



PRACTICE

Climate crisis: the cold hard facts about all that “hot air”

BY **JENNY COOPER QC**

SCHOOL STUDENTS ARE STRIKING, the Extinction Rebellion movement is growing, and local governments in New Zealand and around the world have declared a climate emergency. But not everyone is ready to join the zero emissions revolution. There are still sceptics, most notably in the White House, but also closer to home, who dismiss the talk of a climate crisis as just a lot of hot air.

The need to build consensus about how to tackle climate change is becoming increasingly urgent as temperatures and CO₂ levels continue to rise. The negative reaction from parts of the agricultural sector to the Climate Change Response (Zero Carbon) Amendment Bill, introduced on 8 May 2019, highlights the challenges ahead. The bill provides a framework for New Zealand’s contribution to limiting the average temperature increase to 1.5°C above pre-industrial levels. It sets a target of reducing New Zealand’s net greenhouse gas emissions (except biogenic methane from agriculture and waste) to zero by 2050. Biogenic methane is subject to a separate target of 10% below 2017 levels by 2030 and within the range of 24-47% below 2017 levels by 2050.

The bill doesn’t address how those targets will be met. Instead, an independent Climate Change Commission will be created to advise the government on setting a series of five-year emissions

budgets and to monitor progress towards the targets in the bill. The first three emissions budgets must be set by 31 December 2021 and will cover the period from 2022-2035. The government is required to have a plan in place to meet the 2050 target and the five-year emissions budgets.

The bill provides much needed clarity about what we are aiming for but a lot of the difficult conversations about how to achieve those goals, and who should bear the costs of doing so, are still ahead of us. As lawyers, we have an important role to play in those discussions to ensure that legislative and policy responses to climate change are evidence-based, effective, and consistent with the rule of law, Te Tiriti o Waitangi, and New Zealand’s international obligations.

This article summarises what we need to know about climate change, why we should get involved, and how we can help.

The basic science

The most important facts to know about climate change are: (a) it is occurring now; (b) it is caused by human activity; and (c) there is overwhelming consensus among scientists about both (a) and (b). Anyone claiming that there is still uncertainty about either of these facts is simply wrong. Indeed, a recent paper notes that the scientific evidence for human-induced climate change reached the “gold standard” in 2005 (Santer & Ors,

“Celebrating the anniversary of three key events in climate change science”, *Nature Climate Change*, 25 February 2019).

In simple terms, global warming is caused by an increase in the concentration of greenhouse gases in the atmosphere, which trap heat. The main greenhouse gases are carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O). CO₂ levels in the atmosphere have risen rapidly over the last century, especially in the last 50 years, largely as the result of burning fossil fuels. Atmospheric CO₂ levels are now above 400 ppm (parts per million), far higher than at any other time during human existence. Before the last century, the highest peak in CO₂ levels was 300 ppm, 325,000 years ago.

The CO₂ that has already been released will stay in the atmosphere for thousands of years, while methane lasts decades. Therefore, even if we cut our *rate* of emissions, warming will continue to increase as long as more emissions are released and their cumulative concentration in the atmosphere increases. That is why we need to reduce our CO₂ emissions to zero to stop warming getting worse (and why there is a valid argument for treating methane separately, given its shorter lifespan).

The most comprehensive and authoritative statement of the current scientific consensus on climate change is the special report by the

Intergovernmental Panel on Climate Change (IPCC), *Global Warming of 1.5°C*, published in October 2018.

The IPCC is the United Nations body for assessing the science related to climate change. It was established in 1988 and has 195 member states (more than the UN itself). It does not conduct its own research but relies on panels of scientists from around the world to assess scientific papers and identify where there is agreement, where there are differences of opinion, and where further research is needed.

When the Paris Agreement on climate change was adopted in December 2015 the IPCC was invited to produce a special report on global warming of 1.5°C above pre-industrial levels. This reflects the Paris Agreement target of “holding the increase in the global average temperature to well below 2°C above pre-industrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels”.

The IPCC report is the outcome of that request. It is the product of 91 authors from 44 countries, 188 contributing authors, over 6,000 cited references, and a total of 42,001 expert and government review comments. It deserves to be taken seriously.

Everyone *should* read the IPCC report but, realistically, very few people will. So here’s a rundown on what you need to know.



Key messages

Climate change is already happening

The IPCC report tells us that human-induced global warming reached approximately 1°C above pre-industrial levels in 2017, based on the increase in combined air and sea surface temperatures, averaged over the globe and over a 30-year period (p 51).

That doesn’t sound like much, but it is enough to have real impacts on ecological and weather systems, as evidenced by melting ice-sheets, dying coral reefs and intensification of weather events. It is also important to remember that it is an average and the effects are not evenly distributed. The IPCC report

notes that: “Temperature rise to date has already resulted in profound alterations to human and natural systems, including increases in droughts, floods, and some other types of extreme weather; sea level rise; and biodiversity loss ...” (p 53). Many commentators have linked the impact of climate change with increased migration and conflict, such as the wars in Syria and Sudan.

Even if warming is limited to 1.5°C, 70-90% of coral reefs are expected to disappear (p 179). That is grim but does not fully capture the extent of the problem. The report notes that: “The ocean has absorbed about 30% of the anthropogenic carbon dioxide, resulting in ocean acidification and changes to carbonate chemistry

that are unprecedented for at least the last 65 million years.” (p 178). Further changes have the potential to be catastrophic for marine life.

Climate change is caused by human activity

Yes, the climate changed before there were humans and yes, non-human factors can influence the climate, but neither of those facts means that we aren't causing the change this time around or that the effects won't be devastating.

The link between human emissions and climate change is demonstrated by the close match between observed patterns of climate change and the predicted patterns based on human rates of emissions. Meanwhile, studies quantifying solar and volcanic contributions to global warming from 1890 to 2010 have found their net impact on warming over the full period to be less than plus or minus 0.1°C (p 59).

Ominously, the IPCC report states: “global-level rates of human-driven change far exceed the rates of change driven by geophysical or biosphere forces that have altered the Earth System trajectory in the past; even abrupt geophysical events do not approach current rates of human-driven change”. (p 54).

Being clear about the cause of global warming enables us to be clear about the solution: we need to stop emitting CO₂ and other greenhouse gases at a higher rate than they can be absorbed.

It is still possible to keep global warming to 1.5°C

A temperature increase of around 1.5°C is virtually inevitable at this point. But, beyond that, it is still within our control. It is technically feasible to make the global changes needed to limit warming to 1.5°C (p 51).

Doing so will require significant investment in new technology and infrastructure. While this will be



expensive, many of the required changes will have significant co-benefits. For example, buildings designed and built to minimise energy consumption will be warmer and drier. Electrification of transport and better public transport systems will reduce congestion and air pollution. Planting and restoration of forests and wetlands to absorb carbon will improve biodiversity and water quality.

Because it is difficult to fully quantify the costs of mitigation or the long-term economic costs of global warming, it is difficult to undertake a cost-benefit analysis of the investment required to mitigate climate change. But it is clear that the costs of climate change will be very substantial (in both financial and non-financial terms) and that the greater the temperature

increase, the higher the cost. If we value future human wellbeing, the case for investment now is compelling.

If we do nothing it will get a lot worse

The main message of the IPCC report is that there is a big difference between 1.5°C of warming and 2°C or higher. The report describes how the outcome will be significantly worse on every measure if warming exceeds 1.5°C. For example, limiting warming to 1.5°C instead of 2°C could result in around 420 million fewer people being frequently exposed to extreme heatwaves (p 178).

But even the less ambitious goal of keeping warming to 2°C would require a big shift from our current trajectory. In the absence of effective action to reduce emissions, global



warming is likely to reach between 3.7°C and 4.8°C above pre-industrial levels by the end of the century. The IPCC report provides a “worst-case scenario” snapshot of what the world might look like in 2100 with just 3°C of warming (p 208-281). This includes heatwaves, droughts, flooding, ecosystems being destroyed, a decrease in global crop production, with an increase in starvation, high levels of political destabilisation and conflict, mass migration, high extinction rates and an overall substantial decline in the health and wellbeing of people compared to 2020. It is a disturbing picture of how the world could look within our children’s lifetimes.

Based on a review of various models, the report concludes that limiting warming to 1.5°C requires us to reduce global net CO₂

emissions by about 45% from 2010 levels by 2030, reaching net zero CO₂ emissions by around 2050, with concurrent deep reductions in other greenhouse gases, particularly methane (p 95).

The target of a 45% CO₂ reduction by 2030 was widely misreported as the IPCC saying we have 12 years to save the planet. The world will not end in 2030. But the longer we carry on producing greenhouse gases, the harder it will get to preserve the world we know.

OK, that's bad, but it's not our job to fix it, is it?

The IPCC report makes it clear that drastic cuts to emissions are critical to avoid irreversible global catastrophe. But some popular misconceptions undermine our willingness to take action. For example:

“New Zealand is not a significant contributor to global warming.”

It is true that New Zealand’s share of total greenhouse gas emissions is small, but our emissions per person are very high. According to the OECD, New Zealand has the fifth highest greenhouse gas emissions per capita in the OECD, behind Australia, the United States, Canada and Luxembourg.

According to Statistics NZ, New Zealand’s greenhouse gas emissions are about 44% CO₂ – of which 39% comes from road vehicles, 20% from manufacturing and construction, and 9% from electricity generation, with the remaining 32% of CO₂ from other sources – and about 42.8% methane and 11.6% nitrous oxide, both of which mainly come from agriculture.

Our emissions profile is different to many other countries because of our high agricultural emissions. But these emissions still contribute to global warming. We can’t expect other countries to give us a free pass on them. Especially developing

countries with much lower standards of living than ours. And we can certainly reduce our transport and other CO₂ emissions.

“We can't do anything about agricultural emissions without wrecking the economy”

Methane is a potent greenhouse gas and reduction of agricultural emissions is necessary if we want to limit global warming. Doing so without reducing production is difficult but not impossible. A 2014 paper from the New Zealand Agricultural Greenhouse Gas Research Centre, “Reducing our agricultural GHG emissions: how we are getting there”, reported that emissions per unit of milk or meat produced on New Zealand farms declined by an average of 1% a year since at least 1990, but increased production over the same period resulted in an overall 15% increase in agricultural emissions.

The New Zealand Agricultural Greenhouse Gas Research Centre is currently looking at ways to reduce agricultural emissions, including selection of low methane-producing animals, low methane feeds, a vaccine to reduce methane production, reducing nitrous oxide and nitrate leaching, and increasing soil carbon levels (see www.nzagrc.org.nz). In some situations emissions can be offset by using mixed farming models and converting less productive land to forestry.

Ultimately we may need to reduce the number of cows and sheep on our farms but we may also find there’s a lot we can do to reduce agricultural emissions without reducing production (and a lot we can do besides farming sheep and cows).

“Action in New Zealand is pointless while the major emitters aren't doing anything”

While there is undeniably a long way to go, other countries are taking action. A useful source

of information is the website climateactiontracker.org. This reports that the United Kingdom has reduced its total emissions by 42% from 1990 levels, mainly by decreasing its use of coal. The rest of the EU, India and China are also reducing their reliance on coal and investing heavily in solar and other renewable energy sources.

Meanwhile, despite Donald Trump's roll-back of federal environmental measures, California is on track to reduce its emissions to 1990 levels by 2020, despite strong population and economic growth, and is targeting 40% below 1990 levels by 2030 (see oehha.ca.gov). Other state and city governments in the US are also taking steps to reduce emissions.

Comparatively, New Zealand's efforts so far are dismal. According to Statistics NZ our gross greenhouse gas emissions increased by 24% from 1990 to 2015, while our net emissions increased by a whopping 64% due to reduced uptake of CO₂ by forestry. Climateactiontracker.org claims that "if all countries were to follow New Zealand's approach, warming could reach over 3°C and up to 4°C. This means New Zealand's current policies are not in line with any interpretation of a "fair" approach to the former 2°C goal, let alone the Paris Agreement's 1.5°C limit".

New Zealand needs to do better if it wants to preserve its international reputation and brand image as an environmentally responsible member of the global community. New Zealand can also demonstrate leadership by showing the major emitters how an effective emissions reduction programme can work.

So, what can we do?

The most important thing we can each do as individuals is get involved in the discussion about these issues, whether through our work or in our communities. As lawyers, we have good research,

analytical and communication skills which we can use to help decision-makers and the general public to get good information and raise the quality of the debate.

We can also vote for and support central and local government actions to reduce emissions, and we can use our power as consumers and investors to support businesses which are zero carbon, or actively working to reduce emissions.

For those who want to get more involved, Lawyers for Climate Action NZ Inc is a newly formed society whose purposes include advocating for legislation and policies to ensure New Zealand achieves net zero carbon emissions no later than 2050. More information is available at www.lawyersforclimateaction.nz.

Finally, while there's no question that the scale of the problem requires government-level policy changes, there are small changes we can all make to reduce our personal emissions:

Take fewer flights: We can stop flying for meetings that could be held by telephone or video conference. We can spend more of our holidays in New Zealand. And we can pay a little extra to offset our carbon emissions when we do fly.

Use cars less or get an electric car: Walk, ride a bike, or use public transport. Or get an electric car - they are more expensive to buy but cost very little to run.

Buy less, buy wisely: Most of us have so much stuff we don't know what to do with it. Making, packaging, transporting and disposing of all that stuff produces emissions. We need to buy things we genuinely need, not junk we don't really want.

Reduce red meat consumption: We're not going to convert everyone to veganism or vegetarianism overnight. But we can cut back on our red meat portion sizes or frequency, or both.

Reduce food waste and use a compost bin, bokashi bin, and/or worm farm: Food waste is not only wasteful of the resources that have gone into producing and transporting the food, but when it goes to landfill it produces methane. Composting avoids those methane emissions and enables valuable organic matter and nutrients to be put back into the soil. If you don't want to do it yourself, We Compost has recently started a domestic food waste collection service in Auckland (www.wecompost.co.nz).

Meanwhile, the number one thing we should *not* do is despair. The situation is bad but not hopeless. Millions of people are working hard to make it better. The more of us who get on board to support them, the better the future will be. ■

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