



CENTRE *for*
SUSTAINABLE
HEALTHCARE
inspire • empower • transform



Child Health and
Wellbeing Network
North East and North Cumbria

Sustainable Child Health – Section 1 – Why?



Welcome to the Child Health and Wellbeing's networks Sustainable Health course

This interactive series of PDF's contains a selection of materials to help you to understand the challenges our world faces and how this is impacting on child health.

Each section of the course is broken down into an interactive PDF which contains website links, videos and images to give an overview of the challenges and opportunities we have to make a difference.

This course has been written in partnership with the Child Health and Wellbeing Network for the NENC, Centre For Sustainable HealthCare and the RCPCH. We have had a range of contributors who have written and edited pages and a special thanks goes to everyone for making the time to make a difference.



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- Why?
- What is Sustainability?
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To engage people at the deepest level you need stories



Children love stories, so do adults. Stories are not just for fun though. They have the **power** to **inspire** and **engage** us; helping to shape our thoughts, our behaviours and our beliefs. They tell us about our past, our communities and culture and shape our identity. Part of our role as professionals working with children is to tell stories that widen their horizons and help them to make sense of the world. The types of stories we tell them (and ourselves) about the future, matter. They determine what we believe to be possible.

It is easy in the current context to tell a story of apocalyptic doom which generates hopelessness and inaction. What is needed now, more than ever, is a story of hope, courage, and shared purpose.

In wealthier nations we have come to believe the story that our comfortable lifestyles, cars, consumer items and inexpensive food are conjured up without consequence. This story assumes that the planet is so large and bountiful that unregulated extraction and consumption of resources can continue without end; that clean air, water and soil have no limit and that waste disappears when we 'throw it away'.



But there is no 'away'. Images of mountains of waste and the impact of resource extraction in 'sacrifice zones' (largely in low-income nations), coupled with the increasingly severe impacts of global heating, are leading many to re-evaluate the assumptions this story holds.

Some people are telling a story that we, in wealthier nations, are entitled to all this, and that another way of life would be too hard or too expensive. This story is told most often and most loudly by those profiting from the current system. It is based on the belief that humans are too greedy and selfish to change.

But there is a different story to tell about humanity. One that emphasises our extraordinary capacity for collaboration, compassion and innovation. This is the story on which universal healthcare and education was built. It is the story we must build on to create a sustainable future. Taking part in this exciting transformation allows us to tell (and live) a story about ourselves in which we are trailblazers, at the forefront of delivering care and building communities that are grounded in our responsibility to each other and respecting the natural world that supports us.





CENTRE FOR MENTAL HEALTH

To create this new way of life we need to break away from the old reductionist thinking that has dominated centuries of European thought, which breaks everything down in to separate, disconnected pieces. At the heart of the story of sustainability is the importance of seeing how everything is connected; to rediscover the joy and harness the power of those connections:

Our intricate connections to the natural world, which provides beauty, a sense of wonder, and the most fundamental requirements for life. Take a couple of deep breaths. The oxygen you just inhaled was made by the forests and ocean plant life. Every breath you take connects you to them.

Our connections to our local, national and global communities. To welcome all voices and reaffirm the importance of social justice and equity, which benefits and enriches all.

The connections between our mental and physical wellbeing (the [parity of esteem](#) movement recognizes that good health cannot be achieved without valuing physical and mental health equally).



When one tugs
at a single thing
in nature,
he finds it
attached
to the rest of
the world.

- John Muir
sustainablebabysteps.com

It is the vision of this resource that all the different ingredients that make up a child's world: families and friends, schools, health services and community groups, all nested within the natural environment, can work together to create a safe, sustainable present and future in which all children can thrive.

If you are taking this course, you are probably already looking for a way to change things. As you work through the pre-course reading, think about how you could apply what you are learning to your own area of work. Whatever you decide to change, people will ask you to explain to why. In essence, you will be asked to tell a story. The story of sustainability is one we are creating together; a story you are now part of and which, by participating in, you are shaping.



*What is the story
of your journey
into
sustainability?*

Why?

What is Sustainability?

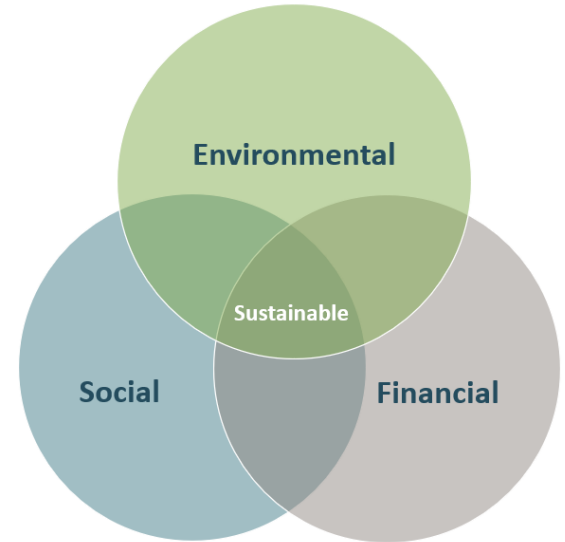


Sustainability is simply the ability of something to be maintained into the future.

There are different ways of thinking about Sustainability.

1. **Environmental** – does it avoid damage to the natural environment?
2. **Financial** – is it affordable - now and in the future?
3. **Social** – is it accessible for all? Does it support good quality of life for all?
Is there sufficient engagement for the change to be kept going beyond the initial effort?

When using the term ‘sustainability’ it is important to be clear which of these you are referring to. In this course, when we talk about sustainability, we are referring to bold, holistic vision which incorporates all three of these dimensions; ensuring high quality lives, education and healthcare for all, in the present but not at the sacrifice of conditions for generations to come.



What is sustainability?



Contrary to the expectations of many, the necessary transition to sustainability is not more expensive and can provide better lives, education, jobs and healthcare, with wider benefits than traditional services for individuals and communities. To achieve this will require a fundamental re-structure of the way we think about services.

Take the example of healthcare. Globally we spend over \$8.5 trillion/year (~ 10% of the GDP of most developed nations) on a healthcare industry which: -

- Treats only those who are already sick.
- Excludes many with health needs but who, for financial or other reasons, can't access the service.
- Is contributing to ecological breakdown in many ways, damaging the health of the population in the process.



A truly sustainable health system would eliminate the negative environmental impact of what we do, whilst also building a stronger focus on health creation at a population level. After all the best way to avoid the environmental impact of healthcare activity is not to have to do it! [This 3-minute video](#) outlines the basics of sustainability and highlights the importance of taking a whole system approach

“

**"IN OUR EVERY
DELIBERATION, WE MUST
CONSIDER THE IMPACT OF
OUR DECISIONS ON THE NEXT
SEVEN GENERATIONS."**

THE GREAT LAW OF THE IROQUOIS CONFEDERACY



The climate crisis is a child rights crisis

Introducing
THE CHILDREN'S
CLIMATE RISK INDEX

Safeguarding

Safeguarding



As professionals working with children, we all undertake safeguarding training in which we are told to be constantly alert for risk of harm to children, and to act to address this. Yet the greatest harm, the destruction of the habitable planet on which they rely for their most basic needs, is ignored.

Our collective failure to tackle the combined climate and ecological emergencies is a safeguarding issue for an entire generation.

Working together to create a sustainable world is an act of safeguarding – for an entire generation.

Warning

In this first section we will outline why the climate and ecological crises are the greatest threat to our children's health and wellbeing, even their very survival. –this is the scary bit.

It's important you know this information; in the same way you would want to know if you or your child had a serious illness. Knowledge helps motivate us to act.

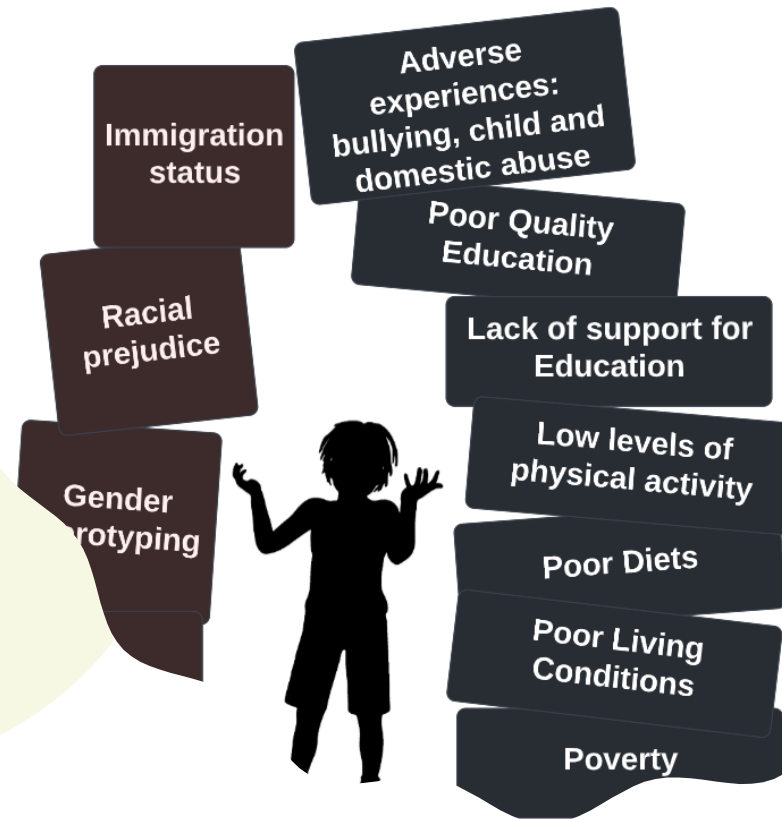
Don't give up hope in this section though. In the rest of the course we will outline how embracing sustainability could avoid the worst outcomes and tackle many of the other threats and inequalities which impair our children's health and wellbeing now and in the future. We will describe a system which allows all our children not just to live, but to thrive.

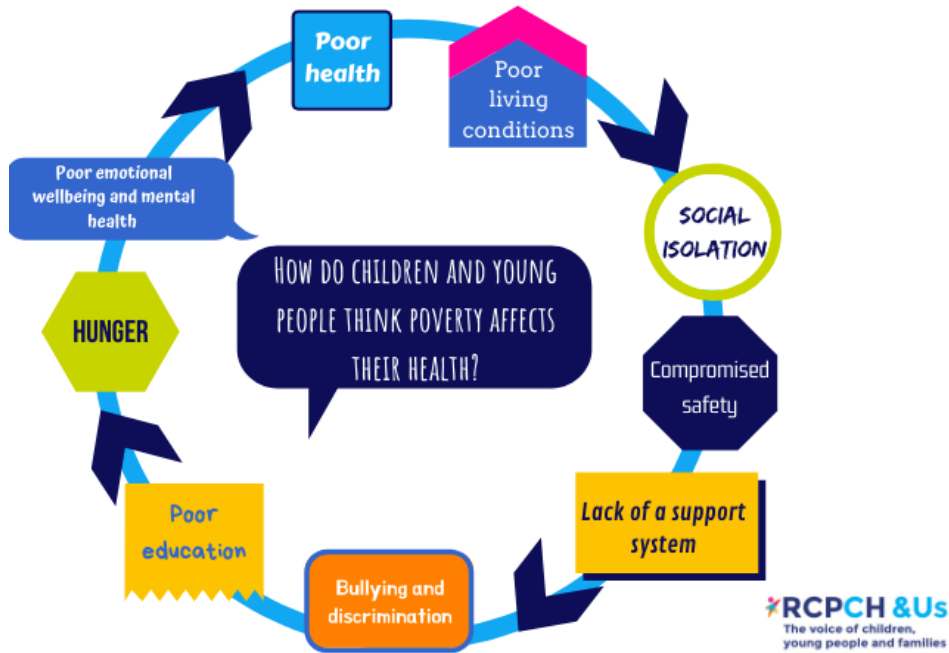


The Determinants of Health - Social and Economic Determinants

The [health and wellbeing](#) of children and their level of [educational outcomes](#) are primarily determined by the circumstances in which they are born and grow up. External factors, such as those shown in this graphic, create negative spirals of social and health inequality.

Poverty is the underlying cause of many of the other issues. Around [29%](#) of children in the UK live in poverty (4.2 million). These Statistics are higher in the NENC with an estimated [38% of children](#) living in poverty, rising to over 40% in parts of Newcastle Middlesbrough. With the current cost of living crisis, this is likely to rise. Increasingly teachers are reporting children coming to school [hungry](#), living in cold homes, many don't have a [bed](#) to sleep in or adequate clothing. This impacts their self-esteem, ability to engage with peers, education and their long-term health.





This [6-minute video](#) explores the escalating crisis of child hunger in London.

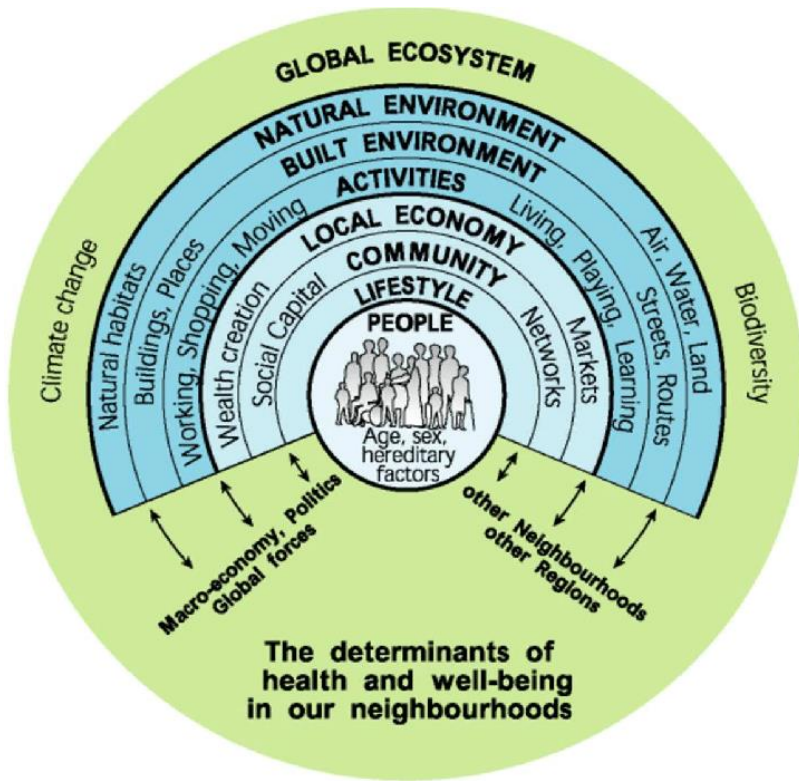
Environmental Determinants

We evolved as part of nature and our health remains inextricably linked to the health of the natural world. Not only does it provide our most basic needs (oxygen, freshwater, food), our brains are still wired to be more at peace in natural environments and a growing body of evidence shows that access to, and time spent in 'green' or 'blue' spaces has physical and mental health benefits that are ['equigenic'](#) (they reduce existing health inequalities) and have positive impacts on children's [development and ability to learn](#)

A circular inset image showing a gravel path winding through a lush green forest. The path is flanked by ferns and other vegetation. A large, thick tree trunk is visible on the right side. The quote is overlaid in a light green, cursive font. A small circular icon with a refresh symbol is positioned above the quote.

"Nature itself is the best physician" - Hippocrates

This figure shows how human health is nested within social and ecological contexts.



The centre circle shows aspects of the individual which cannot be modified, such as our age and genetic makeup.

The inner blue circles represent various aspects of social determinants of health.

Finally the outer blue and green circle shows how all of this is nested within the natural environment – our ultimate support system. Threats to its stability pose an existential threat to health and wellbeing.

The Pandemic



The impacts of the pandemic demonstrated how natural events can expose and widen social and health inequality. Lack of digital access and an appropriate home environment left many children from low-income families further behind in their education. Whilst the more affluent locked down in homes with space and access to gardens, those on low incomes were often confined to overcrowded or isolated flats with poor heating and cooling. Many children were confined in abusive environments. The impact on children's mental health and social development was immense. [1 in 6 children](#) now have a probable mental health condition and services to respond are desperately lacking.



Meanwhile, billionaires' wealth increased by a staggering \$3.9 trillion between March and December 2020. Their total wealth now stands at \$11.95tn – about the same amount that G20 governments spent in response to the pandemic. In the same period the total number of people living in poverty is estimated to have increased by between 200 million and 500 million, reversing the global decline in poverty ([data from Oxfam](#)).

Climate Change



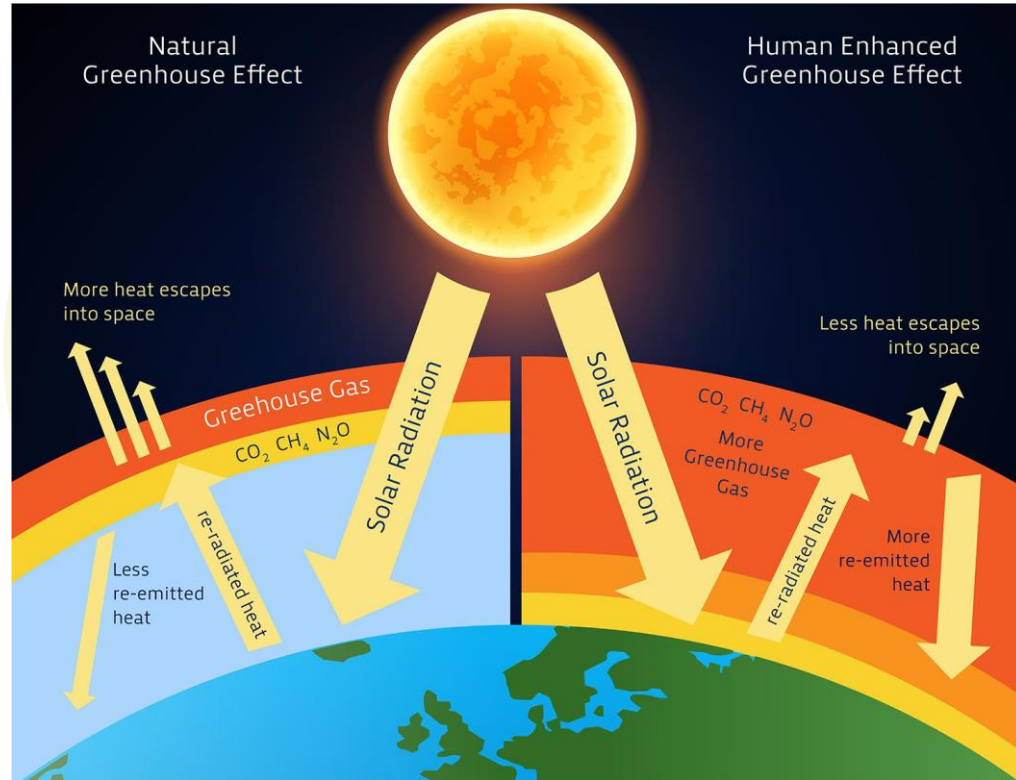
Similarly, to the pandemic, [climate change exacerbates social and health inequalities](#). In the next few pages we will explore how climate change and pollution are negatively impacting people and their health.

Further information on socio-economic and environmental determinants of health:

- [Health Equity in England: The Marmot Review 10 Years On - The Health Foundation](#)
- [Social determinants of health \(who.int\)](#)
- [Green space and early childhood development: A systematic review](#)
- [Urban green spaces and health - a review of evidence](#)



The Climate Emergency - The Science



Resources



Main resource sites:

- [What Is Climate Change?](#) – A basic introduction to climate change
- [State of Climate in 2021 Report](#): World Meteorological Organization. [Summary](#) of main points
- [Climate Change Committee UK](#) –UK specific impacts, risks, progress on net zero and adaptation plans



Resources



The Intergovernmental Panel on Climate Change (IPCC) –

Created in 1988 by the World Meteorological Association and the UN, the IPCC produces reports summarising the scientific evidence for the causes and impacts of climate change, future risks and required [mitigation](#) and [adaptation](#). These reports inform the [Conference of Parties](#) or **COP meetings** - regular meetings of world governments to review progress and action on climate change. Their most recent reports are listed below:

- [Global Warming of 1.5 °C](#) (IPCC) 2018 - the evidence for the 1.5-degree target and the carbon budget to achieve this.
- [Climate Change 2021: The Physical Science Basis](#)
- [Climate Change 2022: Impacts, Adaptation and Vulnerability](#) o Climate Health Alliance summarised the Health aspects of this report in a 20 page [Briefing](#).
- The [Synthesis Report](#) combining the main messages from these reports is due to be released late 2022 or early 2023
- **Critique of The IPCC** - As worrying as they are, some scientists feel the IPCC is too conservative in their reports – see [What Lies Beneath](#)





Highlights of the 2022 IPCC Impacts, Adaptation and Vulnerability Sixth Assessment Report:

(for a good summary see - [6 Big Findings from the IPCC 2022 Report | World Resources Institute](#) (wri.org) even at just 1.1°C of warming the impacts of climate change are more widespread and severe than predicted - affecting every region of the world.

- **Population displacement** - Extreme weather has driven over 20 million people from their homes every year since 2008.
- **Reduction in crop yields** – in Africa, climate change has driven a reduction in crop yields of more than one third since the 1960s
- **Water supply** – half the world’s population faces water insecurity at least one month per year
- **Infectious diseases** - Vector-borne (e.g. malaria, Dengue fever, West Nile virus etc) and water-borne (e.g. cholera) disease are spreading





Highlights of the 2022 IPCC Impacts, Adaptation and Vulnerability Sixth Assessment Report:

- **Ecosystems** - Climate change is contributing to a rise in extinction rates and movement of species to higher latitudes (where there is space for them to move)
- **Impacts will get worse** even if we stop GHG emissions due to the delayed impact of those already in the atmosphere
- New focus on **Short-Lived Climate Pollutants (SLCPS)** e.g. methane, nitrous oxides and hydrofluorocarbons. These are more potent GHGs than CO₂. Estimates suggest SLCPS have contributed nearly half (45%) of global heating to date and that targeted efforts to reduce them could reduce increase in temperature rise by 0.6 degrees Celsius by 2050. Many SLCPS are also harmful for human health. The WMO estimate that reductions in methane and black carbon emissions could save 2.4 million lives in the year 2030 alone.
- **Tipping points** (see below) – “high confidence” that “abrupt responses and tipping points of the climate system, such as strongly increased Antarctic ice sheet melt and forest dieback, cannot be ruled out.”





RAISING THE ALARM

Evidence that tipping points are under way has mounted in the past decade. Domino effects have also been proposed.



A. Amazon rainforest
Frequent droughts

B. Arctic sea ice
Reduction in area

C. Atlantic circulation
In slowdown since 1950s

D. Boreal forest
Fires and pests changing

F. Coral reefs
Large-scale die-offs

G. Greenland ice sheet
Ice loss accelerating

H. Permafrost
Thawing

I. West Antarctic ice sheet
Ice loss accelerating

J. Wilkes Basin, East Antarctica
Ice loss accelerating

©nature

Source: T. M. Lenton *et al.*

Tipping Points and Positive Feedback

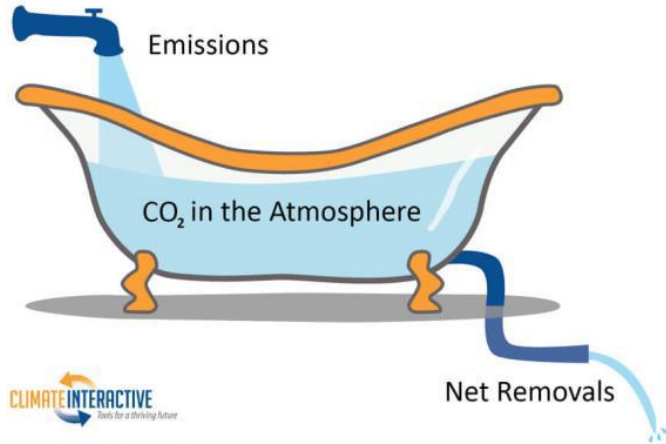
Positive feedback loops in the earth's systems which could lead to continued global heating until the earth reaches a new equilibrium, almost certainly uninhabitable for most species, possibly including us.

[What are climate change tipping points?](#)

This [article](#) explains more about the most up to date science on tipping points.

These papers look at specific tipping points in more detail:

- [Arctic Sea Ice Extent | Vital Signs of the Planet](#) (nasa.gov)
- [Permafrost Carbon feedbacks](#)
- Forests - [Amazon - no longer a carbon sink](#)



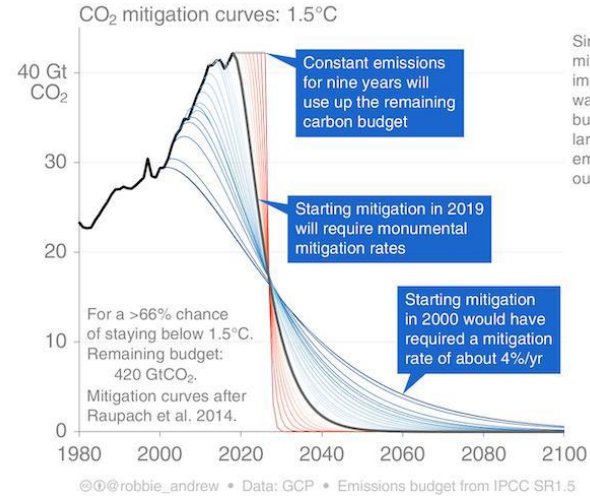
Overall framing by Dr. John Sterman, MIT Sloan

Net Zero - is when GHG emission are balanced by removals. At this point temperatures should stabilise (assuming positive feedback has not been triggered). The IPCC estimated a carbon budget for a 50% or 66% chance of remaining below 1.50 warming (see 1.50 Report above). The 2050 Net Zero pledges being made by governments and others are based on the 50% chance. Whilst there is no doubt that achieving this will be challenging it would be considered reckless in any other area of health and safety to choose this over a 66% chance.



Does the 2050 target mean we can delay action now?

NO - It is vital to ensure the bulk of reductions occur within the next 5-10 years to avoid blowing the total budget early – see graph.

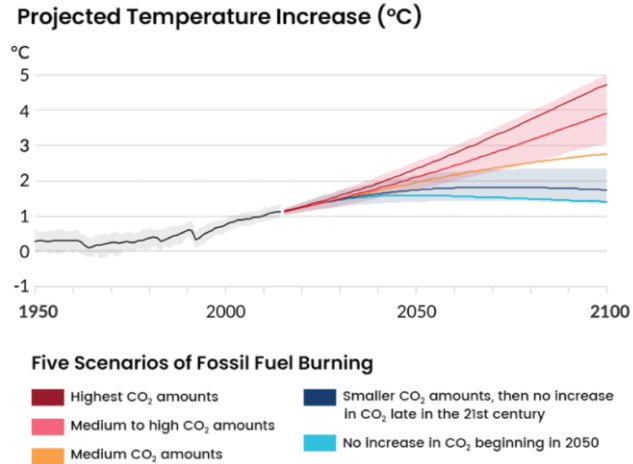


Since such steep mitigation is impossible, the only way to achieve this budget is with very large "negative" emissions: pulling CO₂ out of the atmosphere.

[Climate scientists: concept of net zero is a dangerous trap \(theconversation.com\)](http://theconversation.com)



What does the Future hold?



If GHG emissions continue to rise at present levels, climate models predict the global average temperature will rise an additional 4° C by the end of the century. Without swift action to reduce emissions, models project that holding global average temperatures to within a 1.5-2.0°C may no longer be possible.

What does Four Degrees look like?

“A 4° C is incompatible with 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 – consequently 4° C should be avoided at all costs “

- Prof. Kevin Anderson, then head of the Tyndall Centre (the UK’s climate research group)

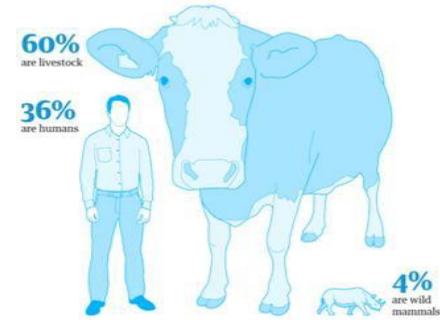
“It’s difficult to see how we could accommodate eight billion people or even half of that” - Johan Rockström, director of the Potsdam Institute for Climate Impact Research



The Ecological Emergency

Biodiversity is the diversity of species, ecosystems and genes on earth. This richness underpins all aspects of human life, from the air we breathe to food and fresh water to the strength of the global economy. Over the past few thousand years, humans have cut down half of the world's forests and dammed more than 2/3 of its rivers. We use about half of the planet's accessible fresh water and half the habitable land surface for agriculture. Across the planet, forests, wetlands, grasslands, and other ecosystems are being degraded and destroyed. Up to 1 million species (of about 1.8 million species we know about) are threatened by extinction and many ecosystems are at risk of collapse.

Of all the mammals on Earth, 96% are livestock and humans, only 4% are wild mammals





Species loss - Since 1970 wildlife populations have plummeted by 69%. Species are being lost at around 1000 times the natural background rate of extinction, ~ 150 species per day.

- Freshwater species have declined by 83%
- In some areas of the world 90% of wetland areas have been destroyed.
- 1 in 5 plants are threatened with extinction.

The rate of species decline is now so rapid scientists believe we have entered a **Sixth Mass Extinction** event and the pressures driving this decline are intensifying. None of the [Aichi Biodiversity Targets](#) for 2020 have been fully met, threatening progress on the Sustainable Development Goals and undermining efforts to address climate change.

David Attenborough speaks about the crisis – [The Advice Sir David Attenborough Needs You To Hear](#) (4-minute video)



Major Threats to the Natural World –



1. Land Use Change – destruction of ecosystems for agricultural, industrial and urban development
2. Climate Change – disrupts seasonal links between species, alters habitats and forces species to migrate to new areas with appropriate temperatures for them to thrive – where there is land available for them to do this
3. Water Extraction - for agriculture, industry and human settlements
4. Pollution e.g.-
 - a. Plastics
 - b. Oil spills
 - c. Toxins such as persistent organic pollutants (e.g. DDT, PCBs etc) [Persistent Organic Pollutants: A Global Issue, A Global Response | US EPA](#)
 - d. Heavy Metals (e.g. mercury used in dental amalgam and traditional thermometers)
 - e. Agricultural run off – fertilizers and manure – causing algae blooms and dead zones
 - f. Pesticides
5. Exploitation of Wildlife – hunting for wild meat, sport, material such as ivory, traditional medicines etc
6. Invasive species – non-native species moved to an area intentionally (e.g. the cane toad in Australia) or inadvertently (e.g. certain species of jellyfish in the ballast of ships)



Deforestation



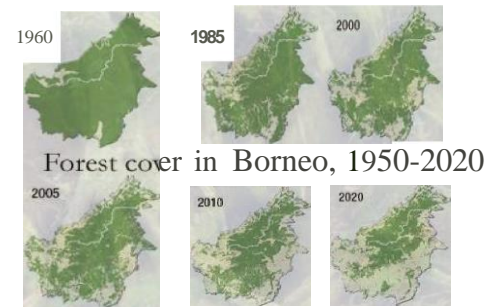
Forests are home to approx. 80% of biodiversity on land. They are vital carbon sinks but also provide us with food, shelter, wood and other raw materials. Over 25% of the world's population rely on forests for their livelihood: for food; fresh water; clothing; traditional medicine and shelter. Trees also help retain moisture in the soil, mitigate flooding and prevent landslides, cool cities and remove pollution from the air.

Although rates of deforestation have declined since the 1990's we are still losing an area larger than Belgium every year, 1 soccer field every 6 seconds. The biggest driver of deforestation is large-scale commercial agriculture (primarily cattle ranching and cultivation of soya bean (largely for animal feed) and oil palm). Climate change is also threatening forest cover due to increases in frequency and extent of wildfires and spread of tree pests, such as pine beetle, due to warmer winters.

Halting deforestation and maintaining forests could contribute about 14 percent of the emissions reductions needed up to 2030 to keep planetary warming

below 1.5 °C, while safeguarding more than half the Earth's terrestrial biodiversity.

- [The State of the World's Forests 2022](#)
- [Deforestation - 11 facts you need to know](#)
- [Forests and poverty reduction](#)



Water -



Over-extraction of water dries out the land, changing entire habitats and ecosystems and impacting the livelihoods of local people. In ~ 20% of regions that pump groundwater, rivers are already flowing too low to maintain healthy aquatic ecosystems ([Nature](#)).

Case Examples 1-The Aral Sea, once the world's 4th largest lake has shrunk by >60% due to diversion of the rivers which feed it for agriculture, largely cotton monoculture, requiring large amounts of fertilizer and pesticides. This, in addition to local mining and weapons testing, polluted the remaining water, impacting the health of local people. Life expectancy has fallen and around 60,000 fishermen lost their livelihoods.



1990

2000

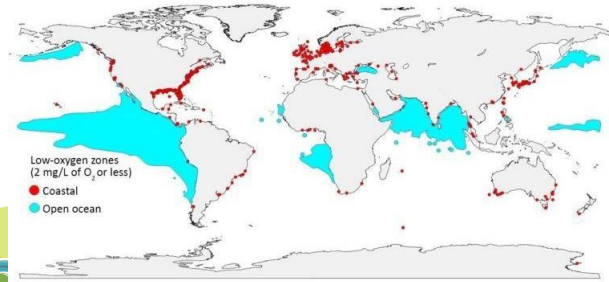
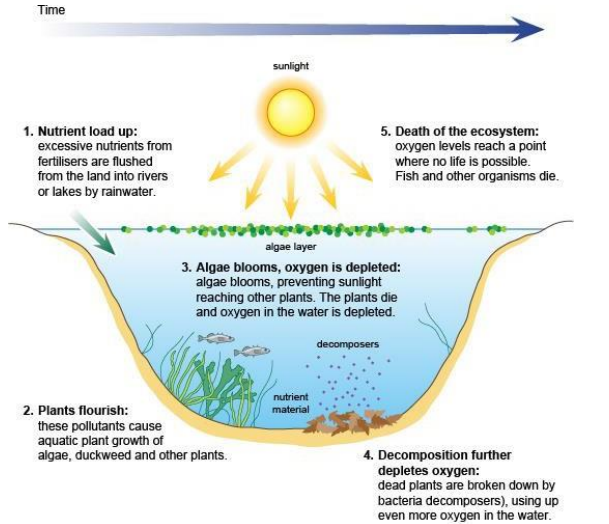
2010

Aral Sea 1990-2010

2 - The Colorado River Basin Since 2000 a historic drought, combined with extensive water extraction for agriculture and cities has impacted regional water supply, hydropower, recreation, and ecosystems. Around 40 million people get their water from the Colorado River. It has rarely reached the sea since the 1960's. In 2014 a pulse of water was released which reflooded the delta, delighting local communities. The resulting plant growth recharged groundwater, supporting further growth for ~ 1 yr. and demonstrating how nature can recover if we can spare it just enough water.



Eutrophication and Dead Zones



Excess nutrients (primarily from excess use of fertilizers and large quantities of livestock excrement) are washed into the rivers, lakes and coastal waters causing algae blooms which deplete oxygen leading to the formation of dead zones. Climate change makes it easier for these to form as warmer water can hold less oxygen. In freshwater systems this can be further exacerbated by drought and low water levels due to extraction of water for human activities. [Dead zones in our oceans have increased dramatically since 1950, and we're to blame | World Economic Forum](#)

Case example – 4 minute video [What caused the death of a million fish in Australia's Murray-Darling Basin?](#)

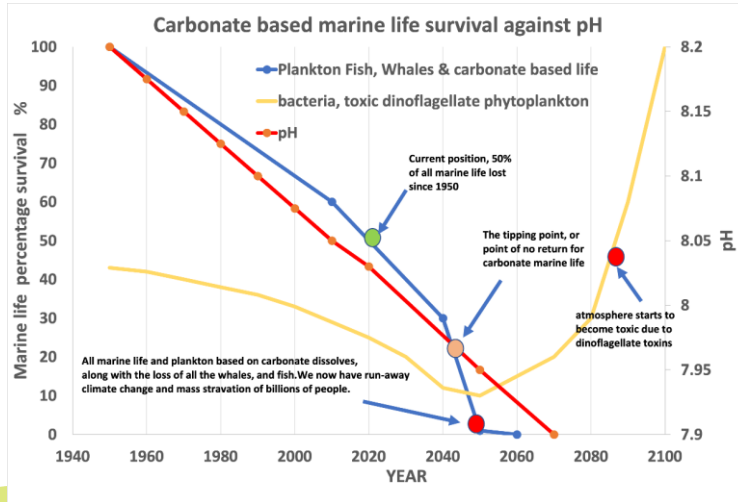


Oceans – Warming, Acidification and Pollution

All life on earth depends on the health of the oceans. We may not think about plankton much but these tiny organisms are vital to our survival. They produce more than half the oxygen we breathe and pull carbon out of the atmosphere, making an enormous contribution to tackling climate change. They are the real lungs of the planet. They are also the bottom of the ocean food chain. Without them we would not have the fish, whales, dolphins, sharks we love and over ~ 3 billion people rely on for their primary source of protein.

Plankton have already declined by over 40% and continue to decline at a rate of about 1% per year. Some scientists are concerned that, without urgent action to address ocean pollution, plankton populations could crash as early as 2045, triggering widespread collapse of marine ecosystems.

To learn more about this watch this [14 minute](#) lecture or read the [GOES report](#).



Threats to the oceans:



Warming – the oceans have absorbed about 90% of global warming

Acidification - CO₂ dissolving in ocean water makes them more acidic

Chemical pollution including agricultural runoff, oil spills and microplastics, which absorb other toxic chemical pollution such as pharmaceuticals, chemicals such as parabens - in our toiletries and cleaning products

Overfishing and Destructive fishing techniques (such as bottom trawling),

Noise pollution and is driving marine life to the brink. Up to 90% of global fisheries are exploited at or beyond their maximum sustainable limits.



<https://www.scientistswarning.org/wp-content/uploads/2018/05/healthy-and-bleached-coral-reef.jpg>



Coral reefs contain ~ 25% of ocean biodiversity. We have already lost ~ 50% of the coral reefs due to bleaching ([What is coral bleaching? \(noaa.gov\)](#)). At 2^o of global warming we can expect to lose 99% s vs 70-90% at 1.5^o. Reefs in marine protected areas, here there are lower levels of pollution, are less likely to die during bleaching events.

Further reading:

[Why should we care about the ocean? \(noaa.gov\)](#)

[10 Threats to Ocean Life](#)

[Oceanic And Human Health | NHS Ocean Book](#) – Stung!: On Jellyfish Blooms and the Future of the Ocean by Lisa-Ann Gershwin



Nature in the UK

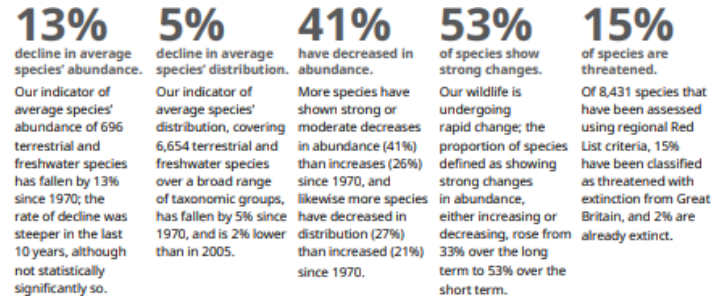


The abundance and distribution of the UK's species has, on average, declined since 1970. Prior to 1970, the UK's wildlife had already been depleted by centuries of persecution, pollution, habitat loss and degradation.

Pressures – Intensification of land management for agriculture, climate change, pollution, urban development, invasive species

Progress –

- Woodland cover increased by 9% (1998—2018)
- Some farmers are adopting wildlife-friendly farming
- 46% increase in the time donated by volunteers in conservation since 2000.



THE UK'S BIODIVERSITY IS DECLINING



SINCE 1970...



CLIMATE CHANGE IS HAVING AN INCREASING IMPACT ON NATURE IN THE UK



CHANGING AGRICULTURAL MANAGEMENT HAS HAD THE BIGGEST SINGLE IMPACT UPON NATURE IN THE UK OVER RECENT DECADES



URBANISATION



POLLUTION



INVASIVE NON-NATIVE SPECIES



WOODLAND MANAGEMENT



FISHERIES



PUBLIC SUPPORT FOR CONSERVATION CONTINUES TO GROW



However public sector expenditure on biodiversity in the UK, as a proportion of GDP has fallen by **42%** since a peak in 2008

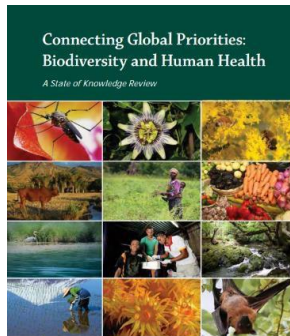
<https://nbn.org.uk/stateofnature2019/>



Impacts on Human Health

"In pushing other species to extinction, humanity is busy sawing off the limb on which it perches"
- Stanford ecologist Paul Ehrlich

Human health is intricately entwined with the health of the natural world which provides for our most basic needs – air, water and food, in addition to other vital raw materials. Nature also plays a crucial part in cultural identity and supports our psychological wellbeing, bringing joy, peace and wonder to our lives.



- Some 70 % of drugs used for cancer are natural or are synthetic products inspired by nature
- An estimated 4 billion people rely primarily on natural medicines for their health care
- More than 2 billion people rely on wood fuel to meet their primary energy needs
- More than 75 % of global crops rely on animal pollination inc. fruits and vegetables and some of the most important cash crops, such as coffee, cocoa and almonds,
- Marine and terrestrial ecosystems are the sole sinks for anthropogenic carbon emissions, with a gross sequestration of 5.6 gigatons of carbon per year (~ 60% of global emissions).

[This 2015 report by the World Health Organization and the Convention on Biological Diversity catalogues a hundred specific ways that nature and health are related.](#)

[Connecting Global Priorities: Biodiversity and Human Health](#)



“The causes of biodiversity loss and ecosystem degradation are well known, and there is widespread agreement on many of the actions required to address them. The key drivers - changes in land and sea use, direct exploitation of organisms, continuing climate change and pollution and invasive alien species, are caused by human values and behaviours.

Alongside protecting and restoring nature, we will need to address climate change and tackle the underlying causes of biodiversity loss: our financial systems, our food systems, and our wider models of consumption and production. This implies big changes to way we live and operate as societies around the world. In order to achieve this, the whole of society has a part to play.

This is a last chance decade for both biodiversity and climate. There is an urgent need to recognize our dependence on a healthy planet and to work together to re-establish a positive relationship with nature, for the benefit of people and planet.”



World Environment Situation Room
Data, Information and Knowledge on the Environment





The Planetary Emergency



“You say you love your children above all else, and yet you are stealing their future in front of their very eyes”
Greta Thunberg

[Young peoples message to World leaders at COP 27](#)
(3minute video)



Climate Change

The science of climate change is well established. It is no longer a 'future' or 'theoretical' issue; it has begun. Increasing frequency and intensity of extreme weather events (heatwaves, droughts, wildfires, floods, storms, etc) is already impacting the lives of tens of millions of people. If sufficient action is not taken to reduce greenhouse gas (GHG) emissions to net zero fast enough to avoid 1.5 degrees of global heating above pre-industrial levels, these impacts will become far worse and may trigger positive feedback in the earth's systems which trigger exponential heating.



[NASA Time Series 1884-2021](#)

Optional - For more information on climate change click [here](#)

This 1.45 minute video outlines the [state of the global climate](#).

Planetary Boundaries

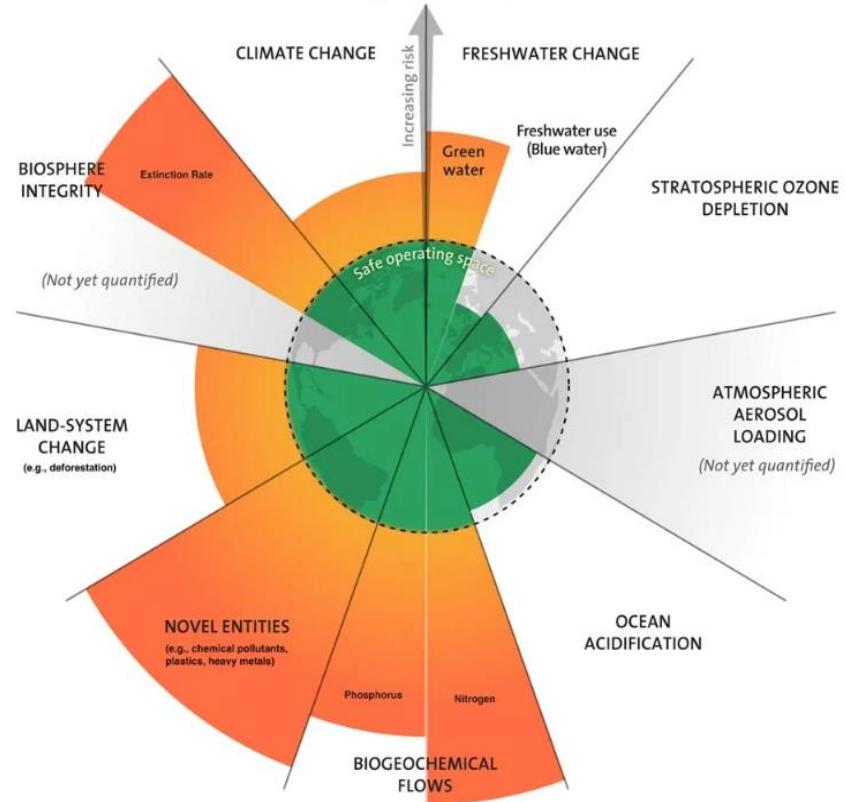


Figure 1. The nine planetary boundaries beyond which there is a risk of destabilization of the Earth system that would threaten human societal development, April 2022 version. Humanity had crossed out of the green "safe" space across six out of nine boundaries, and was close to crossing one other boundary (ocean acidification). (Image credit: [Stockholm Resilience Institute](https://www.stockholmresilience.org/); plot annotated for clarification)



Sorry – it's not just climate change though. What this diagram shows is the 9 planetary boundaries identified by The Stockholm Institute for Climate Research. These define the safe limits for major earth systems that are essential to support human life. As of 2022 we have breached 6 of these boundaries and are well on the way with a 7th (ocean acidification). This is [Recklessness defined: breaking 6 of 9 planetary boundaries of safety \(Yale Climate Connections\)](#)

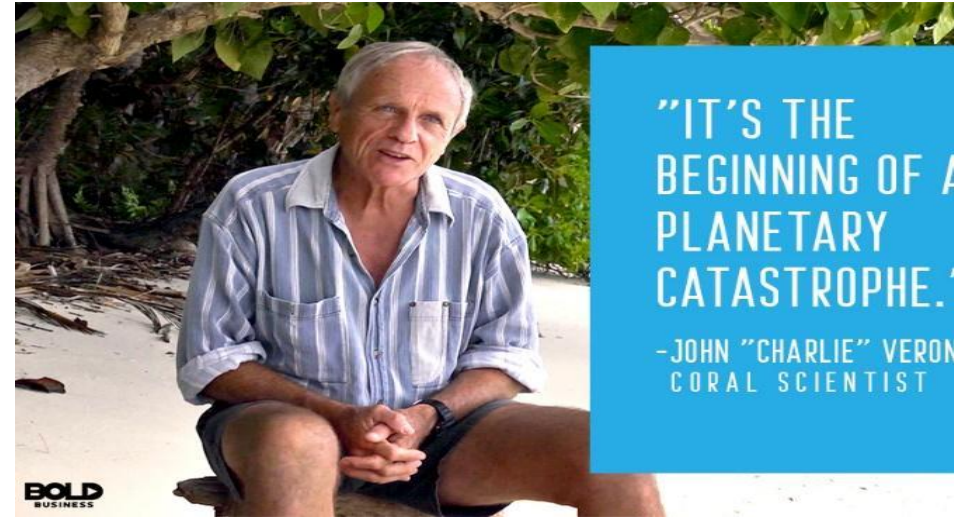
In this 8 minute [TED talk Johan Rockström](#), who led the team which developed the planetary boundaries concept, discusses earth system tipping points.

or consider watching the Netflix Documentary 'Breaking Boundaries' with David Attenborough and Johan Rockström.





Human activity is pushing the natural world beyond the limits of its resilience, causing populations of species to plummet (69% reduction since 1970) and ecosystems on land and in the oceans, to collapse. Human health is intricately intertwined with the health of our ecosystems. We depend on functioning ecosystems for our most fundamental needs – oxygen (in clean air), food and water. Environmental degradation has also been implicated in the emergence of new pandemics such as COVID -19.



- This 1 minute video summarises [the 2020 Living Planet report](#)



The 9th boundary - 'Novel Entities'

This is pollution – plastics, radiation, heavy metals, industrial chemicals, pharmaceuticals, persistent organic pollutants (found in our toiletries and cleaning products) etc. It's not hard to see that we have crossed this boundary.





The Anthropocene

Modern human life - our agriculture and complex societies - emerged after the last ice age as a consequence of the stable, predictable climate conditions and abundant biodiversity of the Holocene; a geological epoch which has persisted for around 11,000 years.

The stability of the Holocene and human technological innovations over the last few centuries have led many of us to take the availability of food and fresh water for granted. We have forgotten that we are part of the natural world and its vital role in supporting our health. We have come to believe that we can endlessly exploit nature and bend it to our will. All that is about to change.



<https://www.theguardian.com/environment/gallery/2020/mar/31/burning-question-plastic-pollution-scars-poorest-countries-in-pictures#img-1>



Since the end of the 2nd World War our consumption and exploitation of natural resources has grown exponentially. This has raised living standards for many and allowed human populations to grow more numerous and live longer than ever in history.

However, over the past few decades, it has become clear that the excesses of consumer capitalism and exploitative social systems (including colonialism and [‘sacrifice zones’](#) to supply resources to industrialised societies) have consequences which threaten our health, homes, livelihoods, communities and possibly our very survival.

In the words of Richard Powers (author of *The Overstory*) we have been “cashing in a billion years of planetary savings bonds and blowing it on assorted bling”

The impact of human activity on the planet is now so marked that scientists say we have entered the Anthropocene - a new geological epoch in which humans are the primary driver of changes in the Earth's systems. We have left the Holocene. This marks the end of the stable climatic conditions in which agriculture and human societies have evolved.

What does this mean for our children?





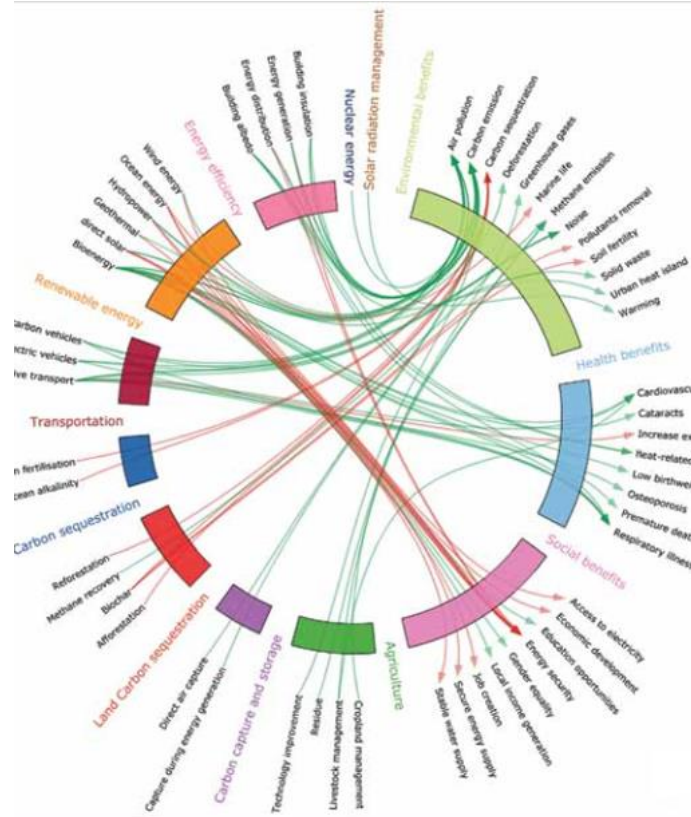
Impacts on Children’s Health

“Every child has the right to ... clean water, nutritious food, and a clean environment and education on health and well-being” - The UN Convention on the Rights of the Child (UNCRC) “Current emissions trajectories pose a potentially catastrophic risk to human health” – The Lancet Commission on Health and Climate 2015

In this [3-minute video](#) the Lancet Countdown describes the impact of our choices on the lives of children born today. Every region of the world is affected by climate and ecological change. This is already impacting health and is starting to reverse progress on sustainable development goals.

In all areas children are more vulnerable.

[New report labels climate change a ‘medical emergency’ \(theengineer.co.uk\)](#)



requently cited co-benefits of major mitigation techniques between a mitigation technology and an effect indicate that the technology will increase the effect; green arrows indicate an opposite trend.



Why?



They are smaller which means:

It's harder for them to [regulate their body temperature](#) in heat waves or in cold flood waters

They need more calories and nutrients per kg of body weight so they are more at risk in times of famine.

When there are toxins in the air, water or food they absorb more per unit of weight than adults. Water and food may be contaminated with industrial or agricultural waste or sewage during floods and storms. 90% of the global population breathes air which exceeds WHO safe limits for pollution.

Being closer to the ground increases their exposure to air pollution from car exhausts. We will discuss the impacts of air pollution on the next part.



They are still growing, so toxins, illness and stressful events can impact physical and psychological development causing lifelong harm.

They are dependent on caregivers for their safety. Children are less likely to be able to swim, find their way to safety or access safe drinking water and food alone. If separated from caregivers they are vulnerable to abuse and trafficking.

Although childhood mortality has been falling in recent decades, all four conditions responsible for over 50% of global childhood deaths are sensitive to climate change: chest infections, diarrhoea, malaria and malnutrition. Currently 88% of the burden of climate related disease is falling on children under 5.



Of the 2.1 billion children on the planet almost every child is exposed to at least one climate and environmental hazard. 850 million – around 1/3 of all children - are exposed to four or more hazards. This creates incredibly challenging environments for children to live, grow and develop. [The Climate Crisis is a Child Rights Crisis | UNICEF](#)

