The Energy Transition

Building an Investment Strategy Piece by Piece

SS&C | ALPS ADVISORS

Introduction

The energy transition is a polarizing subject. While everyone agrees it is an important social and economic topic, and the amount of money dedicated to it will be staggering—$9.2 Trillion annually between now and 2050 according to the McKinsey Global Institute[1]—not everyone agrees on what it will look like. That polarization cuts across social, political and demographic lines, and also extends to the capital markets.

To the extent that it is possible to cut through the noise, this paper intends to unpack the energy transition in a thoughtful, nuanced way. It is important that investors keep an open mind as they think through related investment opportunities. While certain social or environmental filters may prevent investors from applying some of the concepts in this paper, a comprehensive understanding of what the energy transition encompasses is paramount.

To properly understand the energy transition and the massive opportunity it represents, it is important to focus on the words ***"energy"*** and ***"transition"*** because they underscore the fundamental tenants of what we believe this opportunity represents:

Energy

What we know to be energy and how we consume energy will change dramatically over the next 25 years. Companies and technologies tied to energy will evolve. Investment products that focus on energy will follow suit. Investors must position their portfolios with this in mind and avoid thinking about energy in static terms.

Transition

Instead of thinking about energy markets in binary terms—where we are now and where we will be—it is important to understand the period between now and some future state. In other words, the word transition is instructive because it implies change and change is at the heart of the energy transition story.

With these foundational concepts in mind, we can start to explore how investors can build a portfolio that attempts to capture the evolving nature of energy and the ongoing changes the transition will bring. Just like manufacturing a wind turbine involves methodically putting the various pieces together—the tower, the nacelle and the rotor blades—the process of building an energy transition strategy is laid out in a similar fashion: an incremental build toward a comprehensive solution.

Level One: What's Old is New

The goal of this paper is not to distinguish between "good" energy and "bad" energy. Rather, we are trying to build an investment strategy that captures the energy markets in a way that focuses on the transition of energy markets over the coming decades. As such, any investment strategy focused on the energy transition must include fossil fuel companies. After all, it is fossil fuels that power much of the globe and will continue to power much of the globe for years and decades to come.

Consider:

- In Fiscal Year 2023 more than 15 million light vehicles were sold in the United States.[2]
- In 2022 the electric vehicle (EV) market share was 5.6%.[2]
- In May 2022 the average age of a vehicle in the United States was 12.5 years.[3]

[1] *McKinsey Global Institute. (January 2022). The net-zero transition: What it would cost, what it could bring. McKinsey & Company.*
[2] *US Bureau of Economic Analysis. (n.d.). Light Weight Vehicle Sales: Autos and Light Trucks [ALTSALES]. Retrieved from FRED, Federal Reserve Bank of St. Louis. Data from 1/1/2023 to 12/31/2023.*
[3] *US Department of Transportation, Bureau of Transportation Statistics. (n.d.). Average Age of Automobiles and Trucks in Operation in the United States. Data as of May 2022.*

To summarize: more than 15 million brand new internal combustion engines (ICEs) hit the road in 2023 and the average age of a vehicle in the United States is more than 12 years. This simple example is designed to underscore how crude oil, and its refined products like gasoline, will remain in high demand for years to come. The companies that produce and refine these products will therefore have a major economic role to play in the years ahead. Crucially, the current iteration of the energy sector has large weights in companies that produce, process and transport crude oil and natural gas. While it may be tempting to argue that the data above about ICEs doesn't account for the expected adoption of EVs—and the lofty projections and policies supporting this shift—the fact is that less than 50% of the average barrel of oil goes to refined gasoline (Figure A). While EV adoption, which is as high as 25% in China,[4] will continue to eat into gasoline demand, the other products we use daily do not have the same ready replacement: jet fuel, diesel, asphalt, lubricants and consumer electronics, to name a few.

| Figure A

The Products Derived From a Barrel of Crude Oil

A barrel of crude oil (42 gallons) produces just under 45 gallons of refined products, from transportation fuels to essential materials for everyday products.

GASOLINE | 42.7%
19.2 gallons

The primary product of crude oil, **finished motor gasoline** is made from a blend of crude oil and petroleum liquids.

JET FUEL | 5.8%
2.6 gallons

Both **kerosene-jet fuel** and **naphtha-type jet fuel** are used in jet aircraft engines.

ASPHALT | 4.0%
1.8 gallons

Asphalt binds the stone, sand and gravel that make up the sidewalks and roads of our cities. It's also used in waterproofing, sealing and insulation products.

HYDROCARBON | 2.0%
0.9 gallons

Hydrocarbon gas liquids like propane and butane power vital utilities like water heating systems and stovetops.

HGLs are also part of everyday items and materials like plastics, synthetic rubber and paints and solvents.

DIESEL | 27.4%
12.3 gallons

Most heavyweight trucks and industrial vehicles use **diesel fuel**, and diesel engine generators are used as a backup power supply for large buildings.

HEAVY FUEL | 5.0%
2.25 gallons

Highly available at low cost, **heavy fuel** is thicker and less refined compared to other fuels, and emits more black carbon than any other fuel when burned.

LIGHT FUEL | 3.0%
1.3 gallons

Light fuel oil is used in liquid-fuel burning equipment to produce heat in domestic and small commercial spaces.

OTHER | 10.1%
4.6 gallons

Residual fuels, petrochemical feedstocks and other miscellaneous petroleum products are blended with other fuels to create finished fuel products. They're also part of essential materials like wax and plastics used in everyday items.

Source: Conte, Niccolo. (September 14, 2021). What's Made from a Barrel of Oil? Visual Capitalist.

[4] *Statista Market Insights. (n.d.). Mobility Market Insights: Electric Vehicles - China. Data as of September 2023.*

At the same time, biofuels and renewable forms of natural gas are also likely to see big gains in market influence in the coming years. Ethanol blending into gasoline has been a mainstay of energy markets for decades and the profits from these activities will be critical to legacy energy firms for years to come. Flexible-fuel vehicles (FFVs) are also evolving in ways that will continue to compete with traditional ICEs and EVs during the transition.[5] In addition, airlines and airplane original equipment manufacturers (OEMs) have dedicated themselves to sustainable aviation fuels (SAFs) as a way to wean off traditional fossil fuels. Crucially, these products—gasoline blended with ethanol, SAFs, biofuels and renewable forms of natural gas and diesel—are all being produced, processed and developed by legacy energy companies.

What's more, many renewable energy technologies require significant fossil fuel contributions to the manufacturing and supply chain. Mining the inputs for batteries requires heavy machinery often powered by fossil fuels. The construction and shipment of wind turbines and solar panels also require the use of fossil fuels. Any current application of hydrogen fuel cells requires natural gas as a feedstock. In other words, ***even as wind and solar farms proliferate, and as industrial batteries provide a backstop to intermittency issues with both, fossil fuels will be required along the lifespan of nearly every piece of the renewable energy supply chain for the foreseeable future.***

The biggest takeaway here is not that EV adoption will shrink or that electrified and fuel cell-powered mining equipment will cease to be used in the future. To wit, more than 1.4 million EVs were sold in the United States in 2023 alone.[6] Meanwhile, large equipment OEMs like Caterpillar are already building battery powered excavators, wheel loaders and industrial equipment. Green hydrogen solutions, like those being deployed in Chile, China and India, will be key to hydrogen getting to scale. The underlying theme of this paper is that binary thinking—drawing a line in the sand between renewable energy and legacy energy—is problematic. Adoption curves will vary in steepness, and timelines of application will vary.

It is our belief that renewable energy technologies will grow alongside, as opposed to in place of, many fossil fuels. As such, investing in renewable energy strategies in tandem with a "legacy" energy strategy allows investors to capture the potential upside of these largely growth-oriented names while also capturing the companies that will shepherd us into the new version of our energy markets in the coming decades. Fundamentally, this portfolio combination provides a uniquely positioned energy transition exposure that captures many of the companies generating profits in the current market, companies that will participate in the transition to our future energy markets and companies that aim to provide the energy of the future.

From a portfolio construction perspective, a combination of renewable and legacy energy strategies provide offsetting factor exposures as well. Look under the hood of most renewable energy portfolios and you will often see significant growth exposure and higher betas. This is natural for companies capturing and exploring new markets where the market size and potential share are as of yet unknown. As such, much of their valuation is based on Free Cash Flow (FCF) expected to be earned in the future. Take your typical Discounted Cash Flow (DCF) model (Figure B):

| Figure B

Discounted Cash Flow Formula

$$DCF = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \cdots + \frac{CF_n}{(1+r)^n}$$

DCF = Discounted cash flow
CF = Cash flow period
r = Interest rate
n = Cash flows for the final year being considered in the DCF financial analysis

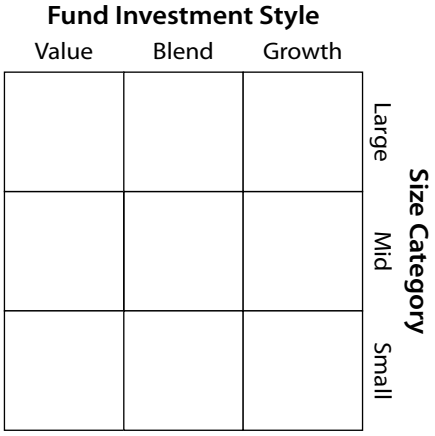
This is a foundational concept in company valuations. In essence, it says that a company is worth the free cash flow it will earn every year in perpetuity, discounted by an appropriate discount or interest rate. For renewable energy companies, that can be based on a number of cash flows that are small or negative for multiple years and larger positive FCF numbers down the road. The opposite is typically true for many of the companies in the energy sector as currently defined. Many of these companies generate FCF now and are increasingly deploying that free cash flow, and the heft of their balance sheets, to acquire and develop companies and projects in the renewable energy space.

[5] *US Department of Energy, Alternative Fuels Data Center. (n.d.). Flexible Fuel Vehicles.*
[6] *US Department of Energy. (January 5, 2024). Statement by US Energy Secretary Jennifer M. Granholm on 2023 EV Sales.*

A simple way to think about this is to think about the style box (Figure C) and how growth and value interact. Growth companies typically have higher valuations on metrics like price-to-book (P/B) and price-to-earnings (P/E) ratios which investors justify due to the higher expected growth rates of earnings and cash flow. Value companies, on the other hand, typically have lower P/B and P/E ratios due to the slower expected rates of earnings and FCF growth. If a company is in between the two it is considered "core". In combining renewable energy strategies with legacy energy strategies, investors can bring their factor exposure back toward the core, while still maintaining exposure to the theme.

| Figure C

The Morningstar™ Style Box



The style box categorizes funds based on market capitalization (large, mid, small) and investment style (value, blend, growth).

The style box can indicate a fund's potential risk and return profile based on its category, given that different sectors and company sizes have varying levels of volatility and potential for growth.

Sources: Morningstar, Investopedia

When combining renewable and legacy energy strategies, exposure to the theme looks very much like oil and water, pun intended. On the one hand are "dirty" oil and natural gas companies and on the other hand are "clean" renewable energy companies. The truth is that ***combining energy strategies creates a portfolio that stands to evolve along with the energy transition.*** Renewable energy-related companies will evolve with the global economy's application of energy technologies and legacy energy-related companies will also evolve with the same market dynamics. Further, companies in the legacy energy sector will evolve to embrace emerging renewable energy opportunities, like Exxon drilling for lithium in Arkansas[7] or Kinder Morgan acquiring a renewable natural gas producer.[8]

After all, index-based Exchange-Traded Funds (ETFs) are simply designed to provide exposure to a segment of the market. In the case of energy that means the energy sector as defined by the Global Industry Classification Standard (GICS). As companies in the renewable energy segment grow and start to realize the potential baked into their valuations, their market capitalization will grow. That natural cycle of markets will play a role in how such a portfolio behaves over time.

It is worth pointing out that not every company in a renewable energy portfolio will be captured by a sector-based energy strategy. For example, EV manufacturers fall in the Consumer Discretionary sector, hydrogen companies may sit in the Materials sector and many solar companies currently exist in the Technology sector. In other words, the combination of an energy specific strategy and a renewable energy portfolio cuts across factors as well as sectors, which provides a different type of diversification.

Level Two: Connecting the Dots

As we laid out above, the nature of the energy transition will evolve and the companies that stand to benefit will also change over the next three decades. At the same time, some of the basic functions that enable the current energy market will continue to exist in much the same way they do now, albeit with perhaps new products involved. Take for example the energy infrastructure industry. The companies in the energy infrastructure industry provide three basic functions:

1. *Transportation* of crude oil, natural gas and natural gas liquids
2. *Storage* of crude oil, natural gas and natural gas liquids
3. *Procession* of crude oil, natural gas and natural gas liquids

[7] *ExxonMobil. (November 3, 2023). ExxonMobil drilling first lithium well in Arkansas, aims to be a leading supplier for electric vehicles by 2030 [press release].*
[8] *Kinder Morgan. (August 20, 2021). Kinder Morgan Closes Kinetrex Energy Acquisition [press release].*

Of course the industry is more nuanced than this, but at its core the companies in this segment provide some service that captures one or more of these categories or an adjacency. Even the most optimistic projections assume an incremental decline in demand for crude oil and natural gas over the coming decades. As such, these fundamental services that connect production of US crude oil and natural gas to consumption are likely to remain critical in coming years.

The exponential rise in electricity demand stemming from mandated (or directed) EV adoption and the broader electrification of the economy will put massive strain on renewable energy sources until energy storage catches up to the implementation of wind and solar. As we have seen in progressive energy markets like Texas and California, where wind and solar adoption outpaces other parts of the country, natural gas has and will remain an important backstop to these high latency energy sources. The pipelines that ensure natural gas is available to provide a backstop will remain critical as we transition to two-way charging optimization and at-scale applications of energy storage.

However, the current iteration of the energy infrastructure industry does not fully capture its potential role in the energy transition. Using the International Energy Agency's (IEA) path to net zero projections as a reference, the world is expected to capture nearly seven gigatons of carbon annually in 20 years' time. By comparison, the world captured less than 0.04 gigatons in 2020.[9]

To achieve that lofty goal, policymakers and the companies looking to capture the carbon they emit will need the expertise to design and implement systems to capture and process the carbon efficiently and likely transport carbon dioxide ($C0_2$) to its next destination. That destination may be in the ground or into an electrolyzer being used to create hydrogen. This is where energy infrastructure companies fit in an energy transition portfolio. A wide range of deals to build carbon capture projects, acquire companies with carbon capture technologies and scope carbon capture roadmaps have appeared over the past two years, including:

Exxon Acquires Carbon Capture Leader Denbury[10]
November 3, 2023
Following this acquisition, Exxon now controls the largest CO_2 pipeline network in the United States, spanning over 1,300 miles, including around 925 miles in Louisiana, Texas and Mississippi. The oil and gas major now also has access to over 15 strategically located onshore carbon storage locations.

Occidental Buys Technology Supplier Carbon Engineering[11]
August 15, 2023
The acquisition positions Occidental to develop a string of carbon-capture sites it hopes will profit from tackling climate change. Occidental aims to build about 100 plants using direct air capture (DAC) technology that strips CO_2 from the atmosphere to bury underground or for use in making products such as concrete and aviation fuel.

Kinder Morgan Launches Venture Group to Pursue Energy Transition Opportunities[12]
March 15, 2021
Kinder Morgan, one of the largest energy infrastructure companies in North America, announced the launch of a new Energy Transition Ventures group, tasked with identifying, analyzing and pursuing commercial opportunities emerging from the low carbon energy transition.

As if the multi-trillion dollar opportunity for carbon capture wasn't enough, energy infrastructure companies are also currently in the business of transporting and processing biofuels, renewable natural gas and hydrogen, with room to grow their footprint in these segments alongside the large investments expected to occur in the coming decade. While it is possible a decline in demand for refined gasoline precipitates a decline in demand for crude oil transportation, we are already seeing a shift in the energy infrastructure business model. Transporting and storing of biofuels, renewable diesel, hydrogen, SAF and cleaner natural gas liquids (NGLs) all represent growth drivers for pipeline companies. All of these are critical feedstocks into many domestic downstream industries, and the global export opportunities continue to grow.

[9] *International Energy Agency. (May 2021). Net Zero by 2050: A Roadmap for the Global Energy Sector. IEA Publications.*
[10] *George, Violet. (November 3, 2023). Exxon Completes Acquisition Of Carbon Capture Leader Denbury For $4.9 Billion. Carbon Herald.*
[11] *Valle, Sabrina and Bose, Sourasis. (August 15, 2023). Occidental buys carbon air capture tech firm for $1.1 billion. Reuters.*
[12] *Segal, Mark. (March 15, 2021). Kinder Morgan Launches Venture Group to Pursue Energy Transition Opportunities. ESGtoday.*

One way to capture the opportunities in energy transportation and storage, from an investment perspective, is to combine the level one strategy (GICS-based energy sector strategy and renewable energy thematic portfolio) with a targeted portfolio of energy infrastructure companies. While there is redundancy between the S&P 500 Index's energy sector and an energy infrastructure portfolio, the unique portfolio characteristics of energy infrastructure—relatively higher yield and lower commodity price exposure thanks to volume-based, fee oriented business models—and small weighting to the industry provide potential diversification benefits at both the factor and sector level.

Level Three: The Building Blocks

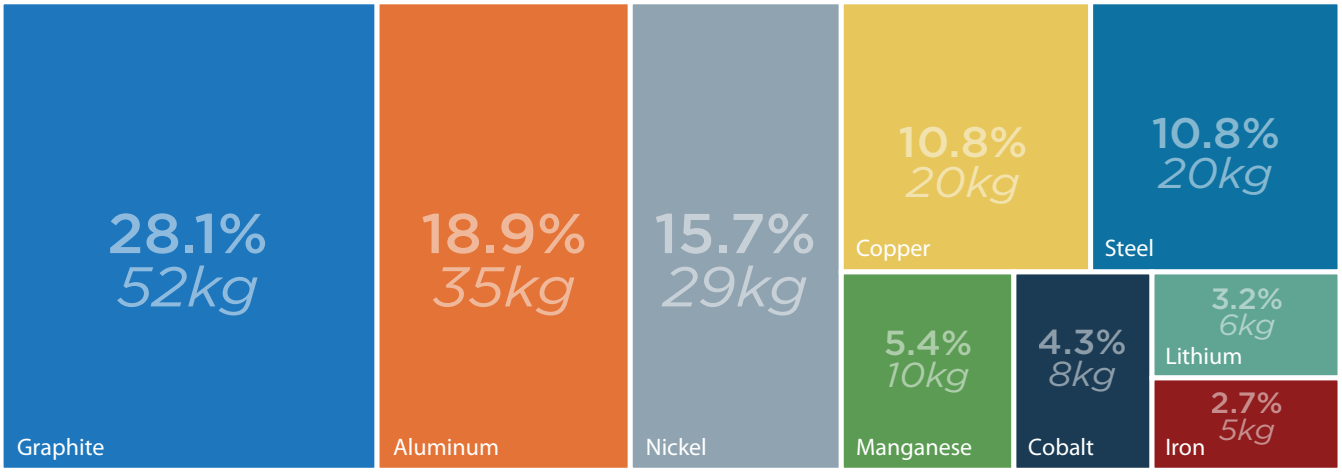
Before we begin with level three, it is important to review the exposure we have laid out so far. We began by combining companies in a thematic, GICS-agnostic renewable energy portfolio focused on the solar, wind, electric vehicle and energy storage businesses—to name a few—that promise to capture the future of our energy markets with the legacy energy companies that will bridge the gap between now and the future. We added the critical energy infrastructure companies that allow our current energy markets to function while positioning for opportunities in emerging categories like carbon capture.

What this solution fails to capture, however, are the critical inputs that will be in high demand in a resource constrained world. Take, for example, the raw materials needed to make an EV battery (Figure D):

| Figure D

The Key Minerals in an EV Battery

Amount contained in the average 2020 battery (in kilograms)



Lithium-ion batteries harness the properties of various minerals to power electric vehicles.

The cells in the average lithium-ion battery with a **60-kilowatt-hour (kWh)** capacity contain around **185kg*** of minerals.

Aluminum and **copper** foils are typically used as current collectors for the cathode and anode, respectively.

Cobalt is the most expensive battery metal, increasing battery life and energy density.

In 2021, **nickel-based** cathodes powered 80% of the battery capacity deployed in new plug-in EVs.
Source: Adamas Intelligence

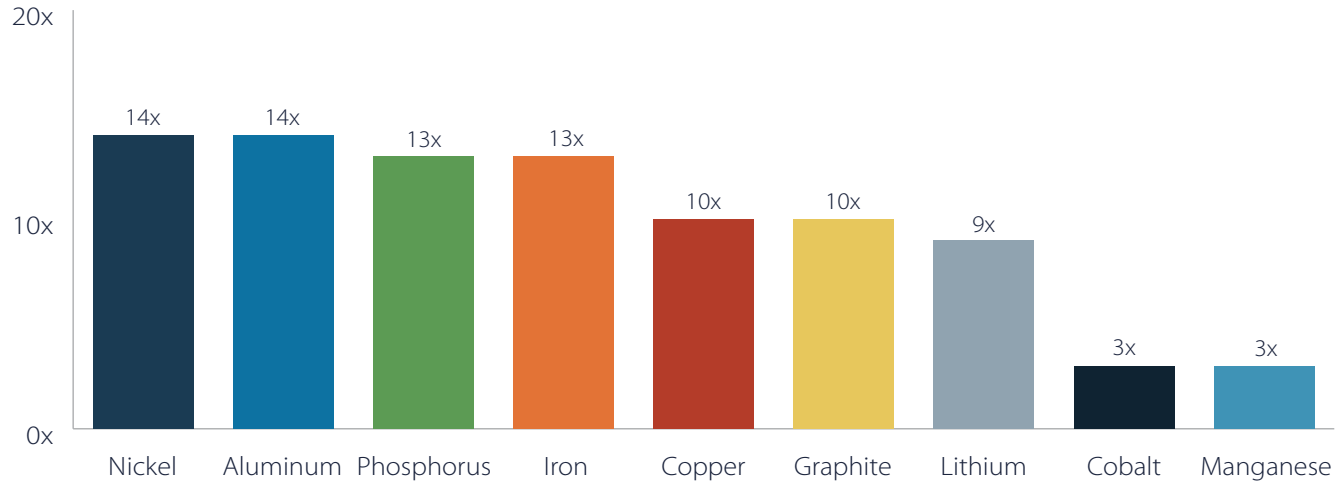
** Based on the weighted average of battery compositions on the market in 2020. Does not include materials in the electrolyte, binder, separator and battery pack casing.*
Source: Alexander, Athul and Bhutada, Govind. (May 2, 2022). The Key Minerals in an EV Battery. Visual Capitalist.

These commodities are neither in short supply nor will they be required in the same amounts in future versions of batteries. Finally, not all of these commodities have the same global supply and demand dynamics. Despite these qualifiers, the global appetite for these commodities is forecasted to grow dramatically in the coming years (Figure E):

| Figure E

Electric Cars Boost Metal Demand

Demand increase in precious metals and materials between 2019 and 2030



Source: Statista, Bloomberg

What makes this portfolio implementation unique is just how different it looks and feels from a traditional energy portfolio. Crude oil and natural gas dominate most commodity indexes and rightfully so. These indexes are typically weighted by production or futures market liquidity, and both crude oil and natural gas dominate both categories. Unlike those traditional energy segments, the commodities listed above are not typically associated with an energy strategy. Copper, nickel, cobalt and lithium are all either in the industrial metals or mineral segments. They don't have a place in most investor definitions of energy.

But, as we have attempted to argue in this paper, the definition of energy will continue to change in the coming decades and the companies, technologies and resources associated with the word "energy" will also evolve. With that in mind, electric vehicles replacing internal combustion engines means the nature of transportation is undergoing a massive shift. The need to store energy produced by wind and solar will unlock the potential of these renewable energy technologies. Just as natural gas (the commodity) is considered a building block to an energy strategy now, lithium and cobalt will become synonymous with energy and energy storage. To ensure comprehensive exposure to the energy market during and after the transition of the next 25 years, it is imperative that investors have exposure to the core buildings blocks of the transition.

As we have said numerous times, looking at any of these dynamics at this point in time and making definitive conclusions about what the energy mix will look like in 10 or 20 years is problematic. For example, the dominant technology for EVs is currently lithium-ion batteries. In the future it could be sodium-ion[13] or a solid state technology that requires less lithium than its predecessors. This underscores our main thesis: ***Capturing the energy transition fully requires flexibility of both approach and strategy. It is not enough to simply focus on renewable energy equities or to invest in one of the key ingredients to a specific technology like lithium. Instead, it takes a mosaic of exposures to comprehensively invest in this trend.***

[13] *House, Robert. (October 10, 2023). How sodium-ion batteries could make electric cars cheaper. The Conversation.*

In practice this means vital commodities like those shown above provide both an asset class diversification to an energy transition strategy while rounding out some of the lifecycle of the technologies at the core of the global energy transition push. Conversely, the companies globally in the business of mining, extracting, processing and supplying equipment to the sourcing of these commodities will also have a massive role to play in the energy transition. Again, the end client for a company mining copper may once have been a homebuilder or construction company, but increasingly those customers may be electricity grid operators or EV manufacturers. It is important to note that EV demand not in and of itself displaces home builders as a core center of demand for copper. Companies are already exploring ways to reduce copper use in EVs. But even a new source of incremental demand for commodities can have a significant impact on supply and demand equilibrium.

By introducing both the raw materials through a commodities strategy and a metals-and-mining oriented equity strategy, the energy transition portfolio nears its objective of comprehensive measurement of the energy market and all of its inputs.

Level Four: Upcycle, Recycle and Offset

One of the lynchpins of a net zero effort is carbon mitigation and one of the products is the growth in carbon offset and credit markets globally. Companies across the cap spectrum have begun the process of measuring carbon emissions and designing strategies to offset or decrease these emissions.

There is a unique alignment of stakeholders in this story. Governments globally are attempting to reign in carbon emissions and are standing up protocols for measuring and pricing carbon. Private investment is flowing to carbon markets both directly and in rounding out the required components of functioning markets. This includes infrastructure and trading platforms as well as accreditation. The third stakeholder supporting this market is the institutional investment community. As measurement and tracking of carbon markets globally matures, the size of global carbon markets will follow. Asset managers have launched products tracking carbon credits, and institutional investors have directed money toward the category.

Earlier we described legacy energy companies investing in carbon capture projects. We highlighted energy infrastructure companies porting their expertise in transportation and storage to this emergent economic segment. What is also true is that in order for the carbon capture, utilization and storage (CCUS) business to grow and be applied at scale, there needs to be a clear and consistent market price of carbon. That is true for infrastructure firms and the clients—large energy companies—that they serve. Governments must create clear rules and the tax for carbon and/or methane emissions must be consistent. This will inform how contracts are priced by CCUS partners, and help clarify the economics of CCUS projects.

Shareholders and investors need measurable and trustworthy financials to allocate capital to companies. For a company, that means carbon must be priced consistently and actively to ensure projects and the massive bills that come with them can be modeled and priced with confidence. It is not enough to have assurances and/or promises. Financial modeling and the framework by which most investments are analyzed (FCF and Net Present Value) simply don't work in the real world if all of the working assumptions are just that, assumptions. Benchmarks and real-time pricing are key components of the potential success of carbon markets achieving the lofty goals of policymakers the world over.

As with the other pieces of the energy transition puzzle, carbon credits provide a potential diversifier at the asset class level. "Potential" is an important word here because carbon markets, and the credits that trade on them, have little track record and perhaps even less consistency.

This is very much a new asset class unto itself, but the existence of carbon credits and the market that enables them are very much fundamental to the energy transition. At its core, the energy transition is about decreasing carbon dioxide emissions globally. Carbon credits are the measurement tool on which the transition will be based, as they are the arbiter of success and/or failure in the global effort to achieve net zero by 2050. The fact that they are, and will continue to be, investable makes them a key ingredient in the construction of an energy transition portfolio, for those investors willing and able to incur the risks associated with investing in an asset class that was created, pardon the pun, out of thin air.

The opportunity in carbon markets sits at the intersection of public and private markets and the direction of capital and policy toward capturing and measuring carbon emissions globally. Given the immaturity of global carbon markets and lack of history, the relationship with traditional asset classes as measured by correlation and risk-adjusted return is still to be written. To date, carbon markets have been defined by volatility and a lack of transparency.

In theory, carbon prices should be influenced by a mixture of energy prices, electricity prices, fiscal policy and energy production globally—among other economic dynamics. Many of these factors are measurable but others spill into the realm of the qualitative. It is with this in mind that a carbon allocation falls into the last level of an energy transition portfolio because nobody and no single model can account for all the variables that will impact the performance of carbon credits or the pricing of carbon regionally and globally. Said another way, carbon credits are the most speculative asset class covered in this framework despite carbon markets occupying critical green space in the path to net zero.

Conclusion

As we have laid out above, the energy transition promises to touch a wide range of traditional economic sectors and the span of influence will encompass multiple asset classes. Investors who appreciate the scale of investment in this megatrend will ultimately find the public and private dollars directed at the energy transition captured by a diverse set of stakeholders. In order to ensure that portfolios are well positioned to capture the returns associated with this theme, investors will need to get creative and apply nuance to their approach. The building block approach to the energy portfolio is designed to provide a framework for investors to piece together the seemingly disparate exposures that, when combined, can achieve a textured portfolio segment aligned with the most influential segments of the growing global economic footprint of the energy transition.

Definitions

Beta: a measure of the volatility, or systematic risk, of a security or a portfolio in comparison to the market or a benchmark. The beta of the market or benchmark is 1.00 by definition. An investment with a beta above 1 is more volatile than the overall market, while an investment with a beta below 1 is less volatile.

Discounted Cash Flow (DCF): refers to a valuation method that estimates the value of an investment using its expected future cash flows.

Free Cash Flow (FCF): a measure of cash earnings that excludes the non-cash expenses of the income statement but includes capital assets as well as changes in working capital from the balance sheet.

Net Present Value (NPV): the difference between the present value of cash inflows and the present value of cash outflows over a period of time.

Price/Book (P/B) Ratio: the weighted average of the price/book ratios of all the stocks in a portfolio. The P/B ratio of a company is calculated by dividing the market price of its stock by the company's per-share book value.

Price/Earnings (P/E) Ratio: a valuation ratio of a company's current share price compared to its per-share earnings.

S&P 500 Index: widely regarded as the best single gauge of large-cap US equities. The index includes 500 leading companies and covers approximately 80% of available market capitalization. One may not invest directly in an index.

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