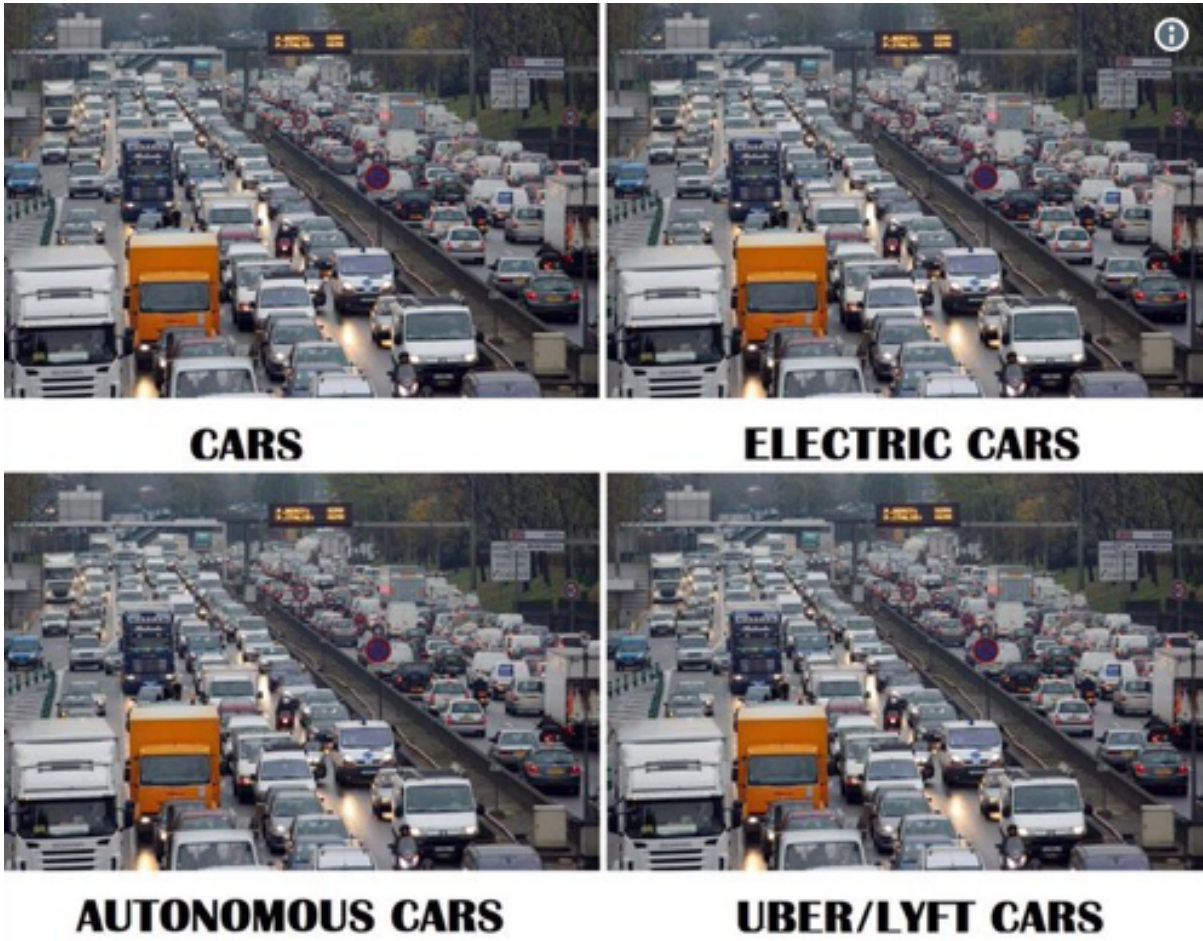


Electric Cars: No Road Forward

Electric cars rank as a top 'technofix' flagship. Yet they are still road vehicles! And, of course there are also many other vehicles clogging the road network (a total of some 1.2 billion and still set to rise to 2 billion by 2035 according to some estimates.¹ Just ask how big a difference it would make if all the vehicles pictured below were electric. On present trends, which electric vehicles would not change, by 2050, our still finite planet would 'accommodate' another 25 million kilometres of paved roads,— enough to encircle the Earth more than 600 times.²



'Green cars' are something of an oxymoron. All cars have, of course, to be manufactured, using a great deal of energy and raw materials (including a great deal of water) in the process, sometimes with worse impacts in terms of minerals used. Batteries now have to be manufactured in far bigger quantities with attendant impacts, including disposal of a fast growing number of dead batteries.³ Indeed it would lead sooner or later to sea-bed mining.⁴

They still have to be delivered to their users, including parking at sprawling dealerships. They still have to be powered by some means and, in the short term, that is likely to be fossil fuel electricity.

¹ https://www.greencarreports.com/news/1093560_1-2-billion-vehicles-on-worlds-roads-now-2-billion-by-2035-report

² <https://www.global-roadmap.org/media/publications/>

Roads are major causes of habitat loss and fragmentation eg

<https://www.sciencedirect.com/science/article/pii/B9780124095489109133>

³ <https://www.theguardian.com/environment/2021/aug/20/electric-car-batteries-what-happens-to-them>

⁴ <https://e360.yale.edu/features/the-race-for-ev-parts-leads-to-risky-deep-ocean-mining>

They still devour huge areas of land⁵ for roads, parking lots, service stations, home driveways, traffic lights, street lighting... They would still need traffic law enforcement officers and police patrols as well as take up court time and generate many, many hours of computer usage on insurance and claims etc. Suburban sprawl, the biggest land use disaster of the 20th century and one facilitated by the car, will still be suburban sprawl with all its costs, even its inhabitants get around by electric cars.



During their usage, their tyres and braking systems still pollute the air.⁶ There will be still be large-scale road kill⁷ and wildlife habitat fragmentation. Whatever vehicles use them, roads also open up new areas to logging, mining, plantations, suburban sprawl, second homes, long distance commuting, business strips, tourist resorts etc. And, as with all vehicles, electric ones (and their batteries) still need disposal at the end of their 'lives'.

If an electric car were to knock you down, it is probably not the case that you would feel that much better knowing that it was powered by electricity from a giant HEP scheme, vast monocultural solar farm or industrial size set of wind turbines. Still, if one were to run over you, you probably wouldn't be lying there worrying about any nickel, cobalt, lithium etc that might be in the battery and how they were mined and processed.⁸

⁵ This paper is a bit dated but it gives a flavour of the land taken by roads and related spaces: <http://www.ecologica.co.uk/pdf/CPRELandTake.pdf>. An alien space craft might well think that the Earth is inhabited by cars and that people are parasites who live off them.

⁶ <https://www.thisismoney.co.uk/money/cars/article-8079645/Tyre-wear-produces-1-000-times-harmful-pollution-car-exhausts.html>

⁷ Here is an Australian estimate:

<https://theconversation.com/10-million-animals-are-hit-on-our-roads-each-year-heres-how-you-can-help-them-and-steer-clear-of-them-these-holidays-149733> For figures for just one 'protected' American National Park, Yellowstone, see:

<https://www.hcn.org/issues/291/15268> For the UK:

<https://inews.co.uk/news/science/thousands-animals-run-over-uk-every-year-experts-warn-roads-more-dangerous-summer-952050> More generally, see:

<https://en.wikipedia.org/wiki/Roadkill>

⁸ <https://www.investmentmonitor.ai/.../batteries-are-bad...>

Some 65% of cars are occupied by just 1 person—the driver—and even a fully-occupied car takes up around twice as much space if it is full with passengers. The true space needed for cars is several times larger, because of stopping distances, necessary road markings, street furniture and parking. Cars generally sit parked and unused for 96% of their ‘lives’. Such statistics stay the same whether they are petrol, diesel or electrically powered.

We certainly need more research and development in the fields of alternative battery technologies.⁹ At the same time, we need to explore other forms of power supply. Thus there is a very strong case for new tram systems. But on-board batteries are expensive, heavy, limited in longevity and range. They require cooling which wastes more energy. These problems are apart from those associated with the energy and raw materials used in production. So, again, we need to call for more R&D, *perhaps* in the field of biomethane.¹⁰

Certainly, for every assembly plant there must be a ‘disassembly’ facility that will be able to deal sustainably with repair, reuse, recycling and safe disposal. We let nuclear power go ahead without such systems in place and now we face a dreadful problem with radioactive waste. The same is true of the plastics industry. We must not repeat such folly.¹¹

The basic issue is ultimately one of scale. There is a case for *some* electric vehicles, not least for those with mobility issues. That extends to, say, in-town electric mini-buses,¹² car-sharing schemes,¹³ electric bicycles, or ‘last mile’ delivery vehicles, including electric cargo bikes.

It is the notion that electrifying anything remotely like the scale of current vehicle fleet that is unsustainable.¹⁴ Sustainability requires a different vision to reformed ‘business-as-usual’ and different policies. Slow travel and less frequent journeys will require radical and complicated social reorganisation, not least a shorter working week, a shorter working day and more annual leave.

The problem is bigger than just a bit of dirt in an otherwise healthy engine.

<https://www.wired.co.uk/.../lithium-batteries-environment...>
<https://changeit.app/.../2021-03-26-environmental-impact.../>

⁹ I am not technically qualified to comment on this sample innovation and merely cite it as an example of the need to explore other options <https://aquabattery.nl/bluebattery/>

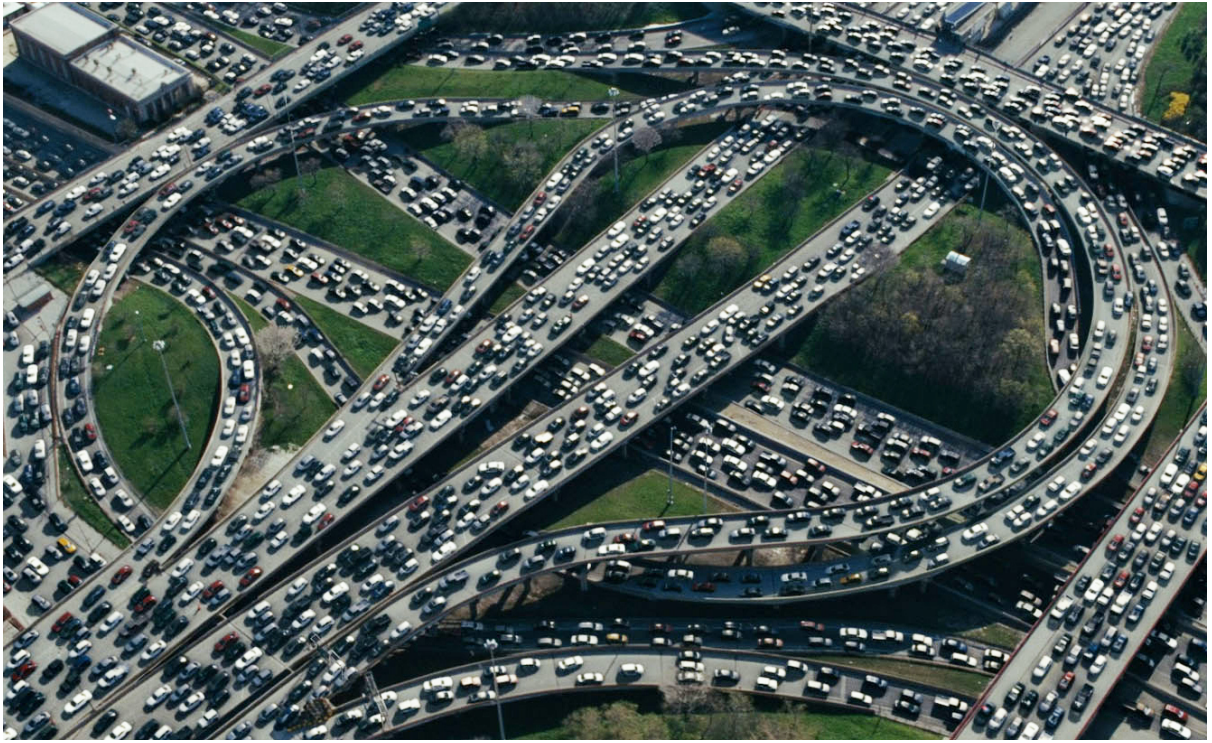
¹⁰ Eg <https://uktram.org/.../pre-metro-supports-innovative.../>

¹¹ (<https://insideclimatenews.org/.../inside-clean-energy.../> and <https://www.wired.com/.../the-race-to-crack-battery.../>). If we do not do this right now, we are going to face an insoluble ‘battery mountain’ (<https://www.science.org/.../millions-electric-cars-are...> and <https://www.theguardian.com/.../electric-car-batteries...>).

¹² Eg <https://www.visitljubljana.com/en/visitors/travel-information/getting-around/kavalir-getting-around-the-city-centre-by-electric-car/>

¹³ <https://www.zipcar.com/en-gb/flex/electric>

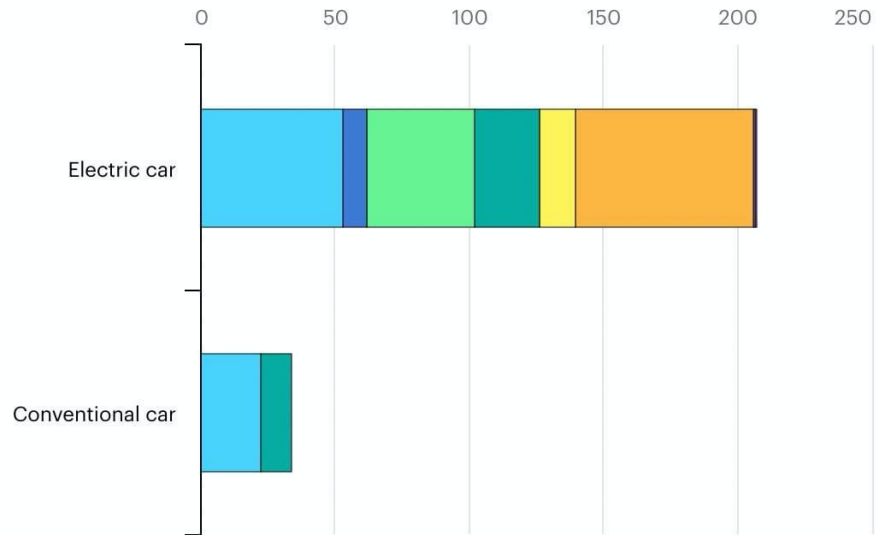
¹⁴ <https://pjmedia.com/news-and-politics/bryan-preston/2020/12/01/musk-electric-cars-will-require-a-lot-more-electric-power-than-we-currently-have-n1183962?fbclid=IwAR3Ld2pgYX1GUycJC3i285BRNO6o1qLv-1FxKzrf754ilDyf6O1r2BZDZs4>;
https://theyee.ca/Analysis/2022/01/25/Are-Electric-Cars-Solution/?fbclid=IwAR3302XkSgGhP2i5tezlFyFwz8g_1xpx31qLceuSvwjzJiEHLwy8Pp-z0
https://www.treehugger.com/electric-cars-footprint-still-too-big-5080916?utm_campaign=treehugger&utm_medium=email&utm_source=cn_nl&utm_content=21726032&utm_term=&fbclid=IwAR3JgudQK739vpno-BwEzXTnaMJNP1VCmV8odl7G5W66OvSD2SVI3AJ_ST0;
https://www.treehugger.com/are-electric-cars-part-climate-solution-or-are-they-actually-part-problem-4854209?utm_term=0_32de41485d-1e2fbd8936-243865541&fbclid=IwAR3zV3oWMv8xRQmQ5xSjNQ76UYBV8e5Fpyj7JfQLBg3PSiiHPCGQd2qelKk&utm_campaign=1e2fbd8936-EMAIL_CAMPAIGN_10_12_2018_6_55_COPY_01&utm_medium=email&utm_source=TreeHugger+Newsletters;
<https://www.bloomberg.com/news/features/2019-06-11/saving-the-planet-with-electric-cars-means-strangling-this-desert?fbclid=IwAR3ZPFTt2eYKl20SxZZAeFe4R0HLDmKuuwkn5dWd0kE1y6FZoBjf1XuVs>;
<https://www.dw.com/en/the-true-cost-of-electric-cars/av-46457917?fbclid=IwAR3VwQUDq-BhL5QkTTYNeMLFmhaU6Bs-i25xpAlcM03Q3-sFOEIJUo73Pqs>;
<https://www.nhm.ac.uk/press-office/press-releases/leading-scientists-set-out-resource-challenge-of-meeting-net-zero.html?fbclid=IwAR1nxBdZZNzT6UkeEJsZaAnFpBlhAdp1gReerni44t-KompONcIl6Zyxc4>



Minerals used in electric cars compared to conventional cars

[Open](#)

kg/vehicle



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- Copper
- Lithium
- Nickel
- Manganese
- Cobalt
- Graphite
- Zinc
- Rare earths
- Others



Mining for battery 'ingredients'

