



# Fact Sheet

## Climate, Environmental, and Health Impacts of Fossil Fuels (2021)

The use of fossil fuels—coal, oil, and natural gas—results in significant climate, environmental, and health costs that are not reflected in market prices. These costs are known as externalities. Each stage of the fossil fuel supply chain, from extraction and transportation to refining and burning, generates externalities. This fact sheet provides a survey of some of the externalities associated with fossil fuels.

### Fossil Fuel Impacts Include:



### Climate Externalities

When fossil fuels are burned, they emit greenhouse gases like carbon dioxide that [trap heat in the earth's atmosphere](#) and contribute to climate change.<sup>1</sup> In 2019, fossil fuels accounted for [74 percent](#) of U.S. greenhouse gas emissions.<sup>2</sup> Nearly [25 percent](#) of emissions in the United States come from fossil fuels extracted from public lands.<sup>3</sup> Some of the climate externalities of fossil fuels include:

- **Ocean acidification:** [At least](#) a quarter of the carbon dioxide emitted from fossil fuels is absorbed by the ocean, changing its chemistry (pH).<sup>1</sup> The increased [acidity](#) makes it harder for marine organisms to build shells and coral skeletons.<sup>4</sup> Over the last 150 years, ocean acidity has increased by [30 percent](#), posing threats to coral reefs, fishing, tourism, and the economy.<sup>1,5</sup>
- **Extreme weather:** According to the [National Oceanic and Atmospheric Administration](#), climate change, brought upon by burning fossil fuels, is contributing to more frequent and severe extreme weather events that lead to disasters costing at least a billion dollars each.<sup>6</sup> The cost of extreme weather events, including wildfires, hurricanes, wind storms, flooding, and droughts, between 2016 and 2020 in the United States has been estimated at [\\$606.9 billion](#).<sup>6</sup>
- **Sea level rise:** Oceanic and atmospheric warming due to climate change is melting glaciers and land-based ice sheets, resulting in global [sea level rise](#).<sup>1</sup> Sea levels have risen about [9 inches](#) since the late 1800s, causing [more frequent](#) flooding, destructive storm surges, and saltwater intrusion.<sup>7,8</sup> With 40 percent of the U.S. population living along the coasts, it is estimated that defending coastal communities from sea level rise could cost [\\$400 billion](#) over the next 20 years.<sup>9</sup>

### Environmental Externalities

Fossil fuels have significant environmental externalities including:

- **Air pollution:** Fossil fuels produce [hazardous air pollutants](#), including sulfur dioxide, nitrogen oxides, particulate matter, carbon monoxide, and mercury, all of which are harmful to the environment and human health (as discussed in the health section below).<sup>10</sup> [Air pollution](#) from fossil fuels can cause acid rain, [eutrophication](#) (excessive nutrients that can harm aquatic ecosystems by lowering oxygen levels), damage to crops and forests, and harm to wildlife.<sup>11,12</sup>

- **Water pollution:** From oil spills to fracking fluids, fossil fuels cause water pollution. Each fracking well uses between **1.5 million to 16 million gallons** of water, and the resulting wastewater can be toxic, often containing **substances** like arsenic, lead, chlorine, and mercury that can **contaminate** groundwater and drinking water.<sup>13,14,15</sup>
- **Plastic pollution:** Over **99 percent** of plastics are made from fossil fuels.<sup>16</sup> Globally, **300 million tons** of plastic waste are produced each year, **14 million tons** of which end up in the ocean, killing wildlife and polluting the food chain.<sup>17,18</sup> Plastics also have climate consequences: the U.S. plastic industry produces **232 million tons** of carbon dioxide equivalent per year, and the industry's greenhouse gas emissions are expected to surpass those of coal-fired power plants by 2030.<sup>19</sup>
- **Oil spills:** Fossil fuel extraction, transportation, and refining can lead to oil spills that **harm communities and wildlife**, destroy habitats, erode shorelines, and result in beach, park, and fishery closures.<sup>20</sup> The largest oil spill in history, the 2010 BP Deepwater Horizon spill, released **134 million gallons** of oil into the Gulf of Mexico, killing 11 people and countless birds, turtles, fish, marine mammals, and plants—and cost BP **\$65 billion** in penalties and cleanup costs.<sup>21,22</sup>

## Health Externalities

Air pollution from burning fossil fuels can cause multiple **health issues**, including asthma, cancer, heart disease, and premature death.<sup>23</sup> Combusting the **additives** found in gasoline—benzene, toluene, ethylbenzene, xylene—produces cancer-causing ultra-fine particles and aromatic hydrocarbons.<sup>24</sup> Globally, fossil fuel pollution is responsible for one in five deaths.<sup>25</sup> In the United States, **350,000 premature deaths** in 2018 were attributed to fossil fuel-related pollution, with the highest number of deaths per capita in states like Pennsylvania, Ohio, and West Virginia.<sup>25</sup> The annual cost of the health impacts of fossil fuel-generated electricity in the United States is estimated to be up to **\$886.5 billion**.<sup>26</sup>

The environmental and health impacts of fossil fuels disproportionately harm communities of color and low-income communities. Black and Hispanic Americans are exposed to **56 and 63 percent** more particulate matter pollution, respectively, than they produce.<sup>27</sup> In a predominantly Black and low-income area of Louisiana known as “Cancer Alley,” the cancer risk is nearly **50 times** higher than the national average due to 150 nearby chemical plants and oil refineries.<sup>28</sup>

## Policy Mechanisms to Reduce Fossil Fuel Externalities

Several policy mechanisms have been proposed to reduce fossil fuel externalities, including:

- **Eliminating fossil fuel subsidies**, which could generate **\$35 billion** in taxpayer savings over the next ten years.<sup>29</sup> To learn more about policy mechanisms to phase out fossil fuel subsidies, check out **EESI's fact sheet**.<sup>30</sup>
- Increasing the **social cost of carbon (SCC)**, which estimates the often-unaccounted economic **damages** that result from carbon dioxide emissions.<sup>31</sup> The federal government uses SCC to evaluate the climate impacts of policies.
- A federal **clean electricity standard**, which would require a percentage of the electricity sold by utilities to come from clean electricity sources.<sup>32</sup> Such standards already exist in **several states** and usually require the share of clean energy on the electric grid to increase over time.<sup>33</sup>
- A **carbon price**, which sets a price on carbon dioxide emissions that is paid by emitters.<sup>34</sup> Carbon price policies can be structured in **different ways**, including as a carbon tax.<sup>35</sup> Cap-and-trade programs like the Northeast's **Regional Greenhouse Gas Initiative**, in which the market determines a carbon price, have existed at the subnational level for many years, reducing emissions and creating new revenue streams for clean energy investments.<sup>36</sup>

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The Environmental and Energy Study Institute (EESI) is a non-profit organization founded in 1984 on a bipartisan basis by members of Congress to help educate and inform policymakers, their staff, stakeholders, and the American public about the benefits of a low-emissions economy that prioritizes energy efficiency, renewable energy, and new clean energy technologies. In 1988, EESI declared that addressing climate change is a moral imperative, which has since guided our work toward our vision: a sustainable, resilient, and equitable world.

## ENDNOTES

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