

The Surprising Environmental Impacts of Transportation

To assess the direct and indirect environmental impacts of transportation, the entirety of fuel, vehicle, and infrastructure cycles must be considered. The transportation sector is only about 20% fuel-efficient because of energy lost to heat and inefficiencies mostly before or after fuel enters a vehicle. About 75% of pollution actually comes from the handling and transportation of the fuel before it is ever consumed. Direct impacts of transportation include harmful emissions, increased runoff and erosion, and habitat destruction. Indirect impacts include climate change, ocean pollution, and the urban heat island.

Road vehicles are largely in the public eye but actually emit less pollution than other main types of transportation while also better suiting certain transportation needs. Although carrier ships are more efficient than locomotives which are more efficient than trucks, trucks are faster and can move across higher grade land than trains could handle. The Clean Air Act has dramatically reduced on-highway emissions, but non-road transportation is less regulated and sometimes has much greater emissions. For example, 500,000 cars produce less NO_x and PM_{10} than the port of Los Angeles. Sometimes public transportation is even less fuel-efficient than cars because of low-ridership.

In the United States, transportation makes up about 30% of energy consumption, and no obvious solution exists to fix this and the sector's high emissions. Only so much kinetic energy can be garnered from the potential energy in fuel, and engine-efficiency is close to its maximum. Petroleum is a main fuel source for transportation, but all alternative fuels also have greenhouse gas emissions associated with some part of their production or usage. Possible ways to reduce carbon dioxide emissions include reducing the weight of transported goods, switching to less

carbon intensive fuels and more aerodynamic vehicles, and increasing the recycling and lifetime of vehicles, goods, and infrastructure.