

BRIEFING



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Introduction

Energy and climate change have a myriad of impacts on global health equity – from directly increasing the likelihood of specific diseases, to the exacerbation of social and economic inequities that lead to further negative health impacts. This spectrum of health, social and economic impacts disproportionately affects those already most marginalised in society – including women, girls, those living in poverty, indigenous peoples, people of colour, people living with disabilities and more.

Clean air, stable climate, adequate water sanitation and hygiene, sound agricultural practices, health-supportive cities and built environments are just some of the prerequisites for a healthy environment, which – in turn – creates healthier lives. Indeed, healthier environments could prevent almost one quarter of the global burden of disease.¹ However, whilst there are multiple factors that undermine the right to a healthy environment, fossil fuel (oil, gas and coal) production and combustion stand out as one of the greatest causes of global warming and, therefore, has a huge negative impact on health equity.

Despite the impact of fossil fuels on global health the UK is seeking to open dozens of new fields by 2025. This contrasts with the IEA's recommendation that the UK should not open any further fossil fuel projects in order to stay within safe climate limits. It also contradicts the UK Government's own Net Zero strategy – a strategy for reducing greenhouse gas emissions.² Freeing us from fossil fuels and moving to an affordable and less polluting energy supply requires this government to say no to fossil fuel companies and to any new developments.

Since the Paris Agreement was signed in 2015, which saw the UK and multiple countries commit to limiting global warming to below 2°C and pursue efforts towards 1.5°C, the UK government has handed the oil and gas industry £13.6 billion in subsidies. OECD data claims that from 2016 to 2020 companies received £9.9 billion in tax reliefs for new exploration and production and £3.7 billion in payments towards decommissioning costs.

We are at a crucial juncture for the success of the Paris Agreement. The UK must play its part as a global leader on both climate and health by taking actions that creates a just transition from fossil fuel to renewable energy in order for the Paris Agreement to be achieved.

This paper sets out just some of the linkages between energy, climate and health and puts forward a set of recommendations that the UK Government and wider high-level spaces must focus on to protect the planet and improve health equity for all. As we experience a critical juncture for the Paris Agreement, the massive impacts of climate-induced flooding in Pakistan, the droughts in Kenya, Somalia, Djibouti, and Ethiopia and more, there is an urgency for countries to shift towards sustainability and increased support to net-zero efforts in order to decrease climate change and improve health equity for all.

¹ <https://www.who.int/health-topics/environmental-health>

² https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1033990/net-zero-strategy-beis.pdf

The Inequitable Burden

There is clear evidence that health issues are disproportionately experienced (in volume and severity) by communities experiencing marginalisation across all parts of the world. These disproportionate experiences are also mirrored by the impacts of climate change. Women and girls, LGBTQIA+ people, indigenous peoples, disabled, elders, those living in poverty, and more, are often more greatly impacted.

For example, the onset of disaster is more severely experienced by women due to their gendered role placing them in more vulnerable geographical areas when a disaster occurs – whether it be a fast disaster onset, such as climate-induced flood, or a slower onset, such as increased temperatures. There are also increased impacts with the longer-term, and/or secondary impacts, such as increased gender-based violence, increase of early child forced marriage, decrease in girls education and deepening of poverty. All of which create direct and indirect impacts on their health.

Climate change and environmental degradation may deeply change and dramatically impact the conditions of people's lives because of natural disasters affecting infrastructures and services as well as slow onset phenomena that reshape – for instance – food availability, livelihood opportunities, and quality of life. Inequities are a huge concern: exposure to hazards change considerably around the world. "Low income countries will see themselves exposed to more volatile temperatures and more frequent temperature anomalies with potentially devastating effects on agricultural output, while regions with the highest responsibility for climate change may experience reduced temperature volatility."³

Inequities also persist within countries. Poverty, living in urban areas, lack of infrastructures and services (including weak health systems), and the absence of preparedness and response mechanisms could shape the impact of climate change among and within countries.

Social determinants of health (SDH) affected by climate change phenomena may configure unsafe, unhealthy and unsupportive environments – especially for the most at risk groups, such as children. This may result in higher mortality and morbidity rates among disadvantaged and marginalised groups. It is important to consider that SDH (how communities and societies organise their basic conditions like built environment, transports, food chains, etc.) impact on the local environment (in terms of risk of pollution, for example) and global phenomena (in terms of their carbon footprint).

Access to inclusive health information and services, lifestyle and social norms, commercial determinants, gender, stigma, discrimination and human rights violations create unfair differences in the impact of SDH on health outcomes. For instance, shocking disparities in life expectancy among people living with disabilities (on average living 10 to 20 years less than people without disabilities)⁴ could even increase because of the effects of climate change on SDH.

Finally, those processes could generate negative externalities pushing forced migration, increasing conflict and violence (that result in physical and mental health impacts) and, at the social level, worsening community cohesion (worse wellbeing and communities less able to be resilient to climate change/take climate action).

3 <https://wid.world/news-article/climate-inequality-report-2023-fair-taxes-for-a-sustainable-future-in-the-global-south/>

4 <https://www.themissingbillion.org/the-reports>

Energy, Climate and Health Equity: What Are The Connections?

In 2018, 89% of global CO₂ emissions came from fossil fuels and industry.⁵ In turn, CO₂ contributes three quarters of total greenhouse gas (GHG) emissions, when weighted according to the warming potential of other greenhouse gases. As such, energy use is a key defining factor of the scale of climate-induced health impacts.

The impact of climate change is becoming increasingly severe – with more frequent and more intense wildfires, droughts, water scarcity with changing weather patterns, melting glaciers and rising sea levels, flooding, melting polar ice, extreme storms.

Rising temperatures and changing weather patterns can lead to an increase in infectious and non communicable diseases. Changing climatic patterns are creating opportunities for transmission of infectious diseases either by directly enabling pathogens to grow, survive and become more severe or indirectly by facilitating transmission through changes in ecosystems.

Melting ice caps and glaciers can release ancient and unknown new potentially deadly microbes and pathogens that we are not equipped or prepared to handle. In 2021⁶, scientists discovered 33 viruses in ice and snow samples collected from glaciers. Another study found almost 1,000 species of bacteria in similar samples.⁷

Impacts of more frequent and severe heat waves are already being felt across the globe. Heatwaves linked to climate change have killed approximately 157,000 people globally between 2000 and 2020.⁸ However, these numbers do not accurately capture deaths due to intense heatwaves in the global south, which could be much higher.

Impacts of heatwaves vary by geography. For example, urban areas are usually a few degrees warmer than rural areas, due to the urban heat effect, so overheating during heatwaves can lead to risk of heat-related illness and possibly death. The urban heat island effect along with local air pollution can also become severe.

Extreme heat can increase the risk of other types of disasters – intense periods of drought, as well as hot, dry conditions can in turn create wildfire conditions. Climate change has doubled the area of forest fires in the United States between 1984 and 2015⁹, creating a risk to life from fire, increased air pollution and potential contamination of water supply from burned materials.

Increased instances of flooding lead to more deaths through drowning but also through injuries, infections, exposure to chemical hazards, and heart attacks. Disruption of health services, safe water, sanitation and transportation ways, plays a major role in vulnerability.

In addition to the direct health impacts of energy and climate change on health, there are multiple socio-economic impacts that contribute to health inequity. These impacts also extend to the livestock and crops of affected populations, thus also compromising livelihoods and food security.¹⁰

5 Hausfather, 2018. Analysis: Fossil-fuel emissions in 2018 increasing at fastest rate for seven years. Carbon Brief. [Online](#).

6 Ritchie et al, 2020. Greenhouse Gas Emissions". Our World in Data. [Online](#).

7 <https://www.forbes.com/sites/davidbressan/2022/06/28/melting-glaciers-could-release-deadly-microbes-scientists-suggest/?sh=4cd9648f6734>

8 <https://www.newscientist.com/article/2326163-every-heatwave-occurring-today-is-more-intense-due-to-climate-change/>

9 <https://phys.org/news/2016-10-climate-western-forest.html>

10 <https://europepmc.org/article/MED/33738188>

Case Study

In 2022, Bangladesh was hit by one of the worst floods in more than a century, killing dozens of people and displacing nearly four million people. The rain-triggered floods submerged a large part of the country's northern and north-eastern areas and are a result of climate change.

Bangladesh is one of the world's most climate vulnerable where those living in poverty are disproportionately impacted. The Institute of Water and Flood Management (IWFM) at the Bangladesh University of Engineering and Technology (BUET) found that rains are more unpredictable, and many rivers are rising above dangerous levels more frequently than before, with five major floods in the past seven years.¹¹

Fossil Fuels and Air Pollution

From energy use in buildings and industry to air pollution from the burning of fossil fuels and use of transport, fossil fuels create a myriad of health issues. The production of energy through the burning of fossil fuels is the leading cause of global warming¹² and the steps taken to extract and process fossil fuels also poses a myriad of health risks. For example, living in proximity to fossil fuel extraction sites has been associated with a wide array of health concerns, including respiratory conditions, some cancers, cardiovascular disease, liver damage, immunodeficiencies, poor birth outcomes and developmental defects.¹³

More than half of greenhouse gas emissions are caused by energy use in buildings and industries and air pollution from the burning of fossil fuels can be attributed to about 8.7 million deaths – more than twice than what was previously attributed. Concerningly, fossil fuel pollution is not only fuelling the climate crisis, but it also kills more people each year than HIV, TB and malaria combined.¹⁴

Links between air pollution and a wide range of serious health problems – non-communicable diseases such as cardiovascular disease, cancer, type 2 diabetes, asthma and mental health concerns – are well documented. Children, in particular, are of increased risk partially due to their developing immune systems and their capacity to inhale greater levels of air and, thus, more pollution than adults. Exposure to air pollution has also been attributed to the disproportional rates of COVID-19¹⁵, an infection which already has disproportionate impacts on structurally marginalised peoples.

Household air pollution – created from the use of unsafe fuels and technologies for cooking heating and lighting – has been attributed to an additional 3.8 million deaths.¹⁶ For example, exposure to household air pollution almost doubles the risk for childhood pneumonia and is responsible for 45% of all pneumonia deaths in children less than five years old.

Indeed, women and children are most vulnerable to household air pollution due to the long periods spent in the home – with gender roles leaving women responsible for cooking and household tasks. Furthermore, the health impacts of air pollution are disproportionately evident in low- and middle-income countries (LMIC) – with 91% of deaths due to air pollution occurring in LMIC.

Because of the strong links between air pollution and non-communicable diseases (NCDs), the WHO now includes air pollution as one of the five main risk factors for NCDs, alongside poor diet, alcohol and tobacco use, and physical inactivity, with the latter also being linked to the transport system.

Currently, many countries' net zero plans depend upon carbon capture and storage (CCS) to reduce emissions from electricity production. Evidence to date suggests that CCS is not a viable solution at scale for reducing emissions. For as long as net zero plans depend on CCS technologies, not only climate change but also air pollution and pre-combustion health threats will continue to harm public health.

11 <https://www.aljazeera.com/news/2022/6/22/bangladesh-floods-experts-say-climate-crisis-worsening-situation>

12 The Intergovernmental Panel on Climate Change (IPCC) has found that emissions from fossil fuels are the dominant cause of global warming.

13 <https://climateandhealthalliance.org/wp-content/uploads/2022/07/Cradle-To-Grave-Fossil-Fuels-Brief.pdf>

14 Karn Vohra, Alina Vodonos, Joel Schwartz, Eloise A. Marais, Melissa P. Sulprizio, Loretta J. Mickley (2021) Global mortality from outdoor fine particle pollution generated by fossil fuel combustion: Results from GEOS-Chem, Environmental Research

15 <https://www.ons.gov.uk/economy/environmentalaccounts/articles/doesexposuretoairpollutionincreasetheriskofdyingfromthecoronaviruscovid19/2020-08-13#:~:text=Studies%20in%20the%20United%20States,rate%20of%20up%20to%2021%25.>

16 <https://www.who.int/data/gho/data/indicators/indicator-details/GHO/household-air-pollution-attributable-deaths>

Health Impact of Fossil Fuel Extraction and Processing

Aside from air pollution during combustion, fossil fuel dependence also severely impacts health throughout extraction and processing.¹⁷ Local and Indigenous communities experience the worst of these impacts. Living in proximity to fossil fuel extraction sites has been associated with a wide array of health risks, including respiratory conditions, some cancers, cardiovascular disease, liver damage, immunodeficiencies, poor birth outcomes and developmental defects.

Transport of fossil fuels between sites of extraction, refining and combustion including by pipeline, train, shipping or road also carries health risks such as explosions and spills with both acute injuries or death and chronic health issues including cancers and psychological impacts, as well as destruction of local ecosystems to build pipelines or other transport routes.

Fugitive methane emissions generate tropospheric ozone, which can worsen bronchitis and emphysema, trigger asthma, and permanently damage lung tissue. Disposal of waste produced during fossil fuel extraction and processing remains a challenge. The process of fracking is itself highly dependent on the use of chemicals that persist long after the oil or gas has been extracted, many of which present a severe threat to human health and which can contaminate drinking water supplies with grave effects.

Meanwhile, the separation of coal and oil after extraction from the ore, sands or silt, which themselves contain high levels of toxic metals, can require the use of harmful chemicals. The “tailings” which remain after this separation are deposited into large ponds, from which toxic substances may leach into surrounding water and soil.

Transport and Pollution

Current transport systems contribute to a range of health inequities due to air pollution, global warming-inducing emissions and contribute to the lack of physical activity and more.

Road transport and diesel vehicles are heavy contributors of air pollution and greenhouse gas emissions. Energy consumption in the transport sector accounts for 12% of global greenhouse gas emissions and around 20% of small particulate air pollution. The health impacts of these include increased risk of cardiovascular and respiratory diseases.¹⁸

The World Health Organization estimates that 25% of adults and 80% of adolescents do not meet the recommended levels of physical activity.¹⁹ Up to five million deaths a year could be averted if the global population was more active. Many countries are currently facing health challenges associated with lower physical activity, including obesity and cardiovascular disease.

Transport systems which prioritised private motorised transport over active and public transport exclude the world’s poorest populations who make most daily journeys on foot. This limits access to critical services like education, healthcare, decent jobs, and nutritious food, and to non-essential goods that contribute to general wellbeing.^{20 21}

17 <https://climateandhealthalliance.org/wp-content/uploads/2022/07/Cradle-To-Grave-Fossil-Fuels-Brief.pdf>

18 <https://apps.who.int/iris/handle/10665/344854>

19 WHO, n.d., Physical activity. <https://www.who.int/health-topics/physical-activity>

20 <https://cms.wellcome.org/sites/default/files/2021-08/transport-systems-that-protect-climate-and-health.pdf>

21 <https://climateandhealthalliance.org/wp-content/uploads/2022/07/Cradle-To-Grave-Fossil-Fuels-Brief.pdf>

Energy poverty and household energy use

Today 770 million people live without access to electricity, mostly in Africa and Asia.²² Reliance on biomass fuels (such as wood, animal dung, crop residue) and coal to meet their daily cooking and heating needs contributes to a range of health issues. In addition to indoor smoke and air pollution, constant exposure can also lead to acute respiratory infections, including pneumonia, chronic obstructive pulmonary disease and lung cancer, as well as tuberculosis, low birth weight and cataracts.

In addition, collecting these fuels expose women and children to additional risks outside of households. Fuel poverty further blocks chances of economic progression through loss of time, inadequate lighting for household chores and being unable to use energy-dependent appliances for income generation.

Energy and Healthcare Delivery

Access to sufficient and reliable power is necessary for quality health care service delivery. However, around one in four health facilities in Sub-Saharan Africa lack access to electricity and three in four facilities lack reliable power.²³ Globally, more than 287,000 women die each year from pregnancy and childbirth-related complications²⁴ – yet with better provision of lighting and electricity-dependent medical services, many complications can be avoided.

Climate Impacts: A Case Study

In India, where air pollution is amongst the highest in the world, air pollution led to more than 1.6 million premature deaths in 2019. All of India's 1.4 billion people are exposed to unhealthy levels of pollution. After a brief respite during the pandemic, smog returned this year to envelop Delhi and numerous other cities in the country. Air pollution in the capital – home to 20 million people – has proved especially potent: One measure of pollution frequently exceeds the World Health Organization's daily recommended limits by a factor of more than 20.²⁵

22 <https://www.iea.org/reports/sdg7-data-and-projections/access-to-electricity>

23 <https://www.seforall.org/press-releases/health-facility-electrification-in-sub-saharan-africa>

24 <https://www.who.int/news-room/fact-sheets/detail/maternal-mortality>

25 <https://www.bbc.co.uk/news/world-asia-india-61489488>

Recommendations

1

To connect with and develop locally led approaches for climate action within the UK Government's Net Zero Strategy

2

Reduce the carbon footprint of health systems programmes and financing.

3

Embed climate action in all health equity work.

4

Avoid overreliance on carbon capture and storage (CCS), which would not offer protection against the impacts of air pollution, nor of fossil fuel extraction and processing.

5

To lead on reducing greenhouse gas emissions by more than 68% by actively phasing out fossil fuels and transitioning to green energy, including:

- Impose tobacco style bans on fossil fuel promotions and advertisements.
- Implement fiscal policies which reflect the true costs of fossil fuel use – by phasing out subsidies and implementing carbon taxes.
- Issue guidelines on excluding the fossil fuel industry from policymaking discussions.

Endnotes

