

Decarbonizing Long-haul Trucking

by

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As climate change poses an ever-increasing challenge for the world, the transportation sector has experienced significant troubles in mitigating its carbon dioxide emissions. Particularly responsible for this development is the heavy-duty trucking sector. Heavy-duty freight trucks are responsible for approximately 30 % of the highway transportation emissions even though they only represent about 5.5 % of vehicles on the road. Heavy-duty trucks are also the backbone of US freight, as they account for 71 % of freight delivered to the American people. The corresponding road freight energy consumption has been consistently increasing over the last decades and is expected to grow even further in the future. Emissions must be drastically reduced in order to adhere to the proposed targets of the 2015 Paris Agreement and to limit global warming. This contrast raises a crucial question: how can road freight emissions be substantially reduced while at the same time facing a growing transportation demand? Especially for long-haul class 8 trucks, this question is difficult to answer. This study seeks to elucidate potential competitive powertrain and fuel combinations and eliminate other poor alternative options.

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