



# #1 FRAMING THE CLIMATE CHANGE ISSUE FOR THE DISCERNING INVESTOR







Sustainability



Sustainability and  
the investment  
process



Earth Dividend™



Carbon Neutral



Sustainability  
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# Executive Summary

The COVID-19 pandemic brought into stark relief the vulnerabilities of our linear, “just in time”, unsustainable economies, but also made real how far and fast we must move to mitigate the global environmental crisis we face. The ecological “Overton” window<sup>1</sup> has shifted drastically and stakeholders at all levels are demanding meaningful and quantifiable action.

It is startling just how large and long this writing has been on the wall. Rachel Carson’s *Silent Spring* published in 1962 contained over two decades of research into the extent chemicals were wreaking environmental destruction. Exxon’s research in the 1980s, cataloguing the damage that fossil fuels caused to the planet, further confirmed this and yet we have continued to stick our heads in the sand.<sup>2</sup>

We have reached a fork in the road with arguably two distinct transition pathways to the low carbon, circular and sustainable economy that we so desperately need. Either we plan a managed transition, minimising disruption and losses and maximising new opportunities, or through our inaction we find ourselves undergoing a chaotic shift, a series of reactions full of disruption and uncertainty, loss and perhaps even violent conflict. This would not be a planned transition, but rather a defensive patchwork triggered by manmade disasters, beyond our control or collective imagination.

The exponential growth of humankind’s

economic footprint has drastically impacted the Earth’s ecosystems which underpin our global economy; the more we deplete the ecosystem, the less it will sustain us. When the Chairman of AXA Insurance publicly states “a +4°C world is uninsurable”<sup>3</sup>, the ramifications of inaction are too drastic to ignore.

“A fiduciary duty is a legal responsibility when managing someone else’s money, however this can no longer be a legitimate barrier to ESG incorporation for institutional investors.”

We need drastic changes to our way of life requiring change to our models of economic systems to mitigate these very real costs, risks and threats.

A fiduciary duty is a legal responsibility when managing someone else’s money, however this can no longer be a legitimate barrier to ESG incorporation for institutional investors; climate change is now accepted as potentially posing material risks to asset values and therefore falls squarely within fiduciary responsibility.

This is an instance of one of the oldest paradoxes; what happens when the unstoppable force meets the immovable object?

1. “The Overton Window is named after Joseph P. Overton of the Mackinac Center for Public Policy. This window contains the range of policies that a politician can recommend without appearing too extreme to gain or keep public office in the prevailing climate of public opinion. It can shift and expand as societal norms and values change.”

2. Hall, Shannon, *Scientific American* (2015)

3. <https://www.greenbiz.com/article/axa-4c-warming-makes-world-uninsurable>

# Framing the climate change issue for the discerning investor

In the third decade of the 21<sup>st</sup> century, the urgent need for a systemic change to our economic models and targets is increasingly clear, to our political and environmental priorities and to governmental and supranational regulations to mitigate the global environmental crisis we face. The environmental and ecological “Overton” window” shifted drastically this past decade from the protests at Standing Rock over the Dakota Access pipeline to the fires that burned across the Australian or Alaskan peninsulas and across California for months, all culminating in Greta Thunberg, a Swedish environmental activist being the youngest person ever nominated for

the Nobel Peace Prize for her work in raising awareness about the climate emergency. This cannot be ignored any longer; the question that should be asked is what must we do now?

In his 2005 book, *The End of Oil*, Paul Roberts outlined two possible paths for the transition to a low-carbon economy. One “a gradual smooth change phased in over time... minimising out losses and even allowing ... profit from new opportunities”; he hoped for a “proactive endeavor, driven by consensus ... based on scientific analysis, ... [that] managed to minimise disruption and maximise economic gain”.



Source: United Nations

By contrast, the second was “A swift chaotic shift in our energy economy [which] almost guarantees disruption, uncertainty, economic loss, even violence”. For him, this second path is “less a transition than a reaction, a patchwork of defensive programmes triggered by some political or natural disaster.”<sup>4</sup>

### **The pandemic proves where there is a will there is a way**

Since the launch of the United Nation’s Sustainable Development Goals in 2015, it has become clearer that holistic and systemic change is required to prevent environmental collapse. In the face of near-total agreement in the scientific community that humans are causing global warming and climate change, what is astonishing, particularly in light of responses to the Covid-19 pandemic, is the comparative lack of decisive action from some governments and institutions of all sizes.<sup>5</sup> The pandemic revealed two startling facts which had previously been ignored in many areas. Firstly, how vulnerable our financial systems and supply chains are

to disruption. Furthermore, as globalisation continues not only are our economies becoming more intertwined, but industries and sectors are becoming more susceptible to domino-like cascade events. Secondly, where there is a will there is a way. Governments globally have been forced to make drastic changes at speed and scale, introducing hitherto unprecedented legislation and support to prevent economic and societal collapse. The pandemic proved that when necessary, the money to avoid disaster can be and is found. If so much can be achieved to fight one, singular, global pandemic, why are similar forces and resources not being applied to the global systemic degradation of the planet that maintains our very existence?

“As globalisation continues not only are our economies becoming more intertwined, but industries and sectors are becoming more susceptible to domino-like cascade events.”

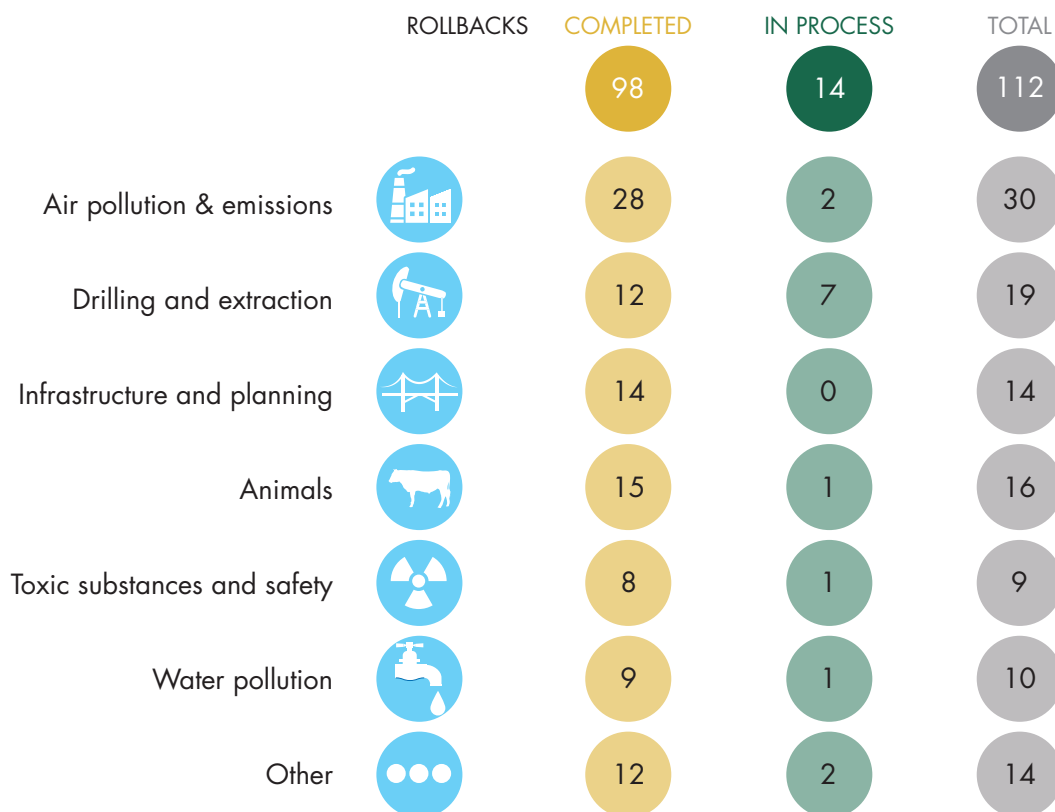
4. Roberts, Paul, *The End of Oil*, Bloomsbury Publications pp10-12 (2014)

5. [Do Scientists Agree on Climate Change, NASA \(2017\)](#)

## Exponential increase in climate impacts

On September 27<sup>th</sup> 1962 Rachel Carson published *Silent Spring*, the culmination of over two decades of research into the environmental destruction that American industries had wrought through their use of chemicals including synthetic pesticides. The book questioned the myth of progress that had defined post-war culture in the United States; that progress for progress's sake is good. It led to a radical change in the USA's policies on pesticides (including the banning of DDT), mobilising the changes that brought about the creation of the US Environmental Protection Agency and brought environmental issues to the fore in Western Culture for which she was posthumously awarded the Presidential Medal of Freedom in 1980.<sup>6</sup>

All too recently, it has felt like this wisdom has been lost, with the Trump administration's reversal of a ban on the harmful pesticide Chlorpyrifos,<sup>7</sup> its announcement of its withdrawal from the Paris Agreement of COP24,<sup>8</sup> and the EPA's revoking of the enforcement of environmental laws in response to COVID-19, in effect granting licence to pollute by explicitly suspending environmental laws where some link to the pandemic can be shown.<sup>9</sup> Thankfully, we have restored hope with the recently elected Biden administration returning the US to the Paris agreement just hours after being sworn in and declarations to reverse all of Trump's climate-related policies.



Source: New York Times <https://www.nytimes.com/interactive/2020/climate/trump-environment-rollbacks-list.html>

6. Sir David Attenborough stated that *Silent Spring* was probably the book that had changed the scientific world the most, after *The Origin of Species* by Charles Darwin.

7. [Tracking deregulation in the Trump era, Brookings \(2020\)](#)

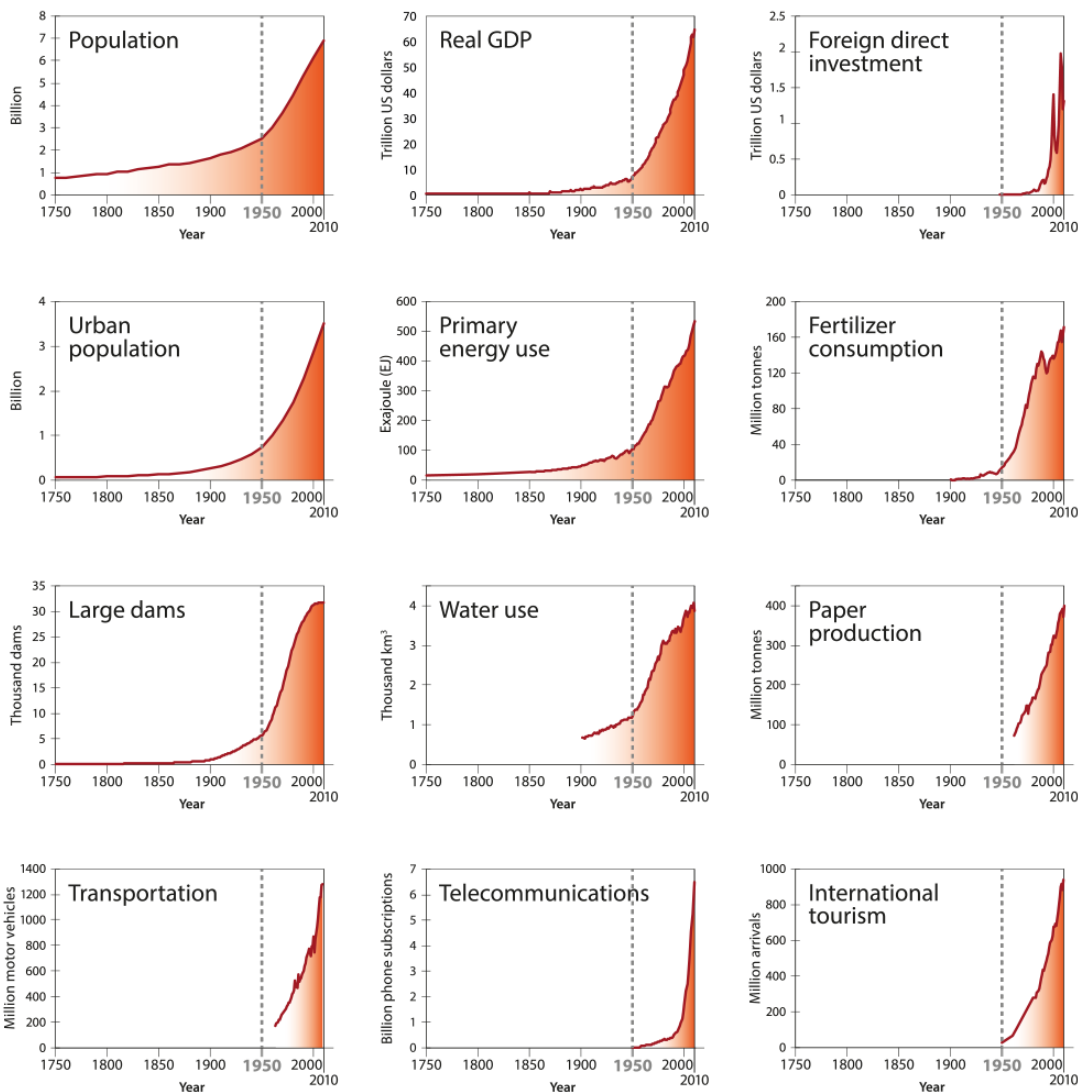
8. [An analysis of the Trump Administration's economic and policy arguments for withdrawal of the United States from the Paris Agreement on Climate Change, LSE \(2020\)](#)

9. <https://www.theguardian.com/environment/2020/mar/27/trump-pollution-laws-epa-allows-companies-pollute-without-penalty-during-coronavirus>



## Socio-economic Trends

Over the past seven decades, the impact of humankind on Planet Earth has increased exponentially, seen in the explosion of rates of change in economic trends as the figures below show:



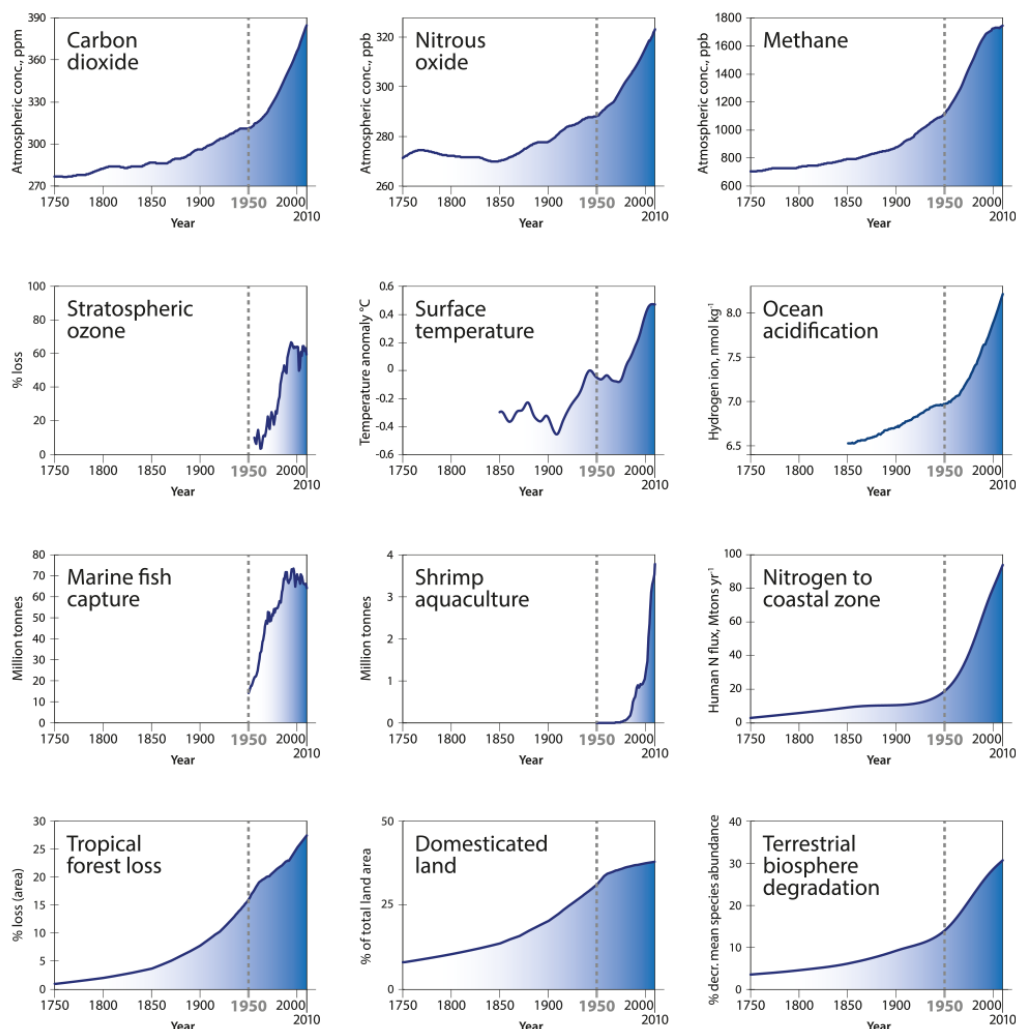
Source: *The Great Acceleration*

## Earth system trends

This was made possible by the cheap and plentiful availability of fossil fuels; since the industrial exploitation of coal began in 1847, an estimated 1649 GtCO<sub>2</sub> has been emitted from the burning of fossil fuels.<sup>10</sup>

This exponential growth of humankind's economic footprint has had drastic impacts on the Earth's ecosystems. Humankind's effects can be seen in systemic impacts, from temperature rise to an explosion of GHG emissions and ocean acidification. Urban areas have more than doubled

since 1992, 75% of the land-based environment and 66% of the marine environment have been significantly altered by human actions with 35% of the world's land and nearly 75% of fresh-water resources devoted to crop or livestock production.<sup>11</sup> The scale and accelerated rates of these changes have placed unprecedented strains on our planet, which we now know to be unsustainable; 60 billion tons of renewable and non-renewable resources are extracted globally each year, up nearly 100% since 1980.<sup>12</sup>



Source: *The Great Acceleration*

10. The cumulative carbon emissions are the sum of the total CO<sub>2</sub> emitted during a given period of time. Total cumulative emissions from 1850 to 2019 were from fossil fuels and industry, and 751 GtCO<sub>2</sub> from land use change. [Carbon Budget 2019](#)

11. [IPBES Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services \(IPBES\) paper](#)

12. IPBES *ibid*



The impact on the planet can be seen through the same IPBES report. Of an estimated eight million animal and plant species (including 5.5 million insect species) up to one million are threatened with extinction whilst over 500,000 have insufficient habitat for long term survival without habitat restoration. About a third of corals and marine mammals are threatened with extinction, whilst a third of marine fish stocks in 2015 were harvested at unsustainable levels, 60% were at the extremes of maximum sustainable fishing and only 7% were under-fished. About 10% of insect species, crucial for pollinating plants and crops, are threatened with extinction. Nearly 700 vertebrate species have already been driven to extinction by human actions since the 16th century.<sup>13</sup>

Much as we might believe differently, we are subject to nature and the earth's ecosystems. Without restraint on our part, we risk trapping ourselves in a vicious spiral; the more we destroy the ecosystem, the less able it will be to sustain our current population, forcing greater extraction of resources, further diminishing our survival chances. We have reached the point where our global ecological line of credit is running dry.

Our globalised, technologically advanced, economic system requires a tremendous amount of energy and resources to maintain and, unless we change, demand will only continue to grow exponentially. At the same time, there are currently c2,500 violent conflicts over fossil fuels, water, food and land occurring worldwide and 40% of the global population lacks access to clean and safe drinking water.<sup>14</sup> Despite this, little meaningful effort is being made to create a sustainable economic system. Over 80% of global wastewater is discharged untreated and 300-400 million tons of heavy metals, solvents, toxic sludge, and other wastes from industrial

facilities are dumped annually into the world's waters.<sup>15</sup> Even now the capital committed to finding, extracting, refining and distributing fossil fuels vastly outweighs that committed to renewable energy generation; there are currently c6,500 offshore oil and gas installations in 53 countries.<sup>16</sup> Government subsidies for fossil fuels greatly outweigh those provided for renewable energy, but despite this, renewable energy costs are reaching and in some cases falling through grid parity whilst offering an alternative that is less harmful to the planet. IPBES reports US\$345 billion in global subsidies for fossil fuels resulting in US\$5 trillion in overall costs; coal accounts for 52% of post-tax subsidies, petroleum for +/-33% and natural gas for +/-10%.<sup>17</sup> Our ceaseless drive for more has caused consumption of natural resources to explode, but it is not just the consumption of those resources that has been so destructive, but the processes which we have used to access them, such as open cast mining, fracking and deep-sea oil extraction, often in environments that are still largely untouched by humankind.

*"Without restraint on our part, we risk trapping ourselves in a vicious spiral; the more we destroy the ecosystem, the less able it will be to sustain our current population, forcing greater extraction of resources, further diminishing our survival chances. We have reached the point where our global ecological line of credit is running dry."*

<sup>13, 14, 15, 16, 17.</sup> IPBES *ibid*

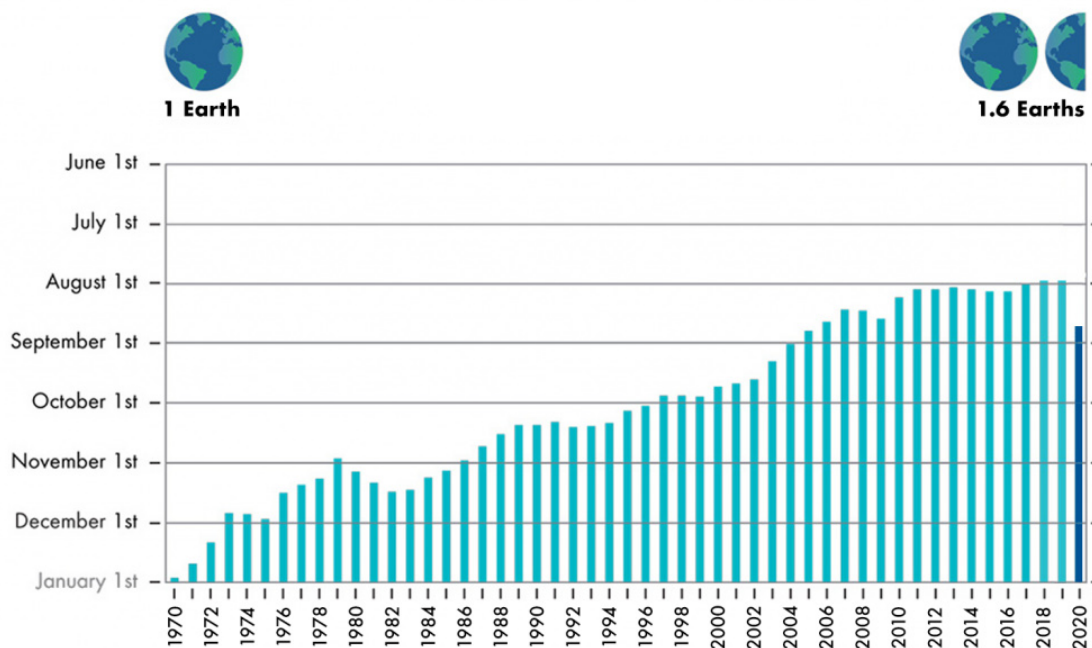
## Earth Overshoot Day: 1.75 Earths needed to meet demand

Earth Overshoot Day marks the date when humanity's consumption of ecological resources in a given year exceeds what the Earth can sustainably regenerate in that year. In 2019, Earth Overshoot Day was 29 July, the remainder of the year corresponding to global overshoot. We maintain this deficit by liquidating stocks of ecological resources and accumulating waste. In 1970, Earth Overshoot Day was 29 December, in 2000 it was 1 November and between 2015 and 2019 it moved from 6 August to 29 July.<sup>18</sup> In 2019 we consumed globally c1.75 planets

worth of resources. In 2020, despite the global lockdown and the impact that it had, Earth Overshoot Day was only marginally delayed to 22 August which has demonstrated the need for a serious review of the sustainable development, technology and investment required and at increased levels of speed and scale.

**"In 2019 we consumed globally c1.75 planets worth of resources."**

## Earth Overshoot Day 1970 - 2020

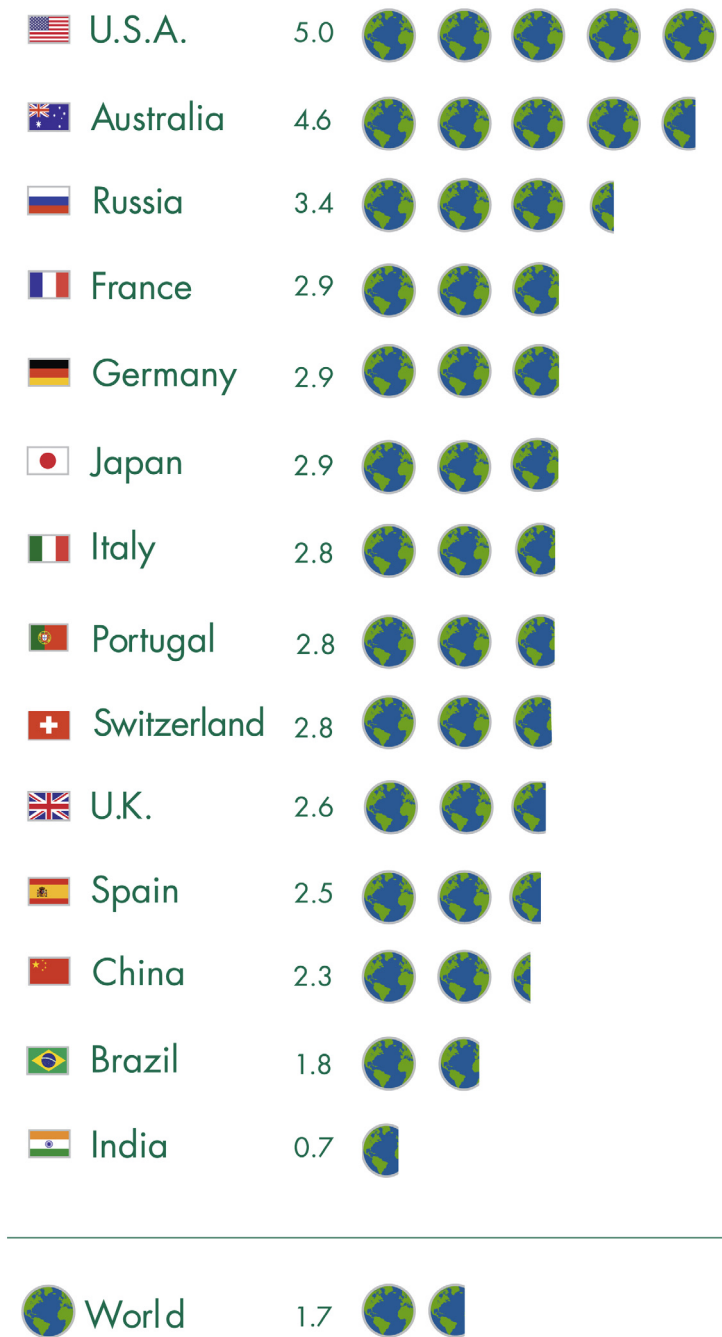


Source: Global Footprint Network National Footprint and Biocapacity Accounts 2019

18. Noting the impact of COVID-19, Earth Overshoot Day in 2020 fell on 22 August. The global lockdown from the pandemic closing manufacturing for several months.

In this, as with many things the developed world leads the way. Were we to live like US or Canadian citizens we would need a staggering 5 planets-worth of resources to support our lifestyle or 4.6 for Australians. Russia lags slightly behind at 3.4, Western Europe averages between 2.5 and 3, and the UK reaches 2.6.<sup>19</sup> The table here shows how, except for the USA, Canada and Australia, the worst offending countries are typically geographically tiny and often major extractors of fossil fuels and European countries are clustered in the second quarter of the year:

**How many Earths would we need if everyone lived like U.S.A. residents?**



Source: National Footprint and Biocapacity Accounts 2021  
Additional countries available at [overshootday.org/how-many-earths](https://overshootday.org/how-many-earths)

<sup>19</sup> [Earth Overshoot Day](#), Global Footprint Network

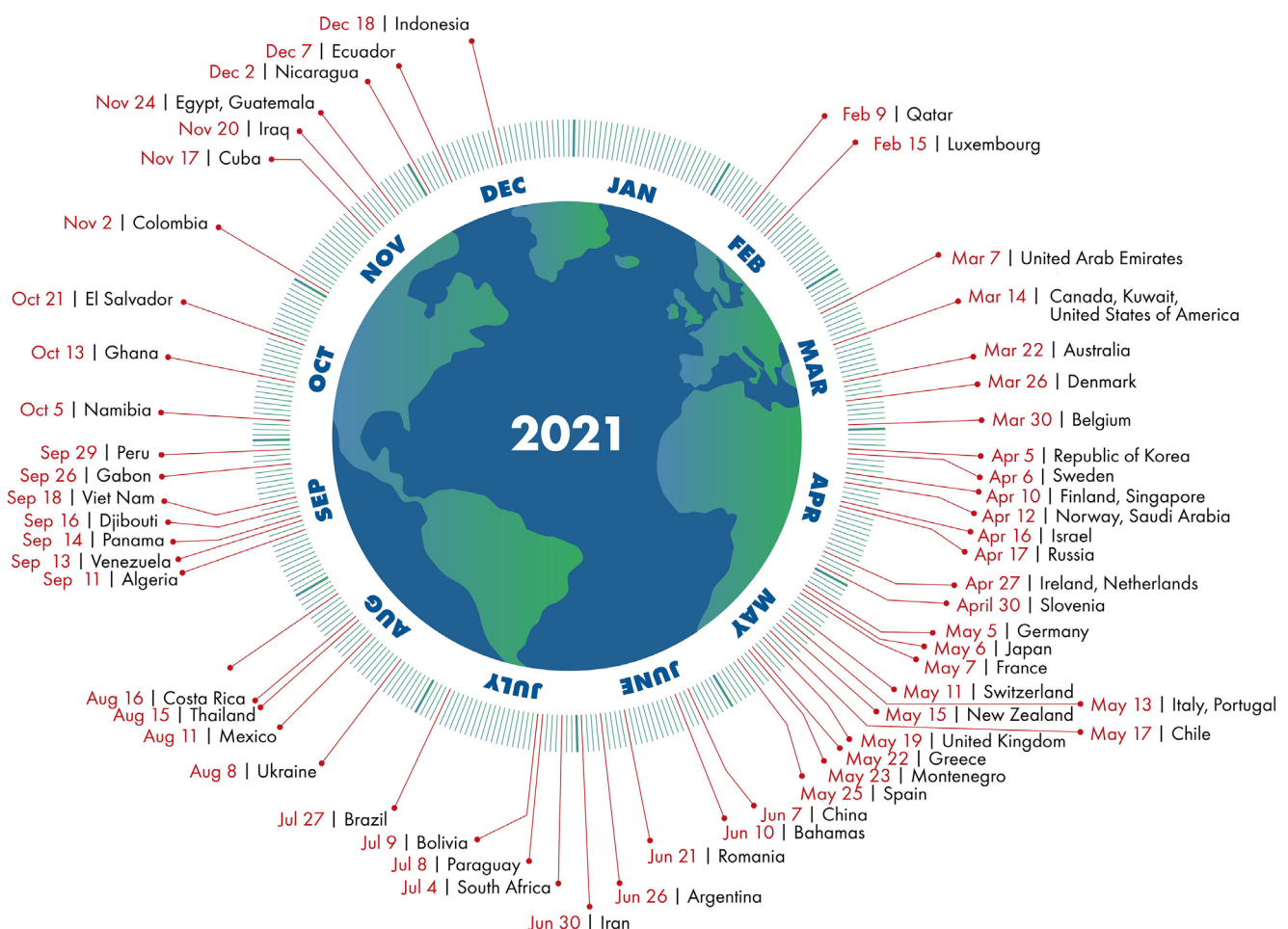


Only developing countries are in the second half of the year and very few countries (India being an obvious one – 0.75 planets worth of resources) have no overshoot day. China and India represent the barbell of Westernised Upper and Middle classes standing on the shoulders of a huge subsistence class living in rural or slum areas. This speaks to the inequality to be found globally and the chasm that sits between the “haves” of the developed world and upper classes in the developing world and the “have nots” in the rest of the developing world. Given

the developing world’s ambition to raise living standards, these countries are following down the western world’s path. As Mahatma Gandhi put it, “God forbid that India should ever take to industrialism after the manner of the West... keeping the world in chains. If [our nation] took to similar economic exploitation, it would strip the world bare like locusts”.<sup>20</sup> Unless we make drastic changes to our way of life, we will find ourselves the victims of our own greed, unable to sustain life on our planet.

## Country Overshoot Days 2021

When would Earth Overshoot Day land if the world’s population lived like...



Source: National Footprint and Biocapacity Accounts, 2021 Edition

20. Harijan, p422 (2020)

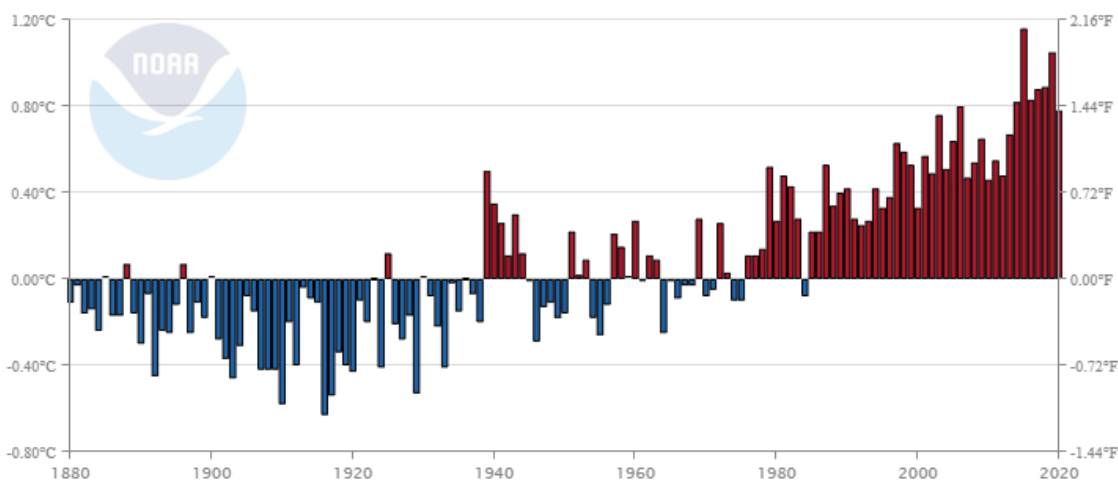
## Risk of irreversible changes constantly increasing

The simplest measure to track climate change is through the average temperature rise since records were first kept. There has been a 1.1°C temperature rise since pre-industrial levels (beginning in 1850), and the trend is currently c0.2°C per decade. There has been a doubling of greenhouse gas emissions, raising average global temperatures by at least 0.7°C. This has led to a 3mm annual average global sea-level rise over the past two decades, the tail end of a c200mm

rise in global average sea level since 1900.<sup>21</sup>

The 10 hottest years on record have occurred since 2005, with the last 7 years (2014-2020) being the world's warmest.<sup>22</sup> Mark Carney, the former governor of the Bank of England, has written that for the 2050 Carbon Neutral goals what matters is not just that we reach them but the progress and speed at which we reach them; the faster we decelerate our carbon output the less lasting damage it will produce.<sup>23</sup>

## Global Land and Ocean December Temperature Anomalies



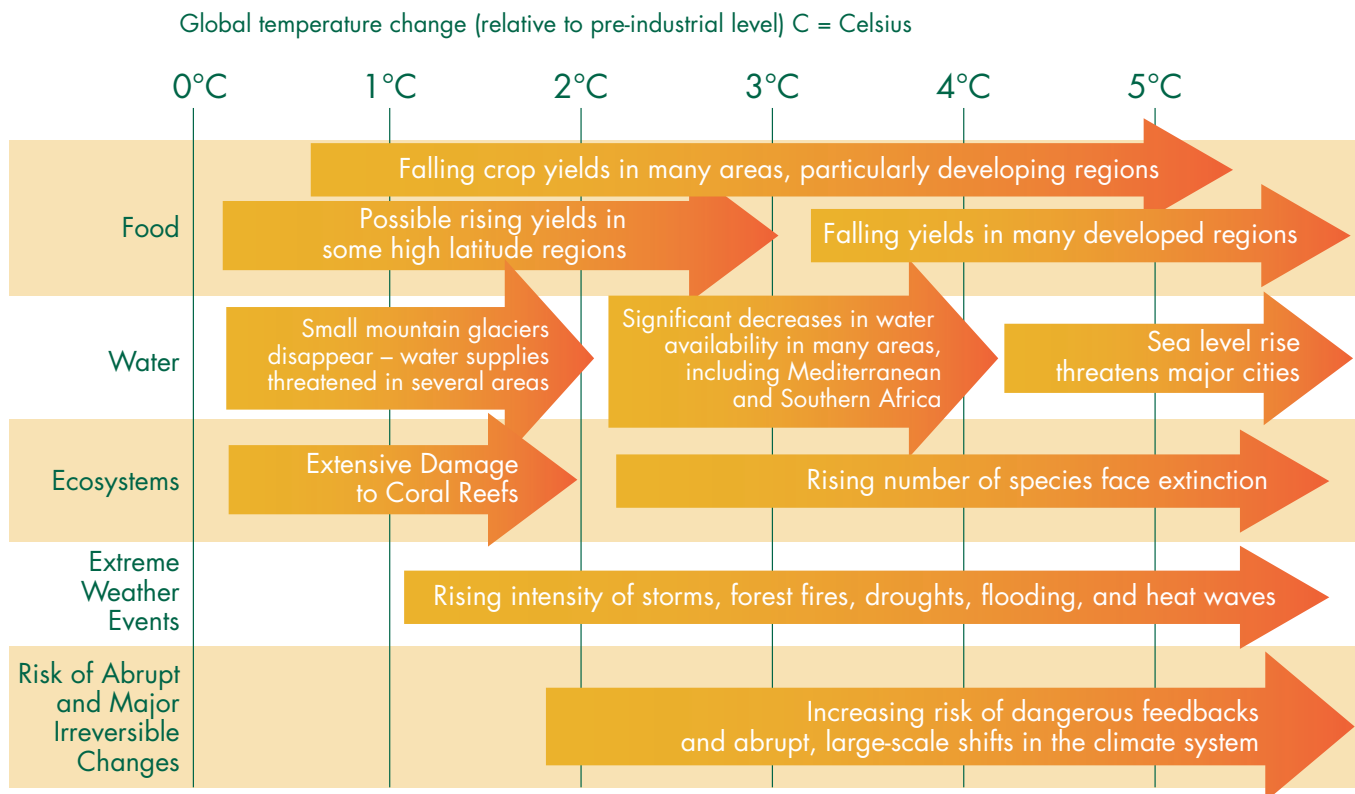
Source: NOAA Global Climate Report 2020

21. IPBES *ibid*

22. [National Oceanic and Atmospheric Administration](#)

23. 30:00 [Mark Carney in conversation with Greta Thunberg Guest Editor Today Programme \(2019\)](#)

## Projected impacts of climate change



Source: Adapted from the Stern Review on the Economics of Climate Change.

The Stern Review on Climate Change informs us just how catastrophic these seemingly small ecological changes can be.<sup>24</sup> A mere 2°C increase in the mean global temperature would lead to the melting of ice caps and glaciers causing sea level rises, flooding the first and second floors of many buildings in London, New York, Tokyo, Florida, Bangladesh, the Nile Delta and the Netherlands.<sup>25</sup> Climate scientists are not arguing whether we will see an increase in mean temperature but whether the increase will be as low as +2°C or as high as +6°C. At +6°C, the Antarctic ice sheet would be gone completely, causing sea levels to rise around 200 feet, the Statue of Liberty in New York would now be completely underwater.<sup>26</sup> When the Chairman

“A mere 2 C increase in the mean global temperature would lead to flooding of the first and second floors of many buildings in London and New York.”

of AXA Insurance in France publicly stated that “a 4°C world is uninsurable”<sup>27</sup>, given global temperatures have already risen by 1.1°C, the ramifications of inaction are too drastic to ignore. The scale of the challenge is clearly demonstrated in *Absolute Zero*, published in November 2019 by Cambridge University; for the UK to meet its 2050 zero emissions commitments it would

24. Sir Nicholas Stern, chair of the Grantham Research Institute on Climate Change, Stern Review on the Economics of Climate Change, table 3.1 p57 (2006)

25. Northcott, p6

26. Northcott, *ibid*, p6

27. <https://www.greenbiz.com/article/axa-4c-warming-makes-world-uninsurable>



have to close all airports, convert all private cars to electric, reduce road traffic to 60% of current levels, phase out fossil fuels and increase renewable energy production fourfold.<sup>28</sup> Whilst technological advantages will bridge some of the gap, this is no small feat; belief in the invisible hand of the market to resolve this crisis in time, saving us from our current cataclysmic path, is at best naïve and at worst grossly negligent.

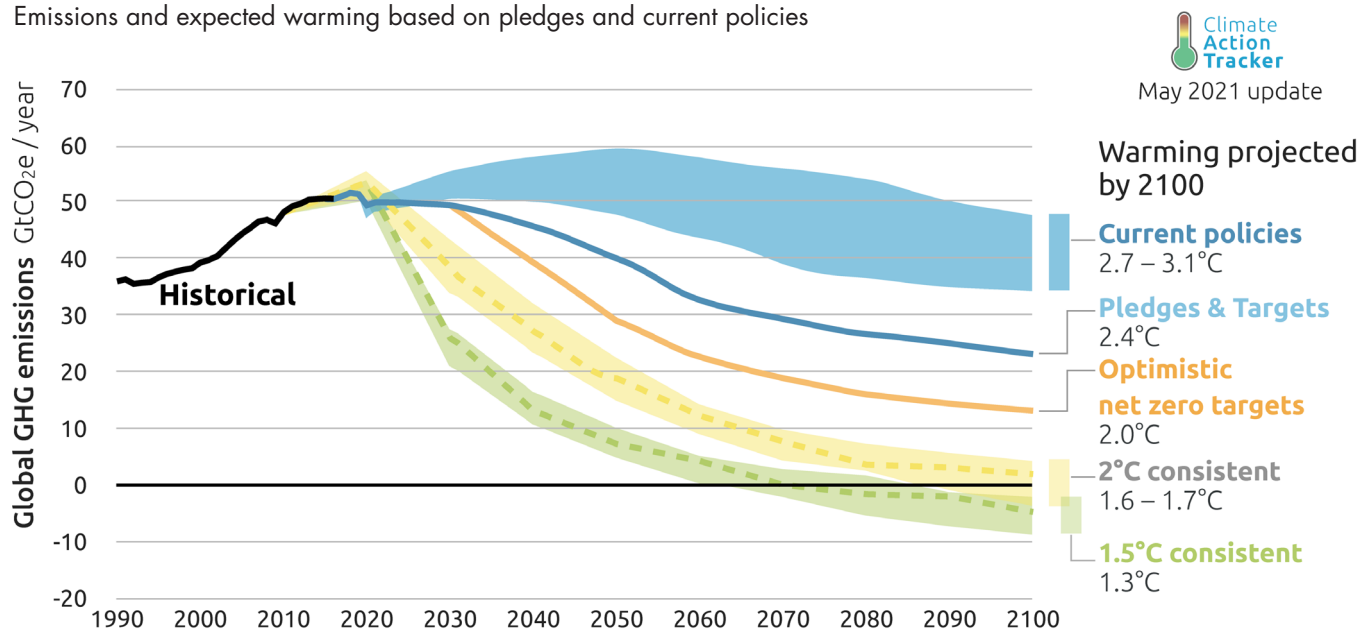
In January 2019, The Pacific Gas and Electric Company in California filed for Chapter 11 following media accusations of blame for devastating wildfires in the state in 2017 and 2018 that resulted in potential claims of c\$30bn (versus its market capitalisation of c\$3.25bn). Whilst wildfires are not new, the longer drier summers greatly increased their impact and poorly maintained PG&E equipment was blamed

by media sources as the cause of the blazes. The Washington Post reported this as America's first climate bankruptcy. The effects of the climate crisis will result in increasing numbers of sudden distress cases of those companies that fail to take appropriate action.

As the American Association for the Advancement of Science puts it, "Most projections of climate change presume that future changes ... will happen incrementally." However, they point out that small climate changes have led to abrupt systemic change "In other words, pushing global temperatures past certain thresholds could trigger abrupt ... irreversible changes ... We can think of this as sudden climate brake and steering failure where the problem and its consequences are no longer something we can control."<sup>29</sup>

## 2100 Warming projections

Emissions and expected warming based on pledges and current policies



Source: Climate Action Tracker

28. [Absolute Zero: Delivering the UK's climate change commitment with incremental changes to today's technologies](#)

29. [What We Know: The Reality, Risks, and Response To Climate Change, AAAS](#)

## Less pledges: more meaningful action

Since 2011 some one million Syrian refugees have arrived in Europe fleeing civil war. Whether this conflict was inflamed by climate change and drought or not, what is clear is that Europe has struggled to cope with this flow of refugees. Climate-related flooding in Bangladesh is predicted to displace ten times this number. Christiana Figueres, former Executive Secretary of the United Nations Climate Change Secretariat recently stressed that there are some 60 million displaced people globally<sup>30</sup> and that without meaningful action to avert the climate disaster this number could increase tenfold.<sup>31</sup> The United Nations predicted an even bleaker 200 million with a worst-case scenario of cascading events displacing up to 1 billion or more vulnerable people with little choice but to flee north to survive.<sup>32</sup> However, the lack of movement on reforms and issues with current levels of immigration means that the EU and the US remain woefully unprepared.

Even the most conservative forecasts of climate change impacts paint strikingly stark pictures. The UN Food and Agricultural Organisation has noted that natural disasters triggered by climate change have more than doubled between the 1980s and 2017.<sup>33</sup> In the last decade, Munich Re estimated global natural disaster losses of US\$2.7 trillion, expecting that this will rise to US\$24 trillion in the current decade. Furthermore, they note in 7 of the last 10 years, economic costs have exceeded the 30-year average of US\$140 billion.<sup>34</sup> The physical climate risks

to asset classes are significant and will only continue to grow in magnitude. Such incidents are no longer showing a typical mean regression that we might have previously expected.

**“The only thing rising faster than greenhouse gas emissions is the output of words pledging to decrease our output.”**

Faced with this tsunami of evidence, governments and corporations have begun to respond, but as Naomi Klein pithily observes “The only thing rising faster than greenhouse gas emissions is the output of words pledging to decrease our output.”<sup>35</sup> At the beginning of 2020, BP published a lengthy press release championing the goal of 2050 net zero carbon emissions as a central pillar to its business plan and purpose but, as commentators have pointed out, they have left themselves several definitional ambiguities that could reduce any impact of the statement.<sup>36</sup>

Also, to Klein’s point, nowhere within this does it set out a meaningful roadmap to show how or when this will be achieved; such a roadmap, it says, will come later. The beginnings of which have begun to materialise with the pledge to sell US\$25 billion of old world assets by 2025. Whilst the intentions are laudable, it is worth

30. Global Trends Forced Displacement in 2015, The UN Refugee Agency

31. [Christiana Figueres, \(2020\)](#)

32. [UN International Organization for Migration](#)

33. [The impact of disasters and crises on agriculture and food security 2017, Food and Agricultural Organization of the United Nations \(2018\)](#)

34. <https://www.21stcentech.com/reinsurer-calls-steeper-carbon-pricing>

35. Naomi Klein, This Changes Everything, Penguin Books, London p11 (2015)

36. [Coffin, Mike, BP’s Net Zero Ambition: Deciphering the Code, Carbon Tracker \(2020\)](#)

noting that unless the proceeds are purely reinvested in renewable energy resources, selling these assets off is more a questionable exercise in mitigating short term ESG compliance pressures. Even then, this is a form of sustainability offshoring which allows the assets to be transferred to private companies and individuals rather than publicly listed companies. Turning a blind eye to what goes on in the shadows is not meaningful or strategic but more window dressing and greenwashing. Similarly, Shell has publicly stated that it will seek to pivot into a low carbon company stating its continued commitment to developing low carbon renewable energy. Despite these public pronouncements, in 2020 it has allocated US\$25 billion towards search and development of new oil and gas sources compared with a meagre US\$2 billion for low carbon renewable energies (aiming to rise to US\$3 billion per annum by the end of the decade).<sup>37</sup>

It is this mismatch between the recognition of the problem, the well-meaning words about change and the actions of the major players that translates into an ever snowballing problem; the longer we delay meaningful action, the worse the problem, the greater the impacts and the higher the cost of trying to reverse climate change.

“Turning a blind eye to what goes on in the shadows is not meaningful or strategic, but window dressing and greenwashing.”

Later this year, the delayed 26<sup>th</sup> United Nations Conference of the Parties is due to meet in Glasgow. A study from 2013 should perhaps be considered, that found in the roughly two decades since supranational negotiations towards a climate treaty began, global CO<sub>2</sub> emissions had increased by a staggering 61%.<sup>38</sup> During the time spent failing to find meaningful consensus on climate change, let alone take meaningful action, governments have created the World Trade Organisation (admittedly an evolution of GATT), an intricate global system with a clear regulatory structure and harsh penalties for violations.<sup>39</sup> If such a framework can be established to create the WTO then the meaningful mechanisms to prevent the, now undisputed, risks of climate change and to avoid ever-increasing natural disasters, requiring changes to current economic systems, can also be negotiated.

37. 51:00 [BBC's Today programme reporter Sarah Smith interviews Shell's Maarten Wetselaar on big energy's environmental impact.](#) (2019)

38. Klein, *ibid*, p11

39. [World Trade Organization](#)



## Systemic change needed to stop constant expansion and growth

On the corporate side, supply chain impacts are beginning to be considered, resource usage is increasingly coming under scrutiny and carbon footprints beginning to be measured which facilitates meaningful discussions about reductions. Some have gone further; in 2010 Unilever created the Sustainable Living Plan – its blueprint for becoming a sustainable business, reducing CO<sub>2</sub> emissions in 2016 by 43% compared to its baseline from 2008, announcing plans to become carbon positive by 2030 and in the process recognising cumulative cost avoidance of €700 million from 2008. With 2.5 billion consumers worldwide, businesses such as Unilever are not only of a scale to effect significant change but can benefit financially from doing so. In her book, *The Trillion Dollar Shift*, Marga Hoek identifies 50 case studies of companies that are actively positioning their businesses to profit from the move to a low carbon economy. These include companies from the technology, food and agriculture, education, health, energy and finance sectors. Initiatives include renewable energy generation and financing, sustainable manufacturing processes, clean water provision, improving social licences to operate, real estate design and retrofit, sustainable agriculture, education and nutrition. Specific examples from Hoek's book include IKEA (sustainable timber, renewable energy), Aviva (sustainable financial products and investment processes), National Australia Bank (financing the transition to a low carbon economy) and Siemens (wind turbines, smart building control systems and smart city infrastructure).

A Canadian example is Veriform, a metal fabrication business that reduced its carbon footprint through over 100 energy-saving measures by 77% between 2006 and 2017, a period which

saw it double its physical footprint and increase headcount by 30%. According to the company, despite the energy-intensive heavy presses, welders and rollers needed to produce products for anything from railcars to trucks, ships or helicopters, the first three years of initiatives achieved 80% of the carbon footprint reduction. These changes reduced emissions, but did not result in increased costs. Some were simple (switching off lights, lowering heaters), others longer-term (energy efficiency as a major determinant of plant renewal), all were driven by extensive data capture and analysis. Sales per kilowatt-hour of energy consumed tripled and the company concluded that every tonne of emissions eliminated delivered C\$900 in cost savings.<sup>40</sup> Nike is also included having recognised that “every company doing business today has two simple options: embrace sustainability as a core part of your growth strategy or eventually stop growing”; its focus has been on reducing energy consumption and CO<sub>2</sub> emissions whilst increasing clean energy usage.

“Every company doing business today has two simple options: embrace sustainability as a core part of your growth strategy or eventually stop growing.”

However reducing emissions across its supply chain only goes so far, making your production process more effective will make little meaningful difference in the long run if your business strategy is rooted in a need to continue to produce and sell collection after collection of new trainers every season of the year. Businesses still working on a

40. Keyes, Sarah, *GHG Emissions Management: Linking GHG Emissions Management to Corporate Strategy, Risk and Performance*, Chartered Professionals Accountants Canada (2020)

model driven by constant linear consumer-driven growth will eventually fail. What is needed is to build less but build better.

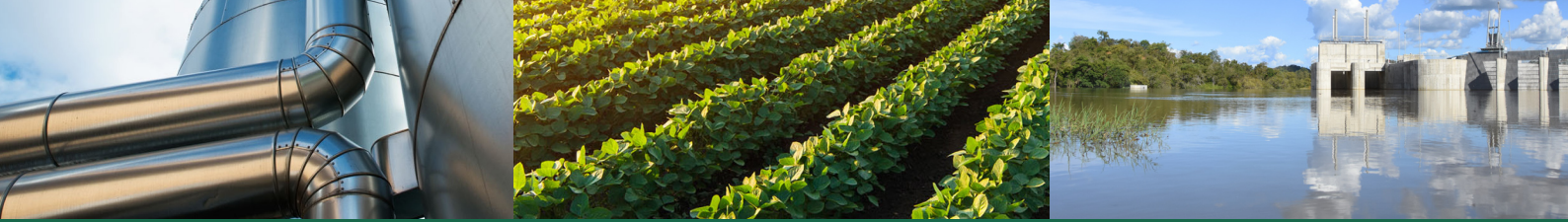
Put simply, this is an instance of one of the oldest paradoxes of all times – what happens when the unstoppable force meets the immovable object? Our current economic models and systems require constant expansion and growth within a (mostly) linear flow-based economic model; resources are extracted, transformed into products, used, and discarded. This requires continued expansion to avoid collapse, whereas our ecological environment requires a contraction of human consumption to avoid irreversible degradation and destruction. These are incompatible outcomes, but only one can change. What is therefore required is a change in the way that we model our economic systems to internalise these very real costs, risks and threats to both our systems and our way of life.

Western civilisation and its founding philosophies are grounded in an anthropocentric perspective; the idea that “nature has made all things specifically for the sake of man” is found as far back as Aristotle’s *Politics*.<sup>41</sup> There lies a deep-seated narrative within our minds that we somehow have a divine right to subdue the earth and to exploit the earth’s natural resources, creatures and ecosystems, bending them to our will and needs. What is fundamentally flawed in this thinking is the idea that we are somehow fundamental to planetary existence. The Earth is believed to be c4.5 billion years old, with life appearing c3.8 billion years ago; groups of humans started domesticating crops and animals less than 20,000 years ago. We are in the “Anthropocene era” (the period during which human activity has been the dominant influence on climate and the environment); it should be remembered that at c16,000 years, humankind’s increasing interaction with the planet

amounts to some 0.000356% on the timeline of its existence. The planet will exist long after our extinction, perhaps in a form completely incompatible with and unrecognisable to our current civilisation and ecosystems, and quite possibly as a result of our impact on it. What will drive us to prevent that state of nature accelerating towards us?

“What is therefore required is a change in the way that we model our economic systems to internalise these very real costs, risks and threats to both our systems and our way of life.”

41. Aristotle, *Politics* Bk1 Ch8



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