



## **A Call to Ban Coal for Electricity Production**

Submitted by the Environmental Health WG

### **Purpose and Scope**

This resolution aims to describe the costly and detrimental health effects of coal use for electricity and urge nations to rapidly transition to healthier, renewable sources of energy. The contribution of coal fired energy generation to climate change renders coal a lethal product, which establishes the case for agencies centered on promoting human health to facilitate its ban.

This resolution supports existing WFPHA Resolutions:

1. Sustainable Energy and Health (2014)
2. Global Climate Change (2001)

And WPHA Declarations:

1. The Melbourne Demand for Action
2. The Kolkata Call to Action
3. The Addis Ababa Declaration
4. The Istanbul Declaration

### **Background and Context**

#### **Health consequences**

The evidence that the mining of coal is detrimental to the health of miners and the surrounding communities is now incontrovertible. Each phase of coal's lifecycle (mining, disposal of contaminated water and tailings, transportation, washing, combustion, and disposing of post-combustion wastes) produces pollutants that harm human health (1). Research conducted in India, China, the US, Australia and the EU consistently demonstrate that coal communities and workers have higher rates of lung cancer, asthma, coal workers' pneumoconiosis (CWP) as well as chronic heart, respiratory, kidney, and cardiopulmonary diseases (2-11). CWP known as 'Black Lung', was believed to have been eradicated in Australia until a Senate Inquiry revealed a catastrophic failure of the regulatory and health surveillance systems intended to ensure the protection of coal industry workers (12). Additionally, coal communities experience an increased likelihood of hospitalization for chronic obstructive pulmonary disease (COPD) and hypertension as well as increased incidence of birth defects and respiratory disease in children (13-15).

Aside from these proximal effects, burning coal produces pollutants that have delayed and dispersed effect. The process produces significant amounts of mercury (Hg). Whereas the



increasing awareness of Hg toxicity has led to its replacement in many industrial spheres, coal burning continue to release large amounts of Hg into the environment, contributing an estimated 50% of mercury emissions in the EU, 40% of the emissions in the US, and 26% of global emissions (16-19). In the EU, 200,000 children per year are exposed to critical levels of methylmercury (the organic form found in waterways and fish) in the womb (20, 21). Exposure to mercury has been linked to cardiomyopathy, anemia, IQ deficits in children, delayed neurodevelopment, changes in vision, memory, and language, and increased rates of Attention deficit hyperactivity disorder (18, 22-24).

Coal mining, transport and burning produces many additional toxic air pollutants (SO<sub>2</sub>, NO<sub>x</sub>, particulate matter, heavy metals, CO, VOCs and arsenic), and is a major contributor to the tragic statistic that 90% of people on Earth breathe polluted air, causing 4.2 million deaths per year (25). Studies have shown that low concentrations of SO<sub>2</sub> increase death rates from heart and lung conditions. Specifically, for every 10ppb increase in SO<sub>2</sub> concentration, there is a 0.4 – 2% increase in the risk of death (26). Similarly, exposure to low concentrations of NO<sub>2</sub> increases susceptibility to viral infection and reduces in lung function in asthmatics, while ambient concentrations have been linked to increased hospital admission and emergency room visits for respiratory cases (27).

Arguably, the most toxic effect of burning coal is the production of fine particulate matter (PM<sub>2.5</sub>). The mining and burning of coal accounts for 75% of all the particulate matter produced (28). It has been shown to increase respiratory disease, COPD, lung cancer, asthma, as well as cardiovascular disease, which alone causes 45% of all deaths in Europe per year (29-32). For every 10 µg/m<sup>3</sup> increase in concentration, there is an 8 – 18% increase in cardiovascular death, a 0.5 – 2.4% increase in hospital visits, and a 1 – 3.4% decrease in lung function (31, 33). Respiratory effects of PM<sub>2.5</sub> have been documented in Australia, New Zealand, Mexico, Canada, and Europe (34-37).

Coal remains a major fuel in global energy systems, accounting for almost 40% of electricity generation and more than 40% of energy-related carbon dioxide emissions in 2019 (38). The contribution of coal to climate change underpins the long-term health harm and intergenerational inequity. Coal-related CO<sub>2</sub> emissions alone already exceed the total CO<sub>2</sub> emissions under cost-optimal 2 °C compliant policies by 2035 on a global level (39).

### **Morbidity and Mortality**

Reports suggest a resurgence of progressive massive fibrosis and rapidly progressive pneumoconiosis (RPP) is occurring among coal miners in the U.S. (4) and Australia (5). Annually, in the EU, coal power plants cause 18,200 premature deaths (23,300 if Croatia, Serbia, and Turkey are included), 28,600,000 cases of lower respiratory symptoms, 8,500 cases of bronchitis and contribute to 4,000,000 lost working days, (40). More generally, ambient air pollution in Europe causes 790,000 excess deaths per year, of which 40-80% are caused by cardiovascular events



(41). For every terawatt-hour (TWh) of electricity produced by coal in the EU, there are 24.5 deaths, 225 serious illnesses, and 12,288 minor illnesses (42). In China, India, the USA, South Africa, and the Philippines, there are 250,000-366,000, 115,000, 13,000, 2100, and 960 deaths per year due to coal pollution, respectively (43-48). Globally, there are over 2 million serious illnesses and 151 million minor illnesses annually as a result of coal pollution (21).

### **Costs**

Estimates suggest that 95% of the externalized costs of coal consist of adverse health effects on the population (49, 50). In the EU, the estimated overall annual health cost of coal is €15.5 - 42.8 billion and €54.7 billion when including Croatia, Serbia, and Turkey (40). Overall, asthma costs the EU €17.7 billion directly and €9.8 billion via lost productivity annually (51). Cardiovascular and respiratory diseases, both heavily linked to coal pollution, costs €210 billion and €380 billion per year, respectively (32, 52). Loss in IQ from mercury toxicity has been estimated at €9 billion annually (53). In the US, the health costs associated with coal have been estimated at 19 - 45 cents per kWh of electricity produced, which would be an estimated \$230 billion in 2017 (54, 55). In Australia, the health costs from merely one coal producing valley are estimated at \$2.6 billion per year and globally, the pollution from fossil fuels are estimated to cost \$540 billion per year, the majority of which is attributable to coal (56).

### **Cheaper, healthier and fairer alternatives**

Although coal is marketed as a cheap form of energy, when health costs are taken into account, this is simply untrue. Factoring in the costs of implementation, replacing coal with renewables, sufficiently to achieve the Paris target of limiting global warming to 2°C, would still reap net health and environmental co-benefits of 2.8% of GDP by 2050 (39). Furthermore, coal represents an insidious industry where the profits are reaped by a few, yet the costs are born by the public – both privately through the loss of healthy life years and out of pocket expenses, as well as nationally, via health care system costs and reduced productivity. Renewable energy sources alleviate the imbalance by removing the population borne morbidity costs.

As coal mines and plants are often located in disadvantaged communities, coal directly contributes to the amplification of health inequities and socioeconomic disadvantage (57). In 2019, renewable sources of energy are more affordable and most importantly, healthier (58-60). Significantly, for countries without universal population access to centralized electricity generation, renewable energy sources are now cheaper to introduce than using coal (61, 62). Benefits of transitioning electricity away from coal and towards renewable energy sources extend beyond direct health. Green jobs outnumber fossil fuels jobs by a factor of 3 to 1 (63), which assures employment opportunities. A global energy system based on a 100% share of renewable energy would help reduce [water consumption](#) by more than 95% [compared to conventional power generation](#) (64). In a warming climate, with increasing global water stress and an epidemic of air pollution deaths, renewable energy alternatives are healthier, cheaper, fairer and better equipped to fight climate change. Coal-based electricity is no longer justified.



## Action Steps

### **The WFPHA urges governments to:**

1. Put an immediate halt on the opening of new coal mines worldwide,
2. Enact immediate strategies to accelerate closure of existing coal mines,
3. Accelerate the transition to alternative sources of energy, such as renewables, accompanied by promoting adoption of more efficient electrical appliances, and introducing steps to reduce total demand for energy and electricity,
4. Create alternative employment options for communities currently reliant on the coal industry and develop policies and programs to secure a just transition for these affected communities to the new economic situation.

### **The WFPHA urges multilateral public institutions (WHO, OECD etc) to:**

1. Provide scientific and technical capacity to support adoption of coal free policies.
2. Urge country governments and multilevel governments such as European Union to anticipate the reduction of subsidies to coal industry.
3. Develop guidelines and strategies to develop alternative economic options to rapidly replace coal as a source of energy and to encourage the creation of local alternative sources of employment.

### **The WFPHA urges all agencies to:**

1. Recognize the moral contradiction in profiting from a lethal product and Divest from coal, and other fossil fuel industries.

### **The WFPHA proposes to national public health associations and other civil society organizations to:**

1. Include the information on the negative health impacts of the coal industry and actions to prevent these impacts in their advocacy initiatives for healthy policies.
2. Empower affected communities to fight for alternative local and regional economic sources, and to establish public policies as well as links of community solidarity so that the transition to renewable energy sources does not bring negative social or economic impacts.



## Conflicts of Interest

The authors have no conflicts of interest to declare.

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