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Title: Wildfire Education and Preparedness

Why do we care: Wildfire is life threatening, environmental disastrous, and economically costly

What is our goal: Provide a high-level overview of wildfire impacts, illustrate a comprehensive guidance on prevention and reaction, and deliver a message of hope from impressive stories.

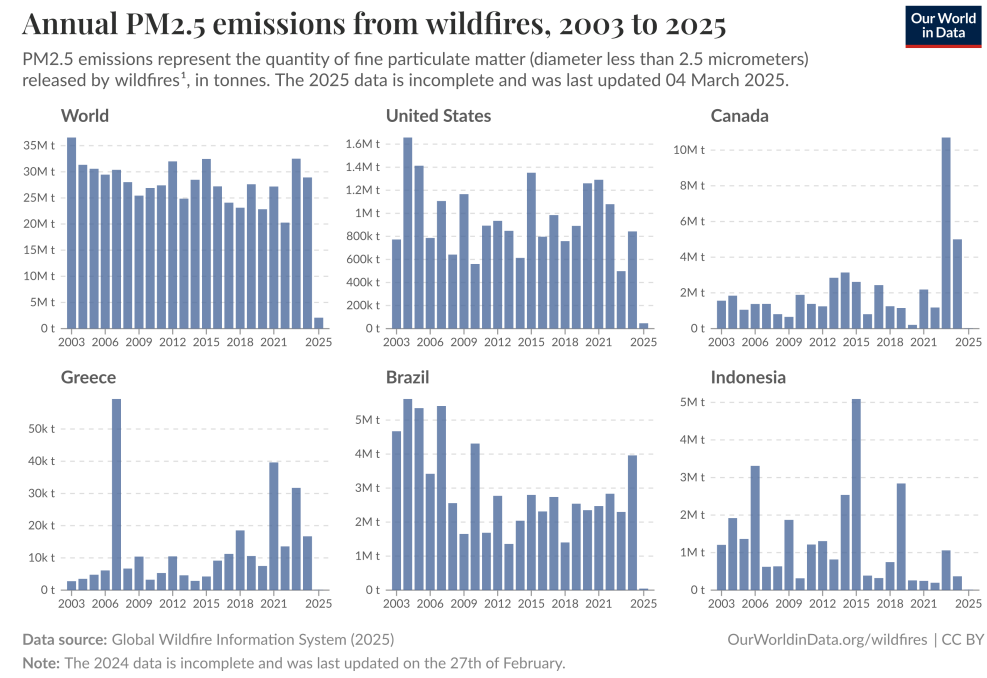
Introduction to wildfire impacts:

Dangerous:

Direct threat: It is very important to note that wildfire can spread very fast. According to Western Fire Chiefs Association, wildfire can travel with a speed of 14.27 miles per hour, and the speed may vary greatly due to different factors ("How Fast Do Wildfires Spread?"). This includes humidity, location, inflammable material density, and wind velocity. Therefore, it would be difficult for people to escape from wildfire without precaution and preparation, especially for children, elder people, and people with disability.

Harmful smoke (Toxins): Besides direct threat from the fire spread, the wildfire smoke may severely harm people's health both in short terms and long terms. The burned materials particularly produces gaseous pollutants and particle pollutants. For example, carbon monoxide is a typical gaseous pollutant that is poisonous. California Air

Resources Broad emphasizes that: “Carbon monoxide is harmful because it binds to hemoglobin in the blood, reducing the ability of blood to carry oxygen” (“Carbon Monoxide & Health”). Moreover, wildfire also produces a massive amount of fine particles (PM2.5) which threats people’s health in the long run. According to the United States Environmental Protection Agency, PM2.5 is one of the primary concern of public health because the particles are able to reach human lungs and get into people’s bloodstream (“Why Wildfire Smoke is a Health Concern”), thus, raising the chance of cardiovascular disease.

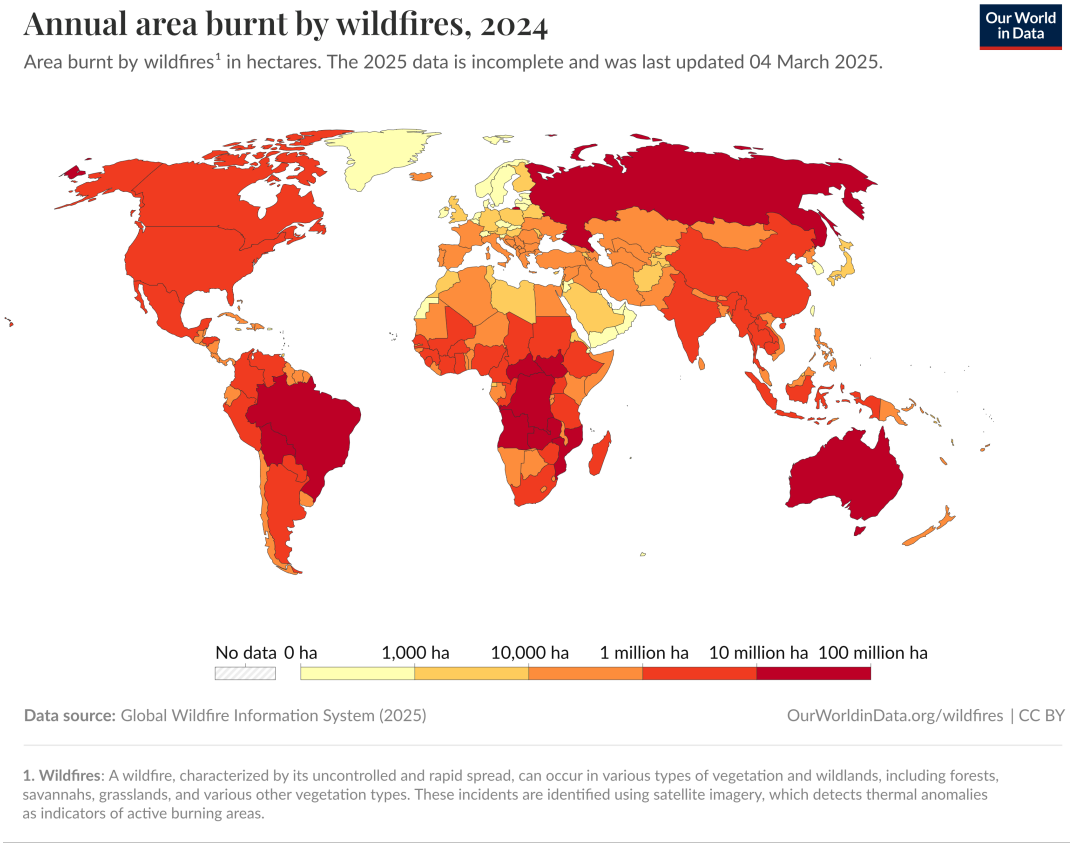


Environment and climate:

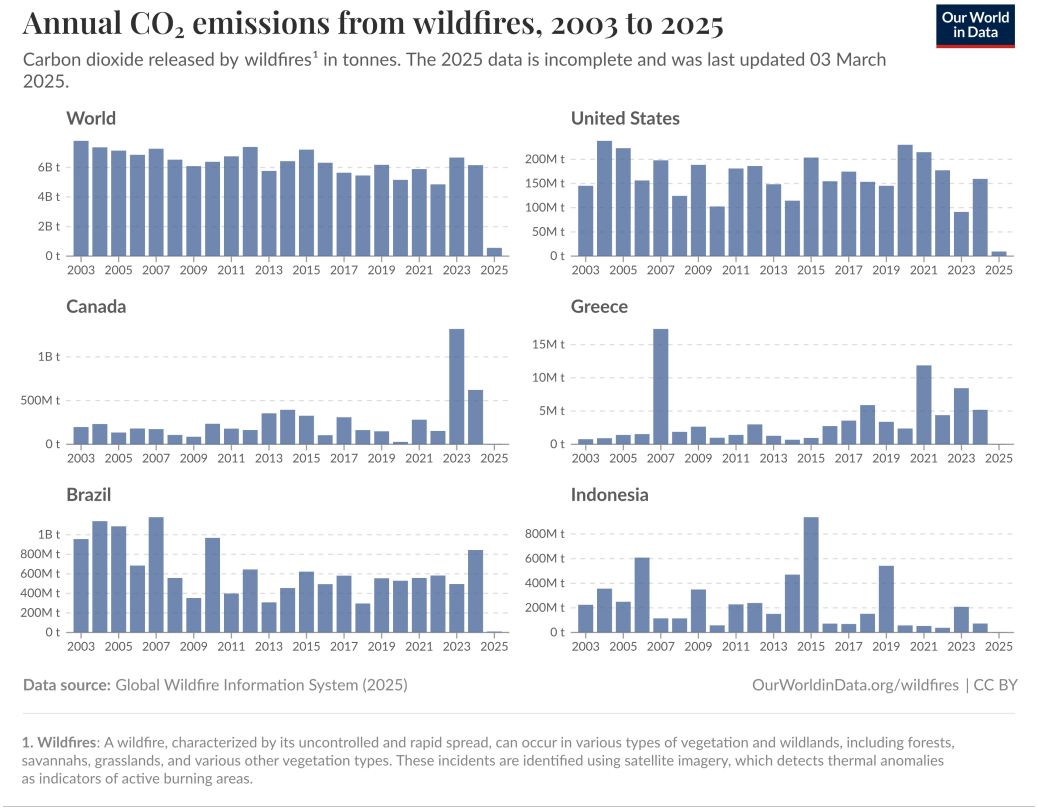
Lost forest: Vast forests, where thousands of species thrive, are important to earth’s ecosystem. However, since woods and dried plants are ideal for ignition, it is also very

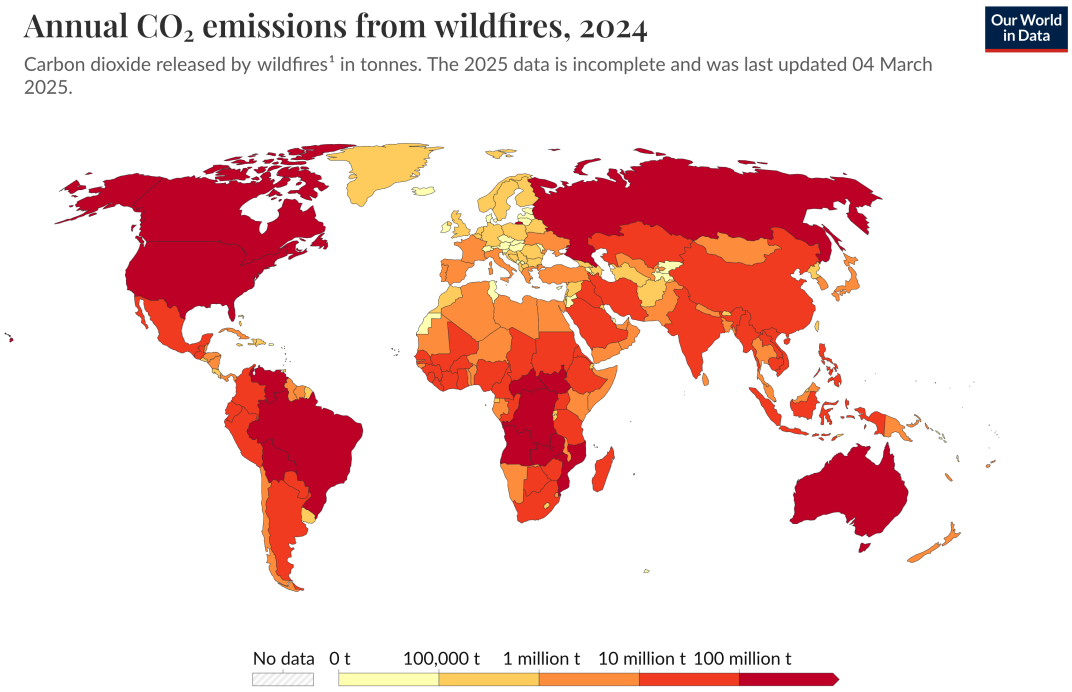
easy for wildfire to spread across forests at a very fast pace. It is important to note that wildfire caused deforestation is much faster than other human caused activities such as cutting trees and acquiring logs. Wildfire is able to destroy large forests within a few days. Consequently, hundreds of species lose their habitats and are exposed to extinction threats.

Burned land: Each year, countries around the world suffer from wildfire burning territories, and the numbers are astonishingly large. The following graph from "Wildfires" by Veronika Samborska and Hannah Ritchie on Our World in Data illustrates the global area burnt by wildfire in 2024 for each country. According to the graph, the United States lost 4.14 million hectares from wildfires in 2024 (Samborska and Ritchie). This is shocking because the number is roughly the size of Switzerland.



Carbon dioxide and other emissions: Wildfire burnings also release a massive amount of carbon dioxide emissions, which is well known as a green house gas that has tremendous impact on climate change. According to “Annual CO2 emissions from wildfires” by Our World in Data, wildfire in 2024 has released 6.17 billion tons of CO2 to the atmosphere, and wildfires in the United States contributed 159.62 million tons that year (“Annual CO2 emissions from wildfires”). These numbers are extremely large, and they are one of the major factors that constitute the overall annual emissions.





Economic and Financial:

Direct loss of asset: Wildfire often causes direct loss of asset not only to individuals, but the society as a whole. The fire may simply burn houses, cars, facilities, and even infrastructures. According to Karissa Waddick's article, "How many homes have burned in the Los Angeles wildfires so far", the wildfire earlier this year in North Los Angeles destroyed more than 12000 homes, facilities, and commerces (Waddick). Snejana Farberov in the article "Property Losses From L.A. Wildfires Could Exceed $30 Billion —From Condos to Megamansions", demonstrated that the sum of loss exceeded $30 Billions (Farberov).

Insurance crisis: The tremendous property loss due to the wildfire in Los Angeles in January 2025 has worsen the insurance issue in California, especially for property insurance. The first problem is that many insurance companies just simply don't have the ability and money to pay for all of the loss at the same time. The second issue is that since wildfire happens frequently in Southern California, insurance companies either refuse to provide property insurance or significantly raise the premium.

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