



Will electric vehicles muffle future oil demand?

Assessing the long-term outlook of oil demand fundamentals and the supply role of the US

The rise of US shale oil over the past decade has upended previous energy market norms, leading to uncertainty over supply trends and heightened volatility that ebbs and flows even today. Furthermore, the emergence of renewable energy in power generation and electric vehicle (EV) proliferation have created additional uncertainty about future oil demand.

However, we believe, some basic macro-level trends have emerged that will define the “new normal” in US shale. First, the productive, low-cost nature of the principal US oil and gas shales may lead to continued production growth for the foreseeable future. Second, despite the likely ramp up in renewables and EV adoption, oil and natural gas will still be heavily relied upon for transportation and power generation for an extended period.

Evaluating the proliferation of electric vehicles

While we plan to address all the issues discussed above in future blogs, we will address the EV proliferation in this one. Given the visible presence of EVs on the road today, we are frequently asked about the impact of electric vehicles on the oil market, and many of the questioners assume that the growing EV adoption will lead to oil’s demise.

We believe that even in a world with vastly more EVs, global oil demand will remain robust for decades, because of two factors: first, an overall global vehicle fleet predominantly powered by internal combustion engines (ICE), and second, rising motorization rates in developing economies and even some developed countries, most significantly China.

Though EVs will undoubtedly capture a larger share of new vehicle sales going forward, sales of ICEs are forecasted to be higher than EVs for another 20 years.¹ Also, new vehicle sales in a given year still represents a small fraction of the existing fleet on roads today, which are almost exclusively ICEs. To illustrate, global passenger EV sales in 2018 were approximately 2 million vehicles, which represents 0.2% of the approximately 1.2 billion light-duty vehicles in existence. So even as EV sales see strong growth, the composition of the overall vehicle fleet will likely be dominated by ICEs for decades. In fact, Bloomberg New Energy Finance (NEF) projects that light-duty EVs will account for 30% of new vehicle sales by 2030 but only 9% of miles driven.²

Future EV sales, in our opinion, will be sensitive to advances in battery costs and cell densities, government directives, supply chain expansions, access to rare-earth materials, and consumer preferences, among other factors. Regardless, most major auto manufacturers have announced or reaffirmed plans to materially expand their EV product lineups. However, to put these projections in context, the 2030 sales forecast cited above assumes approximately 28 million EV units sold per year. Tesla, the world’s largest EV manufacturer, currently produces less than half a million EVs annually at its facility in California.³ With an additional plant currently under construction in China and a planned facility in Europe, Tesla will be expected to produce, in aggregate, roughly 1 million vehicles annually by 2022. So, while many entrenched, upstart auto manufacturers are investing heavily in the production infrastructure and manufacturing of electric vehicles, selling 28 million EVs per year within the next decade will likely require a significantly higher investment.



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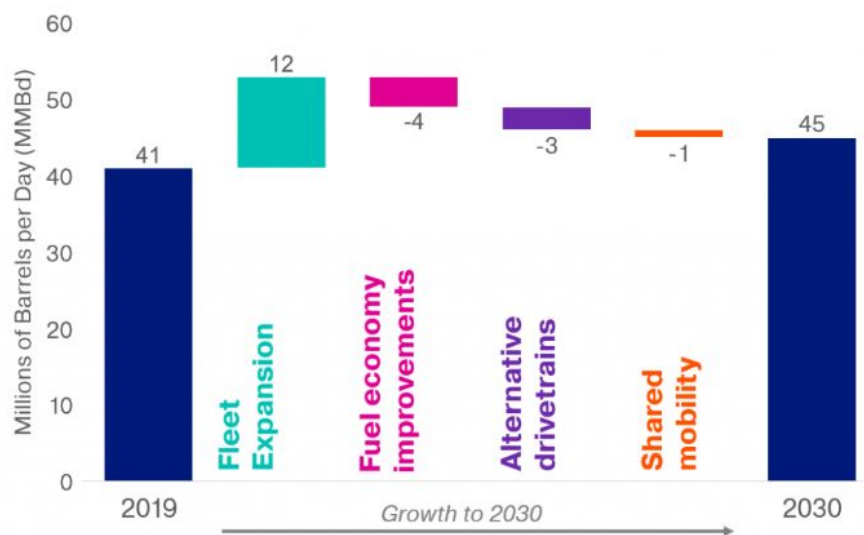
Oil demand and EVs set to rise

Even if EV manufacturing manages to meet the above forecasts, oil demand from road transportation is projected to grow because demand losses from fuel-efficient and electric vehicles will be likely offset by the growing global vehicle fleets. A growing global population and economy will require larger vehicle fleets, especially in countries with currently low motorization rates. To illustrate, vehicles per capita (road motor vehicles per 1,000 inhabitants) were 811 in the US, 179 in China, and 22 in India. The current global road transportation fleet consisted of approximately 1.2 billion light-duty vehicles (LDV) and 220 million heavy-duty vehicles (HDV), which together consumed approximately 41 million barrels of oil per day (MMbpd).⁴

By 2030, the combined LDV and HDV fleet is projected to grow by 28% to 1.8 billion units. That would increase oil demand growth by 12MMbpd without taking into account any future fuel economy improvements or increased EV adoption rates.⁵

Unquestionably, though, we believe both fuel economy standards and EV adoption rates will increase in the years ahead. But meaningful progress on both of these fronts may only partially offset the impact of a continuously growing global vehicle fleet. According to Bloomberg NEF, the road transportation fuel demand will still grow by 4MMbpd or 10% above the current levels. That forecast operates on two assumptions: first, that by 2030, EV sales will rise to 28 million units (or about 30% of total vehicle sales), and second, fuel economy standards for new vehicles will improve by 76% in the US, China, and Europe.

Figure 1: Change in road-fuel demand



Source: Bloomberg NEF, 2019 Road Fuel Outlook, 5/30/2019 There can be no assurance that estimated forecasts will come to pass

Therefore, when one considers the macro impact of EVs' proliferation on the energy markets, it is important to understand the relative scale of EVs.

Oil demand is diverse

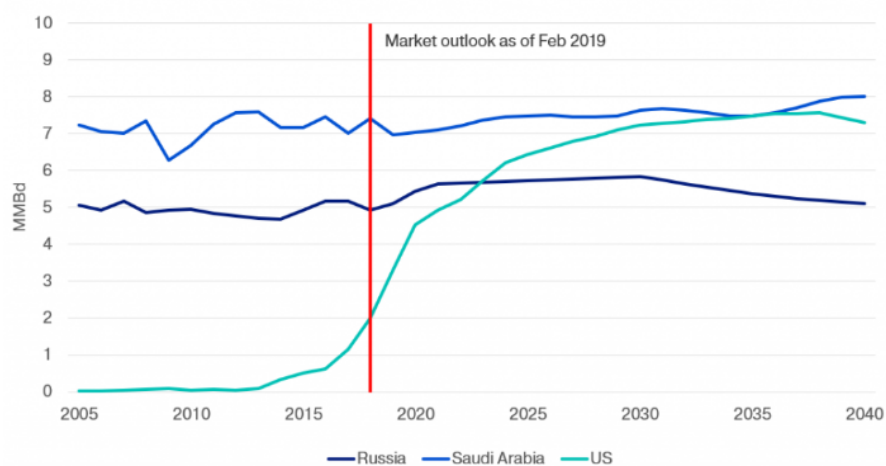
Furthermore, it is important to remember that the demand for oil is not solely dependent on transportation. In fact, road transportation accounts for less than half of oil demand (45%), while chemicals and other oil dependent industries account for 26%, residential and commercial 11%, and aviation 6%.⁶ In particular, demand growth from petrochemicals—feedstocks for materials used in consumer electronics, automotive, medical equipment, construction, and textiles—is expected to be healthy and driven by improving living standards and continued economic development globally. McKinsey, a global management consulting firm, projects a 46% increase in oil demand from petrochemicals for 2018-2035.⁷ To this end, massive investments are being made in the US for new petrochemical facilities. Wood Mackenzie, a leading commodities research and consultancy group, estimates \$200 billion worth of projects have been announced since 2010.⁸

Conclusion

We believe the global outlook for oil demand is less precarious than expectations about the impact of EVs would suggest, simply because of the relative size of the current EV market. According to Wood Mackenzie, nearly \$200 billion worth of projects have been announced since 2010, which further removes any issues that could arise from global supply and demand dynamics. As discussed above, the incredible productivity and low-cost nature of the principal US oil and gas shales may lead to continued production growth, and therefore energy infrastructure volume growth, well into the foreseeable future.

In fact, the US—which became the world’s largest oil producer last year—is set to become one of the largest, if not the largest, global oil exporter.⁹ IHS Markit, a global research and information provider, estimates that the Permian Basin will contribute more than 40% of the growth in oil supply from now until 2030. By then, only Saudi Arabia and Russia would be bigger producers than the Permian Basin. Increasingly, the US may be relied on not only to meet global demand growth, but also to offset supply declines in other countries with less competitive resources.

Figure 2: Forecasted oil exports



Source: IHS Markit, North American Natural Gas Long-Term Outlook, February 2019 **There can be no assurance that estimated forecasts will come to pass. Past performance is not a guarantee of future results.**

DISCLOSURES**Footnotes**

1. Source: Bloomberg NEF, 2019 Road Fuel Outlook, May 2019
2. Source: Bloomberg NEF, 2019 Road Fuel Outlook, May 2019
3. Source: Tesla as of 6/30/2019
4. Source: Bloomberg NEF, 2019 Road Fuel Outlook, 5/30/2019
5. Source: Bloomberg NEF, 2019 Road Fuel Outlook, 5/30/2019
6. Source: McKinsey as of 6/30/19
7. Source: McKinsey, Global Energy Perspective 2019, January 2019
8. Source: McKinsey as of 6/30/19
9. Source: Energy Information Administration, October 2018

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