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Tenke Fungurume Mine, one of the largest copper and cobalt mines in the world, is owned by Chinese company CMOC, in southeastern Democratic Republic of Congo. Minerals like cobalt are important components of electric vehicle batteries, but mines that produce them can hurt the environment and people nearby. Emmet Livingstone/AFP via Getty Images hide caption

Earlier this year, NPR"s podcast The Sunday Story reached out for listener questions about electric vehicles. You can hear the resulting podcast here. We"re also taking some of the most-asked questions and answering them here on NPR .

Electric vehicles are sometimes called "zero-emission vehicles." But the batteries that go into them are not zero-emission at all. In fact, making those batteries takes a lot of (mostly-not-clean) energyand hurts the environment in other ways, a fact that"s become common knowledge after widespreadmedia coverage.

Does that environmental damage cancel out the green benefits of giving up gasoline? Or, as Jennifer Sousie, who owns a Nissan Leaf, put it: "Does the manufacturing and ultimate disposal of the batteries completely negate all the good that the no-emission aspect of my car does?"

With all that"s required to mine and process minerals -- from giant diesel trucks to fossil-fuel-powered refineries -- EV battery production has a significant carbon footprint. As a result, building an electric vehicle does more damage to the climate than building a gas car does.

If you look at the climate impact of building and using a vehicle - something called a "lifecycle analysis" - studyafter study has found a clear benefit to EVs. The size of the benefit varies - by vehicle, the source of the electricity it runs on, and a host of other factors - but the overall trend is obvious.

"The results were clearer than we thought, actually," says Georg Bieker, with the International Council on Clean Transportation, who authored one of those reports. (This is the group that busted Volkswagen for cheating on its emissions tests. Holding industries accountable for whether they"re actually reducing emissions is the ICCT"s whole thing.).

Several listeners asked NPR about the negative impacts of mines, beyond carbon emissions. There are several: They disrupt habitats. They pollute with runoff or other waste. And people can suffer in other ways: worker poisonings, child labor, indigenous communities" rights violated and more.

The carbon pollution from burning gasoline and diesel in vehicles is the top contributor to climate change in the U.S. And there are other costs: Oil spills; funding for corrupt oil-rich regimes; the illnesses and preventable deaths caused by pollution from fossil fuels.

Public pressure and a shift toward mining in regions with stronger regulations, like the U.S. instead of China, could reduce the harms done in mines. New technology, like a mining method called "direct lithium extraction," could produce minerals with much smaller footprints.

Right now, if you want to avoid cobalt in your battery because of the horrific mining conditions, you could seek out an LFP battery, which is made without cobalt - they"re used in vehicles like the Tesla Model 3 and Ford Mach-E. In the future, batteries based on sodium might be an alternative to lithium.

And last but not least, battery minerals can be recycled. This won"t meaningfully reduce the need for mining until huge numbers of EVs on the road have reached the end of their lifespan. But eventually, the same molecules of lithium and nickel could be used for many generations of cars - something that can"t be said for fossil fuels. (Recycling batteries is also important because it addresses environmental concerns about the risks of throwing them out.)