



2022 Real Assets Market Overview

Into the Un-‘Known’

July 2022 | Brent Burnett, Head of Real Assets

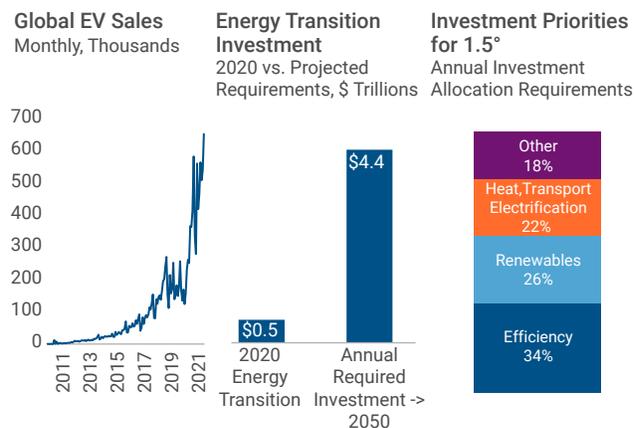
“It’s not what you don’t know that gets you in trouble. It’s what you ‘know’...that just ain’t so.” Though unconfirmed, this quote is often attributed to Mark Twain. Regardless of the source, there is a lot of wisdom in this old saying. We are weary of the unknown yet embrace what we feel as “known” without question.

The problem is, what we “know” is inherently biased by short-term signals. In contrast, optimal decision-making involves incorporating but modulating short-term indicators while marrying those with longer-term observations in order to inform our view of the future. As private market investors with a long-term horizon, we should be better at this than most. However, even the most rationale long-term investor can’t help being influenced by what we observe in the short-term, especially when those observations are echoed and repeated by nearly all market participants.

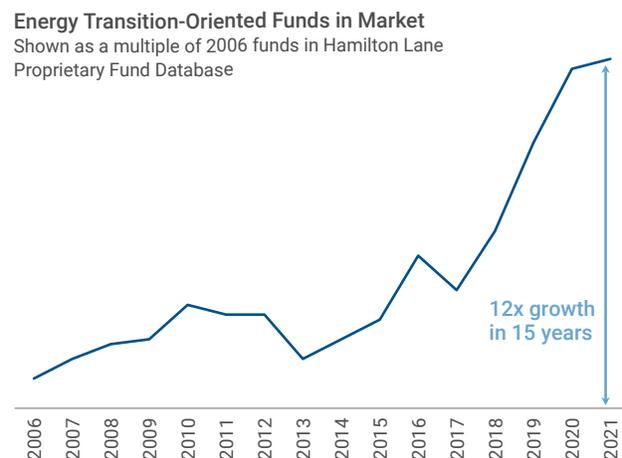
We are seeing some of this today in private real assets. I wrote previously in [Catching the Wave](#) about the strong macro themes driving infrastructure investment over the last several years. We continue to see those same themes attracting capital today. Indeed, it seems that nearly every infrastructure investor has been investing behind three key themes: Electrification, digitization and logistics. On the real estate side, we are hearing more generalist funds shifting to “only targeting” industrial and multi-family properties. Traditional energy, you say? No way. Invest in office, retail and hospitality? Are you trying to lose money!?! There is a market consensus today that these assets have no future based on a reasonably short (albeit bumpy) recent past.

Mark Twain also famously said “The reports of my death have been greatly exaggerated.” So, with that in mind, what do we “know” that may not be so, and where are we potentially missing contrarian opportunities?

We've [written extensively](#) about the capital needs required to effectuate the energy transition. Over \$4 trillion of capital is projected to be required to meet those goals. McKinsey recently put that number as high as \$9 trillion. Not surprisingly, private investors have lined up to raise capital pools targeted specifically at this opportunity set.



Source: Bloomberg New Energy Outlook Dataset, as of July 2021. Accessed via Bloomberg Terminal on December 9, 2021. IRENA World Energy Transitions Outlook June 2021, IEA World Energy Investments 2021



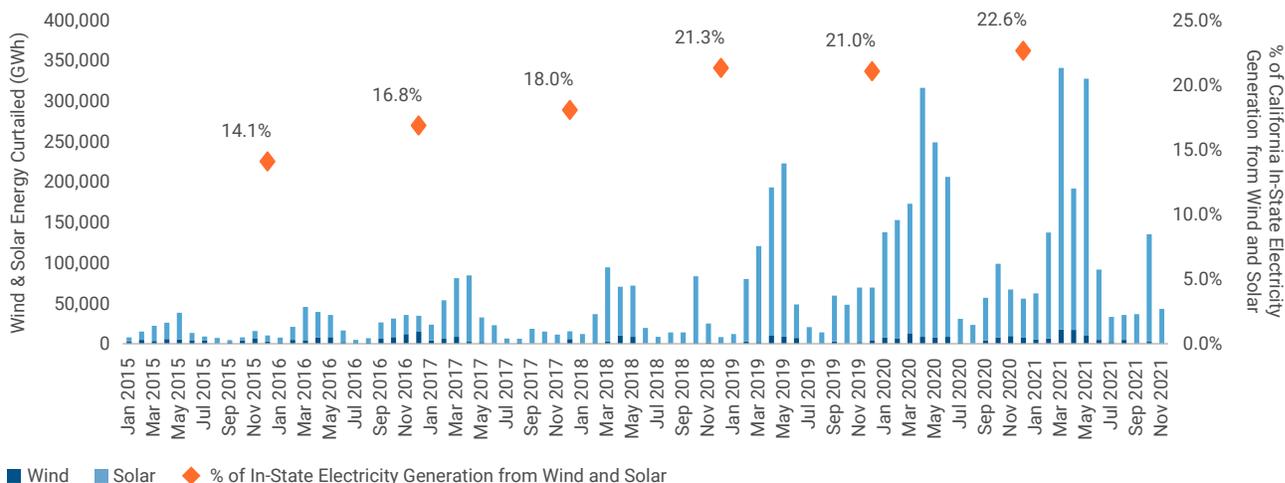
Source: Hamilton Lane Data (December 2021)

Although the future looks electric, are investors potentially missing some warning signs on renewable assets? And, conversely, are there attractive investment aspects of traditional energy that are being overlooked?

Let's look at a couple of things. First, with significant capital going to fund renewable generation, we are seeing higher degrees of renewable penetration in power markets across the U.S. But, with higher degrees of penetration, we are also seeing higher levels of curtailment on renewable resources. The chart on the next page illustrates this in the California Independent System Operator (CAISO) market. By the end of 2021, roughly 23% of the power generated in CAISO came from wind and solar generation as this market has made great progress in moving toward renewable energy goals. But, while wind and solar penetration have increased, so has curtailment of these power generation resources in the CAISO market. Curtailment means to reduce the output of a renewable resource below what it can produce, potentially indicating over-built resource capacity in a specific type of generation. This introduces certain risks to developers and owners of these assets. Significant upfront capital costs are required to develop utility scale solar and wind resources. These upfront capital costs are undertaken based on expectations of future power prices and resource utilization. Depending on the payment schemes in the market, high degrees of curtailment can be indicative of an overbuilt market and one in which an owner needs to lower their expectations around both power prices and resource utilization.

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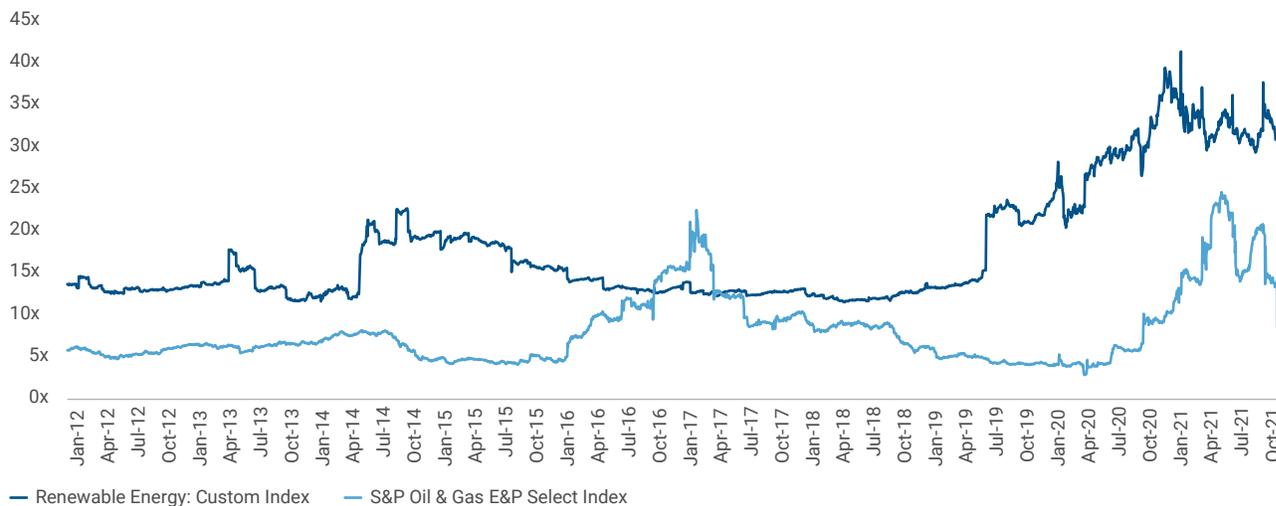
Penetration of Wind & Solar (rhs) vs. Curtailed Energy (lhs)



Source 1: California Energy Commission, California Electrical Energy Generation 2001 –Current. 2: California Independent System Operator, Monthly Renewables Performance Report

We also see valuation risk increasing for renewable assets, as well as the execution risk investors seem to be willing to take today on renewable project development pipelines. Look at the chart below:

TEV/EBITDA
2012-2021



Source: Hamilton Lane, Capital IQ, As of January 2022. HL custom energy index equal-weighted and comprised of : Ørsted A/S, Brookfield Renewable Corporation, Atlantica Sustainable Infrastructure plc, Voltalia SA, Falck Renewables S.p.A., Northland Power Inc., NextEra Energy Partners, LP, Ormat Technologies, Inc., Scatec ASA, Sunnova Energy International Inc.

You can see that EBITDA multiples for renewable energy companies are near all-time highs, with multiples hovering between 35-40x. In contrast, traditional energy companies are trading at 5-7x EBITDA. A multiple of 35-40x assumes significant future growth in the platform – growth that may be difficult to achieve given transmission and distribution constraints.

We are also noting some aggressive underwriting assumptions for renewable assets and perhaps overly aggressive projections about the retirements of some traditional energy assets in certain power markets. For example, consider the table below, which summarizes some of the underwriting assumptions we’ve seen versus what we feel are more realistic expectations around asset useful lives.

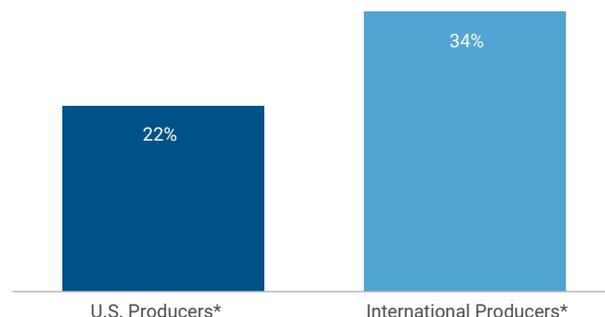
Asset Type	Assumed Useful Life	Actual Useful Life
Coal-fired generation	40 years	50-60 years
Gas Combined Cycle	20 years	30 years
Utility Solar – Thin Film	30 years	15-20 years
Wind - Onshore	20 years	10-15 years

Why does this matter? Private investment tends to lean into markets where there is a strong belief of pending asset retirements that will require capacity substitutions from renewable resources. In addition, if useful lives are over-estimated on renewables relative to the actual capex requirements to build and maintain those assets, the risk of capital destruction increases.

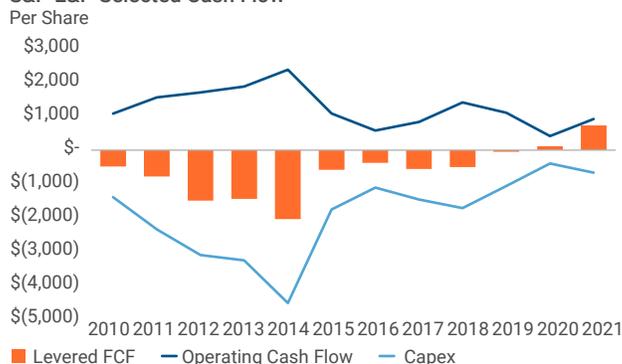
At the same time we are seeing an increased risk in some of the renewable generation assets, we may also be missing opportunities in traditional energy. With improving commodity prices and capital discipline, the E&P sector saw record free cash flow and strong free cash flow margins last year. That strength is continuing into 2022. And whereas producers have historically increased capex with higher commodity prices, they are now showing much more discipline in their capital spending

programs. This capital discipline is expected to be a permanent change to their business models, as E&P companies have heard from shareholders that they need to live within cash flow and remain selective about new development programs.

Levered Free Cash Flow Margin
LTM, Median Across Selected Peer Sets



S&P E&P Selected Cash Flow



Source: Hamilton Lane, CapitalIQ. Data as of January 2022, with available LTM data shown. *U.S. producers include: Laredo Petroleum, Inc., Whiting Petroleum Corporation, Callon Petroleum Company, SM Energy Company, PDC Energy, Inc., Matador Resources Company, Devon Energy Corporation, APA Corporation, Continental Resources, Inc., Pioneer Natural Resources Company, Ovintiv Inc., Marathon Oil Corporation, Centennial Resource Development, Inc., Diamondback Energy, Inc., EOG Resources, Inc., Northern Oil and Gas, Inc. International producer universe includes: DNO ASA, Woodside Petroleum Ltd, Talos Energy Inc., Aker BP ASA, Lundin Energy AB (publ), Frontera Energy Corporation, Tullow Oil plc, Harbour Energy plc, Canadian Natural Resources Limited, EnQuest PLC, Kosmos Energy Ltd., Hurricane Energy plc.

S&P 1500 Oil & Gas E&P (Sub-Index) Capex vs. Oil Prices
2004-2021; Average WTI Price (\$/bbl) by Quarter vs. Capex (Rebased)



Source: Hamilton Lane, Capital IQ, FRED, as of January 2022

In making some of these comparisons, we put together the table below. As noted, there are some similarities we are seeing in renewables today relative to the shale revolution we saw years ago – namely, aggressive capital inflows, loosening underwriting standards and an apparent unwillingness to distinguish between resource grade.

	Shale Revolution	Renewables Similarity?	Renewables
Rapid Productivity Growth and Technology Advancement; Rate of Advancement Plateauing	The shale boom made the U.S. the world’s largest oil producer. Well productivity began to plateau in 2016 after years of rapid improvement	✓	Rapid cost declines driven by technology improvements and commercialization observed across wind, solar and battery storage, with solar costs declining by ~90% over the last ~15 years. Rate of advances slowing as technologies mature
Capital Chasing Speculative Investments?	Paying for untested acreage, banking on continued productivity improvements	✓	Aggressive acquisitions of renewable energy developers, with meaningful value ascribed to pre-NTP and unspecified future projects. Selected investors banking on post-PPA terminal value to achieve returns
Aggressive Underwriting and Financing	Over-optimistic assumptions around costs and resource availability	✓	According to Kwh Analytics, “1-in-8 solar assets chronically underperform P99 estimates, exposing newer loans to default risk”. Higher than expected degradation and terrain mis-modeling paired with increased leverage are cited as risk contributors. However, such issues are well documented today, for wind and solar, reducing go-forward risks
Spacing Issues?	Parent/child well performance issues associated with spacing	~	Wind turbine performance can suffer from “wakes” and solar can suffer from terrain loss, recognizing that the magnitude of such losses are minimal relative to those observed during the later innings of the shale revolution
Resource Variability and Revenue Visibility	Highly variable well performance resulted in inconsistent performance and poor capital allocation	✗	Wind and solar resources are generally well understood and documented, reducing the potential for binary outcomes. Most projects benefit from subsidies or offtake agreements which mitigate commodity price risk
“High-Grading”	Shale producers, like other extracted resource companies explored and depleted Tier-1 acreage early-on	✓	Developers have been pursuing the most resource-abundant geographies first for development, raising the prospects for increased costs over time to the extent technology gains fail to offset such risks
Supply/Demand Mismatch	Production growth associated with the shale boom exceeded demand growth, putting downward pressure on prices	✗	Despite renewables exhibiting a deflationary effect on power prices, demand is expected to grow substantially amid increased electrification, requiring substantial investments in new generation

On the flip side, we see limited capital interest in traditional energy assets despite high distributable cash flows, disciplined capex decision making and attractive entry valuations. Most of the lack of institutional capital interest in the traditional energy space is attributed to ESG concerns related to the future viability of these asset types. These concerns are warranted, but as we have previously noted, we believe energy transitions take time and that traditional sources of energy will continue to make up the bulk of global energy needs for the foreseeable future. After a few very difficult years of capital raising, we are seeing some capital start to flow back into the traditional energy space, which is being reflected in share price performance relative to clean energy alternatives.



All of this is not to say that we should stop investing in renewables or reverse progress in the energy transition. It is to highlight though that despite strong macro tailwinds, investing is never without risk and we see elevated risk in the renewable sector today as evidenced by high entry price multiples, aggressive underwriting assumptions, increased asset curtailment and potentially unmanageable constraints related to interconnection, transmission and distribution.

When we hear themes repeated and see the majority of market participants pursuing similar themes, it becomes much easier for us to accept those observations as known fact. Those “knowns” then become the basis for future decision-making and we may inadvertently create self-reinforcing feedback loops that lead us to screen out observations that we deem inconsistent with our own set of facts. As a result, we only see opportunities that look and feel like what we want to see, and although data may be telling us that we need to reevaluate what we “know,” it becomes increasingly difficult to shift our frame of reference.

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ENDNOTES

Index definitions

S&P Oil & Gas E&P Select Index – The S&P Oil & Gas E&P Select Index comprises stocks in the S&P Total Market Index that are classified in the GICS oil & gas exploration & production sub-industry.

S&P 1500 Oil & Gas E&P Select Index – The S&P 1500 Index tracks all stocks in the S&P 500, S&P 400, and S&P 600.

S&P 500 Index – The S&P 500 Index tracks 500 largest companies based on market capitalization of companies listed on NYSE or NASDAQ.

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