A quarter of carbon emissions from transportation come from heavy-duty trucks. They are also disproportionate sources of air pollution.  Addressing these emissions will be challenging and will require a multi-prong strategy.

For distances under a few hundred miles, electrification offers the most promising solution. California and fourteen other states plan to make 30% of new heavy-duty truck sales zero emission by 2030. That primarily means battery vehicles. We need to make this a national goal, with the ultimate goal of shifting entirely to electric trucks for short-haul shipping. The UK is ahead of us here. The British commitment is "sales of all new medium sized trucks (up to and including 26t) to be zero emissions from 2035, with the heaviest (above 26t) zero emission by 2040."

At least with present technology, electric batteries do not seem to be a viable solution for long-haul trucking. Multiple stops for charging with add prohibitive delays to long trips. According to a report from Brookings:

"Battery sizes as large as 1000 kW-hours require very high-power flows to charge quickly. A light vehicle fast charger could take as long as 20 hours to charge such a large battery. Overnight charge times might be fine for many local applications but raise a serious challenge for long-haul trucking."

One solution discussed by the Brookings report would be chargers with much higher charging rates. Those would allow quick charging but would also place extremely heavy demands on the power grid, especially in rural areas. Biofuels are a possibility, although in the long run they are more needed for planes and ships. Hydrogen is a promising alternative for trucking, but it would need a new distribution network and cleaner methods of production.

Another option would not require new technology. Shifting transport from trucks to trains substantially cut emissions.  A conservative estimate is that shifting 4% of truck freight to rail would result in an equal percentage decrease in freight emissions.  improved rail infrastructure, some of which is funded by the recent Infrastructure Act, would help make rail more appealing. Experience in Europe shows that subsidies for lower-carbon transport can also be helpful.  Efforts to speed up rail transit, improve handling, and allow nimbler shipping schedules would all help make rail more appealing to shippers.

However you look at it, decarbonizing long-haul shipping will itself be a long haul. Fortunately, cars, delivery vans, and short-haul freight are a lot more approachable. We need to prioritize those will continuing to work on the tougher problem of long-distance

shipping.