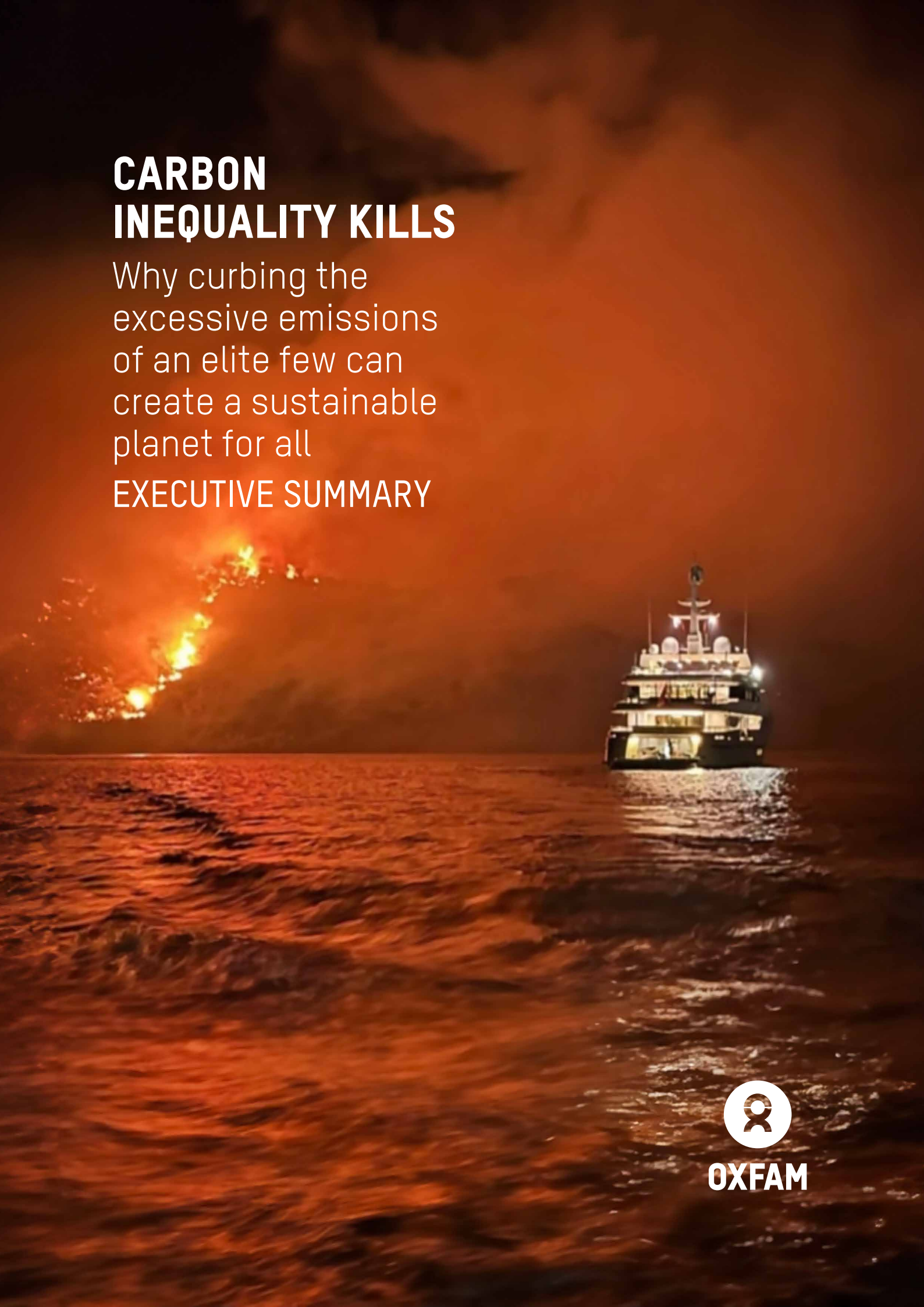
CARBON INEQUALITY KILLS

Why curbing the excessive emissions of an elite few can create a sustainable planet for all

EXECUTIVE SUMMARY



OXFAM

BRIEFING NOTE, OCTOBER 2024

The only way to beat climate breakdown and deliver social justice is to radically reduce inequality. This briefing paper reveals the catastrophic climate impacts of the richest individuals in the world, and proposes taking urgent action to protect people and the planet.

What little carbon dioxide we can still safely emit is being burned indiscriminately by the super-rich. We share new evidence of how the yachts, jets and polluting investments of 50 of the world's richest billionaires are accelerating the climate crisis. Oxfam's research shows that the emissions of the world's super-rich 1% are causing economic losses of trillions of dollars; contributing to huge crop losses; and leading to millions of excess deaths.

As global temperatures continue to rise, risking the lives and livelihoods of people living in poverty and precarity, we must act now to curb the emissions of the super-rich, and make rich polluters pay.

This paper was written by:

Lead authors: Mira Alestig, Nafkote Dabi, Abha Jeurkar and Alex Maitland.

Contributing authors: Max Lawson, Daniel Horen Greenford (Concordia University and Universitat de Barcelona), Corey Lesk (Dartmouth College) and Ashfaq Khalfan.

Oxfam acknowledges the assistance of Adam Musgrave, Annie Theriault, Deepak Xavier, Hanna Saarinen, Lyndsay Walsh, Anna Marriot, Chiara Liguori, Amina Hersi and Ayesha Arif in its production. It is part of a series of papers written to inform public debate on development and humanitarian policy issues.

Research and technical input: Daniel Horen Greenford (Concordia University and Universitat de Barcelona) conceived and coordinated the damage calculations, and performed the economic damages calculations. Corey Lesk (Dartmouth College) conceived and performed the agricultural loss calculations and provided additional guidance throughout the process. Donny Seto (Concordia University) conducted the CMIP6 data extraction and RTCRE calculation. Daniel Bressler (Columbia University) provided country-level estimates of the mortality cost of carbon. Chris Callahan (Stanford University) provided extensive guidance on the climate damages methods and calculated population-weighted values for historical temperature and RTCRE values. Damon Matthews (Concordia University) provided guidance on climate science and the RTCRE approach.

Designed by: Nigel Willmott.

Edited by: Emma Seery, Adam Houlbrook and Lucy Cowie.

For further information on the issues raised in this paper please email advocacy@oxfaminternational.org

Published by Oxfam GB for Oxfam International in October 2024.
DOI: 10.21201/2024.000039
Oxfam GB, Oxfam House, John Smith Drive, Cowley, Oxford, OX4 2JY, UK.

Cover photo: A forest fire in Hydra, Greece, June 2024. A luxury yacht with a forest fire in the background.
Credit: Firefighters took this photo [as stated on a BBC article]

EXECUTIVE SUMMARY

CARBON INEQUALITY MATTERS

The story of climate breakdown is a story of inequality. At its core is the excessive carbon emissions of the world's richest people: causing pain and suffering to the poorest and putting our whole planet at risk.

Conversely, the story of how we beat climate change is a story of equality.

Only by making our world a radically more equal place can we stop climate destruction. Only by fighting inequality can we secure popular political support for the radical policy changes we need to decarbonise our world in time to save it.

POLLUTOCRATS

There is precious little carbon dioxide left that humanity can emit and still avoid climate breakdown. Yet some of the richest people in the world are pumping out CO_2 with abandon, and with minimal regard for the global impacts of their poisonous pollution.

The finite amount of carbon dioxide that we can safely emit is known as the carbon budget. At current rates we will have burned through it in four years.

The evidence from this briefing paper is clear: the world's richest people are using a disproportionate amount of the world's remaining carbon budget and setting us all on course for irreversible and catastrophic global warming.

As our research shows, the consumption and investment habits of the richest are overwhelmingly responsible for burning through the carbon budget.

- If everyone began emitting as much carbon as those in the top 1%, the remaining carbon budget would be gone in fewer than five months.
- If everyone emitted carbon at the same rate as the luxury transport emissions of 50 of the world's richest billionaires, the remaining carbon budget would be gone in two days.[1]

This paper presents new data on the luxury transport consumption (private jets and superyachts) and investment emissions of 50 of the world's richest people. The research finds that the emissions from the investments, private jets and superyachts of these billionaires is more than the consumption emissions of the poorest 2% (155 million people combined). These figures are the most up-to-date and comprehensive quantification of the emissions of the richest people, based on detailed investigations of their consumption and investments.

The evidence from this briefing paper is clear: the world's richest people are using a disproportionate amount of the world's remaining carbon budget and setting us all on course for irreversible and catastrophic global warming.

It builds on Oxfam's previous climate and inequality reports with fresh evidence of how the very wealthiest are making a decisive contribution to planetary destruction. This research signals that climate breakdown cannot be avoided without reducing excessive wealth concentration among an elite few. We must take urgent action to dramatically change the consumption and investment habits of the richest people.

Jetting towards climate breakdown

Globally, just 1% of people are responsible for half of all plane carbon emissions.[2] Extreme wealth is adding fuel to the fire of the climate crisis by increasing access to luxury air travel and private jets for the richest few. Sales of high-polluting private jets have doubled in the last two decades.[3]

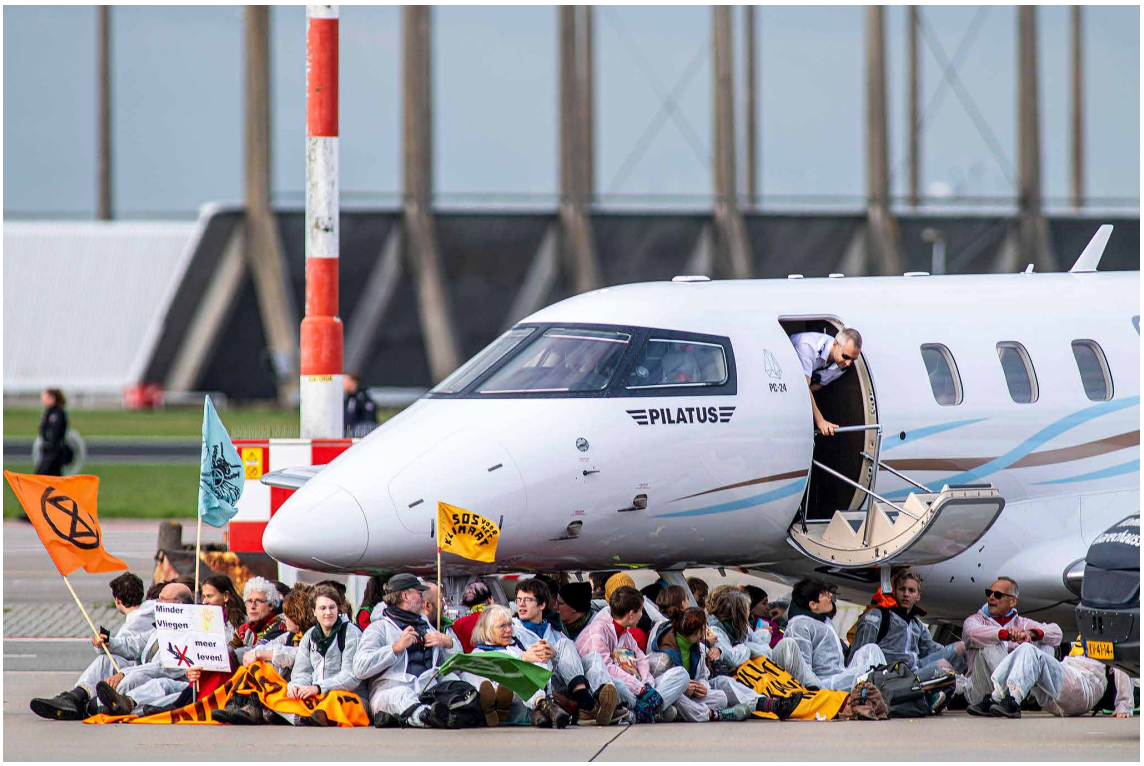
For this research, Oxfam was able to identify private jets belonging to 23 of 50 of the world's richest billionaires; the others either do not own private jets or have kept them out of the public record.[4]

On average, these 23 billionaires each took 184 flights – spending 425 hours in the air – in 2023. That is equivalent to each of them circumnavigating the globe ten times.[5]

The private jets of these 23 super-rich individuals emitted an average of 2,074 tonnes of carbon a year. This is equivalent to 300 years' worth of emissions for the average person in the world, or 2,000 years' worth for someone in the global poorest 50%.[6]

Elon Musk owns (at least) two private jets which together produce 5,497 tonnes of CO_2 per year. This is the equivalent of 834 years' worth of emissions for the average person in the world, or 5,437 years' worth for someone in the global poorest 50%.[7]

Despite these extraordinary emissions statistics, there is hope. Following protests by Greenpeace and Extinction Rebellion,[8] Schiphol, the biggest airport in the Netherlands, announced it was going to ban private jets by 2026,[9] although this has been dismissed by the new government.



Activists ground a private jet for six and a half hours in Amsterdam. Credit: Marten van Dijl/Greenpeace Netherlands (2022).

Super-Polluting Superyachts

Superyachts are among the most polluting aspects of the consumption of the super-rich. The number of superyachts has more than doubled since 2000, with around 150 new launches every year.[10] Although they are moored for most of the year, about 22% of their overall emissions are generated during this 'down time'.[11]

Oxfam identified 23 superyachts owned by 18 billionaires and estimates the average annual carbon footprint of each these yachts to be 5,672 tonnes, which is more than three times the emissions of the billionaires' private jets. This is equivalent to 860 years of emissions for the average person in the world, and 5,600 times the average of someone in the global poorest 50%.[12]

The Walton family, heirs of the Walmart retail chain, own three superyachts worth over US$500m.[13] They travelled 56,000 nautical miles in a year with a combined carbon footprint of 18,000 tonnes: this is equivalent to the carbon emissions of around 1,700 Walmart shop workers.[14]

Investment emissions of billionaires dwarf consumption

The richest 1% control 43% of global financial assets, and billionaires control (either as CEOs or principal investors[15]) 34% of the 50 largest listed companies in the world, and 7 out of the 10 largest.[16] The investment footprint of the super-rich is the most important element of their overall impact on people and the planet.

Investment emissions matter for two reasons:

1. It is vital to understand the true scale of the emissions generated by the richest people in our society, and to analyse the role that these emissions play in climate breakdown.
2. By looking at how the richest people behave as investors, we can demonstrate not just their roles as consumers of carbon but also as wealth-holders who own, control, shape, and financially profit from production processes that release greenhouse gases (GHGs) into the atmosphere.

Oxfam's analysis for this paper found that investment emissions are the most significant part of a billionaire's carbon footprint. Of the richest 50 people in the world, Oxfam was able to identify the investment emissions of 41 individuals. The average investment emissions of these billionaires were around 2.6 million tonnes of CO_2 equivalents (CO_2e) on average. That is around 340 times their emissions from private jets and superyachts combined. Each billionaire's investment emissions are equivalent to almost 400,000 years of consumption emissions by the average person, or 2.6 million years of consumption emissions by someone in the poorest 50% of the world.

Billionaire investments are far worse for the planet than average investment portfolios. Forty percent of the billionaire investments are in highly polluting industries: oil, mining, shipping, and cement; and just 24% of the companies they invest in have set net-zero targets. On average, a billionaire's investment portfolio is almost twice as polluting as an investment in the S&P 500 (an index of the 500 largest listed companies in the USA), but if their investments were in a low-carbon intensity investment fund their investment emissions would be thirteen times lower.[17]

Oxfam's research also found that many of the corporations that the billionaires are invested in are known to lobby against good climate policy. Only two companies get a 'B' rating in the Influence Map database,[18] which indicates support for climate policy aligned with the Paris Agreement.[19] Other corporations, such as Cargill and Berkshire Hathaway, receive 'D+' and 'E' grades, indicating 'obstructive climate policy engagement'.[20]

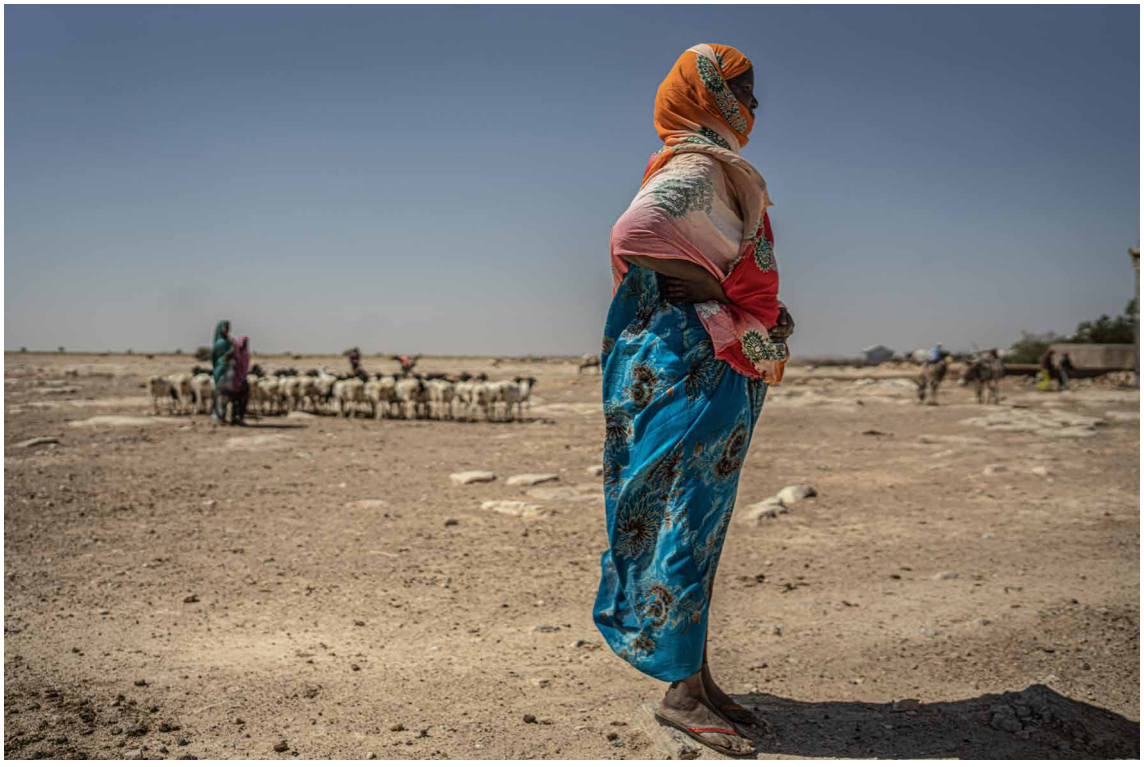
HOW THE EMISSIONS OF THE RICHEST ARE FUELLING INEQUALITY, HUNGER AND DEATH

The emissions of the richest are costing trillions

Hotter temperatures due to rising emissions impact annual economic growth. Changes in economic output occur due to changes in labour productivity, agricultural productivity, and energy use.[21]

New research for this paper shows that:

- From 1990 to 2050, the economic cost of the world's super-rich 1% is $52.6 trillion.[22]
- This impact will be felt most in low- and lower-middle-income countries. Between 1990 and 2050, low- and lower-middle-income countries will accrue economic damage totalling $44 trillion.
- Oxfam calculates that about one decade of the world's 50 richest billionaires' investment emissions alone (between 2018 and 2028) will cause $250bn of economic damage by 2050. This is equivalent to the current economic output of countries such as Ecuador and Bulgaria.[23]
- The economic damages that low- and lower-middle-income countries have already accrued between 1990 and 2023 because of three decades of consumption emissions of the world's super-rich 1% (1990–2019), is about three times the total officially recorded climate finance developed countries have given to poorer countries.[24]



The Sanaag region of Somalia, where Oxfam has built a water supply system for people and animals. Credit: Pablo Tosco/Oxfam

A note: In this section, economic damages are expressed in International Dollars ($), which adjusts for Purchasing Power Parity (PPP). Taking this approach allows for a fairer comparison of climate damages since International Dollars ($) better account for differences in the cost of living between countries. Using United States dollars (US$) – as done commonly in early climate economic literature – would downplay harms caused to lower-income countries. Recently, using International Dollars has become a more accepted method in climate economics literature.

The emissions of the richest are fuelling hunger

There is growing consensus that climate change is already affecting crop yields,[25] and that the climate crisis is already one of the leading causes of the steep rise in global hunger.[26] Oxfam's analysis estimates changes in the yields of major global crops due to changes in temperature. It considers maize, wheat and soy, which are among the most common crops globally.[27]

The findings show that the outsized consumption emissions of the world's super-rich 1% are causing significant crop losses, and the poorest countries and people are bearing the brunt of the impact.

Killing crops

At a global scale, the research reveals that:

- Three decades of the consumption emissions (1990–2019) of the world's super-rich 1% have already caused crop losses that could have provided enough calories to feed 14.5 million people a year between 1990 and 2023.[28]
- Between 2023 and 2050, the crop losses induced by four decades of the consumption emissions of the world's richest 10% (1990–2030) could provide enough calories to feed a staggering 148.8 million people a year.[29]
- About one decade (2018–2028) of investment emissions by 50 of the world's richest billionaires alone will cause crop losses that could provide enough calories to feed 120,000 people a year between 2028 and 2050.[30]

The emissions of the richest are fuelling excess deaths

When people are exposed to extreme heat, the risk of suffering from potentially deadly illnesses rises steeply. Heat exhaustion and heatstroke occur when the human body can no longer control its temperature,[31] and exposure to excessive heat can also contribute to deaths from heart attacks, strokes, and other forms of cardiovascular disease.[32] According to the IPCC's *Sixth Assessment Report*, the frequency and intensity of heatwaves has already increased over the past decades, and this is only predicted to get worse in the future.[33]

As a result, the number of people exposed to extreme heat is growing exponentially[34] and various studies predict a drastic increase of excess deaths due to heat.[35] Based on a recent study,[36] Oxfam has estimated the numbers of deaths attributable to the emissions of the super-rich. Our findings show that even in an optimistic climate change scenario,[37] just four years of the emissions of the world's richest people are driving up global temperatures enough to contribute to a shocking number of excess deaths.[38]

Killing people

At a global scale, the findings show that:

- Just four years (2015–2019) of the consumption emissions of the world's super-rich 1% are enough to cause 1.5 million excess deaths between 2020 and 2120.[39] This equates to just over 15,000 excess deaths per year over the subsequent century to 2120, which is higher than the current annual death toll due to natural disasters.[40]
- 78% of these excess deaths due to heat, 1.18 million people in total, will occur in low- and lower-middle-income countries, while the number of deaths in high-income countries will be less severe.[41] Richer countries have a greater capacity to invest in adaptation measures, as do richer individuals.[42] While the rich can afford to protect themselves, their excessive emissions are causing deaths elsewhere.
- The impact of the consumption emissions of the world's richest 10% for the same period is a staggering 4.8 million excess deaths, or 47,600 per year, to 2120.[43]
- Just four years (2021–2025) of the investment emissions of 50 of the world's richest billionaires are enough to cause around 34,000 excess deaths between 2026 and 2126.[44]

TIME TO MAKE RICH POLLUTERS PAY

The emissions of the super-rich are pushing our planet to breaking point and exacerbating inequality. They are exhausting our precious carbon budget on excessive luxuries and ever-more wealth accumulation, with direct and devastating consequences for the planet and for the world's poorest countries and communities. We cannot avert total climate breakdown unless the world's richest individuals are required to make dramatic and immediate reductions in emissions.

To address the climate and inequality crises, governments must step up and prioritize the following actions to reduce emissions, make rich polluters pay, and create new systems that prioritize human and planetary flourishing.

Recommendations

1. REDUCE THE EMISSIONS OF THE RICHEST

Action to tackle excessive planet-destroying emissions cannot wait any longer. To safeguard the future of life on our planet, governments must:

a. Produce and implement just and ambitious climate plans to reduce emissions according to the requirements of the Paris Agreement.[45] This means meeting their Nationally Determined Contributions (NDCs) by 2025 based on the fair share principle[46] and on limiting warming to 1.5°C. Rich countries in the Global North – where many of the world's richest people live and have lived historically – have contributed to 92% of excess emissions.[47] They have the greatest responsibility to cut emissions, and to do so first and fastest.

These national plans should include progressive measures to phase out fossil fuels and assist low- and middle-income households to cope with the transition to low-carbon economies, as well as measures to significantly reduce the emissions of the richest individuals. They should also outline the financial contributions of the richest to support climate adaptation for communities at risk and to facilitate a just transition.[48]

b. Tax the super-rich to curb their excessive consumption and investment emissions, and their role in propping up polluting industries. This means:

- Introducing a range of permanent progressive income and wealth taxes on the world's richest 1%. A tax of 60% on the incomes of the richest 1% of earners globally would cut emissions equivalent to more than the UK's total emissions in 2019.[49] Rates must also be high enough to meaningfully reduce economic inequality: as long as the number and wealth of super-rich individuals grows, so will their consumption and investment emissions.
- Charging an *additional* higher rate of tax on wealth and (individual and corporate) income from polluting investments to specifically target carbon pollution. For example, a tax on the proportion of profits from the sale of fossil fuels or products running on them. Rates should be high enough to disincentivize investment in polluting industries.
- Taxing the excess profits of corporations gained via disproportionate control over markets or through exceptional windfalls.

c. Ban or punitively tax carbon-intensive luxury consumptions, starting with private jets, superyachts, sports utility vehicles (SUVs), and frequent air travel.

Governments should ban private jets and superyachts, as these luxury emissions significantly contribute to climate breakdown. Such measures are appropriate and necessary steps to address the urgent climate crisis.

Alternatively, luxuries should be taxed at punitive rates (90% or above). Taxes on such luxuries would disincentivize excessive consumption while raising revenue from the richest that could be invested in national climate plans.

d. Regulate corporations and investors to radically and fairly reduce their carbon emissions.
Corporations should be required to:

- Provide full disclosure of Scope 1, 2 and 3 emissions[50] across operations and supply chains, with independent verification.
- Carry out ongoing reporting on their progress towards achieving emissions reduction targets.
- Establish ambitious science-based targets and a clearly defined roadmap for reducing emissions across all scopes, consistent with the objectives of the Paris Agreement.[51]
- Adhere to internationally agreed human rights and environmental standards.

2. MAKE RICH POLLUTERS PAY

Governments must implement an ambitious package of progressive taxes on the income and wealth of the richest individuals and on the profits of the largest corporations, starting with windfall profits. They must make rich polluters pay. And rich countries must use a portion of the revenue to meet their international climate finance responsibilities in full.

Climate finance needs are enormous and escalating. Yet there is no indication that rich countries will accept this responsibility. Developed countries[52] failed to keep their US$100bn climate finance promise,[53] and heading into COP29 there is no indication that they will set a new climate finance goal that meets realistic climate financing needs. They also continue to resist calls for reparations.

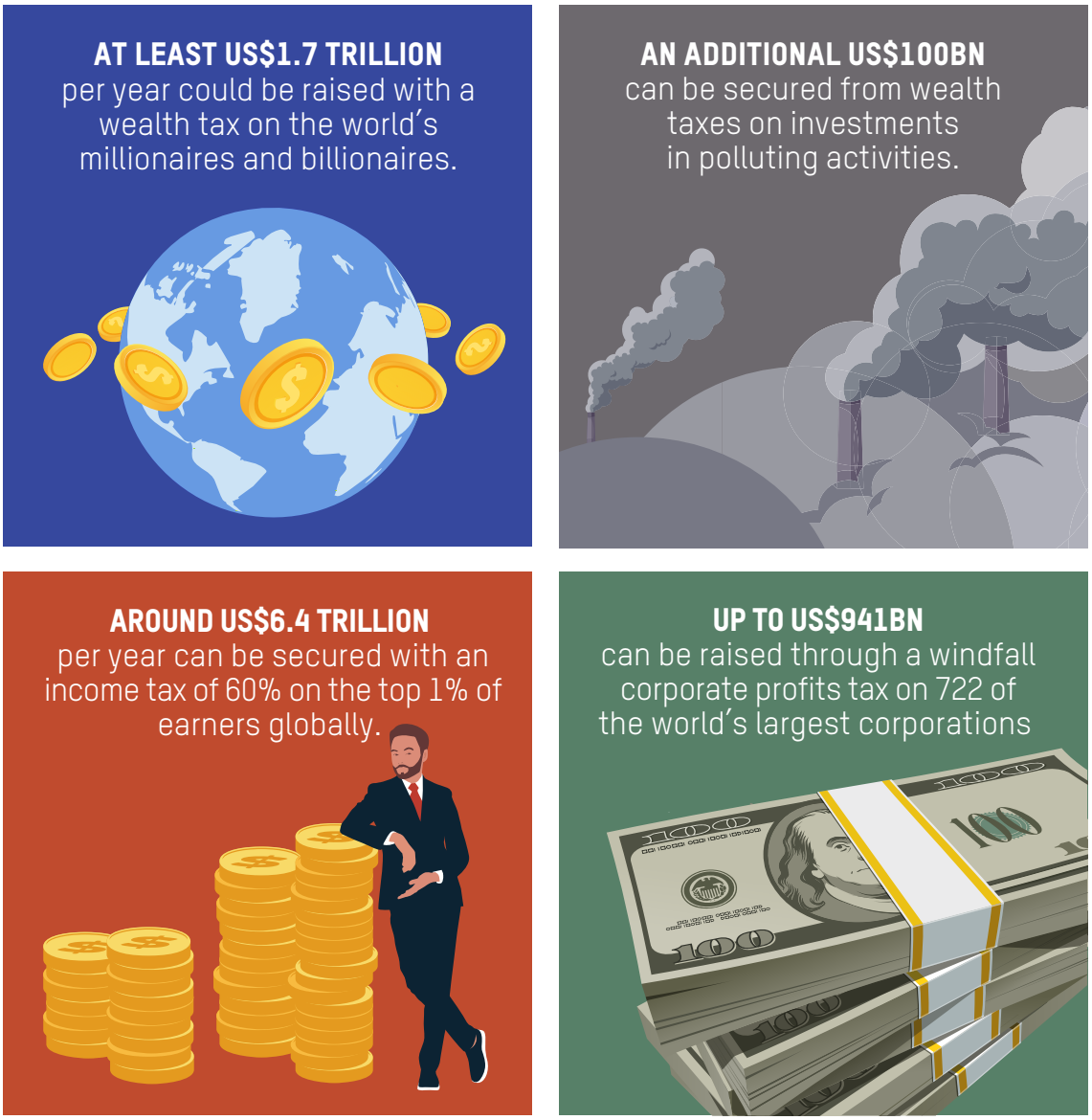
Oxfam estimates that low- and middle-income countries need at least US$18.9 trillion between now and 2030 for climate action.[54] Civil society estimates that in addition to this, the Global North owes the Global South a climate debt of US$5 trillion between 2025 and 2050 to compensate for their past exploitation of nature and people.[55]

Governments must implement an ambitious package of progressive taxes on the income and wealth of the richest individuals and on the profits of the largest corporations. Credit: Ralf Hahn/istockphoto.

The argument that 'there is no money' does not hold water. If governments were willing to make rich, high-polluting individuals and corporations pay, they could start raising the scale of financing truly needed. For example, governments could raise:

- **At least US$1.7 trillion per year** with a wealth tax on the world's millionaires and billionaires.
- **An additional US$100bn** from an additional wealth tax on investments in polluting activities.
- **Around US$6.4 trillion per year** with an income tax of 60% on the top 1% of earners globally.
- **Up to US$941bn** through a windfall corporate profits tax on 722 of the world's largest corporations, who together raked in over US$1 trillion in windfall profits per year in 2022 and 2023.

FIGURE 1 RAISING THE SCALE OF FINANCING



3. REIMAGINE OUR ECONOMIES AND SOCIETIES TO DELIVER WELLBEING AND PLANETARY FLOURISHING

To tackle the inequality and climate crises we also need to establish new systems and measures that promote the twin goals of human wellbeing and planetary flourishing. For too long our economic system, geared towards delivering ever-greater wealth for the rich, and extraction and consumption at any cost, has undermined a truly prosperous and sustainable future for all people and for our planet.

To tackle the inequality and climate crises we also need to establish new systems and measures that promote the twin goals of human wellbeing and planetary flourishing.

All governments must:

- **Set targets to radically reduce economic inequality**. A significant and sustained reduction in the gap between the rich and the rest of the world is the only thing that can stop climate change and deliver social justice. Governments should commit to a global inequality goal that dramatically reduces inequality between the Global North and the Global South. Both globally and at national level, the incomes of the top 10% should be no higher than the bottom 40%. Country-owned national plans must be developed to reduce inequality through participatory processes involving all groups within the population.
- **Go beyond the flawed goal of GDP growth** and put new measures of progress at the heart of public policy measures. These must centre on equality, human wellbeing, and planetary health. They must reflect how income and wealth are distributed, and fully account for the unpaid and care work disproportionately done by women and marginalized people.[56]
- **Reject neoliberal economics** and put the state at the centre of delivering healthy and prosperous societies that are good for people and the planet. This means rejecting the assumption that the only way to transform our society away from fossil fuel dependence is by enabling and/or subsidizing private actors. It also means committing to strategic public investment in research and development, service provision, renewable energy, and low-carbon public transport and infrastructure.
- **Rebalance global institutions** such as the International Monetary Fund (IMF), the World Bank and the World Trade Organization (WTO), to ensure that Global South countries have the autonomy and policy space to build a better future for their people.

ENDNOTES

1 Oxfam. (2024). *Carbon Inequality Kills: Methodology note.*

2 S. Gössling and A. Humpe. (2020). 'The Global Scale, Distribution and Growth of Aviation: Implications for Climate Change'. *Global Environmental Change*, 65, 102194. https://doi.org/10.1016/j.gloenvcha.2020.102194.

3 C. Collins, O. Ocampo and K. Thomhave. (2023). *High Flyers 2023: How Ultra-Rich Private Jet Travel Costs the Rest of Us and Burns Up Our Planet*. Patriotic Millionaires and the Institute for Policy Studies. Accessed 16 July 2024. https://ips-dc.org/wp-content/uploads/2023/04/High-Flyers-2023-Report.pdf

4 Oxfam. (2024). *Carbon Inequality Kills: Methodology note.*

5 Ibid.

6 Ibid.

7 Ibid.

8 F. Street. (4 April 2023). *Amsterdam Schiphol Airport proposes a ban on private jets*. CNN. Accessed 16 July 2024. https://edition.cnn.com/travel/article/amsterdam-schiphol-airport-proposes-ban-private-jets/index.html

9 Schiphol. (28 September 2023). *Fewer flights and private jets at Schiphol*. Press release. Accessed 16 July 2024. https://news.schiphol.com/fewer-flights-and-private-jets-at-schiphol

10 International Institute of Marine Surveying. (13 August 2021). *The State of Yachting 2021 report from SuperYacht Times*. Accessed 16 July 2024. https://www.iims.org.uk/the-state-of-yachting-2021-report-from-superyacht-times

11 J. Roy, P. Shallcross, A.M. Hardy and S. Burnay. (2011). *Reducing the Environmental Impact of Large Yachts*. Accessed 16 July 2024. https://bmtmarketing.azureedge.net/media/2295/2011rinasuperyachtconference.pdf

12 Oxfam. (2024). *Carbon Inequality Kills: Methodology note.*

13 Superyacht Fan. Accessed 16 July 2024. https://www.superyachtfan.com.

14 Oxfam America. (2024). *Business at an Inhuman Scale*. Accessed 16 July 2024. https://webassets.oxfamamerica.org/media/documents/Amazon-Walmart_Briefing_Note_FINAL.pdf

15 As defined by the US Securities and Exchange Commission (SEC), a principal shareholder is a shareholder who owns at least 10% of the company. These shareholders are considered to have significant influence over a company.

16 R. Riddell, N. Ahmed, A. Maitland, M. Lawson and A. Taneja. (2024). *Inequality Inc: How Corporate Power Divides Our World and the Need for a New Era of Public Action*. Oxfam International. Accessed 16 July 2024. https://policy-practice.oxfam.org/resources/inequality-inc-how-corporate-power-divides-our-world-and-the-need-for-a-new-era-621583

17 Oxfam. (2024). *Carbon Inequality Kills: Methodology note.*

18 LobbyMap. (n.d.). *LobbyMap Scores*. Accessed 16 July 2024. https://lobbymap.org/LobbyMap-Scores

19 LobbyMap. (n.d.). *About our Scores*. Accessed 16 July 2024. https://lobbymap.org/page/About-our-Scores

20 Ibid.

21 Ibid.

22 Oxfam. (2024). *Carbon Inequality Kills: Methodology note*. These economic damages were incurred to due emissions of the world's super-rich 1% between 1990 and 2030 only.

23 Ibid.

24 The recorded climate finance by the Organization for Economic Co-operation and Development (OECD) between 2013 and 2022. For more details see: Oxfam. (2024). *Carbon Inequality Kills: Methodology note*. However, it should be noted that Oxfam analysis has shown that generous accounting practices have allowed developed countries to overstate the level of support they have actually provided. See, for example: B. Zagema, J. Kowalzig, L. Walsh, A. Hattle, C. Roy and H.P. Dejgaard. (2023). *Climate Finance Shadow Report 2023: Assessing the Delivery of the $100 Billion Commitment*. Oxfam. Accessed 16 July 2024. https://policy-practice.oxfam.org/resources/climate-finance-shadow-report-2023-621500

25 Mbow, C., C. Rosenzweig, L.G. Barioni, T.G. Benton, M. Herrero, M. Krishnapillai, E. Liwenga, P. Pradhan, M.G. Rivera-Ferre, T. Sapkota, F.N. Tubiello, and Y. Xu. (2019). 'Food Security'. In *Climate Change and Land: An IPCC Special Report on Climate Change, Desertification, Land Degradation, Sustainable Land Management, Food Security, and Greenhouse Gas Fluxes in Terrestrial Ecosystems*, edited by P.R. Shukla, J. Skea, E. Calvo Buendia, V. Masson-Delmotte, H.-O. Pörtner, D.C. Roberts, P. Zhai, R. Slade, S. Connors, R. van Diemen, M. Ferrat, E. Haughey, S. Luz, S. Neogi, M. Pathak, J. Petzold, J. Portugal Pereira, P. Vyas, E. Huntley, K. Kissick, M. Belkacemi and J. Malley, pp. 437–550. Cambridge: Cambridge University Press. https://doi.org/10.1017/9781009157988.007.

26 World Food Programme. (n.d.) *A Global Food Crisis*. Accessed 16 July 2024. https://www.wfp.org/global-hunger-crisis

27 FAO. (2022). *Agricultural Production Statistics 2000–2021*. FAOSTAT Analytical Brief Series No. 60. Accessed 16 July 2024. https://openknowledge.fao.org/server/api/core/bitstreams/58971ed8-c831-4ee6-ab0a-e47ea66a7e6a/content

28 Oxfam. (2024). *Carbon Inequality Kills: Methodology note*.

29 Ibid.

30 Ibid.

31 A. Morris and G. Patel. (2023). *Heat Stroke*. Accessed 16 July 2024. https://www.ncbi.nlm.nih.gov/books/NBK537135

32 World Health Organization (WHO). (28 May 2024). *Heat and Health*. Accessed 16 July 2024. https://www.who.int/news-room/fact-sheets/detail/climate-change-heat-and-health

33 IPCC. (2023). *Climate Change 2023: Synthesis Report. Contribution of Working Groups I, II and III to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change*, pp. 35–115. IPCC. Accessed 16 July 2024. https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_FullVolume.pdf

34 Lancet Countdown. (2023). *Heat-Related Mortality*. Accessed 16 July 2024. https://www.lancetcountdown.org/data-platform/health-hazards-exposures-and-impacts/1-1-health-and-heat/1-1-5-heat-and-sentiment

35 R.D. Bressler. (2021). 'The Mortality Cost of Carbon'. *Nature Communications*, 12(1), 4467. https://doi.org/10.1038/s41467-021-24487-w; T. Carleton, A. Jina, M. Delgado, M. Greenstone, T. Houser, S. Hsiang, ... and A.T. Zhang. (2022). 'Valuing the Global Mortality Consequences of Climate Change Accounting for Adaptation Costs and Benefits'. *The Quarterly Journal of Economics*, 137(4), 2037–105; C. Mora, B. Dousset, I.R. Caldwell, F.E. Powell, R.C. Geronimo, C.R. Bielecki, ... and C. Trauernicht. (2017). 'Global Risk of Deadly Heat.' *Nature Climate Change*, 7(7), 501–06. https://doi.org/10.1038/nclimate3322; A. Gasparrini, Y. Guo, F. Sera, A.M. Vicedo-Cabrera, V. Huber, S. Tong, ... and B. Armstrong. (2017). 'Projections of Temperature-Related Excess Mortality Under Climate Change Scenarios'. *The Lancet Planetary Health*, 1(9), e360–7.

36 Bressler. (2024). *The Distributional Mortality and Social Cost of Carbon*. [Unpublished manuscript].

37 See Bressler. (2024). *The Distributional Mortality and Social Cost of Carbon*. [Unpublished manuscript]. MCC results are calculated in the RFF-SP emissions scenarios now being used by the US government in which global average temperatures are expected to rise just above 2°C above pre-industrial levels in 2100; K. Rennert, B.C. Prest, W.A. Pizer, R.G. Newell, D. Anthoff, C. Kingdon, ... and F. Errickson. (2021). 'The Social Cost of Carbon: Advances in Long-Term Probabilistic Projections of Population, GDP, Emissions, and Discount Rates'. *Brookings Papers on Economic Activity*, 2021(2), 223–305; US Environmental Protection Agency. (2023). *Report on the Social Cost of Greenhouse Gases: Estimates Incorporating Recent Scientific Advances*. Accessed 16 July 2024. https://www.epa.gov/system/files/documents/2023-12/epa_scghg_2023_report_final.pdf

38 Oxfam. (2024). *Carbon Inequality Kills: Methodology note*.

39 Ibid.

40 Institute for Health Metrics and Evaluation. (IHME). (2024). *Global Burden of Disease 2021: Findings from the GBD 2021 Study*. Accessed 16 July 2024. https://www.healthdata.org/research-analysis/library/global-burden-disease-2021-findings-gbd-2021-study

41 Bressler. (2024). *The Distributional Mortality and Social Cost of Carbon*. [Unpublished manuscript].

42 R.D. Bressler, F.C. Moore, K. Rennert and D. Anthoff. (2021). 'Estimates of Country Level Temperature-Related Mortality Damage Functions'. *Scientific Reports*, 11(1), 20282.

43 Oxfam. (2024). *Carbon Inequality Kills: Methodology note*.

44 Ibid.

45 United Nations Climate Change. *The Paris Agreement*. Accessed 30 September 2024. https://unfccc.int/process-and-meetings/the-paris-agreement

46 The climate fair share principle ensures that each country reduces global emissions fairly, considering historical responsibility, capability, and the right to develop. It aims to balance emission reductions with fairness, so all countries contribute based on their abilities and responsibilities.

47 J. Hickel. (2020). 'Quantifying National Responsibility for Climate Breakdown. An Equality-Based Attribution Approach for Carbon Dioxide Emissions in Excess of the Planetary Boundary'. *The Lancet Planetary Health*, 4(9), e399–e404. For this analysis, national fair shares of a safe global carbon budget consistent with the planetary boundary of 350 parts per million (PPM) were derived. These fair shares were then subtracted from countries' actual historical emissions (territorial emissions from 1850 to 1969, and consumption-based emissions from 1970 to 2015) to determine the extent to which each country has overshot or undershot its fair share. Through this approach, each country's share of responsibility for global emissions in excess of the planetary boundary was calculated.

48 Definition of 'just transition': the process of moving away from fossil fuels to clean, renewable energy in a way that reduces inequality and prioritizes economic, racial, and gender justice. This involves ensuring that the costs of climate action are borne by wealthy polluters and that vulnerable communities are supported throughout the transition.

49 A. Khalfan et al. (2023). *Climate Equality: A Planet for the 99%*. Accessed 8 October. https://policy-practice.oxfam.org/resources/climate-equality-a-planet-for-the-99-621551/ op. cit.; Oxfam. (2024). *Carbon Inequality Kills: Methodology note.*

50 Scope 1–3 emissions are an international standard for corporate accounting and reporting emissions, categorizing greenhouse gasses into Scope 1, 2 and 3 based on the source. Scope 1 emissions refer to direct emissions owned or controlled by the company; scope 2 emissions refer to indirect emissions from purchased electricity, heat, or steam; scope 3 emissions refer to other indirect emissions from sources not owned or controlled by the company, such as supply chain, transportation, and product use. Source: World Resources Institute. *Greenhouse Gas Protocol*. Accessed 3 October 2024. https://www.wri.org/initiatives/greenhouse-gas-protocol#:~:text=WRI%20and%20WBCSD%20created%20GHG%20Protocol

51 United Nations Climate Change. *The Paris Agreement*. Accessed 30 September 2024. https://unfccc.int/process-and-meetings/the-paris-agreement

52 Oxfam is moving away from using terms such as 'developed' or 'developing countries', but since these country groupings are enshrined in the UNFCCC and the Paris Agreement, we use them for clarity when referencing aspects of the international climate regime, including the provision of climate finance.

53 High-income countries say they mobilized nearly US$116bn in climate finance in 2022 – for the first time surpassing the US$100bn a year they originally had promised to reach by 2020 to help Global South countries cope with the worsening effects of climate breakdown. However, Oxfam estimates that the 'true value' of climate finance provided by high-income countries in 2022 is only between US$28bn and US$35bn, with at most only US$15bn earmarked for adaptation. See J. Kowalzig, T. Cherry-Virdee, R. Bo Sørensen and S. Cutts. (2024). *Climate Finance Short-Changed, 2024 Update: Estimating the Real Value of the $100 Billion Commitment for 2021–22*. Oxfam International. Accessed 16 July 2024. https://www.oxfam-novib.nl/Files/rapporten/2024/Climate%20Finance%20Short-Changed%202024.pdf

54 The breakdown is US$13.7 trillion for climate mitigation, US$2.8 trillion for loss and damage, and US$2.4 trillion for climate adaptation; E. Seery and D. Jacobs. (2023). *False Economy: Financial Wizardry Won't Pay the Bill for a Fair and Sustainable Future*. Oxfam International. Accessed 16 July 2024. https://www.oxfam.org/en/research/false-economy-financial-wizardry-wont-pay-bill-fair-and-sustainable-future

55 Climate Action Network. (20 September 2024). *US$5 trillion owed to Global South by Global North due to the climate crisis*. Press release. Accessed 2 October 2024. https://climatenetwork.org/2024/09/20/us5trillion-owed-to-global-south-by-global-north-due-to-the-climate-crisis/#:~:text=A%202023%20study%20shows%20that%20by

56 Oxfam. (2024.) *Valued: Breaking the link between paid and unpaid care, poverty and inequalities across Britain*. Silvia Galandini and Claire Spoors. Accessed 3 October 2024. https://policy-practice.oxfam.org/resources/valued-breaking-the-link-between-paid-and-unpaid-care-poverty-and-inequalities-621592/

For further information on the issues raised in this paper, or to send us comments on the report, please email matthew.martin@dri.org.uk and max.lawson@oxfam.org

For further information on the issues raised in this paper please email advocacy@oxfaminternational.org

Oxfam

Oxfam is an international confederation of 21 organizations, working with its partners and allies, reaching out to millions of people around the world. Together, we tackle inequalities to end poverty and injustice, now and in the long term – for an equal future. Please write to any of the agencies for further information or visit www.oxfam.org.

Oxfam America (www.oxfamamerica.org)
Oxfam Aotearoa (www.oxfam.org.nz)
Oxfam Australia (www.oxfam.org.au)
Oxfam-in-Belgium (www.oxfamsol.be)
Oxfam Brasil (www.oxfam.org.br)
Oxfam Canada (www.oxfam.ca)
Oxfam Colombia (lac.oxfam.org/countries/colombia)
Oxfam France (www.oxfamfrance.org)
Oxfam Germany (www.oxfam.de)
Oxfam GB (www.oxfam.org.uk)
Oxfam Hong Kong (www.oxfam.org.hk)
Oxfam IBIS (Denmark) (www.oxfamibis.dk)
Oxfam India (www.oxfamindia.org)
Oxfam Intermón (Spain) (www.oxfamintermon.org)
Oxfam Ireland (www.oxfamireland.org)
Oxfam Italy (www.oxfamitalia.org)
Oxfam Mexico (www.oxfammexico.org)
Oxfam Novib (Netherlands) (www.oxfamnovib.nl)
Oxfam Québec (www.oxfam.qc.ca)
Oxfam South Africa (www.oxfam.org.za)
KEDV (www.kedv.org.tr)

OXFAM