

## Contents

<b>Emergency on Planet Earth</b>	<b>2</b>
<b>Part 1. How do we know that the Earth is warming?</b>	<b>3</b>
1.1 Temperature records	3
1.2 But it feels colder where I live!	4
1.3 Hasn't it been hotter than this in the past?	4
<b>Part 2: Why is the Earth getting warmer?</b>	<b>4</b>
2.1 What is the greenhouse effect?	4
2.2 What about natural Earth cycles?	5
2.3 Is the rise in carbon dioxide levels our fault?	6
2.4 Can we be sure that human action has caused global warming?	6
2.5 Aren't governments now trying to bring greenhouse gas emissions down?	7
<b>Part 3: What is happening to our planet as a result of global warming?</b>	<b>10</b>
3.1 The weather is getting more extreme	10
3.1.1 Heat waves, fires and droughts	11
3.1.2 Monsoons, floods and hurricanes	13
3.2 Melting ice, rising sea levels and increases in ocean acidity	14
3.2.1 Melting ice	14
3.2.2 Sea levels	15
3.2.3 Ocean warming and increases in acidity	16
3.3 Knock-on effects of the climate emergency	17
<b>Part 4: What else are we doing to our land, our air and our water?</b>	<b>18</b>
4.1 Damage to our land	18
4.1.1 Deforestation and loss of wetlands	19
4.1.2 Damage to soil	19
4.1.3 Loss of natural resources and food	20
4.2 Pollution of our air and our water	21
4.2.1 Air pollution	21
4.2.2 Water pollution	22
<b>Part 5: What are we doing to our biodiversity?</b>	<b>22</b>
5.1 Species Loss	22
5.2 Vertebrates	23
5.3 Insects	24
5.4 We're entering the Sixth Mass Extinction	24
<b>Part 6: Quotes</b>	<b>25</b>
6.1 We are in a climate and ecological emergency	25
6.2 We have to act now	27
<b>Part 7: Addressing tricky questions posed by the media and climate skeptics</b>	<b>28</b>

# Emergency on Planet Earth

Humanity is facing a crisis unprecedented in its history. A crisis that, unless immediately addressed, threatens to catapult us further into the destruction of all we hold dear: this nation, its peoples, our ecosystems and the future of generations to come.

The science is clear: the world is warming and the breakdown of our climate has begun. There will be more wildfires, unpredictable super storms, scorching heat waves, rising sea levels and droughts. Vast tracts of land could be rendered uninhabitable through flooding and desertification. Our food supplies and fresh water are at risk of being cut off. Mass migration and famine could take us towards civil unrest, societal collapse, and ultimately war.

But that's not all.

Around the world, biodiversity is being annihilated at a terrifying rate. We are entering the 'sixth mass extinction' event - with one million species at threat of extinction over the next few decades due to human intervention - and the consequences could be catastrophic if we do not act swiftly. Millions of trees are being felled to make room for our ever-increasing demands for palm oil, clothes and meat. We are running out of raw materials and using up our resources. Our rivers are being poisoned and our seas are acidifying and full of plastic. The air is so toxic that the UK is breaking the law: harming the unborn whilst causing tens of thousands to die.

As Sir David Attenborough put it: "We are facing a man-made disaster on a global scale."

These climate and ecological crises can no longer be ignored or denied. In spite of promises from governments, greenhouse gas emissions continue to rise steeply and biodiversity loss shows no sign of slowing. The time has come to take radical action. The future of our planet is at stake.

But can it really be as terrifying as all that?

How can we be so sure that the world is warming any more than it has in the past? And even if it is, are we really certain that humans are to blame? We hear so many conflicting opinions and reports – what's really occurring on our planet right now?

And more importantly, is it really going to get worse? How much worse? And how soon?

We have been assured that the UK government has declared a climate and ecological emergency. It has pledged to follow the Paris Agreement to stay within 1.5 degrees of warming, and to get to net-zero carbon emissions by 2050. Climate change is well and truly on the political agenda. So surely these horror stories won't actually happen? Aren't we already doing enough to prevent it?

\*\*\*\*\*

This document sets out to provide clear, unequivocal answers to these questions - through the use of peer-reviewed, evidence-based robust science - and to set out the current scientific consensus on the issues surrounding the climate and ecological emergency.

## Part 1. How do we know that the Earth is warming?

### 1.1 Temperature records

Temperature records (as verified by the Met Office Hadley Centre for Climate Change in Exeter, the National Oceanic and Atmospheric Administration US Climate Centre, The Japanese Met Office, NASA and Berkeley Earth in California) confirm that there is absolutely no doubt whatsoever that the Earth is warming. Since 1850, when records began, there have been small variations in the average annual temperatures - with some years being warmer than the previous year and some colder - but since the 1980s temperatures have begun to rise more consistently. Indeed, each of the last three decades has been successively warmer than the one before, and 19 of the top 20 warmest years have occurred in the last 19 years. [The past four years have been the hottest on record.](#)

Overall, the average global surface temperature has now risen by 1.1°C since pre-industrial times. This might not sound like a lot, but even tiny changes in the Earth's temperature can have huge impacts, as we shall see below.

## 1.2 But it feels colder where I live!

Whilst the past 19 years have been successively warmer *globally*, there is enormous regional variation - along with short-term changes. This might make it seem, at times, like it's actually getting colder where you live. For example it could be colder than usual in parts of Northern America, but at the same time hotter than usual in Canada. An extreme example of this is the Arctic, which has warmed at [twice the rate](#) of the global average due to a process called Arctic amplification. The key point is that *overall* the Earth is getting warmer.

## 1.3 Hasn't it been hotter than this in the past?

Reconstructions of the Earth's climate history since before the earliest days of the Roman Empire have shown that global temperatures have never been this consistently high. A recent [report in Nature](#) concluded: "the near-global extent of ongoing warming is unparalleled over the past 2,000 years."

Scientists are able to estimate the temperatures of the Earth going back hundreds of thousands of years by analysing air bubbles trapped deep within layers of ice. It's certainly true that if we go back far enough the Earth might have been warmer before, but not since around 3 million years ago. The important point is that temperatures have never risen as *quickly and consistently across the globe* as they have done in the past few decades. In our prehistoric past any rise in temperature would have taken place over tens of thousands of years, which crucially would have given our weather systems and creatures on Earth time to adapt to these changes.

# Part 2: Why is the Earth getting warmer?

## 2.1 What is the greenhouse effect?

The temperature at the Earth's surface is controlled primarily by the levels of certain gases in the atmosphere, such as carbon dioxide and methane. Due to their molecular structure, these gases absorb heat that is emitted from the Earth's surface as a result of it having being warmed by the Sun, preventing the heat energy from escaping back out into Space. It can be said that they provide an insulating 'blanket'

around the Earth. This is sort of like how the glass roof of a greenhouse traps heat energy from the Sun, preventing it from escaping from the greenhouse and therefore keeping the inside of the greenhouse warmer than its surroundings. Hence this phenomenon has become known as the greenhouse effect and the gases known as greenhouse gases. The greenhouse effect is essential for life here on Earth; without greenhouse gases in our atmosphere, the temperature at the Earth's surface would be around  $-18^{\circ}\text{C}$  - far too cold for us to survive.

Carbon dioxide is generally thought of as the most significant greenhouse gas. Whilst methane is roughly 30 times better at trapping heat than carbon dioxide, it has a much shorter lifetime in the atmosphere. Carbon dioxide in our atmosphere is constantly being absorbed into the oceans, as well as being locked into carbon compounds in trees and plants by a process called photosynthesis. Other living creatures feed off these trees and plants, taking the carbon compounds into their own bodies. These carbon compounds are then turned back into carbon dioxide through a process called respiration, which is released back into the atmosphere. Carbon dioxide is also released when dead matter decays and rots, or is burnt. This process of the removal and replacement of carbon dioxide in our atmosphere is called the carbon cycle, and it is what has ensured that the levels of carbon dioxide in the Earth's atmosphere have remained pretty stable over long periods of time.

## 2.2 What about natural Earth cycles?

Analysis of air bubbles trapped in Antarctic ice sheets reveals that over the past 800,000 years there have been periods in the Earth's history where the carbon dioxide levels have risen and fallen, although extremely gradually. This is thought to be due to the way in which the Earth travels around the sun - a process called orbital forcing. Such oscillations in carbon dioxide levels resulted in gradual changes in the Earth's temperature, driving the glacial and interglacial periods. In other words, this is why we had Ice Ages.

Whilst the fluctuations in carbon dioxide levels due to the Earth's natural cycles may have been significant, what's crucial is that, not only did they take place over enormous timescales, but they also never resulted in anything close to the carbon dioxide levels that we see in our atmosphere today.

Today, carbon dioxide concentrations are at a record high of [411 parts per million \(ppm\)](#), an increase of over 45% on pre-industrial levels. These are the highest levels in at least the [last 3 million years](#).

## 2.3 Is the rise in carbon dioxide levels our fault?

Around 12,000 years ago our planet came out of its last period of glaciation. As greenhouse gases rose and we warmed, we entered a period of climatic stability, known as the Holocene. It is this stability that allowed humans to settle and farm. Eventually greenhouse gas levels should have started to fall again, sending us towards a new period of glaciation. However, human action began to disrupt the Earth's natural cycles. We began cutting down trees - reducing the amount of carbon dioxide that could be removed from the atmosphere by photosynthesis. At the same time, paddy fields were planted to grow rice, releasing methane into the atmosphere. For a long period of time the levels of greenhouse gases in our atmosphere rose slowly and steadily. That is, until the last couple of centuries.

Since the industrial revolution, humans have been pumping enormous additional quantities of carbon dioxide into the atmosphere - especially here in the UK - due to the burning of fossil fuels like coal, oil and natural gas. Fossil fuels are naturally occurring substances that were formed millions of years ago from the remains of dead plants and sea-creatures. When these fuels are burnt, the carbon compounds that have remained trapped inside them for millions of years are converted back into carbon dioxide and released, adding extra carbon dioxide into the atmosphere that shouldn't be there. In addition, deforestation on massive scales to clear land for agriculture and livestock has released huge amounts of carbon dioxide, and has meant that there are increasingly fewer trees to absorb carbon dioxide from the air. Since 1850 carbon dioxide levels in the atmosphere have been rising exponentially, and [they continue to do so today](#).

At the same time, there has been a huge increase in the number of paddy fields and in the breeding of cattle for the meat and dairy industries. Due to the presence of bacteria in their stomachs that help them to digest grass, cows burp and fart huge quantities of methane.

Global greenhouse gas emissions from human activities are [continuing to shoot up at an alarming rate](#), despite all the policies and pledges from the government.

## 2.4 Can we be sure that human action has caused global warming?

Yes, we can. Whilst many skeptics still try to claim that the Earth is getting warmer due to natural cycles, volcanic activity, or the Sun, a vast body of peer-reviewed

scientific evidence now confirms that these factors have had a negligible effect on our current temperature rise. The most recent report from the Intergovernmental Panel on Climate Change confirms that it is the increase in carbon dioxide levels that is playing a major role in global warming.

Indeed, [a study](#) that looked at 12,000 academic papers on the subject of global warming or climate change published from 1991 to 2011 found that 97% of climate scientists agree that human factors (car exhausts, factory chimneys, forest clearance and other sources of greenhouse gases) are responsible for the exceptional levels of global warming that we are seeing today. Professor Stefan Brönnimann, Unit Leader of Climatology at the University of Bern and lead author of the most authoritative paper on the subject to date, confirmed that this number “[is likely to have now exceeded 99%](#)” and could rise further after separate research that clears up some of the remaining doubts.

Professor Brönnimann told a national newspaper: “There is no doubt left – as has been shown extensively in many other studies addressing many different aspects of the climate system using different methods and data sets”. According to Mark Maslin, Professor of Climatology at University College London, “This paper should finally stop climate change deniers claiming that the recent observed coherent global warming is part of a natural climate cycle.”

Or as the IPCC Report says: “evidence for climate change is ‘unequivocal’”.

## 2.5 Aren't governments now trying to bring greenhouse gas emissions down?

In a word, no.

In 2016 the [Paris Agreement](#) was drawn up, whose aim is “to strengthen the global response to the threat of climate change by keeping a global temperature rise this century well below 2°C above pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5°C.” It has now been signed by 196 states, as well as the European Union.

In order to reach this target, there is a finite amount of carbon dioxide that can still be emitted, known as the carbon budget. The recent IPCC report found that in order to have a 50% chance of remaining below a 1.5 warming, global carbon dioxide

emissions need to halve by 2030, and get to net zero by 2050. For a 66% chance of staying below 1.5C, we have a 420Gt global carbon budget.

However, despite repeated pledges to end fossil fuel subsidies by 2025, governments from the seven largest advanced economies in the world continue to provide [at least US\\$100 billion each year](#) to support the production and consumption of oil, gas and coal. Globally, these energy sources get more than [\\$370bn \(£305bn\) a year in support, compared with \\$100bn for renewable energy sources](#).

A report released in September 2019 revealed that, over the past year, globally oil and gas companies have approved \$50 billion of investment in major projects that undermine the climate targets of the Paris Agreement. The study found that [“no major oil company is investing to support its goals of keeping global warming “well below” 2°C and to “pursue efforts” to limit it to a maximum of 1.5°C.”](#)

The UN Secretary General, António Guterres has [attacked fossil fuels subsidies](#), saying: “What we are doing is using taxpayers’ money - which means our money - to boost hurricanes, to spread droughts, to melt glaciers, to bleach corals. In one word: to destroy the world.”

Here in the UK, in May 2019 the UK Committee on Climate Change gave recommendations that in order to reach the Paris Agreement and global net zero by 2050, we also need to get to net zero emissions by 2050. However, this doesn’t take into account that that gives us a much larger share of the carbon pie. If other developed nations such as the EU, US, China and India were also to do that, together we would use up so much of the remaining carbon budget that the rest of the world would not be able to produce *any carbon dioxide at all* after around 2030. In order to give global carbon net zero a chance of happening, many climate scientists agree that we should really be getting to net zero much sooner than 2050, a concept known as carbon equity.

Remember, for a 66% chance of staying below 1.5C we have a 420Gt global carbon budget. At current emission rates the UK will have exhausted its official share of this budget in less than 4 years (taking into account imports and travel). To stay within our anything-close-to-actually-fair-share of the global budget, we’d have to cut emissions by around 90% within the next 5-10 years.

Either way, some people argue that, given that carbon dioxide emissions are actually falling here in the UK, we are already doing enough. Firstly, it should be clarified that the main reason emissions have been falling is because we have been switching over from coal to gas. Gas does indeed produce less carbon dioxide than coal, but that doesn’t mean emissions will continue to fall. Secondly, our emissions are not falling nearly as fast as they need to. But most importantly, it’s vital that we realise

that the impact the UK is having on global emissions is not primarily due to the emissions we produce *here*, but the emissions that are produced *elsewhere* in the globe in order to manufacture the food and materials we import from overseas. Not to mention the emissions produced in *transporting* these goods to the UK.

In addition, according to a report from the European Commission in January 2019, the [UK has the biggest fossil fuel subsidies](#) of the whole of the EU. A government report published in June 2109 found that over the past five years, the UK has [spent £2.5bn on fossil fuel projects](#) - the vast majority being in low- and middle-income countries. In October 2019, the UK government was [accused of “utter hypocrisy”](#) after it rejected calls from MPs to stop spending billions on overseas fossil fuel projects while claiming to be a leader in the fight against global warming. Parliament’s Environmental Audit Committee warned the UK government that it is sabotaging its climate credentials by paying out “unacceptably high” oil and gas subsidies in developing nations.

In spite of parliament declaring a climate emergency earlier this year, a [damning report](#) from the UK Climate Change Committee (the government's own official climate change advisers) in July warned that the government is failing to cut emissions fast enough. The committee found that only 7 out of the 24 government goals needed to meet emission targets were on track. Outside the power and industry sectors, only two indicators were on track.

The report also warned that the government is failing to put in measures needed to adapt to rising temperatures. It warned that, at the current rates of global emissions cuts, the world may be heading for a temperature rise of more than 3C by the end of this century - but that England appears unprepared for even a 2C rise.

Committee chairman Lord Deben, the former agriculture minister John Gummer, [told the BBC](#): "The whole thing is really run by the government like a Dad's Army. We can't go on with this ramshackle system."

Whichever way you look at it, our emissions are not falling anywhere close to fast enough in order for the world to reach net zero by 2050. To compound the problem, even if we were to stop emitting greenhouse gases today, evidence shows that the climate will keep slowly warming for [around 10 years](#) due to [thermal inertia](#).

In a [recent address](#) to the Japan Climate Initiative, Christiana Figueres, former United Nations’ Climate Chief, said “Should we continue as a planet to increase greenhouse gases as we have done for the past two years and as we have done for the past 150 years, we would way exceed the 2 degree maximum temperature rise and certainly the 1.5 degrees. What that means is that future generations will have to

live in a world that is so unstable that it will be very difficult for them to have any predictability about their life whatsoever.”

Professor Stephan Harrison, Professor of Climate and Environmental Change, University of Exeter, said in a [recent lecture](#): “We have all the resources we need to deal with this. There is nothing magical about reducing carbon dioxide in the atmosphere. There is nothing magical about the greenhouse effect. We know exactly how to deal with it. We just don’t have the political or economic will to do this.”

As Greta Thunberg warned UN leaders recently: even if we cut our global emissions in half in the next 10 years, that only gives us a 50% chance of staying below 1.5 degrees, risking setting off irreversible chain reactions beyond human control. Those numbers do not include tipping points, most feedback loops, additional warming hidden by toxic air pollution or the aspects of equity and climate justice. They also rely on us sucking hundreds of billions of tons of carbon out of the air with technologies that barely exist. If we want to have a 67% chance of staying below 1.5 degrees, the world had 420 gigatons of carbon dioxide left to emit back in January 2018. But today that figure is already down to less than 350 gigatons. With today’s emissions levels, that remaining carbon dioxide budget will be entirely gone within less than eight and a half years.

## Part 3: What is happening to our planet as a result of global warming?

Professor Schellnhuber, Founder of the Potsdam Institute for Climate Impact Research, said: “Based on sober scientific analysis, we are deeply within a climate emergency state but people are not aware of it.”

### 3.1 The weather is getting more extreme

As global temperatures rise we see changes to our weather systems. The number of extreme climate-related disasters, including extreme heat, droughts, floods and storms, [has doubled since the early 1990s](#), with an average of 213 of these events occurring every year during the period of 1990–2016. Whilst they can’t all be attributed to climate change, last year’s extreme weather events meant that millions of people needed humanitarian aid. Extreme climate-related disasters also harm

agricultural productivity contributing to shortfalls in food availability, with knock-on effects causing food price hikes and income losses that reduce people's access to food.

Professor Mark Maslin, Professor of Climatology at University College London, stated: "We know that with increased storms, increased floods, droughts and heat waves, production of food will be more problematic. Ensuring people have access to clean, safe drinking water will become much more difficult."

### 3.1.1 Heat waves, fires and droughts

#### Heat waves

Across the globe, calculations show that record-breaking extreme temperatures have become far more probable due to human-induced warming. There have now been more than [230 attribution studies](#) around the world and these have found that 95% of heat waves were made more likely or worse by climate change.

In 2003 an extreme heat wave struck Europe. Over the course of that year, approximately [70,000 more people](#) died than usually die in an average year. It is likely that the vast majority of these deaths were directly attributable to the extreme temperatures. Scientists at the Met Office said, "it is very likely...that human influence has at least doubled the risk of a heat wave exceeding this threshold magnitude."

Similarly, a study found that the unprecedented heat and wildfires across the northern hemisphere in 2018 "[could not have occurred without human-induced climate change](#)". Here in the UK, a Met Office analysis found that the sweltering heat in the UK that summer was made [30 times more likely](#) by human-caused climate change. Hundreds more [early deaths](#) than usual occurred, while farmers struggled for water and hay and [thousands of houses suffered subsidence](#).

The searing heat wave of the summer of 2019 that broke temperature records at multiple locations across Europe and caused widespread disruption - with wildfires breaking out in Spain and Germany - [would have been "extremely unlikely" without climate change](#). The heat in France and the Netherlands was made up to "100 times more likely", whilst the record-breaking temperatures in the UK were around "20 times more likely" to have occurred. Such heat waves are about 4°C hotter than a century ago and inevitably lead not only to widespread travel chaos but also premature deaths.

Professor Peter Stott from the Met Office told a national newspaper: “World leaders should be listening not just to scientists but also to the people who are being affected by extreme weather events right now. They are seeing it with their own eyes and suffering from it. Humanity just won’t be able to cope with the world we are heading for.”

Prof Mark Maslin, at University College London, added: “The analysis clearly shows climate change has already changed our weather patterns and is having adverse effects on people’s lives. It is beholden on all governments to take heed of these warnings and start cutting carbon emissions as quick as possible.”

If we continue to burn fossil fuels, it is predicted that extreme heat waves will become an average European summer by 2040, and [almost all summers will be hotter than that by 2060](#). A climate-modelling study of Northern China concluded that continued carbon dioxide emissions are [likely to limit habitability](#) and to lead to heat extremes that “exceed the threshold defining what Chinese farmers may tolerate while working outdoors.”

By 2050, under even a relatively optimistic carbon emissions scenario, it is predicted that 22% of major cities will be heated to the point that their climate is [unlike any currently existing city](#).

What is of particular concern is that the heat waves hitting Europe have been [more frequent and more severe](#) than climate models have predicted. “These records will be broken in a few years,” said Friederike Otto, of the University of Oxford. “What we see with European heat waves is that all the climate models are underestimating the change that we see.”

## **Fires**

To make matters worse, the hot, dry conditions produced during heat waves are extremely conducive to the spreading of forest fires. Recent years have seen record-breaking wildfires take hold across the globe, including Portugal, Spain and Germany. We've seen a tripling in the extent of wildfires in the western United States: the fires that swept through California in 2018 - the deadliest and most destructive wildfire season ever recorded in California - caused more than \$3.5 billion worth of damage and killed at least 80 people.

In addition to the devastating fires that continue to blaze in the Amazon, Greenpeace say that wildfires have scorched [13.4 million hectares of Siberian forest](#) in Russia

since the beginning of the year. It will be the largest wildfire disaster in the history of Russia. Satellite images show other areas of the Arctic catching fire too, from eastern Siberia to Greenland to Alaska. Thomas Smith, an Assistant Professor in Environmental Geography at the London School of Economics, [told USA Today](#): “These are some of the biggest fires on the planet, with a few appearing to be larger than 100,000 hectares (380 square miles).” To make matters worse, these fires are having huge knock-on effects on global warming. Smith said: “The fires are burning through long-term carbon stores (peat soil) emitting greenhouse gases, which will further exacerbate greenhouse warming, leading to more fires.”

## Droughts

Excessive heat and changes to weather patterns can also cause droughts and water-shortages. According to [a 2018 UN report](#) an estimated 3.6 billion people (nearly half the global population) already live in areas that are potentially water-scarce at least one month per year. In 2018 an intense drought in Cape Town led to severe water restrictions being put in place. The city came to within days of turning off its water supply – dubbed ‘Day Zero’. It has been calculated that climate change made the chance of a drought this severe go from a one in 300 year event to a one in 100 year event. If we get to 2°C of warming, a drought of this severity will happen roughly [once every 33 years](#).

### 3.1.2 Monsoons, floods and hurricanes

Warmer air causes more water to evaporate off the oceans, and more water vapour in the air leads to more rain. In addition, winter and summer storms are now coming through more slowly because of changes in the jet stream. Michael Mann, Professor of Atmospheric Science at Pennsylvania State University, told the BBC: “When there's more moisture in the air, you're going to get more rainfall. You're going to get super storms and force flooding events. We are seeing the impacts of climate change now play out in real time. They're no longer subtle.”

We have seen massive monsoons and devastating floods in China, Japan, Kerala, Pakistan, Nepal, Sierra Leone, Nigeria and Texas. In 2017 the largest-ever recorded hurricanes, Harvey and Irma, battered the Atlantic, causing more than 200 deaths and more than \$125 billion in damage, whilst hurricane Maria left 2,975 dead in Puerto Rico. In 2019, hurricane Dorian caused the evacuation of entire communities in the Bahamas. It was regarded as the worst natural disaster in the country's history.

While the overall number of hurricanes has remained roughly the same in recent decades, [human-caused climate change is supercharging them and exacerbating the risk of major damage](#). The proportion of tropical storms that rapidly strengthen into powerful hurricanes has [tripled over the past 30 years](#). [According to the UN's Intergovernmental Panel on Climate Change](#), the maximum intensity of hurricanes will increase by a further 5% this century.

Here in the UK, in a single week this September there were more than 150 flood warnings. As well as direct risks, flooding can cause chemicals from old mines to be swept up and dumped into rivers and onto farmland. After the millennium floods in 2000, levels of lead were much higher in rivers and were sufficient to kill farm animals grazing on the land. This will be a big issue with flooding in the future.

Dr Sunita Narain, Director General of the Centre for Science and Environment, told the BBC recently: "Join the dots. It's happening. It's happening in your world, it's happening in my world. And let's be very clear about this - it is going to get much worse."

Not only are floods and hurricanes deadly, they are expensive. No more than half the losses from the 2017 disasters were covered by insurance, and insurance companies are already warning that they will soon stop insuring basements in London, New York and Mumbai.

In a [recent address](#) to the Japan Climate Initiative, Christiana Figueres, former United Nations' Climate Chief, said that we are moving towards "a world that the insurance industry calls systemically uninsurable because the degree of destruction will be such that the insurance companies cannot deal with the level of risk that would be brought upon us." She [told Reuters](#): "The expense of a constant construct, reconstruct, reconstruct, frankly, no country can afford. Because we know we will be getting more of these effects, we cannot let ourselves get to a scenario where we are systemically uninsurable."

## 3.2 Melting ice, rising sea levels and increases in ocean acidity

### 3.2.1 Melting ice

Even really small changes in ocean temperatures can melt an awful lot of ice, causing sea levels to rise. Calculations show that over the past 40 years, the amount of ice we have lost amounts to losing 300 double-decker sized chunks of ice every second.

The land ice sheets in both Antarctica and Greenland [have been losing mass](#) at increasing rates. Greenland has lost four trillion tonnes of ice, and it's losing five times as much ice today as it was 25 years ago. Earlier this year it lost 11 billion tonnes of ice in a single day. Antarctica is [losing six times more ice mass](#) annually now than 30 years ago. In 2014 a team from NASA found that [parts of the West Antarctic Ice Sheet](#) seem to have begun what they described as an “[unstoppable](#)” collapse. If they are correct, this would lock in around [a metre of sea level rise](#). If we continue warming, we [risk triggering the collapse of more sectors of the ice-sheets](#).

In the Arctic, sea ice is now declining at [a rate of 12.8 percent per decade](#). In recent years, during a time when the sea ice should have been expanding, an area the size of Montana melted. Summer Arctic sea ice is [predicted to disappear](#) almost completely by the middle of this century if emissions continue at higher rates. “Sea level is rising much faster and Arctic sea ice cover shrinking more rapidly than we previously expected. Unfortunately, the data now show us that we have underestimated the climate crisis in the past.” [Stefan Rahmstorf, Professor of Physics of the Oceans](#).

We are losing our glaciers too. In July, scientists memorialized the demise of Okjökull, the first Icelandic glacier lost to climate change. [Glaciologists predict](#) that “all of Iceland's glacial mass will disappear in the next 200 years, with a massive impact to cultural heritage, tourism, hydroelectric power and fisheries.” Last month a study warned that [Himalayan glaciers are melting at a dramatic rate](#)-losing almost half a metre of ice each year since the start of this century. Rising temperatures will melt at least one-third of the Himalayan glaciers by the end of the century [even if we limit the global temperature rise to 1.5°C](#). Melting glaciers in both the Andes and the Himalayas [threatens the water supplies](#) of hundreds of millions of people living downstream. [A report published in April](#) warned that most glaciers in Central Europe, Western Canada and the United States could vanish by the second half of this century under current ice loss rates.

### 3.2.2 Sea levels

Whilst melting ice is depositing huge volumes of extra water into our oceans, it is not the only thing that causes rises in sea levels. As atmospheric conditions get warmer,

the water in the world's oceans expands, causing it to take up more space. Over 90% of the increased heat trapped in our atmosphere has been stored in the oceans.

The World Meteorological Organisation recently reported that between 2016-2019 [sea levels rose by 5mm per year](#) compared to the average 3.2mm per year since 1993. This may not sound like much, but rising seas are already displacing hundreds of thousands of people from already vulnerable coastal areas in the South Pacific, Indonesia and Bangladesh. Over the last six decades much of the Isle de Jean Charles - once home to 400 people - has disappeared, due to subsidence caused by oil and gas extraction and now rising sea levels.

Models predict around 0.6m of sea level rise by the end of the century, but climate scientists say that modeling this sort of situation is extremely hard, so changes in sea levels are incredibly hard to predict. Stephan Harrison, Professor of Climate and Environmental Change at the University of Exeter, said in a [recent lecture](#): “We think we’re going to be lucky to get away with 1.5 to 2°C temperature rise, and we may be much more likely to get a 4°C rise by the end of the century. That will eventually mean we will eventually get at least 20m rise of sea level - and possibly eventually 70m.”

According to Colette Pichon Battle, Executive Director of the Gulf Coast Center for Law and Policy, “The impact on families is going to be something that I don't think we could ever prepare for.”

### 3.2.3 Ocean warming and increases in acidity

In the last three years, repeated heat stress has caused a third of the world's corals to first bleach and then die. According to the [2018 IPCC special report](#), 70-90% of all coral reefs are expected to die with just 1.5°C of warming above pre industrial levels, and more than 99% at 2°C - the “safe” level of warming in international negotiations. That is near total destruction of some of the most important and diverse ecosystems on the planet, which provide food and protection from storms for hundreds of thousands of people.

Director of the Global Change Institute at the University of Queensland, [Professor Ove Hoegh-Guldberg](#), said- “20 years from now, every summer will be too hot for corals: they will disappear as dominant members of tropical reef systems by 2040-2050. It’s hard to argue it any other way.” Or as Michael Mann, Professor of Atmospheric Science at Pennsylvania State University, put it -“Our generation is going to be responsible for the loss of one of the most majestic ecosystems on the face of the Earth. We're literally watching the death of this natural wonder.”

In addition, ocean warming causes the oxygen that is usually dissolved in seawater to become less soluble. This leads to areas of water with depleted levels of oxygen, which can lead to suffocation of the sea creatures living within it. Since 1950, **the number of ocean 'dead zones'** - areas containing very little oxygen - has increased by a factor of 10.

It is not only the warming itself that causes problems to the creatures living in our seas. Excess carbon dioxide in our atmosphere can dissolve in seawater, altering its chemistry and making it more acidic. Acidity affects marine life, from shellfish like clams and oysters to whole coral reef communities, by removing minerals that they require in order to grow their shells. **Present ocean acidification** is occurring approximately ten times faster than anything experienced during the last 300 million years, jeopardising the ability of ocean systems to adapt.

The oceans are already 30% more acidic relative to the beginning of the industrial era and, at our current emissions trajectory, it is predicted that this will **rise to 150% by the end of the century**. These oceanic conditions would be unlike anything marine ecosystems have experienced **for the last 14 million years**. Under such conditions, many shell-secreting sea creatures would simply not survive. Given that most of these creatures are at the bottom of the food chain, their loss would lead to catastrophic knock-on effects in entire ecosystems that depend on them.

### 3.3 Knock-on effects of the climate emergency

According to Professor Hugh Montgomery, director of the University College London Institute for Human Health and Performance, "Climate change is a medical emergency ... It thus demands an emergency response..." Or as Ban Ki-Moon, Former UN Secretary General said: "This is an emergency and for emergency situations we need emergency action."

Dr Sunita Narain, Director General of the Centre for Science and Environment, told the BBC: "You have to understand, this is also a crisis for the world. The fact is that if the poor are suffering today, then the rich will also suffer tomorrow."

Michelle Bachelet, United Nations Rights Chief, has deemed that "Climate crisis is greatest ever threat to human rights. The economies of all nations, the institutional, political, social and cultural fabric of every state, and the rights of all your people, and future generations, will be impacted."

One of the world's leading medical journals, The Lancet, carried out a major review which concluded that climate change poses "the biggest global health threat of the 21st century" because of both the direct impacts of extreme weather events and the indirect disruption to the social and ecological systems that sustain us.

Dr Peter Stott, Head of the Climate Monitoring and Attribution Team at the Met Office, said: "It really becomes difficult to see at such levels of warming how we're going to maintain our agriculture, such that the population of the world can actually feed itself." Indeed, Jim Yong Kim, President of The World Bank, has warned that "climate change will lead to battles for food."

Professor Joseph Stiglitz, Economist, has warned that "the climate emergency is our third world war. Our lives and civilization as we know it are at stake, just as they were in the second world war." Indeed, Mark Carney, Governor of the Bank of England, warned: "Once climate change becomes a defining issue for financial stability, it may already be too late."

According to Lord Nicholas Stern, Professor of Economics and Government: "Climate change is the result of the greatest market failure the world has seen. We risk damages on a scale larger than the two world wars of the last century. What we are talking about is extended world war. People would move on a massive scale. Hundreds of millions, probably billions of people would have to move."

## Part 4: What else are we doing to our land, our air and our water?

As well as pumping out increasing amounts of carbon dioxide into the atmosphere, with devastating impacts on our climate systems, we are also damaging our land, using up its resources, polluting our waters and poisoning the very air we breathe.

### 4.1 Damage to our land

A recent government report revealed that 75% of the Earth's land has been "severely altered" by human actions such as industry and farming.

#### 4.1.1 Deforestation and loss of wetlands

Rainforests across the globe are being cleared at ever-increasing rates, to provide land for growing soybeans and rubber, and pasture for cattle. Another big driver for deforestation is our demand for palm oil, which is found in a myriad of products such as soaps, shampoo, chocolate, bread and even crisps.

Between 1990 and 2015, 180 million more hectares of native forest were lost than were planted. According to the [latest government data](#), deforestation of the Brazilian Amazon is now occurring faster than three football fields a minute, pushing the world's biggest rainforest closer to a tipping point beyond which it cannot recover. July 2019 was reported to be the first month for several years in which [Brazil lost an area of forest bigger than Greater London](#).

Philip Fearnside, a Professor at Brazil's National Institute of Amazonian Research, said - "It's very important to keep repeating these concerns. There are a number of tipping points, which are not far away. We can't see exactly where they are, but we know they are very close. It means we have to do things right away. Unfortunately that is not what is happening. There are people denying we even have a problem."

Not only does deforestation lead to the loss of habitats of millions of living creatures - not to mention the homes of indigenous people - but it also increases the levels of carbon dioxide in the atmosphere, contributing to global warming. When forests that are centuries old are cleared and burned, not only can the trees no longer remove carbon dioxide from the air, but also their burning releases huge amounts of carbon dioxide back into the atmosphere. Trees are now being cut down and burnt at such a rate that nearly a third of our carbon dioxide emissions are caused by deforestation.

Whilst deforestation is occurring at a devastating rate, the [destruction of our wetlands](#), in percentage terms, is occurring three times faster. By the year 2000, more than 85% of the wetlands that were present in 1700 had been lost.

#### 4.1.2 Damage to soil

More than 95% of what we eat is dependent on the presence of healthy soil. However, our soil is being lost. Increased deforestation, overgrazing and the use of chemicals in recent years have caused a dramatic increase in the rates of soil erosion and degradation – a problem that is exacerbated by the increase of extreme weather events associated with climate change.

As the soil degrades and does not hold water efficiently, agriculture relies more on fertilisers and irrigation to maintain high yield. Once topsoil has been lost it is extremely hard to replace it. Not only does it take about **500 years to form 2.5 cm of topsoil**, but earthworms, creatures that usually play a key role in the restoration of degraded soils, are **being depleted by 80%** or more by the chemicals used in intensive farming.

**50% of the planet's topsoil has been lost in the last 150 years**, leading to increased pollution, flooding and desertification. Desertification currently affects **more than 2.7 billion people** across the globe.

In addition, current agricultural practices have led our soils to become more **acidic**. Meanwhile groundwater irrigation is leading to increased salinity with recent projections warning that **50% of all arable** land will become impacted by salinity by 2050.

#### 4.1.3 Loss of natural resources and food

We are running out of our natural resources. Approximately 60 billion tonnes of renewable and nonrenewable resources are extracted globally each year, up nearly 100% since 1980.

There are also threats to our food security. More frequent and severe water extremes, including droughts and floods, impact agricultural production. It has been calculated that the risk of extreme weather hitting several major food producing regions of the world at the same time **could triple by 2040**. **By 2050, land degradation and climate change** together are predicted to reduce crop yields by an average of 10 per cent globally and up to 50 per cent in certain regions.

**A recent study** looking at the impact of climate change on food production for the top four maize-exporting countries (which currently account for over 85% of global maize exports), found that “the probability that they have simultaneous production losses greater than 10% in any given year is presently virtually zero, but it increases to 7% under 2°C warming and 86% under 4°C warming.” Meantime, 33% of marine fish stocks are being harvested at unsustainable levels.

Given that people across 51 countries and territories are already **facing crisis levels of acute food insecurity**, a further reduction in crop yields would be devastating.

Here in the UK we're dependent on a complex global industrial consumer economy. Around 50% of all our food comes from foreign imports, and 70-80% of our fruit and vegetables. When harvests fail, countries ban their food exports, leading to a 'domino effect' of price raises. Massive price hikes could see families struggling to put food on the table. Without a radical change of course we could see an unprecedented epidemic of food riots. A hungry country is an ungovernable one.

## 4.2 Pollution of our air and our water

Pollution is **the world's largest environmental cause of disease and premature death**. A study found that, in 2015, pollution was responsible for an estimated **9 million premature deaths** – that's 16% of all deaths worldwide.

### 4.2.1 Air pollution

By far the largest proportion of premature deaths from pollution is due to air pollution, mostly from small particles that can penetrate deep into the lungs. Globally, a staggering **9 out of 10 people breathe polluted air**. Ambient air pollution is **responsible for 4.2 million deaths**, whilst household air pollution accounts for an additional 2.8 million deaths. Most of these deaths occur in low- to middle-income countries and are largely preventable by using modern technologies, such as by using cleaner fuels or electricity to replace **inefficient solid-fuel burning cook stoves**, or using solar powered lights instead of **kerosene lamps**.

Across Europe, **toxic air results in more than 400,000 early deaths each year**. In the UK alone, air pollution has been linked to around 40,000 deaths every year, with over 60% of people in England living in areas with *illegal* levels of air pollution. In London, air pollution has been estimated to cause the deaths of 24 people every day, with 32 out of 33 boroughs exceeding legal air quality limits.

Young children, and those with pre-existing health conditions such as asthma and old people are particularly vulnerable. Exposure to air pollutants has been linked to a **huge range of diseases**, from lung cancer and respiratory infections to stroke, dementia and even diabetes.

## 4.2.2 Water pollution

According to a [government report](#), 66% of our marine environments have been significantly altered by industry, farming, and overfishing.

Since 1980, there has been a [ten-fold increase](#) in plastic pollution, with now an estimated [300kg of plastic entering the ocean every second](#). This adds up to a staggering 4.8-12.7 million metric tonnes of consumer plastics ending up in the world's oceans each year. Plastic pollution has resulted in the presence of more than [100 million particles of macroplastics in only 12 regional seas worldwide](#), and 51 trillion particles of microplastic floating on the ocean surface globally.

Whilst plastics pollute the seas, nitrates from the use of agricultural fertilisers are now the [most common chemical contaminant](#) in our groundwater. These nitrates can find their way into lakes and coastal waters, dramatically affecting the plants and animals growing within. In addition, [300-400 million tonnes of heavy metals](#), solvents, toxic sludge, and other wastes from industrial facilities are dumped annually into the world's waters. [More than 80% of global wastewater](#) is discharged untreated into the environment and 40% of the global population lacks access to clean and safe drinking water.

## Part 5: What are we doing to our biodiversity?

Since the 1970s we've lost 40-50% of the world's wildlife. Earlier this year, a [Global Assessment Report](#) from the Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES), the most comprehensive assessment of its kind, revealed that the current biodiversity crisis is on a par with the threat posed by climate change. The report stated: "Nature is declining globally at rates unprecedented in human history - and the rate of species extinction is accelerating, with grave impacts on people around the world now likely."

Sir Robert Watson, Chair of the IPBES said: "The health of ecosystems on which we and all other species depend is deteriorating more rapidly than ever. We are eroding the very foundations of our economies, livelihoods, food security, health and quality of life worldwide."

### 5.1 Species Loss

The IPBES report estimated that **a million species of animal and plant are already threatened with extinction** because of human action, many within decades. It gave the main direct causes of biodiversity loss as habitat change, direct exploitation (e.g. fishing, hunting and logging), invasive alien species, pollution, **and climate change**.

Of the approximately **100,000 species assessed** by the International Union for Conservation of Nature, more than a quarter were found to be threatened with extinction. That included 40% of all amphibians, 25% of all mammals, 34% of all conifers, 14% of all birds, 33% of reef-building corals, 31% of sharks and rays.

The 2016 **State of Nature** report found that the UK was “amongst the most nature-depleted countries in the world” with populations of hedgehogs and water voles declining by almost 70% in just the past 20 years and a staggering 1 in 5 British mammals at risk of extinction. Their **most recent report**, published in October 2019, revealed that the “UK’s wildlife loss continues unabated” and that the proportion at risk has now risen to 1 in 4. The report also found that 41% of the species studied have fallen since 1970, 15% of species are under threat of extinction and 2% have already gone for good. Butterflies and moths are down by 17% and 25% respectively, whilst numbers of high brown fritillary and grayling butterflies have fallen by more than three quarters. The average number of mammals has fallen by 26% and the wild cat and greater mouse-eared bat are almost extinct.

According to the Joint Nature Conservation Committee, a government advisory body, the **UK is set to miss 14 out of 19 of its biodiversity targets for 2020**, which were agreed under the UN convention on biological diversity.

## 5.2 Vertebrates

The **latest Living Planet Index** estimates an average decline of 60% in the population size of thousands of vertebrate species around the world between 1970 and 2014 - with even faster declines in freshwater populations. (It should be noted however that this does not mean that the actual number of all vertebrates has gone down by 60%). A study published in April found that across Europe, North Africa and Asia, populations of great freshwater species, from catfish to stingrays, have **plunged by 97% since 1970**.

Of particular concern is the recent discovery that **forest elephants in Central Africa are rapidly declining and facing extinction**. Forest elephants, like other large fruit eaters, play an important role as forest ‘gardeners’. In their absence, slow-growing plant species do not survive so well, so they are not able to remove as much carbon

dioxide from the atmosphere. **Forest elephants** have been said to represent a carbon storage service of \$43 billion.

Across Europe the average population size of farmland bird species has **fallen by 55%** in just the past three decades, whilst the most recent **report** by the British Trust for Ornithology found that more than a quarter of British bird species are threatened, including the puffin, the nightingale, and curlew.

### 5.3 Insects

A recent report showed that over **40% of insect species are threatened with extinction**, from a wide range of pressures including habitat loss, agro-chemical pollutants, invasive species and climate change.

A 27-year long population monitoring **study** across Germany revealed a dramatic 76% decline in flying insect biomass. Worryingly, the study took place inside nature reserves, which should be the best protected places. A new study by Dutch scientists found that butterfly numbers had **fallen by an average of over 80%** in the last 130 years. The authors concluded, "**industrial agriculture is simply leaving hardly any room for nature.**" In Great Britain, **three times as many pollinator species are declining as are increasing**, and pesticides are driving some **bee populations extinct**.

Many birds feed on insects, so **insects decline has already led to dramatically fewer birds** in gardens and in the countryside. But it isn't only the birds that depend on insects. Insects pollinate many of our crops, help fertilise the soil they grow in, and help control outbreaks of crop pests and of organisms that cause disease in people and livestock. 70 out of the top 100 human food crops - which supply about 90% of the world's nutrition - are **pollinated by bees**. In fact, in the last meeting of the Royal Geographical Society of London, **the Earthwatch Institute concluded** that bees are the most important living beings on this planet.

Catastrophic reductions in global insect populations therefore have profound consequences for ecological food chains and human crop pollination. Losing insects that pollinate the plants we eat, birds that protect our crops from pests and earthworms that are essential for a healthy soil to grow plants, will increase the risk of famine and disease worldwide.

In the words of Professor Dave Goulson, Professor of Biology at The University of Sussex: "Insect decline should be of huge concern to all of us, for insects are at the heart of every food web, they pollinate the large majority of plant species, keep the

soil healthy, recycle nutrients, control pests, and much more. Love them or loathe them, we humans cannot survive without insects.”

## 5.4 We're entering the Sixth Mass Extinction

It's not just how *many* species we are losing; it's how *fast* we are losing them. Globally, species are **going extinct at rates up to 1,000 times** faster than the background rates typical of Earth's past (compared to the average over the last 10 million years), with up to 200 species going extinct every day. And the rate is accelerating. The loss of vertebrates, in particular, is up to **100 times higher** than the background rate. It has been calculated that the **total number of vertebrate species that went extinct in the last century** should have taken about 800 to 10,000 years to disappear. **At least 680 vertebrate species** have been driven to extinction by human actions since the 16th century.

A **series of studies** have suggested that things are so bad that we are entering the **Sixth Mass Extinction** in Earth's history. Mass extinctions are defined as times when the Earth loses more than three-quarters of its species in a geologically short interval, as has happened only five times in the past 540 million years or so. The report warned that a **“biological annihilation”** of wildlife was eroding the foundations of economies, livelihoods, food security, health and quality of life worldwide.

An **international panel of scientists** backed by the UN have argued that climate change is now the third biggest driver of biodiversity loss, after changes in land and sea use and overexploitation of resources. The IPBES reported that the government response to biodiversity loss has been insufficient, and that **“transformative changes”** were now needed to restore and protect nature.

In the words of Sir David Attenborough: “This isn't just about losing wonders of nature. With the loss of even the smallest organisms, we destabilise and ultimately risk collapsing the world's ecosystems - the networks that support the whole of life on Earth.”

## Part 6: Quotes

### 6.1 We are in a climate and ecological emergency

“We are facing a man-made disaster on a global scale.” - Sir David Attenborough

“Scientists say that evidence for climate change is ‘unequivocal’” - Intergovernmental Panel on Climate Change Report

“We are in a planetary emergency.” - Professor James Hansen, former Director of the NASA Goddard Institute for Space Studies

“Based on sober scientific analysis, we are deeply within a climate emergency state but people are not aware of it.” - Professor Schellnhuber, Founder of the Potsdam Institute for Climate Impact Research

“Nature is declining globally at rates unprecedented in human history - and the rate of species extinctions is accelerating, with grave impacts on people around the world now likely” - Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services Report

“The health of ecosystems on which we and all other species depend is deteriorating more rapidly than ever. We are eroding the very foundations of our economies, livelihoods, food security, health and quality of life worldwide.” - Sir Robert Watson, Chair of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services

“This isn't just about losing wonders of nature. With the loss of even the smallest organisms, we destabilise and ultimately risk collapsing the world's ecosystems - the networks that support the whole of life on Earth.” - Sir David Attenborough

“Our generation is going to be responsible for the loss of one of the most majestic ecosystems on the face of the Earth. We're literally watching the death of this natural wonder.” Professor Michael Mann, Professor of Atmospheric Science at Pennsylvania State University, speaking about coral reefs.

“Insect decline should be of huge concern to all of us, for insects are at the heart of every food web, they pollinate the large majority of plant species, keep the soil healthy, recycle nutrients, control pests, and much more. Love them or loathe them, we humans cannot survive without insects.” - Professor Dave Goulson, Professor of Biology, The University of Sussex

“Join the dots. It's happening. It's happening in your world, it's happening in my world. And let's be very clear about this - it is going to get much worse.” - Dr Sunita Narain, Director General of The Centre for Science and Environment

“Climate change is moving faster than we are - and its speed has provoked a sonic boom SOS across our world. We face a direct existential threat.” - António Guterres, United Nations Secretary-General

“Sea level is rising much faster and Arctic sea ice cover shrinking more rapidly than we previously expected. Unfortunately, the data now show us that we have underestimated the climate crisis in the past.” - Professor Stefan Rahmstorf, Professor of Physics of the Oceans, Potsdam Institute for Climate Impact Research

“The impact on families is going to be something that I don't think we could ever prepare for.” - Colette Pichon Battle, Executive Director of the Gulf Coast Center for Law and Policy, speaking about rising sea levels.

“We know that with increased storms, increased floods, droughts and heat waves, production of food will be more problematic. Ensuring people have access to clean, safe drinking water will become much more difficult” - Professor Mark Maslin, Professor of Climatology at University College London

“It really becomes difficult to see at such levels of warming how we're going to maintain our agriculture, such that the population of the world can actually feed itself.” - Dr Peter Stott, Head of the Climate Monitoring and Attribution Team at the Met Office

“Climate change will lead to battles for food” - Jim Yong Kim, President of The World Bank

“You have to understand, this is also a crisis for the world. The fact is that if the poor are suffering today, then the rich will also suffer tomorrow.” - Dr Sunita Narain, Director General of The Centre for Science and Environment

## 6.2 We have to act now

“It is generally foolish to bet against the judgments of science, and in this case, where the planet is at stake, it is insane.” - Professor Steven Weinberg, Nobel-Prize winning Theoretical Physicist, 2018

“The future of the human race is now at stake.” - Rowan Williams, Former Archbishop of Canterbury

“Climate change is a medical emergency ... It thus demands an emergency response...” - Professor Hugh Montgomery, director of the University College London Institute for Human Health and Performance, Lancet Commission Co-Chair

“This is an emergency and for emergency situations we need emergency action.” - Ban Ki-Moon, Former UN Secretary General

“Climate crisis is greatest ever threat to human rights. The economies of all nations, the institutional, political, social and cultural fabric of every state, and the rights of all your

people, and future generations, will be impacted.” - Michelle Bachelet, United Nations Rights Chief

"Climate change is the result of the greatest market failure the world has seen. We risk damages on a scale larger than the two world wars of the last century. What we are talking about is extended world war. People would move on a massive scale. Hundreds of millions, probably billions of people would have to move." - Lord Nicholas Stern, Professor of Economics and Government and Author of The Stern Review on the Economics of Climate Change

"The climate emergency is our third world war. Our lives and civilization as we know it are at stake, just as they were in the second world war." - Professor Joseph Stiglitz, Economist

"We have all the resources we need to deal with this. There is nothing magical about reducing carbon dioxide in the atmosphere. There is nothing magical about the greenhouse effect. We know exactly how to deal with it. We just don't have the political or economic will to do this." - Professor Stephan Harrison, Professor of Climate and Environmental Change, University of Exeter, 2019

"The urgent need for interventions can no longer be postponed." - Pope Francis

"To ignore the challenge of climate change is to betray Jewish values." - Rabbi Jonathan Wittenberg

"It's not enough to simply pray for a better environment, you have to stand up and take action." - Fazlun Khalid, Founder of Islamic Foundation for Ecology and Environmental Science

"Once climate change becomes a defining issue for financial stability, it may already be too late." - Mark Carney, Governor of the Bank of England

"The problems of the world cannot possibly be solved by skeptics or cynics whose horizons are limited by obvious realities. We need men and women who can dream of things that never were." - John F. Kennedy

"It doesn't matter how strong your opinions are. If you don't use your power for positive change, you are, indeed, part of the problem." - Coretta Scott King, American Author, Activist, and Civil Rights Leader

"It is not enough to be compassionate - you must act." - The Dalai Lama

"Start by doing what's necessary; then do what's possible; and suddenly you are doing the impossible." - St. Francis of Assisi