



**Title:** 'Crossing the divide'

**Description:** An impressionistic version of a train journey

**Photographer's name:** Noelle Bennett

**Where and when:** Dunedin. November 2015.

**Sustainability:** I got to wondering about the general merits and otherwise of various modes of transport. Typically, I find myself overtaken by logic. Certain aspects seem logical. But then I discover my logic and reality don't coincide. For instance, when I see a train go past, I can't help but think that transporting goods by rail must be more environmentally friendly than transporting them by truck, if for no other reason than the sheer volumes that can be moved at one time by rail. So is this just another example my flawed logic or is there something in my supposition?

It seems indeed that there are huge benefits to using rail. It is a more energy efficient mode of transport and has 70% lower emissions than heavy road freight. In the year to June this year (2021) in New Zealand, 18 million tonnes of freight were transported by rail. That equates to taking one million truck trips off the roads which in turn has avoided over 276,000 tonnes of carbon dioxide equivalent (CO<sub>2</sub>e) emissions. I do realise that freight transport cannot all simply be shifted to rail for a variety of reasons, but at least some of it may be transferable to benefit our struggling planet.

According to the 2018/2019 data, 16% of total freight movements annually in New Zealand are by rail. But these volumes have varied quite significantly over the years. Pre-1980, annual rail freight movement volumes had been a little over 12 million tonnes but by 1980, those volumes had started to fall back until they reached a low of 8.5 million tonnes by 1993. Come the year 2000 and there had been an increase to 14.99 million tonnes annual freight movements by rail, but once again they started to fall. By 2003 they were down to 13.7 million tonnes. Since then that downward trend has largely been reversed to reach the current 19 million tonnes of freight transported by rail annually. Why all the variability? I have no idea. Perhaps it is attributable to the transition of rail in and out of state

ownership. It's hard to be certain.

By comparison, movement of freight by truck seems to have seen a steady growth. Between 1997 and 2005 there was a 55% increase in the number of heavy trucks operating in New Zealand. This resulted in a 42% increase in the number of kilometres travelled by heavy trucks, and associated increase in road repair costs and accident risk, let alone the increase in greenhouse gas emissions. The cost of finding other ways of becoming carbon neutral by 2050 will be enormous.

Electrification of the light vehicle fleet in New Zealand is gradually gaining momentum, but still has a long way to go – only 7% of vehicle registrations in New Zealand are EVs at the moment. Over the last couple of years, the rush to buy heavy duty and highly polluting 'utes' has more than counteracted the gains from growth in the national EV fleet. Clearly, we have a long way to go to change public perceptions about road transport and there are deep seated objections to change from vested interests in carbon intensive business-as-usual.

Electric light industrial vehicles (small trucks and vans) are becoming available, and in America, the heavy-duty electric trucks are already on the market. The dilemma for New Zealand and the world is the initial cost of these EV alternatives. That high cost can be traced back to the costs and short supply of battery factories. Several super-factories will come on stream in 2023, so the supply problems will soon ease. But then New Zealand will still have to compete with consumers in other countries, many of whom are scrambling to electrify their fleet. Our market is small and we drive on the "wrong" side of the road for most countries, so we are likely to face delays in converting our light vehicle and heavy transport fleets. Some form of "subsidisation" of the cost of transitioning is probably needed where public funds are used to pay in part for the public good from reducing emissions. This use of public funds to deliver environmental care is hotly debated in New Zealand – usually we expect business itself to pay for the care, an expectation that to be frank is often not realised.

On the brighter side, Aotearoa New Zealand has a plentiful supply of electricity generated from renewable sources (hydro, wind, solar, geothermal), so if we can electrify our transport, we will have much faster gains in reducing greenhouse gas emissions. Both direct and indirect emissions have to be taken into account if an accurate picture is to be obtained. Indirect emissions might include emissions from the construction of new roads or railways, production of batteries, general road or rail maintenance and repairs and so on. We also currently use a small amount of coal to generate electricity. All the information is required if the picture is to be accurate.

What about electrifying rail transport then? Many of the European railways are powered by electricity after all. New Zealand has made many attempts to electrify sections of its main trunk lines and eventually built a 412 km electrified stretch in the North Island by 1988. In December 2016 KiwiRail announced it would abandon this and revert to diesel engines. In 2018 that decision was reversed. So are we going to see an expansion and modernisation of electric rail transport?

Most new innovations struggle for acceptance and this is often called "Crossing the Chasm" in the sustainable business world. For EV uptake, it's about "crossing the divide" between adherents to fossil fuelled transport and green transport advocates. That's a debate about values and social and economic philosophy as much as straight financial sustainability and feasibility.

Whatever the outcome for train electrification, rebuilding the network will be expensive and slow. We could get immediate gains in emission reduction if we just start thinking smarter and transferring a lot of goods off our roads and on to trains.

**Photographer's notes:** This was one of those cases of just being in the right place at the right time with the train. But having taken the image, it felt as though it could be part of a composite image that would tell a far better story.

**Photo specs:** This is a composite image created from two separate images. Both were developed individually using conventional processing and then the two images were combined using various blend ranges and techniques. Technical specs: The main image was taken using a Panasonic DMC-GH4 camera and a Panasonic Lumix G-Vario 12-

35mm f/2.8 lens. Exposure details - 1/250sec at f7.1 with an ISO of 200 and a focal length of 30mm (60mm full frame equivalent).

**Digital specs:** 6318 x 5271 pixels (33.30MP) @ 300dpi

**Key words:** train, engine, carriages, tracks, railways, clouds, reflection, sunrise, driver, electrification, transport, climate change, emissions, Noelle Bennett, Ecosystems Photography, sustainability.

**Price:** \$300 (incl. GST) for use of the digital image. Visit [www.ecosystemsphotography/sales](http://www.ecosystemsphotography/sales) for details & to order, or to get a quote if you would like a high-quality print.

**Donation:** the price includes a \$100 donation to a sustainability organisation or project of your choice, or otherwise to the *Better New Zealand Trust*, <https://www.leadingthecharge.org.nz/>.

We recommend that the donation goes to *the Better New Zealand* because of the work they are doing for electrification of transport in New Zealand. They work hard on education to debunk the myths and disinformation about EVs and lobby for smart policy to accelerate EV uptake.

**Image ref:** NB#026 (please use this reference in all orders and correspondence).

**Noelle Bennett**

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