

**Cradle to grave:
The health harms
of fossil fuel dependence
and the case
for a just phase-out**

a Global Climate and Health Alliance briefing
July 2022

In the lead up to COP26, over 600 organizations representing over 46 million health professionals, together with individuals from over 100 countries, signed a letter calling for real action to address the climate crisis by limiting global warming to 1.5°C, and to make human health and equity central to all climate change mitigation and adaptation actions¹. This “Healthy Climate Prescription” notes that achieving these objectives will require the rapid and just phase-out of fossil fuels. In follow up to the Healthy Climate Prescription, the health community is now joining the call for a Fossil Fuel Non-Proliferation Treaty.

You can sign on to the call by health professionals for a Fossil Fuel Non-Proliferation Treaty here: bit.ly/HealthForFossilFuelTreaty

Introduction

For over a century, fossil fuels have been at the root of global development, and today account for 80% of global energy consumption². Economic, social and health advances have been built on these valuable assets. Fossil fuels have enabled the heating of homes, transportation to jobs and vital services, powering of hospitals and sanitation systems, and the production and delivery of food. However, these same resources are the leading driver of changes which are already harming people's health, communities, and the planet on which we depend for survival. Health is impacted throughout the entire cycle of fossil fuel use — from “cradle to grave”³ — from extraction, through processing, transport, combustion and waste disposal. These processes drive pollution of air, water and soil as well as climate change.

Fossil fuels were referred to for the first time in a UNFCCC decision at COP26⁴, when governments committed to phase down the use of “unabated” coal power (produced and used without interventions that substantially reduce the amount of GHG emitted)^{5,6}, and to phase out “inefficient” fossil fuel subsidies. This language was significantly watered down from an initial call to phase out all fossil fuels and all fossil fuel subsidies. In June 2022, one of 10 recommendations emerging from Stockholm+50 referred to the need

to “adopt system wide change in the way our current economic system works to contribute to a healthy planet”, including through “promoting phase-out of fossil fuels while providing targeted support to the poorest and most vulnerable in line with national circumstances and recognizing the need for financial and technical support towards a just transition”⁷. While this language offers a strong basis for calls for further action, and is the first time fossil fuel phase-out has been explicitly referred to in the outcomes of a global summit, “promoting” phase-out also falls far short of a commitment to phase-out by a specified end date commensurate with limiting temperature rise to 1.5°C. In the wake of the Russian invasion of Ukraine, people around the world struggle to pay for rising gas and food prices while oil, gas and coal companies are reaping record profits^{8,9}.

This short brief examines the impact of fossil fuel extraction, production and combustion on human health, the role subsidies play as supporting fiscal architecture for fossil fuel dependence, and solutions to achieve fossil fuel phase-out across sectors, before identifying key recommendations. This brief will be complemented by a forthcoming publication by the Health and Climate Network which will examine pathways to fossil fuel phase-out and effective solutions for both climate and health in greater depth¹⁰.

Climate justice is essential for health equity

The short-term economic benefits and long-standing health harms associated with fossil fuel consumption are not distributed equally. Often, fossil fuel activity (extraction, processing, transport, or combustion) takes place far from centers of economic privilege, near communities who are otherwise marginalized or disempowered, sometimes referred to as “sacrifice zones”¹¹. As of 2015, the Global North was responsible for 92% of excess GHG emissions. By contrast, most countries in the Global South were within their boundary fair shares, including India and China (though China will soon overshoot)¹². The dangerous impacts of fossil fuel pollution and climate change fall most heavily on communities who are least historically responsible; have profited least from the sale and use of fossil fuels; and who have the least access to the resources and power needed for redress¹³. Communities in proximity to fossil fuel activity and pipelines are subject to threats and inflicted violence, including but not exclusively, as they seek to protect their lands, livelihoods and health. This includes populations in the Global South, and, in countries throughout the world, Indigenous peoples, people facing racial, gender or other discrimination, people experiencing poverty, and young people. Addressing these issues of climate and environmental injustice is vital to achieve health equity.

The health risks of fossil fuel production

The use of coal, oil and gas harms health at every step, and well before combustion. Fossil fuel extraction, refining and manufacturing of byproducts, transportation, distribution, and disposal of waste products drive potentially catastrophic and often cumulative health harms across the life span of individuals and future generations.

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^{14,15,16,17}. Noise pollution, ecosystem degradation and biodiversity loss, water use, loss of livelihood, and community disruption have also been reported^{18,19}.

Proximity to petrochemical refineries, and exposure to facilities manufacturing other fossil fuel-derived products such as plastics and fertilizers, are associated with an increased risk of respiratory illnesses such as childhood asthma, cardiovascular diseases, and blood cancers^{20,21,22,23}.

Workers at extraction sites and in refineries face particularly severe occupational health risks, including terminal respiratory diseases such as black lung, silicosis, chronic obstructive lung disease, mesothelioma and other cancers, as well as safety risks from industrial fires and explosions^{24,25}.

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^{26,27,28,29}. Global methane emissions from energy supply, primarily fugitive emissions from production and transport of fossil fuels, accounted for about 18% of global GHG emissions from energy supply⁵, accelerating the progression of climate change and also generating tropospheric ozone, which can worsen bronchitis and emphysema, trigger asthma, and permanently damage lung tissue³⁰ [see box on short lived climate pollutants].

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 effects³¹. 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^{32,33}.

The health risks of fossil fuel combustion

Our fossil fuel dependence also harms people's health at the combustion stage, with significant near- and medium-term effects on air quality, and long-term effects of climate change. In addition to CO₂, fossil fuel combustion is the major source of other climate- and health-damaging air pollutants; these include sulfur dioxide (SO₂), nitrogen oxides (NO_x), ozone, volatile organic compounds (VOCs), fine particulate matter (PM₁₀ and PM_{2.5}) and mercury^{34,35}.

Fossil fuel driven outdoor air pollution accounts for approximately 3.6 million deaths annually, including from cardiovascular disease, lung cancer and chronic respiratory diseases^{36,37}. Other estimates place the burden still higher; up to 8 million deaths annually or 1 in 5 of all deaths³⁸. According to the Lancet Countdown on Health and Climate Change, a little over half of all deaths due to fossil fuel driven ambient air pollution are caused by coal combustion, most notably from generating electricity and from burning coal in households. Coal ash is especially dangerous, again inflicting greatest risk on those living in close vicinity to the site of fossil fuel activity. Long-term exposure to coal ash can lead to kidney and liver damage, cardiac impacts, and increased risk of certain cancers³⁹.

The climate crisis is one of the most critical health threats facing humanity, exacerbating existing health threats and damaging health care infrastructure⁴⁰. In 2018, 89% of global CO₂ emissions came from fossil fuels and industry⁴¹. In turn, CO₂ contributes three quarters of total greenhouse gas (GHG) emissions, when weighted according to the warming potential of other GHGs⁴². Combustion of gas is cleaner than coal or oil, but nevertheless produces huge amounts of CO₂ on combustion (approximately half that

of coal⁴³), while leakage in gas systems is a direct contributor to methane emissions. Burning fossil fuels is the leading cause of climate change, with global temperature increase to date of an average of 1.1°C compared to the pre-industrial era⁴⁴.

New fossil fuel plants continue to be planned around the world, but even existing fossil fuel projects would warm the world beyond 1.5°C⁴⁵. In fact, the UNEP Production Gap Report finds that governments still plan to produce more than double the amount of fossil fuels in 2030 than would be consistent with limiting global warming to 1.5°C⁴⁶. According to IPCC projections, limiting warming to around 1.5°C requires global GHG emissions to peak before 2025 at the latest, and be reduced by 43% by 2030 compared to 2019 levels⁵. Pledges made by countries to limit emissions over the long term could keep warming to less than 2°C above pre-industrial temperatures, but shorter term climate plans do not match up⁴⁷. The most recent UNFCCC synthesis report published just prior to COP26 projects that the national climate commitments (the "Nationally Determined Contributions" or NDCs) of all 193 Parties to the Paris Agreement amounted to "a sizable increase, of about 13.7%, in global GHG emissions in 2030 compared to 2010"⁴⁸. Temperature rise of 1.5°C would already be catastrophic in SIDS and other climate vulnerable nations.

Under a business-as-usual scenario, one study found that climate change will likely cause 83 million cumulative excess temperature-related deaths between 2000 and 2100⁴⁹. Climate change has other profound direct and indirect impacts on health and wellbeing, driving other extreme weather events, environmental suitability for vector- and water-borne disease transmission, food and water insecurity, and negative mental health

Short-lived climate pollutants

Short-lived climate pollutants (SLCPs) present particular risks for both human health and the climate. Black carbon, methane, and tropospheric ozone are among the greatest contributors to the man-made global greenhouse effect, after CO₂, responsible for up to 45% of current global warming⁵¹. Though much shorter-lived in the atmosphere, methane (the main component of fossil gas, and often emitted from oil fields and coal mines) is over 80 times more potent than CO₂ over a 20 year timescale and has driven 30% of the rise in global temperatures since the industrial revolution^{52,53}. Black carbon and tropospheric ozone, produced during fossil fuel combustion, are health-damaging air pollutants, while methane is a precursor of the latter. Rapid action to reduce SLCPs has the potential to reduce the amount of warming by as much as 0.6°C in the next few decades⁵¹, and is a vitally important near-term strategy in the effort to limit warming to 1.5°C.

Fossil Fuels' Health Hazards: From Cradle to Grave

- Lungs** — respiratory diseases including asthma, black lung, bronchitis, COPD, emphysema, lung cancer, silicosis
- Heart** — cardiovascular diseases including hypertension and ischaemic heart disease

- Liver** — hepatic diseases
- Kidney** — renal diseases
- Brain** — neurological conditions including stroke and psychological impacts, mental health impacts from climate change

- Systemwide/nonspecific** — including cancers (leukemia, mesothelioma and others), immunodeficiencies, injuries, poor birth outcomes and developmental defects, heat exposure, vector- and water-borne diseases, food and water scarcity



Exposure to toxic compounds for communities living near extraction sites



Occupational health risks when working at extraction sites and refineries



Processing plastics and fertilizers



Transporting fossil fuels — risks from spills and explosions



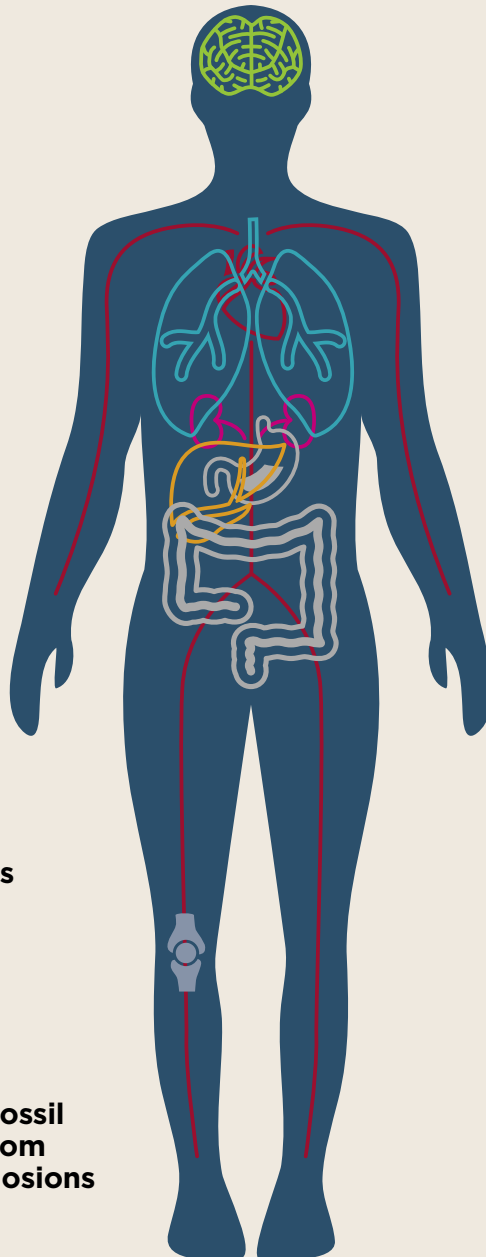
Methane leakages during transport and production impact health and climate



Waste disposal and fracking contaminate water and soil



Air pollution and climate impacts from combustion, including from power generation, transport, industry and residential use (cooking, heating and lighting)



The health costs of fossil fuel impacts*

- The economic and health costs of air pollution from burning fossil fuels totaled US\$2.9 trillion in 2018, calculated in the form of work absences, years of life lost, and premature deaths. The cost represents 3.3 percent of global GDP, or about US\$8 billion per day⁵⁴.
- Across the European Union and the United Kingdom, the average health-related cost per household of using a coal boiler is €1,200 per year⁵⁵.
- In the United States alone, health costs arising from fossil-fuel generated air pollution and climate change surpass US\$820 billion each year⁵⁶.
- Globally, 295 billion hours of potential work were lost due to heat exposure in 2020, of which fossil fuel use is a key driver. This is equivalent to 88 work hours per employed person, equivalent to 4–8% of GDP in countries with a low human development index⁵⁷.
- The monetised value of global heat-related mortality increased by 6.7% as a percentage of global GDP, with total costs of over US\$240 billion⁵⁸.
- G20 governments paid an annual average of at least US\$584 billion in fossil fuel subsidies from 2017 to 2019. Previous evidence suggests every dollar of fossil fuel subsidies by G20 countries caused 6 dollars of health costs⁵⁹.
- The highest burden of costs from climate-related malnutrition, diarrhea and malaria are projected to be in the Global South^{60,61}.
- Across seven high-income countries, air pollution is estimated to account for 3.5% of total health expenditure. In Sri Lanka, a rapidly industrializing country where the burden of pollution-related disease is proportionately much larger than in high-income countries, this rises to 7.4%⁶².
- Productivity losses due to air pollution related deaths (of which fossil fuels are the leading cause) are estimated to be equivalent to 0.1% of GDP worldwide⁶².

* In 2018, 89% of global CO₂ emissions came from fossil fuels and industry⁴¹. In turn, CO₂ contributes three quarters of total GHG emissions⁴², when weighted according to the warming potential of other GHGs. In addition, fossil-fuel-related emissions account for about 65% of the excess mortality rate attributable to air pollution³⁶. Thus, while fossil fuels are not the sole driver of climate change and air pollution, they can be assumed to be the principal drivers of the health costs described here.

impacts. Young people are especially vulnerable to climate change: UNICEF suggests one billion children are at ‘extremely high risk’ of the impacts of the climate crisis due to high exposure to shocks coupled with inadequate essential services, such as water and sanitation, healthcare and education⁵⁰.

Subsidizing health harms

Despite these extensive health harms, governments continue to subsidize fossil fuels; effectively, publicly financing damage to people’s health. The International Monetary Fund estimates that fossil fuel subsidies will amount to 7.4% of total GDP by 2025⁶³. Fossil fuel subsidies outweighed any measures for carbon pricing in 65 of 84 countries assessed by the Lancet Countdown, leading to a net negative carbon price. The resulting net

loss of revenue was, in many cases, equivalent to substantial proportions of the national health budget⁵⁷. The costs of health impacts are greater still: in G20 countries, costs of health impacts of fossil fuel use were found to be six times greater than the sums invested in fossil fuel subsidies⁵⁹. Health can be protected, and health costs reduced, by rechanneling existing fossil fuel subsidies into renewable energy investments, and into improving access to healthcare and social support. In Indonesia and Iran, deep reductions to subsidies for fossil fuels in were matched by a substantial planned increase in spending on other areas, including health services^{64,65}. Such progressive reallocations in other countries can help build public support for transitions, as well as support sustainable economic development⁶⁶.

Solutions across sectors

In order to deliver the GHG emissions reductions needed to protect people's health, the use of fossil fuels must be phased out across all sectors. The 2021 Net Zero Report published by the International Energy Agency states that "the path to net-zero emissions is narrow: staying on it requires immediate and massive deployment of all available clean and efficient energy technologies", and that "net zero means a huge decline in the use of coal, oil and gas". It further notes that "beyond projects already committed as of 2021, there are no new oil and gas fields approved for development in our [net zero] pathway, and no new coal mines or mine extensions are required"⁶⁷. Such a transition will not only reduce the health impacts of climate change, but yield extensive health co-benefits both on account of improved air quality, and mitigation of climate change. Four sectors which account for the majority of all fossil fuel use are electricity generation, industry, transport, and residential use. The health sector itself also has a role to play in the transition away from fossil fuels.

Electricity generation

In 2019, around 64% of electricity worldwide was generated from fossil fuels⁶⁸. While electricity rarely harms health at the point of use, risks associated with electricity production fall on communities in other locales. Investments in renewable energy infrastructure, including battery storage and grid modernisation, will be crucial to phase out fossil fuels in the electricity generation sector.

There are currently 733 million people – 9% of the total global population – without access to electricity, mostly in Africa⁶⁹. Lack of modern clean energy access traps people in poverty. Poor electrical reliability is associated with increased morbidity and mortality, lower quality of healthcare, and reduced utilization of health services⁷⁰. Local renewable grids (including solar and wind) can both ensure delivery of power to rural communities who do not have access to the national grid, as well as promote energy sovereignty.

Currently, many countries' net zero plans depend upon carbon capture and storage (CCS) to reduce emissions from electricity production. However, a 2020 review concluded that the failures of CCS are systemic and irremediable, and as currently practiced, CCS is net-additive, releasing more CO₂ into the atmosphere than it removes⁷¹. Moreover, reliance on CCS would perpetuate fossil fuel usage. False solutions like carbon capture

and storage (CCS) fail to offer viable, scalable or cost effective approaches to mitigate climate change.⁷² 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.

Industry

A range of industrial processes rely on fossil fuels, including the production of steel, fertilizers and plastics. The production of steel from iron requires both heat and a source of carbon, for which coal is most commonly used. The iron and steel industry accounts for around 7% of global GHG emissions⁷³. Alternatives to the conventional blast furnace are the electric arc furnace route (which still requires a source of carbon), and hydrogen breakthrough ironmaking technology (HYBRIT), which has been used in Sweden with green hydrogen, made from renewable sources, to produce the world's first fossil fuel free steel⁷⁴.

One of the by-products of oil refining is petroleum coke, which can be used to create ammonia and urea ammonium nitrate for nitrogen fertilizers. Growing use of nitrogen-based fertilizers for food production is increasing emissions of nitrous oxide (N₂O), a GHG 300 times more potent than CO₂⁷⁵. The use of nitrogen-based fertilizers is associated with methemoglobinemia (blue baby syndrome), various cancers, adverse reproductive outcomes (especially neural tube defects), diabetes, and thyroid conditions⁷⁶. Coal ash is also used in some fertilizers, despite concerns regarding its toxic metal content. Agroecological methods, based on applying ecological concepts and principles to optimize interactions between plants, animals, humans and the environment, should be promoted as a sustainable alternative.

The production of both fertilizers and plastics from oil itself carries health risks as described previously. Around 4% of oil globally is used to make plastics. In addition, chemicals used in the production of plastics mean that microplastics released as plastics slowly break down, and which have been found in human blood and are associated with cancer, cardiovascular diseases, inflammatory bowel disease, diabetes, rheumatoid arthritis, chronic inflammation, autoimmune conditions, neurodegenerative diseases, and stroke^{77,78}. Aside from the benefits of reducing consumption and increasing re-use and recycling, alternatives to petroleum based plastics include degradable polymers. The start of a UNEP process to negotiate a plastics treaty is also now underway.

Transport

Transport has the highest reliance on fossil fuels of any sector⁷⁹. Fossil fuel-based transportation emits health harming air pollutants across road transport, aviation and shipping. People living in communities which are dependent on motor vehicles or close to airports endure high levels of air pollution^{80,81}. Some improvements in urban air quality can be yielded by transitioning to electric cars and more stringent vehicle regulations, though the greatest benefits from electric vehicles will come only when the electricity they use comes from clean, renewable energy sources. Air pollution arising from brake and tire friction, however, will remain. Investing in urban planning and infrastructure to support safe, accessible walking and cycling and robust public transportation systems will not only reduce urban air pollution, but also increase physical activity levels, reducing the risk of obesity and noncommunicable diseases. At present, physical inactivity is estimated to cause 3.2 million deaths annually⁸².

Residential

In addition to fossil fuel-generated electricity, fossil fuels themselves are used in homes around the world for cooking (e.g. gas stoves), heating (e.g. coal fires) and lighting (e.g. kerosene lamps). 2.4 billion people have no access to clean fuels or technology for clean cooking, relying instead on

fuels and appliances which expose them to indoor air pollution⁶⁹. While this brief is principally focussed on ambient air pollution, household air pollution, mainly from fossil fuel and biomass combustion, causes over 3 million deaths annually from stroke, ischaemic heart disease, chronic obstructive pulmonary disease (COPD) and lung cancer⁸³.

Priority interventions for heating include well-insulated, energy efficient homes, with a shift from gas and coal to electric heat pumps for heating, and designed for passive cooling. Gas cooking and heating must be replaced by renewable electricity-powered electric stoves.

Clean and affordable technologies must be made accessible to people living in poverty — as countries phase out of fossil fuels new alternatives will be needed — including super efficient biofuels stoves, local biogas, and electrical appliances.

Health systems

The health sector contributes almost 5% of global GHG emissions⁵⁷. At COP26, and in the months since, 55 national governments have committed to low-carbon sustainable health systems (of which 20 have set net zero target dates), and over 60 health care institutions representing the interests of over 14,000 hospitals and health centers have joined the UNFCCC Climate Champions Race to Zero health care cohort^{84,85}. In their 2022 Communiqué G7 leaders committed “to making

Returns on investment*

- Globally, improvements in air quality as a result of climate action could save several trillion dollars annually by the end of the century due to avoided premature mortality⁸⁷.
- In China and India, costs of reducing GHG emissions could be compensated with savings due to resulting health co-benefits alone, with partial offsetting in the United States and the European Union^{88,89}.
- Delivering the emissions reductions set out in NDCs in Europe would be equivalent to savings of US\$244–564 billion, or 1–2% of regional GDP; of which US\$34.3 billion is due to saved treatment costs⁹⁰.
- In the United States, every dollar invested in air pollution control since 1970 has yielded returns of approximately US\$30: a total of US\$1.5 trillion savings against an investment of US\$65 billion⁶². Nationwide efforts to eliminate energy-related emissions could provide US\$608 billion in benefits from avoided PM_{2.5}-related illness and death⁹¹.
- Air quality improvements made in the EU between 2015 and 2018 alone, including the closure of coal power stations, will reduce loss of life with savings of US\$8.8 billion every year⁹².

Fossil Fuels Fix: True Costs versus Health Savings of Phase-out



SAIKAT PAUL/SHUTTERSTOCK

Global annual heat-related mortality costs > **us\$240 billion.**



PREDRAG ZDRAVKOVIC/SHUTTERSTOCK

Using a coal boiler results in average health-related costs of **€1,200/household/year** in the EU and UK.

US health costs from fossil-fuel air pollution and climate change: > **\$820 billion/year**

CHRIS971/SHUTTERSTOCK

3.3%

Health and economic costs from burning fossil fuels totalled us\$ 2.9 trillion in 2018 = 3.3% of global GDP = us\$ 8 billion/day



RUSLANA IURCHENKO/SHUTTERSTOCK

If global warming $\leq 2C$, ozone pollution would fall and improve crop yields:

> **us\$10 saving per capita** in Spain and US

> **us\$8 saving per capita** in Argentina, Brazil, Canada, Greece, Paraguay, Turkey, Turkmenistan, Uzbekistan by 2050



LUCA PRESTIA/ISTOCK

Highest costs of adaptation for climate change-related diarrhea, malnutrition, and malaria are projected to be in the Global South.



JACE & AFSOON/UNSPLASH

Air quality improvements made in the EU 2015–2018 including by closing coal power stations, offer health savings of **us\$8.8 billion/year.**



AMNAT30/SHUTTERSTOCK

In China and India, costs of reducing GHG emissions could be fully offset by **savings from health co-benefits**, and in the US and EU, partially offset.

- Improvements in ozone pollution as a result of measures to limit warming to 2°C would improve crop yields to the value of >US\$10 per capita in Spain and the United States in 2050, and > US\$8 per capita in Argentina, Brazil, Canada, Greece, Paraguay, Turkey, Turkmenistan and Uzbekistan⁹³.

* In 2018, 89% of global CO₂ emissions came from fossil fuels and industry⁴¹. In turn, CO₂ contributes three quarters of total GHG emissions, when weighted according to the warming potential of other GHGs⁴². In addition, fossil fuel-related emissions account for about 65% of the excess mortality rate attributable to air pollution³⁶. Thus, while fossil fuels are not the sole driver of climate change and air pollution, the phase-out of fossil fuels can be assumed to be the principal driver of health savings described here.

our health systems environmentally sustainable and climate-neutral at the latest by 2050, as well as more resilient⁸⁶. Fossil fuel phase-out in the health sector is essential to ensure that these commitments are delivered.

Just and equitable transitions for health

Phase-out of fossil fuels around the world is a public health imperative. However, this must be accomplished with attention to a just and equitable transition. The livelihoods of workers employed by the fossil fuel industry, and the risk of energy poverty faced by vulnerable populations, must be carefully considered, not least as social determinants of health. Key components of a just and equitable transition include financial provision for fossil fuel workers to affordably retrain to enter other industries including but not limited to renewable energy systems; and carefully managed subsidy reform to maintain energy access for vulnerable populations. These measures are not however sufficient: renewable energy alternatives

must also be planned and delivered with care. The environmental and health impacts of hydropower are increasingly well recognised, while concerns are growing regarding the extraction of resources required for the manufacture of solar panels or batteries for renewable energy storage, and impacts on local communities^{94,95,96}. Health impact assessments and engagement of communities prior to and throughout the transition process is vital—especially Indigenous peoples and other most impacted populations, as well as health professionals.

Developed countries, which have long since profited from fossil-fuel driven economies, should take the initiative in leading mitigation and fossil fuel phase-out efforts with faster and deeper cuts to fossil fuel use (referred to as “common but differentiated responsibilities” during UNFCCC negotiations). The pledge by developed countries of \$US100bn annually by 2020, to support both mitigation and adaptation activities in developing countries, has not yet been met⁹⁷.

Lessons and parallels from tobacco control

In many countries, tobacco control measures are a triumph of the public health community. Rich lessons can be exchanged on the effective regulation of these two health-harming commodities, including on the issues of interference by the industry in policymaking; fiscal policies; and advertisement bans. Article 5.3 of the WHO Framework Convention on Tobacco Control clearly prohibits the involvement of the tobacco industry in tobacco control policy making⁹⁸. By contrast, the fossil fuel industry had a larger presence than any single country at COP26⁹⁹. In addition to ending fossil fuel subsidies, some countries have also instituted a carbon tax¹⁰⁰. Finally, movements are already underway in Canada and in the EU to ban fossil fuel ads, just as has been achieved for tobacco in much of the world^{101,102}.

A fossil fuel non-proliferation treaty

Following sustained calls by vulnerable nations and by civil society, and building on the work of front line communities and other treaty campaigns, the Fossil Fuel Non-Proliferation Treaty Initiative began in 2019. Today, it is carried by a diverse Steering Committee, an international support team, more than 750 organizations, 12 cities, over 2,500 scientists and academics, Parliamentarians, youth, senior faith leaders, Indigenous movements, and 101 Nobel Laureates¹⁰³. The initiative proposes that a Fossil Fuel Non-Proliferation Treaty be adopted, and makes three key demands, namely: (1) to end new exploration and production; (2) phase out existing stockpiles and production of fossil fuels and (3) accelerate a just and equitable transition for every worker, community and country¹⁰⁴. Phasing out fossil fuel production in line with 1.5°C will require limits on extraction, removal of production subsidies, dismantling unnecessary infrastructure and shifting support to safer and more sustainable alternatives.

Ways forward: action at local, national and international level

The response to climate change provides an unparalleled opportunity to improve health and redress health inequities, since many climate solutions have immediate and significant health benefits. The just phase-out of fossil fuels is critical to achieve these goals, and interventions at local, national, and international level are set out below (with substantial overlap and complementarity between these levels of action). More broadly, there is a fundamental need to address the global injustices which underpin the global climate and health crises in order to ensure future energy systems are grounded in equity and fair resource distribution. There is clear need to carefully assess the benefits and trade-offs of climate action, including the phase-out of fossil fuels, for health. One proposal for addressing these issues is the formation of an international commission of independent experts and policy makers to undertake an assessment of the policy options that optimize the climate, development, and social and health equity outcomes of greenhouse gas mitigation actions in different socioeconomic settings¹⁰⁵.

Local action at workplace and community level

- Communicate to decision makers and via the media about the impacts of fossil fuel production and use on patients and communities.
- When appropriate, inform patients about their health risks related to exposure to air pollution or other harmful by-products of fossil fuels, and about how they can protect themselves to reduce the harm.
- Lead initiatives to transition your institution (hospital, clinic, agency or workplace) or community to 100% renewable electricity; and use this to help power low and zero-emissions transport.
- Lead initiatives to divest from fossil fuels and reinvest in low-carbon solutions.
- Sign the call for Fossil Fuel Non-Proliferation Treaty and encourage colleagues, institutions and decision makers to do the same.

National level action

- Promote sector-specific solutions:
 - Production of and access to renewable energy with supporting infrastructure
 - Energy efficiency and savings measures such as home insulating and retrofitting, with support mechanisms for low income households
 - Investment in active transport infrastructure (i.e. for walking and biking) and expanded public transit, as well as electrified vehicles powered by renewable energy sources.
 - Local and sustainable agriculture, based on agroecological methods without fossil fuel derived fertilizers and pesticides.
- Amplify the demands of the Fossil Fuel Non-Proliferation Treaty initiative, by calling for:
 - Ending all new exploration and production of coal, oil and gas.
 - Phase-out of existing production of fossil fuels in line with the 1.5°C with exemplary action and support from the wealthiest countries.
 - Ensure a just transition for every worker, household, community, and country.
- Call for proven public health measures to be applied to fossil fuels as for other health harming commodities such as tobacco:
 - End subsidies and implement pricing measures which reflect true costs, including health impacts.
 - Protect policymaking from interference by industry actors with vested interests.
 - Ban fossil fuel advertising.

International priorities

- As part of the UNFCCC Mitigation Work Programme, call for commitment to the phase-out of all fossil fuels as a public health imperative and in order to ensure delivery of the Paris Agreement goal of limiting warming to 1.5C.
- Call for accelerated delivery under the UNFCCC of the overdue US\$100bn financing from developed countries to enable climate action in developing countries, and ensure delivery of an ambitious post 2025 financing goal – the ‘New Collective Quantified Goal’.
- Request WHO to publish ‘best buy’ recommendations for cost effective interventions to reduce air pollution to address non-communicable diseases (NCDs) as has been done for other NCD risk factors.
- Call for adoption of a Fossil Fuel Non-Proliferation Treaty.

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