

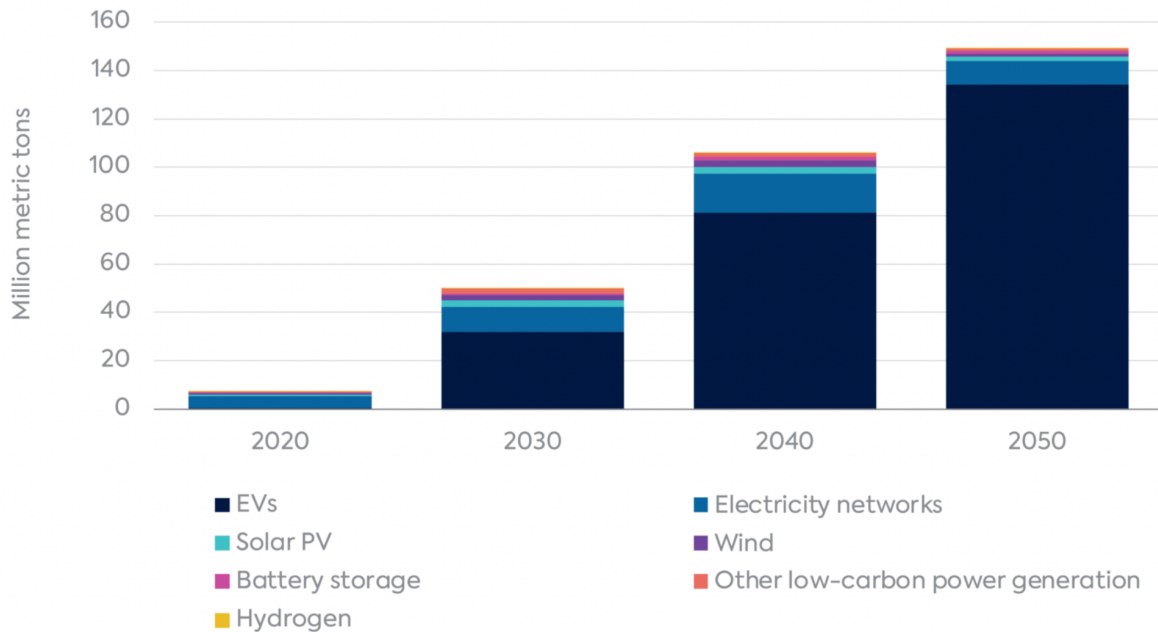
Weekly Blog
December 14th, 2023



Source: Waymo

When looking at staggering numbers such as the projected demand in critical minerals required in the world for the green transition to Net Zero by 2050, we need to ask ourselves what we could be getting wrong. So what exactly are those critical minerals to be used for? A closer look at the uses of those various minerals shows a large allocation to the replacement of the global auto fleet by electric vehicles (EVs).

Critical minerals demand by low-carbon energy technology



Note: Other low-carbon power generation includes hydro, bioenergy, concentrated solar power (CSP), geothermal, and nuclear.

Source: Center on Global Energy Policy at Columbia SIPA

Some have remarked that the best car for the environment is “no car”. It seems logical that to solve our dilemma of extracting more than projected production and creating too much waste and pollution at the same time, we would need to cut back massively on our use of cars. Enter autonomous driving, which has been around for almost a decade, with deployment on public roads and critical data accumulation by manufacturers for a future massive adoption expected in the 2030’s, or even sooner.

McKinsey & Company’s base scenario for adoption of autonomous driving technology assumes that those manufacturers can meet their announced timelines for autonomous vehicle launches, with a medium level of customer adoption despite the high costs. In those projections, by 2030, 12% of new passenger cars are sold with autonomous technologies, and in 2035, 37% have advanced autonomous driving technologies. In the optimistic scenario, there are sizable revenues coming in through new business models, such as pay as you go and subscriptions, and most premium automakers preinstall hardware that makes fully autonomous driving possible when the software is ready to upgrade: 20% of passenger cars sold in 2030 include advanced autonomous driving technologies, and by 2035, 57% have them.

What does this mean for the size of the auto fleet? An OECD study looked at what might happen if all cars become self-driving in a mid-sized European city, Lisbon. The model

leveraged existing transportation data from the city, but replaced 100% of the human driven cars with two types of self-driving cars: “TaxiBots”, driverless cars that would be shared with multiple people at the same time, and “AutoVots”, picking up one person at a time. One scenario combined TaxiBots and AutoVots with public transit and discovered that the same number of people could be moved around with only 10% of the cars currently on the road - a gigantic 90% reduction. In addition, the city needed 20% less on-street parking and 80% less off-street parking. Another scenario removed mass transit altogether and produced an 80% reduction in the number of cars on the road. It also led to a reduction in rush hour commute times.

Add to this the clear benefits to society in 1) security: not having error-prone humans driving machines weighing tons 2) economy: a phasing out of public transit is plausible, less road surface required, secondary parkings become unnecessary and free up massive prime real estate, perhaps less road signs, more energy savings from optimal routes and driving, development of new regions with newfound comfort when commuting 3) consumers’ pocket books: cars are often the second largest expense in a household, pay as you go and subscriptions become extremely cheap alternatives because autonomous cars drive 24/7, as opposed to cars being currently parked on average 23 hours per day in the world, insurance costs disappear when you don’t have a driver’s license, etc. It becomes difficult to see why governments and populations will not embrace this technology once it becomes good enough. It also questions many scenarios and projections currently used.

What it does not imply is an elimination of the significant new demand for minerals required for the green transition, as we wrote in our previous blog. Also, of petrochemicals, which are found in many parts of the modern energy system (including solar panels, wind turbine blades, batteries, thermal insulation for buildings and electric vehicle parts) and could account for over a third of the growth in oil demand in 2030, and nearly half to reach Net Zero in 2050¹. You often need to get a little dirty to get clean. Judging by the moderate price action of those sectors and the possibility of an even better buying window should an economic slowdown create a slump in sentiment, they are not to be overlooked.

Best regards,

Mount Murray Investment

¹ International Energy Agency