Morgan Stanley

WEALTH MANAGEMENT CANADA



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Part One. Power Play: Energy Sector Upside Potential on Long-tail Transition

Executive Summary

- The transition route to Net Zero Emissions (NZE) established by the 2015
 Paris Agreement may be a turbulent one given a curtailed supply of
 traditional energy, while demand has yet to fully adjust. On the other side of
 energy transition lies a new, stable system, but the transition also entails
 risks that may be hedged with exposure to the energy sector.
- While the supply side of the oil market has become increasingly responsive to expected changes in the far future with reduced capital spending, changes to demand have been less responsive. Combined, this means prices are likely to be higher on average, but probably more volatile as well.
- Investors can participate in the energy transition with exposure to Canadian Energy. We believe that Canada's Oil & Gas industry can play a critical role in energy transition over the coming decades despite a less enthusiastic view from the market. Growth investments in new cleaner energy businesses are in the early stages for most, but supportive policy could allow them to scale more rapidly (and economically) than expected.
- The Canadian Energy sector is currently trading at the steepest discount to long-term average valuations relative to any other sector in the S&P/TSX Composite Index. We believe this pessimistic outlook reflects significant uncertainty related to the future demand for oil and gas, but at the same time, does not reflect the potential for narrowing West Texas Intermediate and Western Canadian Select crude price differential (known as the 'WTI-WCS differential') over the near-term, nor a decline in growth investments of renewable technologies over the long-term. With renewed capital discipline, evident by market leading free cash flow yields (+8%), investors in Canadian energy have exposure to potential dividend growth (+6% current dividend yield).
- Canadian energy producers do not need a high price of oil to be sustainable.
 Analysis suggests that the producers can sustain capital expenditures, meet dividend payments, net zero emission targets, and retire their outstanding debt with WTI above \$65 per barrel (current price ~\$80 per barrel). While we expect more price volatility for oil in the long-term, the sustainability of the sector above \$65 per barrel provides perspective on the downside case for Canadian energy.

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Transitioning to Net Zero – How and When?

The transition route to Net Zero Emissions (NZE) established by the 2015 Paris Agreement may be a turbulent one given a curtailed supply of traditional energies, while demand has yet to fully adjust. On the other side of an energy transition lies a new, stable system, but the interim entails risks that may be hedged with continued exposure to the energy sector.

Canada's Net Zero Goals: According to the International Energy Agency's Canada 2022 Energy Policy Review, "Canada has made a series of international and domestic commitments, putting the country on a path towards an ambitious transformation of its energy system, while remaining a stable and reliable supplier of energy to the world. Most recently, Canada set a target to cut greenhouse gas emissions by 40-45% from 2005 levels by 2030 and legislated a commitment to reach net zero emissions by 2050."

Specific targets set by the Canadian Federal Government include:

- Requiring the oil and gas sector to be net-zero by 2050 and setting interim five-year targets.
- Requiring oil and gas companies to reduce methane emissions by at least 75% below 2012 levels by 2030.
- Creating a 100% net-zero electricity system by 2035; and
- Providing support for domestic procurement of Canadian clean technology.

While NZE implies major shifts in the energy sector, we believe that Canada's energy sector may provide investors with sustained dividend and capital appreciation over the coming decade, assuming a reasonable outlook for the price of oil. Alternatives to fossil fuels will eventually scale to compete with traditional energy sources but there are potential headwinds to supply and demand which may lengthen the expected transition period. This may result in greater price volatility to both the upside and downside, a risk we believe investors can hedge with exposure to the Canadian energy sector.

In this two-part series, we discuss important considerations for investors in the energy sector:

- Part one: A potentially longer than anticipated transition period
- Part two: Hedging the risk of a longer than anticipated transition period with Canadian Energy exposure

Part One: A turbulent transition period due to an imbalance of demand and supply

For over 100 years, oil has transformed the global economy and lifestyles of most of the world's population. Oil is not only the dominant fuel for transportation but is also found in everything from textiles to sporting goods, and from electronics to medical supplies. It is the second-most abundant liquid on Earth after water.

How much energy do we need? Global energy demand is driven by three factors: population growth, rising average

wealth levels and the uneven nature of energy consumption. According to the World Bank, the population grows by approximately 1 billion people every 13-14 years. Based on Organization for Economic Co-operation and Development (OECD) data, every 13-14 years, GDP per capita in real terms increases by around 35%, and energy consumption per capita ranges from 280GJ per year in the US, to 28GJ per year in India. Furthermore, MS & Co. Research, believes that should energy-use per capita continue to rise in tandem with above-average consumption in select geographies, the total energy demand curve will be upward sloping.

Total global energy demand will rise, while oil's share of the pie will decline over time. Over the last few decades, the liters of oil consumed per US\$1,000 of global GDP have steadily declined, falling from 100 liters in the early 1980s to 65 liters today according to the International Energy Agency ("IEA"). Despite oil's decline as a share of global GDP, the net demand for oil has increased. Conversely, the IEA's base case foresees annualized improvement in energy intensity of 2.4% from 2021 to 2030, contributing to linearly declining oil demand which is expected to reach a peak of 107 million barrels per day (mb/d) by 2033, which is still higher than the 99.2 mb/d consumed in 2022. Morgan Stanley & Co. LLC ("Morgan Stanley") expects oil's incremental market share of global energy will decline by some 0.50% per year over the next decade, while still leaving considerable demand thereafter.

Growth in the Electric Vehicle (EV) fleet may further erode oil's dominant share of global energy demand. The decline in oil demand above does not account for a rising share of EVs on the road until about 2035, according to Morgan Stanley research. The IEA expects EVs to represent 60% of new global auto sales, and significantly contribute to decline of demand for oil and gas. Currently, the IEA expects a 29% decline in oil demand by 2033 and 7% decline in natural gas relative to 2019's demand figures.

Though NZE poses a clear threat to the demand for oil, there are some caveats to consider before completely discounting global dependency on the commodity.

1) It may take more time for EVs to become a meaningful share of the global auto fleet. The IEA's NZE scenario expects that by 2030, EV's will account for 60% of new car sales and will have also grown to represent 20% of total cars on the road. But in the case of Norway where EVs have exceeded the 60% target of new car sales in 2022), EVs accounted for only 12% of the cars on the road and total oil consumption remains unchanged according to Morgan Stanley research.

According to the Harvard University Weatherhead Center for International Affairs, while oil only accounts for 32% of the total global energy market, most of this demand is attributable to the transportation sector, which also

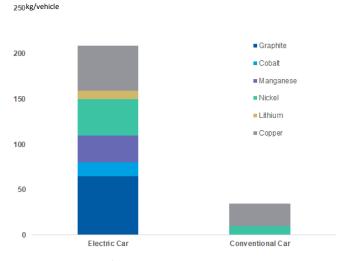
represents the single largest source of demand increases—especially in developing countries like China and India where the number of vehicles is growing rapidly. Global energy consumption will continue to shift proportionally to developing economies over the next thirty years, where population and economic growth are faster than the global average.

We believe that the global outlook on oil demand is founded on an implied global transition away from combustion engines towards EVs and any disappointment could lead to a strong price response in oil.

2) Scarcity of key metals required for EV production, have led to additional supply/demand asymmetries, further slowing the transition to NZE. According to BCA Research Inc., supply-demand fundamentals for key metals in the EV transition will remain tight over the coming decade. The US, Europe and China are all upping the ante to play in the global transition to renewable energy through extensive fiscal spending programs. Ambitious NZE timelines and EV production goals will drive competition for key metals and hinder EV penetration amongst global auto fleets exacerbating the capacity constraints experienced today.

As shown in Chart 1 below, EV production requires a substantially larger and more diverse supply of key metals when compared to conventional cars. Furthermore, China dominates many key metals' supply chains, and given current geopolitical tensions between China and G7 countries, we believe there are risks to the scalability of EVs in the nearterm.

Chart 1. Input metals required for Electric and Conventional Cars



Sources: BCA Research Inc., IEA.

- 3) Infrastructure projects to upgrade power grids shouldn't be underestimated. With an expected global EV fleet outpacing the growth in combustion engines, existing power grids will have to be updated and enhanced to support increasing demands for electricity. The problem with existing power grids is they tend to be geared toward handling fixed power loads from dedicated plants located near consumers, and thus transmission lines are designed to be as short as possible. Projects to upgrade power grids may face delays in government support and additional costs where re-routing of transmission pathways is required, which poses a risk to NZE transition timelines. The IEA estimates investment in electrical grids will need to average \$600 billion annually through 2030, (double the current yearly spend) to hit NZE targets.
- 4) Uncertain monetary policy is also not helping the transition to net zero. Global central banks have tightened monetary policy over the last 18 months to combat decade high inflation. Much like the cost of money, hurdle rates for new mining projects have risen, leading to the potential delay or cancellation of much-needed projects to meet the demands of NZE targets. Since many of these projects require lead times of over 15 years, it may further constrain the alreadytight supply market for copper and other metals required for the transition to NZE. In addition, the short-term inflationary effects of transitionary spending required to reach NZE may contribute to elevated interest rates, and perhaps an elongated transition period.

To conclude on the demand side, we see these four potential hurdles running contrary to the consensus view that the demand for oil is going to materially decline by the end of this decade. We note there is a wide range of estimates to what oil demand might be over the coming decades.

There is potential for large divergence between what will happen and what policymakers wish to happen. As such, we believe that energy exposure may potentially hedge portfolios against a wide range of outcomes.

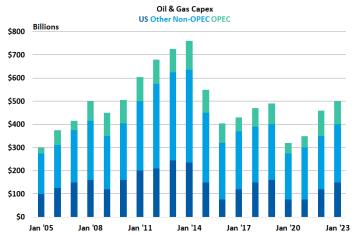
Now, we explore the supply side trends that founded our expectation for greater oil price volatility.

Oil Supply Begins to Position for Net Zero

The underinvestment in commodity supply over the last decade is poised to continue as the expected transition to a lower-carbon economy creates uncertainty about future demand for energy and other commodities. We also believe that supplies will struggle to meet demand, price pressures will likely ensue.

As shown in Chart 2 below, the global Oil & Gas sector reached peak Capital Expenditure (CapEx) in 2014 around US\$780 billion, which then declined to a trough of approximately US\$350 billion in both 2020 and 2021 – less than half the spend of 2014. CapEx is expected to decline to about US\$500 billion for 2023. Note that over the post-pandemic period, most of the increase in nominal spending has been due to inflation, so real spending has been well below previous levels of required spending.

Chart 2. Global Oil & Gas Capital Expenditures (US, Other Non-OPEC, and OPEC)



Source: RBC Global Asset Management Inc., Wood Mackenzie. Note: OPEC refers to the 13 members of the Organization of Petroleum Exporting Countries (OPEC). OPEC+ includes 11 other non-OPEC members

According to the U.S. Energy Information Administration (October 2021), the global base supply of oil is expected to decline at a 6% CAGR from 2020 to 2040, a decline which is set to outpace the shrinking demand for oil. Since oil and natural gas are depleting resources, underinvestment over the long-term may result in higher price volatility for the commodity.

New oil supply may take some time to come online, which may support pricing power. According to Morgan Stanley research, if oil supply peaks around mid-decade with demand only peaking around the turn of the decade, the potential tension in the oil market is substantial. Furthermore, bringing on new supply of oil may take time. For example, Saudi Aramco has indicated that its planned 1 mb/d capacity expansion will only be realized by 2027.

A Multipolar World / Geopolitics may result in higher oil price volatility. We often look to previous cycles to understand how the economy and financial/commodity markets behave over time

given various external factors. Historically, oil price volatility and geopolitical risks are correlated. However, traditional price response, energy trading dependencies, and the US dollar dominance across global trade and energy pricing may be at an inflection point. Following the Trump administration trade tariffs with China in 2018, and potentially accelerated following

Russia's invasion of Ukraine. In a multipolar world potentially split between US/NATO allies, and BRICS countries, we would expect higher oil price volatility all else being equal.

Where could we be wrong on the supply side?

While we expect supply to remain constrained over the coming decade of transition to NZE, over the near-term, Morgan Stanley research notes that despite low investment, non-OPEC+ supply has been growing and supply from Russia, Iran and Venezuela has been creeping higher. Like our observations on the demandside, on the supply side of crude oil, multi-year forecasts have wide uncertainty intervals on current trends, and despite low investment, there is little tightness on the horizon.

Though CapEx has already adjusted to NZE demand forecasts, oil supply has remained robust according to Morgan Stanley research. This is reflected by the US Energy Information Administration (EIA) which expects US crude oil production to average 12.8 million b/d in 2023 and 13.1 million b/d in 2024, an all-time high despite less than enthusiastic government energy policies toward the industry. US production was 20% of global crude supplied in 2022, the largest single country outside of OPEC, giving US production some weight in the balance of global supply of crude.

Furthermore, the EIA expects global production to keep up with demand over 2024 despite announced OPEC production cuts. According to the EIA, other things being equal, lower levels of non-OPEC supply tend to put upward pressure on prices by decreasing total global supply and increasing the influence of OPEC. Conversely, higher levels of non-OPEC supply tend to put downward pressure on prices by increasing total global supply and decreasing the influence of OPEC.

While the supply side of the oil market has become increasingly responsive to expected changes in the far future with reduced capital spending, changes to the demand have lagged. Combined, this means prices are likely to be higher on average, but probably more volatile as well.

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S&P 500 Index: The Standard & Poor's (S&P) 500 Index tracks the performance of 500 widely held, large-capitalization US stocks.

S&P/TSX Composite Index: The S&P/Toronto Stock Exchange Composite Index is a capitalization-weighted index designed to measure market activity of stocks listed on the TSX. The index was developed with a base level of 1000 as of 1975.

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