EFFICIENT TRUCKS

Because they tend to travel long distances and carry considerable weight, trucks make a sizable contribution to GHG emissions. In the U.S., trucks comprise just over 4% of vehicles and 9% of total mileage, but they consume more than 25% of fuel nationwide.[1] As a result, targeted investments in the efficiency of trucks can make a big difference to the climate. Efficiency gains can be made by building new truck models with better engines and aerodynamics, lighter weights, less rolling resistance for tires, automatic engine shutdown, and hybrid-electric engines. Existing trucks can be retrofitted with anti-idling devices, upgrades that improve aerodynamics and reduce rolling resistance, and automatic cruise-control devices. All of these measures can pay for themselves quickly in reduced fuel use.[2]

One of the biggest barriers to widespread adoption of these innovations is the fact that trucks are often owned by a large number of different owner-operators with small fleets of one to five trucks apiece. As a result, access to capital and the benefits derived from investments can be spread thin. In some cases, a trailer and a truck have different owners, creating questions as to who should pay for upgrades. A lack of information and education can also contribute to inertia when it comes to retrofitting and upgrading the nation's trucking fleet.[3]

Increasingly, truck innovators are looking at alternative fuels in order to decarbonize trucking altogether. Leading contenders are electric batteries, hydrogen fuel cells, and catenary systems (overhead electrified wires).[4] "Electric highways" are touted as the most efficient route to zero-emissions road freight, and some experts are calling for a rapid influx of government investment in infrastructure upgrades to make electric highways possible. Electric highways can be powered by catenary systems, wireless induction (in which electric coils located under the asphalt transmit energy to moving trucks without direct contact), and electric rails embedded in the roadway.[5]

- Fishery friendliness: Efficiency measures that reduce the amount of energy needed for move freight overland can reduce the amount of energy generation needed, including energy that is produced in fishery-unfriendly ways. Electrification of trucking via batteries, catenary systems, and electric highways represent an electrification of previously non-electrified transportation, and the fishery friendliness of these technologies will depend in part on the friendliness of the electricity sources that power

[1] Project Drawdown. "Efficient trucks." https://drawdown.org/solutions/efficient-trucks
[2] Project Drawdown. "Efficient trucks." https://drawdown.org/solutions/efficient-trucks
[3] Project Drawdown. "Efficient trucks." https://drawdown.org/solutions/efficient-trucks
[4] Amelang, Soren (February 5, 2021). "Time for trucks: The next big thing in the shift to climate-friendly transport." *Clean Energy Wire.* https://www.cleanenergywire.org/dossiers/time-trucks-next-big-thing-shift-climate-friendly-transport
[5] Amelang, Soren. (February 1, 2021). "Electric highways offer the most efficient path to decarbonise trucks." *Clean Energy Wire. https://www.cleanenergywire.org/factsheets/electric-highways-offer-most-efficient-path-decarbonise-trucks*

them. EV batteries produce some lifecycle GHG emissions and can have environmental impacts associated with mining and manufacturing. With hydrogen-powered trucks, impacts to fisheries are determined by the source of energy that is used to produce it, which can be renewable, fossil fuel-based, or nuclear. With biofuel- and other alternative fuel-powered trucks, impacts to fisheries are determined by the feedstock used and its cultivation process.

- Co-benefits: Efficient trucking, electric trucks, hydrogen trucks, and alternative fuel-powered trucks can lead to improved air quality and in some cases, cost savings.
- Environmental externalities: EV batteries produce some lifecycle GHG emissions and can have environmental impacts associated with mining and manufacturing. Electrification of trucking via batteries, catenary systems, and electric highways represent an electrification of previously non-electrified transportation, and the environmental impacts of these technologies will depend in part on the electricity sources that power them. With hydrogen-powered trucks, impacts to the environment are determined by the source of energy that is used to produce it, which can be renewable, fossil fuel-based, or nuclear. With biofuel- and other alternative fuel-powered trucks, impacts to the environment are determined by the feedstock used and its cultivation process.
- Policy catalysts: Many of the trucking technologies described in this section can be promoted through tax incentives, rebates, grants, loans, fuel economy or low-carbon fuels standards, green procurement policies, carbon pricing, lead-by-example programs, and government-sponsored research and development. Installation of EV charging infrastructure and alternative fuel refueling stations by private and public entities can be promoted through incentives to utilities to invest in "make-ready" infrastructure, utility-run programs to provide discounts or special rates on electricity used for EV charging, development of charging or refueling infrastructure plans, parking infrastructure requirements, and financial incentives such as tax credits, loans, grants, and rebates.
- More information:
    - Drawdown: Efficient trucks
    - Amelang, Soren (February 5, 2021). "Time for trucks: The next big thing in the shift to climate-friendly transport." *Clean Energy Wire.*
    - Amelang, Soren (January 15, 2021). "Climate targets force trucks into race to clean up transport." *Clean Energy Wire.*

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