

ENERGY FOR
HUMANITY _

AIR POLLUTION

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Air pollution is a major environmental and health hazard causing up to 7 million premature deaths every year, whilst doing severe environmental damage both to crops and biodiversity.

While the world focuses on discussing if radiation from Fukushima nuclear accident will or will not kill anyone or if wind turbines or concentrated solar power are the end of all birds, there is some real damage being done right before our eyes, both human and environmental.

Air pollution, and more precisely, air pollution that is the result of human energy production and use, is a major environmental and health hazard, that often gets ignored in energy discussion. According to recent reports, between 5.5 million (OECD 2016) and 7 million (WHO 2014) people die prematurely because of air pollution every year. In addition, it causes severe environmental damage both to crops and biodiversity, and has a negative impact on the lives of millions of people.

Indoor air pollution

Air pollution can be divided in two categories, indoor and outdoor air pollution. They are often the result of two very different ways to use energy. Indoor pollution is often the result of, to simplify, poor people cooking inside with inefficient open stoves and poor ventilation, often using wood/branches and animal dung as fuel. These people do not have the money to buy a more efficient stove for a few bucks, which would decrease the amount of pollution as well as the need for fuel. They don't have the opportunity and money to even think about cooking with LPG (liquefied petroleum gas) or having electricity in their homes. The ones most affected are women and kids, whose job it often is to collect the fuel and see to the cooking.



Roughly 4.3 million deaths in 2012 were linked to indoor pollution, according to WHO (2014).

Roughly 4.3 million deaths in 2012 were linked to indoor pollution, according to WHO (2014). Many more get sick, meaning huge losses in both their productivity as well as their quality of life.

In addition, harvesting wood and dung is not only time consuming, it is often unsustainable as well, and results for example in accelerated erosion.

A few things can be done to alleviate the situation, besides these people getting out of poverty to be able to help themselves. One is to supply the poor with better stoves that pollute less and use less fuel. Another is to supply them with other distributed ways of cooking, such as liquefied petroleum gas. Third way is to supply them with modern energy services, such as electricity from a local or central power station.

Outdoor air pollution

Outdoor air pollution is usually the result of different kind of burning. While indoor air pollution is a problem mainly of the poor people, outdoor pollution is present in the rich OECD-countries as well. The biggest sources depend on the country in question and its energy mix, transportation, industry and other infrastructure and regulation. Burning of solid fuels such as coal, biomass and peat, is often the biggest source of outdoor air pollution. Another big source is diesel-powered transportation, especially heavy vehicles such as trucks and buses, but also smaller personal vehicles. In cities, where both cars and people are tightly packed, air pollution is a significant health hazard. Other sources of air pollution include pollen, dust and particulates that come off of car wheels and pavement. In northern latitudes, some areas people also burn wood for heating in dense suburbs, leading to periods of seriously bad local air quality.

A total of 3.7 million deaths were caused by outdoor air pollution around the world in 2012 (WHO 2014).

In Europe, more than 22,000 people die prematurely each year because of air pollution caused by coal power, a recent report by various environmental organizations concludes (Europe's Dark Cloud, 2016). The main polluters are Poland, Germany, UK and Romania, and roughly half of all the health impacts are caused by just 30 of the most polluting plants (out of roughly 280 in total).

Economic consequences of outdoor air pollution

The hazards and price that air pollution are taking on us is "stochastic" in nature. This means that while it is often impossible to link a certain death to a certain cause, the cause and effect can be seen statistically and the likely sources modelled quite accurately. The economic consequences that burning has can be counted as an externality. An externalized cost (or benefit) is a real cost which is not included in the price of the product.

According to Europe's Dark Cloud, the health costs in Europe alone are between 32 and 62 billion euros per year, depending on the value used for loss of life. If these costs would be internalized in the costs of coal burning, the price of coal-powered electricity would rise by roughly 3 to 6 cents per kilowatt hour.

An OECD study estimates that the annual health care costs alone (excluding the value of lost work or lives) will increase from current \$21 billion to \$176 billion by 2060. Global fatalities due to outdoor pollution will increase from 3 million to 6 – 9 million in 2060.

WHO report on air pollution in 2012 (2014)
<http://www.who.int/mediacentre/news/releases/2014/air-pollution/en/>