to do whatever is needed.⁷⁵ Disasters often move people to acts of great courage and bring communities together to work for the greater good. For example, following the 2015 Brisbane floods, 55,000 people came out on the streets to contribute to the clean-up.⁷⁶

The transition into emergency mode usually happens as a disaster unfolds, creating a tangible trigger. How can campaigners motivate this shift? One option is to initiate a process to **declare a climate emergency**. In Australia, we are used to the declaration of an emergency in times of natural disaster. In such times the priorities of communities shift radically: people readily support rationing or regulation of essential services and are willing to direct all available resources to the shared task of overcoming the crisis.⁷⁷

A society-wide climate mobilisation is required

As well as describing a shift in state of mind, the solutions part of the climate emergency message must capture the speed and scale of change required. The Climate Mobilization calls for people to pledge support for **a World War II-scale climate mobilisation**.⁷⁸

History shows that societies can rapidly transform when faced with a serious threat: massive changes have been achieved in wartime. The threat of billions of people dying as large parts of the world become uninhabitable is bigger than any war we have faced. This framing has been used by Australian climate scientist, Professor Will Steffen, who is quoted as saying we need something **“more like wartime footing”**.⁷⁹

Some campaigners in Australia have been reluctant to use wartime as a frame, but it is difficult to find an alternative: the Snowy Mountains scheme was a massive project but it didn't transform the whole economy; Al Gore uses the spread of technologies such as the mobile phone to talk about fast change,⁸⁰ but again this comparison does not convey the need for a period of society-wide change predominantly driven by regulation. An alternative wording that has been used in the Australian campaign to declare a climate emergency is to talk about **“a scale and speed of change never before seen in peacetime”**.⁸¹

A fast transition to zero emissions is possible

It has been clear for at least a decade that an emergency transition to zero emissions and beyond is required. While governments have turned a blind eye to the risk, climate campaigners, experts, and community leaders have had to shoulder the burden of developing emergency transition plans.

In Australia, Beyond Zero Emissions has produced zero emissions plans for stationary energy (electricity), buildings and land use.⁸² In the United States, Ezra Silk from The Climate Mobilization has written a Victory Plan⁸³ describing the social and economic changes needed to accomplish an emergency transition. These include the use of rationing of essential services and strong regulation to ensure fairness and protection for affected workers and communities.



A recent book, *Drawdown*, edited by Paul Hawken, reports on the work of a vast team of researchers and recommends 80 initiatives that could reduce emissions and/or accomplish large-scale drawdown.⁸⁴ *Drawdown* describes many well-known climate solutions like **100% renewable energy, electric vehicles, energy efficiency, changing what we eat, and reducing food waste**. Also described are some less well-known solutions, including **improving women's access to education and voluntary high-quality family planning in developing countries, and rapidly phasing out problematic refrigerant gases**.



What goes up must come down

Addressing the climate emergency requires us to implement as many solutions as possible simultaneously, without delaying emissions reductions and with no use of 'offsets'. The earth is already too hot and our carbon budget has been zero for quite some time. **From now on, what goes up must come back down.** As we are already in overshoot, there is an additional task of drawing down some of the carbon already in the atmosphere – a process sometimes referred to as 'negative emissions' or 'atmospheric carbon extraction'.

There has been little public discussion of drawdown, and there are a number of reasons this might be an awkward topic. The Paris agreement relies heavily on being able to successfully suck the carbon emissions back from the atmosphere in the longer term, using measures such as biomass energy with carbon capture and storage (BECCS). This reliance is not directly mentioned⁸⁵ and BECCS is unlikely to work at the scale required.⁸⁶ According to deputy director of the Tyndall Centre for Climate Change Research, Kevin Anderson: **"It is pantomime season and the world has just gambled its future on the appearance in a puff of smoke of a carbon-sucking fairy godmother."**⁸⁷

Former NASA chief scientist James Hansen estimates that: **"If phasedown of fossil fuel emissions begins soon, improved agricultural and forestry practices - including reforestation and steps to improve soil fertility and increase its carbon content- may provide much of the necessary carbon dioxide extraction."**⁸⁸

Natural carbon drawdown methods, including restoration of forests and wetlands, regenerative farming, biochar and marine permaculture, are all win-win solutions and talking about these can help raise support for negative emissions. The sooner we reach zero emissions, the smaller the drawdown task will be and the less we will need to rely on expensive measures like direct air capture of carbon dioxide or problematic measures like BECCS.⁸⁹

Restoring forests and wetlands

We are in a race against time when it comes to preserving and regenerating forests, wetlands and other ecosystems. If we take the strongest possible action to reduce emissions, and move fast, the natural world can make a significant contribution to the tasks of drawing down the carbon dioxide we must remove



from the atmosphere. If we move slowly, we will see global warming destroying these habitats faster than we can restore them.⁹⁰

"Reforestation and afforestation could improve the quality of the planet through the conservation of biodiversity and an improvement in water quality and water resources, and all of this while we are reducing the concentration of carbon dioxide in the atmosphere. It's a win-win-win possibility" according to Alessandro Baccini, a lead author of a 2017 study on tropical forests.⁹¹

Coastal wetlands and mangrove forests are very rich carbon stores. Coastal wetlands can store five times as much carbon as tropical forests over the long-term while providing nurseries for fish, feeding grounds for migratory birds and a first line of defence against storm surges.⁹²



Regenerative farming and biochar

Soil contains more carbon than air and plants combined. This means even a minor change in soil carbon would be likely to have major implications.⁹³ Again, it's a race against time.

According to Whendee Silver, senior author of a 2018 meta-analysis of the impact of changed farming practices on soil carbon and climate, **“well-established agricultural management practices such as planting cover crops, optimising grazing and sowing legumes on rangelands, if instituted globally, could capture enough carbon from the atmosphere and store it in the soil to make a significant contribution to international global warming targets”**.⁹⁴

Regenerative farming practices minimise or eliminate the need for fertilisers and pesticides, reducing cost, and improving the health of the soil by allowing below-ground life to flourish.⁹⁵ They help store water in the soil, drought-proofing farms, and can cool the local area via transpiration (the way plants take in and give off moisture).⁹⁶ As Whendee Silver explains: **“Anytime you increase the organic content of soils, you are generally increasing the fertility, water-holding capacity, and sustainability, decreasing erosion and improving general resilience to climate change.”**⁹⁷ Across the world, around one billion acres has been lost to land degradation. *Drawdown* project researchers estimate that almost half of that area could be converted to regenerative agriculture.⁹⁸

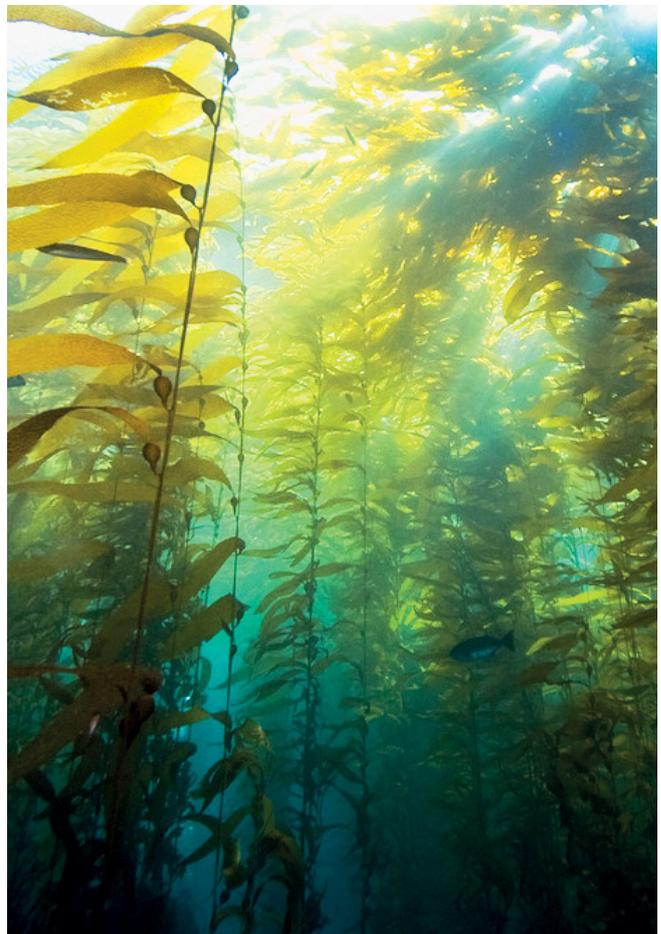
Biochar is a stable form of carbon produced by the controlled heating of plant and/or animal material (biomass feedstock) at high temperatures in a low oxygen environment. When buried, it improves soils and stores carbon over hundreds of years.⁹⁹

Yacouba Sawadogo (shown in the picture above) is a farmer from Burkina Faso in Africa who pioneered farmer-managed natural regeneration, allowing trees to grow between his grain crops. Use of this simple, cheap and effective technique has spread rapidly in neighbouring areas and is helping to hold back the spread of the Sahara Desert. **“This is probably the largest positive environmental transformation in the Sahel and perhaps in all of Africa,”** according to Chris Reij, a Dutch environmental specialist who has worked in northern Africa for thirty years. He estimates that in Niger alone, farmers have grown 200 million trees and rehabilitated 12.5 million acres of land.¹⁰⁰



Marine permaculture

The oceans are also a massive store of carbon, containing 55 times as much as the atmosphere, mostly in the top 150 metres of water. Plankton and kelp together comprise half the organic matter on earth and produce at least half the earth's oxygen. Scientist Tim Flannery and *Drawdown* editor Paul Hawken both see potential for marine permaculture to recreate entire ocean ecosystems and contribute to drawdown.¹⁰¹ Wave-driven pumps could bring nutrient-rich water close to the surface, allowing kelp and other seaweeds to grow on squares of giant mesh, attracting fish. If these techniques are found to be scalable, they could contribute to reversing acidification, cooling coral reefs and protecting the coast from storms.



Talking about ‘safe passage’ is important

As we reduce the carbon emissions from burning fossil fuels, we will face a brief spike in warming as the Earth loses the cooling influence of the pollution in the atmosphere. The risks we face of passing tipping points during this spike in temperature are seldom discussed, and **the technologies for temporarily cooling the earth that could assist with ‘safe passage’¹⁰² through this period are mired in controversy.**

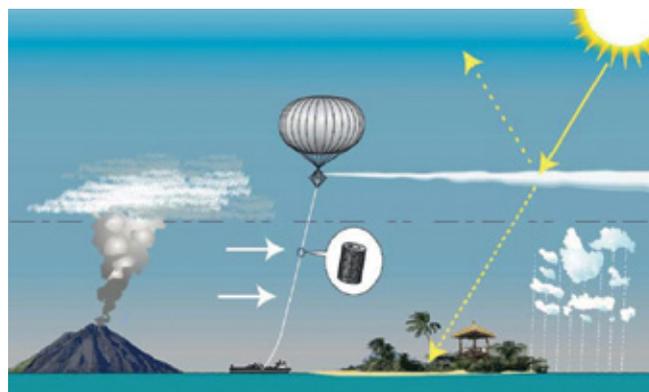
Governments are already looking into geoengineering technologies, including solar radiation management methods.¹⁰³ However, such methods understandably raise concerns about governments acting unilaterally in ways that benefit their constituents, but at a cost to people in other parts of the world. There is also a fear that discussing geoengineering as a solution could be used to delay action.¹⁰⁴ It has been argued that even researching these methods is dangerous for this reason.¹⁰⁵

However, **it is time to carefully research the pros and cons of these technologies so we can make well-informed decisions and discuss the issue in ways that do not alienate potential supporters of emergency action.**

Describing benefits can build support

There are many lifestyle benefits from making a transition to a safe climate and these can be told as part of the emergency mobilisation message. Solar and wind power, and battery storage, have come down in price faster than most experts expected. Renewable energy is cleaner and cheaper too, as the fuel is free. Imagine a world where there is no need for wars over oil and gas, or dangerous pipelines and oil tankers.

Electric transport is cleaner and quieter. Cities with good public transport, bike paths, and walking paths are more enjoyable to live in than cities crisscrossed by freeways. Ten star houses that are self-sufficient for power, well-designed and well-insulated are more comfortable to live in. Eating food grown in nutrient-rich soils without fertilisers and pesticides will make us healthier. The transition to renewable energy and sustainable agriculture provides many opportunities for communities to regain control of energy and food distribution networks.



One possible solar radiation management approach uses a tethered balloon to inject sulfate aerosols into the stratosphere. Image from Wikipedia by Hughhunt.

There are social benefits as well. A lifestyle that involves recycling, less rubbish, and less ‘stuff’ can make us happier and less stressed as well as preserving the natural environment.¹⁰⁶ Contributing to improved education and family planning services for women and girls around the world is a highly-effective use of our foreign aid.

Support is already stronger than many realise

As mentioned earlier (p.6), people feel less cynical when they realise that most others are motivated by universal values, not selfishness and greed. It is likely to be helpful for members of the public to know that a 2017 survey of 8000 people in eight countries for the Global Challenges Foundation found that **84% consider climate change a “global catastrophic risk”**. The figure for Australia was 75%, somewhat lower, but still a very solid majority.¹⁰⁷ Another useful statistic from the same survey was that 81% of 1000 Australians polled agreed, **“we should try to prevent climate catastrophes, which might not occur for several decades or centuries, even if it requires making considerable changes that impact on our current living standards”**.¹⁰⁸

Conservatives are waking up

The most challenging aspect of describing the climate emergency mobilisation is painting a picture of the political path. Many find the ascendance of Donald Trump in the United States and the disruptive force of the coal lobby in Australian politics disheartening. However, not all of those on the right of politics are against action on climate. In Britain, the ruling Conservative Party is planning to phase out coal power within seven years, and their Energy Minister is quoted as saying: **“Conservatism to me is about protecting what you inherit and improving it”**.¹⁰⁹

It is useful to distinguish true conservatives from those who are sometimes referred to as the 'hard-right' who seem determined to undermine democracy and the free press, scrap social safety nets, sell off public assets, and fry the planet.

As mentioned earlier, the Lock the Gate campaign has been successful in mobilising traditionally conservative Australian farmers. Similarly, the Irish referendum to legalise abortion won the support of many conservatives because campaigners – many of them young – reached out to everyone, old and young. Journalist Fintan O'Toole, from *The Guardian*, reported "They stayed calm and dignified. And when they were jeered at, they did not jeer back. ... They did not assume that an elderly lady going to mass in a rural village was a lost cause. ... It turned out that a lot of people were sick of being typecast as conservatives. **It turned out that a lot of people like to be treated as complex, intelligent and compassionate individuals.**"¹¹⁰

Together we are strong

Authors George Monbiot, Naomi Klein, Jonah Sachs and others have pointed out that "No is not enough": it is important to convey a positive vision of the future, built on universal values and reorienting society away from "the failed narratives [of greed and selfishness] wrecking our world".¹¹¹

Jonah Sachs says: **"I want you to be part of the story wars because our world is badly in need of solutions in so many spheres – economic, social and environmental to name just a few. The ability to**

dream up and spread these solutions lives or dies on the ability to tell great stories that inspire people to think differently. Nothing is more urgent than that right now".¹¹²

There are many groups working on campaigns for the greater good that are natural allies of the climate movement. Environmentalist and author Paul Gilding has predicted that the experience of working together on something as important as preserving human civilisation and the natural world could help cooperation between nations.¹¹³ **Climate change is one of the greatest threats facing humanity, but we also know it is an opportunity to create a more just and sustainable world.**¹¹⁴

Research on social movements by Erica Chenoweth, co-author of *Why civil resistance works* suggests that **just 3.5% of the population engaged in non-violent direct action can win** even in the face of what seems like overwhelming odds, providing their cause has broad support.¹¹⁵ And, as the Occupy movement has argued: **"We are the 99%"**. The vast majority of Australians support a transition to renewable energy, want a federal anti-corruption body, and value honesty and fairness.¹¹⁶ If people understood that we are risking climate catastrophe, there would be support for emergency action from most people.

Sometimes it seems that progress is slow, but as Paul Gilding also points out - using the example of the #metoo movement - it can look as though nothing much is changing, and then suddenly large changes are triggered.¹¹⁷ **As with climate tipping points, it is hard to spot social tipping points until after the event.**



CLIMATE EMERGENCY ACTION



Scientists and campaigners are beginning to speak out more clearly about the need for emergency action. There are several groups working on emergency transition campaigns. Campaigns on specific issues also have an important role in telling their part of the climate emergency story.

The Climate Mobilization

Early successes of The Climate Mobilization campaign in the United States have included persuading Democratic Party presidential primaries candidate, Bernie Sanders, to strengthen his calls for climate action, and negotiating to have emergency action included in the platform of the Democratic Party:

“It would be a grave mistake for the United States to wait for another nation to lead the world in combating the global climate emergency. In fact, we must move first in launching a green industrial revolution ... Just as America’s greatest generation led the effort to defeat the Axis Powers during World War II, so must our generation now lead a World War II-type national mobilisation to save civilisation from catastrophic consequences.”¹¹⁸

The Climate Mobilization campaign has successfully pushed five local governments in New Jersey, Maryland and California to declare a climate emergency. They are also working with a coalition of community groups in Los Angeles to establish America’s first Climate Emergency Mobilization Department.¹¹⁹

Australian emergency transition campaigns

In 2016, as the Great Barrier Reef was bleaching, community climate groups in Australia launched a campaign to pressure the Federal Government to declare a climate emergency (see more at <http://climateemergencydeclaration.org>). The campaign is supported by 55 community groups and 20,000 individuals, including some federal and state members of parliament and a number of councillors.

Breakthrough - The National Centre for Climate Restoration is an independent Australian think tank that develops climate emergency thought leadership to influence the national debate and policy making. Work is being done to recruit trusted messengers, such as defence experts, who can reach out to those on both sides of politics. A visit by United States defence expert Sherri Goodman in April 2017 was a catalyst for a senate inquiry into the security implications of climate change.¹²⁰ The Sustainable Living Festival¹²¹ in Victoria consistently conveys an emergency transition message to a broad audience.

Local government emergency transition campaigns

Local government campaigns can lay the groundwork for emergency action at higher levels of government. Darebin Council in inner-city Melbourne has unanimously declared a climate emergency, written a climate emergency plan and made climate action a key consideration in their strategic plan. The picture on the previous page shows eight Darebin councillors. Groups including Council Action in the Climate Emergency (CACE) are working with several other Australian councils. Similar campaigns are active in the United States and the United Kingdom.¹²²

Single issue campaigns

Contributing to emergency action with single issue campaigns. Campaigns on issues with a specific or localised focus, such as those on renewable energy, fossil fuels and forests, are a vital component of winning an emergency transition. Often these campaigns focus on impacts other than climate. For example, they may include a focus on land rights of traditional owners if a gas, coal or logging project is on Aboriginal land, or impacts on water and land if farmers are involved. Similarly, the campaign to stop the Adani coal mine in Queensland focusses on the risk to the reef.

Build awareness over time. In single issue campaigns, it is often more effective to reach out to new supporters with a message about local impacts. However, over time it may be possible to build awareness of broader climate issues. For example, a local campaign to save a particular forest area from logging can evolve over time to include messages about the importance of preserving and restoring forest carbon stores as part of solving the climate crisis. All campaigners can convey a strong climate message when meeting with politicians or talking to well-engaged supporters.

Avoid misleading messages. Ideally, all campaigning on climate and related issues is consistent with an overarching climate emergency message. The important thing is to use messages that are as strong as possible and avoid messages that are so weak as to be misleading.

For example, it's not accurate to say that stopping the Adani mine will save the reef: a stronger and more honest message is 'Coal is killing the reef'. 'Coal kills' is a useful message as it covers coal's impact on the reef, coal's impact on mortality rates of people who live near coal infrastructure and the deaths already being caused by climate impacts linked to coal. The following section lists some weak or misleading messages to avoid and summarises elements of the climate emergency message.



MESSAGING OVERVIEW



The climate emergency message will gain traction if it is heard from as many community leaders and commentators as possible. As a minimum, it is important to stop using weak and misleading messages.

Drop misleading or weak messages

<p>Minimise use of the term <i>climate change</i>.</p>	<p>Talking about <i>climate change</i> amplifies the denier meme “the climate is always changing”. <i>Global warming</i> is a term that has been shown to evoke significantly more concern.¹²³</p>
<p>Don’t say “We need to stay under two degrees of warming to avoid dangerous climate change.”</p>	<p>Two degrees is not safe; it was a limit that arose out of a reluctance to acknowledge how serious the situation already was in 1990.¹²⁴ As predicted, we are now seeing serious impacts at only one degree of warming.</p>
<p>Don’t imply we have a remaining carbon budget. Avoid phrases like “The Adani mine would blow our carbon budget” or “We must leave 80% of our gas and coal in the ground”.</p>	<p>Bill McKibben’s 2012 article, <i>Global warming’s terrifying new math</i>, popularised the view that we had a remaining carbon budget of 565 gigatons,¹²⁵ reversing 350.org’s previous emphasis on returning below 350 parts per million of atmospheric carbon dioxide.¹²⁶ The earth is already too hot: we have long since blown our carbon budget. We need to get to zero emissions as fast as humanly possible and well before 2050. We must leave <u>all</u> coal and gas in the ground.</p>
<p>The changes we are seeing are not “the new normal”.</p>	<p>We are seeing the start of escalating and accelerating changes. Unless we take strong action, we will see further changes, not stabilisation.</p>
<p>Don’t talk about the Paris agreement as though it will keep us safe or say that emissions reductions of 26% or 45% are “our fair share of staying below two degrees”.</p>	<p>The <i>emissions reduction pledges</i> made as part of the Paris agreement bear no relationship to the 1.5°C or 2°C <i>temperature limits</i> countries signed up to – nor to the 1°C limit that would be safer. Even if honoured, the Paris <i>emissions pledges</i> condemn us to a world 3°C to 5°C hotter with catastrophic outcomes.¹²⁷ Emergency action is required for any real chance of staying under 2°C warming, let alone 1.5°C or 1°C.¹²⁸</p>

Sound the alarm: Describe the climate emergency threat

“We are facing a climate emergency.”	Use strong language to describe the threat. Other useful terms include <i>climate crisis</i> , <i>climate damage</i> , or <i>climate disruption</i> .
“The earth is already too hot.”	Make clear that we are already outside the safe climate zone.
“People are in danger and suffering.”	Global warming is already causing food and water shortages and is a threat multiplier for conflict and mass migration. People are suffering, as well as the natural world.
“We are doing irreparable harm.”	Talking about impacts such as the death of large parts of the Great Barrier Reef makes clear that the damage we are doing may not be reversible.
“We are risking the death of billions of people and the collapse of human civilisation.”	Explain <i>existential threat</i> . We are heading for warming of 3 to 5 degrees later this century unless we dramatically change course, and at these temperatures much of the earth may be uninhabitable.
“We are running out of time.”	We are close to or past tipping points.

Call for action: Describe emergency mobilisation

“It’s time to move into emergency mode, as we do when facing a fire or a flood except at a much larger scale.”	Convey the need to move outside business-as-usual and politics-as-usual, doing whatever is needed, and making action on the climate emergency a central priority for governments. One way of doing this is to call for the declaration of a climate emergency.
“We must reverse global warming, reaching negative emissions as fast as humanly possible.”	We need to cool the earth, not just stop heating it. This means (i) a rapid transition to zero carbon emissions; (ii) rapid reductions in short-lived climate pollutants such as methane and black soot; and (iii) <i>drawdown</i> and sequestration of the excess carbon dioxide already in the atmosphere.
“This requires a massive whole-of-government effort of a speed and scale never before seen in peacetime.”	100% renewable energy is one part of the solution. Regulating to close down the fossil fuel industry is another. But what is needed is far more than this - the strongest possible action right across society, making large changes as fast as humanly possible, as societies have done in the past when facing an existential threat.
“We are making the world a better place.”	It is important to convey the positives of the emergency transition including beneficial social changes.
“Fast political change is possible.”	Social tipping points, like climate tipping points, are difficult to see until afterwards, but they have occurred before.
“We are part of a growing movement.”	We need courage to take strong action, confident that we are on the right side of history and that others share our views.

CONCLUSION

Will you help tell the story of the climate emergency?

Our first step is to shift the message so that people hear from every direction the human story of the climate emergency and the speed and scale of the changes required to address it. We need to throw everything we've got at the technological solutions and everything we've got at the political solutions as well.

If you are a scientist, campaigner or community leader, you can:

- Tell the truth about how serious things are: the earth is already too hot; tipping points are close or passed; and we must act now to avoid risking the collapse of human civilisation and the deaths of billions of people.
- Make use of both fear and anger to motivate action, but pair them with clear descriptions of measures that can adequately address the threat.
- Understand the implications of the climate science – don't suggest that 1.5 or two degrees of warming is safe, that we have a remaining carbon budget, or that gradual change will suffice.



If you are a member of the public, you can:

- Support campaigns for emergency climate action. Also those opposing fossil fuel projects or protecting forests (see list at <https://climateemergencydeclaration.org>)
- Bring the emergency message to a campaign you are already involved with.
- Reach out to influential people and your local networks.
- Send messages of appreciation to journalists, campaigners and politicians who convey a clear climate emergency message.
- Vote for strong action on climate at election time.

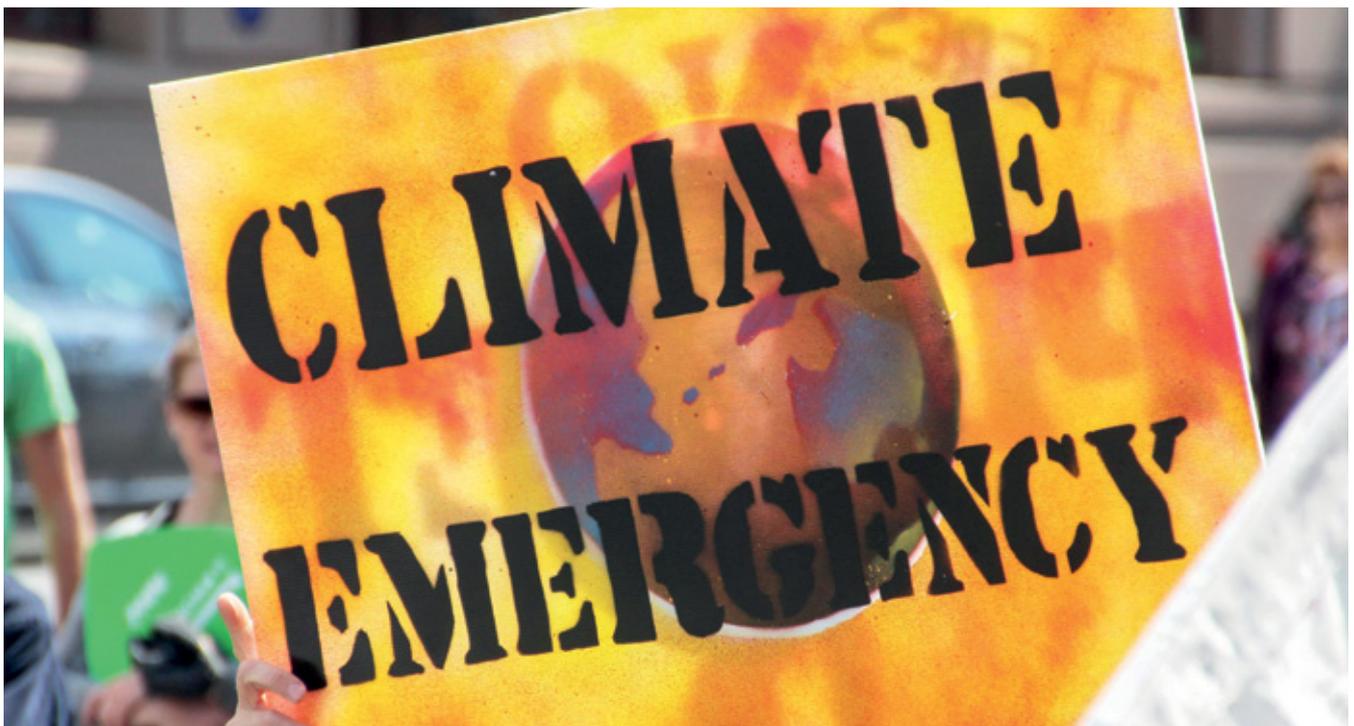


IMAGE: JOHN ENGLART

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16. See for example, O'Neill, S. & Nicholson-Cole, S. (2009) Fear won't do it. *Science Communication*, 30(3), 355-379; also reported at <https://bigthink.com/age-of-engagement/study-finds-that-fear-wont-dont-do-it-why-most-efforts-at-climate-change-communication-might-actually-backfire>. Like many studies with similarly declamatory titles, this study has a weak methodology (semi-structured interviews with a sample of 30, focus groups involving 27 participants, and an online survey of 63 people) and, notwithstanding the title, finds that high-fear images work well to engage attention, but that high-fear messages should be paired with advice on actions that the individual can take to address the threat. This study is listed in an IPCC summary of relevant messaging research: https://www.ipcc.ch/meeting_documentation/pdf/Communication/List_of_IPCC_communications_research_compiled_by_NEA.pdf
- Sizzle: The new climate message*, a frequently cited report by Futerra Communications, relies on the advice of a 1940s salesman, Elmer Wheeler, to "sell the sizzle not the steak". This advice is taken by Futerra to mean that 'climate heaven' sells and 'climate hell' doesn't: "Threats of climate hell haven't seemed to hold us back from running headlong towards it." <https://www.wearefuterra.com/wp-content/uploads/2015/10/Sellthesizzle.pdf>. See also, their 2017 blog: <https://www.wearefuterra.com/2017/06/how-to-sell-climate-change/>. However, Wheeler was talking about the power of emotions – both positive and negative – to influence, as opposed to mere facts: he wasn't advocating a positive-only message. <https://www.newyorker.com/magazine/1938/04/16/the-sizzle>.
- Barack Obama took up positive-only messaging based on advice from Republican pollster Frank Luntz: "Officials in Obama's first term avoided any mention of the words global warming or climate change – believing it would provoke a backlash from Republicans – and spoke instead of 'clean energy' and 'green jobs'." <https://www.theguardian.com/environment/2014/may/27/americans-climate-change-global-warming-yale-report>. See also: https://www.washingtonpost.com/opinions/a-dangerous-shift-in-obamas-climate-change-rhetoric/2012/01/26/gIQAynwzVQ_story.html?noredirect=on&utm_term=.b1f42c3d3492.
- A 2011 study by M. Feinberg and R. Miller, with the eye-catching title, 'Apocalypse soon? Dire messages reduce belief in global warming by contradicting just-world beliefs', received extensive media coverage and is frequently cited and is included in the IPCC messaging advice reading list. <https://www.ncbi.nlm.nih.gov/pubmed/21148457>. The summary of the article says that "dire messages warning of the severity of global warming and its presumed dangers can backfire, paradoxically increasing scepticism about global warming by contradicting individuals' deeply-held beliefs that the world is fundamentally just." However, the messages the researchers were comparing were not reported in their article and are consequently not widely known. The 'dire' message they tested in part 1 of their study said that the science shows climate change is dangerous and there is nothing we can do, while the more positive message tested the same message about the threat, but talked about the possible solutions. Part 2 examined reactions to two videos that are not typical of climate emergency messaging (one showed a speeding train heading toward a small girl and the second showed anxious looking children who verbally simulated a clock's ticking). The participants were 97 undergraduate students, completing the exercise for course credits. Thus this study is not a fair test of whether strong messages about the climate emergency work.
- This debate was re-ignited by David Wallace-Wells' article, 'The uninhabitable earth'. See more in note 25.
17. Spratt, D. (2012) "Always look on the bright side of life: Bright-siding climate advocacy and its consequences." <http://www.climatecoded.org/p/brightsiding.html>
18. For example, as early as 2007, Mike Hulme, a climate scientist from the Tyndall Centre argued that "the discourse of catastrophe is in danger of tipping society onto a negative, depressive and reactionary trajectory": <http://news.bbc.co.uk/2/hi/science/nature/6115644.stm> and James Risbey from the CSIRO responded that the science was alarming and it was not alarmist to say so: http://sciencepolicy.colorado.edu/students/envs_4800/risbey_2008.pdf See also note 25.
19. For example: <https://blogs.scientificamerican.com/observations/doom-and-gloom-scenarios-on-climate-change-wont-solve-our-problem/>; <https://www.facebook.com/MichaelMannScientist/posts/1470539096335621>
20. For example, <https://newrepublic.com/article/143788/power-peril-climate-disaster-porn>
21. Two ground-breaking books by Antonio Damasio explain the central role of emotion in decision making: *Descartes' error: Emotion, reason, and the human brain* (1994) and *The feeling of what happens* (1999). For a brief summary of similar views, see the summary of Jonah Lehrer's *The decisive moment: How the brain makes up its mind* at <http://www.smh.com.au/national/feeling-our-way-to-decision-20090227-8k8v.html>
- Daniel Kahneman's (2011) book, *Thinking fast and slow*, provides a helpful overview of the interplay between conscious effortful rational thinking and automatic processes.
- Chip and Dan Heath have written two excellent books on persuasion. *Made to stick: Why some ideas survive and others die* (2007) and *Switch: How to change things when change is hard* (2011).
- Two useful books on framing are George Lakoff's (2014) *Don't think of an elephant! Know your values and frame the debate* and Anat Shenker-Osorio's (2012) *Don't buy it: The trouble with talking nonsense about the economy*.
- On universal values, see Dahlsgaard, K., Peterson, C., & Seligman, M. (2005). Shared virtue: The convergence of valued human strengths across culture and history. *Review of General Psychology*, 9(3), 203-213. <http://dx.doi.org/10.1037/1089-2680.9.3.203>. In considering how to engage with values in order to motivate 'committed action' (action on values), it is worth looking at how clinicians use values: see for example, *The art and science of valuing*

- in psychotherapy* (2009) by Joanne Dahl and colleagues and *Brief Interventions for Radical Change* (2012) by Kirk Strosahl and colleagues. On the importance of stories and advice on the art of story-telling, read Jonah Sachs' (2012) *Winning the story wars: Why those who tell – and live – the best stories will rule the future*. See also, Dahlstrom, M. (2014), Using narratives and storytelling to communicate science with non-expert audiences, *Proceedings of the National Academy of Science*, 111 (4). http://www.pnas.org/content/111/Supplement_4/13614.
22. Barrett, L. & Russell, J. (1998). Independence and bipolarity in the structure of current affect. *Journal of Personality and Social Psychology*, 74 (4). <https://www.affective-science.org/pubs/1998/FBRussell1998.pdf>
Panksepp, J. & Watt, D. (2011). What is basic about basic emotions? Lasting lessons from affective neuroscience. *Emotion Review*, 3(4). <http://journals.sagepub.com/doi/pdf/10.1177/1754073911410741>
Berger, J. & Milkman, K. (2011). What makes online content viral? *Journal of Marketing Research*, 49(2) pp. 192-205. <https://jonahberger.com/wp-content/uploads/2013/02/ViralityB.pdf>
 23. See notes 16 and 25.
 24. Wallace-Wells, D. (2017). The uninhabitable earth: Famine, economic collapse and a sun that cooks us. *New York Magazine*. <http://nymag.com/daily/intelligencer/2017/07/climate-change-earth-too-hot-for-humans.html> See also an annotated version of this article: <http://nymag.com/daily/intelligencer/2017/07/climate-change-earth-too-hot-for-humans-annotated.html>
 25. Climate Feedback reported that a majority of reviewers tagged David Wallace-Wells' article as alarmist, imprecise/ unclear and misleading. <https://climatefeedback.org/evaluation/scientists-explain-what-new-york-magazine-article-on-the-uninhabitable-earth-gets-wrong-david-wallace-wells/>. However, Wallace-Wells was able to provide credible references for the majority of his statements, making just two amendments subsequently (see annotated version, note 24). Wikipedia lists some of the flood of responses to the article, many of which focussed on whether it was acceptable to scare people about worst-case scenarios. https://en.wikipedia.org/wiki/The_Uninhabitable_Earth. Of those who argued that scaring people is counterproductive, many provided no evidence, or vague generalisations (for example, <https://www.theatlantic.com/science/archive/2017/07/is-the-earth-really-that-doomed/533112/>), or support from only a handful of studies, for example, <https://phys.org/news/2015-09-ways-climate-action-world.html>.
 26. Fishbein, R. (2017). Are humans doomed? A Q&A with the author of NY Mag's terrifying climate change story. *Gothamist*, July 10. http://gothamist.com/2017/07/10/climate_change_ny_mag.php
 27. Romm, J. (2017). We aren't doomed by climate change. Right now we are choosing to be doomed. *Think Progress*. <https://thinkprogress.org/climate-change-doomsday-scenario-80d28affef2e/>
 28. The phrase 'the age of consequences' has been in use since at least 2007 to refer to potentially catastrophic human security consequences from global warming. See for example a report by the Center for Strategic and International Studies and the Center for a New American Security, <http://www.dtic.mil/dtic/tr/fulltext/u2/a473826.pdf>. The term was popularised by a film with that name, examining global warming as a threat multiplier for conflict and mass migration as seen from the perspective of US defence experts: <http://theageofconsequences.com>.
Members of the public have a right to be fully informed about the dangers humanity faces, and there is some preliminary research showing that a stronger message can paradoxically increase confidence in taking action. M. Hornsey et al. (2015) in 'Evidence for motivated control: Understanding the paradoxical link between threat and efficacy beliefs about climate change', *Journal of Environmental Psychology*, (42). <https://doi.org/10.1016/j.jenvp.2015.02.003>, found that "Participants who read a high-threat message reported more (collective) efficacy than did those who read a climate change message that downplayed threat." This finding dovetails with the experience of campaigners using the climate emergency declaration petition, who report that a typical response to the strongly worded message is not alarm but relief that someone is telling the truth: for example, "Yes of course the government should declare a climate emergency! Why is nobody doing anything?"
 29. Elder R. et al. (2004). Effectiveness of mass media campaigns for reducing drinking and driving and alcohol-involved crashes: A systematic review. *American Journal of Preventative Medicine*, 27(1). <https://www.ncbi.nlm.nih.gov/pubmed/15212776>. Noar, S. et al. (2009). A 10-year systematic review of HIV/AIDS mass communication campaigns: Have we made progress? *Journal of Health Communication*, 14(1). <http://dx.doi.org/10.1080/10810730802592239>. Wakefield, M. et al. (2010). Use of mass media campaigns to change health behaviour. *The Lancet*, 376 (9748). <https://www.sciencedirect.com/science/article/pii/S0140673610608094>. Durkin, S. et al. (2012). Mass media campaigns to promote smoking cessation among adults: An integrative review. *Tobacco Control*, 21. <https://tobaccocontrol.bmj.com/content/tobaccocontrol/21/2/127.full.pdf>.
 30. Tannenbaum, M. et al. (2015). Appealing to fear: A meta-analysis of fear appeal effectiveness and theories. *Psychological Bulletin*, 141(6). <http://dx.doi.org/10.1037/a0039729>.
 31. Fong, G. et al. (2009). The impact of pictures on the effectiveness of tobacco warnings. *Bulletin of the World Health Organization*, 87. <http://www.who.int/bulletin/volumes/87/8/09-069575/en/>
 32. Tannenbaum et al. (2015), see note 30.
 33. Witte, K. & Allen, M. (2000). A meta-analysis of fear appeals: Implications for effective public health campaigns. *Health Education and Behavior*, 27. <http://heb.sagepub.com/cgi/content/abstract/27/5/591>.

- See also G. Ygram Peters, G. et al. (2013). Threatening communication: a critical re-analysis and a revised meta-analytic test of fear appeal theory. *Health Psychology Review*, 7(Supp 1). <http://dx.doi.org/10.1080/17437199.2012.703527>
34. For examples of many campaigns and their relation to social justice, see M. & P. Engler (2016). *This is an uprising*. For an example of individual work with justified anger to address helplessness and powerlessness associated with trauma, see Thomas, S. et al. (2012). Anger in the trajectory of healing from childhood maltreatment. *Archives of Psychiatric Nursing*, 2012, 26(3), 169–180. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3361676/#R60>.
 35. Chapman, D. et al. (2017). Reassessing emotion in climate change communication. *Nature Climate Change*, 7. <https://www.nature.com/articles/s41558-017-0021-9>. See also Thomas, E. et al. (2009). Transforming 'apathy into movement': The role of prosocial emotions in motivating action for social change. *Personality and Social Psychology Review*, 13(4). <https://www.researchgate.net/publication/26813489>; and Carver, C. & Harmon-Jones, E. (2009). Anger is an approach-related affect: Evidence and implications. *Psychological Bulletin*, 135. <https://pdfs.semanticscholar.org/042a/d9e00c7ad1e7a20677e8fd342d128da12da5.pdf>
 36. The *Story of Stuff* project has popularised the idea that we need to move from seeing ourselves as consumers to seeing ourselves as citizens and exercise our 'citizen muscle'. <https://storyofstuff.org/>
 37. Dunaway, F. (2017). The 'Crying Indian' ad that fooled the environmental movement. *Chicago Tribune*. <http://www.chicagotribune.com/news/opinion/commentary/ct-perspec-indian-crying-environment-ads-pollution-1123-20171113-story.html>. See also Sparrow, J. (2018). Recycling: how corporate Australia played us for mugs <https://www.theguardian.com/environment/commentisfree/2018/jul/19/its-not-recycling-its-collecting-how-australians-were-sucked-into-the-crisis>
 38. Bernauer, T. & McGrath, L. (2016). Simple reframing unlikely to boost public support for climate policy. *Nature Climate Change*, 6(7). <https://www.nature.com/articles/nclimate2948>
 39. Marvel, K. (2018). We need courage, not hope, to face climate change. *On Being* blog. <https://onbeing.org/blog/kate-marvel-we-need-courage-not-hope-to-face-climate-change/> "Just as fear can be contagious, so can courage, caring and calm." See also Murphy, K. (2017). Outsmarting our primitive responses to fear. *The New York Times*. <https://mobile.nytimes.com/2017/10/26/well/live/fear-anxiety-therapy.html?mwrs=Email&referrer>
 40. Shpancer, N. (2010). You are a conformist. (That is, you are human.) *Psychology Today*. <https://www.psychologytoday.com/us/blog/insight-therapy/201012/you-are-conformist-is-you-are-human>
 41. Shpancer (2010), see note 40.
 42. Spratt, D. (2016). *Climate reality check: After Paris counting the cost*. <https://www.breakthroughonline.org.au/publications>. See also: <https://reneweconomy.com.au/warming-past-1-5c-quantifying-our-faustian-bargain-with-fossil-fuels-24784/>
 43. For example, Oreskes & Conway (2010), see note 12.
 44. Dennis, R. (2018). Dead right: How neoliberalism ate itself and what comes next. *Quarterly Essay*, 70.
 45. Common Cause (2018) *Perceptions matter: The Common Cause UK values survey*. https://valuesandframes.org/resources/CCF_survey_perceptions_matter_full_report.pdf
 46. And Tea Party supporters trust Tea Party supporters. <https://www.vox.com/videos/2017/4/18/15339266/debbie-dooley-tea-party-conservative-republicans-renewable-energy>
 47. https://en.wikipedia.org/wiki/Death_of_Alan_Kurdi
 48. Jenni, K. & Loewenstein, G. (1997). Explaining the 'identifiable victim effect'. *Journal of Risk and Uncertainty*, 1(4), pp235–257. https://www.andrew.cmu.edu/user/gl20/GeorgeLoewenstein/Papers_files/pdf/identifiable-victim.pdf
 49. Jenni & Loewenstein (1997), see note 48. See also Genevsky, A. et al. (2013). Neural underpinnings of the identifiable victim effect: Affect shifts preferences for giving. *Journal of Neuroscience*, 33 (43). <http://www.jneurosci.org/content/33/43/17188>
 50. "The United Nations Development Programme's 1994 *Human Development Report* is considered a milestone publication in the field of human security, with its argument that [ensuring] 'freedom from want' and 'freedom from fear' for all persons is the best path to tackle the problem of global insecurity." https://en.wikipedia.org/wiki/Human_security. The term 'human security' has been adopted by some climate commentators as a way of allowing discussion of global warming as a threat multiplier for conflicts and mass migrations without implying that a traditional 'national security' response is appropriate. See for example, David Spratt's blog <http://www.climatecoderead.org/2018/05/senate-report-recognises-climate-change.html>. Use of the term aims to overcome the concerns that have been raised about national security framing. (For example, Nick Buxton, co-editor of *The secure and the dispossessed: How the military and corporations are shaping a climate-changed world* (2015), argued in a 2018 article in *The Guardian* that: "An approach that relies on military forces and barbed wire will worsen the crisis and create a world no one wants to live in. Real security emerges from recognising our interdependence, tackling injustice and inequality, and working together to protect those who are most vulnerable." <https://www.theguardian.com/environment/2018/jun/04/dont-turn-to-the-military-to-solve-the-climate-change-crisis>.)

51. For example, in Seaspray, Victoria, the result of a Lock the Gate community survey was 98% voting to keep the area gasfield-free. <http://www.abc.net.au/news/2013-07-23/seaspray-to-declare-itself-csg-free/4837666>. See also [https://www.parliament.vic.gov.au/images/stories/committees/EPC/Submission_393 - Lock the Gate .pdf](https://www.parliament.vic.gov.au/images/stories/committees/EPC/Submission_393_-_Lock_the_Gate_.pdf).
52. Fenton, D. (2018). Climate One podcast: *Selling the science of climate change*. <https://fenton.com/podcast-selling-the-science-of-climate-change/>
53. 'Unconscious averaging' or 'anchoring' was demonstrated in an ingenious experiment by Daniel Kahneman, described in *Thinking, Fast and Slow* (2011, pp 119-120). Participants in the experiment were asked to guess how many African nations were in the United Nations after spinning a rigged wheel of fortune. Those for whom the wheel stopped on 10 guessed a lower number of African nations than those for whom the wheel stopped on 65, indicating that the number they had just seen influenced their guesses, even though it was completely irrelevant.
54. The quote comes from an interview with George Lakoff in *The Guardian*, <https://www.theguardian.com/books/2014/feb/01/george-lakoff-interview>. Similarly, in *Don't think of an elephant* (see note 21), Lakoff argues that "Liberal and progressive candidates tend to follow the polls and decide they have to become more 'centrist' by moving to the right. The conservatives do not move to the left at all and yet they win!" (page 18).
55. Schellnhuber (2018), see note 4.
56. Based on Figure 1 from Jos Hagelaars (2013) The two epochs of Marcott, on Our Changing Climate blog <https://ourchangingclimate.wordpress.com/2013/03/19/the-two-epochs-of-marcott/>
<https://iview.abc.net.au/show/david-attenboroughs-great-barrier-reef>
57. For example, Professor Justin Marshall is reported in *The Guardian* as saying "I have cried. I have broken down in front of cameras. This is the most devastating, gut-wrenching fuck up." <https://www.theguardian.com/environment/planet-oz/2016/apr/21/mourning-loomis-reef-the-heart-of-the-great-barrier-reefs-coral-bleaching-disaster>
58. See for example, <https://www.nytimes.com/2018/04/19/world/australia/australia-barrier-reef.html>
59. "In 2009, the terrible Black Saturday bushfires killed 173 people. What most Australians don't realise is that the crippling heat around the horrendous bushfires killed 374 people." <https://www.smh.com.au/opinion/heatwaves-are-more-deadly-than-bushfires-and-theyre-going-to-get-worse-20161212-gt9fyl.html>
60. "In the European heatwave of 2003, 50,000-70,000 people died between June and August. The Russian heatwave of 2010 killed about 55,000 people." <https://www.smh.com.au/opinion/heatwaves-are-more-deadly-than-bushfires-and-theyre-going-to-get-worse-20161212-gt9fyl.html>
61. As Joseph Stalin said: "The death of a single Russian soldier is a tragedy. A million deaths is a statistic." Quoted in Jenni & Loewenstein (1997), see note 48.
62. <https://www.news.com.au/technology/environment/conservation/the-approaching-crisis-is-the-world-running-out-of-water/news-story/8d48f0cce7b33bc7b480d8e6f1e9152b>. See also Dunlop, I. & Spratt, D. (2017). *Disaster alley: Climate change, conflict and risk*, pages 10-11. <https://www.breakthroughonline.org.au/publications>
63. "According to the Bangladesh government's 2009 *Climate change strategy and action plan*, "in an 'average' year, approximately one quarter of the country is inundated." Every four to five years, "there is a severe flood that may cover over 60% of the country." <https://blogs.scientificamerican.com/guest-blog/the-unfolding-tragedy-of-climate-change-in-bangladesh/>. Closer to home, some of the Torres Strait Islands are under threat, according to Oxfam:
<https://www.oxfam.org.au/2017/07/close-to-home-the-climate-crisis-in-the-torres-strait/>; <https://www.theguardian.com/environment/2017/jul/13/the-island-is-being-eaten-how-climate-change-is-threatening-the-torres-strait>
64. The picture of Joseph Billy and the quote are from an Oxfam report, see note 64.
65. As an example of a recent article that integrates discussion of human security with climate science, see <https://www.theguardian.com/commentisfree/2018/aug/07/climate-change-catastrophe-political-will-grassroots-engagement>
66. Dunlop & Spratt (2017) [see note 63] page 8.
67. Dunlop & Spratt (2017) [see note 63] page 9.
68. Spratt & Dunlop (2018) [see note 4] page 14 cites studies indicating that temperature rises of between +3°C and +5°C are likely by 2100 even if the current Paris agreement emissions reductions pledges are honoured.
69. See <https://www.slideshare.net/DFID/professor-kevin-anderson-climate-change-going-beyond-dangerous> for the first part of the quote. The second part of the quote is from Anderson K. & Fyall, J. (2009) Warming will 'wipe out billions', *The Scotsman*, 29 November. This article was previously archived at <http://www.webcitation.org/5ul6K9Jmt?url=http://news.scotsman.com/latestnews/Warming-will39wipe-out-billions39.5867379.jp> as quoted in Climate Code Red blog: <http://www.climatecodedred.org/2017/07/a-failure-of-imagination-on-climate.html>. It can now be found at <https://docs.google.com/document/d/1eURuaSf55ezl8k52agHSr-85x83uvXWEWXzcb3TmJy8/edit#>
70. Similarly, Hans Schellnhuber has estimated that at 4°C warming, the Earth would have a carrying capacity of only

one billion people. <https://www.smh.com.au/business/on-course-to-suffer-global-warming-of-four-degrees-20110708-1h6mh.html>.

See also Anderson's views in another article by *The Scotsman* at <https://www.scotsman.com/news/climate-change-too-hot-to-handle-1-1363112> in which he is reported as saying that the prospect of a 4 degrees Celsius temperature rise is "terrifying". "People won't sit still in that situation. When push comes to shove, people don't respond in a nice, neat manner. We turn to other ways of getting what we need, through violence or mass migration. The other thing to remember is that 4C is a global average. It's probably nearer 5C on land, and would be up to 15C in some areas. There's no evidence to suggest that humanity can actually survive at this sort of temperature. Small pockets of human beings might continue to exist but I don't consider that to be a success."

71. See recent research summarised in *The Guardian*: <https://www.theguardian.com/environment/2018/apr/11/critical-gulf-stream-current-weakest-for-1600-years-research-finds>
72. Hawken P. (Ed.) (2016). *Drawdown: the most comprehensive plan ever proposed to reverse global warming*, page 179.
73. Research on tipping points is summarised in Spratt (2016), see note 11.
74. Klein Salamon (2016), see note 3.
75. Klein Salamon (2016), see note 3.
76. <https://www.smh.com.au/environment/weather/salvation-comes-with-brooms-and-gumboots-20110115-19rv6.html>. Picture shows the Brisbane floods clean-up.
77. Gilding, P. (2016). *War. What is it good for? WWII economic mobilisation: an analogy for climate action*. <https://www.breakthroughonline.org.au/publications>
78. Silk, E. (2016). *Victory plan*. <https://www.theclimatemobilization.org/victory-plan/> and Grenier (2017), see note 5.
79. <https://theintercept.com/2018/08/14/hothouse-earth-climate-change-neoliberal-economics/>. See also, <https://www.commondreams.org/views/2018/08/21/going-war-climate-change>. Durwood Zaelke, President of the Institute for Governance and Sustainable Development and one of the three co-chairs of the *Well under 2 degrees Celsius* report (see note 8) uses similar language: "While time is short, we can still avoid catastrophic and the potential existential risks, though we'll have to really kick these strategies into high gear—akin to a war footing". <http://www.igsd.org/new-reports-detail-essential-climate-policies-needed-to-limit-warming-below-2celsius/>
80. Gore, A. (2017): "There is now in our world a sustainability revolution and it's best understood, in my view, by placing it in the context of other great global transformations – the agricultural revolution, the industrial revolution, the digital revolution. This sustainability revolution has the breadth and magnitude of the industrial revolution but it has the speed of the digital revolution. Instead of beginning in a corner of the UK in a world of 1.5 billion people, and then slowly spreading to western Europe and North America, this sustainability revolution is being jump-started in rich and poor countries alike in every corner of this world of 7.4 billion people." <https://www.theguardian.com/environment/2017/jun/21/al-gore-battle-against-climate-change-like-fight-against-slavery>
81. This is the wording used in a recent petition from the Australian campaign to declare a climate emergency. <http://climateemergencydeclaration.org/petition1/>
82. <http://bze.org.au/bze-publications-overview/>
83. Silk (2016), see note 78.
84. Hawken (Ed.) (2016), see note 72.
85. Anderson, K. (2015). Talks in the city of light generate more heat. *Nature*, 528(7583). https://www.nature.com/news/talks-in-the-city-of-light-generate-more-heat-1.19074?WT.mc_id=TWT_NatureNews
86. Anderson (2015), see note 85.
87. Anderson (2015), see note 85.
88. Hansen, J. et al. (2017) Young people's burden: requirement of negative CO₂ emissions. *Earth System Dynamics*, 8, 577-616. <https://www.earth-syst-dynam.net/8/577/2017/>
89. Hansen et al. (2017), see note 88.
90. <https://www.carbonbrief.org/tropical-forests-no-longer-carbon-sinks-because-human-activity> See also Baccini et al. (2017) Tropical forests are a net carbon source based on aboveground measurements of gain and loss. *Science*. <http://science.sciencemag.org/content/early/2017/09/27/science.aam5962> and Raupach et al. (2014). *Biogeosciences*, 11, 3453–3475. <https://www.biogeosciences.net/11/3453/2014/bg-11-3453-2014.pdf>
91. See note 90.
92. Hawken (Ed.) (2016), see note 72, pages 112-113.
93. <https://www.sciencedaily.com/releases/2014/01/140108133303.htm>
See also Lal, R. (2010). Managing soils and ecosystems for mitigating anthropogenic carbon emissions and advancing global food security. *BioScience*, 60(9). <https://academic.oup.com/bioscience/article/60/9/708/238009>
94. See *Science Daily* overview <https://www.sciencedaily.com/releases/2018/08/180829143834.htm>. See also Mayer, A., et al. (2018). The potential of agricultural land management to contribute to lower global surface temperatures. *Science Advances*, 4(8) <http://advances.sciencemag.org/content/4/8/eaq0932>, and <http://advances.sciencemag.org>

- org/content/suppl/2018/08/27/4.8.eaaq0932.DC1, particularly Table S1: Summary of global soil C sequestration potential by agricultural land management.
95. Rhodes, C. (2017). The imperative for regenerative agriculture. *Science Progress*, 100 (1), pp. 80-129. "Some types of symbiotic fungi can lead to 70 percent more carbon in the soil. The role of these fungi is currently not considered in global climate models." <https://www.sciencedaily.com/releases/2014/01/140108133303.htm>
 96. Wilson, C. (2018) *Landscape rehydration: Theory and practice*. <https://trove.nla.gov.au/work/232443192?selectedversion=NBD63632111>
 97. See *Science Daily* article in note 94.
 98. Hawken (Ed.) (2016) page 41 and 118-119, see note 72
 99. <https://www.dpi.nsw.gov.au/agriculture/soils/soil-carbon/biochar-basics>
 100. <https://www.scientificamerican.com/article/farmers-in-sahel-beat-back-drought-and-climate-change-with-trees/>
 101. Hawken (Ed.) (2016) pages 179-180, see note 72. Also Flannery, T. (2017). *Sunlight and seaweed: An argument for how to feed, power and clean up the world*.
 102. 'Safe passage' is a phrase used by Philip Sutton and others to refer to the use of geoengineering to provide temporary cooling through the temporary spike in warming arising from the loss of the protective functions of aerosols: "If necessary, another strategy that could be added to the safe climate package – to contribute to the 'safe passage' of the earth's living things and to drive the earth system's positive feedbacks in the cooling rather than warming direction – would be to marginally increase the reflectivity of the earth to deflect a couple of percent of the incoming solar radiation (solar radiation management) – until the combined effect of the zero emissions and the drawdown strategies create the conditions for the natural maintenance of a safe climate." www.green-innovations.asn.au/RSTI/A-safe-climate-is-still-possible.doc and <https://www.greenleft.org.au/content/conference-debates-how-restore-safe-climate>. See also D. Spratt on the 'Faustian bargain' with aerosols: <http://www.climatecodered.org/2018/02/quantifying-our-faustian-bargain-with.html#more>
 103. See, for example, <https://www.theguardian.com/environment/2017/mar/24/us-scientists-launch-worlds-biggest-solar-geoengineering-study>
 104. See, for example, <https://www.theguardian.com/environment/2018/oct/08/geoengineering-global-warming-ipcc>
 105. See, for example, <https://www.nytimes.com/2015/02/12/opinion/the-risks-of-climate-engineering.html>
 106. Grubb, A. & Raser-Rowland, A. (2017). *The art of frugal hedonism: A guide to spending less while enjoying everything more*. Also, Bregman, R. (2017). *Utopia For realists: And how we can get there*.
 107. Goering, L. (2017). 8 in 10 people now see climate change as a 'catastrophic risk' – survey, Thomson Reuters Foundation, 23 May, <http://news.trust.org/item/20170523230148-a90de>. See more in Dunlop & Spratt (2017) – note 63.
 108. ComRes (2017). Global Challenges Foundation global risks survey. *CommunicateResearch Ltd*, <http://www.comresglobal.com/polls/global-challenges-foundation-global-risks-survey/>. See more in Dunlop & Spratt (2017), see note 63.
 109. <http://www.abc.net.au/news/2018-04-08/uk-conservatives-are-abandoning-coal-fired-power-stations/9630936>
The tendency to accept ever-higher probabilities of catastrophic risk is sometimes referred to as 'conservative', but there is nothing conservative about under-estimating risk. When it comes to the catastrophic risks associated with global warming, conservatives face a difficult choice between reducing risk via large, fast and fundamental changes to society (which is difficult for lovers of tradition to accept) and preserving business-as-usual but risking the end of human civilisation and the death of billions of people (a completely unacceptable risk regardless of world view).
 110. Klein, N. (2014). *This changes everything*. Penguin; Klein, N. (2017). *No is not enough: Resisting Trump's shock politics and winning the world we need*. Haymarket; Monbiot, G. (2017). *Out of the wreckage: A new politics for an age of crisis*. Verso. See also, Denniss, R. (2018). Dead right: How neoliberalism ate itself and what comes next. *Quarterly essay*, issue 70.
 111. <https://www.theguardian.com/commentisfree/2018/may/29/brexit-ireland-referendum-experiment-trusting-people>
 112. Sachs, J. (2012) *Winning the story wars: Why those who tell - and live - the best stories will rule the future*, page 7.
 113. Gilding, P. (2011): "We have to roll out new technologies on a massive scale to prevent the climate from tipping over the edge. We will mobilize mind-boggling amounts of money, people and focus to this task, and we need to do it as fast as we possibly can. [Another] transformation will start at the same time and build more slowly. This will be the genuine transformation of the economy and society to a steady-state sustainable economy, built on the pursuit of quality of life, a more equitable sharing of the world's wealth, and learning to live in harmony with the ecosystem's capacity to support us." *The great disruption - How the climate crisis will transform the global economy.*, page 253.
 114. Quote is from https://www.seedmob.org.au/about_seed. See also, Dembicki, G. (2017). *Are we screwed? How a new generation is fighting to survive climate change*.

115. Chenoweth, E. (2013): "Researchers used to say that no government could survive if five percent of its population mobilized against it ... In fact, no campaigns failed once they'd achieved the active and sustained participation of just 3.5% of the population—and lots of them succeeded with far less than that." The 3.5% figure "is based on the highest number of observed participants directly confronting the opponent during the campaign ... the maximum number of people the campaign involved in peak events." <https://rationalinsurgent.com/2013/11/04/my-talk-at-tedx-boulder-civil-resistance-and-the-3-5-rule/> Also, Chenoweth, E. & Stephan, M. (2011). *Why civil resistance works: The strategic logic of nonviolent conflict*.
116. "On nearly every question we ask around climate change and renewables, support for government action sits around two-thirds of all voters ... 69% believe it's important for the government to agree to a policy to reduce climate change, and 74% approve of government incentives for renewables." www.essentialvision.com.au/wp-content/uploads/2018/10/Essential-Report-091018.pdf And 80% support establishing a federal ICAC. <http://www.tai.org.au/content/support-federal-icac-poll>
117. <http://climatesafety.info/slf2017-speeches/#paulgilding> See also <https://nytimes.com/2018/10/06/opinions/Sunday/climate-change-global-warming.html>
118. <https://www.theclimatemobilization.org/blog/2016/7/27/dnc-party-platform-mobilization> and <https://thinkprogress.org/democratic-platform-calls-for-wwii-scale-mobilization-to-solve-climate-crisis-d2f84c22f9ca/>
119. <http://www.climatecoded.org/2017/03/meet-sherri-goodman-who-in-two-words.html>
120. https://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Foreign_Affairs_Defence_and_Trade/Nationalsecurity/Final_Report
121. <https://www.slf2019.org/>
122. "In the past year, The Climate Mobilization and partners and volunteers have convinced four local governments to declare climate emergencies. In California, these include Berkeley and neighbouring Richmond. On the east coast, Hoboken, New Jersey, and Montgomery County, Maryland, have signed on." Los Angeles city council has voted unanimously to explore creating a municipal Climate Emergency Mobilization Department. <https://www.yaleclimateconnections.org/2018/09/climate-mobilization-plea-cities-must-declare-emergency>
123. In 2002, Frank Luntz, an American pollster and conservative political advisor, advised George Bush and the Republicans to refer to 'climate change' not 'global warming': "'Climate change' is less frightening than 'global warming' ... While global warming has catastrophic connotations attached to it, climate change suggests a more controllable and less emotional challenge." <https://www.sourcewatch.org/images/4/45/LuntzResearch.Memo.pdf> Subsequent research has supported Luntz's views. People find the term 'global warming' more alarming and are more likely to accept that there is a serious threat if that term is used. See, for example, Whitmarsh, L. (2009). What's in a name? Commonalities and differences in public understanding of 'climate change' and 'global warming'. *Public Understanding of Science*, 18. http://psych.cf.ac.uk/home2/whitmarsh/Whitmarsh_PUS%202009.pdf
Also Leiserowitz, A. et al. (2014) found that "[the term] global warming generates stronger feelings of negative affect and stronger perceptions of personal and familial threat among Republicans; they are also more likely to believe that global warming is already affecting weather in the United States ... The use of the term climate change appears to actually reduce issue engagement ... across political and partisan lines." *What's in a name? Global warming vs. climate change*. Yale University and George Mason University. http://environment.yale.edu/climate-communication-OFF/files/Global_Warming_vs_Climate_Change_Report.pdf. See also <https://www.theguardian.com/environment/2014/may/27/americans-climate-change-global-warming-yale-report>.
124. <https://www.carbonbrief.org/two-degrees-the-history-of-climate-changes-speed-limit>
125. McKibben, B. (2012) Global warming's terrifying new math. *Rolling Stone*, July 19. <https://www.rollingstone.com/politics/politics-news/global-warmings-terrifying-new-math-188550/>
126. The archived 2009 version of the 350.org website says "Scientists say that 350 parts per million CO₂ in the atmosphere is the safe limit for humanity." It features a graph showing decreasing emissions to zero and continuing into negative emissions: <https://web.archive.org/web/20091029155956/http://www.350.org/>.
127. Spratt (2016), see note 42.
128. Ramanathan et al. (2017), see note 8.

As climate catastrophe looms ever closer, some opinion leaders still hold fast to the view that we must not mention the seriousness of our plight for fear of demoralising people.

But how could we explain to our children, in some dystopian future of runaway global warming, that we held back from telling the truth at a time when human action could still have made a difference?

It's time to talk honestly about the climate emergency and what we need to do to save human civilisation and the precious ecosystems on which we depend.



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