# Comparing Freight Transport Emissions by Mode

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| Moving domestic freight by rail and coastal shipping is widely regarded as using less energy, and emitting less greenhouse gas emissions, per tonne-km than road freight. While the evidence appears to support this view in general, the data that would tell us how much reduction in energy use and emissions we could expect if more freight were diverted from road to rail or coastal shipping in New Zealand has been quite limited. This paper reviews the evidence on freight emissions by mode in New Zealand. We consider each of the three modes—coastal shipping, rail, and road transport. For each mode, we look at the New Zealand-specific evidence, then compare this to overseas evidence. A particular challenge in comparing emissions by mode is that rail and coastal shipping compete mainly with long-haul heavy trucks. Since long-haul heavy trucks are considerably more energy-efficient per tonne-km than urban delivery heavy trucks, a simple comparison of rail and coastal shipping with an average heavy truck would be misleading for estimating emission changes from mode shifts. We, therefore, use a unique dataset obtained from eRoad to estimate emissions per tonne-km separately for long-haul and urban delivery heavy trucks. We conclude with some recommendations regarding reasonable assumptions about average emissions per tonne-km by mode and some suggestions for further research. [Note: An unpublished draft of this paper has been circulating privately for almost two years, and it has already been cited in MfE’s  *Measuring Emissions: a Guide for Organisations—2019 Detailed Guide* (see <https://www.mfe.govt.nz/sites/default/files/media/Climate%20Change/2019-detailed-guide.pdf>) and co-author Wang’s presentation at the 2019 Transport Knowledge Conference (<https://www.transport.govt.nz/assets/Import/Uploads/Research/Documents/TKC2019/Wang-H_Real-world-fuel-economy-of-heavy-trucks_TKC2019-web.pdf>). We have been seeking a suitable venue to have it peer-reviewed and published, and would be honoured to present it at this conference.] |