

SUMMARY OF SOME KEY ENERGY DATA

April 14, 2024

1. Global use of oil: 70% of oil is used by planes, trucks, autos, ships/boats, and other transport, 3% for heat/power, and 27% for petrochemicals (Pet-chems).
2. Global auto fleet (12/23): 1,185,000,000 vehicles; EV's: 22,000,000 (1.9%).
3. Global auto fleet estimates (2035): 1,973,000,000; EV's: 150,000,000 (7.6%)
Unfortunately, EV future fleet estimates are likely too high, as the fastest growing category of autos in 2024 are hybrids, led by Toyota, and now Honda, and Ford Motor. The "low hanging fruit" for EV sales has taken place and there is a change in consumer purchase patterns away from EVs turning toward a preference for hybrid vehicles.
4. Petrochemicals/Plastics for containers and packaging are made from oil and natural gas turned into natural gas liquids and then into feedstocks from petrochemical plants to make ethylene and then polyethylene, polypropylene. These are the most common plastics in use today: shopping bags, water bottles, catheters, clothing, iPhone cases, face masks, sanitary products, appliances, medical sutures, food containers, carpets, furniture, and plastic drinking straws. Asphalt comes from the bottom of the barrel of refined petroleum and is used to pave 90% of our country's roads. The inconvenient truth is that petrochemicals are ubiquitous and indispensable.
5. As we said in our first two Energy Realty papers, the world needs all sources of energy: oil, natural gas, nuclear, hydro, solar, wind, hydrogen, and yes, even clean coal power for the remainder of this century. Government policies that hollow out worldwide oil and gas production damage normal trade flows. The result not only increases energy prices, but also raises prices across the board on a multitude of products. All of us depend on affordable fossil fuels for a high standard of living.

IN-DEPTH DISCUSSION OF FOSSIL FUEL SOURCES AND FUTURE PRICING TRENDS

FMR's "Energy Reality" research papers of the past two years covered supply and demand for oil, the energy transition, CO2 emissions, renewables, electrification, and new technologies in battery storage. FMR maintains a significant client portfolio overweighting in the energy sector supported by very strong "reality" fundamentals, along with good data on the global oil market. The outperformance of FMR's pipeline and exploration and production companies along with strong balance sheets and dividend payouts has not

been a surprise for FMR. FMR expects continuing strong returns over the next five years at a minimum. WHY?

The West Texas Intermediate (WTI) oil price index is \$86.00/barrel, the U.S. price for oil. The BRENT crude price is now at \$90.00/barrel, and is the international oil price. WTI is up 17% year to date and Brent is up 14% year to date. Four important data points help explain the worldwide rising oil prices and the relationship to the stock market's current obsession with inflation and interest rate cuts.

1. World-wide global demand has historically grown at roughly one half the rate of global GDP. Over the past several years there have been numerous rumors that: demand is collapsing because of China's weakness; inventories are too high; or whether Russia is sneaking increased production to China or India (they are). The simple message is that demand does not move violently in either direction, and has grown consistently, year in and year out. Demand in Q1 2024 is estimated at 102.7 million barrels per day (mbd). A demand growth increase of 1% is not herculean, nevertheless that means 1.02mbd of new production would be required to hold supply/demand stable. The U.S. is the ONLY non-OPEC+ country that is increasing its production, now running at slightly more than 13mbd. Given the negative climate for U.S. energy production, the U.S. is unlikely to bridge this supply shortfall.

2. OPEC+ (13 oil producing countries + Russia) is dominated and led by its largest producer, Saudi Arabia. Mohammed bin Salman, Crown Prince, has a national budget of \$378 billion and oil income of \$261 billion. Accounting for projected oil exports, the implied per barrel revenue in price that Saudi needs to balance their budget is \$102/barrel. OPEC members have each agreed to a specific reduction in production of oil to move oil prices up to help meet their domestic budgets. Saudi has cut another 1mbd of oil production for the first quarter, on top of a previous 1mbd cut. The current oil market assumes these OPEC cuts will continue to at least the end of the second quarter or until the Brent crude oil price is near \$100/bbl.

3. A significant, but hard to find number, is the level of world-wide inventories. This is one of the best barometers for slack or tightness in the supply and demand for oil. World-wide inventories are now down 765 million barrels to 2.4 billion barrels, the lowest level in 40 years! This level of inventories has occurred while the U.S. has been selling, in the open market, more than half of our strategic petroleum reserves (SPR reserves). Our fundamental take away from this data is the inevitability of higher oil prices.

4. On top of the above, is a fourth factor which is very important. It has become clear that a free, fungible, and financialized global oil trading market has changed as a result of the wars in Ukraine, or with Israel's war with Hamas, Hezbollah and Houthis. Also, the continued attacks along the important Red Sea oil shipping lane has the potential of escalating into a more direct Iran-Israel war. Adding to these geopolitical "black swans" is China's threatening stance around Taiwan and its arming of islands in the South China sea within the critical shipping lane to South Korea and Japan. Finally, there is currently significant reduced ship traffic flowing through the Panama Canal due to record low rain and water levels.

Among all commodity markets in the first quarter of 2024, the commodity up the most in price is COCOA, + 132%. The second largest commodity price increase is GASOLINE, up 31% in the last three months. HOW IS THIS RELEVANT TO OUR OUTLOOK?

The FMR overweight of energy in client portfolios for the past few years is supported by the hard data and fundamentals discussed above. We would also add, without much more data, that U.S. oil production is rising very slowly as virtually 90% of increased oil production is coming from on shore shale fracturing, where depletion of producing wells falls off rapidly after the first year. The life expectancy for a shale well is only five years. FMR estimates U.S. oil production will be flat to a very modest annual increase from year end 2023 (current production is 13.3mbd).

Capital expenditures (CAPEX) in the oil industry have declined \$3.7 trillion over the last ten years. While the U.S. is the largest producer of oil and natural gas in the world, the industry has been constrained by a variety of new regulations. Major reductions in permits and new offshore leases in the Gulf of Mexico, as well as in Alaska, have slowed U.S. production growth. The U.S. is likely close to the twilight of shale as the majority of the large shale basins have been identified. Currently, the U.S. is a net importer of 2.5mbd. This imported oil is specifically heavy oil (diesel) as U.S. refineries were built to process heavy oil, not light oil (gasoline), and U.S. shale basins produce light oil. It would be ideal if the imported heavy oil was transferred from Canada. However, the U.S government banned the building of a new pipeline connecting to our Gulf coast refineries for heavy oil. Hindsight is short sighted in this specific decision as Canada is a more reliable source of heavy oil and the U.S is now forced to buy the heavy oil from Venezuela.