TD Asset Management

Investor Knowledge 10 Minutes

Will peak oil ever happen?

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At a glance

- The advent and growth of electric vehicles will ultimately have an impact on the demand for oil.
- From an oil supply perspective, in the near to medium term, we feel there is a rather balanced market where the Organization of the Petroleum Exporting Countries (OPEC) has enough control to smooth fluctuations and keep oil prices range-bound.
- The $70-$90 per barrel of oil is a sweet spot that is acceptable to both producers and consumers.

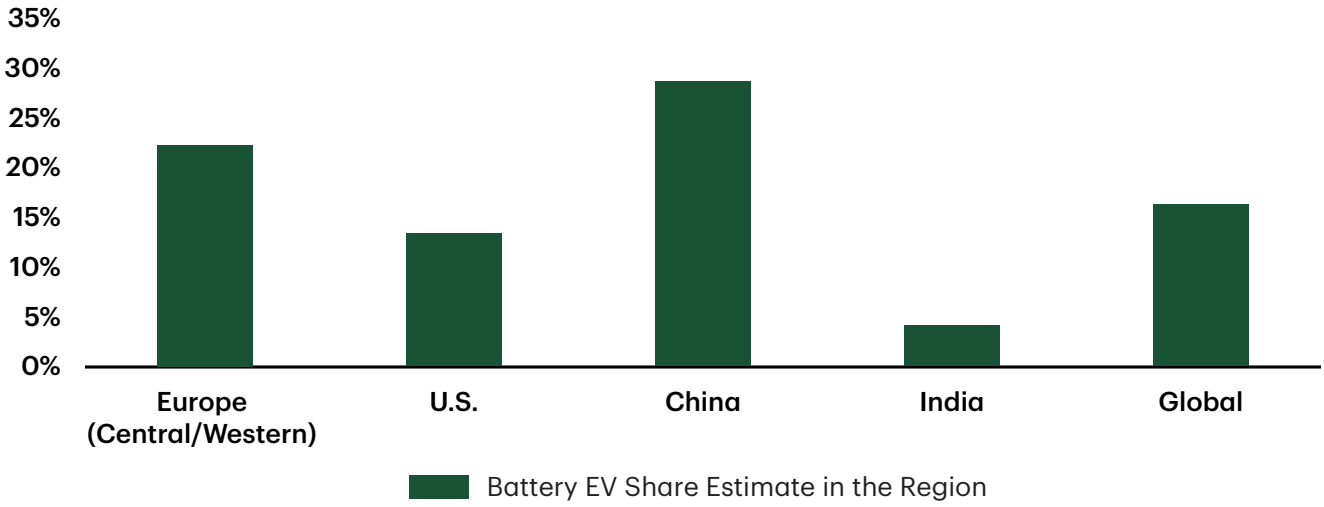
The term “peak oil” has been floating around for decades and refers to a theory about the point in time when the amount of oil that can be physically extracted peaks, which is then followed by an irreversible decline in production. So far, this peak event hasn’t been reached on a global level.

Historically, it was thought that the eventual depletion of known oil reserves would be caused by a secular decline in oil production, however, a new theory has recently been proposed. It states that reductions in the actual demand (or global use) for oil may reduce the price of oil. This can largely be attributed to an increased deployment of clean energy technologies to reduce carbon emissions.

The impact of electric vehicles (EV)

EV euphoria took over the auto industry over the past several years and automobile manufacturers announced very ambitious EV sales growth targets based on their visions for an EV future. Today the hype is dwindling, and EV adoption is slower than expected. In Europe, adoption of EVs has been flattish for the past two years. And this isn't just a European trend. North American demand for EVs is also weaker than expected[1]. EVs have won over the early adopters, but the vast majority of consumers aren't quite ready to follow. Why?

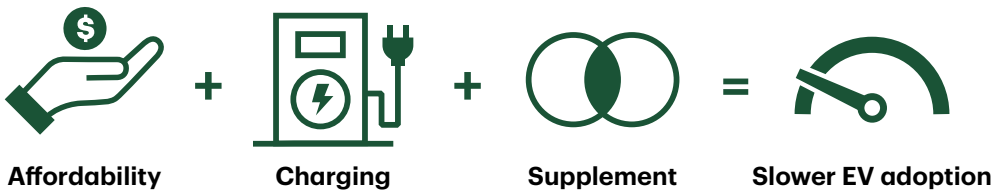
Battery EV market share estimates for 2024



Source: S&P Mobility. Data as of Dec. 31, 2023.

There are a few key reasons that have slowed EV adoption and these barriers need solutions before the forecasted growth can skyrocket. These include:

- **Affordability** – EVs still remain much more expensive than their traditional combustion engine counterparts.
- **Charging** – Aside from the expense of installing a home charger, many in North America and Europe don't have access to home charging (particularly in large metropolitan areas).
- **A supplement, not a replacement** – Many consumers who have purchased EVs are not outright replacing petrol-powered vehicles. Instead of fully transitioning to electric power, consumers are often supplementing their personal fleets.



The broad return to a more mixed offering of vehicles — with lineups of gas-powered vehicles alongside hybrids and fully-electric options — still assumes an all-electric future, eventually, but at a slower pace of adoption than previously expected.

What does it mean for demand for oil?

The advent and growth of EV will ultimately have an impact on the demand for oil. But by how much and how soon? To evaluate the impact, we consider a few key factors that we feel will influence the demand for oil the most.

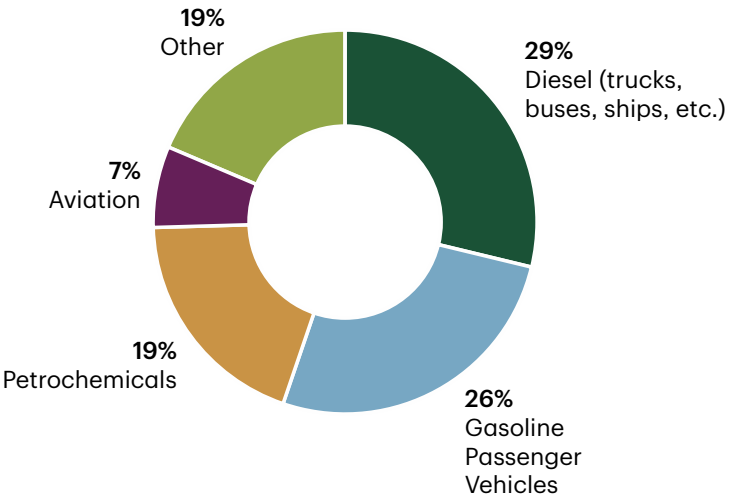
> **The advent and growth of EV will ultimately have an impact on the demand for oil.**

Demand by product – As of today, passenger vehicles and gasoline account for about ¼ of total oil demand. How about the other ¾ of oil demand[2]? Some of it – like diesel trucks or buses, can be electrified eventually, but we are still in early days. Others – like aviation or maritime will require more innovation and yet more time. Finally, there are parts of oil demand that we can't easily substitute – like petrochemicals, which will grow for decades to come. While the trend to cleaner energy is moving in the right direction, a large portion of the demand for oil will likely be around for a long time.

Transitioning to electricity is not cheap – The main idea of energy transition is to use low-carbon electricity sources to replace oil, coal and other carbon-heavy energy sources. However, rapid energy transition makes electricity more expensive, which is a headwind to energy transition. An example of this can be found in two regions that decided to accelerate their transition to renewable power. In Germany, their energy now sits at 50% renewable, but the average electricity price has also increased 70% since 2010. The second example is Canada (specifically Alberta). The province decided to accelerate the move away from coal, and in the process its power prices spiked, up 8 times at the peak and still up 4-5 times compared to prices several years ago[3].

Demand by region – Developed countries are becoming more energy efficient, which is good. However, emerging markets (EM) need more energy. Emerging economies are slowly catching up to the energy demand of developed countries and in the coming decades we will add at least another billion people to the total population. Most of these people will be in EM and energy consumption per capita in EMs will continue to grow[4]. We often hear terms "energy transition" and "climate change", but rarely hear about "energy poverty". The reality is that over a billion people globally use wood and other biomaterial as their primary source of energy and have little or no access to electricity.

Passenger vehicles represent a mere 26% of all OECD demand for oil



Source: OPEC World Oil Outlook 2023

Key takeaway – We feel oil demand will peak in the next 5-10 years and several major oil producers forecast that oil demand will peak by 2030. Thus, major oil producers are gradually pivoting capital expenditures towards integrated gas (which is expected to peak much later) and lower carbon technologies (renewables – wind and solar, hydrogen, fast charging etc.)

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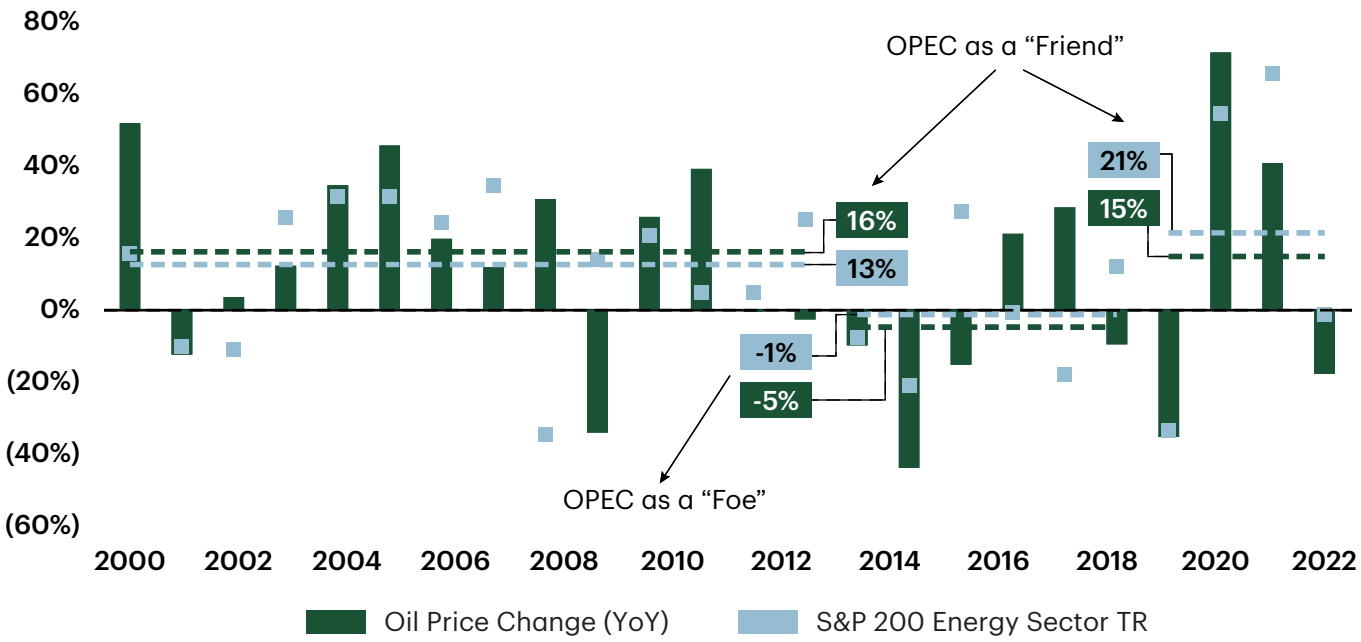
What is happening with oil supply?

If we look at the U.S, which has been the major driver of new production growth over the past decade, its production growth has reached a plateau of around 13.2 million barrels per day in recent months and it isn't clear how much more U.S production can grow in the next few years. Moreover, the ratio of gas to oil production from oil wells in Texas continues to increase[5], which usually indicates that an oil field is starting to mature. If energy transition takes longer than expected and the U.S shale industry won't grow as much as it used to, is it possible that the worries about "peak oil" will come back to haunt the global economy with an oil price spike once more?

It seems quite unlikely at this point. In the short term, OPEC has about 4-5 million barrels per day of spare production capacity, which alone would be sufficient to meet approximately 2-3 years of global oil demand growth. On top of that, oil producers outside of the OPEC and U.S also continue to increase production with most growth in recent years coming from Brazil, Guyana, Kazakhstan and Canada[2].

OPEC's ability to control the oil market is critical for oil and energy returns



Source: FactSet. Data as of March 31, 2024. YoY = Year-over-year

Production

It is notable that the Energy industry has reduced its capital investments after the COVID-19 Pandemic and there are some concerns about the industry underinvesting relative to expected future demand growth. And that could become an issue at some point in the future since some of the oil projects, such as deepwater offshore platforms, take multiple years to construct. However, it does not appear to be a problem currently. First, Saudi Arabia had a plan to expand its production capacity by one million barrels of oil per day by 2027, but it scrapped this plan earlier this year. It wouldn't have done so unless it believes that the market will be well-supplied within this time frame. The second reason why we should not worry about peak oil is that unlike in early to mid-2000s, shale technology has grown to be a major source of supply. U.S shale is providing approximately 10 million barrels of oil per day or nearly 10% of global supply and all of this capacity was built up over the past 15 years[5].

One potentially bearish argument for oil in the long term is that shale technology might become more widespread in other regions in the future, unlocking new areas of supply growth and tipping the global oil market into an oversupplied position. As of now, some shale technology, which is basically directional (horizonal) drilling and fracking are being used to some extent in countries like Argentina, China and Saudi Arabia, among others. But shale deposits are quite common around the world, and we could see other countries turn to this technology to boost their energy security. The fast rate of adoption of shale technology in the U.S was explained by the presence of existing infrastructure, availability of skilled labour and capital to fund fast growth. Other countries may take longer, but we should expect more shale oil production from other regions in the future.

Key takeaway – From an oil supply perspective, in the near- to medium-term, we have a rather balanced market where OPEC has enough control to smooth fluctuations and keep oil prices rangebound – at a high (but not too high) level of around $80. The capital discipline of public Western oil companies, which prefer returning cash to shareholders rather than reinvesting into production growth, will also help keep the market balanced. However, growth outside of OPEC and the U.S, particularly in offshore Latin America, Africa and Asia as well as growth in shale production outside of the U.S risk oversupplying the oil market longer term, especially if energy transition indeed results in peak oil demand around 2030.

> **OPEC has enough control to smooth fluctuations and keep oil prices rangebound – at a high (but not too high) level of around $80.**

In summary

Energy transition is not a buzzword or a flavour of the month – it is real and growing. The popularity of EVs will continue to grow. While the speed of growth won't be even over time or by region, it's likely going to continue in an upward trajectory. The demand for oil will have to peak at some point and will decline, but the reality is that we will be using oil for a long time. On the supply side, there is no shortage of oil in the ground and investors need to be mindful of OPEC actions. Finally, $70-$90 oil is a sweet spot that is acceptable to both producers and consumers and oil is likely to stay range-bound. Investors just need to keep in mind that in the world of commodities, things always change.

Energy

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[1] S&P Mobility. Data as of Dec. 31, 2023.
[2] OPEC World Oil Outlook 2023.
[3] Clean Energy Wire, Our World in Data, as of Dec. 31, 2023.
[4] OECD. Data as of Dec. 31, 2023.
[5] Energy Information Administration (EIA), Data as of Dec. 31. 2023.

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