

Avoiding fossil fuel addresses human and planetary health

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Abstract

This policy brief argues that fossil fuel extraction and combustion strongly affects human (including violence against women) and planetary (including ocean) health (SDG 3, 5, 15). Although fossil fuels have contributed to economic prosperity for some, there is growing evidence that they need to be phased out in a just manner using appropriate means of implementation. This policy brief argues for revitalising the global partnership for sustainable development. Such a partnership can also encourage a structural change to the global economy to ensure human wellbeing, employment, and prosperity.

Introduction

The continued extraction and use of fossil fuels poses severe risks to achieving the Sustainable Development Goals (SDGs), particularly in relation to human health (SDG 3), gender equality (SDG 5), planetary health (e.g., life below water (SDG 14)), and sustained, inclusive economic growth and employment (SDG 8). It also threatens SDG 17, as fossil fuel dependency undermines the trust, equity, and cooperation needed for effective global partnerships.

Leaving fossil fuels underground (LFFU) is a high-impact strategy to mitigate health risks and accelerate the global energy transition. This policy brief argues that fossil combustion affects the health of the planet and humans and that it is time to prioritise planetary and human health through a global partnership for sustainable development. It explores actionable solutions, including financial sector interventions, regulatory mechanisms, and governance frameworks, that can enable LFFU while ensuring a just transition for communities and workers.

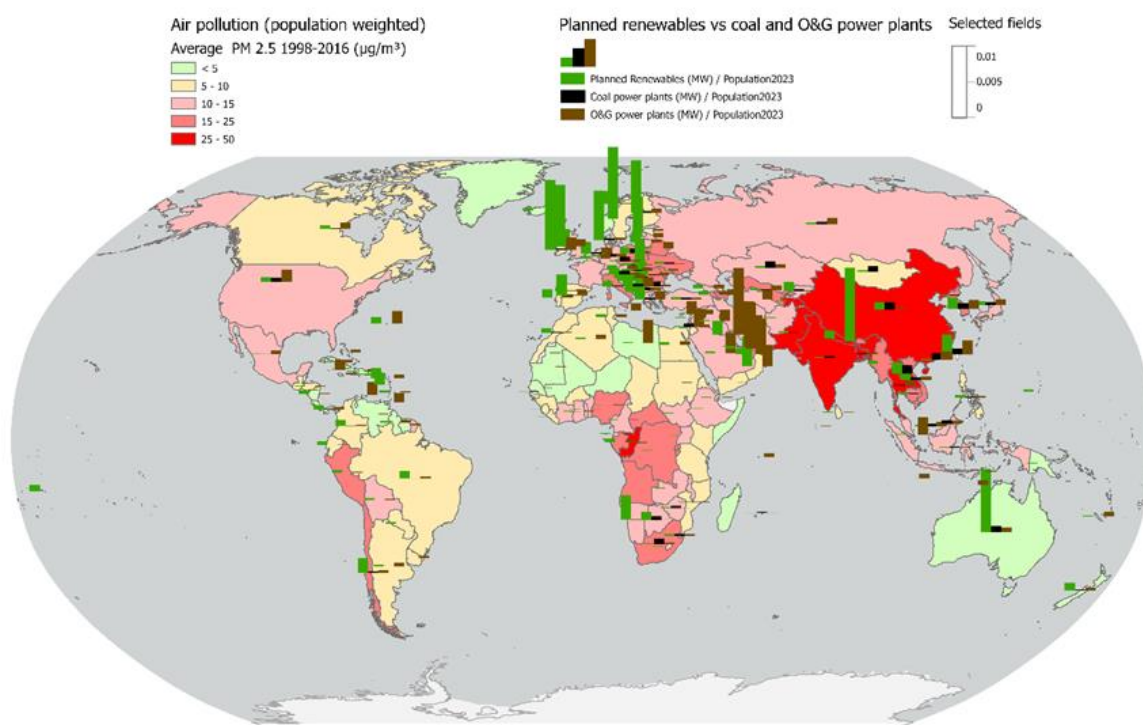
Fossil fuel and human health

Fossil fuel combustion is the primary driver of climate change, contributing to rising global temperatures, increased air pollution, and the spread of climate-related ill-healthⁱ. The cost to human health and wellbeing from climate change has led scholars to propose 1°C as the 'just' climate target, which makes it essential not to miss the 1.5°C target if human health is to be prioritisedⁱⁱ.

Fossil combustion also directly affects local human health. Ambient air pollution from fossil fuels is

responsible for 5.13 million excess deaths annuallyⁱⁱⁱ. An estimated 6.6 billion people (81.6% of the 2023 global population) reside in areas exceeding WHO's PM2.5 air pollution threshold (10 µg/m³), based on 19-year historical average 1998-2016^{iv}. Alarming, 5.5 billion (82%) of these individuals live in the Global South, across 69 countries and regions, where the air-pollution-related mortality rate is very high (84 per 100,000 people). In these countries the largest capacities of the most polluting coal power plants operate (>2000 GW), which are responsible for not only substantial greenhouse gas emissions but also air pollution. Notably, mortality rates are significantly lower only in the Global North's low air pollution risk regions (Low, GN).

Map 1 reveals critical insights by visualising PM2.5 levels (red gradient above WHO's threshold), alongside population-normalised coal (black), oil & gas (brown), and planned renewable energy capacities (green) in megawatts (using multiple datasets from Global Energy Monitor). Key observations include: (1) China's per capita renewable capacity, despite its absolute leadership, lags behind European nations and is insufficient to replace coal; (2) regions with the highest air pollution in Asia exhibit a dearth of planned renewables; (3) the MENA region displays the highest oil and gas capacity and minimal renewable development; (4) Africa faces significant energy poverty, characterised by limited overall electricity generation and lagging renewable adoption; and (5) only a few Global North economies demonstrate adequate preparedness for a sustainable energy future. This also calls for strong demand-side management.



Risk (PM2.5)	Group	Countries and regions	Mortality Rate (mean)	PM2.5 ($\mu\text{g}/\text{m}^3$) mean	Total OG_plant (MW)	Total Coal_plant (MW)	Total Planned Renewables (MW)	Total Population 2023
High	GN	26	65	14.5	1,087,214	442,146	823,711	1,177,239,584
High	GS	69	84	17.2	1,325,199	2,133,949	2,271,482	5,425,760,810
Low	GN	15	26	6.2	107,175	35,551	666,919	164,348,373
Low	GS	112	68	3.6	342,006	39,387	497,023	1,326,976,563

Map 1. Global air pollution (PM2.5) levels, fossil-fuel powered electricity generation (coal in black, oil and gas in brown), and forthcoming renewables (green, including geothermal, hydropower, wind, solar, nuclear, and bioenergy) in megawatts weighted by 2023 population.

Today's fossil fuel 'petroculture' also affects women's health in very direct ways. Extractive industries such as coal, oil, and gas have some of the lowest levels of female employment^v, with a persistent gender pay gap, reaching nearly 20% in some European countries^{vi} and ranking as the worst among STEM industries in Australia^{vii}. Moreover, fossil fuel resource extraction is frequently associated with increased rates of sexual and physical violence, particularly in Indigenous communities. The emergence of "man camps" (temporary settlements for fossil fuel workers) has been linked to surges in human trafficking, rape, and missing Indigenous women^{viii}.

Fossil fuel and planetary health

Climate change has a very strong impact on planetary health. Most of its impacts work through and on water (e.g., evaporation, sea level rise, extreme weather

events, changing hydrological patterns), with cascading impacts on human health and the health of other species^{ix}. For example, climate change impacts the oceans through rising temperatures, acidification, and sea-level rise^x. 2°C warming would entail near total loss of coral reefs^{xi}, and already at today's warming levels around 60 percent of marine ecosystems have been degraded^{xii}. Ocean acidification adversely affects marine life, and in the presence of other climate stressors such as warming oceans, makes it harder for them to bounce back^{xiii}. This has reverberating impacts on local economies and communities as well as on fish supplies and human (especially maternal) health^{xiv}.

In 2022, in response to the impacts of pollution on the world's oceans, the Commission of Small Island States on Climate Change and International Law requested an advisory opinion from the International Tribunal for the Law of the Sea (ITLOS) to clarify the obligations of states

under the United Nations Convention on the Law of the Sea (UNCLOS, ratified by 169 countries). Specifically, the Tribunal was asked whether greenhouse gas (GHG) emissions constitute marine pollution under the Convention^{xv}. ITLOS confirmation extended states' obligations to prevent and reduce such emissions. While the Tribunal acknowledged the sovereign rights of states, particularly regarding the exploration and extraction of offshore oil and gas, it also emphasised their duties to protect the marine environment^{xvi}.

Fossil fuel, jobs and the economy

Today the fossil fuel industry employs almost 32 million people^{xvii}. However, fossil fuel-driven climate change is causing Earth system changes that threaten the livelihoods of millions^{xviii}. Thus, net employment may be seriously affected. Fortunately, there is growing evidence that new forms of less polluting energy are possible and that this might become the new decentralised growth motor of the future, if given a chance to develop in a sustainable manner. Shifting to renewable energy and green technologies could generate over 10.3 million new jobs globally by 2030^{xix} and should be paired with a just transition that prioritises workers' rights and economic stability.

Although fossil fuel companies have been aware of their impacts on global warming since the 1950s, they have used strategies of denial and delay to maintain their position today^{xx}. Despite the known risks to human and planetary health that climate change poses, both financially and existentially, new finance continues to flow into fossil fuel expansion, to the order of hundreds of billions of dollars annually from banks alone^{xxi}.

Developing countries, based on their specific socio-economic contexts, are in a subordinated position in the global economy, structurally dependent on fossil fuels (e.g., in international trade and for revenues), further exacerbating a series of risks (e.g., carbon lock-in, stranded assets, climate and health risks). Unbundling and liberalisation of power markets have resulted in a biased and incomplete incorporation of RES into the energy matrix (energy addition)^{xxii}. Despite the vast renewable potential and declining costs^{xxiii}, the renewable business is not very profitable (compared to fossil fuels) due to the electricity market's design, cost structure across time (very high upfront costs, uncertainty of revenues), and structural need for subsidies to make projects bankable^{xxiv} as well as the fact that the fossil industry is still implicitly allowed to externalise massive damage to the environment. Debt distress and higher cost of capital are a serious obstacle to ambitious and applicable climate policy (climate

investment trap)^{xxv}, worsened by the risk of policy backtrack domestically when governments change.

Recommendations

Based on the above, this policy brief recommends:

1. Protecting planetary and human health requires ensuring that we do not cross 1.5°C, noting that 1°C is the proposed just objective. This also requires meeting WHO air quality standards.
2. In addition to scholars, and the Climate COP decision of 2023 to phase down fossil fuel^{xxvi}, the International Tribunal of the Law of the Sea has explicitly recognised greenhouse gases as marine pollutants and called on ratifying states to see GHG emissions as (marine) pollution. This further means that such emissions could be included in their Environmental Impact Assessment (EIA) procedures to halt future exploration projects and eventually leave fossil fuel underground.
3. This implies radically reducing all fossil fuel (i.e. coal, gas, oil) as merely increasing renewables adds to the total energy supply without displacing fossil fuels. A reduction is needed to create physical and systemic space for renewable expansion.
4. While fossil fuel investment remains profitable due to ignored environmental and health externalities, investors must urgently shift course. They can (a) set minimum standards for remaining invested in fossil fuel companies and (b) prioritise ending *new* finance directed towards fossil fuel expansion, in their own portfolios, as well as through contracts and investments in the financial sector. Governments should: (a) impose stricter conditions on new fossil finance in line with its externalities; (b) require mitigation of climate harm in financial activities; (c) guide investors in balancing fiduciary duty with long-term climate risks. Philanthropy can accelerate phase-out by: (a) divestment advocacy; (b) supporting initiatives like the Fossil Fuel Non-Proliferation Treaty; (c) financing renewable access in underserved areas to avoid fossil lock-in; and (d) financing non bankable just transition projects. All financing must avoid concentrating wealth and undermining democratic accountability.
5. The shift away from fossil fuels must be just and inclusive, ensuring that workers, particularly those in fossil fuel-dependent economies, are not left

behind. Governments, financial institutions, and international organisations must collaborate to channel investments into green industries and create social protection mechanisms for affected workers. Additionally, addressing the disproportionate burden of fossil fuel impacts on women and marginalised communities is crucial for achieving a fair transition.

6. Developing country governments should: (1) *prioritise long-term planning* to mitigate risks and align financial flows to ensure a just transition, including policy sequencing^{xxvii,xxviii}, strategic management of reforms^{xxix} and broad-based frameworks to phase out fossil fuels as State policy; (2) *share experiences* (communities, subnational levels of government, multilateral arenas), centring civil society in policy, with participatory planning^{xxx} and promoting alternative governance models of energy; (3) *advocate for reforming the international financial architecture*, to ensure grants over loans, and 3 types of finance for LFFU: RES-based energy systems and infrastructure; productive diversification away from fossil fuels and labour reconversion; institutional multilevel governance, State capacity and human resources.

The time for incremental action has passed; high-impact solutions must be rapidly implemented to meet the 2030 Agenda.

Acknowledgments

This project has received funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement No 101020082).

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