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The Carlyle Compass

By **Jeff Currie**
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*Welcome back to **The Carlyle Compass**, your weekly newsletter that brings together the latest research and market insights from our global team. This week's edition features guest author Jeff Currie, Chief Strategy Officer of Energy Pathways at Carlyle, who shares his insights on what a new rate cycle means for green energy.*

A new rate cycle opens the path for the next phase in new energy

The highly anticipated turn in the US rate cycle has likely finally arrived. As our economists correctly predicted, it was driven by a growth scare which started with the ISM last week and culminated with Friday's labor report. While we believe the magnitude of the market reaction and volatility was likely overblown, it is not unusual for such inflection points. Looking past the current noise, the most important takeaway is we have likely entered a new rate cycle for the first time since July 2019, the end of the previous peak and a period (similar to today) of widespread market fears around growth[1].

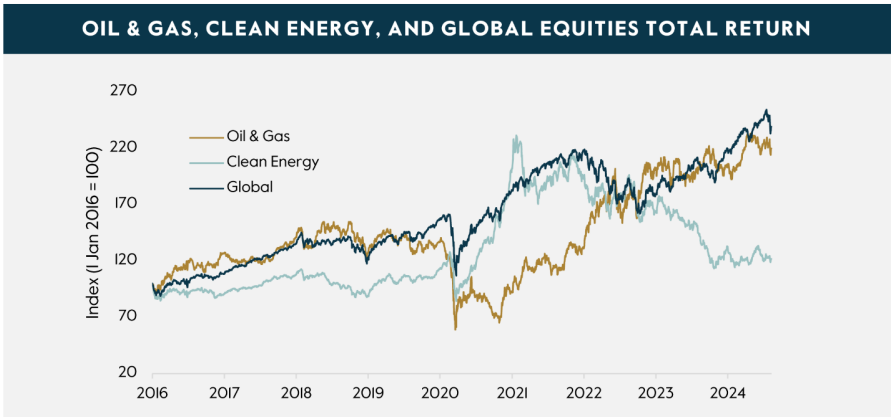
So what do we make of this for energy and commodities? With the turn in the rate cycle comes new opportunities, particularly in the more rate sensitive sectors such as green energy and infrastructure.

Green energy and the associated infrastructure have potentially powerful long-term structural supports. There is a need for more energy, which is not new, and there is a need to transition towards green energy, which is new—this points to substantial investment. Of course, returns naturally wax and wane around this prospective multi-decade trend, but right now attractive valuations have been opening in some parts of the space. The sharp increase over the past three years in rates, both real and nominal, had been a further headwind, but that is now likely to become a tailwind.

We believe opportunities like this in green energy only come around every 5-10 years, on average, when the economy starts a new rate cycle. The sector defined more broadly has fallen to extremely low valuations (see Figure 1), but during the recent equity volatility green energy has held up relatively well, underscoring the sensitivity to interest rates. The big difference, as we will argue below, with this new green energy cycle versus the cycles of the past will likely be a focus on an "ecosystem" of renewables, such as batteries and Combined

Cycle Gas Turbines ("CCGT"), that create a "reliability" premium for investors when combined with intermittent supply such as wind and solar. This will allow renewables to become functionally like fossil fuels in terms of portability and storability, which is central to what will ultimately drive the energy transition.

Figure 1: Clean Energy Has Underperformed Since 2022



Source: Carlyle Analysis; S&P, MSCI, Bloomberg. There is no guarantee any trends will continue.

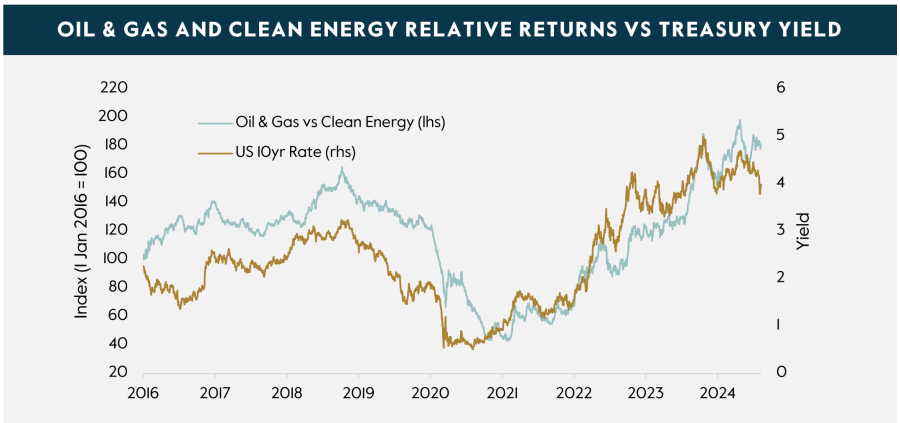
Rates are shifting from a headwind to a tailwind for renewables...

Renewable energy is one of the more rate sensitive sectors in the economy. Wind and solar, for example, have high fixed costs that are front-loaded, with low variable costs thereafter. The long tail of future cash flows is discounted to the present while the early-stage capital investment is usually debt financed, which means the profitability of the project typically has a high beta relative to interest rates.

By contrast, oil and gas tends to be relatively less sensitive to interest rates and far more equity financed given the geopolitical and technological risks involved. A much larger portion of costs are the result of ongoing extraction activities, which means modest fixed costs and higher variable costs. In addition, because oil and gas infrastructure is mostly already in place and the companies tend to be relatively cash rich, both capital structure and future cash flows mean oil and gas projects have a relatively low beta to rates.

This is clearly visible in the ratio of oil and gas relative to clean energy total returns compared to the US 10-year government bond yield (see Figure 2). Simplistically, "green" behaves like a long duration/growth asset, while "brown" behaves like a short duration/value asset. The relationship of the two with yields is strong, and thus the more recent macro headwind for renewable energy as compared to conventional oil and gas is becoming a macro tailwind.

Figure 2: Green Outperforms Brown When Rates Go Down



Source: Carlyle Analysis; S&P, MSCI, Bloomberg. There is no guarantee any trends will continue.

The new cycle requires a new ecosystem of power generation, storage and distribution...

During the previous rate cycle the green energy model was relatively straightforward. The only predominant risks were capital costs and permitting (which were still very significant), which is why the sector was so correlated to interest rates. The idea was to build a solar or wind farm and take on the (not insignificant) challenges of permitting and construction. Once it was up-and-running, connected to the grid, and cash flowing, it was sold on to a new owner with a lower cost of capital. This division between different specialized economic agents in building, operating, and financing green energy is efficient, and it also reinforces the correlation with interest rates. This model is evolving, however, as the transition takes hold. Risk management, in addition to capital costs and permitting, has increased in importance for developers as the market adjusts to the dynamics brought by a more renewable-heavy power stack.

As the transition to a lower carbon energy system accelerates, it naturally brings with it localized booms and busts as investments are uncoordinated and out of sync with local market dynamics. An example is the electricity market (Compass, June 18), where the surge in wind and solar capacity without a concurrent increase in storage and distribution capacity has resulted in an increase in price volatility. In places like Spain this supply/demand imbalance is so severe that prices are zero or negative for a third of the day and then surge in the mornings and evenings.

A negative price is the market's way of signaling that an asset is stranded, whether in time or space. Thus, negative prices open an economic arbitrage—investors who can store, move, or use these electrons will get essentially free power, at least for a while, and thus "unstrand" the asset. When the investment across the supply chain regains balance, so will returns for renewables. In other words, consumers want power when they need it not when it is produced and those that can provide this service will be paid to do so.

...as these ecosystems will generate a "reliability" premium

Therefore, "unstranding" these assets via an ecosystem of renewables combined with batteries, CCGT creates a "reliability" premium for those that can match supply and demand on a real time basis. Not only does it require dealing with the intermittency issues, but also managing seasonal and weather volatility. The higher the reliability the higher the premium. This can be seen in companies that have created such ecosystems such as Total Energies' Low Carbon Power division, Vistra, Constellation and Talen.

Private markets will have an advantage at creating such ecosystems

As we have highlighted in the past, public markets have become too short-term focused, driven by algorithmic trading and multi-strats (Compass, July 30). The evolving energy ecosystems are local by definition and tend to include small or mid-sized companies with large up front capital costs alongside substantial regulatory and technological hurdles, which is an ideal target market for a private equity investor.

Entry point matters, which is why the more patient private markets can avoid the overbought and be more disciplined about valuation and governance. Deployment also matters, as private markets can be more strategic about capital allocation in contrast to public companies, which can often be forced into a "growth at all costs" strategy by fickle investors.

Flexibility remains key

Lower rates combined with increased storage and distribution are likely to be extremely positive for renewables, which suggest this is an opportune time to be focused on acquiring those assets. However, hydrocarbons will still continue to play a role in the energy system during the transition for three reasons. First, energy demand will likely continue to outstrip growth in renewable supply for many years to come, which means we will need the most carbon-efficient hydrocarbons simply in order to keep the lights on. Second, hydrocarbons still have an advantage in portability and storability which will take time for renewables to offset. Finally, with hydrocarbons providing the marginal joule that balances the energy system, they will also set the marginal price—which means "brown" will continue to be linked with inflation.

Ultimately, the focus on ecosystems that exploit a "reliability" premium will make renewables more competitive with hydrocarbons from a functional perspective, creating the same much needed flexibility that have made hydrocarbons so attractive since the start of the industrial revolution.

[1] *During the previous cycle, the FOMC raised the target range for the federal funds rate for the last time in December 2018.*

Rates were on hold through July 2019 until the FOMC meeting in August, when after a period of substantial market volatility and slowing sequential GDP growth, the FOMC embarked on a campaign of three rate cuts to address the broader growth scare.

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