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# Applying the Pareto Principle to Benefit the Planet:

## How converting the commercial transportation sector to clean energy could significantly reduce the negative effects of climate change.

As an individual, there are so many ways you can reduce your carbon footprint—from the three Rs (reduce, reuse and recycle) to the three Cs (choosing clean energy, carpooling and conserving water and electricity). In fact, if you committed to just 20% of these practices, you might be able to reduce your carbon footprint by 80%. That's what's known as the Pareto principle. It can be applied to just about everything, but it works both ways (though not in exact 80/20 measure). For example, just 100 companies of the millions across the globe are responsible for 71% of all greenhouse gas (GHG) emissions.<sup>(1)</sup>

Here in the U.S., the transportation sector is one of

six that contributes most to GHG. At 28%, it is at the top of a list of polluters inclusive of agriculture, industry, commercial, residential and electricity. Within transportation itself, which encompasses commercial trucks, aircraft, rail, ships and boats, it's the light-duty, medium- and heavy-duty vehicles that are responsible for 82% of GHG, while the others combined contribute just 18%.<sup>(2)</sup>

Now imagine the positive impact if commercial trucks alone were converted to EVs.

Fortunately, many cities, states, countries and innovators in the private sector have gone beyond imagining into

**The Pareto principle states that, for many events, roughly 80% of the effects come from 20% of the causes. It can be applied to just about everything, (though not in exact 80/20 measure). For example, just 100 companies of the millions across the globe are responsible for 71% of all greenhouse gas (GHG) emissions.**



implementation, aware not only of the future benefits but also the present challenges and barriers that must be considered and resolved before EV adoption is widespread. Among them, total cost of conversion and ownership, charging station infrastructure and battery life are the most significant. In the U.S., trucks carry almost 71% of the tonnage moved throughout the country, with some hauling goods over thousands of miles. But if we focus on the fact that 80% of freight is transported less than 250 miles, these challenges then become surmountable.<sup>(3)</sup>

Take specific environments such as airports, shipping ports, mining sites and even commuter buses in our cities, where vehicle routes are short and circular—beginning and ending at the same point or confined to a single location. With one central depot for charging, range anxiety is eliminated while infrastructure cost is dramatically reduced in comparison to building a network that stretches across a state or the entire country.

This short-range approach is becoming an effective model particularly with shipping ports. In 2017, the

Port of Barcelona invested in 31 electric vehicles and 47 charging points as part of the port's Air Quality Improvement Plan. And in June 2020, the California Air Resources Board unanimously passed the nation's first electric truck standard, a landmark regulation that aims to transform the state's freight and transportation industries by first targeting "diesel death zones." Home to 11 major shipping ports, including the Port of Los Angeles—the busiest port in the U.S.—trucks hauling shipping containers along freight lines from north to south spew deadly diesel that is choking communities in their path. On a typical day, about one thousand diesel trucks move goods between the ports of Long Beach and Los Angeles, and the supporting distribution warehouse infrastructure, every hour.<sup>(4)</sup>

With the electric truck mandate, California estimates it could help save lives and improve health risks in these affected communities. The state further estimates the positive financial impact over time, saving the local economy billions of dollars through reduced health costs by preventing 17 million metric tons of CO<sub>2</sub> from being released into the air. Daimler Trucks North America currently has drivers testing its new eCascadia

freightliner trucks along these short routes. A heavy-duty truck designed for local and regional distribution and drayage, it can go about 250 miles before needing a charge. But, while they hold great promise and potential, the road is long.

If there are lessons to be learned and shared, China may provide invaluable insight. Clearly taking the lead in electrification of commercial vehicles, as well as manufacturing, China has been motivated to transition by several factors including the need to decrease reliance on imported fuel and reduce pollution and improve the quality of air for citizens. Embarking on an ambitious plan to electrify fleets a decade ago, it took just eight years to convert the southern city of Shenzhen's more than 16,000 buses over to clean electricity. By 2019, China had 421,000 electric buses, with 18% of its entire bus fleet electrified, whereas the U.S. had just 300.<sup>(5)</sup> By 2022, China hopes to convert or replace its current diesel-powered buses. And it is well on its way.<sup>(6)</sup>

It's important to note that mass conversion to EVs in China, particularly among commercial fleets, has largely been the result of government support, with billions of

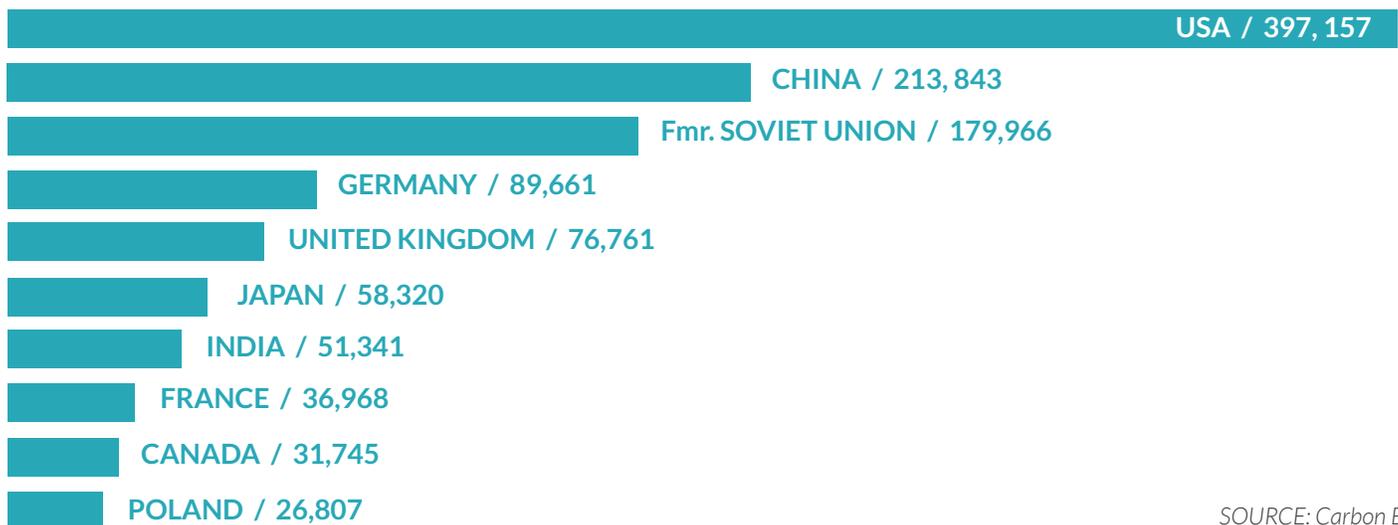
dollars subsidizing EV and battery manufacturers. One of the hurdles for commercial EV adoption has been bridging the financing gap. This lesser known problem is unique to EVs, as lenders require cash deposits based on the percentage of the vehicle's Blue Book® value. EVs are relatively new and have a difficult residual value estimate due to lack of historical resale values and the fact that the battery, which is removable, can be up to 50% of the vehicle's total value.

Due to these factors, lenders have been requiring larger deposits, in some cases up to 50% of a vehicle's value versus around 10% to 20% for conventional combustion engine vehicles. Only the wealthiest fleet operators are able to provide large, upfront cash deposits to purchase thousands of vehicles, yet the majority of fleet operators are mid- and small-sized companies and are unable to shoulder this cost from their long-established, low-margin business models. To solve this, Ideanomics created a financing model to enable fleet operators to purchase EVs without providing the necessary large cash deposit.

Working with financing partners, which include stakeholders in electrification such as insurance firms

## The Countries with the Largest Cumulative CO2 Emissions since 1750

Cumulative CO2 Emissions (million tons)



SOURCE: Carbon Brief

and utility companies, Ideanomics has put together a consortium of partners to provide financing more in line with the lease financing terms that currently align with the commercial fleet operators balance sheet. Offering competitive lease financing terms on electric vehicles enables operators to confidently make the switch to clean energy and unlock the additional return on investment electric fleets deliver through reduced energy, servicing and maintenance costs.

Bringing this back to the Pareto principle, the land mass of China and the U.S. combined account for roughly 13% of the planet, but together they are responsible for nearly half the world's CO2 emissions. If these two countries collectively reached a goal of 80% EVs, the entire planet would benefit significantly. It may take decades, particularly in the U.S., but along the way, every incremental step would reduce damage to our environment.

While we must all continue to do our part to reduce our own carbon footprint, converting commercial trucks and vehicles to clean energy vehicles is a good start and will undoubtedly have a major impact on reversing the negative effects of climate change. Supported by legislation, government subsidies and private sector partnerships, we can use the 80/20 rule to shift the imbalance of output and input in favor of cleaner energy within the transportation industry and help future generations breathe a little easier.

(1) [\*CDP, The Carbon Majors Database, July 2017\*](#)

(2) [\*EPA, Fast Facts on Transportation Greenhouse Gas Emissions, June 2020\*](#)

(3) [\*U.S. Department of Transportation, Freight Facts and Figures 2017\*](#)

(4) [\*WGCU News, California's Landmark Electric Truck Rule Targets 'Diesel Death Zone', 26 June 2020\*](#)

(5) [\*Bloomberg, The U.S. Has a Fleet of 300 Electric Buses, China Has 421,000, 15 May 2019\*](#)

(6) [\*Blue Skies China, Electrifying 800,000 Chinese tour buses "paves the way for future security token offering", 10 February 2019\*](#)

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