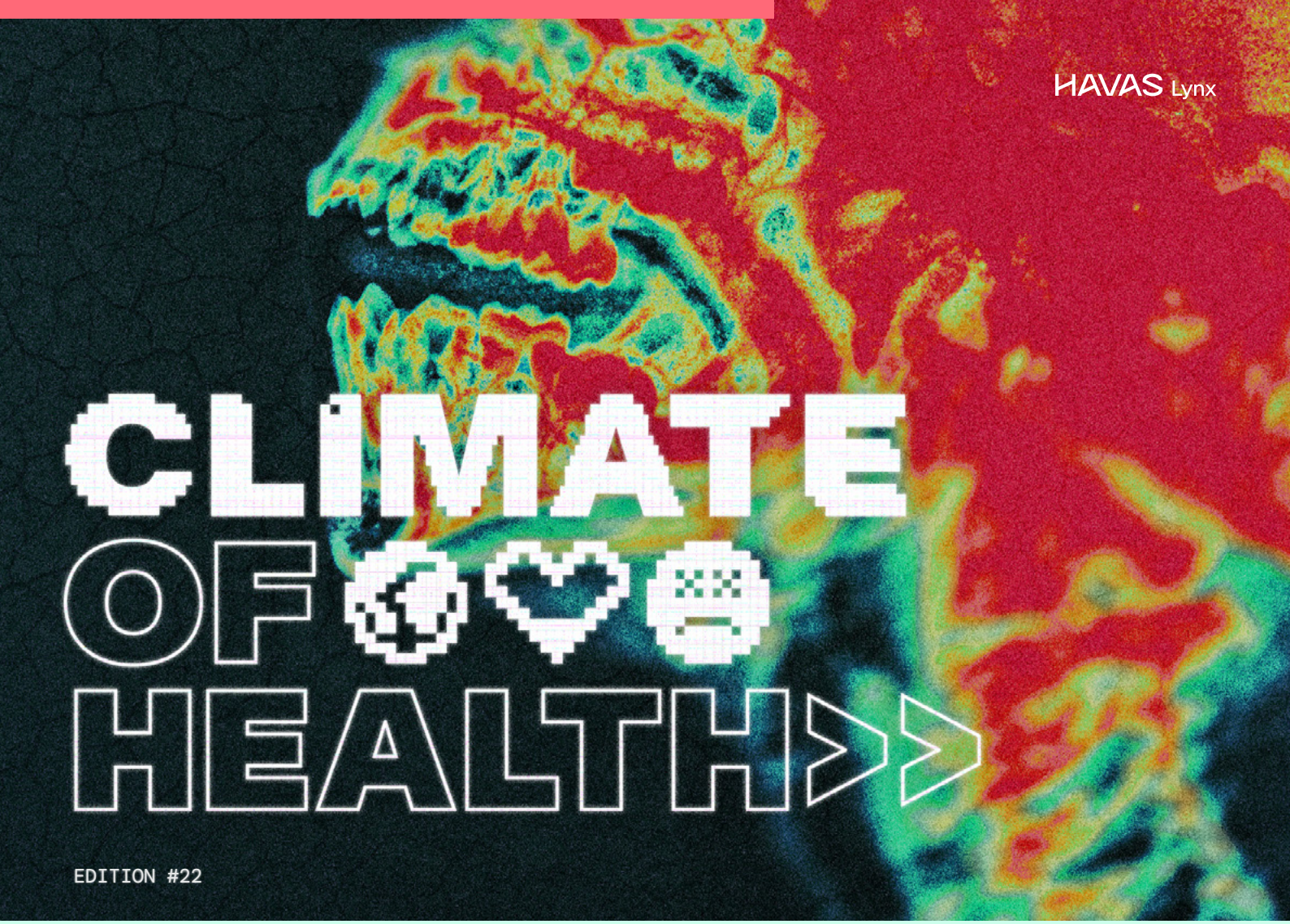
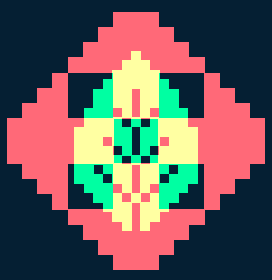


OUR WORLD IS IN AN UNPRECEDENTED STATE OF EMERGENCY

The World Health Organization (WHO) has declared the climate crisis one of the biggest global threats to human health.[1] It has also estimated that **one in four deaths** can be attributed to preventable environmental causes; all of which are being exacerbated by climate change.[1]



"The climate crisis is the biggest threat to our own survival, and to that of the worlds' ecosystems. The scale and urgency of action now required cannot be overstated. Every industry, every organisation, and every individual needs to play their part, before it's too late. This is a matter of saving our own children. But it's also a matter of saving our civilisation as we know it. What the future looks like, is now entirely dependent on us – you and me."

- Professor Hugh Montgomery OBE, University College London.

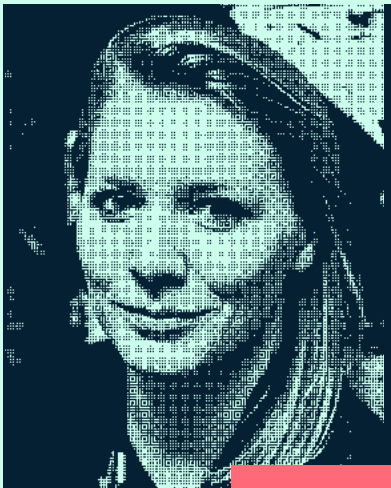
World-leading climate scientists are already predicting that the global temperature increase will surpass the 1.5°C target set out in the 2015 Paris Agreement just a few years ago.[2,3]

Increased air pollution and rising temperatures are inextricably linked with higher morbidity and mortality rates across a huge number of therapy areas.

The combined effects of this climate crisis have created a limitless health crisis. There is a new reality; one in which increased air pollution and rising temperatures are inextricably linked with higher morbidity and mortality rates across a huge number of therapy areas, from respiratory illness and cardiovascular disease to oncology, mental health, and diabetes.[4–10] Furthermore, global healthcare systems, already under phenomenal strain, are being pushed to their limits; forcing us to reconsider the impact of the climate crisis at every stage of the healthcare pathway, from clinical trial design and patient identification to effective treatment approaches.

This is where the pharmaceutical industry has a unique and undeniably important role to play in mitigating the effects of climate change. As well as having duty of care in responding to the fast-changing health demands caused by the climate crisis, it must proactively work to reduce its own emission contributions towards it.

Positive steps are already being taken across the industry, with the majority of pharmaceutical companies committing to being net zero by 2045.[11–18] This is a step in the right direction. However, now is the time to make greater leaps, in more areas. Collectively, we have a responsibility to acknowledge and prepare for the challenge. This means re-evaluating where, how, and when we can make a difference. That is what we hope to unpack throughout this white paper.



"We are not sustainability experts, and we most certainly don't have all the answers – but through this white paper we hope to share our findings and positively contribute to the ongoing conversation. We are on this journey together to better understand the scale of the issue, to learn and to make meaningful changes in any way we can to improve the health of our planet, and subsequently the health of humanity."

- Claire Knapp, CEO at Havas Lynx

References

1 The World Health Organization. We must fight one of the world's biggest health threats: climate change. Available at: https://www.who.int/news-room/commentaries/detail/we-must-fight-one-of-the-world-s-biggest-health-threats-climate-change. Accessed July 2024.

2 Carrington D. World's top climate scientists expect global heating to blast past 1.5C target. Guardian, 8 May 2024. Available at: https://www.theguardian.com/environment/article/2024/may/08/world-scientists-climate-failure-survey-global-temperature. Accessed July 2024.

3 United Nations Climate Change. The Paris Agreement. Available at: https://unfccc.int/process-and-meetings/the-paris-agreement. Accessed July 2024.

4 Klein T et al. Sustainable Cities and Society 2021; 73: 103098.

5 Chen G et al. Lancet Planet Health 2021; 5(9): e579–e587.

6 World Bank Group. What you need to know about climate change and air pollution. Available at: https://www.worldbank.org/en/news/feature/2022/09/01/what-you-need-to-know-about-climate-change-and-air-pollution. Accessed July 2024.

7 Rao M et al. The climate crisis and the rise of eco-anxiety. Available at: https://blogs.bmj.com/bmj/2021/10/06/the-climate-crisis-and-the-rise-of-eco-anxiety/. Accessed July 2024.

8 Walinski A et al. Dtsch Arztebl Int 2023; 120(8): 117–124.

9 Yu P et al. ACS Environ Au 2022; 3(1): 5–11.

10 Diabetes UK. Diabetes and climate change: what are the links? Available at: https://www.diabetes.org.uk/about-us/news-and-views/diabetes-and-climate-change-what-are-links Accessed July 2024.

11 Astellas. Climate change measures. Available at: https://www.astellas.com/en/sustainability/measures-to-address-climate-change Accessed July 2024.

12 FiercePharma. AstraZeneca aims to go carbon free by 2025-and it'll spend $1B to do it. Available at: https://www.fiercepharma.com/pharma/astrazeneca-puts-climate-action-center-1b-investment-to-turn-carbon-neutral-by-2025 Accessed July 2024.

13 Pfizer. Net Zero by 2040: How Pfizer is fighting climate change with ambitious science based goals. Available at: https://www.pfizer.com/news/articles/net_zero_by_2040_how_pfizer_is_fighting_climate_change_with_ambitious_science_based_goals Accessed July 2024.

14 Novo Nordisk. Our position on climate change. Available at: https://www.novonordisk.com/sustainable-business/zero-environmental-impact/climate-change-position.html Accessed July 2024.

15 Novartis. Climate. Available at: https://www.novartis.com/esg/environmental-sustainability/climate Accessed July 2024.

16 Sanofi. Circular economy and waste management. Available at: https://www.sanofi.com/assets/dotcom/content-app/documents/circular-economy-and-wastemanagement.pdf Accessed July 2024.

17 Teva. 2022 Environmental, social and governance progress report. Available at: https://www.tevapharm.com/globalassets/tevapharm-vision-files/teva-esg-progress-report_2022.pdf Accessed July 2024.

18 UCB. Integrated annual report 2023. Available at: https://reports.ucb.com/. Accessed July 2024.

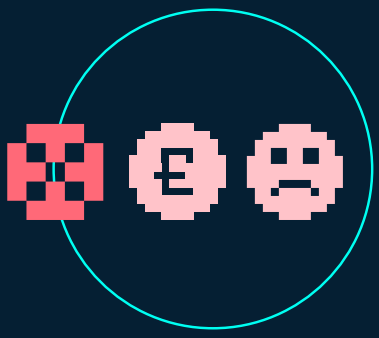
CONTENTS >>

>> Design approach

This white paper has been designed to be read online. All design decisions have been taken to minimise the impact on the environment where possible. By reading online, and not printing out or downloading this document, you are saving paper and also saving energy.

In order to reduce the energy used to view this document we have chosen an energy efficient colour palette, used light weight image formats such as SVG and bitmap, and minimised the use of imagery.

THE CLIMATE CRISIS IS OUR BIGGEST HEALTH CRISIS >>

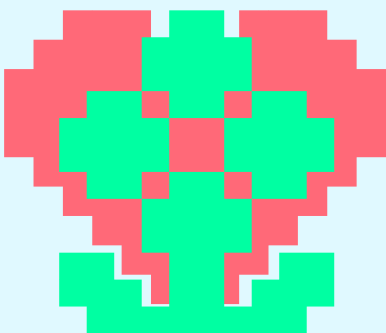


"The climate crisis is a health crisis, and it is driving a **vicious cycle of disease, economic devastation, and suffering...** If we fail to act, not only will the death toll be staggering but we also risk losing progress made over decades to improve health outcomes around the world."

- Vanessa Kerry, CEO of Seed Global Health and WHO Special Envoy for Climate Change and Health.[2]

We all know that the climate crisis is the biggest, most urgent challenge of our time.[1] By 2050, it's estimated that it could cause an additional 14.5 million deaths, loss of >2 billion healthy life years, and $12.5 trillion in economic losses worldwide.[2] Yet, day to day, the extent of its impact on our world, and particularly on our health, seems to go unnoticed.[1] And as this situation progresses, it's becoming ever clearer that our health and the climate change crisis are inextricably linked. We need to wake up to the truth that the climate crisis is a health crisis – and arguably the greatest threat to human health in recorded history.[1,3]

It's becoming ever clearer that our health and climate change are inextricably linked.



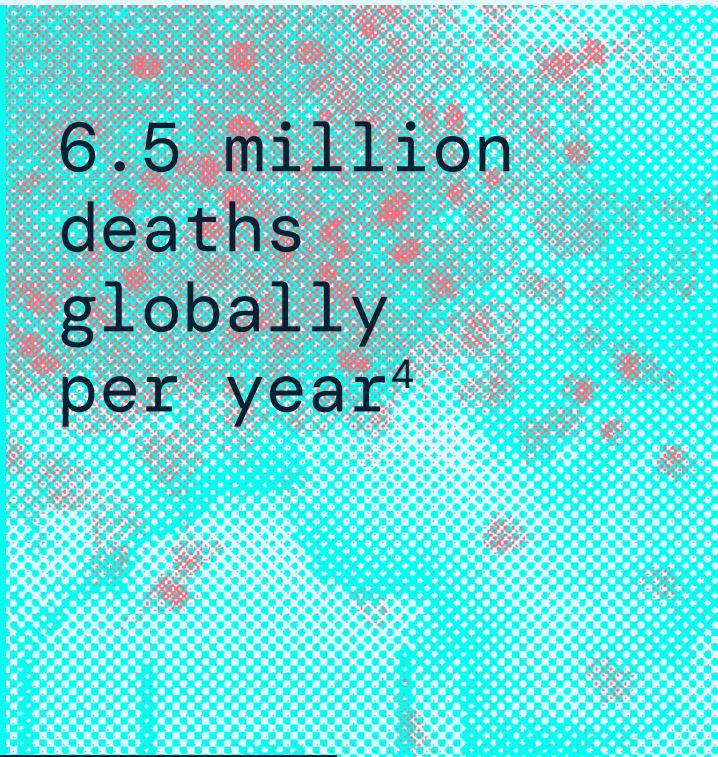
<< Back to contents

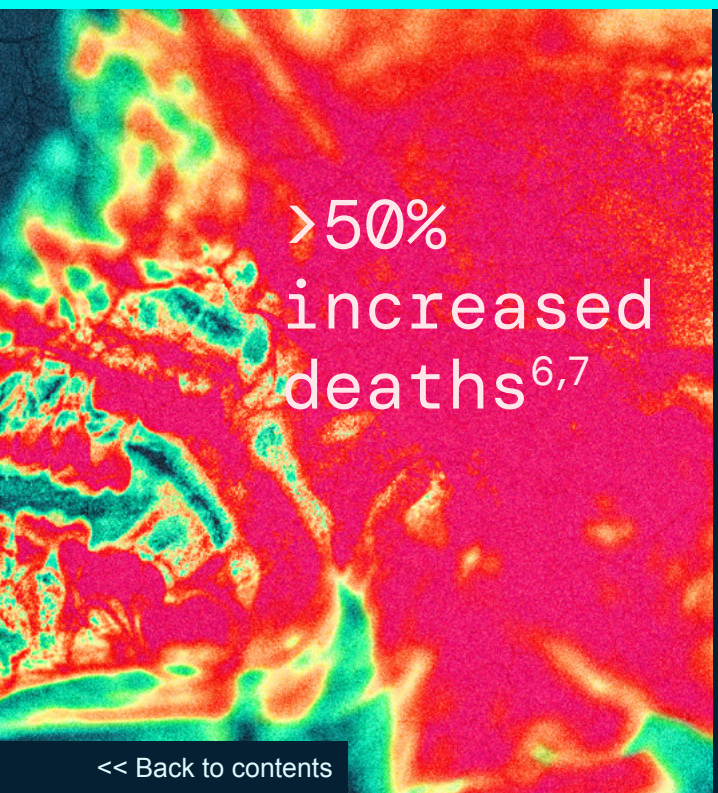
THE CLIMATE CRISIS. IT'S KILLING OUR PLANET AND HARMING OUR HEALTH

Driven by an increasing concentration of greenhouse gases, climate change is an undeniable danger to our planet; defined by a triple threat of global warming, changes in precipitation patterns, and an increased occurrence of extreme weather events.[1]

AIR POLLUTION

- The world's leading environmental cause of illness and premature death[4]
- Fine particulate matter or $PM_{2.5}$, a very small type of particle pollution, is responsible for around 6.5 million deaths globally per year[4]
- Estimated to cause health damage costs of $8.1 trillion a year, equivalent to 6.1% of global GDP or gross domestic product (the total value of goods and services produced within a country in a given period)[4]





HEAT

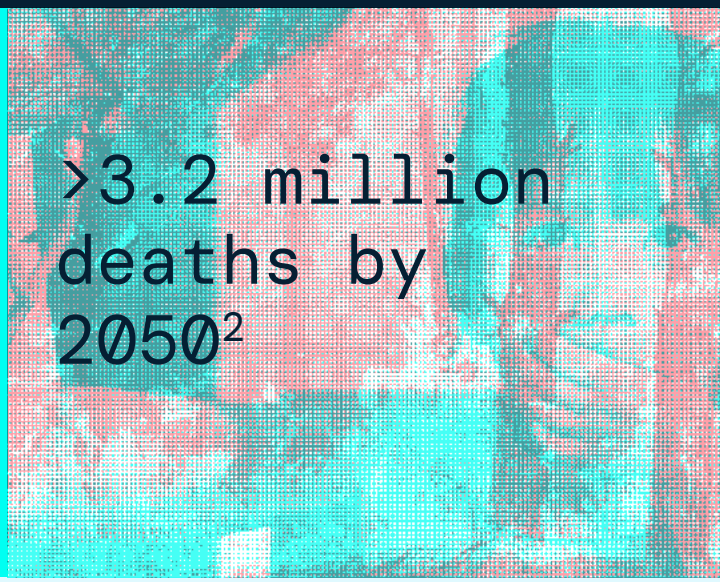
- Mean monthly temperatures of 35°C are expected to increase 10-fold by 2090[5]
- ~30% of the world's population are already exposed to climatic conditions conducive to heat-related mortality for at least 20 days a year[5]
- Heat-related mortality in those >65 years of age has increased by >50% in the past 20 years[6,7]

<< Back to contents

NATURAL DISASTERS

- Acute wildfire-related $PM_{2.5}$ exposure each year causes an estimated 33,500 all-cause deaths, 6,900 cardiovascular deaths, and 3,500 respiratory deaths globally[8]

- By 2050, droughts will be the second-highest cause of climate-induced mortality, causing ~3.2 million deaths[2]



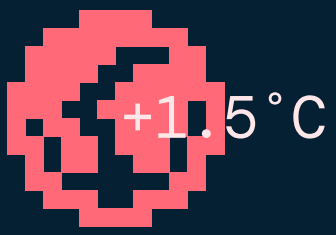
The climate crisis isn't only killing us. It's killing our healthcare system too.

Climate change is having a pervasive impact on human health and has a crucial clinical relevance to every organ system in the human body.[9]

Consequently, it is directly influencing and compromising all stages of healthcare; from research and development (R&D) and risk/incidence to treatment approaches, care system burden, and even morbidity and mortality.

Climate change is having a pervasive impact on human health and has a crucial clinical relevance to every organ system.

Table A below, shows an indicative snapshot of where in the care pathway is most affected, whilst providing a deep dive into the impact the climate crisis is having on multiple different therapy areas.



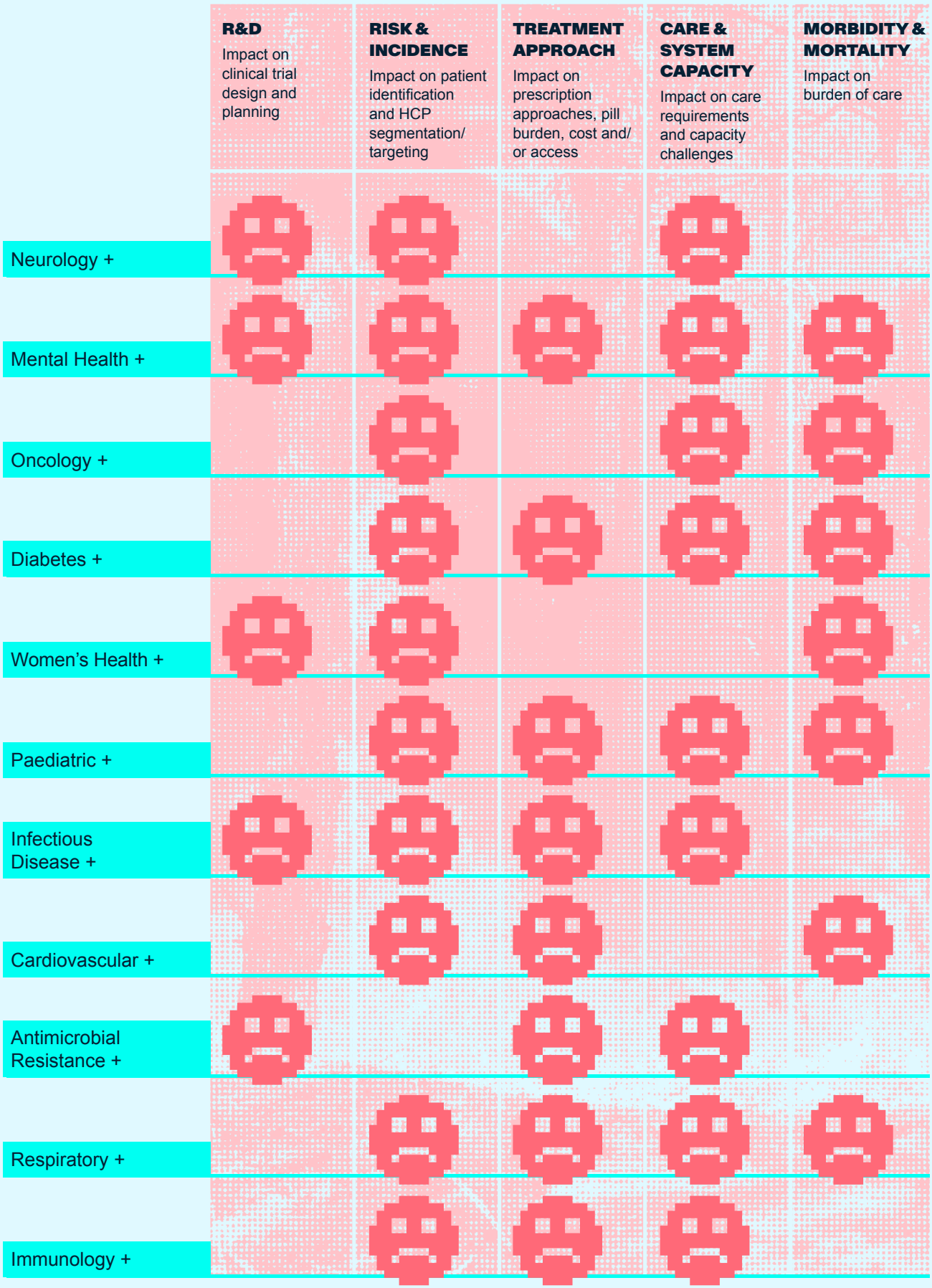
"The science is unequivocal: a global increase of 1.5ºC above the pre-industrial average and the continued loss of biodiversity risk catatrophic harm to health that will be impossible to reverse."

- 19 Editors-in-Chief of medical journals from around the world.[7]

<< Back to contents

Table A:

IMPACT OF THE CLIMATE CRISIS ON PHARMA AND HEALTHCARE.



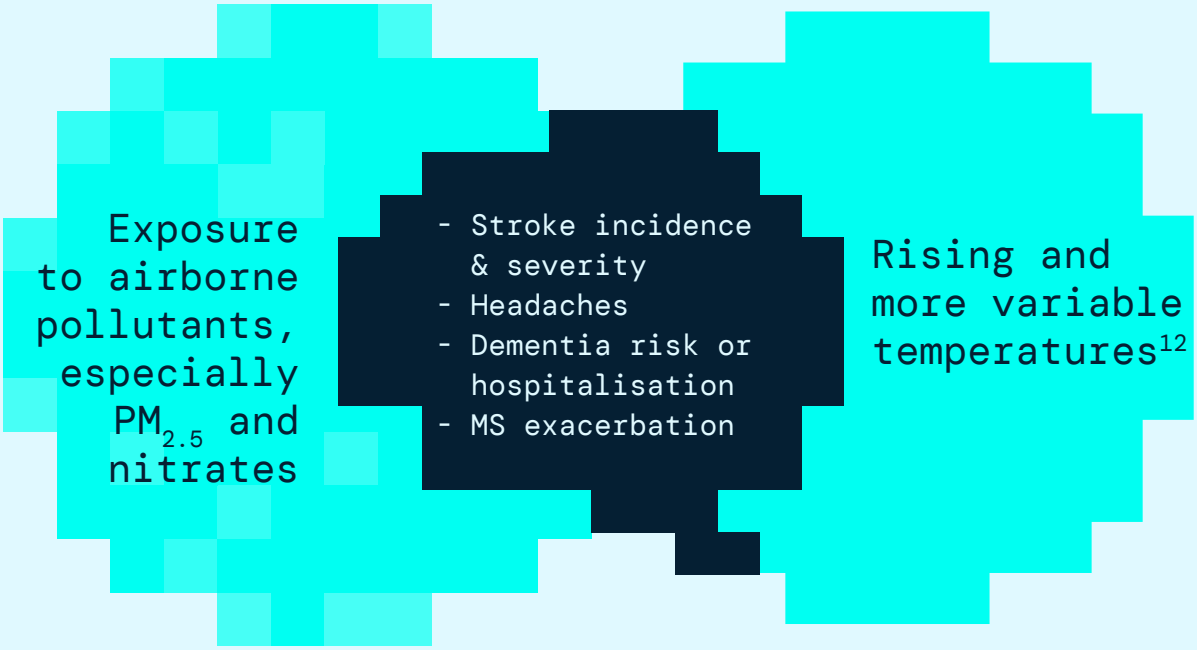
<< Back to contents

NEUROLOGY

<< Back to table

Neurological conditions are currently the leading cause of ill health worldwide, affecting ~3.4 billion people globally;[10] and the climate crisis is almost certainly a key contributing factor.[11]

>> FIGURE 1.
IMPACTS OF CLIMATE CHANGE ON NEUROLOGICAL HEALTH.[12]



Exposure to fine particulate matter ($PM_{2.5}$), a type of air pollution, has been identified as a key potential risk factor for dementia, as seen in Figure 1.[12] As many as **188,000 cases of dementia per year in the United States (US) have been linked to $PM_{2.5}$.[13] Air pollution has also been linked to >20% of stroke deaths worldwide** by contributing to subclinical diseases such as systemic inflammation, oxidative stress, and atherosclerosis.[14,15] Air pollution exposure also increases the level of pro-inflammatory markers in the brain and worsens neuroinflammation, neurodegeneration, and blood–brain barrier breakdown, which exacerbate the inflammatory autoimmune mechanisms of multiple sclerosis (MS).[16]

<< Back to contents

The effects of air pollution and $PM_{2.5}$ can also be amplified by changes in temperature.[1] The risk of migraine, for example, increases with rising air levels of PM, NO_2, O_3, and CO_2; and the particles' effects are significantly stronger on high-temperature days.[1] Both increases and decreases in temperature have been shown to cause a **~20% increase in reports of migraine for every 5°C change.**[1] This correlation poses an interesting question about whether clinical trial design for migraine and neurological conditions should consider temperature variability – caused by seasonality, location, or even heat waves – over the course of a study.

This additional influx of patient admissions could push healthcare systems devastatingly close to collapse - unless we do more to reduce the burden now.

Hotter temperatures and large temperature fluctuations have also been shown to increase numbers of MS and dementia clinic visits or hospitalisations.[12,17] A 4.5% increase in dementia admissions is seen across England for every 1°C increase above 17°C; meaning heat-related emergency dementia admissions could increase by ~300% by 2040.[18]

The unarguable link between climate change and neurological conditions suggests we need to urgently reconsider patient risk and identification protocols. We need to move to a more nuanced, more realistic understanding of patient and healthcare provider needs, with climate change in mind, in which seasonality and regional temperature profiles start to play a pivotal role in shaping patient care strategies and, perhaps, even shape future treatment discussions.[17,18]

As a result of climate change, we can expect a considerable capacity burden; one that adds to already stretched global healthcare systems. This additional influx of patient admissions could push healthcare systems devastatingly close to collapse – unless we do more to reduce the burden now.

MENTAL HEALTH

R&D | RISK & INCIDENCE | TREATMENT APPROACH | CARE & SYSTEM CAPACITY | MORBIDITY & MORTALITY

<< Back to table

The climate crisis is damaging the mental health of hundreds of millions of people around the world; a human tragedy the scale and cost of which remain largely hidden.[19]

A global survey of 10,000 young people (aged 16–25 years) across 10 countries found that 59% were very or extremely worried about the climate crisis, whilst >45% said their feelings about climate change negatively affected their daily life and functioning.[20]

"Adults keep saying, 'we owe it to the young people to give them hope'. But I don't want your hope. I don't want you to be hopeful. I want you to panic. I want you to feel the fear I feel every day. And then I want you to act."

- Greta Thunberg, World Economic Forum 2019.[21]

We're living in a new state of emergency and it can be a frightening place to be, especially for young people.[22–24] Climate anxiety and distress are causing young people to feel betrayed, abandoned, and that they have no future.[20,24] Consequently, in November 2022 the World Economic Forum declared eco-anxiety as a growing mental health crisis.[23] **Eco-anxiety, eco-depression, and eco-anger are associated with stress and anxiety.[25]** These factors not only contribute to decreased wellbeing, increasing the risk of post-traumatic stress disorder (PTSD) and suicide, but they are also risk factors for a wide range of other health conditions including cardiovascular, gastrointestinal, and respiratory conditions, to name a few.[24,26,27]

<< Back to contents

Are we, therefore, about to see two novel areas of healthcare emerge: "eco-exacerbated" conditions and "eco-induced" conditions? Let's look at "eco-exacerbated" conditions. At present, this seemingly critical consideration is simply ignored from a clinician perspective when calculating risk or identifying patients at risk of suicide and PTSD.[28] And equally, when we consider existing mental health treatment and care paradigms, shouldn't we be asking if they are fit for "eco-induced" mental health conditions? For example, should eco-depression and depression be treated identically? Only with more research will we know the answer.[28]

Rising temperatures also impact mental health, with rates of suicide rising by 0.7% in US counties and 2.1% in Mexican municipalities for every 1°C increase in monthly average temperature.[29] **Unmitigated climate change could therefore result in a combined 9,000–40,000 additional suicides across the US and Mexico alone by 2050.[29]** As we begin to quantify the scale of indirect mortality caused by climate change across the world, we must also consider our treatment and care responses; such as season-based treatment regimes, or critical mental healthcare during heat waves.

The number of prescriptions issued for mental health issues has been growing rapidly.[30] In the UK alone, the number of antidepressant items prescribed increased over a six-year period by 34.8%, from 61.9 million items in 2015/2016 to 83.4 million items in 2021/2022.[30] As the climate crisis continues to impact the mental health of millions of people, healthcare systems could be crippled by the cost of prescriptions and the in-person support demands of the growing numbers of people suffering with poor mental health.

<1%

of 54,000 medical research papers that mentioned climate change from 2010 to 2020 also mentioned mental health,[19] suggesting a huge R&D gap that we can expect to gain traction over the coming decade.

<< Back to contents

ONCOLOGY

[<< Back to table]

Cancer is the leading cause of premature death in many countries. And the climate crisis will only exacerbate this situation through its complex connections with modifiable risk factors.[31]

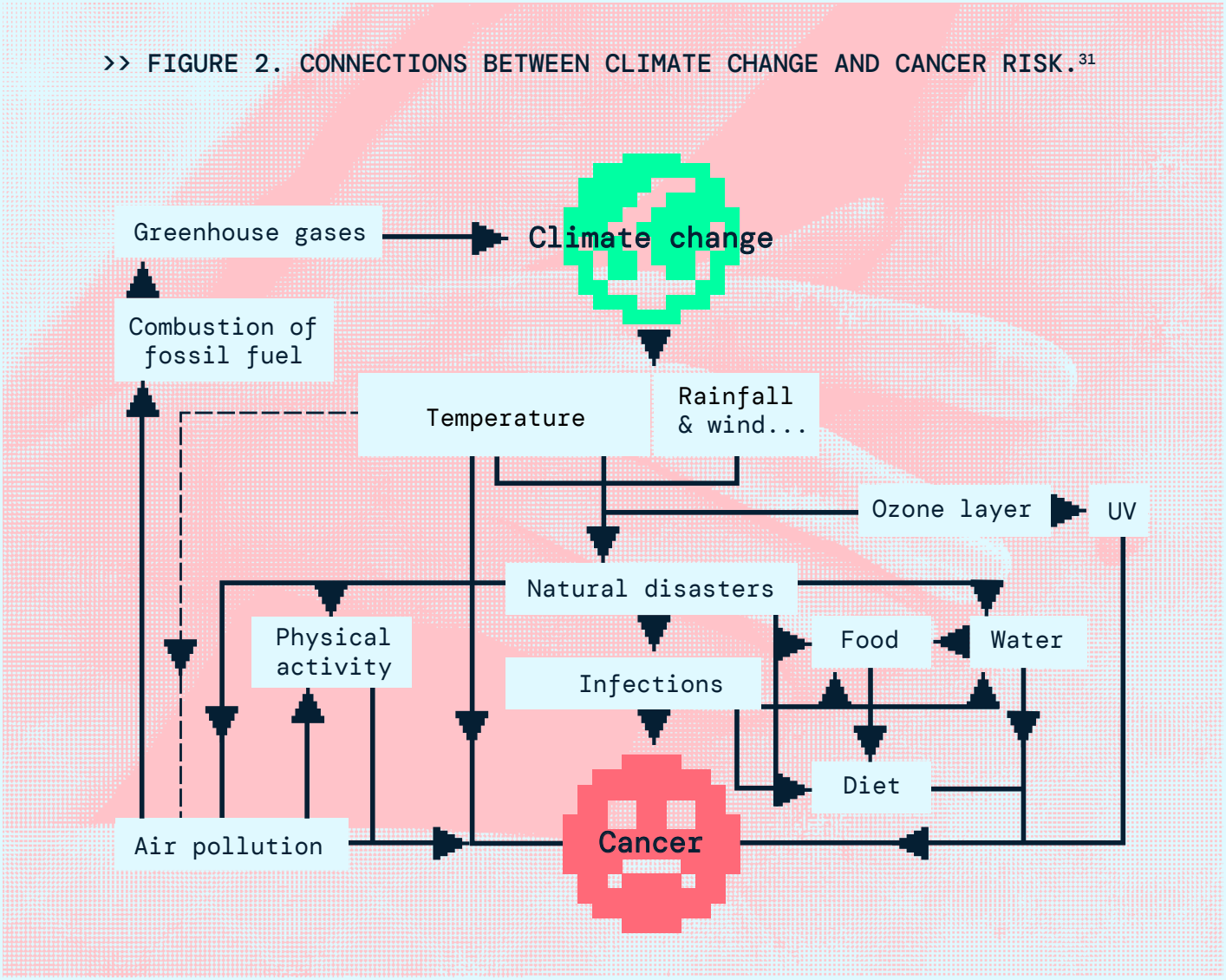
Outdoor air pollution has been identified as a Group 1 carcinogen, meaning there is enough evidence to conclude it can cause cancer in humans, and this association is not just limited to lung cancer.[31] **Multiple studies have shown that air pollution increases incidence and shortens survival in all types of cancer; this link can be seen in Figure 2 below.[31]** Now consider that most cancer-specialist hospitals are in urban locations;[32] we are bringing cancer patients into areas of higher air pollution to treat them, whilst unintentionally threatening their chances of survival.

Extreme temperatures also have an impact on cancer risk.[31] Occupational heat exposure, worsened by climate change, is associated with several types of cancer.[31] Extreme heat and weather may also cause people to become more physically inactive, increasing the risks of colon, female breast and uterine cancers.[31] We need to be considering the climate when identifying patients at risk and those who would benefit from screening.

The depletion of the ozone layer increases the risk of melanoma due to ultraviolet radiation (UVR) exposure.[9] Skin cancer is already the world's most common cancer, causing 126,000 deaths worldwide in 2018; yet it is estimated that for every 1% decrease in ozone layer thickness the incidence of melanoma will increase by 1–2%, with squamous cell carcinoma increasing by 3–4.6%.[33] **At the current rate of ozone depletion, this could mean hundreds of thousands more patients entering into the healthcare system over time; stretching already overworked oncologists and multidisciplinary teams.[34]**

Rising temperatures also work synergistically with UVR to increase the incidence of skin cancer, with **a 2°C increase in ambient temperature estimated to increase the incidence of skin cancer globally by 11% by 2050.**[33] This will also increase melanoma survivors' risk of developing second primary cancers, such as prostate cancer, which brings the question of co-morbidity and even mortality risks of climate change to the forefront of future oncology care.[31]

>> FIGURE 2. CONNECTIONS BETWEEN CLIMATE CHANGE AND CANCER RISK.[31]



UV: Ultraviolet radiation.
The dashed line indicates that high temperatures could amplify, or enhance, the effects of ambient air pollution.

DIABETES

<< Back to table

Nearly one-fifth of the global burden of type 2 diabetes (T2D) has been estimated to be potentially **attributed to air pollution** due to presence of fine particulate matter ($PM_{2.5}$),[35] triggering insulin resistance and inflammation as well as worsening complications from the condition itself.[35,36] One-fifth is a staggeringly high correlation and yet diabetes risk calculators, such as the one from Diabetes UK, make absolutely no mention of residential location as a factor to consider.[37] We must urgently consider the integration of air pollution into patient profiling and healthcare professional (HCP) education. It's time to act and make the reduction of air pollution part of an integrated strategy in the prevention of T2D.

We also know that people living with type 1 diabetes (T1D) and T2D respond differently to heat than those without the condition; their blood vessels can't expand as effectively and if there's nerve damage, it can lead to issues with sweating.[36] **The global rise in temperatures is putting people with T1D and T2D at an increased risk of dysregulated blood glucose levels** if using blood glucose-lowering medication, and at a higher risk of needing medical attention.[35] The complications that climate change can bring to diabetes increases the burden on emergency care systems globally. So, to reduce this burden, maybe it's time to trigger a change in treatment approaches – especially for countries and regions at higher risk of temperature fluctuations and heat waves. Perhaps it would be beneficial for these areas to rely more heavily on auto-regulated insulin release devices, for example.

<< Back to contents

WOMEN'S HEALTH

<< Back to table

Obstetrics

The climate crisis has had an immediate negative health impact on mothers and children.[38] In fact, a study from the US National Institutes of Health found that women exposed to extremes of hot and cold during the first seven weeks of pregnancy were at increased risk of preterm birth.[39] **Extreme heat can also increase the risk of maternal and neonatal morbidity and mortality – from gestational diabetes and hypertensive disorders of pregnancy to low birth weight and stillbirth.[38]** This all suggests we should be baking the potential high-temperature risk factors (seasons, heat waves, locations) into any new thinking around maternal and neonatal morbidity and mortality protocols.

Menopause

The impact of climate change on menopause has received considerably less attention than that of reproduction and maternal outcomes,[40] necessitating further research into the area to gain a deeper understanding of the true repercussions.

Environmental changes may influence the onset of menopause – pollution and toxins may play a role in the modulation of ovarian aging mechanisms, whilst green space exposure was shown to delay the onset of menopause by a median of 1.4 years in a prospective cohort of European women.[40] When identifying women nearing menopause to enable better education, proactive management, and treatment considerations, this correlation should feature, for healthcare systems and also employers.

<< Back to contents

Senior women may also be more vulnerable to the health impacts of the climate crisis, such as dehydration, hyperthermia, and heat strokes; whilst heightened temperatures may modulate the manifestation of vasomotor menopause symptoms, such as hot flushes and night sweats.[41] Both pollution and menopause are associated with declining cardio-metabolic, bone, and cognitive health. All of which means menopausal women may be more vulnerable to climate-sensitive diseases.[40]

The group KlimaSeniorinnen Schweiz – a collective of 2,000 Swiss women activists over the age of 64 – won a significant ruling in April 2024 to hold the Swiss Government accountable for addressing climate change, when the European Convention of Human Rights (ECHR) found Switzerland in violation of women's human rights by failing to implement sufficient climate policies.[41] This highlights the need and desire for more attention to be paid to the specific needs and challenges associated with the menopause, now more than ever before.

Green space exposure was shown to delay the onset of menopause by a median of

1.4 yrs

in a prospective cohort of European women.[40]

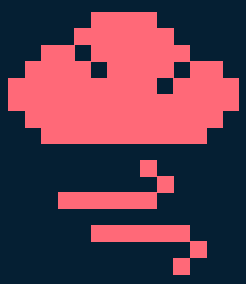
PAEDIATRICS

<< Back to table

R&D	RISK & INCIDENCE	TREATMENT APPROACH	CARE & SYSTEM CAPACITY	MORBIDITY & MORTALITY
				

Climate change is not only affecting our vulnerable planet, but also our most vulnerable patients.[38] This is a crisis that is having a significant cumulative life impact on paediatric patients.[38] And this does not just include the immediate health impacts we've explored in Obstetrics in the previous section on Women's Health, but also the increased predisposition of infants to disease in adulthood.[38]

Many studies report that air pollution has a negative impact on children's brain development, especially on the triggers of attention deficit hyperactivity disorder (ADHD) and autism spectrum disorder.[14] When considering the subtle nuances that can trigger ADHD and autism treatment (or not), we should perhaps be factoring urban locations and air pollution levels into our testing protocols. Certainly, if air pollution is already seen as a causal link, shouldn't it be a factor when it comes to risk and diagnosis assessments?



"Defining the air pollution linkage of the brain/immune system interactions and damage to physical/ immunological barriers with short and long term neural detrimental effects to children's brains ought to be of pressing importance for public health."[43]

- Dr Lilian Calderón-Garcidueñas, University of Montana.

<< Back to contents

Many studies have also shown that exposure to air pollution both before birth and during childhood can impact a child's development by changing their brain structure,[42] with air pollution-related damage being associated with Alzheimer's disease and Parkinson's disease.[43] This is especially true for children living in polluted megacities.[43] A study of 186 young people from Mexico City under the age of 27 found nanoparticles from vehicle pollution in their brainstems, as well as markers of Alzheimer's disease, Parkinson's disease, and motor neurone disease (MND).[44] Given the heavy care demands of these conditions,[45] imagine the potential impact climate change could have on healthcare systems – particularly where these conditions impact individuals' entire lifetimes.

Air pollution contributed to nearly 500,000 infant deaths across the globe in 2019.[46] Tragically, in 2013, 9-year-old Ella Kissi-Debrah died after an acute asthma attack and was the **first person in the world to have air pollution cited as a cause of death,** according to a landmark coroner's report in 2020.[47] Ella's mother, Rosamund Adoo Kissi-Debrah, tirelessly campaigned for the clean air (human rights) bill, also known as Ella's law, which was introduced to the UK parliament in 2022 to make clean air a human right for everyone in the UK; setting 2030 as a target date for compliance with key pollution standards.[47]

Air pollution contributed to nearly 500,000 infant deaths across the globe in 2019.[46]

<< Back to contents

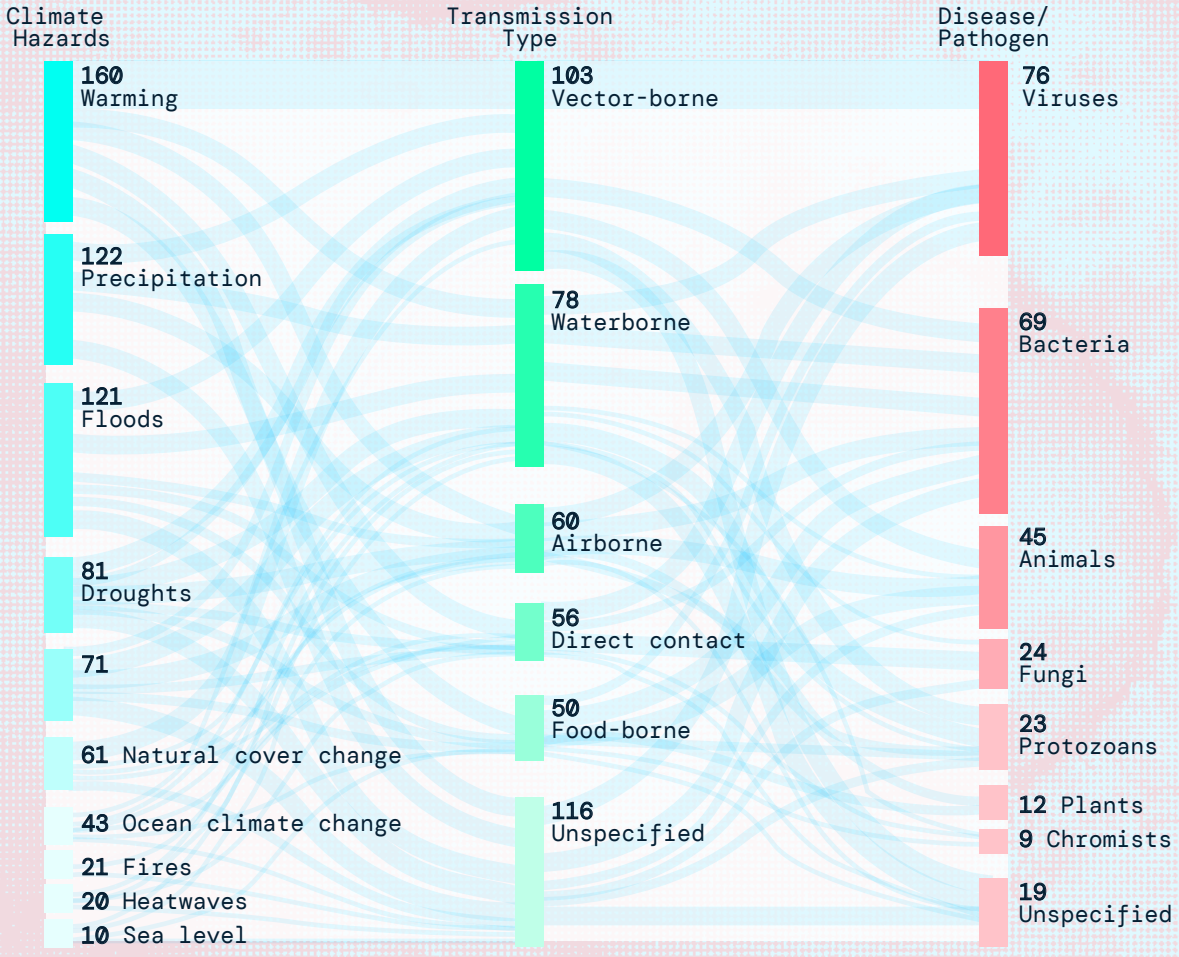
INFECTIOUS DISEASE

R&D | RISK & INCIDENCE | TREATMENT APPROACH | CARE & SYSTEM CAPACITY | MORBIDITY & MORTALITY

<< Back to table

By 2050, an additional 500 million people may be at risk of exposure to vector-borne diseases, according to the 2024 World Economic Forum report.[2] Why is this risk on the rise? And why now? In part, this is because more than **58% of viral, bacterial, and fungal infections are exacerbated by climate change.**[35,48] R&D, and clinical investigation in this area are desperately needed to catch up with this overwhelming risk.

>> FIGURE 3.
THE IMPACT OF THE CLIMATE CRISIS ON INFECTIOUS DISEASE.[48]



<< Back to contents

Figure 3 shows how the climate crisis creates conditions for pathogens to thrive by warming habitats that were previously too cold for them to survive, or by contaminating bodies of water due to increased agricultural or industrial runoff from heavy precipitation and storms.[48,49] One such water-borne pathogen on the rise is the ***Vibrio vulnificus*** species, which lives in waters warmer than 20°C.[48] The proportion of Baltic-sea coastline suitable for Vibrio has increased by 61% compared to the 1980s, and infections on the east coast of the US have risen eight-fold between 1988 and 2018.[48,50] This, of course, dramatically increases those at risk of Vibrio and necessitates a long-term view towards prevention and treatment – from being a "travel risk" for those in the West, to a staple requirement.

In 2023, the World Health Organization warned that half the world's population are now at risk of dengue, which causes persistent vomiting, bleeding gums, and a high risk of death.[48]

Increased global temperatures also allow mosquitoes and ticks to reproduce and feed more frequently, spreading far beyond their previous geographical zones of transmission; meaning diseases like tick-borne encephalitis and dengue, the fastest spreading tropical infection in the world, can now thrive over much larger areas; bringing more risk to more people.[1,48,51] **In 2023, the World Health Organization warned that half the world's population are now at risk of dengue, which causes persistent vomiting, bleeding gums, and a high risk of death.[48]** For the first time, in 2023, health authorities introduced fumigation treatment in Paris against Zika and dengue-carrying tiger mosquitoes.[51] Dengue was first spotted in France in 2004 but is now present in 71 of its 96 departments, according to health ministry data.[51] Once dengue is seen in an area it means that other mosquito-borne diseases like Japanese encephalitis and malaria are likely to be seen as well.[48] Not only does this multiply the burden to the healthcare system, but it also requires education of healthcare professionals and patients to catch up to this rapidly spreading risk.

CARDIOVASCULAR

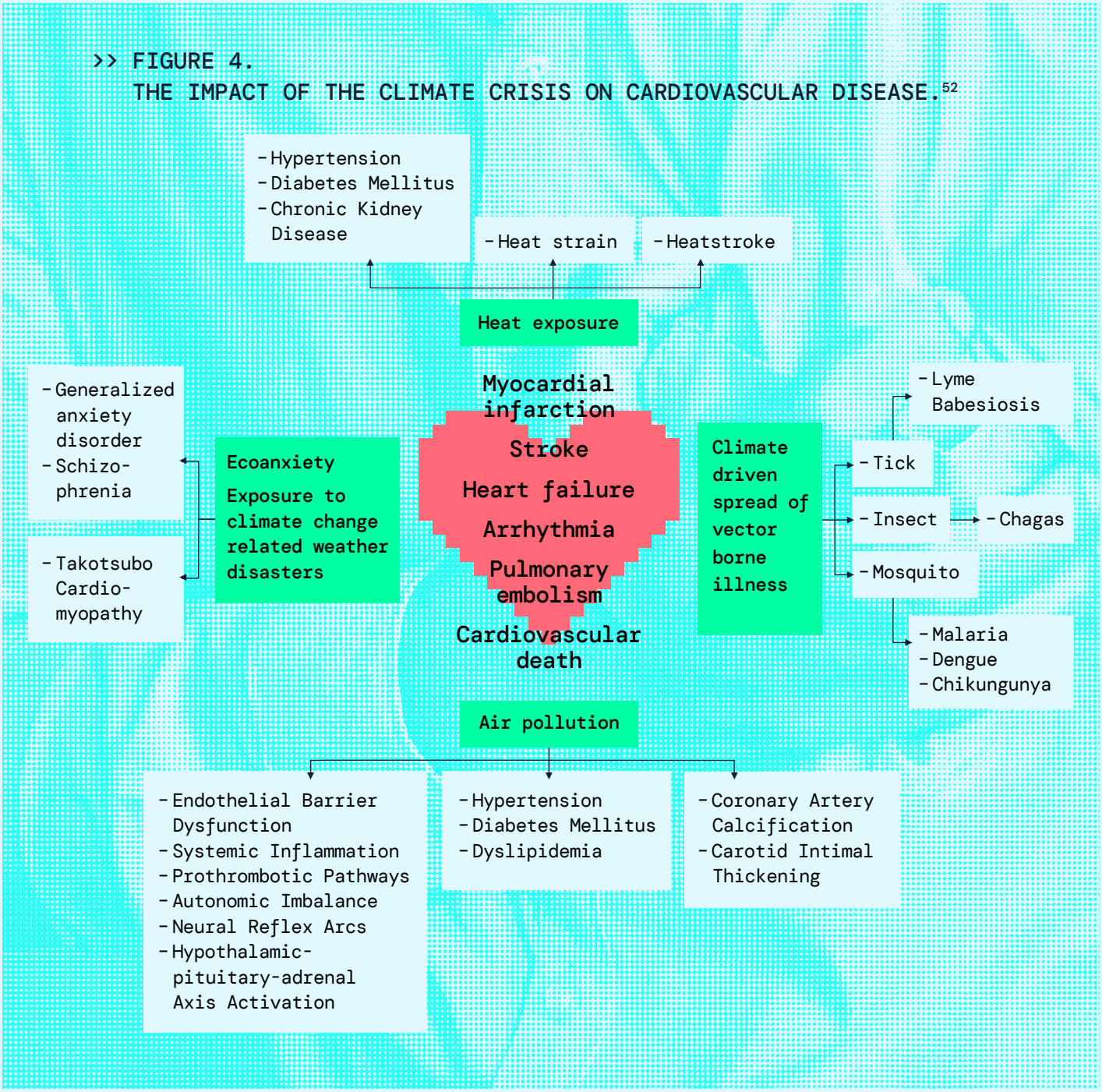
<< Back to table

Increased pollution, temperatures, vector-borne disease and mental health disorders: all are driven by the climate crisis; and all are linked to cardiovascular disease (CVD).[52]

As it passes through the lungs and into our circulation, $PM_{2.5}$ affects the body's vasculature in many ways.[52] For a start, it initiates damaging processes such as oxidative stress and low-grade inflammation. Multiple pathways are then activated, causing wide-ranging effects – from endothelial barrier dysfunction to facilitating prothrombotic pathways. This increases the development of CVD risk factors such as hypertension, dyslipidaemia, and atherosclerosis.[52] And although the risk from chronic exposure to air pollution is similar to traditional risk factors, such as hypertension; for cardiovascular events, **short-term (up to 7 days) exposure to minimally increased concentrations of $PM_{2.5}$ is associated with increases in acute myocardial infarction** (2.5% per 10 mg/m^3), heart failure hospitalisation, and death.[52] Travelling to areas with significantly more air pollution or even a rise in air pollution in the area where you already live, could therefore potentially increase your overall risk of a cardiovascular event. Currently, risk and treatment approaches do not consider spikes in air pollution or travel to cities with high air pollution.[53] This poses the question, why not? Perhaps now is the time to re-align our education policies and adapt our guideline requirements to embrace the new and ever-growing reality.

<< Back to contents

>> FIGURE 4.
THE IMPACT OF THE CLIMATE CRISIS ON CARDIOVASCULAR DISEASE.[52]



As demonstrated in Figure 4, patients with CVD are at the highest risk for dying in a heat wave, this is not just due to temperature, but also humidity.[52] Being exposed to temperatures above 35°C for 6 hours can be lethal if in high humidity, as ventilation and evaporation will no longer be effective.[52]

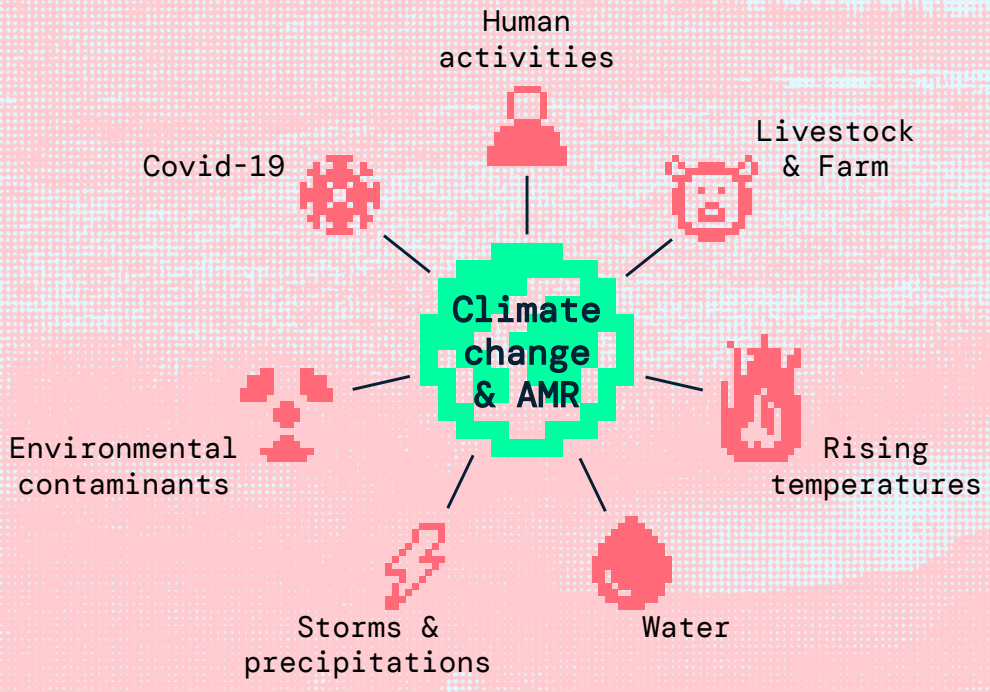
ANTIMICROBIAL RESISTANCE

<< Back to table

R&D	RISK & INCIDENCE	TREATMENT APPROACH	CARE & SYSTEM CAPACITY	MORBIDITY & MORTALITY

The emergence and spread of multi-drug resistance (MDR) in bacteria threatens our ability to deal with common infections.[54] In healthcare settings, the spread of MDR bacteria such as methicillin-resistant *Staphylococcus aureus* (MRSA) can be rapid, with severe consequences for vulnerable patients, such as the elderly, young, or immunocompromised.[54] **Globally, antimicrobial resistance (AMR) is associated with longer states of illness, higher mortality rates, increased costs, and ineffective antibiotic treatments.[54]**

>> FIGURE 5.
THE MAIN FACTORS INVOLVED IN THE RELATIONSHIP BETWEEN CLIMATE CHANGE AND AMR.[54]

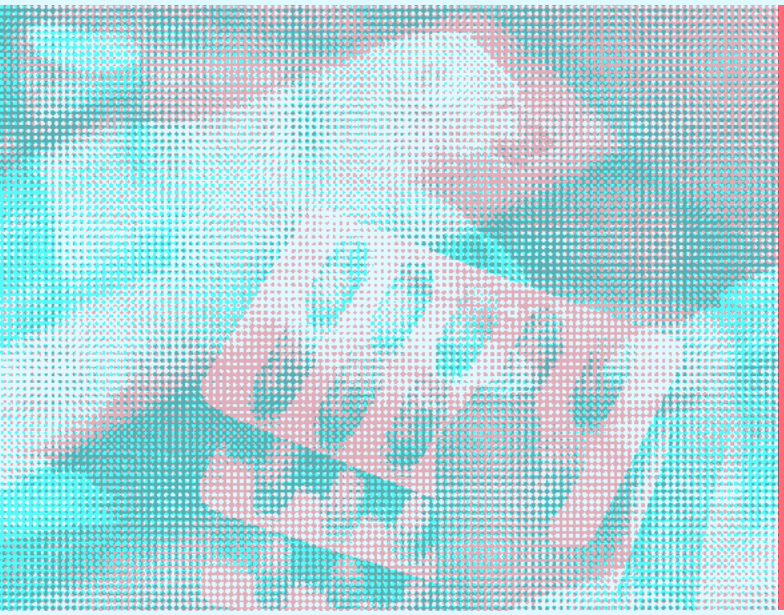


<< Back to contents

Rising temperatures not only heighten the rate at which bacteria can grow, leading to the spread of infectious diseases, but they can also impact AMR to drugs.[55] **Increased temperatures have been shown to increase the rate of horizontal gene transfer, the major mechanism by which antibiotic resistance develops.[55]** A study published in *Nature* found a 10% increase in temperature across US regions was associated with increases in antibiotic resistance of 4.2%, 2.2% and 2.7% for *E. coli, K. pneumoniae, and S. aureus,* respectively.[54] Therefore, it is expected that rising temperatures will put extra strain on treatment and care requirements due to AMR.

The climate crisis is also slowly thawing the permafrost, which covers around 23 million km^2 in the northern hemisphere.[56] Thawing of Siberia's deep permafrost could prove a problem, because it holds more than 100 diverse microorganisms that are antibiotic resistant. As the permafrost thaws, these could be released to mix with meltwater and create new antibiotic-resistant strains.[56] This would simply add even greater pressure to R&D initiatives in this space.

There are high levels of heavy metals, biocides, microplastics, and nitrogen fertilisers found in our soils and water.[54,55] **These pollutants are known to increase levels of AMR by inducing the expression of antibiotic resistance genes (ARGs).[54,55]**



A study published in *Nature* found a

10%

increase in temperature across US regions was associated with increases in antibiotic resistance of 4.2%, 2.2% and 2.7% for *E. coli, K. pneumoniae, and S. aureus,* respectively.[54]

<< Back to contents

RESPIRATORY

<< Back to table

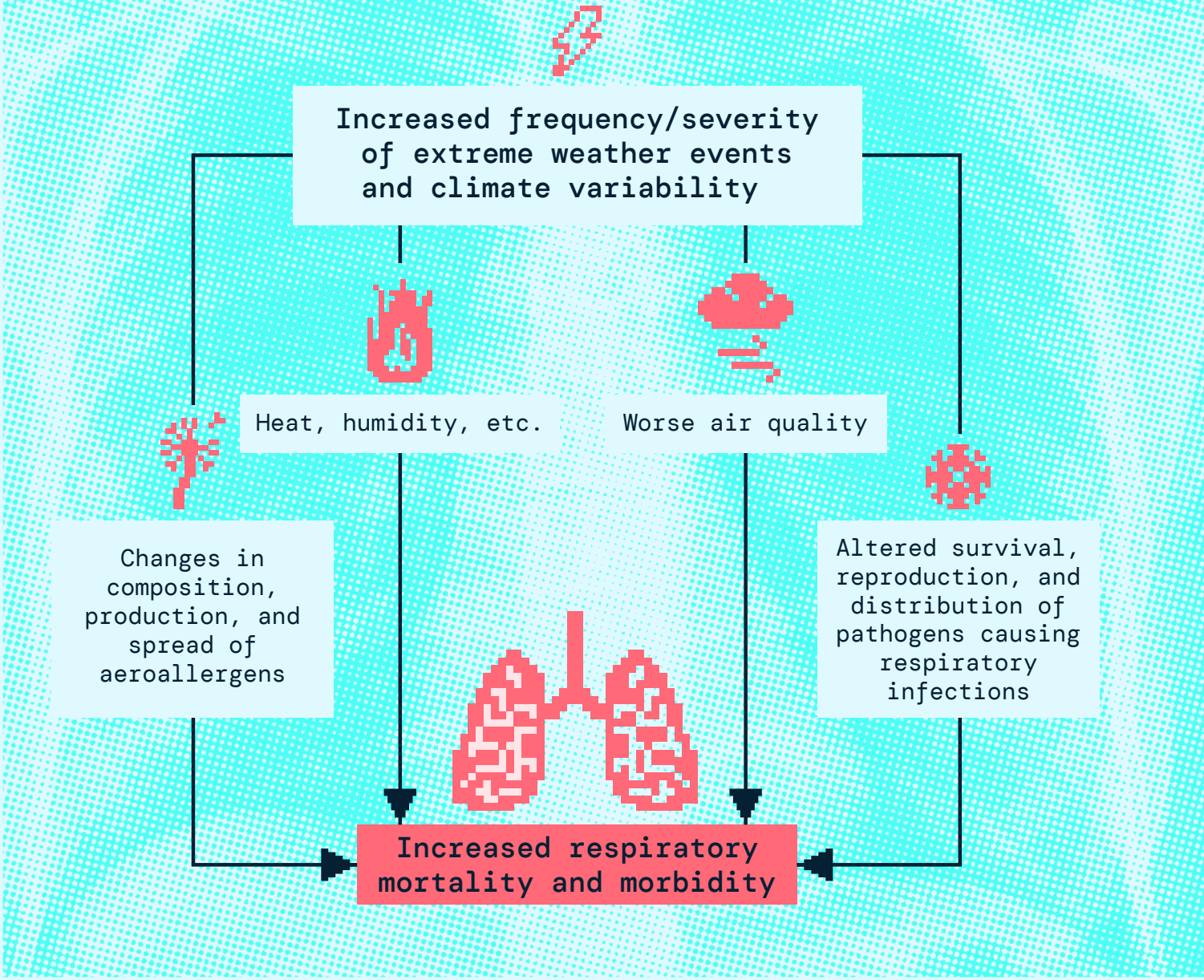
The climate crisis can impact respiratory conditions in many ways. Firstly, **exposure to extreme heat can trigger respiratory symptoms,** but when coupled with increasing humidity and rising pollen counts, the air becomes especially difficult to inhale for patients with conditions such as asthma (Figure 6).[57,58] These factors force us to focus on temperature fluctuations and heat waves in our treatment approaches to asthma patients, to avoid potentially higher emergency care requirements.

Pollution and $PM^{2.5}$ increase the risk of lung infections like bronchitis and pneumonia, whilst also both causing and worsening the symptoms of asthma and chronic obstructive pulmonary disease (COPD).[59] As children have faster breathing rates and developing lungs, they take in more polluted air than adults and are at an increased risk of developing asthma and COPD.[59] Older people are at greater risk too, particularly if they have long-term lung conditions or heart disease.[59] Pollution is already beginning to feature within risk and patient assessments[60] – and it puts us on a pathway towards the kind of climate-based inclusionary protocol we can expect to see actioned across all therapy areas.

By increasing the need for and production of inhalers, the rising prevalence of asthma itself can also add to the ongoing climate crisis.[61,62] In the UK, a total of 1,300 kilo of CO_2-equivalent (CO_2e) emissions from asthma and COPD inhaled products; and 32.3 kilo of CO_2e caused by asthma hospitalisations are released each year.[61,62] For reference, this output combined is equivalent to the emissions produced by **nearly 290,000 cars** each year.[61–63]

<< Back to contents

>> FIGURE 6.
PATHWAYS LINKING CLIMATE CHANGE AND ITS IMPACT ON RESPIRATORY HEALTH.[57]



In 2016, ambient air pollution was responsible for 4.2 million deaths. Worldwide, ambient air pollution is estimated to have contributed to the deaths of patients with lung cancer (16%), chronic obstructive pulmonary disease (COPD; 25%), ischaemic heart disease and stroke (17%), and respiratory infection (26%).[64]

<< Back to contents

IMMUNOLOGY

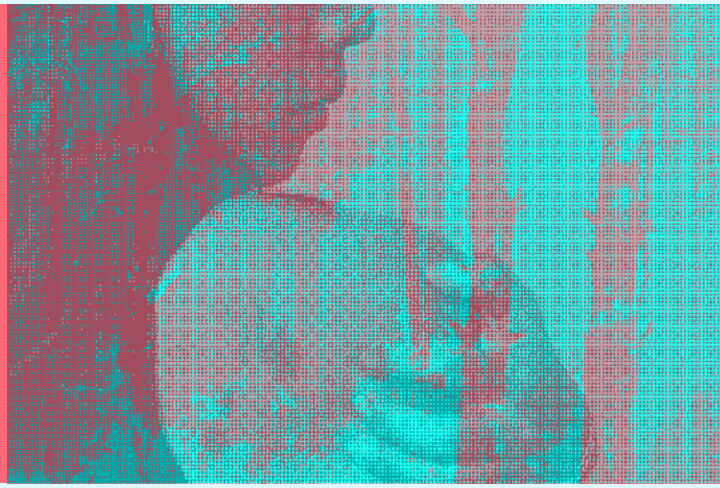
R&D | RISK & INCIDENCE | TREATMENT APPROACH | CARE & SYSTEM CAPACITY | MORBIDITY & MORTALITY

<< Back to table

Allergic diseases, autoimmune diseases, and cancer are conditions that occur because of immune dysregulation – an overreaction or hypersensitivity of the immune system.[65] **The climate crisis fuels conditions that increase immune dysregulation (Figure 7).[65]** Rises in pollutants and allergens are increasing the risk of skin and mucosal barrier disruption and pro-inflammatory reactions.[65] And a loss of biodiversity and reduced exposure to microbial diversity is now impairing the development of our immune systems.[65]

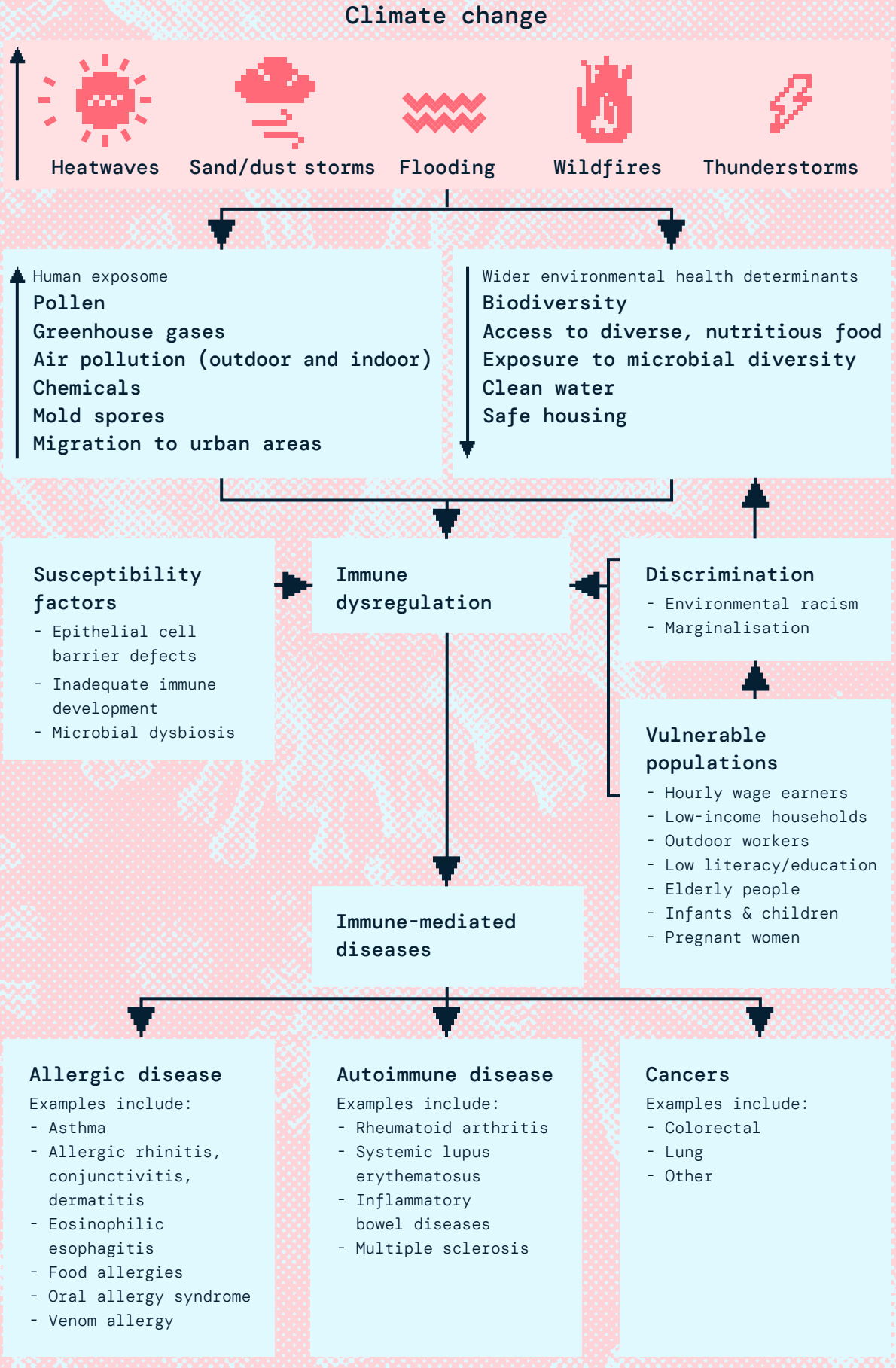
HEAT

Extreme temperatures can disrupt the microbiome of the skin and increase the spread of infectious skin diseases



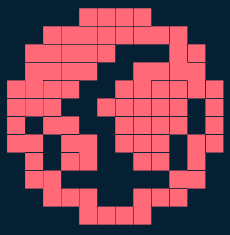
<< Back to contents

>> FIGURE 7.
EFFECTS OF CLIMATE CHANGE-RELATED EVENTS ON IMMUNE DYSREGULATION AND HUMAN HEALTH THROUGH IMMUNE-MEDIATED CONDITIONS.[65]



The “knock-on effect” of **increased crop failure** due to climate change, heightens the use of **crop-development chemicals and pesticides,** which can alter the composition of the gut microbiome.[66] The resulting microbial dysbiosis in the gut can impact the pathophysiology of conditions such as inflammatory bowel disease.[66]

Conditions such as atopic dermatitis (AD) – the world’s most common inflammatory skin condition – together with psoriasis, are both exacerbated by the climate crisis.[9,67,68] **Extreme temperatures can disrupt the microbiome of the skin and increase the spread of infectious skin diseases** (viral, fungal, or vector-borne), and it is well documented that air **pollution particles can penetrate the epidermis and make inflammatory skin conditions worse.**[9,33,68] These factors could, and perhaps should, soon start guiding treatment selection or escalation given the emergence of treatments where the mechanism of action more directly focuses on skin barrier disruption.

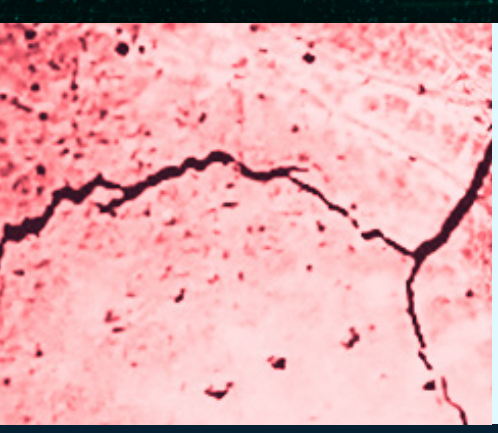


“As the air quality worsens in many areas globally, it is important to recognise how this can increase the risk for AD, to be aware of the increased demand for AD-related medical care, and to understand how to counsel patients regarding their skin health”[67]

- Fadadu RP et al. 2023

The climate crisis heightens the demand for systemic immune suppressant medications, and whilst **dermatologists are aware of the increasing impact of climate change on patients’ skin health,** there is a growing need to increase awareness and education in patients to help prevent flares and manage their conditions.[68] Given that some systemic medications come with high costs or care requirements,[69] there is a possibility that climate change will have broader implications when it comes to funding and system burden.

<< Back to contents



"In the face of the urgent challenges posed by health and climate change, health professionals stand united in every effort to improve health outcomes and address the climate crisis."

- Dr Tedros Adhanom Ghebreyesus, Director-General of the World Health Organization, at COP28.[70]

THE TIME FOR URGENT CHANGE IS NOW

As we've seen across every therapy area, there is an inescapable correlation between climate change and our health, causing morbidity and mortality at an unimaginable level. Even more shockingly, this picture is only getting worse, and the impact remains largely unspoken.

Climate change requires us to re-imagine healthcare systems, protocols, guidelines, and even treatment approaches, whilst rapidly considering capacity demands, reviewing HCP education and patient support strategies, if we are to try and mitigate the devastation of this health crisis as much as we can.

Yet, currently, the health sector only receives 0.5% of global climate financing.[70]

So we must act, and act now.

We must ensure our healthcare systems and health policies are built around the realities and challenges we face today. Only then do we stand a chance of protecting the health of tomorrow.[71]

As climate inaction is costing lives and impacting health every single day, more than 40 million healthcare professionals (HCPs) and health ministers from 120 countries around the globe joined the World Health Organization (WHO) to prioritise health in climate negotiations at COP28,[70] calling to urgently phase out fossil fuels, transition to clean energy, and support people and communities most vulnerable to the impacts of the changing climate.[70]

<< Back to contents

References

1 Ruszkiewicz J et al. Environ Res 2019; 177: 108637.

2 World Economic Forum. Climate crisis may cause 14.5 million deaths by 2050. Available at: https://www.weforum.org/press/2024/01/wef24-climate-crisis-health/. Accessed July 2024.

3 National Geographic. Why climate change is still the greatest threat to human health. Available at: https://www.nationalgeographic.com/science/article/why-climate-change-is-still-the-greatest-threat-to-human-health. Accessed July 2024.

4 World Bank Group. What you need to know about climate change and air pollution. Available at: https://www.worldbank.org/en/news/feature/2022/09/01/what-you-need-to-know-about-climate-change-and-air-pollution. Accessed July 2024.

5 Klein T et al. Sustainable Cities and Society 2021; 73(103098): 1–6.

6 World Health Organization. Heat and health. Available at: https://www.who.int/news-room/fact-sheets/detail/climate-change-heat-and-health. Accessed July 2024.

7 Atwoli L et al. NEJM 2021; 385(12): 1134–1137.

8 Chen G et al. Lancet Planet Health 2021; 5(9): e579–e587.

9 Belzer A, Parker E. Am J Clin Dermatol 2023; 24(4): 577–593.

10 PharmaTimes. New study reveals neurological conditions as leading cause of ill health worldwide. Available at: https://pharmatimes.com/news/new-study-reveals-neurological-conditions-as-leading-cause-of-ill-health-worldwide/. Accessed July 2024.

11 UCL. Climate change likely to aggravate brain conditions. Available at: https://www.ucl.ac.uk/news/2024/may/climate-change-likely-aggravate-brain-conditions. Accessed July 2024.

12 Louis S et al. Neurology 2023; 100(10): 474–483.

13 National Institutes of Health. Air pollution linked to dementia cases. Available at: https://www.nih.gov/news-events/nih-research-matters/air-pollution-linked-dementia-cases. Accessed July 2024.

14 Kim H et al. Front Public Health 2020; 8(575330): 1–12.

15 Stroke Association. What we think about: Air pollution. Available at: https://www.stroke.org.uk/sites/default/files/jn_1920.276b_-_pps_-_air_pollution.pdf. Accessed July 2024.

16 Abbaszadeh S et al. Neurol Sci 2021; 42(10): 4063–4072.

17 Chacko G et al. Int J Environ Res Public Health 2021; 18(11): 5962.

18 Gong J et al. Environ Int 2022; 159: 107027.

19 Carrington A. Climate crisis inflicting huge 'hidden costs' on mental health. Available at: https://www.theguardian.com/environment/2021/may/26/climate-crisis-inflicting-huge-hidden-costs-mental-health. Accessed July 2024.

20 Hickman C et al. Lancet 2021; 5(12): 1–23.

21 Earth.org. 18 powerful Greta Thunberg quotes to inspire climate action. Available at: https://earth.org/greta-thunberg-quotes-speeches-to-inspire-climate-action/. Accessed July 2024.

22 Royal College of Paediatrics and Child Health. Child health inequalities and climate.

23 LSE. The rise of eco-anxiety, what it is, and how to cope with it. Available at: https://blogs.lse.ac.uk/psychologylse/2023/08/16/the-rise-of-eco-anxiety-what-it-is-and-how-to-cope-with-it/. Accessed July 2024.

24 Thebmjopinion. The climate crisis and the rise of eco-anxiety. Available at: https://blogs.bmj.com/bmj/2021/10/06/the-climate-crisis-and-the-rise-of-eco-anxiety/. Accessed July 2024.

25 Stanley SK et al. The Journal of Climate Change and Health 2021; 1(100003): 1–25.

26 Boluda-Verdú I et al. J Environ Psychol 2022; 84(101904): 1–17.

27 Sleep Foundation. Stress and Insomnia. Available at: https://www.sleepfoundation.org/insomnia/stress-and-insomnia. Accessed July 2024.

28 Cianconi P et al. Yale J Biol Med 2023; 96(2): 211–226.

29 Burke M et al. Nature Clim Change 2018; 8: 723–729.

30 The Pharmaceutical Journal. Antidepressant prescribing increases by 35% in six years. Available at: https://pharmaceutical-journal.com/article/news/antidepressant-prescribing-increases-by-35-in-six-years. Accessed July 2024.

31 Yu P et al. ACS Environ Au 2022; 3(1): 5–11.

32 Campbell N et al. Br J Cancer 1999; 80(8): 1275–1280.

33 Rawlings Parker E. Int J Womens Dermatol 2020; 7(1): 17–27.

34 The Lancet Oncology. Lancet Oncol 2023; 24(8): 823.

35 B.M.C. Medicine. BMC Med 2023; 21(1): 281.

36 Diabetes UK. Diabetes and climate change: what are the links? Available at: https://www.diabetes.org.uk/about-us/news-and-views/diabetes-and-climate-change-what-are-links. Accessed July 2024.

37 Diabetes UK. Type 2 Diabetes know your risk. Available at: https://riskscore.diabetes.org.uk/start. Accessed July 2024.

38 World Health Organization. Protecting maternal, newborn and child health from the impacts of climate change: A call for action. Available at: https://www.who.int/publications/i/item/9789240085350. Accessed July 2024.

39 National Institutes of Health. Extreme temperatures could increase preterm birth risk. Available at: https://www.nih.gov/news-events/news-releases/extreme-temperatures-could-increase-preterm-birth-risk. Accessed July 2024.

40 Cucinella L et al. Maturitas 2023; 178(107825): 1–6.

41 Vox. How 2,000 elderly Swiss women won a landmark climate case. Available at: https://www.vox.com/world-politics/24125621/switzerland-echr-climate-change-human-rights-court. Accessed July 2024.

42 Ha S. Dev Med Child Neurol 2021; 63(4): 374–381.

43 Green Car Congress. Study warns on possible air pollution link to neuroinflammatory, Alzheimer and Parkinson's pathologies in megacity children. Available at: https://www.greencarcongress.com/2014/09/20140912-um.html. Accessed July 2024.

44 Lancaster University. Evidence of Alzheimer's, Parkinson's and motor neurone disease found in brains of young people exposed to air pollution. Available at: https://www.lancaster.ac.uk/news/evidence-of-alzheimers-parkinsons-and-motor-neurone-disease-found-in-brains-of-young-people-exposed-to-air-pollution. Accessed July 2024.

45 Lithin Z et al. Ann Indian Acad Neurol 2020; 23(3): 313–317.

46 The Guardian. Polluted air killing half a million babies a year across globe. Available at: https://www.theguardian.com/environment/2020/oct/21/polluted-air-killing-half-a-million-babies-a-year-across-globe. Accessed July 2024.

47 The Guardian. 'Remember me': Ella's law would be fitting legacy after London air pollution death, says mother. Available at: https://www.theguardian.com/environment/2023/feb/10/ellas-law-rosamund-kissi-debrah-air-pollution-death-london. Accessed July 2024.

48 Gavi. The deadly diseases that are spiking because of climate change. Available at: https://www.gavi.org/vaccineswork/deadly-diseases-are-spiking-because-climate-change. Accessed July 2024.

49 National Institute of Environmental Health Sciences. Water-related Illnesses. Available at: https://www.niehs.nih.gov/research/programs/climatechange/health_impacts/waterborne_diseases. Accessed July 2024.

50 European climate and health observatory. Water- and foodborne diseases. Available at: https://climate-adapt.eea.europa.eu/en/observatory/evidence/health-effects/water-and-food-borne-diseases. Accessed July 2024.

51 The Guardian. The century of climate migration: why we need to plan for the great upheaval. Available at: https://www.theguardian.com/news/2022/aug/18/century-climate-crisis-migration-why-we-need-plan-great-upheaval. Accessed July 2024.

52 Jacobsen AP et al. Am J Prev Cardiol 2022; 12(100391):1–13.

53 Sagheer U et al. JACC Adv 2024; 3(2): 100805.

54 Magnano San Lio R et al. Int J Environ Res Public Health 2023; 20(3): 1–18.

55 Burnham J. Ther Adv Infect Dis 2021; 8: 1–7.

56 European Space Agency. Permafrost thaw could release bacteria and viruses. Available at: https://www.esa.int/Applications/Observing_the_Earth/Permafrost_thaw_could_release_bacteria_and_viruses. Accessed July 2024.

57 Andersen Z et al. Breathe (Sheff) 2023; 19(2): 1–11.

58 Chang J et al. Ann Med 2023; 55(2): 1–8.

59 Asthma and Lung UK. Air pollution effects on your lungs, including lung cancer. Available at: https://www.asthmaandlung.org.uk/living-with/air-pollution/your-lungs. Accessed July 2024.

60 Bhat TH et al. Int J Environ Res Public Health 2021; 18(4): 1935.

61 Levy ML. Pressurised asthma inhalers and the environment. Available at: https://bigcatdoc.com/2023/08/02/asthma-inhalers-and-the-environment/. Accessed July 2024.

62 Pernigotti D et al. BMJ Open Respir Res 2021; 8(1): e001071.

63 United States Environmental Protection Agency. Greenhouse gas emissions from a typical passenger vehicle. Available at: https://www.epa.gov/greenvehicles/greenhouse-gas-emissions-typical-passenger-vehicle. Accessed July 2024.

64 World Health Organization. Ambient air pollution. Available at: https://www.who.int/data/gho/data/themes/topics/indicator-groups/indicator-group-details/GHO/ambient-air-pollution. Accessed July 2024.

65 Agache I et al. Front Sci 2024; 2: 1–23.

66 Donnelly M and Talley N. Gut 2023; 72(12): 2199–2201.

67 Fadadu R et al. Int J Environ Res Public Health 2023; 20(3): 1–21.

68 Silva GS and Rosenbach M. Int J Womens Dermatol 2021; 7(1): 3–7.

69 NHS University Hospitals Sussex. Biologics and biosimilar treatment for skin conditions. Available at: https://www.uhsussex.nhs.uk/resources/biologics-and-biosimilar-treatment-for-skin-conditions/ Accessed July 2024.

70 World Health Organisation. Over 40 million health professionals demand bold health and climate action at COP28. Available at: https://www.who.int/news/item/02-12-2023-over-40-million-health-professionals-demand-bold-health-and-climate-action-at-cop28. Accessed July 2024.

71 European Observatory on Health Systems and Policies. Addressing long-term challenges such as population ageing and climate change. Available at: https://eurohealthobservatory.who.int/publications/m/addressing-long-term-challenges-such-as-population-ageing-and-climate-change. Accessed July 2024.

PHARMA IS UNIQUELY POSITIONED TO RESPOND >>

"It's clear that the pharmaceutical industry in the UK is moving from the stage of making commitments to taking meaningful steps forward."

- Dr Richard Torbett, Chief Executive, Association of the British Pharmaceutical Industry.[1]

PHARMA IS UNIQUELY POSITIONED TO TACKLE THE CLIMATE-HEALTH CRISIS

The healthcare sector's sole and united purpose is making people better. However, it's also one of the world's biggest contributors to the climate crisis, accounting for 4.4% of emissions worldwide.[2–5] In fact, if healthcare were a country, it would be the fifth largest emitter on the planet,[2] and by 2050, the CO_2 footprint of healthcare is expected to triple.[6]

This means the pharma industry has a unique role, in both responding to the changing health demands caused by the climate crisis, as well as reducing its own contribution towards it. That's why we need to act today, to bring urgent change.

In light of this, the majority of pharma companies have made clear public commitments to reduce their emissions,[7,8] with the end goal of meeting the targets set out in the Paris Agreement: to limit global temperature rises to within 1.5°C.[7,9]

<< Back to contents

Pharma sustainability initiatives

Several initiatives now exist to both help and independently regulate the pharmaceutical industry when it comes to climate impact.

Collectives and accreditations

The Science Based Targets (SBTs) initiative is an independent body which accredits net zero plans, to ensure they align with global warming limit targets. In total, 230 companies within the pharma, biotech, and life sciences space have SBTs in place.[10,11] Another key initiative is RE100; this is a collective that has been set up for members to commit to utilising 100% of all electricity from renewable sources. The 24 members from biotech, healthcare, and pharma include AstraZeneca, Janssen, and Novartis.[12]

Individual pharma company commitments

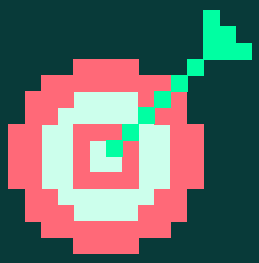
As we can see in Figure 8, most companies have committed to being net zero by 2045, but with the long development cycles in pharma, this doesn't leave much time for what could be quite an extensive overhaul of processes for some.

>> FIGURE 8. PHARMA SUSTAINABILITY COMMITMENTS

	NET ZERO REDUCTION BY	SCOPE 1 REDUCTION	SCOPE 2 REDUCTION	SCOPE 3 REDUCTION
Astellas[13,14]	**2050**	Reduce absolute scope 1 & 2 emissions by 63% by FY2030 from the FY2015 base year		Reduce absolute scope 3 emissions by 37.5% by FY2030 from the FY2015 base year
AstraZeneca[15,16]	**2025**	98% by 2026 (from 2015 baseline)		Reduce absolute scope 3 GHG emissions by 50% by 2030 and 90% by 2045, from a 2019 base year
GSK[17]	**2045**	80% from a 2020 baseline	80% from a 2020 baseline	80% from a 2020 baseline
Sanofi[18,19]	**2045**	55% by 2030 (from 2019 baseline)		30% by 2030 (from 2019 baseline)
Novartis[20]	**2040**	Scope 1 and 2 reductions not specifically reported. Carbon neutrality in own operations by 2025		Not reported. Fully carbon neutral across the value chain in 2030
Pfizer[21,22]	**2040**	95% by 2040 from 2019 levels		90% by 2040 from 2019 levels
UCB[23]	**Net zero reductions not specifically reported. Carbon neutrality by 2030**	38% by 2030 (from 2015 baseline)		
Teva[24–26]	**2045**	46% by 2030 (from 2019 baseline)		25% by 2030 (from 2020 baseline)

Statements aligned to publicly available commitments as of July 2024. Scopes 1, 2, and 3 are defined below.

What these efforts look like in practice

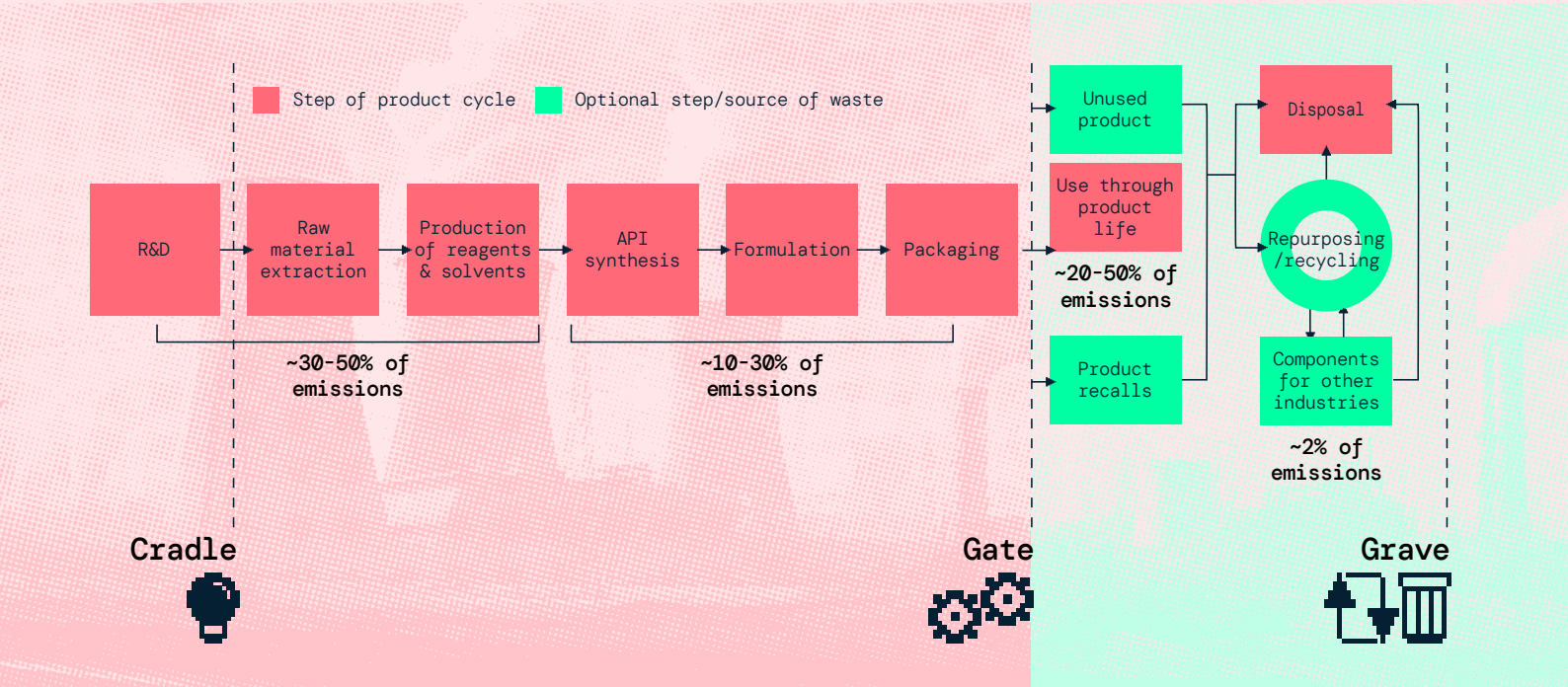


"Instead of having a lukewarm commitment we need to ensure we match our stated promises and goals."

- Chief Procurement Officer, large pharma company, Germany, Deloitte-led interview.[27]

The pharma industry is looking to decarbonise at every stage of the value chain; all the way from research and development (R&D) to product use and disposal.

>> FIGURE 9. THE PHARMA VALUE CHAIN[1]



Downstream emissions are responsible for

20–50%

of all pharmaceutical emissions.[1]

<< Back to contents

Measuring the emissions, scoping the actions

Emissions are defined into three scopes, depending on where they come from:[1,27]

Table B

SCOPE 1 EMISSIONS	SCOPE 2 EMISSIONS	SCOPE 3 EMISSIONS
Direct emissions from a company, i.e. emissions which come from their manufacturing sites or vehicles.[1,27]	Indirect emissions from purchased energy sources/processes the company uses, i.e. electricity, steam, heating, cooling, etc.[1,27]	These are emissions not produced by the company itself, and not the result of activities owned or controlled by the company, but by those that the company is indirectly responsible for.[27]   **Upstream:** associated with the production and transport of goods and services, i.e. excipients and machinery.[1] **Downstream:** associated with the transport, use, and disposal of products.[1]
Make up only a small proportion of emissions in the pharmaceutical industry.[1]		**Make up the majority of emissions.[1,27]**

Upstream vs. downstream

Most environmental efforts to date have, rightly, focused on reducing the vast emissions associated with scopes 1 and 2 processes, including R&D, manufacturing, and supply and distribution.[28]

Reducing upstream emissions is something we can action right now. Here are three examples from pharma:

Table C

SANOFI	AMGEN	NOVARTIS
"Nearly" carbon neutral manufacturing site, relying on energy generated through its own solar panels.[29]	Continuous purification methods used in Amgen's $200 million biomanufacturing plant in Singapore (which produces 69% less carbon emissions vs. a traditional manufacturing facility).[30]	The use of recycled and reusable solvents in most of Novartis' manufacturing sites.[29]

However, emissions associated with downstream processes are much harder to target. To help define possible practical actions, we've categorised them into three key areas: medicine optimisation, medicine disposal, and patient engagement.[27]

Table D

MEDICINE OPTIMISATION	MEDICINE DISPOSAL	PATIENT ENGAGEMENT
– Unused medicine - Adherence & shelf life – Drug delivery systems – Smart packaging – Sustainable healthcare education	– Recycling – Pollution – Antibiotic resistance	– Awareness – Telemedicine

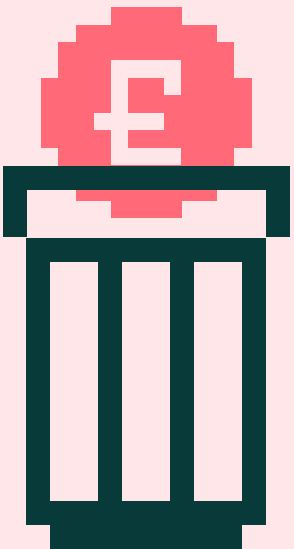
Although these are especially difficult to target, it's crucial they are addressed as they **are responsible for 20–50% of all pharmaceutical emissions (see Figure 9).**[1]

Medicine optimisation

Unused medicines – so much wasted, so much to save

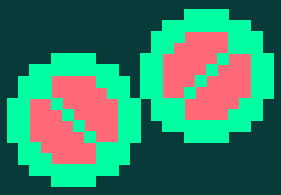
Billions of dollars' worth of medicines are lost each year, many due to avoidable errors. This adversely affects quality and often leads to premature waste or disposal.[1,31,32] According to a recent report, 4% of pharmaceuticals are written off before they even leave the manufacturing site, this amounts to over $11 billion. However, the scope for waste once they've left the building is even higher.[33] **In the US alone, approximately two out of three prescription medicines are reported unused.** In the UK, it's estimated that between £100–800 million in unused medicines are wasted each year, representing approximately £1 in every £25 spent on primary care and community pharmaceutical and allied products.[34] This includes an estimated £90 million worth of unused prescription medicines in homes across the country, £110 million returned unused to community pharmacies over the course of a year, and £50 million worth of NHS-supplied medicines that are disposed of unused by care homes.[34] That's another opportunity to save money, improve healthcare and reduce emissions.

£1 in every £25 spent on products in primary care in the NHS is wasted each year.[33]



<< Back to contents

"Each year, billions of much-needed medicines go unused and are wasted, harming patients and the planet. Together, we must build a more effective, equitable, environmentally responsible pharmaceutical supply chain. We must start now."



- Dr Nazneen Rahman CBE, CEO at YewMaker and Head of the Sustainable Medicines Partnership.

48 organisations have come together to form the Sustainable Medicines Partnership (SMP), a group developing scalable solutions to make medicines more sustainable and equitable.[35] To learn more about this program, read more in the "Every Dose Used" Reducing Medicines Playbook here.

Adherence issues add to our emissions too

Adherence to medicines, or rather non-adherence, is a huge contributor to medicine wastage and is a pervasive issue across healthcare,[36] with up to 50% of people not taking their medicines as prescribed, according to the World Health Organization (WHO).[37]

Poor patient adherence has a critical impact on patient outcomes, but also on our planet and our health. So it's in everyone's best interests to make good adherence a priority. That includes patients, pharma, and healthcare professionals (HCPs).

Making shelf life more sustainable

Medicines currently account for 25% of NHS emissions, partly due to the disposal of perfectly usable medicines.[38] Extending medicines' shelf life can help to both reduce healthcare costs and waste, and to make medicines more sustainable.[39] It's been proven that, on average, 90% of medicines remain safe and effective for five years longer than their expiry date.[39]

Drug delivery systems can deliver less CO_2 too

Improving the drug delivery system in which a medicine is housed can also help to reduce its environmental impact. Examples of innovative drug delivery systems include autoinjectors, extended-release tablets or injections, or zero-order delivery systems such as intravaginal rings, osmotic pumps, actuated pumps, and implantable microchips, which can provide a steady release of the medicine over a given time period.[40–42]

By using these delivery systems, we could be reducing the need for frequent dosing, limiting adverse effects, and taking the “decision-making” out of the process for patients.[36]

CASE STUDY

YpsoMate Zero® >> Ypsomed

Medical technology company, Ypsomed, created the World’s first zero carbon emission autoinjector, coined the **YpsoMate Zero®.** This new sustainable technology is created from alternative biopolymers, with a novel packaging, which follows the principles of circular product design.[40] This improves patient access and adherence, whilst reducing the associated carbon footprint along with the need for travel and hospitalisations.[40]

Inhalers used for conditions such as asthma and chronic obstructive pulmonary disease (COPD) use propellants, which are powerful greenhouse gases that are thousands of times more powerful than CO_2.[43] Whilst they are safe and essential for those who need them, they are a major contributor to the climate crisis, accounting for 3% of the NHS’s overall carbon emissions[43] and 13% of the NHS’s carbon footprint related to delivery of care.[44]

More environmentally-friendly inhalers, sometimes known as “Green inhalers”, produce 25x less CO_2 than the most prescribed inhaler.[45] For example, once-daily, long-acting, combination, dry-powder inhalers (DPIs) can improve patients’ asthma and adherence, whilst also reducing the associated carbon footprint.[44] To add to this, until recently, NHS England also offered financial incentives to encourage the prescription of lower carbon inhalers, which at the time opened up a new market for these devices.[46]

Smart packaging: it's the intelligent way forward.
"Smart packaging" design carries the impact needed to reduce downstream emissions. Smart packaging involves embedding more advanced levels of technology into the packaging of medicines to extend shelf life and display information clearly – to improve product use and customer safety.[41]

"Smart packaging" can also mean something simpler too. Imagine something as minimal as printing behavioural nudges onto the packaging of medicines themselves. Highlighting to patients the impact of the waste created by unused medicines and encouraging positive recycling behaviours. In the same way that the packaging of cigarettes became a vehicle of change, who knows, perhaps the packaging of medicines could do the same?

Sustainable healthcare education that looks forward
The UK is pioneering sustainable healthcare education. During training, UK doctors are required to both understand and then apply the principles of sustainable healthcare in clinical practice.[47] The emphasis is on providing high-quality healthcare now, whilst still being able to meet the healthcare needs of the future.[48] The Centre for Sustainable Healthcare defines four key principles within this:[48]

- >> **Low-carbon alternatives**
- >> **Prevention of ill health**
- >> **Patient empowerment**
- >> **Streamlined service delivery**

The 2024 edition of the General Medical Council (GMC) "Good medical practice" guide featured a spotlight on sustainability.[48] This focused on strategies to reduce the environmental impact of healthcare, and on the effective and sustainable management of resources, without compromising the standard of care.[49]

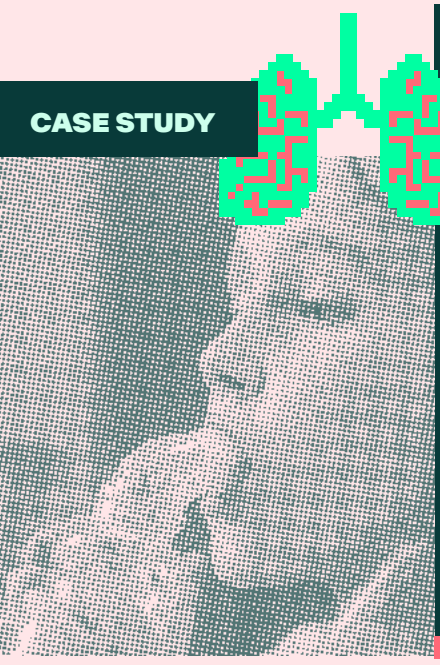
Medical disposal

The improper disposal of medicines such as flushing unused products down the toilet, has far-reaching and serious consequences throughout the world, including contaminating waterworks, posing a danger to both human health and to the environment.[48,51]

It's time to dispose of less and recycle more

To tackle waste issues, other industries have looked to recycling. However, the many health threats posed by healthcare waste mean that recycling or recovering material is often undesirable.[52] In the NHS alone, 133,000 tonnes of plastic is disposed of each year, and only 5% is recovered.[53] This means it is critical that we think more creatively about how to incentivise recycling initiatives

The healthcare sector also has a considerable impact on water systems through other factors e.g. shipping. Healthcare Ocean is a group of HCPs advocating to protect our water systems. By educating their peers on environmental literacy, they promote decision-making to ensure the ocean and nature are considered when working towards sustainability in the healthcare industry.[54]



CASE STUDY

The Health Rhythm >> Havas Lynx

What if we could recycle pharma materials in a way that not only benefits the environment, but also improves the health of those living with serious chronic conditions impacted by climate change? In 2023, Havas Lynx created the concept of "The Health Rhythm" – an initiative that focuses on recycling old inhalers and other pharma waste and transforming it into spirometers that are compatible with the embouchure of various types of wind instruments. These spirometers can then in turn be used to monitor and improve children's lung health. For more information and opportunities to partner, please get in touch.

Packaging is critically important to the safe and effective storage and transport of medicines; however, it also contributes significantly to the overall environmental impact of the pharma industry.[55] In total, 8 billion prescription bottles are disposed of annually in the US, each one taking centuries to degrade,[56] and so further utilisation of recycled materials and a reduction in single-use materials should be a focus for the future.[57,38]

CASE STUDY

The Phill Box >> Parcel Health

The Phill Box, from medical packing agency Parcel Health is **100% biodegradable**, degrading in less than 60 days in a home or commercial compost pile.[56] It also emits **72% less CO_2-equivalent emissions** compared to regular plastic pill bottles; this is the same as removing **89,500** gas-powered cars from the road every year. The Phill Box won Gold at the 2022 Sustainable Medicines Packaging awards.[57,58]

Measure	Every plastic pill bottle	Every PHILL bottle
Energy consumption	1.40MJ	0.39MJ
CO2 footprint	0.0731kg	0.0183kg

Pollution levels are at breaking point

The concentration of pharmaceuticals in waterways is now reaching dangerous levels, posing a threat to the environment and to human health.[59] Medicines released into the environment can damage ecosystems and interfere with the growth and behaviour of animals and plants.[60] Over 40% of the world's rivers could contain harmful levels of drugs.[60] Medicines found frequently in rivers include those used to treat diabetes and epilepsy, as well as antidepressants, antihistamines, anaesthetics, and antibiotics.[59]

CASE STUDY

A hard pill to swallow >> Apotek Hjartat[61]

Apotek Hjartat, a private pharmacy in Sweden, collected and analysed the water surrounding factories, and extracted the active toxic substances to create a fatal medicine coined, *"Sordidum Pharmacum"*.[61] This campaign was broadcast to the Swedish public and sent to politicians, leading to the development of a new law in Sweden outlining stricter environmental criteria when procuring pharmaceuticals.[61]

Medication disposal is also tied to the threat of antibiotic resistance

The level of antibiotics found in waterways is of particular concern due to the growing threat of resistance.[59] The highest level of antibiotic pollution was in a river in Bangladesh, where levels of metronidazole were 300x over the considered "safe" limit.[59]

<< Back to contents

Patient engagement

Awareness leads to action

Patients are the most important stakeholders in reducing downstream emissions. This is because they are ultimately responsible for how medicines are used and disposed of. So, if we get them engaged, half the battle is won.

Engagement could be through product leaflets, medicine packaging, or direct-to-consumer campaigns. It could tie in and help with patient adherence. We could drive demand for "greener" medication options, use of recycling initiatives, or correct disposal techniques.[27]

CASE STUDY

"Drug-free Baltic sea" >> multi-organisation initiative

The "Drug-free Baltic sea" campaign runs for two weeks every year, as a call to action for patients to take their old or unneeded medicines to a local pharmacy, instead of disposing of them.[62]

The campaign is run by several organisations, including the Association of Finnish Pharmacies, GSK, John Nurminen Foundation, and Pharma Industry Finland.[63]

And it seems the campaign is having an effect; in 2019, about 90% of Finnish adults returned their unused medicines to a pharmacy.[62,63]

Telemedicine as an environmental solution

The way in which HCPs engage with their patients can also have a positive impact. Telemedicine, or the online delivery of healthcare, is a clear way to reduce the environmental impact of health vs. in-person consultations, given that emissions associated with inpatient care, such as transport, building energy and construction, contribute to a huge proportion of total healthcare emissions.[64]

References

1 OHE. Supporting the Era of Green Pharmaceuticals in the UK. OHE Consulting Report, London: Office of Health Economics. Available at: https://www.ohe.org/publications/supporting-the-era-of-green-pharmaceuticals-in-the-uk/. Accessed July 2024.

2 NHS Barts Health. How healthcare contributes to the climate crisis. Available at: https://www.bartshealth.nhs.uk/blogs/gasp-sustainability-12280. Accessed July 2024.

3 Pichler P et al. Environ Res 2019; 14(064004): 1–9.

4 Pichler P et al. Environ Res 2019; 14(064004): 1–9. (Suppl Appendix)

5 Wu R. Lancet Planet Health 2019; 3: e413–e419.

6 World Economic Forum. 6 ways the pharmaceutical industry can reduce its climate impact. Available at: https://www.weforum.org/agenda/2022/11/pharmaceutical-industry-reduce-climate-impact/. Accessed July 2024.

7 Booth A et al. Int J Environ Res Public Health 2023; 20(3206): 1–18.

8 AstraZeneca. Seven pharma CEOs announce new joint action to accelerate net zero healthcare. Available at: https://www.astrazeneca.com/media-centre/articles/2022/seven-pharma-ceos-announce-new-joint-action-to-accelerate-net-zero-healthcare.html. Accessed July 2024.

9 United Nations Climate Change. Key aspects of the Paris Agreement. Available at: https://unfccc.int/most-requested/key-aspects-of-the-paris-agreement. Accessed July 2024.

10 Science Based Targets. Ambitious corporate climate action. Available at: https://sciencebasedtargets.org/?constructor=eae2d6. Accessed July 2024.

11 Science Based Targets. Ambitious corporate climate action dashboard. Available at: https://sciencebasedtargets.org/target-dashboard. Accessed July 2024.

12 Climate Group RE100. RE100 Members. Available at: https://www.there100.org/re100-members. Accessed July 2024.

13 Astellas. Climate reduction plan. Available at: https://www.astellas.com/uk/system/files/ppn-0621-carbon-reduction-plan_for_signature.docx.pdf. Accessed July 2024.

14 Astellas. Astellas Receives SBTi Approval for Revised Science-Based Climate Goals to Reduce Greenhouse Gas Emissions. Available at: https://www.astellas.com/en/news/26936. Accessed July 2024.

15 FiercePharma. AstraZeneca aims to go carbon free by 2025-and it'll spend $1B to do it. Available at: https://www.fiercepharma.com/pharma/astrazeneca-puts-climate-action-center-1b-investment-to-turn-carbon-neutral-by-2025. Accessed July 2024.

16 AstraZeneca. Sustainability report 2023. Available at: https://www.astrazeneca.com/content/dam/az/Sustainability/2024/pdf/Sustainability-Report-2023.pdf. Accessed July 2024.

17 GSK. Our climate targets. Available at: https://www.gsk.com/en-gb/responsibility/environment/climate/. Accessed July 2024.

18 Sanofi. Circular economy and waste management. Available at: https://www.sanofi.com/assets/dotcom/content-app/documents/circular-economy-and-waste-management.pdf. Accessed July 2024.

19 Sanofi. Corporate Social Responsibility - Chapter 3 of 2023. Available at: https://www.sanofi.com/assets/dotcom/content-app/publications/esg-reports/2023-01-01-declaration-of-extra-financial-performance-en.pdf. Accessed July 2024.

20 Novartis. Novartis Environmental Sustainability Strategy. Available at https://www.novartis.com/sites/novartis_com/files/novartis-environmental-sustainability-strategy-objectives.pdf. Accessed July 2024.

21 Pfizer. Net Zero by 2040: How Pfizer is Fighting Climate Change with Ambitious Science Based Goals. Available at: https://www.pfizer.com/news/articles/net_zero_by_2040_how_pfizer_is_fighting_climate_change_with_ambitious_science_based_goals. Accessed July 2024.

22 Pfizer. Environmental, Social & Governance Report 2023. https://insights.pfizer.com/2023-esg-report/. Accessed July 2024.

23 UCB. Integrated Annual Report 2023. Available at: https://reports.ucb.com/. Accessed July 2024.

24 Teva. How Teva's German Fleet is Reducing CO2 Emissions by 30%. Available at: https://www.tevapharm.com/news-and-media/feature-stories/german-fleet-reducing-co2-emissions. Accessed July 2024.

25 Teva. 2022 Environmental, Social and Governance Progress Report. Available at: https://www.tevapharm.com/globalassets/tevapharm-vision-files/teva-esg-progress-report_2022.pdf. Accessed July 2024.

26 Teva. 2023 Healthy Future Report. Available at: https://www.tevapharm.com/globalassets/tevapharm-vision-files/teva-esg-progress-report-2023.pdf. Accessed July 2024.

27 Deloitte. Embedding environmental sustainability into pharma's DNA. 2022. Available at: https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/life-sciences-health-care/deloitte-uk-embedding-environmental-sustainability-into-pharma-dna-updated.pdf. Accessed July 2024.

28 Pharma Technology Focus. Pharma's path to Net Zero: Targeting Scope 3 emissions. Available at: https://www.pharmaceutical-technology.com/features/pharmas-path-to-net-zero-targeting-scope-3-emissions/. Accessed July 2024.

29 Pharma IQ. Five ways pharma is reducing its carbon emissions. Available at: https://www.pharma-iq.com/clinical/articles/five-ways-pharma-is-reducing-its-carbon-emissions. Accessed July 2024.

30 Pharmaceutical Technology. Cutting the carbon footprint of pharma's supply chain. Available at: https://www.pharmaceutical-technology.com/features/cutting-carbon-footprint-pharma-supply-chain/. Accessed July 2024.

31 Clinical Trials Arena. The implications of cold chain failure. Available at: https://www.clinicaltrialsarena.com/news/the-implications-of-cold-chain-failure-5755057-2/?cf-view. Accessed July 2024.

32 REUTERS EVENTS. Making medicines sustainable. Available at: https://www.reutersevents.com/pharma/multichannel/making-medicines-sustainable. Accessed July 2024.

33 nVentic. nVentic Big Pharma inventory trends benchmarking report 2024. Available at: https://nventic.com/insights/pharma-inventory-trends-2024/. Accessed July 2024

34 EAHSN. Improving medicines adherence and reducing waste. 2014. Available at: https://www.prescqipp.info/umbraco/surface/authorisedmediasurface/index?url=%2fmedia%2f2353%2feahsn-medicines-adherence-and-waste-framework-report.pdf. Accessed July 2024.

35 YewMaker. Every Dose Used. Available at: https://www.yewmaker.com/reducing-wasted-medicines-playbook. Accessed July 2024.

36 Baryakova TH et al. Nat Rev Drug Discov 2023; 22(5): 387–409.

37 Nursing Standard. Why patients don't take their medicines and what you can do about it. Available at: https://journals.rcni.com/nursing-standard/feature/why-patients-dont-take-their-medicines-and-what-you-can-do-about-it-ns.38.3.35.s14/abs. Accessed July 2024.

38 Open Access Government. Building a sustainable medicines supply chain. Available at: https://www.openaccessgovernment.org/sustainable-medicines/143980/. Accessed July 2024.

39 Gikonyo D et al. Afr Health Sci 2019; 19(3): 2727–2739.

40 YPSOMED. Our investment in research and development is above average. Available at: https://www.ypsomed.com/en/media/details/worlds-first-zero-carbon-emission-autoinjector-from-ypsomed.html. Accessed July 2024.

41 Schaefer D and Cheung W. Science Direct 2018; 72: 1022–1027.

42 Adepu S and Ramakrishna. Molecules 2021; 26: 5905.

43 Asthma and Lung UK. How inhalers affect the environment. Available at: https://www.asthmaandlung.org.uk/conditions/asthma/how-inhalers-affect-environment. Accessed July 2024.

44 Wilkinson and Woodcock. Br J Clin Pharmacol 2022; 88: 3016–3022.

45 C21. Green Inhaler. Available at: https://c-21.co.uk/work/green-inhaler/. Accessed July 2024.

46 Smith L et al. BMJ 2023; 381(e072328): 1–5.

47 Tun MS. Medical Teacher 2019; 41(10): 1168–1177.

48 General Medical Council. Sustainability Q&A. Available at: https://www.gmc-uk.org/professional-standards/learning-materials/sustainability-questions-and-answers. Accessed July 2024.

49 General Medical Council. Domain 1: Knowledge, skills and development. Available at: https://www.gmc-uk.org/professional-standards/professional-standards-for-doctors/good-medical-practice/domain-1-knowledge--skills-and-development. Accessed July 2024.

50 Mohammed S et al. PLoS One 2021; 16(10): 1–15.

51 Daniels. Consequences of Improperly Disposed Pharmaceuticals. Available at: https://www.danielshealth.com/knowledge-center/pharmaceutical-improper-disposal-consequences. Accessed July 2024.

52 World Health Organization. Health-care waste. Available at: https://www.who.int/news-room/fact-sheets/detail/health-care-waste. Accessed July 2024.

53 The BMJ. The plastic pandemic: could the environmental impact of the NHS response to covid-19 be reduced? Available at: https://blogs.bmj.com/bmj/2020/12/08/the-plastic-pahttps://www2.deloitte.com/content/dam/Deloitte/uk/Documents/life-sciences-health-care/deloitte-uk-embedding-environmental-sustainability-into-pharma-dna-updated.pdfndemic-could-the-environmental-impact-of-the-nhs-response-to-covid-19-be-reduced/. Accessed July 2024.

54 Healthcare Ocean. Why Oceans and Human Health? Available at: https://healthcareocean.org/. Accessed July 2024.

55 Amcor. 7 steps to sustainable packaging in the pharma industry. Available at: https://www.amcor.com/insights/blogs/7-steps-to-sustainable-packaging-in-the-pharma-industry. Accessed July 2024.

56 Parcel Health. Meet the Phill Box. Available at: https://www.parcelhealth.co/phill-box. Accessed July 2024.

57 YewMaker. Sustainable Medicines. Available at: https://edition.pagesuite-professional.co.uk/html5/reader/production/default.aspx?pubname=&edid=b0df9198-ef1a-4854-9ef3-98f549cc1aa3. Accessed July 2024.

58 Parcel Health. About Parcel Health. Available at: https://www.parcelhealth.co/aboutus. Accessed July 2024.

59 World Economic Forum. Pharmaceuticals are present in almost all world's rivers, study finds. Available at: https://www.weforum.org/agenda/2022/02/pharmaceutical-pollution-health-drugs-rivers/. Accessed July 2024.

60 Natural History Museum. Drug pollution is threatening the water quality of the world's rivers. Available at: https://www.nhm.ac.uk/discover/news/2022/july/drug-pollution-threatening-water-quality-worlds-rivers.html. Accessed July 2024.

61 Simon & Martin. A hard pill to swallow. Available at: https://simonandmartin.com/apotek-hjartat. Accessed July 2024.

62 Finnish Government, Ministry of the Environment. Returning expired medicines has increased in Finland. Available at: https://valtioneuvosto.fi/en/-/1410903/returning-expired-medicines-has-increased-in-finland-1. Accessed July 2024.

63 Tamro. The drug-free Baltic Sea -campaign aims to reduce the incorrect disposal of medicines. Available at: https://www.tamro.fi/en/current/news/drug-free-baltic-sea-campaign-aims-reduce-incorrect-disposal-medicines. Accessed July 2024.

64 Ravindrane R and Patel J. Future Healthc J 2022; 9(1): 28–33.

THE RISING EXPECTATIONS OF HCPS AND PATIENTS >>

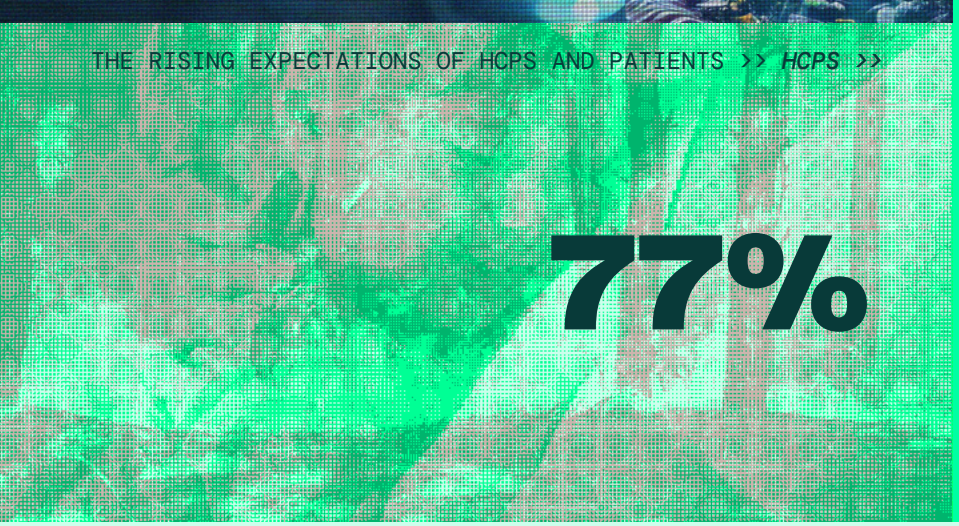
As other industries become influenced by sustainability through the rising expectations of consumers and changing purchasing behaviours, the same trend is becoming true in healthcare. This chapter will explore healthcare professional (HCP) attitudes, expectations, and even prescribing behaviours using our proprietary data set, Point.1. We'll also look at how this matches the changing behaviours of patients.

HCPs

Climate change is changing the way HCPs approach care

As we saw in chapter 1, the climate crisis is having several distinct and wide-ranging impacts on the healthcare landscape. HCPs are becoming increasingly aware of this too; **77%** now recognise that the climate crisis poses a risk to the health of their patients and therefore is an urgent problem that needs addressing.[1] This can trend upwards, depending on specialty. For example, when we look at infectious disease specialists and primary care physicians (PCPs), this number **rises to 90%.**[1]

<< Back to contents

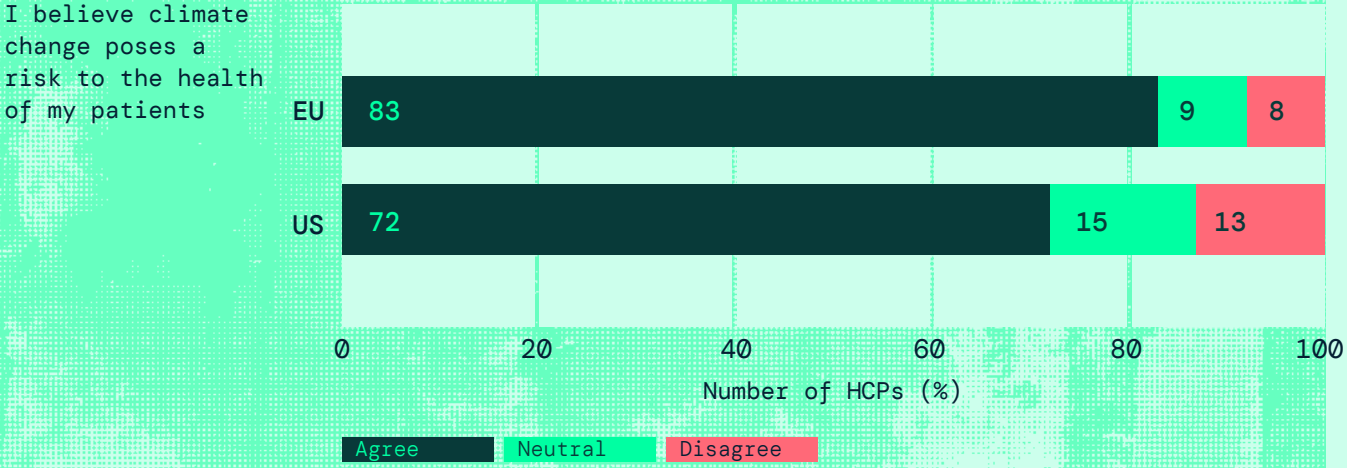


77%

of HCPs now believe that the climate crisis poses a risk to the health of their patients.[1]

As shown in Figure 10, this trend is most significant for the EU4 + UK, with 83% of HCPs believing climate change poses a risk to the health of their patients. And across the EU and the US, only a small minority actively disagree that climate change will impact the health of their patients.[2]

>> FIGURE 10. HCP VIEWS ON THE RISK CLIMATE CHANGE POSES TO PATIENT HEALTH (US VS. EU)[2]



HCPs are becoming increasingly aware that the climate crisis is an urgent problem that needs addressing

<< Back to contents

When we explore HCPs' understanding of the impact climate change has on health, we see an interesting trend. Perhaps, unsurprisingly, PCPs and infectious disease specialists are most likely to see climate change as having a significant impact on the health of their patients, followed by neurologists. However, we see slightly lower levels of awareness within immunologists, oncologists, and endocrinologists.[1,2] As we saw in chapter 1, these therapy areas are all significantly impacted – with climate change leading to exacerbation of inflammatory conditions, increased cancer risk, and shortened survival; and has been shown to be a significant driver for type 2 diabetes (T2D), to name just a few examples.[3–5] This highlights a need to raise greater awareness among HCPs on the lesser-known health impacts of the climate crisis, before it's too late.

>> FIGURE 11. HCP VIEWS ON THE RISK CLIMATE CHANGE POSES TO PATIENT HEALTH (HCP SPECIALITIES)[2]

66%

of HCPs believe that the climate crisis is likely to change their approach to care in the future.[1]

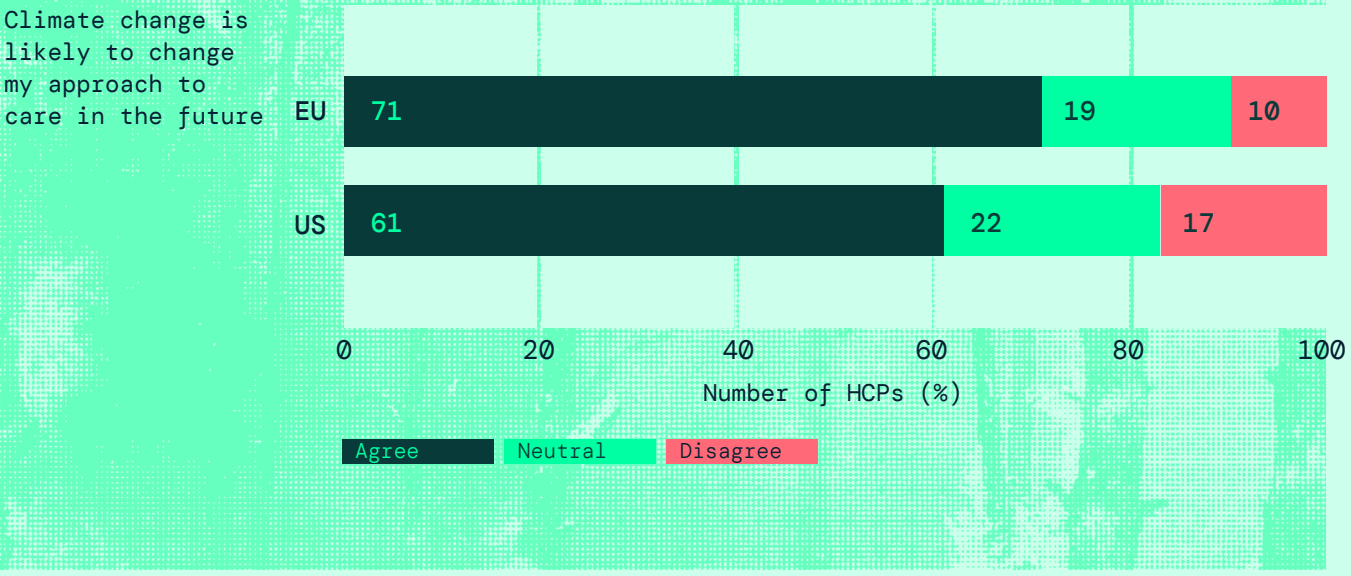
<< Back to contents

We're on the cusp of mass change

Roughly two-thirds (62%) of HCPs currently believe that the climate crisis is **altering the landscape of the patients they treat**, and a similar amount (66%) believe that the **climate crisis is likely to change their approach to care in the future.**[1]

The consciousness of this tsunami of change the climate crisis will have on patients, as highlighted in chapter 1, varies between EU and US HCPs, highlighting a knowledge divide.[2]

>> FIGURE 12: HCP ATTITUDES TO SUSTAINABILITY IMPACT ON CLINICAL PRACTICE (US VS. EU)[2]

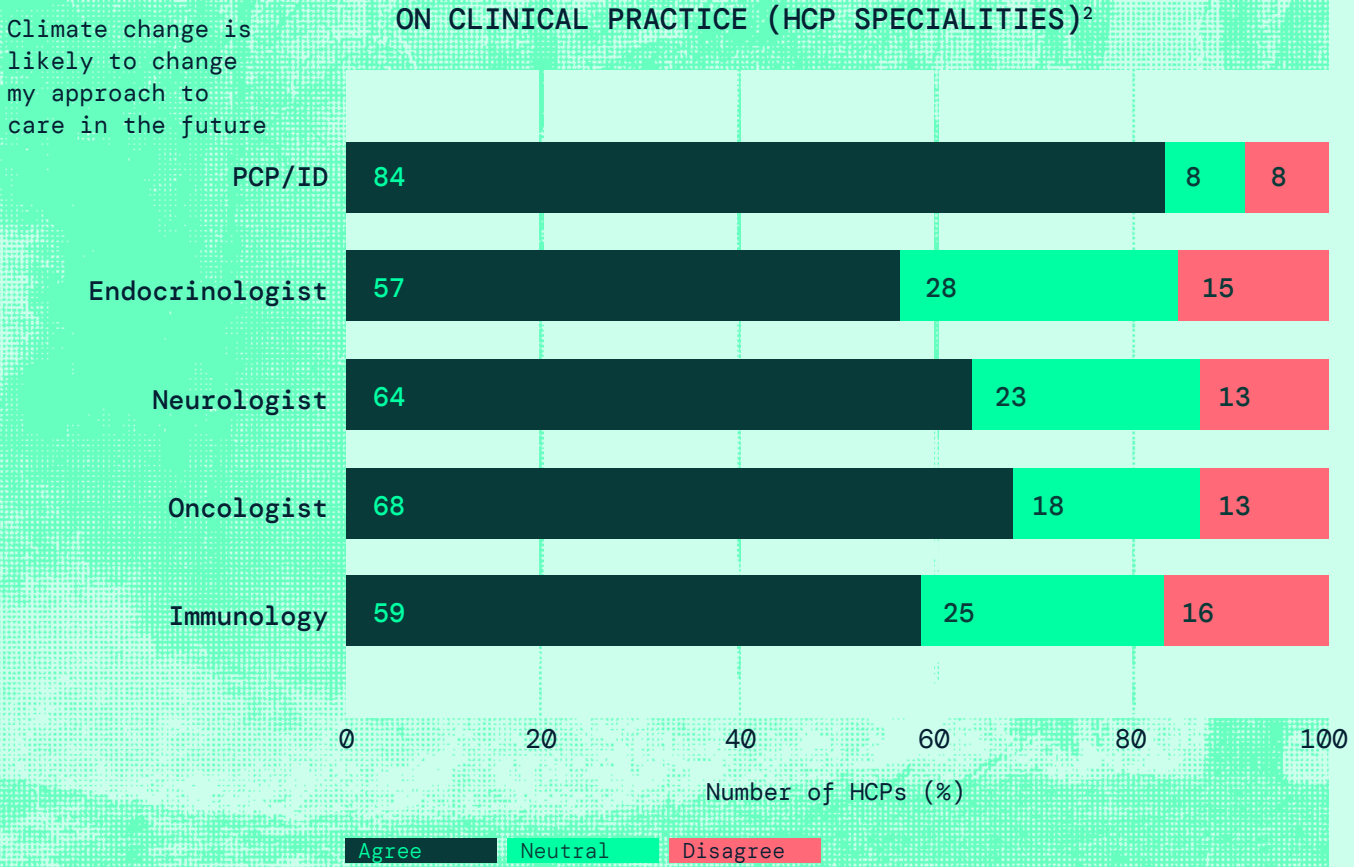


This anticipated change is most prominent in PCPs and infectious disease specialists, with the vast majority saying climate change will alter their approach to care.[2] The perceived impact of climate change on patient health is also correlated with this change in the approach to care; HCPs who are less likely to view climate change as a risk to patients are generally less likely to say it will impact the way they provide care.[2]

Perhaps interestingly, given the huge impact of air pollution on the global burden of T2D[5,6] and the link between temperature and blood glucose dysregulation in diabetics,[6] only 57% of endocrinologists believe climate change will change their approach to care.[2] This indicates that a huge educational job needs to be done in order to enable preparedness.

<< Back to contents

>> FIGURE 13: HCP ATTITUDES TO SUSTAINABILITY IMPACT ON CLINICAL PRACTICE (HCP SPECIALITIES)[2]

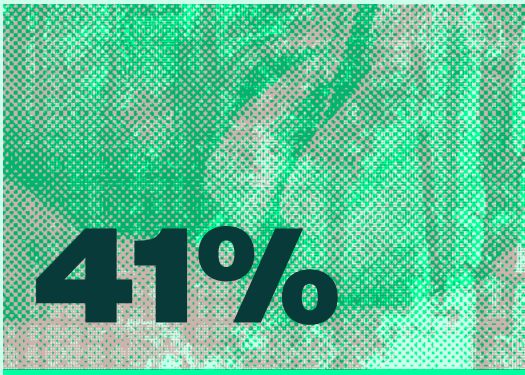


Importantly, some specialisms have already taken the step of integrating the impact of climate change into guidance on patient care approaches. For example, the Royal College of Paediatrics and Child Health (RCPCH) has developed a tool for paediatricians which aids understanding of how climate change impacts the health of children and young people, and exacerbates existing health inequalities.[7] Development and education on these kinds of toolkits are needed across all therapy areas.

Sustainability influences HCP prescribing decisions

Perhaps most notably, climate change is now having a broad and significant impact on the brand and prescription choices of HCPs. For instance, **41%** of HCPs now make clinical decisions with the environment in mind, by trying to prescribe products from responsible pharma brands.[1] Plus, over half **(52%)** are more likely to prescribe a pharma product if they know it is environmentally friendly.[1]

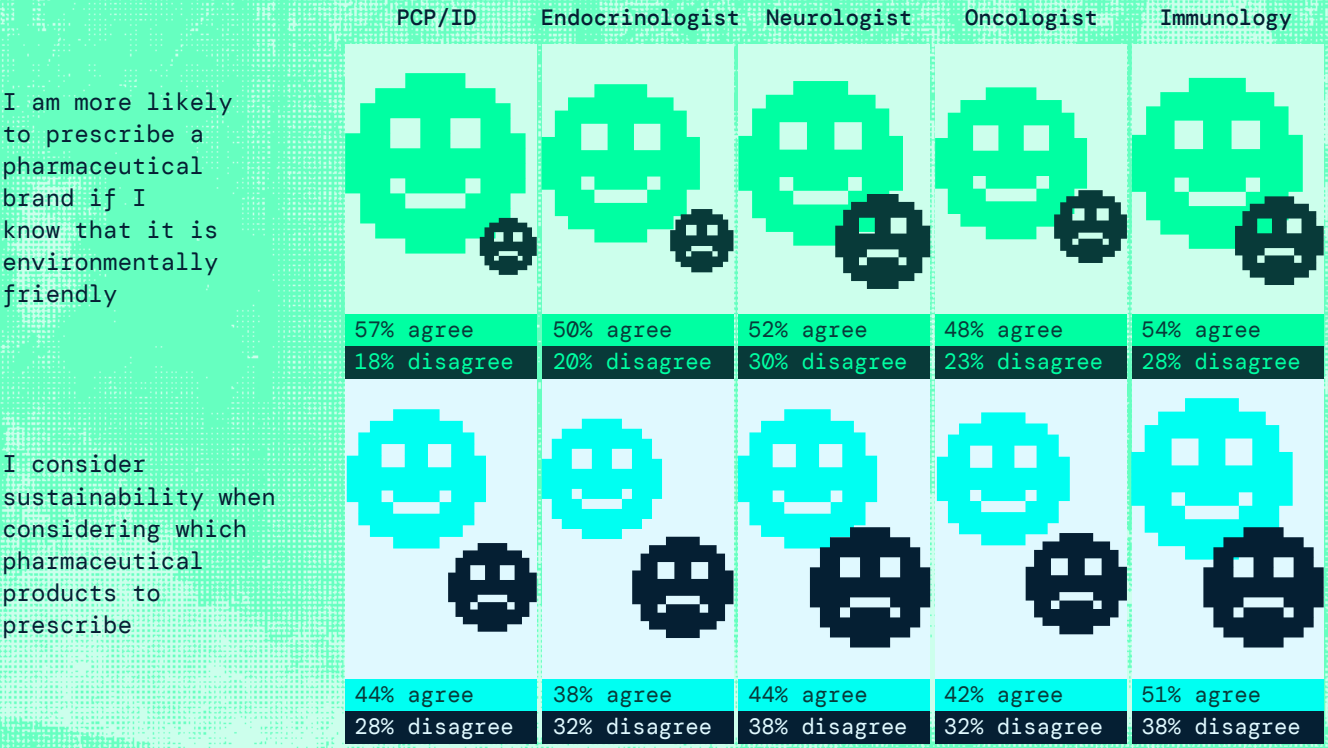
Female HCPs are leading this charge – with 60% saying they are more likely to prescribe an environmentally friendly pharma brand, compared to 48% of males surveyed.[2]



of HCPs prefer to prescribe products from responsible pharma brands.[1]

<< Back to contents

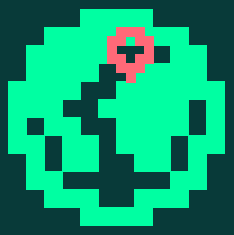
>> FIGURE 14. SUSTAINABILITY IMPACT ON CLINICAL DECISION MAKING (HCP SPECIALITIES)[2]



HCPs across specialisms are overwhelmingly considering the environmental impact of the pharma brands they interact with. Over half of immunologists are likely to consider the sustainability of a product; (see Figure 14), closely followed by PCPs/infectious disease specialists and neurologists (44%).[2]

This ties in to a broader point around being a brand of value. In total, **61% of HCPs prefer to prescribe products from companies with a reputation for having a purpose other than just profits.**[1] Increasingly, considering brand value and climate change as part of our branding packages is critical to prescription and brand success.

When we look at our data, we see that the most eco-mindful prescribers are Female Gen X individuals, based in EU urban locations and working as infectious disease experts and oncologists.[1] These HCPs consistently score highly across a wide range of pro-environmental attitudes (personal, professional, social parameters, behaviours around future media consumption, and requirements from pharma) indicating a significantly higher appetite to change their behaviour to reduce their impact on the environment.[1]



HCPs demonstrate significantly higher pro-environmental attitudes and behaviours compared to the general population, particularly in the EU.[1]

– Point.1 data, 2024.

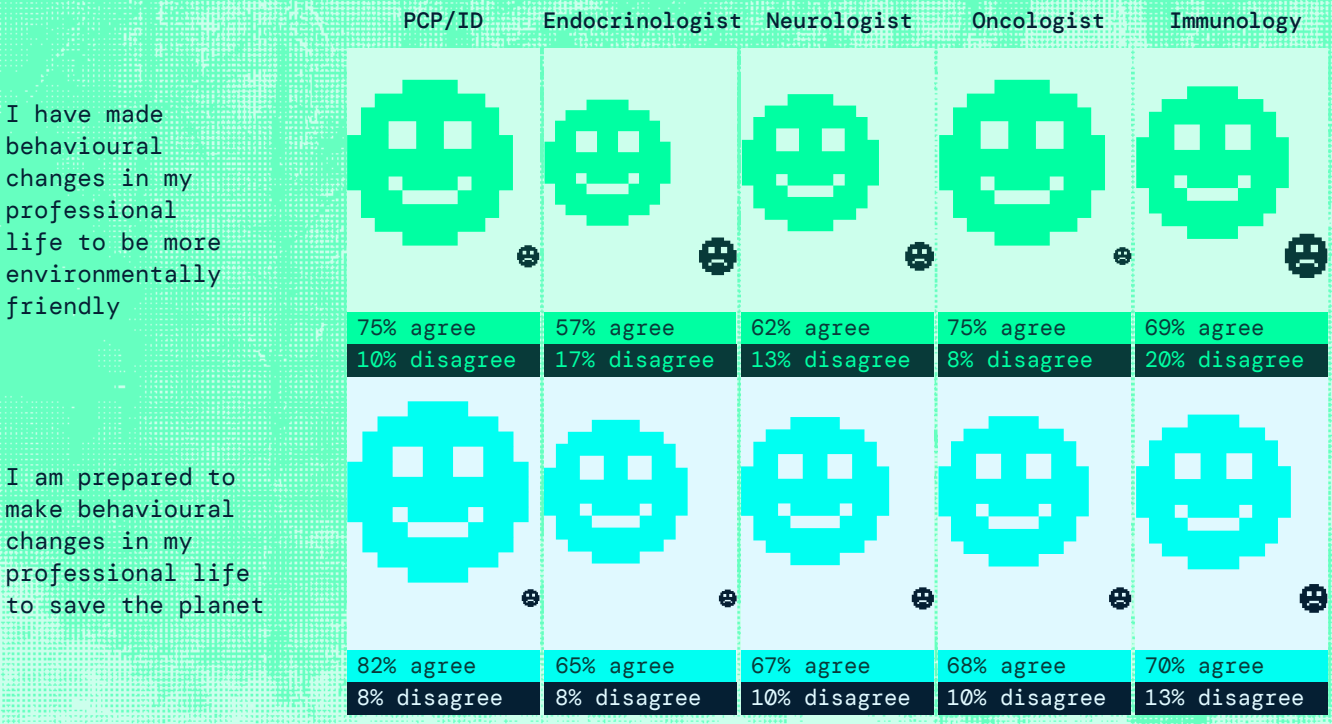
<< Back to contents

HCP behaviours are anticipated to radically change in response to eco-pressures

As we've seen, HCPs are already starting to change their approach to care with climate change in mind, and looking at how they can prescribe more environmentally friendly products. This is no surprise, as HCPs actually demonstrate even higher pro-environmental behaviours and attitudes than the general population.[1]

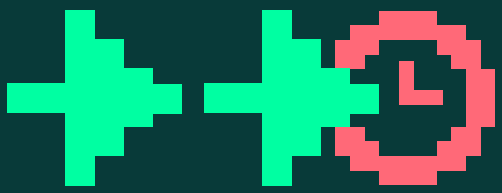
This explains why there are so many HCPs who are willing to change their behaviour to respond to climate change. We found that **71%** of HCPs are ready and willing to change their behaviours, rising to 82% if we focus on PCPs and infectious disease specialists.[1,2] More than this, **68%** have already made changes in their professional lives – increasing to 75% if we look specifically at oncologists (see Figure 15 below).[1,2]

>> FIGURE 15. EXTENT TO WHICH HCPS ARE OPEN TO CHANGES IN THEIR PROFESSIONAL LIVES TO ADDRESS THE CLIMATE CRISIS (HCP SPECIALITIES)[2]



Source: Point.1 data, 2024.

<< Back to contents



"I don't think we're doing enough at all… There's lots of energy to do things but there's just no time and we're all completely overstretched, overworked."

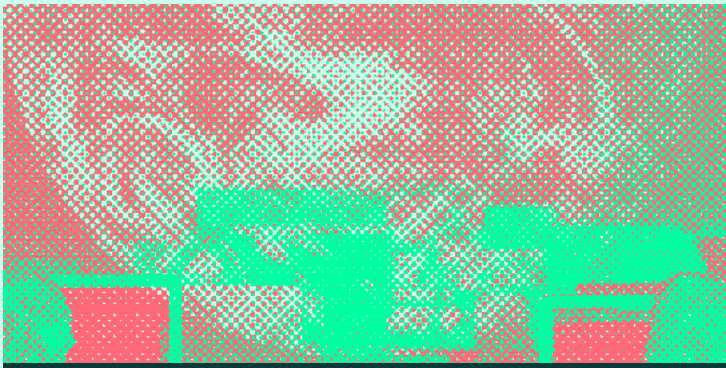
- Dr Tamsin Ellis, London GP, Director Greener Practice.[11]

Greener Practice are a network working to improve sustainability in primary care. They provide a hub of information and resources, including an asthma toolkit which aims to help UK general practices to reduce carbon emissions whist improving asthma outcomes.

Other toolkits, such as that from the Royal College of General Practitioners (RCGP) have been developed to help HCPs in this behaviour change professionally. The toolkit provides practical advice for GPs to help them become more sustainable and adaptive to climate changes. Since 2014, 1,512 general practices have taken part, and 21,089 positive actions have been taken by general practice teams to reduce their impact on the climate, whilst also ensuring better health for their patients.[8]

However, despite these steps, **more than half of physicians are not satisfied with the extent of changes they are able to make to be more environmentally friendly.**[1] And only 29% are personally involved in initiatives within their organisations.[1] Amongst other contributing factors, no doubt burnout from an already demanding profession plays its part, with HCPs themselves experiencing eco-anxiety and guilt.[9,10] To read more about the mental health crisis facing our HCPs, see our White paper, "Healing the Healers".

More than half of physicians are not satisfied with the extent of changes they are able to make to be more environmentally friendly.[1]

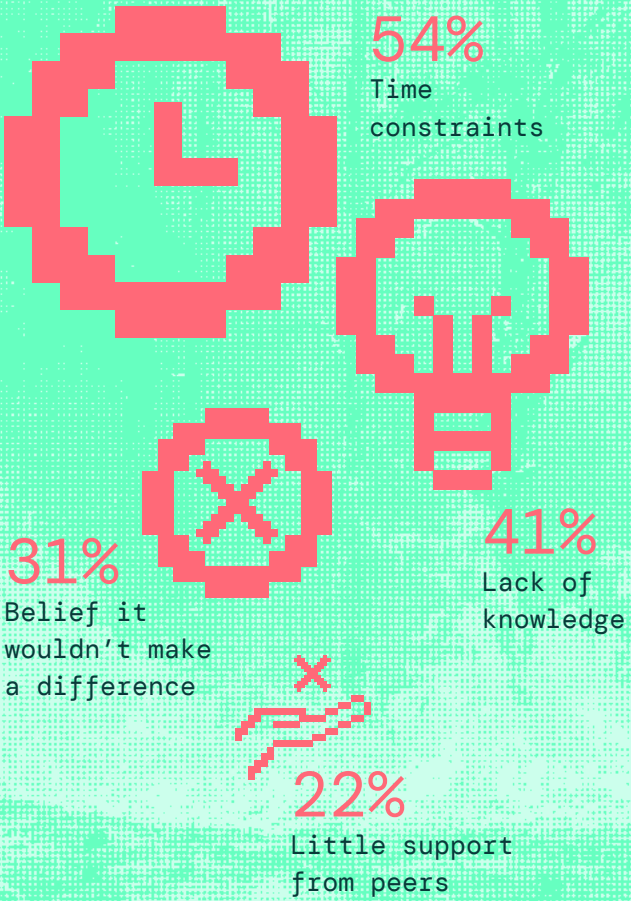


"We hope to positively impact our workplaces so that we can look after our planet as well as we look after our patients."[13]

- Eco Medics

<< Back to contents

>> BARRIERS LISTED BY HCPs WHICH PUT THEM OFF COMMUNICATING WITH THE PUBLIC ABOUT CLIMATE CHANGE AND HEALTH:[12]



That being said, some HCPs have stepped up to the need, either leading the charge themselves, or being part of HCP-led groups such as the Eco Medics, a UK-based organisation working together to ignite change and build more sustainable healthcare systems.[13,14] In the EU, Health Care Without Harm Europe (HCWH Europe) has a network of thousands of hospitals, healthcare leaders, and healthcare professionals; with members across Europe and partners across the globe.[15] Their mission is to make healthcare more sustainable across a wide range of initiatives including cutting carbon emissions, moving away from the use of toxic chemicals, uniting HCPs who are working on the ground to reduce single-use plastics, and more.[15]

As well as larger healthcare bodies / organisations, some passionate HCPs have been actively campaigning single-handedly about how to encourage sustainability in healthcare. One such champion is PCP Dr Tamsin Ellis. Tamsin Ellis / @climate_gp proactively talks to patients about the climate, including lifestyle changes that would also benefit their own health. Individuals like Dr Ellis are critical for healthcare and pharma to engage with as we go on this journey to becoming more eco-minded.

Individual activists are critical for healthcare and pharma to engage with as we go on this journey to becoming more eco-minded

<< Back to contents

HCPs want pharma to be part of the solution

It's clear more needs to be done, and that this will take a collective effort. **Two-thirds of HCPs are open to receiving more support from pharma to tackle environmental challenges.[1]**

Point.1 research found that **HCPs hold pharma brands equally accountable for sustainability as consumer brands.[1]** However, **only one-third of HCPs** (34%) believe the pharma industry is taking sufficient action to address climate change.[1] Instead, they see themselves as the most active group in this space (51% agree).[1]

One in three HCPs **(36%)** also feel that pharma do not understand the environmental challenges being faced.[1] While **57%** don't think pharma are doing enough to solve the climate crisis,[1] only **39%** claim to be aware of the views and values of pharma brands they prescribe.[1] Given the link between eco-brands and prescribing behaviours mentioned earlier in this chapter, these are worrying percentages.

Whilst HCPs hold pharma brands equally accountable for sustainability as consumer brands, only 1 in 3 believe they are taking action.[1]

HCP expectations for pharma to act are growing; 72% of HCPs believe pharmaceutical companies should use their influence to affect change, whilst 67% believe pharma must act now, as communication alone is not enough.[1]

These results suggest that the time is ripe for the industry to connect with HCPs to help tackle the climate-health crisis.

36%

of HCPs feel pharma do not understand environmental challenges.[1]

57%

do not feel pharma are doing enough to solve the climate crisis.[1]

39%

are aware of the views and values of pharma brands.[1]

72%

believe pharma should use their influence to affect change.[1]

<< Back to contents

There is a direct correlation between climate action and corporate equity[1]

As highlighted earlier, pharma companies and brands who are more environmentally friendly benefit from positive prescribing behaviours.[1] Equally, when we look at net promoter scores (NPS), a measure of customer loyalty, there is a direct and positive correlation with awareness of corporate climate action. This means the more aware a customer is of a pharma company's climate action, the more positive the reputation of the company.[1] In 2023, WE Brands in Motion found that outside of product functionality, corporate reputation is the leading factor in prescribing habits – once again demonstrating that actively engaging in the climate-health crisis will only translate into positive prescription behaviours.[16,17]

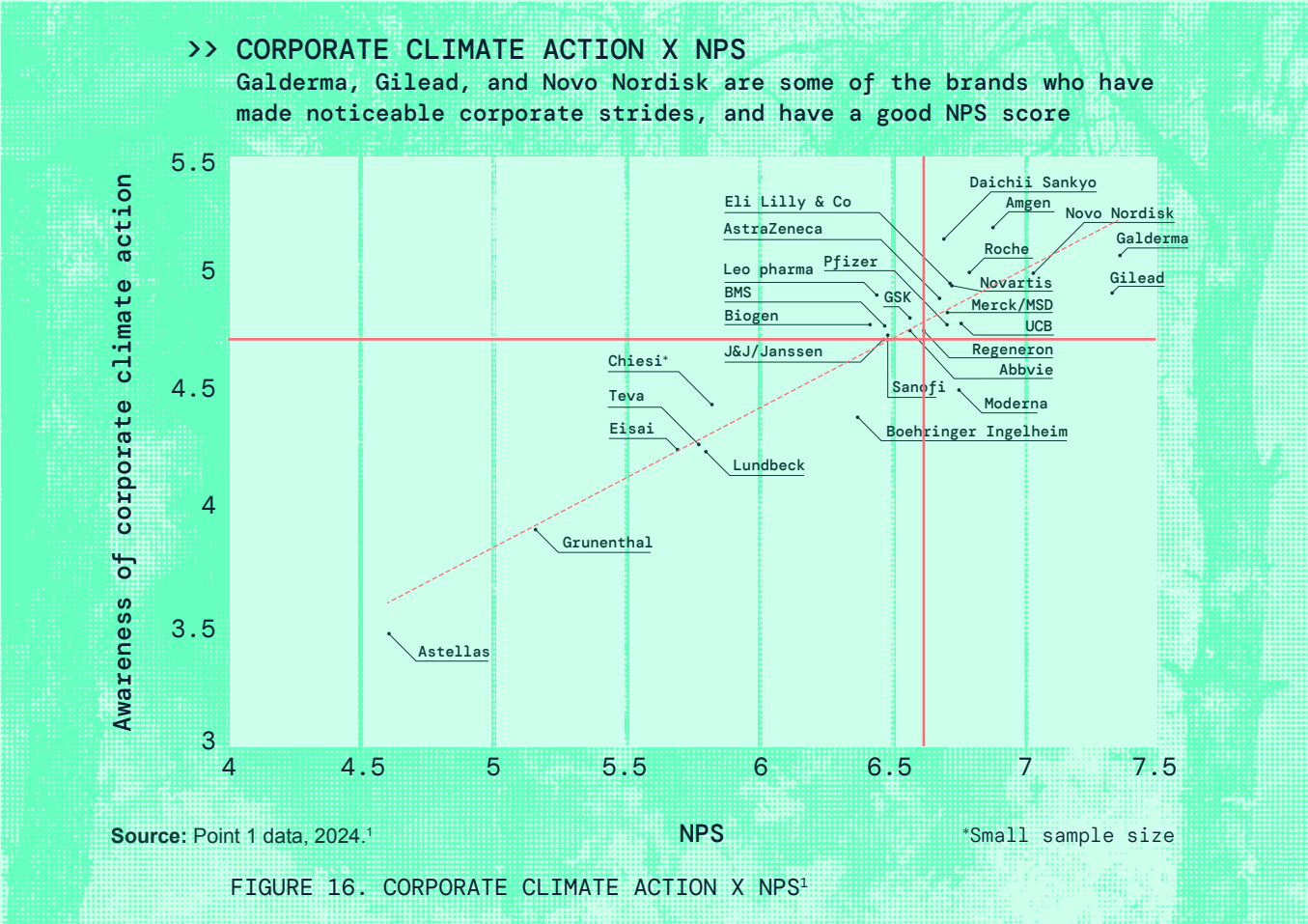


FIGURE 16. CORPORATE CLIMATE ACTION X NPS[1]

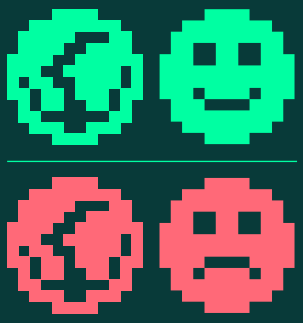
The door for innovation and engagement from the pharma industry is therefore wide open. However, it's important that these initiatives are conducted in a genuinely truthful and ethical way, as nearly one in two **(48%)** also find pharma guilty of greenwashing, and **55%** are tired of pharma companies and brands only pretending they want to act for the good of society.[1]

Therefore, in any initiatives we propose, it's imperative that we make these tangible and actionable, to act as the bridge for HCPs to close the gap between their attitudes and behaviours when it comes to sustainability practices. We'll review this in more detail in the next chapter.

<< Back to contents

PATIENTS

Sustainability is already front of mind for consumers outside of healthcare. **More than 60%** say they value sustainable solutions when shopping, whilst **64%** of US consumers say that sustainability is important to them as consumers.[18] And this trend is only set to continue.[19]



"Our research suggests we're on the brink of a major shift in consumption patterns, where truly sustainable brands – those that make good on their promises to people and the planet – will seize the advantage from brands that make flimsy claims or that have not invested sufficiently in sustainability."

- Harvard Business Review[19]

Patients are starting to relate sustainability to their health

A considerable number of patients are aware of climate change, but fewer directly relate the impacts of climate change to their health. In one survey from The Health Foundation, it was found that **82%** of the UK general public are concerned about climate change, whilst only **one in four** see it as one of the biggest threats to their health; ranking it equally as significant as accidents/injuries and mental health problems.[20]

The same survey also found the public are open to adopting sustainable behaviours, although this belief is more limited for proposals that impact individual treatment decisions and care. For instance, **nine in ten** are willing to return unused medications when given the option.[20]

This aligns with our Point.1 data which show that **nearly half (45%) of HCPs believe that their patients are becoming more concerned about the environmental impact of treatments.**[1] However, this isn't currently translating into treatment preferences, with only 30% of patients proactively requesting environmentally friendly treatment options.[1]

82%

of the UK public are concerned about climate change[20]

25%

of the UK public consider climate change to be one of the biggest threats to human health[20]

<< Back to contents

Patient expectations of pharma are also increasing

An online survey was conducted across 1,304 individuals from the UK, US, Australia, and France to understand consumer demands from healthcare systems and medicine manufacturers.[21]

There was, however, a wider variation in consumer opinion as to whether they would want to know the carbon footprint information of the medicines they were taking, with a lower majority **(52%)** wanting to know this information.[21]

>> THERE WAS A CLEAR CONSISTENCY IN RESPONSE TO HOW CONSUMERS WANTED HEALTHCARE SYSTEMS AND MEDICINE MANUFACTURERS TO ACT:[21]

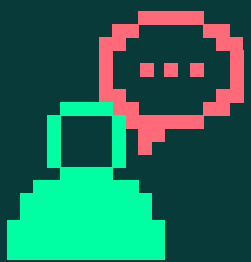
Percentage of people who felt it was important for:

84% Medicine manufacturers to **disclose the carbon footprint of their products**

84% Health systems to try to **reduce the carbon footprint** of the medicines

84% Health systems to **choose medicine suppliers with a lower carbon footprint,** if the costs were the same

73% **Doctors to have access to carbon footprint information** about the medicines they prescribe



"No one has bothered to actually include our organisation or patients in these factors [discussions about ESG]. It is long past due."

- International allergy patient group, USA[22]

<< Back to contents

Patient perspectives on pharma and environment, social, governance (ESG) standards

Although consciousness of the gravity of the climate-health crisis is still limited, patient groups and organisations specifically have begun advocating for greater representation in pharma's ESG-decision making processes, after feeling fairly underrepresented to date.[22]

A report published by PatientView looked into this, analysing expertise and knowledge from 832 patient groups globally, alongside contributions from seven pharmaceutical companies.[22] One thing is clear: ESG matters to patient groups and patients. A total of **93%** of patient groups and **85%** of patients stated that the impact a pharma company has on society is "very important" or "important" to them.[22] Despite this, **49%** of patient groups stated they found it "difficult" or "impossible" to find useful information on a pharma company's ESG performance.[22]

A total of

93%

of patient groups rated a pharmaceutical company's impact on society as "very important" or "important".[22]

55%

of patient groups "always" or "sometimes" take "protecting the environment" into consideration when deciding whether to form a relationship with pharma companies.[22]

Patient–pharma relationships

The ESG performance of a pharma company is so important to patient groups that it is taken into consideration when deciding who to form a relationship with.[22] For instance, **76%** of patient groups would consider whether a pharma company addresses social, or society-wide, issues.[22]

As with HCPs, we are increasingly seeing a need and expectation for pharma to engage in tackling the climate-health crisis in a meaningful and tangible manner. And those that do will benefit hugely as a result.[1] Clearly, there is a huge white space for innovation, partnerships and communication.

<< Back to contents

References

1 Havas Lynx. Point.1 proprietary data: Sustainability White paper outputs. 2023.

2 Havas Lynx. Point.1 proprietary data: Data Analysis. 2023.

3 Agache I et al. Front Sci 2024; 2: 1–23.

4 Yu P et al. ACS Environ Au 2022; 3(1): 5–11.

5 B.M.C. Medicine. BMC Med 2023; 21(281): 1–2.

6 Diabetes UK. Diabetes and climate change: what are the links? Available at: https://www.diabetes.org.uk/about-us/news-and-views/diabetes-and-climate-change-what-are-links. Accessed July 2024.

7 Royal College of Paediatrics and Child Health. Child health inequalities and climate change. Available at: https://www.rcpch.ac.uk/key-topics/child-health-inequalities-climate-change. Accessed July 2024.

8 Green Impact. Green Impact for Health. Available at: https://greenimpact.nus.org.uk/green-impact-for-health/. Accessed July 2024.

9 Mohamed HRA et al. BMC Nursing 2024; 23: 133.

10 The Commonwealth Fund. The Impact of Climate Change on Our Health and Health Systems. Available at: https://www.commonwealthfund.org/publications/explainer/2022/may/impact-climate-change-our-health-and-health-systems. Accessed July 2024.

11 GP Online. Podcast: How can general practice adopt greener ways of working? Available at: https://www.gponline.com/podcast-general-practice-adopt-greener-ways-working/article/1839787. Accessed July 2024.

12 Kotcher J et al. Lancet Planet Health 2021; 5(5): e316–e323.

13 Eco Medics. Our Story. Available at: https://www.ecomedics.co.uk/about-1. Accessed July 2024.

14 Eco Medics. Healthcare Students. Available at: https://www.ecomedics.co.uk/students. Accessed July 2024.

15 Health Care Without Harm Europe. Who we are. https://europe.noharm.org/who-we-are Accessed July 2024.

16 WE Brands in Motion. Healthy Reputation: More Than Medicine. Available at: https://www.we-worldwide.com/insights/brands-in-motion-2023-healthy-reputation-more-than-medicine Accessed July 2024.

17 Businesswire. WE Brands in Motion Health Study: Corporate Reputation Is Leading Factor in Prescribing Decisions. Available at: https://www.businesswire.com/news/home/20230228005038/en/WE-Brands-in-Motion-Health-Study-Corporate-Reputation-Is-Leading-Factor-in-Prescribing-Decisions. Accessed July 2024.

18 Grimmelt A et al. Hungry and confused: The winding road to conscious eating. Available at: https://www.mckinsey.com/industries/consumer-packaged-goods/our-insights/hungry-and-confused-the-winding-road-to-conscious-eating. Accessed July 2024.

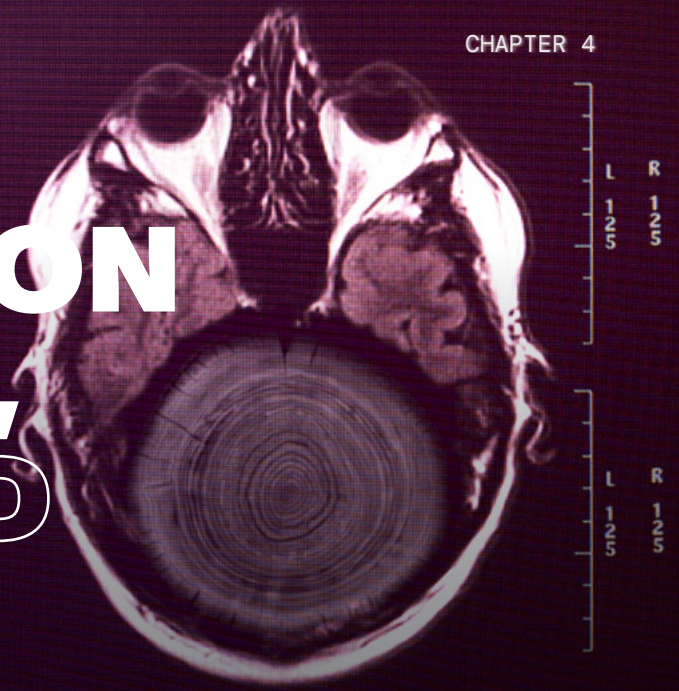
19 Harvard Business Review. Research: Consumers' Sustainability Demands Are Rising. Available at: https://hbr.org/2023/09/research-consumers-sustainability-demands-are-rising. Accessed July 2024.

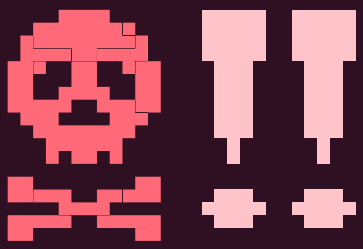
20 The Health Foundation. Public perceptions of climate change and health (September 2021). Available at: https://www.health.org.uk/publications/public-perceptions-of-climate-change-and-health-september-2021. Accessed July 2024.

21 Healthcare for a Thriving Planet. Medicine carbon footprints - what do people want? Available at: https://blog.yewmaker.com/p/medicine-carbon-footprints-what-do. Accessed July 2024.

22 PATIENTVIEW. Pharma and ESG: the Patient Perspective, 2023. Available at: https://www.patient-view.com/wp-content/uploads/2023/11/xx-PV_ESG_PressRelease2023-for-Pharma-FINAL.pdf. Accessed July 2024.

THE INTERSECTION OF CLIMATE, HEALTH, AND PHARMA >>





"Climate change is the biggest threat to humanity. I don't think everybody realises the sense of urgency that is required to address it."

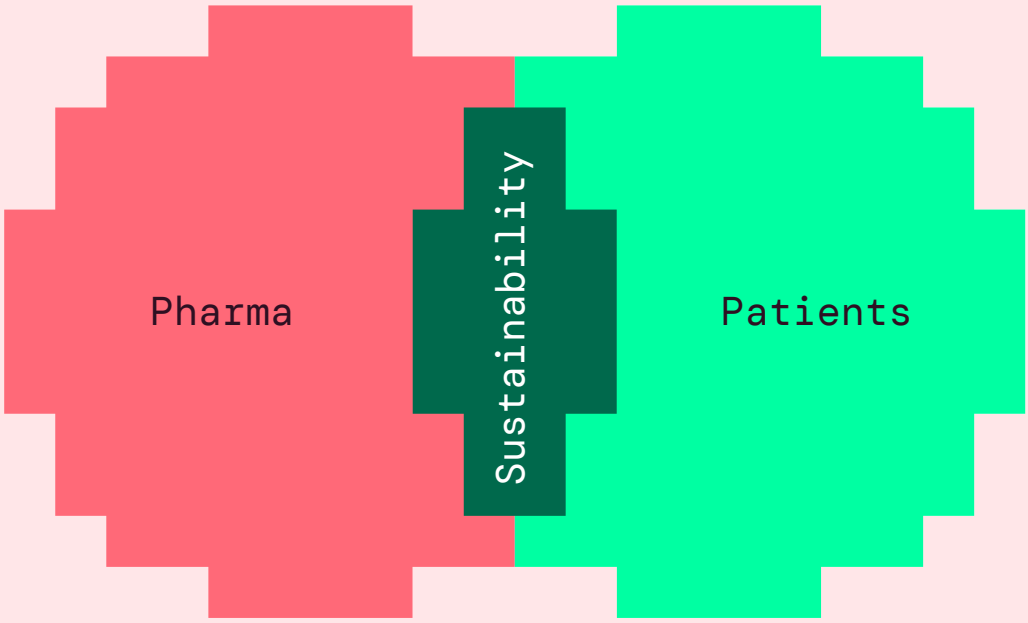
- Pascal Soriot, CEO, AstraZeneca.[1]

We've seen how climate and health are inextricably linked. And how pharma is uniquely placed to drive positive change through both decarbonisation strategies to minimise their own emissions and by playing a pivotal role in responding to the changing health demands caused by the climate crisis.

This places sustainability at a crucial intersection between pharma and patient health (Figure 17); forming a complex, yet interdependent relationship. Any negative impact on the planet's health can have serious repercussions for patient health, which in turn places greater demands on the pharma and healthcare industries. Conversely, positive actions towards the planet's health can also have a beneficial effect on patient health, and on the industries involved.

<< Back to contents

>> FIGURE 17. THE INTERSECTION BETWEEN PHARMA AND PATIENT



This is the new reality. And it strongly suggests that it is in the best interests of the pharma and healthcare industries to look beyond decarbonisation. To go further. To think bigger. To integrate sustainable thinking into the core of their brand ethos and corporate operations.

Let's consider Type 2 Diabetes (T2D) as just one example.

>> FIGURE 18. POTENTIAL AREAS OF OPPORTUNITY IN T2D[2,3]

STATISTIC	CHALLENGE	OPPORTUNITY
Nearly one-fifth of the global burden of type 2 diabetes (T2D) is estimated to be attributed to air pollution, yet does not feature in risk calculators	Underestimating risk = potentially delayed diagnosis	Redevelop risk calculators HCP and patient education
The global rise in temperatures puts people with T2D at an increased risk of dysregulated blood glucose levels	Treatment class choice	KOL-led temperature-based treatment guidelines Patient support content for heat waves
84% of PCPs, and 57% of endocrinologists in Europe believe climate change will alter their approach to care	Prescribing habits	Climate-based input into "ideal" patient profiling

The statistics from chapters 1 and 3 that are represented on the left side of Figure 18 correspond to ubiquitous challenges across pharma brands, shown on the right. These then lead directly into potential areas of opportunity, shown on the far right of the diagram.

Whilst this example focuses on T2D; as discussed previously, climate change affects health outcomes in a way that impacts nearly all therapeutic areas. **So, regardless of the disease, brand, or therapy area – addressing climate change should now be considered a business-critical challenge.**

This is not an opportunity unique to the pharma industry. We have already seen other industries begin to support climate change mitigation through the significant role that brands can play in a mutually beneficial manner.

CASE STUDY

Clothes Live Longer With Vanish, Havas London and Vanish

In 2021, Havas London launched an advertising campaign for Vanish.[4] The campaign's TV ad spotlights the shocking statistic that many of us throw away our clothes after only wearing them as little as ten times, contributing to the 90 million tonnes of clothing waste that goes to landfill every year.[4] By highlighting that "Clothes Live Longer with Vanish", the campaign encourages viewers to use Vanish to prolong the life of their clothes, waste less, and rewear more.[4]

In addition to this, Vanish partnered with the British Fashion Council to make a documentary series that shines a light on the new "Generation Rewear" at the forefront of sustainable fashion.[5]

And this is just one example of how a campaign can encourage a sustainable shift in societal attitudes, transforming behaviours at the same time as staying true to the brand's mission.[4]

<< Back to contents

THE PIVOTAL ROLE OF PHARMA

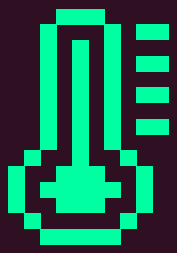
If we look at each of the areas of impact identified in chapter 1, we can begin to paint a tangible picture of where and how pharma could play a more thoughtful role in the climate-health crisis.

> "We want to do things differently in this area and we need to look at prevention. Things like risk calculators and patient education, and moving into prevention of disease versus treatment. Keeping people healthier by predicting the problem and preventing."
>
> - Rupi Pamma, Director, Lung Precision Medicine, AstraZeneca.

Table E: The role pharma could play in the climate-health crisis

R&D	RISK AND INCIDENCE	TREATMENT APPROACHES	CARE AND SYSTEM CAPACITY	MORBIDITY AND MORTALITY
Impact on clinical trial design and trial locations/ seasonality and innovation requirements	Impact on risk and patient identification, therapy area sizing, and HCP segmentation and targeting – including seasonal/geo-based impact	Impact on prescription approaches, pill burden, cost and/or access; including potential seasonal/ geo-based prescription differences	Impact on care requirements, including burden on in-clinic care causing capacity challenges	Impact on related morbidities and mortalities, often relating to additional burden of care
• Clinical trial design • Clinical trial selection • Clinical trial recruitment	• Risk calculators • Patient ID tools • Patient population sizing • Patient profiling • HCP segmentation and targeting, and sizing • HCP profiling • Media and targeting	• HCP and patient education • Guidelines • Peer-to-peer education • KOL communications • Treatment paradigms • Treatment escalations • Patient adherence • Sustainability ranking of treatment choices	• Patient support programmes • Telemedicine needs • Heat-wave and seasonal support content	• Guidelines • HCP and patient education

<< Back to contents



Current clinical trials are not yet mandated to monitor temperature or air pollution data. It is perhaps not surprising that this is also becoming an expectation of healthcare professionals (HCPs)

Let's dig into a few of these examples:

Clinical trial design

In chapter 1, we observed that **fluctuations in temperature – both rises and falls – have been linked to an approximate 20% surge in migraines reported for every 5°C alteration.**[6] Similarly, a connection was noted between higher temperatures and air pollution in an array of health outcomes, including cardiovascular deaths,[7] hospital admissions for multiple sclerosis,[8,9] suicide rates,[10] cancer-related fatalities,[11] dysregulation of blood glucose in diabetes,[2] complications during pregnancy and childbirth,[12,13] as well as increased rates of ADHD,[14] autism,[14] early menopause,[15] antibiotic resistance,[16] and worsening of respiratory[17,18] and immune disorders.[19]

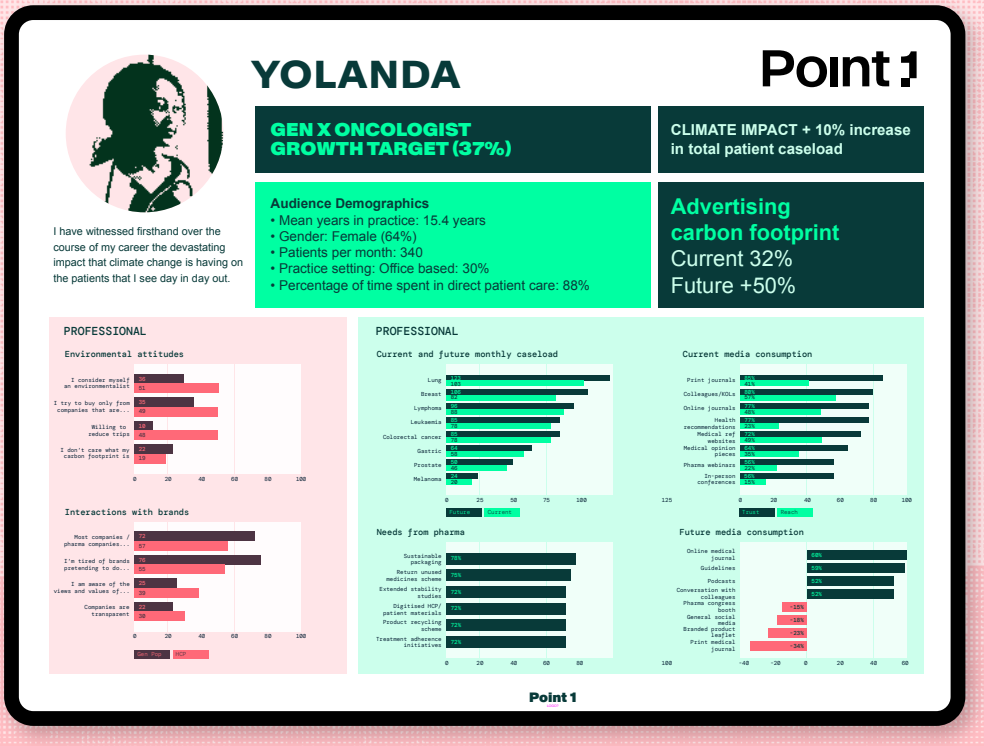
The sheer impact of rises in temperature and air pollution is remarkable and could significantly compromise the outcomes of clinical trials in many, if not all these therapeutic areas. Yet despite this, current clinical trials are not yet mandated to monitor temperature or air pollution data. **It is perhaps not surprising that this is also becoming an expectation of healthcare professionals (HCPs);** for example, in neurology, our proprietary data show that one in five neurologists across the US and Europe would like to see climate-conscious clinical trial design.[20]

Looking ahead, it's widely anticipated that climate change will be integrated into the framework and evaluation of clinical and real-world evidence (RWE) trials. This integration must aim not only to negate potential variables within the study, but to also bridge significant knowledge gaps regarding the effects of climate change on human health.

HCP segmentation and profiling

We can illustrate the significance of incorporating climate considerations into HCP segmentation and profiling by examining the field of oncology. As highlighted in the first chapter, we can see a multitude of studies have established that air pollution not only escalates the prevalence, but also diminishes patient survival rates across various cancer types.[11] Equally, we saw in chapter 3 that 48% of oncologists will prescribe brands with the environment in mind.[3]

>> FIGURE 19. THIS FIGURE SHOWS AN EXAMPLE ONCOLOGIST PROFILE ASSESSING CLIMATE CHANGE ATTITUDES, BEHAVIOURS AND NEEDS



All data are from our proprietary data set, Point.1.
For more information or other therapy area segments, please get in touch at: point.1@havaslynx.com.

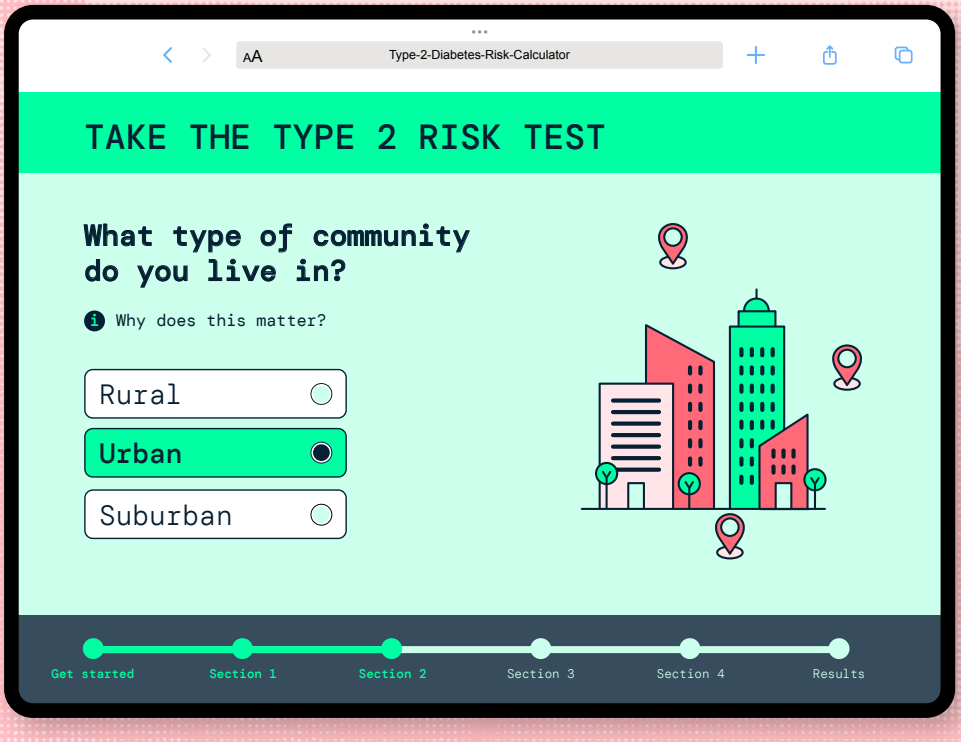
Yet, these critical factors are still frequently overlooked when compiling HCP targeting and the sizing of patient populations. This has to change. Additionally, by using tools like our proprietary OCX Symphony™, we can begin to calculate the reach and influence of different combinations of tactics and channels, enabling us to develop the most climate-conscious engagement strategies. We'll discuss this more in the next chapter.

<< Back to contents

Risk calculators and patient identification tools

As we have seen in chapter 1, there is a direct correlation between climate change and incidence or worsening of multiple different conditions. Failing to consistently consider the link between climate change and risk could create knock-on implications such as diagnoses or treatment delays. For diseases such as T2D, delayed diagnosis has been shown to elevate the risk of disease-related complications, such as microvascular complications and myocardial infarctions.[21]

Although the risk is well understood for some conditions, e.g. respiratory, many risk calculators and patient identification tools still seldom include air pollution or fluctuating temperatures within them. For this paper, we checked risk guidance and calculators for several conditions across multiple credible sources: Cancer Research UK,[22] Mayo Clinic,[23] American Diabetes Association,[24] National Health Service,[25] Centers for Disease Control and Prevention[26], and National Institutes of Health;[27] regrettably, each of the above failed to identify climate change as a risk for various common and life-threatening conditions.



It would be immensely valuable for pharma to take a leading role in the redevelopment of risk assessments and calculators, as well as patient identification tools, to bring the health consequences of climate change to the forefront.

<< Back to contents

Patient support materials

A notable observation from chapter 1 was the impact of climate swings on the health of patients. For example, heat waves or spikes in air pollution have the ability to impact diseases such as multiple sclerosis, mental health conditions, cancer, and myocardial infarction.[7,8,11,27] For the latter, even short-term (up to 7 days) exposure to minimally increased concentrations of $PM^{2.5}$ is associated with increases in acute myocardial infarction, heart failure hospitalisation, and death.[7]

Again, there is frighteningly little information available to educate and support patients on the risks they face from climate change. Heat wave and air pollution guidance for almost all conditions remains a key unmet need that could be fulfilled by pharma.

Corporate activities

Equally, beyond brand-level initiatives, there's so much more we can do at a corporate and industry level, especially when we begin to integrate sustainable strategic thinking into the way we do business. Initiatives like recycling schemes, such as those touched upon in chapter 2, are fortunately becoming more common – which is great. But there are opportunities for these types of activities to get more creative and deliver tangible results. This goes beyond encouraging positive behaviours – it's about delivering real results that will improve the health of future generations.

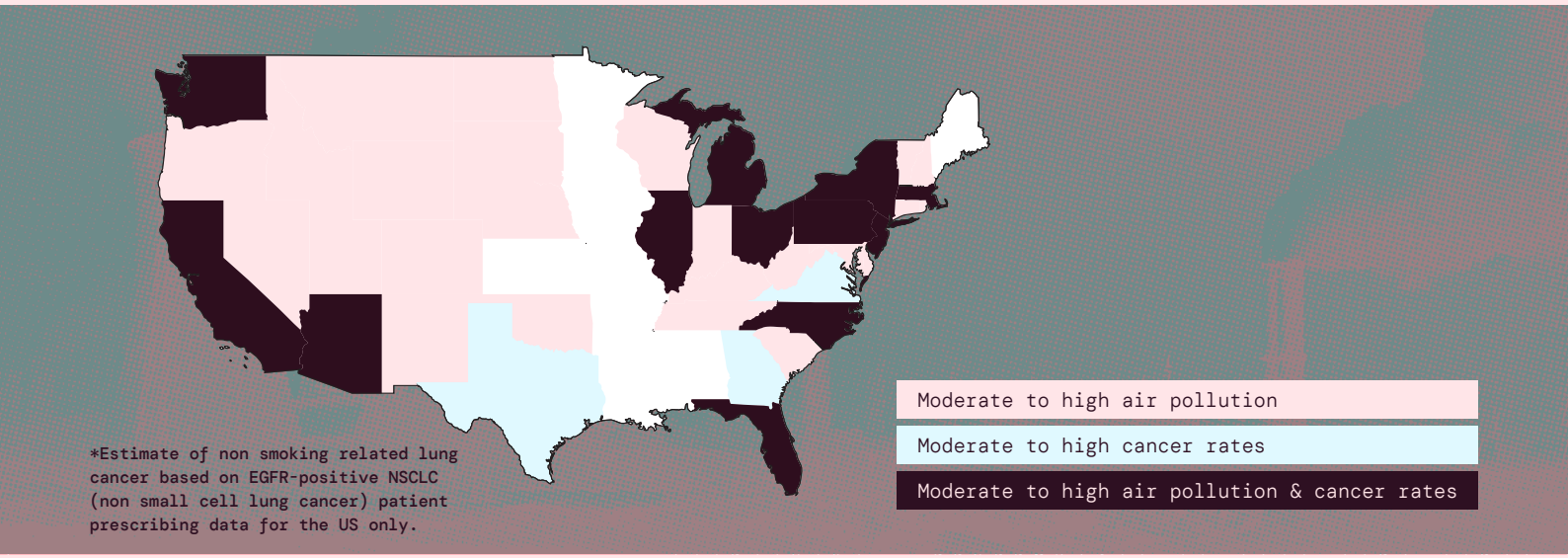
Carbon removal and reforestation

AstraZeneca developed the **"AZ Forest" programme** in 2020, to "plant and maintain more than 50 million trees by the end of 2025 in recognition of the strong connection between healthy people and a healthy planet".[28] They then upgraded this in 2023 with a $400 million investment to plant 200 million trees across six continents by 2030; the same year by which they pledge to halve their environmental footprint across their entire value chain.[28,29]

This is **echoed elsewhere in the industry,** with similar pledges coming from **GSK, Novartis, Amgen, Merck KGaA, Novo Nordisk, Roche, and Sanofi.[29]**

However, if we consider that AstraZeneca's primary area of focus is oncology, and that in chapter 1 we identified that air pollution increases the incidence and shortens the survival of all types of cancer – most notably lung cancer[11] – then we immediately unlock the opportunity to consider a more meaningful integration of regeneration strategies, such as planting trees. Imagine if we deliberately targeted areas of high air pollution for reforestation, not just doing good for the world, but beginning to reverse the impact that climate change is having on our health.

>> FIGURE 20. VISUALISATION OF GEOGRAPHICAL AREAS OF OVERLAP FOR PEOPLE PRESENTING WITH BREAST, LUNG* OR PROSTATE CANCER, BASED ON HISTORICAL PRESCRIBING DATA BETWEEN 2019-2023[30,31]



Thinking more creatively like this underpins Havas Lynx's proactive idea of a "Forever Forest". Using data sources such as Trinity Life Sciences, we can directly plot lung cancer prevalence against high air pollution spots to identify where tree planting efforts would have the highest impact. Ideas like this are infinitely feasible – and almost obvious. But they will only happen when we connect climate change and the health impact with the pivotal role we can play as brands and corporations.

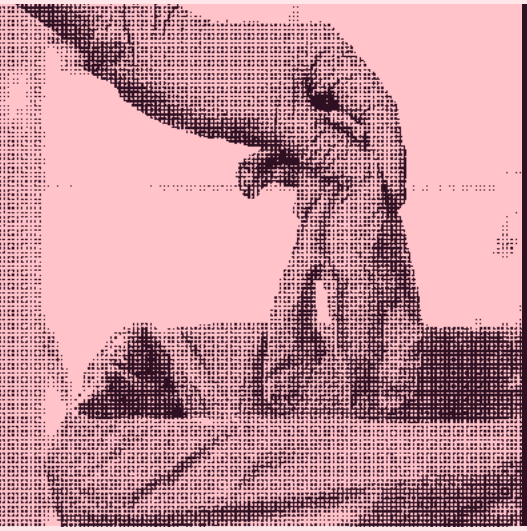
<< Back to contents

Awareness of the problem

Throughout this white paper, it has become increasingly apparent that the climate crisis is not only vast in scale, but also startling in its stealth. The silent progression of this phenomenon, with only sporadic coverage of conditions like asthma, underscores its status as a potentially unparalleled threat to global health: a threat that remains largely unseen and unspoken. So, to catalyse the crucial response from all involved parties, our first step must be to amplify awareness of this critical issue.

Pharma companies have a pivotal role to play here. Initiatives like those led by Maria Koijck, harness the power of storytelling and creativity to convey the message in memorable ways. In this instance, operating theatres are responsible for generating up to 70% of a hospital's waste.[32]

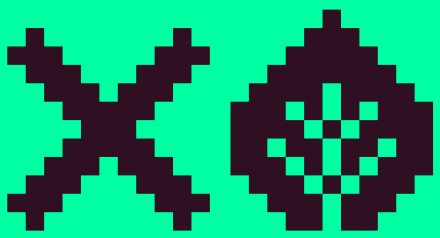
Building on this mindset, working together, we must broaden and share the conversation about this largely unaddressed issue. First, by acknowledging the problem, and then by propelling change.



Initiatives like those led by Maria Koijck, harness the power of storytelling and creativity to convey the message in memorable ways.[32]

As demonstrated by our Point.1 data in the preceding chapter, such initiatives have a direct correlation with Net Promoter Scores (NPS). This makes sustainable practices at the corporate level not only crucial for the planet, but also for business.

Greenwashing is the practice of making **misleading or unsubstantiated** claims about an organisation's environmental performance.[33]



WE NEED TO TALK ABOUT GREENWASHING

When we're talking about what is good for the planet and good for patient health and pharma, we also need to talk about greenwashing. It's a serious problem with serious implications; including both direct consequences for the environment as well as to end-consumers and businesses – because it risks serious legal and reputational damage if found to exist.[33–35]

It's also alarmingly common. A 2021 report found that, within the European Union nearly 50% of companies audited had fully or partially misled the public with their environmental claims.[34] This is perhaps no surprise when consumer demand for environmentally friendly brands is at an all-time high.[36]

Pharma and greenwashing

Nearly half (48%) of HCPs believe pharma are guilty of greenwashing. Only 30% believe that pharma are transparent about their environmental commitments, despite 73% believing they need to be.[20]

US consumers rated "being eco-friendly" as one of the top three factors that encourage them to buy from a brand.[37]

As with any other company, pharmaceutical companies are liable if they greenwash. The European Union requires detailed information about sustainability efforts to keep this in check. Similarly, the US Securities and Exchange Commission is developing new regulations for how companies, including pharmaceutical manufacturers, must disclose their climate-related expenditures.[34]

<< Back to contents

Limiting Greenwashing – The Green Claims Code, UK

To provide some guidance to help companies limit greenwashing, The Green Claims Code was developed by the Competition and Markets Authority (CMA).

It sets out six key points to follow, stating that any environmental claims must:[38,39]

1. Be truthful and accurate
2. Be clear and unambiguous
3. Not omit or hide important information
4. Only make fair and meaningful comparisons
5. Consider the full life cycle of the product
6. Be substantiated

So, it's clear there are several opportunities across the pharma industry to make positive changes to reduce carbon emissions. These span from enhancing practices and processes which already exist to make them more carbon efficient, to finding space for new initiatives which make a real difference. What's clear though is whatever our strategy, we have to continue to hold ourselves accountable to ensure any claims are genuine and we are therefore truthfully contributing to change.

References

1 IMD. AstraZeneca chief calls for global cooperation in the fight against COVID-19 and climate change. Available at: https://www.imd.org/ibyimd/videos/astrazeneca-chief-calls-for-global-cooperation-in-the-fight-against-covid-19-and-climate-change/. Accessed July 2024.

2 B.M.C. Medicine. BMC Med 2023; 21(1): 281.

3 Havas Lynx. Point.1 proprietary data: Data Analysis. 2023.

4 Creative Salon. New vanish ad to fight clothing waste. Available at: https://creative.salon/articles/work/clothes-live-longer-with-vanish-havas. Accessed July 2024.

5 The Drum. Vanish: Generation Rewear by Havas. Available at: https://www.thedrum.com/creative-works/project/havas-vanish-generation-rewear. Accessed July 2024.

6 Ruszkiewicz JA et al. Environ Res 2019; 177: 108637.

7 Jacobsen AP et al. Am J Prev Cardiol 2022; 12: 100391.

8 Louis S et al. Neurology 2023; 100(10): 474–483.

9 Chacko G et al. Int J Environ Res Public Health 2021; 18(11): 5962.

10 Rao M et al. The climate crisis and the rise of eco-anxiety. Available at: https://blogs.bmj.com/bmj/2021/10/06/the-climate-crisis-and-the-rise-of-eco-anxiety/. Accessed July 2024.

11 Yu P et al. ACS Environ Au 2022; 3(1): 5–11.

12 National Institutes of Health. Extreme temperatures could increase preterm birth risk. Available at: https://www.nih.gov/news-events/news-releases/extreme-temperatures-could-increase-preterm-birth-risk. Accessed July 2024.

13 World Health Organization. Protecting maternal, newborn and child health from the impacts of climate change: A call for action. Available at: https://www.who.int/publications/i/item/9789240085350. Accessed July 2024.

14 Kim H et al. Front Public Health 2020; 8: 575330.

15 Cucinella L et al. Maturitas 2023; 178: 107825.

16 Burnham JP. Ther Adv Infect Dis 2021; 8: 2049936121991374.

17 Andersen ZJ et al. Breathe (Sheff) 2023; 19(2): 220222.

18 Asthma and Lung UK. Air pollution effects on your lungs, including lung cancer. Available at: https://www.asthmaandlung.org.uk/living-with/air-pollution/your-lungs. Accessed July 2024.

19 Agache I et al. Front Sci 2024; 2: 2813–6330.

20 Havas Lynx. Point.1 proprietary data: Sustainability White paper outputs. 2023.

21 Gopalan A et al. Diabet Med 2018; 35(12): 1655–1662.

22 Cancer Research UK. Reducing your risk of breast cancer. Available at: https://www.cancerresearchuk.org/about-cancer/breast-cancer/risks-causes/reducing-breast-cancer-risk. Accessed July 2024.

23 Mayo Clinic. Heart Attack. Available at: https://www.mayoclinic.org/diseases-conditions/heart-attack/symptoms-causes/syc-20373106. Accessed July 2024.

24 American Diabetes Association. Take the Type 2 Risk Test. Available at: https://diabetes.org/diabetes-risk-test. Accessed July 2024.

25 NHS. Causes Psoriasis. Available at: https://www.nhs.uk/conditions/psoriasis/causes/. Accessed July 2024.

26 Centers for Disease Control and Prevention. What is ADHD?. Available at: https://www.cdc.gov/ncbddd/adhd/facts.html. Accessed July 2024.

27 Burke M et al. Nature Clim Change 2018; 8: 723–729.

28 AstraZeneca. AstraZeneca announces $400 million investment in reforestation and biodiversity in support of climate action and human health. Available at: https://www.astrazeneca.com/media-centre/press-releases/2023/astrazeneca-announces-400-million-investment-in-reforestation-and-biodiversity-in-support-of-climate-action-and-human-health.html. Accessed July 2024.

29 Kansteiner F. AstraZeneca sows $400M investment in push to plant 200M trees by 2030. Available at: https://www.fiercepharma.com/pharma/astrazeneca-sows-400m-investment-push-plant-200m-trees-2030. Accessed July 2024.

30 AstraZeneca & Trinity Life Sciences. Project Plato Preliminary Findings. 2023.

31 OpenWeather. OpenWeather. Available at: https://openweathermap.org/. Accessed July 2024.

32 Taylor J. BMJ 2023; 383: 1524.

33 ASKEL. 9 negative effects greenwashing has on your business. Available at: https://askelsustainabilitysolutions.com/negative-effects-of-greenwashing-on-business/. Accessed July 2024.

34 Future Bridge. The Legal Risks of Greenwashing and How to Avoid Them. Available at: https://future-bridge.eu/the-legal-risks-of-greenwashing-and-how-to-avoid-them/. Accessed July 2024.

35 Hayes A. What Is Greenwashing? How It Works, Examples, and Statistics. Available at: https://www.investopedia.com/terms/g/greenwashing.asp. Accessed July 2024.

36 Faire. Trendspotting: Demand for sustainable products shows no signs of slowing. Available at: https://www.faire.com/blog/industry-insights/sustainable-product-trends/. Accessed July 2024.

37 Cliffs Notes. GWI From awareness to action 2023. Available at: https://www.cliffsnotes.com/study-notes/3692406. Accessed July 2024.

38 GOV.UK. Green Claims Code. Available at: https://greenclaims.campaign.gov.uk/. Accessed July 2024.

39 Competition & Markets Authority. CMA guidance on environmental claims on goods and services. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1018820/Guidance_for_businesses_on_making_environmental_claims_.pdf. Accessed July 2024.

HOW CAN WE MAKE OUR MARKETING MORE SUSTAINABLE >>

WORKING TOWARDS AD NET ZERO

It is not only the pharmaceutical industry that must address the climate crisis; the marketing and advertising industry must also act. While there have been some positive shifts within our industry, it is important to acknowledge that there is still room for considerable improvement. Steps are being made to record, measure, and reduce emissions associated with the work produced by our industry. Ad Net Zero (ANZ) is the advertising industry's call to action. Its ambition is to reduce the carbon impact by decarbonising the production, distribution, and publication of advertising to real net zero.[1] Its five-point Action Plan provides a guide for reaching net zero, and includes:[2]

- **Reducing emissions from advertising business operations**
- **Reducing emissions from advertising production**
- **Reducing emissions from media planning and buying**
- **Reducing emissions from awards and events**
- **Harnessing advertising's power to support behaviour change**

The ANZ movement includes 18 global supporters (+13 trade associations), 103 companies in the UK, 75 in the US, 71 in Ireland, and 47 in New Zealand.[3] ANZ members have two mandatory requirements: to set a public science-based net zero target by July 2024; and to publicly report against this target annually, so that supporters' targets are credibly aligned with, and accountable to, the goals of the Paris Agreement.[4] A total of 81% of global ANZ supporters have either achieved or set 100% renewable energy targets.[4]

<< Back to contents

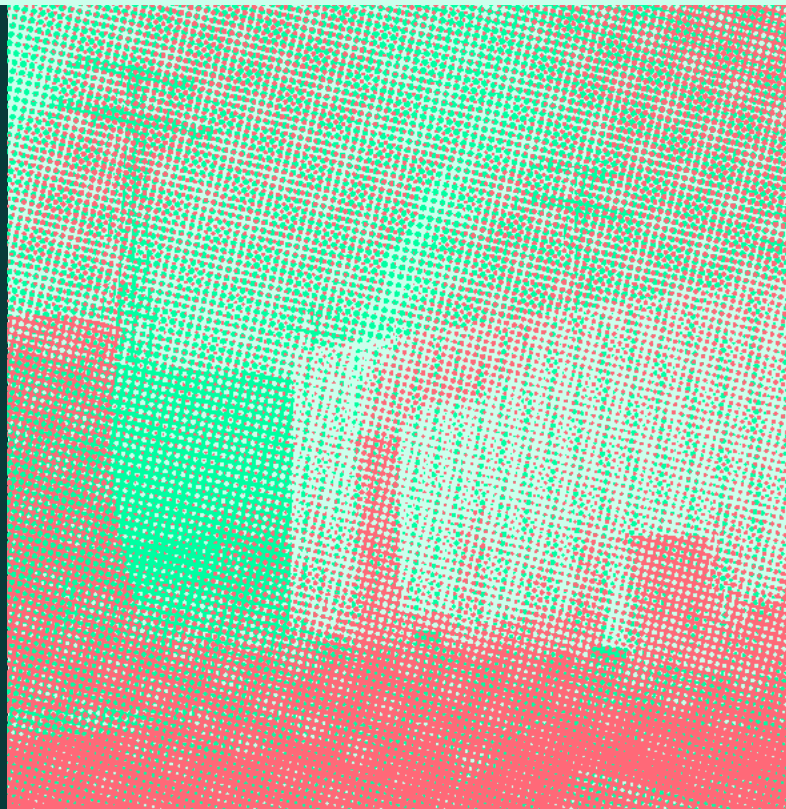
HOW CAN WE MAKE MEDIA AND MARKETING MORE SUSTAINABLE IN PHARMA?

Campaign development

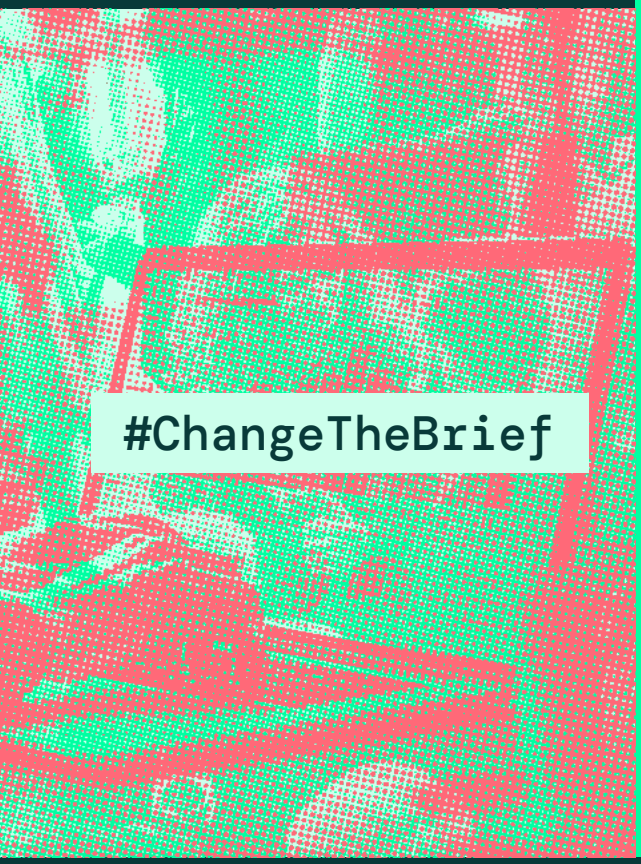
It's no secret that campaigns generate a lot of waste. Today, there is rarely a need for high-production campaign shoots in faraway locations, or to fly people out to do them at huge costs, both financially and in terms of carbon expense.[5] In our increasingly inter-connected, digital, and virtual world, shoots can now be managed remotely with a smaller group of people. Computer-generated imagery (CGI) and artificial intelligence (AI) can even play a part in creating campaigns.[5] There's a tendency in our industry to always want to create something new – but could materials, assets, and images be recycled or re-skinned to prolong their use and limit waste?[5] This is especially pressing as the pharma industry increasingly moves toward a world of multiple indication medicines; in 2018, over two-thirds of cancer medicines were approved for use in multiple indications.[6] Rather than creating multiple different creative campaigns for the several indications of one drug, we could be smarter and develop one master brand up-front to avoid creating assets shoot by shoot.

CARBON CALCULATORS

Like most organisations within our industry, we want to better support our clients in their sustainability journey on a large scale, and help them measure and reduce their emissions linked to advertising. In November 2023, Havas launched the Havas Carbon Impact calculator: the first and only internal tool for calculating the end-to-end carbon footprint of a creative, media, or event campaign. These types of calculators enable agencies to deliver a full carbon impact assessment of a campaign for a shared client to inform and help accelerate the decarbonisation of the advertising sector.[7,8]



<< Back to contents



CAMPAIGN PURPOSE

As ANZ identifies, campaigns also hold the ability to change behaviours. Initiatives like The Purpose Disruptors #ChangeTheBrief capitalise on this possibility. Building a network of 4,000 industry insiders to catalyse the industry's climate transition to align with the 1.5°C Intergovernmental Panel on Climate Change (IPCC) global warming target,[9] their #ChangeTheBrief Alliance – a partnership between agencies and their clients[10] – offers a learning programme to help create award-winning work that normalises sustainable values, lifestyles, and behaviours.[10]

Equally, advertising plays a big part in shaping the narratives of society. This means there's an opportunity to promote more responsible lifestyles and sustainable norms. So, HAVAS Paris created the Impact Score: a tool to measure the societal impact of the advertising campaigns we create (Figure 22).[11]

The tool tests a campaign on a representative sample of the population. Based on the main United Nations Sustainable Development Goals, viewers critique the campaign across seven areas:[11]

- Good health and well-being
- Female representation
- Fair representation of diversity
- Promoting more responsible consumption
- Limiting climate change
- Protecting the environment (biodiversity, water, etc.)
- Reducing social inequalities

>> FIGURE 22. THE PARIS IMPACT SCORE DASHBOARD[11]

Tools such as these enable a more thoughtful conversation not just on the production, but on the actual purpose of campaigns.

<< Back to contents

CAMPAIGN CONTENT

Campaign content and tactical waste can also be an extensive problem for the industry.

"Anecdotally, I hear clients say that up to 70% of content they produce at global is never used at a local level. This isn't something specific to one client – this is across the board. Almost every client I speak to is looking to make gains in this space. I think about the waste of carbon, money, and time and it's truly horrific."

– Claire Knapp, CEO of Havas Lynx.

Having the appropriate brand strategy allows us to be more targeted in what we produce, and why we produce it. Part of the challenge historically has been a lack of data to guide these decisions, but with tools such as our proprietary OCX Symphony™ we can be more concrete in what needs to be produced to reach and influence the right target audience. For example, we know that by leveraging KOL content and congress sponsorship, a brand will be able to influence 59% of specialists; however, if we include social media, podcasts, and leave-behinds, that will increase to 84%. This allows us to be more conscious than ever in what we need to produce, the carbon cost of these investments, and the expected returns.

DIGITAL

Digital sustainability

Many companies use digital to accelerate their green goals; e.g. swapping commutes for video calls and print for digital. But the digital realm can also be unsustainable. In 2020, digitisation was estimated to generate 4% of global greenhouse gas emissions.[12] Storing, processing, and transferring data requires a lot of energy; we need to consider this when working virtually or creating digital assets.

<< Back to contents

Digital sustainability is a new and growing field that includes designing, implementing, and using technology in more efficient ways. One area of focus is building websites with digital decarbonisation in mind. That is, reducing carbon emissions and energy consumption, but not at the expense of the aesthetics or end user experience. There are many ways we can build websites sustainably, as outlined below:

- **Simplified UX/UI** – clear and efficient navigation coupled with concise and streamlined content is not only impactful, but also sustainable. Lots of clicks, long user journeys, and multiple loading pages are all very energy intensive.
- **Optimised multimedia** – multimedia also uses a lot of energy, so should be used intentionally for key moments of richness. Optimisations include:
  - **Compression tools**; which can reduce image size without impacting quality
  - **Lower resolution image formats**; for instance, Scalable Vector Graphics (SVG), bitmap, duotone or monotone
  - **Linking to third-party sites with renewable energy sources**; such as YouTube
  - **Video content which only plays on demand**; avoiding auto-play elements or video looping
- **Carbon aware design** – certain design elements can also help to reduce associated carbon emissions. For instance, some colours are more energy intensive than others, and custom fonts require download on each use. Using system fonts reduces data transfer, and darker user interface treatments can lessen the overall screen power usage. This white paper has been designed using an environmentally-friendly and accessible colour palette, with bitmap images and icons, in an effort to minimise energy usage.
- **Efficient code** – in order to minimise unnecessary energy expenditure, code used to create a website should be lightweight, with little electronic waste, thereby minimising the processing power and energy required to run the website.

As well as being more sustainable, digitally sustainable sites perform better too. A lightweight, sustainable site has pages that will load faster, so they're easier to access. Plus, the faster the page load speed, the more likely it is to be found in Google search results.

This white paper uses an energy efficient colour palette, avoiding white backgrounds (which are energy intensive) and all text has an AAA contrast rating

AAA rating: text has a contrast ratio of at least 7.0 which means you're less likely to need to increase brightness on your screen and thereby use less energy.

<< Back to contents

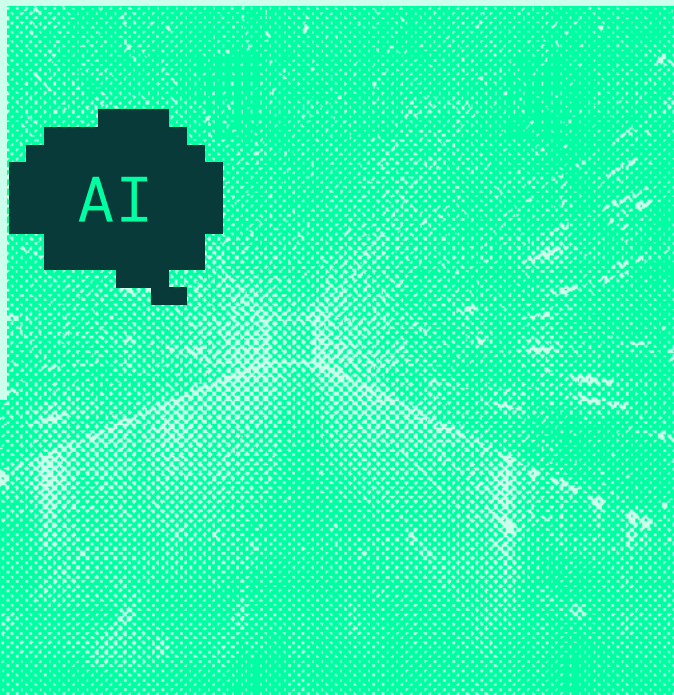
"Efficiency is critical to good CX, so a great CX strategy tends to be highly sustainable. On a functional level, we need to help people get what they want as easily as possible: shorter journeys; faster load times; fewer clicks. This means less energy wasted on inefficient journeys. Even when we're delivering 'surprise and delight' experiences, we want to make them highly targeted and personalised, reducing wastage. Every action has an environmental impact, so there is always a compromise to be made. But if your ecosystem is unsustainable, it's probably a poor experience too."

- Jack Deacon, Head of CX Strategy

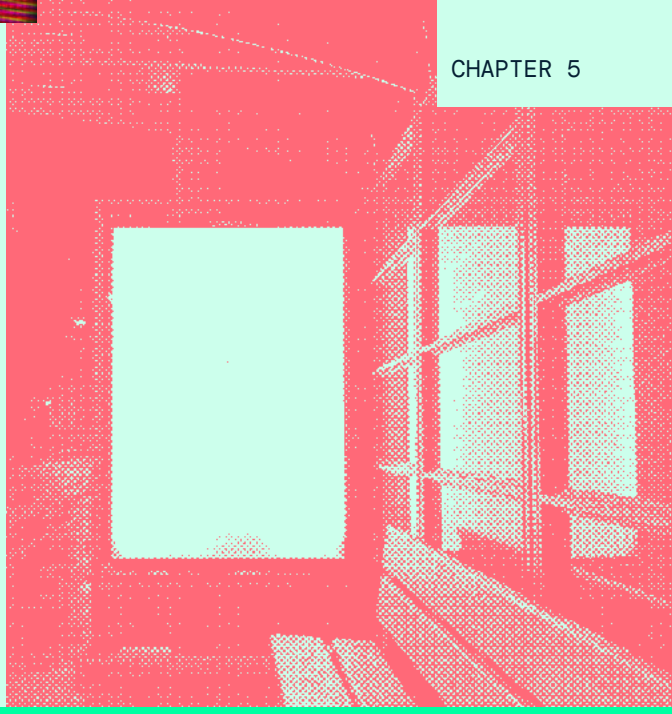
Gen AI

The arrival of 3D and generative artificial intelligence (Gen AI) in virtual production marks a transformative shift towards sustainability in the production industry.[13] Gen AI can generate text, images, or videos using generative models.[14] Gen AI can accelerate content supply chain management, content creation, measurement, and optimisation; and translation, asset taxonomy and management, whilst also streamlining campaign development. However, Gen AI does consume significant computer power and generates CO_2. Practiced correctly, and with data-saving strategies, it can be more sustainable than traditional methods. For example, during the 2020 lockdown, a Land Rover commercial used virtual production and CGI, cutting carbon emissions by 82% compared to a full live-action shoot.[15]

Practiced correctly, and with data-saving strategies, it can be more sustainable than traditional methods.



Carbon emissions from digital ad campaigns can be reduced by 63% when campaigns are optimised for Attention Time



MEDIA PLANNING AND BUYING

GARM Sustainability Quick Action Guide

Together with Ad Net Zero, GARM created the world's first guide to sustainable media for advertisers; identifying 10 areas across planning, buying, and activation where advertisers can reduce the direct carbon emissions of their advertising activity. For media planning and buying, the guide consolidates current best practice on media sustainability, including advice such as:[16]

OPTIMISE FLIGHTING TO INCLUDE OFF-PEAK ENERGY PERIODS	CONSIDER EMISSIONS DATA IN MEDIA MEASUREMENT MODELS	STREAMLINE AND OPTIMISE DATA USAGE	FREQUENCY CAPPING AND RIGHT SIZING
Media flighting strategies can likely be optimised in a way that considers energy use, whether based on network usage or energy source used[16]	As it becomes more reliable, media agencies can increasingly weigh up channel tactics based on media emissions data: balancing an array of metrics spanning business outcomes, media reach, media impact, media efficiency, media quality, and media sustainability[16]	Data are frequently used to improve targeting. Reviewing the layers and ways in which data are handled and applied to campaigns can be examined so that it is done in an energy-efficient manner[16]	Address impression wastage by accurately sizing your target audience and capping the frequency with which you reach them on a weekly basis[16]

<< Back to contents

Attention metrics

Every day, the average person is exposed to 6,000 to 10,000 ads, but only one-third get the audience's full attention.[17] This is not only to the detriment of campaigns, but also the environment. Ads require a lot of energy to run, which generates emissions. The average digital ad campaign releases 5.4 tons of carbon into the atmosphere; 35% more than what the average person emits in a year.[18] Not only are ads over-exposed to the wrong audience, but sometimes they never reach them; approximately 40% of online ads are not viewed, despite being presented on the screen.[18] Attention metrics are one way of tackling this problem – where prioritising quality over quantity benefits both consumers and the planet.[17]

"Advertising contributes an additional 32% to an individual's carbon footprint, and the carbon footprint of advertising is rising with an 11% increase since 2019. Now, more than ever, we need to work harder to ensure we are as effective and targeted to the needs of customers to minimise wastage."

- Phil Streit, Point.1, Havas Lynx

Since 2021, Havas Lynx Media have partnered with Lumen, an attention measurement company, to create the Meaningful Marketplace. This is the largest database of attention data across the healthcare and pharma industry. Every media campaign Havas runs collects data on the time HCPs spend viewing an advertisement, allowing all advertisers to optimise their media spend to placements that are not only more effective, but also less carbon intensive.

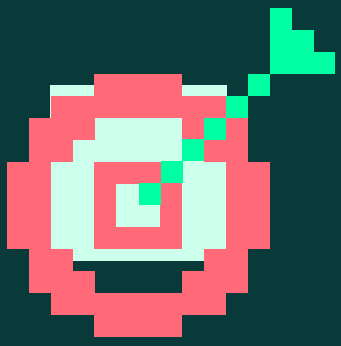
A study by Playground, a leading attention measurement and optimisation company, found that carbon emissions from digital ad campaigns can be reduced by 63% when campaigns are optimised for Attention Time; removing advertising from platforms where Attention Time is below 0.5 seconds.[18] By doing this, the average Attention Time per impression also grew by nearly 40%.[18] The study also found that where ads appear is also important, and by removing the top 20% most-polluting web domains from ad campaigns, advertisers could reduce emissions by almost 60%.[18]

<< Back to contents

Data-driven media

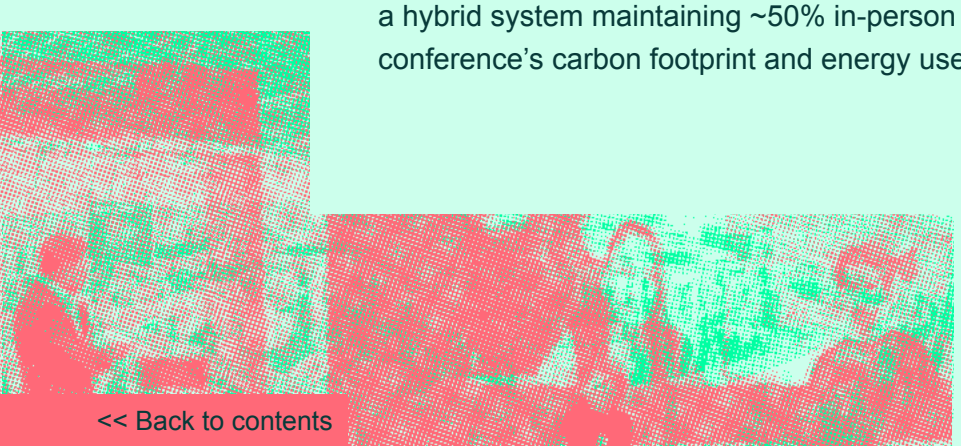
Data such as that from Point.1, a proprietary data product created by Havas Lynx offering the most comprehensive view of HCPs' professional and media behaviours, allow us to be more targeted and less wasteful in our media. Adverts can be highly targeted to reach the right people at the right time, through the right channels. We can also use data sets such as Point.1 to calculate the advertising carbon footprint today and what that will look like in the future, based on changing media consumption habits within specific segments.

Adverts can be highly targeted to reach the right people at the right time, through the right channels



CONGRESSES AND CONFERENCES

The global conference industry has a significant impact on our environment. Prior to the start of the COVID-19 pandemic, the global conference industry was contributing the same annual greenhouse gas emissions as the entire United States: 0.138 to 5.31 billion tons of CO_2 equivalent a year.[19] A silver lining to the pandemic was the opportunity it gave us to reflect on how our travel impacts the environment, and question whether attending in-person events across the globe was absolutely necessary.[20] A study published in *Nature Communications* in 2022 suggested that shifting in-person conferences to online platforms could reduce their carbon footprint by 94% and energy use by 90%, whilst a hybrid system maintaining ~50% in-person participation could reduce a conference's carbon footprint and energy use by 66%.[19]



Virtual and hybrid congresses offer sustainability benefits and provide opportunities for easier data and insight gathering, via built-in surveys and evaluation forms.[20] Virtual and hybrid events have a significant benefit from a social responsibility perspective. “Conference inequity” is common in global health, with Low- and Middle-Income Countries attendees under-represented at global health conferences. Face-to-face events are generally attended by more senior members from distinct socio-economic and demographic backgrounds: i.e. Western and affluent. By reducing the need to travel and its associated barriers (from costs to visa restrictions), hybrid congresses allow a broader dissemination of best clinical practice, scientific data, and ideas to all. Engaging with a wider audience and disseminating messaging and data more broadly also has a demonstrable return on investment in terms of engagement, clicks, and improved understanding.[20]

Hybrid congresses allow a broader dissemination of best clinical practice, scientific data, and ideas to all

The sustainability benefits of hybrid events, coupled with their increased accessibility means that they create a fairer playing field for all medical experts, for the good of the planet, of healthcare, and of pharma companies. However, as of today there is still ample opportunity to innovate in this space, finding smart ways to bring the networking and relationship-building opportunities of in-person conferences with the carbon-saving benefits of virtual. It is highly anticipated that we will see inroads being made in this space over the coming years.

<< Back to contents

References

1 AD Net Zero. Why join us? Available at: https://adnetzero.com/why-join-us/. Accessed July 2024.

2 AD Net Zero. The Ad Net Zero Action Plan. Available at: https://adnetzero.com/the-ad-net-zero-action-plan/. Accessed July 2024.

3 AD Net Zero. The momentum is building. Available at: https://annualreview2023.adnetzero.com/momentum-is-building. Accessed July 2024.

4 AD Net Zero. Action plan. Available at: https://adnetzero.com/the-ad-net-zero-action-plan/. Accessed July 2024.

5 Marketing Week. Marketers must rethink campaign production to become more sustainable. Available at: https://www.marketingweek.com/marketers-rethink-campaign-production-become-more-sustainable/. Accessed July 2024.

6 Mills M et al. BMC Health Serv Res 2023; 23: 150.

7 Havas. Environment. Available at: https://www.havas.com/environment/. Accessed July 2024.

8 Havas carbon impact calculator. F.A.Q. Available at: https://carbonimpactcalculator.havas.com/assistance. Accessed July 2024.

9 Purpose Distributors. About us. Available at: https://www.purposedisruptors.org/about-us. Accessed July 2024.

10 Change the brief. Want to #ChangeTheBrief. Available at: https://www.changethebrief.org/. Accessed July 2024.

11 Havas Paris, Impact score. Accessed July 2024.

12 The Conversation. 'Dark data' is killing the planet – we need digital decarbonisation. Available at: https://theconversation.com/dark-data-is-killing-the-planet-we-need-digital-decarbonisation-190423. Accessed July 2024.

13 Multiplatform.ai. Available at: https://multiplatform.ai/leveraging-ai-for-sustainable-advertising-the-power-of-the-attention-economy/. Accessed July 2024.

14 PWC. Technology Foundations of Generative AI: Architectures, Algorithms, and Innovations. Available at: https://www.pwc.de/en/digitale-transformation/generative-ai-artificial-intelligence/the-genai-building-blocks/technology-foundations-of-generative-ai-architectures-algorithms-and-innovations.html. Accessed July 2024.

15 Havas Prose on Pixels. Accessed July 2024.

16 World Federation of Advertisers. GARM sustainability quick action guide. Available at: https://wfanet.org/leadership/garm/garm-resource-directory-(weblog-detail-page)/2023/06/22/GARM-Sustainability-Quick-Action-Guide. Accessed July 2024.

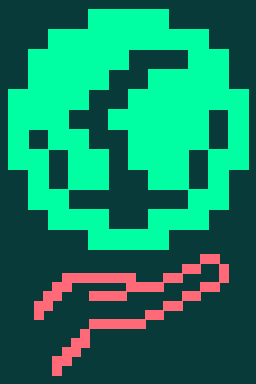
17 Invibes. More than a metric: How measuring attention drives sustainability. Available at: https://www.invibes.com/uk/en/insights/attention-sustainability-article.html. Accessed July 2024.

18 Playground XYZ. Playground xyz study finds carbon emissions from digital ads fall by 63% on average when measured and optimized for attention time. Available at: https://playgroundxyz.com/news-posts/playground-sustainable-attention-study. Accessed July 2024.

19 Euronews.green. Making conferences virtual or hybrid could significantly mitigate climate change, says new study. Available at: https://www.euronews.com/green/2022/01/12/making-conferences-virtual-or-hybrid-could-significantly-mitigate-climate-change-says-new-. Accessed July 2024.

20 PMLIVE. Congress is in session – how companies are boosting their impact and engagement. Available at: https://pmlive.com/intelligence/congress_is_in_session_how_companies_are_boosting_their_impact_and_engagement_1489753/. Accessed July 2024.

THE CLIMATE CRISIS IS OUR BIGGEST HEALTH CRISIS >>



"The devastating change and impact which climate change continues to bring to our planet and to global public health also presents an opportunity. Governments, authorities, and policymakers have a chance to develop public health policies and to motivate citizens, healthcare professionals, researchers, and political entities. The opportunity is there to be taken, and the health community stands ready to support those who are willing to act on this global crisis."

- Professor Zorana Jovanovic Andersen at COP28.[32]

The climate crisis is our biggest health crisis[1,2]

What's happening to our planet is having an undeniable and devastating impact across every aspect of human health.[3–18] What harms the world, harms us all.[19] And these effects are so dramatic, so fundamental, they're changing the whole healthcare landscape.[3]

As we've seen, the role of pharma in mitigating the effects of the climate crisis is critical – both as a contributor to the crisis,[20–22] but also as a key player in responding to the resulting rise in health demands worldwide.[23]

Taking urgent action is not only ethically responsible, it's a business imperative.[24–27] It is now also an expectation – with net promotor scores showing that healthcare professionals' trust for brands is directly correlated to those brands' sustainable initiatives.[28] So now it's more crucial than ever that the industry considers the climate-health crisis a critical component of doing business.[23,28–30]

<< Back to contents

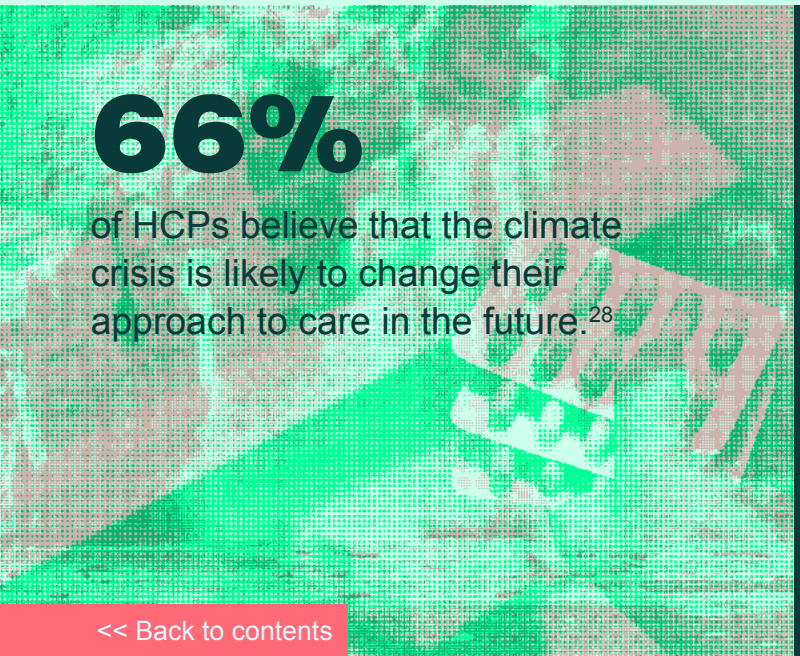
Taking urgent action is not only ethically responsible, it's a business imperative.[24-27]

Understandably, efforts to date have predominantly been focused upstream, where immediate action can be taken and rapid, positive impact delivered.[29] But now, our focus needs to move downstream to the day-to-day product behaviours that account for a staggering **20–50% of total pharma emissions.**[30] Make no mistake, words alone won't achieve what's needed.[28]

This is the time for action

This is the moment when we as healthcare marketers have a huge opportunity, and a responsibility, to act, and act decisively. Action against climate change needs to be more than a topic of conversation, or a tick-box CSR initiative. Time is ticking. And we are facing a fast-moving, enduring global health crisis – so we need to act NOW.[28]

We have it in our power to drive meaningful change. Real, actionable change that makes a tangible difference for our HCPs, for our patients, for our healthcare systems and, ultimately, for our planet.[31]



66%

of HCPs believe that the climate crisis is likely to change their approach to care in the future.[28]

41%

of HCPs prefer to prescribe from responsible pharma brands.[28]

<< Back to contents

References

1 McKeever A. Why climate change is still the greatest threat to human health. Available at: https://www.nationalgeographic.com/science/article/why-climate-change-is-still-the-greatest-threat-to-human-health. Accessed July 2024.

2 Ruszkiewicz JA et al. Environ Res 2019; 177: 108637.

3 Belzer A, Parker ER. Am J Clin Dermatol 2023; 24(4): 577–593.

4 UCL. Climate change likely to aggravate brain conditions. Available at: https://www.ucl.ac.uk/news/2024/may/climate-change-likely-aggravate-brain-conditions. Accessed July 2024.

5 Carrington A. Climate crisis inflicting huge 'hidden costs' on mental health. Available at: https://www.theguardian.com/environment/2021/may/26/climate-crisis-inflicting-huge-hidden-costs-mental-health. Accessed July 2024.

6 Burke M, et al. Nature Clim Change 2018; 8: 723–729.

7 Yu P et al. ACS Environ Au 2022; 3(1): 5–11.

8 B.M.C. Medicine. BMC Med 2023; 21(1): 281.

9 Diabetes UK. Diabetes and climate change: what are the links? Available at: https://www.diabetes.org.uk/about-us/news-and-views/diabetes-and-climate-change-what-are-links. Accessed July 2024.

10 World Health Organization. Protecting maternal, newborn and child health from the impacts of climate change: A call for action. Available at: https://www.who.int/publications/i/item/9789240085350. Accessed July 2024.

11 National Institutes of Health. Extreme temperatures could increase preterm birth risk. Available at: https://www.nih.gov/news-events/news-releases/extreme-temperatures-could-increase-preterm-birth-risk. Accessed July 2024.

12 Cucinella L, et al. Maturitas 2023; 178: 107825.

13 Kim H et al. Front Public Health 2020; 8: 575330.

14 Gavi. The deadly diseases that are spiking because of climate change. Available at: https://www.gavi.org/vaccineswork/deadly-diseases-are-spiking-because-climate-change. Accessed July 2024.

15 Jacobsen AP et al. Am J Prev Cardiol 2022; 12: 100391.

16 Burnham JP. Ther Adv Infect Dis 2021; 8: 2049936121991374.

17 Asthma and Lung UK. Air pollution effects on your lungs, including lung cancer. Available at: https://www.asthmaandlung.org.uk/living-with/air-pollution/your-lungs. Accessed July 2024.

18 Agache et al. Front Sci 2024; 2: 1279192.

19 World Economic Forum. Climate Crisis May Cause 14.5 Million Deaths by 2050. Available at: https://www.weforum.org/press/2024/01/wef24-climate-crisis-health/. Accessed July 2024.

20 NHS Barts Health NHS Trust. How healthcare contributes to the climate crisis. Available at: https://www.bartshealth.nhs.uk/news/how-healthcare-contributes-to-the-climate-crisis-12280. Accessed July 2024

21 Pichler PP et al. Environ Res Lett 2019; 14: 064004.

22 World Economic Forum. 6 ways the pharmaceutical industry can reduce its climate impact. Available at: https://www.weforum.org/agenda/2022/11/pharmaceutical-industry-reduce-climate-impact/. Accessed July 2024.

23 Deloitte. Embedding environmental sustainability into pharma's DNA. 2022. Available at: https://www2.deloitte.com/content/dam/Deloitte/uk/Documents/life-sciences-health-care/deloitte-uk-embedding-environmental-sustainability-into-pharma-dna-updated.pdf. Accessed July 2024.

24 Booth A et al. Int J Environ Res Public Health 2023; 20(4): 3206.

25 Pichler PP et al. Environ Res Lett 2019; 14: 064004. Supplementary information.

26 Wu R. Lancet Planet Health 2019; 3(10): e413– e419.

27 United Nations Climate Change. Key aspects of the Paris Agreement. Available at: https://unfccc.int/most-requested/key-aspects-of-the-paris-agreement. Accessed July 2024.

28 Havas Lynx. Point.1 proprietary data: Sustainability White paper outputs. 2023.

29 Pharmaceutical Technology. Available at: Pharma's path to Net Zero: Targeting Scope 3 emissions. https://www.pharmaceutical-technology.com/features/pharmas-path-to-net-zero-targeting-scope-3-emissions/. Accessed July 2024.

30 Firth I et al. 2022. Supporting the Era of Green Pharmaceuticals in the UK. OHE Consulting Report, London: Office of Health Economics. Available at: https://www.ohe.org/publications/supporting-era-green-pharmaceuticals-uk-0. Accessed July 2024.

31 Eco Medics. Our Story. Available at: https://www.ecomedics.co.uk/about-1. Accessed July 2024.

32 ERS. COP28: climate crisis is a health crisis, say scientific and health-focused organisations and experts. Available at: https://www.ersnet.org/news-and-features/news/cop28-climate-crisis-is-a-health-crisis-say-scientific-medical-public-health-and-patient-representation-organisations-and-experts/. Accessed July 2024.

Glossary

Carbon footprint
A measure of the amount of carbon dioxide an individual, organisation etc. releases into the atmosphere through their activities.[1]

Carbon neutral/neutrality
An organisation or company is considered carbon neutral when their carbon dioxide emissions are net zero (See Net zero). Companies and countries pledge to achieve this state within given timeframes to contribute to limiting climate.[2,3]

Carbon (dioxide) removal
Carbon removal entails the removal of carbon dioxide from the atmosphere and storage across geological, terrestrial or ocean-based methods, or through products. Carbon removal can be achieved through methods such as reforestation, supporting marine organisms and ecosystems in ocean-based uptake of carbon dioxide, or removing carbon dioxide from the air directly (direct air capture).[2,4]

Circular product design
Circular product design focuses on reusing and recycling materials and minimising waste and pollution when designing a product. For example, a product can be manufactured from recycled materials and undergo repairs or reuse, extending the product lifespan and promoting long-term sustainability.[5,6]

Clean energy
Sources of energy production that do not emit greenhouse gases are considered to be clean energy. This can include nuclear, solar, geothermal and hydropower.[7]

Continuous purification methods
Continuous purification methods are an example of continuous manufacturing. This streamlines manufacturing by combining multiple stages of production into one continuous production line.[8]

Decarbonisation
Decarbonisation involves the reduction of carbon dioxide and other greenhouse gas emissions across human activities. Examples of decarbonisation actions include increasing energy efficiency of processes, transitioning to cleaner energy sources (see Clean energy) rather than fossil fuels, and enhancing systems that absorb and store greenhouse gases, known as sinks.[2,9]

ESG (environment, social, and governance) standards
ESG are a set of standards that evaluate a company's environmental, social and governance behaviours and impact. Examples of ESG environmental data evaluated can be a company's impact to the environment through their carbon emissions and water consumption.[1]

Greenwashing
Greenwashing involves making false or misleading environmental claims regarding an organisation and their services, product, practice etc.[3]

Net zero
Net zero is a state in which emissions of greenhouse gas into the atmosphere are balanced by that removed. Companies and countries pledge to achieve this state within given timeframes to contribute to limiting climate change.[2,3]

Paris Agreement
The Paris Agreement is an international treaty regarding climate change adopted by the Conference of the Parties (COP) to the United Nations Framework Convention on Climate Change (UNFCCC) in Paris in 2015. The goal of the agreement is to limit global temperature increase to below 2 degrees Celsius above pre-industrial levels, with efforts made to limit this to 1.5 degrees Celsius.[3]

<< Back to contents

References

1 Sustainable Review. Sustainability 101: 35 terms and definitions you need to know. Available at: https://sustainablereview.com/sustainability-101-terms-and-definitions/. Accessed July 2024.

2 ipcc. Glossary. Available at: https://www.ipcc.ch/sr15/chapter/glossary/. Accessed July 2024.

3 CDP. Demystifying the language of disclosure, climate change, and other environmental crises. Available at: https://www.cdp.net/en/the-sustainable-economy-glossary. Accessed July 2024.

4 World Economic Forum. 5 ways to remove carbon and tackle the climate crisis. Available at: https://www.weforum.org/agenda/2023/09/carbon-removal-climate-crisis/. Accessed July 2024.

5 Ecochain. Sustainability Glossary. Available at: https://ecochain.com/resources/glossary/#C. Accessed July 2024.

6 Ecochain. Guide to sustainable product design (2024 Update). Available at: https://ecochain.com/blog/guide-to-sustainable-product-design/#circular-design. Accessed July 2024.

7 Climate Portal. Ask MIT Climate. Available at: https://climate.mit.edu/ask-mit/what-clean-energy-any-kind-energy-completely-clean. Accessed July 2024.

8 Pharmaceutical Technology. Cutting the carbon footprint of pharma's supply chain. Available at: https://www.pharmaceutical-technology.com/features/cutting-carbon-footprint-pharma-supply-chain/. Accessed July 2024.

9 McKinsey Sustainability. The net-zero challenge: Accelerating decarbonization worldwide. Available at: https://www.mckinsey.com/capabilities/sustainability/our-insights/the-net-zero-challenge-accelerating-decarbonization-worldwide. Accessed July 2024.

<< Back to contents

Acronyms

AD atopic dermatitis.

ADHD attention deficit hyperactivity disorder.

AI artificial intelligence.

AMR antimicrobial resistance.

ANZ Ad Net Zero.

ARG antibiotic resistance genes.

AZ AstraZeneca.

CGI computer-generated imagery.

CMA Competition and Markets Authority.

CO carbon monoxide.

CO_2 carbon dioxide.

CO_2e carbon dioxide equivalent.

COPD chronic obstructive pulmonary disease.

CSR corporate social responsibility.

CVD cardiovascular disease.

CX customer experience.

DPI dry-powder inhaler.

ECHR European Convention of Human Rights.

ESG environment, social, governance.

EU European Union.

FY fiscal year.

GDP gross domestic product.

GHG greenhouse gas.

GMC General Medical Council.

GP general practitioner.

HCP healthcare professional.

HCWH Health Care Without Harm Europe.

ID infectious disease specialists.

IPCC Intergovernmental Panel on Climate Change.

KOL key opinion leader.

MDR multi-drug resistance.

MJ megajoules.

MND motor neurone disease.

MRSA methicillin-resistant Staphylococcus aureus.

MS multiple sclerosis.

NHS National Health Service.

NO_2 nitrogen dioxide.

NPS net promotor score.

O_3 ozone.

PCP primary care physicians.

PM particulate matter.

PTSD post-traumatic stress disorder.

R&D research and development.

RCGP Royal College of General Practitioners.

RCPCH Royal College of Paediatrics and Child Health.

RWE real-world evidence.

SBT science-based targets.

T1D type 1 diabetes.

T2D type 2 diabetes.

UI user interface.

UK United Kingdom.

US United States.

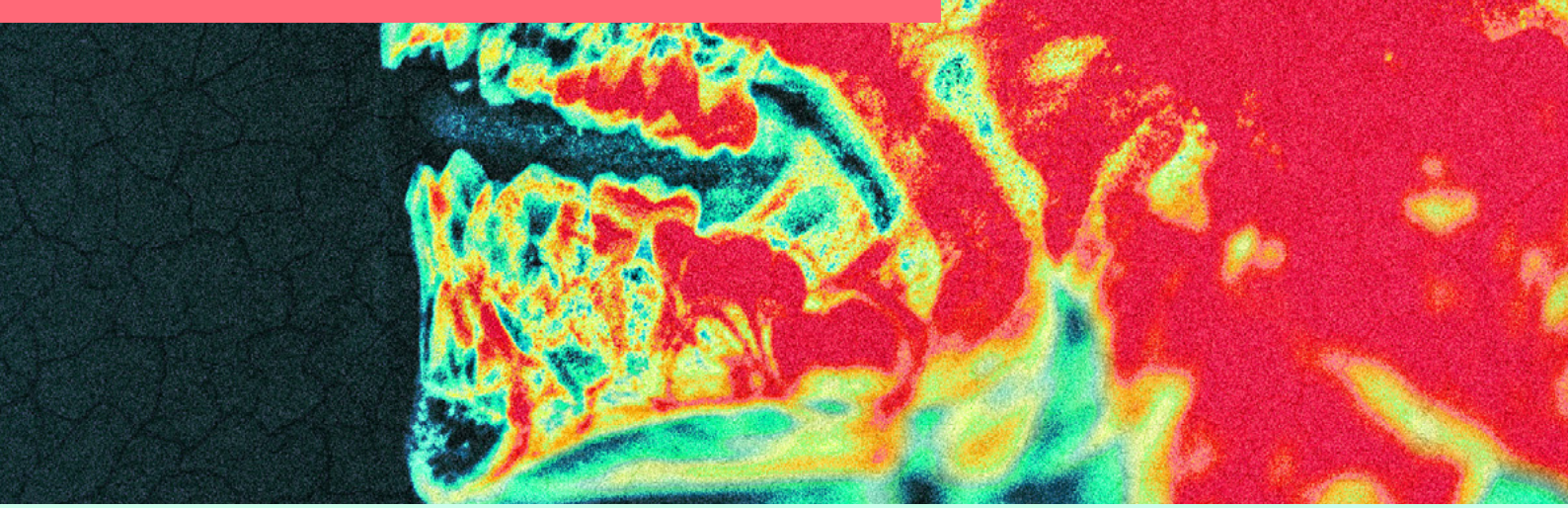
UV ultraviolet radiation.

UVR ultraviolet radiation exposure.

UX user experience.

WHO World Health Organization.

<< Back to contents



This paper was supported by data from Point.1, a proprietary data solution from Havas Lynx, providing one of the most comprehensive global views of healthcare professional (HCP) attitudes, beliefs, behaviours, and influences to enable more powerful HCP strategies and experiences.

Meaningful

Most comprehensive touchpoint, platform, and journal assessment with largest audience panel size data set.

Global

Statistically meaningful sizes across geographies including region level data.

Connected

Readily integrates into wider data sets including Havas Converge platform.

For further information or partnership opportunities with Point.1, please email **europe@havaslynx.com**

Point 1