

# IFMSA Policy Document

## Fossil Fuel Divestment

**Proposed by the IFMSA Team of Officials**

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## Policy Statement

### Introduction

Fossil fuels, accounting for the majority of global energy consumption, have fueled economic growth but also precipitated a profound environmental and health crisis. With carbon emissions on the rise and fossil fuel resources depleting, a just transition toward sustainable alternatives is crucial. As the world deals with the repercussions of climate change, the need to divest from fossil fuels becomes a pillar in mitigating environmental impact and steering toward a cleaner, healthier, and more resilient future. Advocating for a just and equitable transition from fossil fuels is essential for medical students, as it aligns with promoting health equity, mitigating the health impacts of climate change, and advocating for healthier environments and a sustainable future.

### IFMSA Position

The International Federation of Medical Students' Associations (IFMSA) firmly acknowledges the imminent health risks posed by fossil fuel usage and the climate crisis. Commending existing efforts, IFMSA condemns practices perpetuating climate change and asserts the pivotal role of medical students in advocating for fossil fuel divestment. IFMSA also urges immediate collaboration among governments, UN agencies, healthcare institutions, and the health community to divest from fossil fuels, prioritising a sustainable and healthier future for all.

### Call to Action

Therefore, the IFMSA calls on:

#### Governments to:

- Mandate transparent reporting on fossil fuel investments, ensuring clear and accessible financial disclosures to the public.
- Institute robust subsidies, incentives, and supportive frameworks to accelerate just transition from fossil fuels to renewable energy sources and promote the research, development and integration of solar, wind, hydro energy and other relevant forms of renewable energy into the national portfolio.
- Enact legislation that aligns with the UNFCCC Conference of Parties commitments by requiring the divestment of public funds and investments from fossil fuel production and finance.
- Comply with the COP pledges to cease all financing for fossil fuel development overseas and redirect funds to support green energy projects and initiatives.
- Actively pursue COP global stocktake goals, including tripling global renewable energy capacity and doubling energy efficiency improvements by 2030, in alignment with the 1.5°C limit on global warming.
- Foster multi-stakeholder collaboration and partnership when setting plan for a just transition towards renewable energy
- Develop and implement Fossil Fuel Non-Proliferation Treaty

#### Financial Institutions to:

- Engage with clients to understand their preferences for socially responsible investments and align portfolios accordingly.
- Screen investments for environmental, social, and governance (ESG) criteria, excluding companies heavily involved in fossil fuels.
- Conduct regular audits to assess the environmental impact of investment portfolios and disclose findings transparently.
- Partner with renewable energy initiatives and green startups for sustainable investment opportunities.
- Incentivise the creation of green bonds and financial instruments, directing investments toward sustainable energy projects and initiatives.

**Educational Institutions to:**

- Establish sustainability committees that include department committees as well as youth-led initiatives within educational institutions to oversee and promote divestment efforts.
- Capacitate students, faculty, and administrators about the environmental consequences of fossil fuel investments.
- Incorporate discussions on fossil fuel divestment, sustainability, and environmental responsibility into educational curricula, fostering a comprehensive understanding of these crucial topics among future leaders and professionals.
- Collaborate with other educational institutions to share best practices and enhance the collective impact of divestment.
- Analyse the contribution to fossil fuel usage by educational institutions and plan to end the patronage of sponsorships by, and collaborations with companies in the fossil fuel industry.

**UN Agencies, International Organisations, and Non-Governmental Organisations (NGOs), to:**

- Include fossil fuel divestment as a core element of sustainable development and climate action as part of their primary mission, including all advocacy efforts.
- Mobilise public support through social media campaigns, petitions, and grassroots movements.
- Collaborate with scientific organisations to communicate the urgency of divestment for environmental conservation.
- Monitor and report on the divestment progress of various institutions to maintain accountability.
- Amplify the voices of affected communities to underscore the human and environmental impacts of fossil fuel investments and create capacity-building events for those communities.

**Private Sector to:**

- Innovate business models that prioritise environmental sustainability over fossil fuel dependency.
- Publicly commit to specific, measurable, attainable, relevant, and time-bound divestment goals, demonstrating corporate responsibility.
- Adopt circular economy principles to reduce waste and resource consumption.
- Collaborate with sustainability-focused startups and organisations to explore eco-friendly alternatives.
- Educate employees and stakeholders about the benefits of divestment and sustainable business practices.

**Healthcare Sector to:**

- Integrate discussions on the health impacts of fossil fuel pollution into medical education programs.
- Advocate for policies within healthcare institutions that prioritise environmental sustainability.
- Conduct and support research on the health consequences of fossil fuel-related pollution.
- Research the healthcare industry's contribution to fossil fuel investments and plan to cut collaborations with fossil fuel companies.
- Promote lifestyle and behavioural changes within healthcare settings to reduce the carbon footprint.

**IFMSA Members and National Member Organisations to:**

- Capacitate peers and community members about the significance of divestment in addressing climate change through organising campaigns on campuses and within local communities.
- Lobby educational institutions and local governments to adopt divestment policies.
- Collaborate with other youth-led movements to amplify the call for divestment globally.
- Enrol their activities and initiatives under IFMSA programs to ensure inclusive data representation of IFMSA in external meetings.

## Position Paper

### Background information

Fossil fuel divestment began to emerge as university students started campaigning for ethical investments [1]. Divestment is still a grassroots movement driven by students, customers, and employees who don't want to support the fossil fuel industry and contribute to global warming [2]. Fossil fuel divestment is a movement that aims for the suspension of all financial relations with fossil fuel companies [3]. This movement is a strategy toward achieving the goal of making financial flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development [4], as mentioned in Paris Agreement Article 2. Fossil fuel divestment campaigns might have a more substantial impact with their indirect effects, such as stigmatisation. Stigmatisation of fossil fuel companies might scare away suppliers, subcontractors, potential employees, and customers [5].

There have been various targets of the fossil fuel divestment movement. The first target was universities; students demanded that their institutions be run sustainably and ethically [6]. Pension funds hold nearly 30% of the fossil fuel industry shares; therefore, this makes them one of the likely targets of the divestment effort [7]. Fossil fuel divestment also intends to pressure governments to enact legislation, divert investments to clean energy, and raise awareness of the fossil fuel companies' impact on climate change [8]. In addition, religious organisations, financial institutions such as banks, and non-governmental organisations are targeted on several occasions [6].

As a result of the fossil fuel divestment movement, 1612 institutions committed to divesting approximately \$40.63 trillion (as of December 2023) from the global fossil fuel industry (9). However, investments are also increasing, as they went over 1 billion USD in 2022 (10). Fossil fuels have led to a dramatic increase in greenhouse gas emissions (11). Excessive carbon dioxide emissions cause more harm to the environment, climate, and people's health than ever before. Therefore, analysing the exceeded planetary borders, the motivation for divestment increases rapidly. Through the proper implementation of this process and the use of renewable resources, the dangerous effects of climate change can be diminished. Additionally, fossil fuel divestment is essential for achieving the principles of the Paris Agreement to limit global warming to 1.5°C above pre-industrial levels (4), which is already around 1.2 °C (12). This can only be achieved if global emissions of greenhouse gases start diminishing before 2025 at the latest and decline by 43% by 2030.

Fossil fuel divestment plays a fundamental role in achieving the Sustainable Development Goals (SDGs). Climate action (SDG 13) is directly associated with good health and well-being (SDG 3); therefore, divestment is essential for achieving both goals (13). Promoting investment in clean energy infrastructure and technology is a target of both affordable and clean energy (SDG 7) and the divestment movement. Likewise, divestment focuses on promoting sustainable practices and supporting the transition to cleaner energy sources. One of the targets of divestment is governments; the movement pushes governments of various levels to impose reductions in subsidies to the fossil fuel industry, which coincides closely with responsible consumption and production (SDG 12). Life below water (SDG 14) and life on land (SDG 15) address biodiversity loss. Ocean acidification and desertification are consequences of increasing carbon dioxide (CO<sub>2</sub>) emissions and global warming (14)(15). Ocean acidification and desertification are major threats to biodiversity, which can be tackled with fossil fuel divestment.

## Discussion

### 1. Introduction to Fossil Fuels

Fossil fuels are composed of decomposed plants, animal remains, and other organisms that have rested in the Earth's crust for the last 286-300 million years (16). Due to applied heat and pressure, the residues of these organisms fossilised. Additionally, the structure of organisms, mostly consisting of carbon and hydrogen, produces more energy when burned. This process determined the large-scale use of coal, oil, and gas as the three main types of fossil fuels instead of other materials such as wood.

Since the 19th century, numerous countries with large deposits of fossil fuels have developed economies dependent on the fossil fuel market (17). Fossil fuels are extracted from the soil through several different procedures, such as surface and underground mining or vertical and horizontal drilling. All these procedures cause severe disruption to the Earth's biosphere, environment, and biodiversity.

In the combustion process, excessive amounts of carbon dioxide are emitted into the atmosphere. This makes fossil fuels responsible for the largest contribution to climate change globally, mainly through electricity, heat, and transport emissions. Each consecutive year, the amount of global carbon dioxide emissions continues to grow, including the projection of 2023 as the year with the highest global carbon dioxide emissions on record (18).

### 2. Global Statistics on Fossil Fuels Usage

Fossil fuels worldwide have exceeded 137,000 terawatt-hours (TWh), almost a 100 TWh increase from 2021, despite global divestment efforts (19). However, the share of fossil fuels in primary energy decreased from 84% in 2015 to 81% in 2022. Oil consumption constitutes the major amount at 52,000 TWh, with coal and gas following narrowly behind at 45,000 TWh and 39,000 TWh, respectively. Regionally, Asia is the highest consumer of fossil fuels with 77,000 KWh, followed by North America and Europe at a similar 26,000 KWh and 21,000 KWh, respectively (19). Meanwhile, the Middle East and Africa consume 10,000 KWh and 5,000 KWh, respectively. Fossil fuel consumption in high-income and middle-income countries is more than twice the level of consumption in low-income countries (19).

It is important to further understand the level of fossil fuel consumption shares in different countries. For example, while the United States and China have the highest overall consumption of fossil fuels, the United States, as well as Australia and Germany, have the highest consumption rate per capita. Furthermore, the Middle East and Africa may have significantly lower consumption rates compared to other regions, but almost 90% of primary energy in these two regions is derived from fossil fuels (19).

The change in fossil fuel consumption for electricity generation has heavily decreased in low-income countries compared to middle and high-income countries in the past 10 years. Overall, fossil fuel consumption for electricity has only decreased by 8% worldwide in the past 10 years (19). It was estimated that if the rate of current fossil fuel consumption remains constant, oil reserves will run out in 50 years, natural gas in 51, and coal in 132 years. It is also projected that fossil fuel consumption will increase by 21% in 2050, which is considered a "serious environmental concern" (20).

### 3. Interlinkage with the Triple Planetary Crisis

The triple planetary crisis denotes the interconnected challenges humanity presently confronts, encompassing climate change, pollution, and biodiversity loss. Each of these issues has its own causes and impacts, and it is crucial to address all of them if we want a sustainable future on Earth (21).

The first crisis, climate change, refers to long-term shifts in temperatures and weather patterns that will fundamentally change the ecosystems supporting life on our planet (21). The main cause of global climate change is the burning of fossil fuels like coal, oil, and gas, which account for over 75 percent of global greenhouse gas emissions and nearly 90 percent of carbon dioxide emissions (22). These emissions act like a blanket, trapping the sun's heat and leading to global warming and climate change. Currently, the world is warming at an unprecedented rate, altering weather patterns and disrupting the natural balance. This poses numerous risks to humans and all other forms of life on Earth (22). Therefore, divestment of fossil fuels can tackle the consequences of climate change, including severe droughts, water scarcity, wildfires, rising sea levels, floods, melting polar ice, extreme storms, and declining biodiversity (1).

The second crisis, air pollution, is the primary cause of disease and premature death worldwide (1), with over seven million people dying prematurely each year due to pollution (3). Globally, nine out of ten people breathe air that exceeds the pollution guidelines set by the World Health Organization (WHO) (24). The combustion of fossil fuels releases nitrogen oxides and particulate matter (PM), a complex mixture of small particles and liquid droplets present in the air, into the atmosphere. On the one hand, nitrogen oxides contribute to the formation of smog and acid rain (25). On the other hand, PM is associated with severe health effects, including nonfatal heart attacks, an irregular heartbeat, aggravated asthma, decreased lung function, and premature death, according to research conducted by the United States Environmental Protection Agency (25). Proactive fossil fuel divestment measures, with examples of conducting annual inventories and setting long-term reduction targets, can tackle air pollution caused by the burning of fossil fuels (26).

The third crisis, biodiversity loss, refers to the decline or disappearance of biological diversity, encompassing animals, plants, and ecosystems (21). This loss profoundly affects food supplies and access to clean water, making it crucial for the future of our planet (21). Fossil fuels negatively impact biodiversity in several phases, from their exploration, extraction, distribution, refinement to combustion. The exploration phase, including activities like seismic survey lines and marine seismic surveys, can harm biodiversity through habitat conversion and noise pollution from drilling exploratory wells and conducting surveys (27). In the extraction phase of fossil fuel, biodiversity is harmed directly by habitat conversion, degradation, pollution, or disturbance at extraction sites and indirectly by increased access for loggers, farmers, hunters, and settlements (27)(28)(29). Subsequently, the distribution, refinement, and use of fossil fuels have a direct impact on biodiversity through habitat destruction associated with infrastructure development and pollution (30). The combustion of fossil fuels further exacerbates climate change, leading to alterations in marine, terrestrial, and freshwater ecosystems worldwide. This has resulted in the loss of local species, increased disease prevalence, and mass mortality of plants and animals, marking the first climate-driven extinctions (31).

#### **4. Health Impacts**

An estimated 1 in 5 deaths worldwide occurs due to air pollution as a result of burning fossil fuels (32). The impact of fossil fuels on health is determined by quantifying particulate matter less than a diameter of 2.5  $\mu\text{m}$  (PM<sub>2.5</sub>) in outdoor air environments (32). An estimated 10.2 million premature deaths were attributable to fossil fuels using this model, with the greatest number of deaths occurring in China (3.9 million) and India (2.5 million) (32). Chronic exposure to PM<sub>2.5</sub> has been associated with cardiovascular disease, stroke, chronic obstructive pulmonary disease, lung cancer, type 2 diabetes, and lower respiratory infections (33). The majority of mortality

is due to cardiometabolic conditions; however, children under 5 are more susceptible to mortality from lower respiratory infections (32)(33).

Fossil fuels can indirectly affect human health by being the source of plastics and endocrine-disrupting chemicals (EDCs) (34)(36). EDCs include those compounds that make up food packaging (phthalates), can linings (bisphenols), and cookware (perfluoroalkyl) (35). Exposure to EDCs and microplastics is being indicated in non-communicable disease outcomes, such as diabetes and infertility (35). Neurobehavioral disorders have been notably linked to these compounds, most importantly polybrominated diphenyl ethers (PDBEs), with a loss of substantial IQ points documented as a consequence of in-utero exposure (36). Phthalates have been associated with cardiovascular disease due to their serum testosterone-lowering capacity, while bisphenols have been linked to obesity during childhood (36). The costs of EDCs on public health, including the loss of IQ points, are estimated to be around \$340 billion in the US and \$217 billion in Europe per year (36).

In addition, recycled plastics can accumulate harmful contaminants, which suggests that recycling may not be the best solution to dealing with virgin plastic waste (34). Bioplastics can also induce methane production in landfills where they are forced to remain since they require specialised processes (e.g., higher temperatures) to be recycled (34). Methane, in turn, is more harmful to the environment than carbon dioxide.

## 5. Fossil Fuel Dependency in the Medical Industry

The environmental impacts of the healthcare system need more attention. The healthcare industry is still inefficiently dependent on fossil fuels, leading to the production of significant amounts of greenhouse gas emissions (37). This sector is responsible for an estimated 5.2% of greenhouse gas emissions globally in 2019 (38). A study comparing the environmental impacts of healthcare from 2000 to 2015 has shown a 9% increase for PM and a 29% increase in greenhouse gases. The doubling of global expenditures towards the sector primarily caused the upsurge in environmental footprints (37).

Fossil-fueled electricity and gas are utilised in medical and pharmaceutical processes. Direct effects result from transporting patients or warming up water or space. Livestock, especially for gelatin production, and various industrial processes such as crop cultivation, transportation, and manufacturing contribute to the healthcare supply chain's environmental footprint (37).

Defossilisation in the pharmaceutical industry could help the world achieve net zero by transitioning to renewable energy usage during the production process. Shifting from organic-chemical raw materials and widely used plastic products are the steps that need to be considered to prevent climate change (39).

Instability arises from the dependency on fossil fuels. Geopolitical conflicts and the volatile and unpredictable fossil fuel market contribute to the trend of shifting back to the burning of fossil fuels. Despite serving as a temporary alternative, such regressiveness could push the world off track from decelerating climate change. As the global first line of defence, it is crucial to ensure the strength of the healthcare system when faced with future disease outbreaks or geopolitical conflicts. The escalating cost associated with fuels could potentially increase health disparities, especially for socioeconomic groups that are particularly sensitive to price changes (40).

Breaking the healthcare sector's dependence on fossil fuels is complex. Various challenges need to be addressed through multidisciplinary synergy and collaboration between the government, energy actors, and the healthcare sector to materialise this discourse.

## 6. Ethical and Social Dimensions of Fossil Fuels

### 6.1 Ethical Issues and Considerations

Energy justice is defined as the focus of justice on energy systems and their life cycles, from the stages of extraction and production to consumption and waste. Energy equity ensures that historically marginalised groups who have been overburdened by air pollution, underinvestment in clean energy resources, and lack of access to energy are taken into consideration in energy divestment policies (41). It is estimated that 40% of the global population lacks access to clean sources of energy for cooking, with most of this population in very low and low-income countries (42). Energy inequality has been proven to be significantly common for people of colour and vulnerable groups (43). This includes factors such as socioeconomic level, race, and gender. Furthermore, coal and oil production sites are most likely located in marginalised communities as a means for companies to avoid environmental regulations.

Globally, fossil fuel distribution is highly uneven. Eleven countries have about 90% of global coal reserves, 39 countries hold more than 90% of natural gas reserves, and almost 100% of global oil reserves are owned by only 37 countries. The figure also shows that coal is the least unevenly distributed fossil fuel. However, renewable energy resources are spread more evenly than fossil fuel reserves, with hydropower having the highest distribution, followed by solar and wind power. Renewable energy is also more abundant overall than fossil fuels, which means that countries that may be poor in a certain energy resource can cover it with another energy resource (44).

With the ever-growing advancements in technology, the socio-economic effects of automation will affect fossil fuel sources. Power plant operators and service unit operators in oil, gas, and mining were found to be highly susceptible to computerisation, affecting many of the coal workers who tend to be from vulnerable groups. It has also been estimated that 22% of the coal, oil, and gas industry is female, as conventional energy sources are male-dominated due to social and cultural norms (45). This is lower compared to renewable energy's current 32%, which is also expected to increase (45). As of 2017, renewable energy industries employed about 10.3 million people worldwide, up from 7.14 million in 2012 (46).

However, many researchers have concluded that calls to action for fossil fuel divestment without a call for energy equity will only lead to the exacerbation of current inequalities. The initial development and expansion of renewable energy sources and new technologies will lead to a surge in prices. Although this surge is short-term, it will heavily impact people of low socio-economic status (46). Most of the facilities producing these sources are more likely to be placed in local areas than in urban cities, affecting the local people. This can include noise disruptions from wind turbines and unpleasant smells from landfill sites. New technologies such as electric cars, energy-efficient appliances, LED light bulbs, and smart metres will be more available to higher-income households, creating more disparity (46). Low-carbon energy sources are therefore not as inclusive as fossil fuel systems. Implications for land loss and displacement due to renewable energy facilities are also a rising concern. Employment and poverty have complex interactions that can affect communities either positively or negatively, depending on the existing socio-demographic factors. It is concluded that it is not just the new technology implemented but also the method of implementation in the community that will affect energy equity (47). Ethical fossil fuel divestment needs to consider the implications it will have on the traditional energy workforce, which will likely lose their jobs with the replacement of coal factories and oil refineries. Therefore, divestment should also aim for sustainable as well as equitable energy.

### 6.2 Camp Ethos and UN Recognition



The role of youth and educational institutions can play a significant part in the divestment process. It is considered the fastest divestment campaign in history, accelerating rapidly after the Paris Agreement (48). In fact, before COP21, over 542 institutions committed to fossil fuel divestment (49). Today, this number has jumped to 732 different institutions and more than 58,000 individuals, totaling 5.45 trillion dollars in assets (48).

Most campus ethos on divestment is student-led, yet it has garnered UN attention as well as the UNFCCC. The rapid divestment movement from such higher institutions has greatly expanded the moral agency to act against climate change, as well as increased public awareness inside and outside of these institutions on the carbon emissions and the unsustainability of fossil fuel industries (49). Bottom-up initiatives can pressure and change university governance to uphold their values for a sustainable environment. It can also “be seen as a field of learning democratic values and encouragement to enact a responsible citizen role” (48). Divestment campaigns can spur significant legislative restrictions as well as provide youth with opportunities to train for larger climate justice initiatives and network in broader justice movements. Universities that divest benefit by enhancing their students' capabilities with sustainability education, producing future generations of advocates and culturally as well as socially competent graduates. It will also help reduce costs by becoming an energy-efficient institution. Universities will also be able to sell themselves to prospective stakeholders as a socially accountable, civilising institution (50).

However, these divestment campaigns do not officially exist in Asia, Latin America, or Africa. This could be due to a lack of funds or other difficulties faced by higher institutions in developing countries. Another problem faced in developing countries is the urgent need for higher institutions to develop themselves and improve staff and systems, which often happens through the establishment of partnerships with consolidated companies, including fossil fuel companies. In these cases, universities prioritise their overall improvement in the educational framework and facilities over research and student development (51).

These divestment initiatives can take place formally between student unions and university departments. Despite the difficulties of bringing all these parties to an agreement, coordinated effort and a combined understanding of students' development as well as the institution's capabilities can help both parties reach a beneficial outcome (51).

## **7. Fossil Fuels Alternatives**

In 2018, the United Nations International Panel on Climate Change (IPCC) forecasted the drastic consequences of increasing global temperatures (52). The IPCC warned that carbon dioxide emissions must be reduced by 45% to contain temperature changes below 1.5 degrees Celsius above pre-industrial levels to prevent famine, flooding, and worldwide natural catastrophes (52). For this reduction to occur while being less disruptive to the world economy, renewable energy sources and energy efficiency, or decoupling strategies, are being promoted by major emitting nations like China and the USA (53). In addition, fossil fuel resources are finite, and the threat of their depletion is also spurring countries to become more focused on alternatives (53). The predominant non-fossil fuel sources are renewables, like hydropower, solar, and wind energy, as well as nuclear power. There is less emphasis currently on some renewables, like biofuels and geothermal sources of energy.

In 2020, fossil fuels accounted for approximately 82% of primary energy use globally, with oil being the largest energy source overall and the dominant energy provider in the transportation sector (54). Coal is considered the largest source for electricity generation, while gas is also a major source of heat and electricity (19). Of the various types of fossil fuels, coal is considered the ‘dirtiest’ due to it being the largest emitter of carbon dioxide per unit of energy (19). Some countries in Africa and the Middle East have been noted to be coal-free since

2021, with others like Canada and France pledging to be coal-free by 2030 (19). While many countries are shifting away from coal for electricity in favour of renewables like solar and wind energy, they are still continuing to use gas, which, although still a type of fossil fuel, emits less carbon dioxide than coal (19). In order to transition to zero fossil fuel consumption by 2050, a six-fold increase in renewable energy production is needed, and energy demand needs to be simultaneously reduced (53).

Multiple general issues can be identified with transitioning away from fossil fuels to renewable energy sources, even though this is necessary for preventing global warming (53). Fossil fuels are energy maximizers as they release the greatest amount of energy with each unit of weight (energy density) (53). Oil is still considered irreplaceable for transporting heavy machinery, aeroplanes, trucks, and ships due to its potency and ease of storage and handling (53). In comparison, natural gas has 86% of oil's power, whereas dry wood has 35% (53). Wind turbines require more than 350 times as much land as natural gas to generate a similar unit of power (54). Fossil fuels are also stable in their availability, in contrast to wind or solar energy, which relies on natural factors (53). Their unpredictability can be overcome with technological advancements, although they are currently expensive. The "electrification" of the transportation commercial sector will also require the construction of batteries or energy systems that can handle the size and volume of shipping as well as power grids that can sustain that level of energy demand (53). In addition, older planes and ships will need to be fixed to allow the integration of alternative sources of fuel into their systems, which can also take time and capital (53).

Renewable energy sources are the major focus of fossil fuel phase-out initiatives. However, biofuels, which are produced from crops or agricultural remnants, can be an alternative only if it is possible to maximise energy output while also considering the impact of the conversion of land away from food production and the additional loss of habitats for animals (53). Furthermore, like biofuels, renewable energy sources like wind and solar producers need to be scaled up and become profitable for the phase-out of fossil fuels to occur (53). Some negative impacts of renewable energy can be observed in terms of their construction requirements, while others are harmful for human and animal health. For example, wind turbines require metals such as copper to be mined for their makeup, as do solar panels, which require lanthanides and aluminium. The use of metals and mined resources for building renewable technologies could potentially lead to world shortages (53). Wind turbines, as another example, can be aesthetically upsetting as they disturb human sleep and are noisy overall (53). The need for transmission lines will also increase if any world economy focuses on renewable energy sources like solar and wind to produce electricity (53).

Despite all the setbacks, renewable power is increasing at a rate of approximately 14 to 16%, with solar and wind sources being the greatest contributors to this increase (54). Solar power accounted for 72% of the aforementioned global average increase in renewable energy production (54). Solar and wind power generated about 25% and 13% of electricity, respectively, which collectively was greater than nuclear power produced in 2022 (54).

## **8. Global Efforts on Fossil Fuel Divestment**

### **8.1 What Has Been Done So Far?**

Divestment has been employed in response to various situations, with notable campaigns against South African apartheid and the tobacco industry (55). The success of divestment campaigns against South Africa contributed significantly to ending the apartheid regime (56). In the case of tobacco, divestment pressured the industry, leading to policy changes like new taxes and smoking restrictions (57). The impact of divestment campaigns was

more significant in influencing public behaviour than the actual funds withdrawn (57). The divestment strategy gained popularity and became a recognized approach for future activist movements (56).

Inspired by anti-tobacco and anti-apartheid divestment, students initiated divestment efforts on numerous college campuses in 2011, urging institutions to divest from fossil fuels and invest in clean energy (58). By 2012, these campaigns had spread to around 50 campuses globally, gaining momentum with support from international climate organisations (58). The movement attracted diverse support from faith congregations, environmental NGOs, municipalities, and healthcare organisations (59). Notably, the United Nations (UN), the World Bank, and the United Nations Framework Convention on Climate Change (UNFCCC) endorsed the movement (60).

As of December 28, 2023, a total of 1,612 institutions, representing \$40.63 trillion in assets, committed to divesting from the fossil fuel industry to varying degrees (61). The majority of commitments (732 out of 1,612) were in Europe, indicating a growing global recognition of the need to transition away from fossil fuels (67). Faith-based organisations constituted the largest group of institutions at 35.4%, followed by educational organisations (16.3%), philanthropic foundations (11.8%), pension funds (11.7%), governments (10.9%), for-profit corporations (8.3%), and healthcare institutions (1.2%) (61).

## 8.2 Challenges in Fossil Fuel Divestment

While the fossil fuel divestment movement involves over 1,500 institutions managing \$40 trillion in assets, debates persist about its effectiveness (62). A study across the USA, India, and South Africa suggests that the movement has a lesser impact on altering beliefs and policy preferences than previously thought (63). Although divestment commitments have been made by major institutions, such as Stanford University and Australian National University, its direct impact on public or government companies has been limited (64). However, the movement's primary goal was to raise awareness about fossil fuels and the urgency of transitioning (63).

The societal effects, including cultural and mobilisation impacts, outweigh the direct impacts and have contributed to broader social, political, and financial changes (65). Divestment has shifted the discourse and influenced cultural perceptions, sparking mobilisation, political effects, and financial changes (65). The evolving political landscape has led to modifications in government rules, affecting the financial industry and prompting discussions about stranded assets and new fossil-free funds (65).

## 8.3 Divestment Strategies

Fossil fuel divestment faces resistance, necessitating effective strategies to address climate change. A scoping review identified twelve environmentally effective strategies, with three considered cost-effective (regulation of financial capital for fossil fuel projects, elimination of fossil fuel subsidies, and implementation of bans and moratoria) (67). Only four strategies are deemed equitable (asset write-offs, decommissioning existing fossil infrastructure, pursuing court cases/litigations, and financial swaps), but these are considered institutionally problematic due to potential challenges to vested interests (67).

A successful transition towards a sustainable global system requires a clear vision, a feasible strategy, and international support from credible leaders representing diverse cultures, institutions, and political and religious views (66). Governments should proactively plan and execute a transition away from coal, oil, and gas production to align with climate and energy policies (68).

## 8.4 Phase-out or Phase-down

Debates surround the strategies of phase-out and phase-down. Phase-out advocates for a complete end to burning fossil fuels for energy, aiming for absolute zero emissions by 2050 (69). In contrast, phase-down involves scaling back the use of fossil fuels in favour of clean energy sources, allowing continued fossil fuel use alongside emission offset technologies (69). The United Nations Climate Change Conference 2023 refrained from using either term and opted for a new phase: 'transition away' (70).

According to the 6th IPCC Report, rapid action is needed to avoid exceeding the 1.5°C limit (71). While carbon capture and storage systems might contribute to reaching climate goals, phasing out fossil fuels is considered by many scientists as the only effective way to limit climate change damage (72).

### **8.5 Comparing Legalisation, Regulation, and Implementation Globally**

The fossil fuel divestment movement remains primarily a grass-roots campaign with limited direct regulations or legislations. Legal actions, such as lawsuits against Harvard College and local laws passed in the USA, UK, New Zealand, Canada, Australia, and Norway, have been notable (73). Ireland and Norway have legislated divestment from fossil fuels, and in 2023, California and Maine, USA, passed legislation forcing divestment and investment in clean energy (74)(75).

The regulation of climate-related disclosure has been implemented in France, pushing some companies to divest from fossil fuels (76). The EU's Sustainable Finance Disclosure Regulation aims to tackle greenwashing (77), and the U.S. Securities and Exchange Commission proposed extending disclosure requirements.

### **8.6 UN Programs and COP**

The United Nations Framework Convention on Climate Change (UNFCCC) hosts the annual Conference of Parties (COP) to discuss progress regarding commitments from the Paris Agreement (78). COP28, held in Dubai, included significant developments such as establishing a loss and damage fund, pledges for the Green Climate Fund, commitments by the World Bank, and widespread support for declarations addressing climate impacts (79).

However, COP28 has been criticised for loopholes benefiting the fossil fuel industry, with statements having numerous gaps that favour fossil fuel expansion (80). Crucial points, including the phasing out of fossil fuels, the absence of terms like "oil" and "natural gas," stringent commitments for affluent nations, and fairness in adaptation, were missing (81).

## **9. Role of Youth and Medical Students in Fossil Fuel Divestment**

In the realm of education, medical students and young individuals hold the potential to play a crucial role in developing a more comprehensive and sustainable medical curriculum concerning fossil fuel divestment. The lack of education on the benefits of nature preservation hinders the abilities of future doctors and the sustainability of healthcare they can provide (82). On one hand, young people can advocate for the integration of climate change, sustainability, and divestment topics into the medical curriculum. This may involve collaborating with medical schools, student organisations, and professional associations to create and implement relevant courses, workshops, and resources. On the other hand, medical students can encourage the inclusion of other disciplines, such as environmental science, public health, and policy, in the medical curriculum. By embracing interdisciplinary education, young individuals can develop a comprehensive understanding of the connections between fossil fuel divestment and healthcare.

In terms of lobbying, young individuals and medical students have the opportunity to actively advocate for changes in policies that promote the divestment of fossil fuels. They can engage in efforts to influence governments and participate in international climate conferences to call for stricter regulations and incentives supporting divestment. Moreover, young people can make a personal commitment to avoid banking or working for financial institutions that fund projects involving fossil fuels. This approach puts pressure on banks and insurance companies, urging them to reconsider their investments in the fossil fuel industry (83). For instance, in the United States, there is a nationwide campaign called Medical Students for Divestment, which seeks to exert pressure on medical schools and healthcare institutions to divest from fossil fuels. Their aim is to use divestment as a means to address the health impacts of climate change and promote a healthier and more sustainable future (84).

In terms of youth campaigns, medical students and young individuals can play a significant role in raising awareness about the impact of fossil fuels on public health and the environment. They can organise educational campaigns, participate in public demonstrations, and utilise social media platforms to emphasise the importance of divestment and sustainability in healthcare. The efforts of young people in confronting climate change have been recognized by international institutions like the U.N. Development Program. These institutions have provided funding for various youth-led environmental projects worldwide, acknowledging the role of youth as environmental stewards for the future (85).

In terms of research and development, medical students and young individuals can actively engage in research projects and studies that investigate the health impacts of fossil fuel extraction and production. Through their involvement in generating evidence-based data, they can contribute valuable insights into the necessity of divestment in financial institutions and help shape the development of medical student curricula.

## **10. Fossil Fuel Divestment in Post-Pandemic Recovery**

Due to the acceleration and exponentiation of the consequences of the climate crisis, numerous actions have been taken by many governments across the globe. For example, in 2019, this led to an increase in the global renewable energy installation capacity by over 200 billion kilowatts (86). Sadly, the COVID-19 pandemic endangered the process of energetic transformation through the deceleration of renewable energy development.

In recent years, the energy structure has remained strongly dominated by fossil fuels, but since 2015, the usage of renewable resources has remarkably increased. Despite the progressive decline of fossil fuels in the global energy structure, we still note a noticeable increase in carbon emissions. Only in 2018, the global total amount of carbon dioxide emissions increased by 2% compared to the previous year. 65% of this amount were emissions connected to the usage of fossil fuels (87). According to the 2019 report of the International Energy Agency, only 14% of the global energy demand was supplied by renewable resources (88).

The Covid-19 pandemic appeared as a major obstacle on the way to further renewable resource development. All trade and transportation restrictions not only reduced the demand for new renewable energy sources but also declined the production process of required equipment (89). This decrease resulted in a drop in fossil fuel prices (90). With these economic changes, many governments became discouraged from further investments in the energetic transformation (91).

The post-pandemic recovery emphasised the power of governments to implement laws to reinforce renewable energy actions. It also revealed the number of financial opportunities that could be taken by governments. Another aspect supporting fossil fuel divestment after the Covid-19 pandemic is the lack of fossil fuel stability

and the level of dependency on other countries that own the resources. All these aspects, taken collectively into consideration, pose pressure on governments and the fossil fuel industry to implement changes to decrease carbon dioxide emissions. All actions taken give hope of achieving the goals aimed at by the Paris Agreement. Nonetheless, not enough actions are taken to ensure energetic security and a stable increase of renewable resources in the global energy structure (92).

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