PERSPECTIVES
THAT DRIVE
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SUCCESS

PERIOD ENDING: JUNE 30, 2020

Real Assets Review

San Mateo County Employees’ Retirement Association

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Real Asset Outlook

Outlook summary

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
Private Real Estate	Negative impacts from the economic slowdown caused by Covid-19 will likely take several quarters to play out in the appraisal process for existing assets. Transaction activity has come to a halt, making pricing comparisons difficult. Retail/hotel/resort/casinos will likely feel the greatest impact. Income declines are more likely than prior downturns.	— The duration of the economic slowdown will impact the degree of negative real estate performance. Core real estate returns tend to have high correlation to overall GDP growth. — A sharp rise in interest rates could lead to increased cap rates, hurting values.	Our outlook remains neutral; however we are taking a barbell approach. The lag effect of the appraisals process will create a period of several quarters where valuations are not reflective of perceived value. Redemption requests are typically met with gates or redemption restrictions. We recommend rebalancing redemptions in core real estate where possible and deploying capital in non-core strategies with fresh capital.	**Neutral**
REITs	REITs responded sharply downward in March when the severity of coronavirus forecasts filtered in. REITs were down almost 40% YTD at their nadir with some sectors such as hotels and casinos down over 70%. A sharp recovery occurred, but not all the way back. Through mid April REITs were down ~25%, but well off their lows.	— REITs have higher leverage than core real estate and have higher exposures to non-core sectors such as hotels, self-storage, for rent residential and senior/student housing. — Rising interest rates can have a negative effect on REITs and all yield-sensitive assets over short periods. — REITs are sensitive to economic decline and general equity market volatility.	We remain neutral on REITs. Although the recent decline in performance has increased discounts to NAV, the underlying NAVs have not yet adjusted. REITs can provide liquid exposure to real estate with the following caveats: high sensitivity to equity market volatility over shorter holding periods, higher leverage and higher exposures to non-core sectors such as hotels, self- storage, for-rent residential, etc.	**Neutral**
Commodities	Commodities futures have had lackluster performance over the last decade. An upward sloping futures curve for most of the last decade has created a headwind for the asset class. In 1Q, an oversupply of energy, coronavirus demand destruction, and declining inflation concerns has exacerbated performance issues.	— Oversupply issues, especially across the energy complex could have a lasting impact. — Depending on the depth of the recession, demand for energy and industrial metals could be reduced for an extended period. — Inflationary pressures remaining low would continue to be a headwind.	Commodities will likely face both supply and demand issues over the intermediate timeframe. Contango remains steep across the complexes and lower rates will keep collateral returns low. Inflation driven by excess demand is unlikely in the intermediate horizon and any inflation led by excess monetary supply is unlikely to have a direct benefit to commodities.	**Negative**

Outlook summary (continued)

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
TIPS	Declining nominal interest rates have led to positive total returns, however declining inflation has caused TIPs to underperform nominal bonds. Breakeven rates, while volatile, are down across the board.	— Decreasing inflation expectations or rising nominal interest rates would be a headwind to TIPS. — Continued low rates create a high cost of carry.	Low current yields and modest inflation expectations have led to other real assets offering higher total return potential than TIPS.	**Negative**
Infrastructure	Infrastructure assets have not been spared during the broad market sell-off in 2020. Coming into the year, we were especially bearish on transportation infrastructure assets (airports, toll roads, ports, etc.) due to valuations and significant GDP risk. We anticipate that Covid-19-related impacts on travel will generate more interesting deals for client capital. Power and energy-related infrastructure has also been hit hard by the economic fallout though we are cautious about taking significant commodity-price risk. Finally, the telecom/data space remains an attractive segment for infrastructure capital and we anticipate putting more money to work in this area going forward.	— Regulatory changes are creating investment challenges in parts of Europe as low interest rates are putting downward pressure on the allowed returns by investors. We are cautious on utilities where returns are set by governmental bodies. — Transportation assets are particularly vulnerable in the current environment. We may see interesting opportunities emerge from over-levered infrastructure funds, but we'd be a patient buyer.	The asset class offers a compelling return profile that aligns well with long duration pools of capital. We favor private infrastructure funds that have capabilities to improve operations and manage complex deal structures..	**Positive**
Oil & Gas	The oil & gas industry entered 2020 on shaky legs following several years of weak commodity prices. The dual impact of Covid-related demand destruction and the disintegration of OPEC+ supply controls sent oil markets into a tailspin. For independent drillers, current prices are far too low for them to operate profitably. We expect a large number of bankruptcies across the energy industry vertical and a challenging time ahead raising capital once prices stabilize.	— Slowing demand for oil, mostly driven by slowing economic growth, is a key concern for the industry. Longer-term, oil demand is expected to decline as non-carbon sources of power outcompete hydrocarbons. — Access to capital within oil & gas presents a challenge for an industry that requires large capital expenditures to grow. — Geopolitics and the tension between OPEC and non-OPEC producers presents an additional risk for investors.	We had been cautious about energy going into 2020 but industry fundamentals deteriorated far more than we would have predicted. There is too much uncertainty around oil/gas demand, access to capital, and geopolitics for us to gain comfort. We recognize that someone will likely make money from the devastation occurring in upstream energy, but we aren't willing to place bets just yet.	**Negative**

Outlook summary (continued)

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
Renewables	Operating renewable energy assets remain expensive with yields in the mid-single digits. New development projects will slow down in 2020 but will likely see a rebound shortly after as solar and wind farms are now the cheapest form of new build electricity generation for over two-thirds of the global population, and countries shift their energy sources to meet pledges to become carbon neutral.	— As corporations shore up capital to preserve liquidity, capital expenditure dedicated to developing and purchasing renewable energy assets may shrink. There is also a potential for government subsidies and tax incentives to be reduced as governments are forced to dedicate resources to the current crisis as opposed to the long-term impact of climate change.	While we believe the development of solar and wind farms is an attractive investment, it is difficult to find scalable opportunities that warrant deploying capital into a dedicated renewable energy fund. Infrastructure funds with a track record of successful development projects within broader portfolios are the most effective way to gain exposure to the sector.	**Neutral**
Mining	The mining industry has not suffered quite like the oil & gas market, but it has been a weak sector for several years. Unlike oil, we see growing demand for industrial metals like copper, nickel, zinc and steel inputs as electrification takes market share from carbon-based power generation.	— Global GDP growth and the economy in China are the two biggest risks in the sector. China represents a disproportionately large buyer of industrial metals, so its economy and industrial output have a large impact on metal prices.	Longer-term, we believe the demand outlook looks favorable for several industrial metals. There will be near-term headwinds from Covid-19 but as the global economy recovers, we expect a tightening of supply/demand for mining commodities.	**Positive**
Midstream Energy / MLPs	Coming into 2020, midstream companies were trading at levels that indicated the market was skeptical about company cashflows and future earnings. Falling oil prices from the impact of Covid-19 and news that OPEC & Russia would no longer cooperate to balance the supply side of the market compounded negative sentiment. With so much uncertainty now present in the energy market, we would avoid companies exposed directly or indirectly to oil price movement.	— Falling oil/gas prices could curtail drilling programs and reduce production volumes which would hurt MLP cash flows. — Regulatory risk is low for most of the midstream space though there are pockets of risk in states like Colorado and New York where regulations could greatly impact drillers and pipeline owners.	We have shifted our outlook to negative for midstream energy given the challenges that emerged in 2020. Though prices for listed midstream stocks have plummeted, we are seeing a wave of distribution cuts that will reset the sectors income yield and depending on the duration of the oil price downturn, could see a spike in bankruptcies.	**Negative**

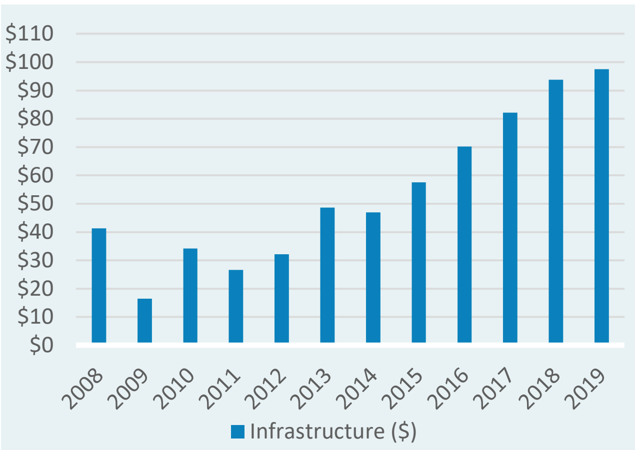
Outlook summary (continued)

Strategy	Current Environment	Potential Risks	Outlook/Implementation	View
Timberland	Timber markets in North America continue to face challenges from excess inventory, low interest rates and unfavorable transaction market. Stumpage and lumber prices are facing near-term headwinds from Covid-19 as home building softens exports to Asia have stalled. Our outlook on timber has been negative for several years due to the headwinds the asset class has faced. Despite broadly negative sentiment towards the timber industry, we struggle to make a case for returns to reach higher than mid-single digits.	— Coming off trade war headwinds, the timber market hit another bump when Covid-19 stalled exports to Asia and home building activity declined. An already oversupplied timber market will take time to work through excess inventory. — Timber markets outside the U.S. face varying degrees of currency and political risk which in many cases has resulted in disappointing returns for investors. With few exceptions, returns do not justify the additional risk.	For most investors, high single-digit expected returns for timberland in the U.S. is too low for the illiquidity and risk assumed within the asset class. Fundraising has been slow for several years which has resulted in a slow transaction market and less competition but finding attractive deals remains elusive.	**Negative**
Agriculture	Farmland prices in the Midwest leveled off after 2014 but remain too expensive for the income and return potential. We are interested in opportunities where we can control more of the value-chain associated with food production.	— Similar to timber markets, we have concerns around valuations and the risk/return proposition for farmland investments. — The income potential within farmland is more attractive than timber and the global growth in food is a more compelling macro trend than pulp and paper but we remain bearish on the sector, in general.	Currently we find the asset class to be broadly expensive. Selectively looking at agriculture business investments where crop and land are a component of a broader value-add investment strategy.	**Negative**

Infrastructure

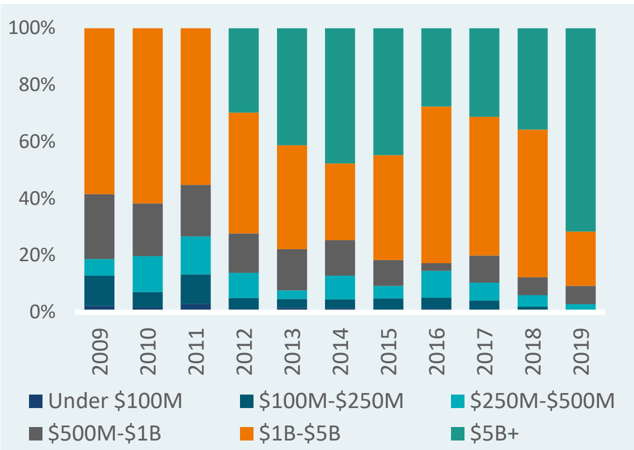
- Fundraising within Infrastructure reached a record high of $98 billion in 2019, according to Preqin. In addition, large infrastructure funds are capturing a greater share of the overall market, with around 70% of the capital raised in 2019 committed to infrastructure funds that were targeting at least $5B in assets.
- In 2019, we saw a surge in deal activity for telecom and energy (ex. renewables). We've been bullish on the telecom theme given the tailwinds around data usage growth globally. Social distancing measures have heightened our collective use of data as we learn to work remotely and conduct meetings via videoconferencing. The growth in energy transactions, led by several midstream take-privates, has likely not worked quite as well. The collapse in oil prices has devasted oil/gas producers which will flow through to the pipeline owners as volumes fall from production declines.

FUNDRAISING IN INFRASTRUCTURE



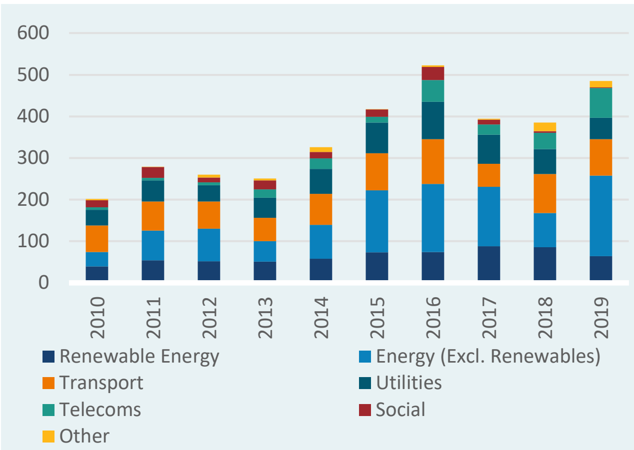
Source: Preqin

INFRASTRUCTURE FUNDRAISING BY FUND SIZE



Source: Pitchbook

INFRASTRUCTURE DEALS BY SECTOR

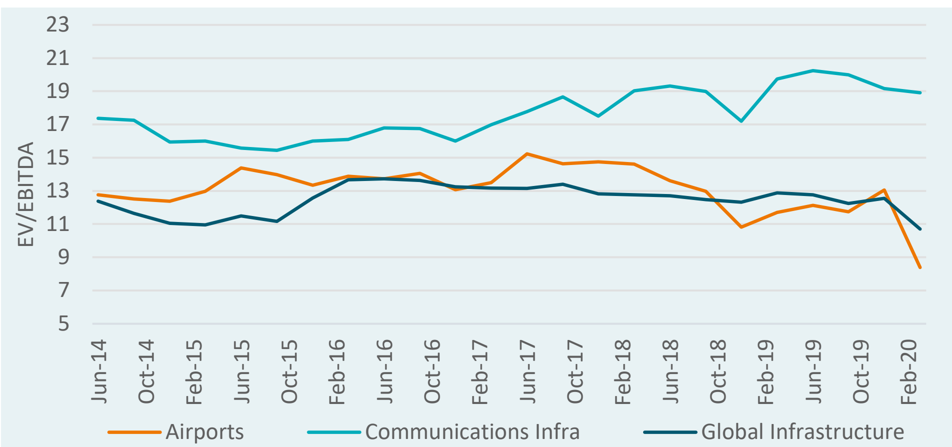


Source: Preqin

Infrastructure (cont.)

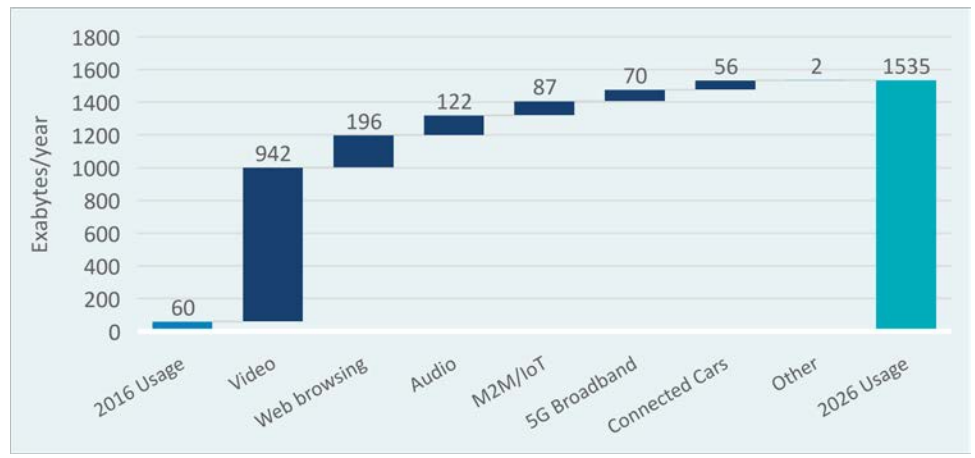
- Transportation infrastructure (i.e. ports, toll roads, airports) is experiencing a material decline in revenue due to travel restrictions and slowing global trade. Airport passenger traffic fell as much as 50-90% during March as the full impact of social distancing orders took effect. Cargo volumes were down 30% at the Port of Los Angeles, the largest port in the U.S. In contrast, communications infrastructure has either seen little-to-no impact or has benefited from a surge in data usage. Verizon reported traffic across its networks increased 20% from pre-coronavirus levels as video streaming, gaming and web traffic surged.
- Valuations within sectors most impacted by Covid-19 fell sharply during the first quarter, reflecting the near-term business impact and higher risk premiums. Listed airports, for example, fell from an average EV/EBITDA multiple of 13.0x to 8.0x in March 2020. Having been bearish on the transportation sector for a couple years, the disruption to infrastructure assets could present an interesting entry point for new capital.
- Communication infrastructure trades at a considerable premium, 19.0x vs. 10.5x for infrastructure broadly, which is a reflection of the stability of their earnings and future growth potential. The macro tailwinds within mobile data usage and video streaming are compelling, though valuations, at least within public markets, appear to be pricing in much of the future growth opportunity.

INFRASTRUCTURE VALUATIONS – EV/EBITDA



Source: Bloomberg; Dow Jones Brookfield Infrastructure; S&P Global Infrastructure

GROWTH IN GLOBAL MOBILE DATA TRAFFIC (EXABYTES PER YEAR)



Source: Altman Vilandrie 2018

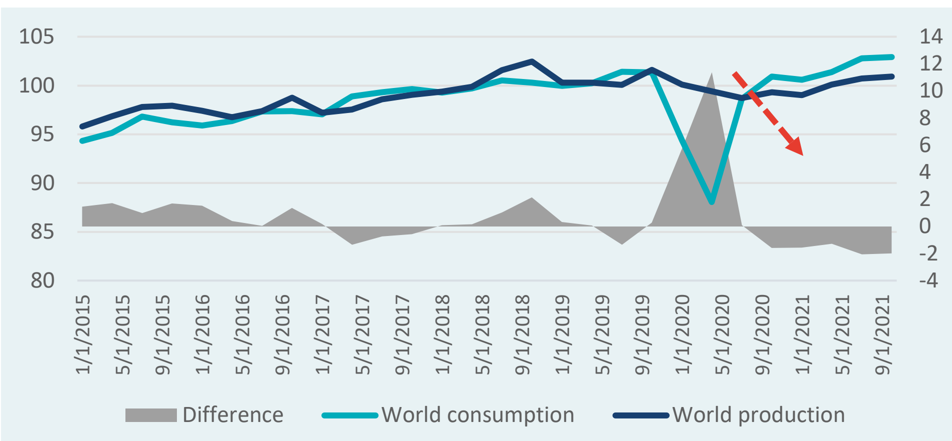
Energy – Oil/Gas

— The oil/gas industry would seem to be cursed as weather, geopolitics, human pandemics and investor antipathy have collectively hit the sector when it was already severely wounded. News of a breakdown in the alliance between OPEC and Russia on supply management will likely result in another round of bankruptcies and capital destruction for North American Oil & Gas companies. Forecasts for oil demand are still being adjusted downward but are projected to decline 5-10% in 2020. An already oversupplied market will take time to recover from the steep decline in demand but for U.S. drillers, time is in short supply.

— We do not see private capital stepping in to provide much needed debt and equity infusions as they did in 2015/'16. Fundraising, both in equity and credit strategies, to support the energy industry has been anemic. Absent a sharp recovery in oil prices over the next 6 months, we believe a substantial wave of restructurings will occur and U.S. shale production will fall sharply as small and financially weak operators are taken out of the market.

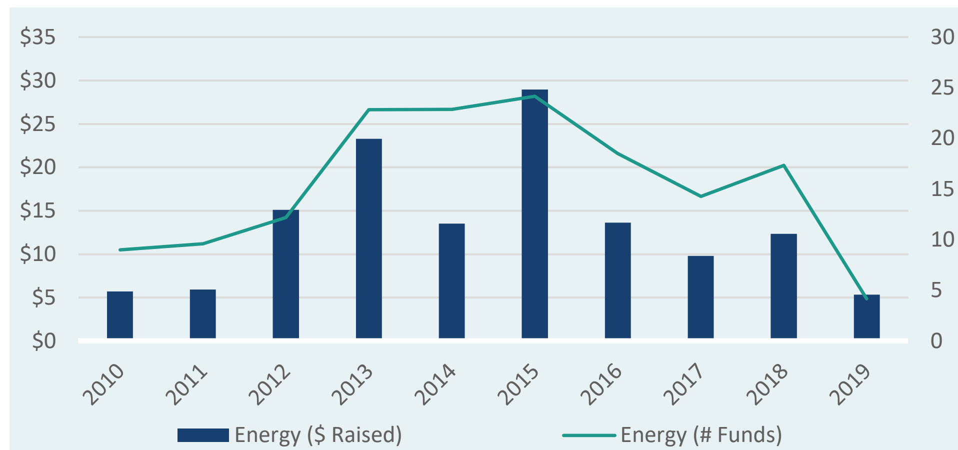
— For now, we would recommend investors avoid putting new capital into the sector. We are more comfortable potentially missing out on a market bottom than risking additional capital that in our view is likely to become impaired.

WORLD CONSUMPTION/PRODUCTION OF LIQUID FUELS PER DAY



Source: EIA

FUNDRAISING IN OIL/GAS

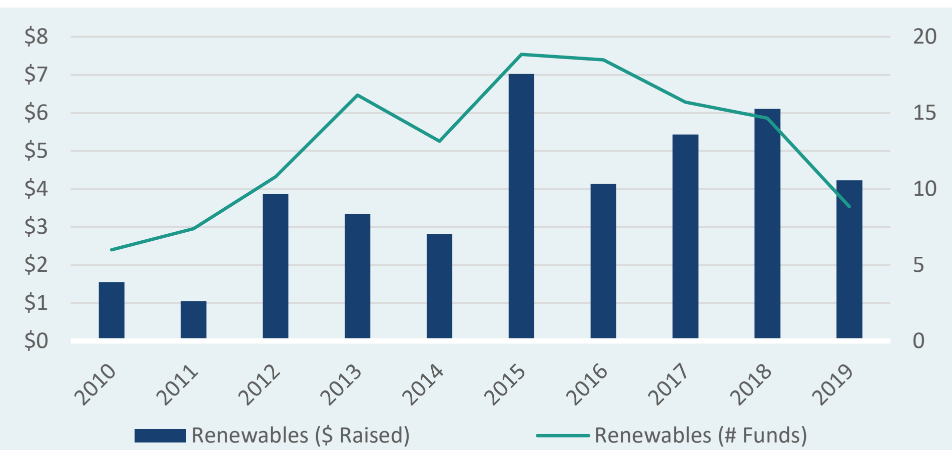


Source: Preqin

Energy – Renewables

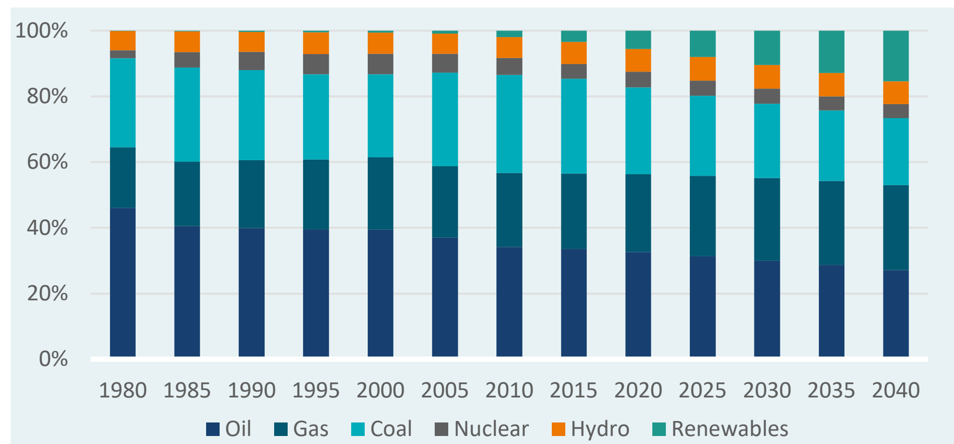
- Dedicated renewable energy fundraising moderated in 2019 to just over $4 billion. However, this figure does not include energy funds that invest in both conventional energy sources along with renewable sources, or infrastructure funds that target renewable energy investments as a portion of their strategy. Taken as a whole, investment in the sector has been on a consistent upward trend, with only more room to grow as countries and corporations aim to become carbon neutral. According to Bloomberg[1], over $10 trillion of investment in new renewable energy generation assets is needed by 2050 in order to meet demand.
- The sector has held up strongly through the Covid-19 crisis due to stable demand for electricity and the relative ease of operations for solar and wind farms. New development projects will likely slow in the short term as financing dries up and permitting processes come to a halt, but existing assets will be largely unaffected.
- Despite a strong outlook for demand, there are challenges to deploying capital in the space. Investments in operating assets are not compelling as returns remain in the mid-single digits, and it is difficult to find scalable development opportunities. We currently believe the best way to gain exposure is through broader infrastructure funds that include investments in the sector as a component of a diversified portfolio.

FUNDRAISING IN RENEWABLES



Source: Preqin

GLOBAL ENERGY SOURCES



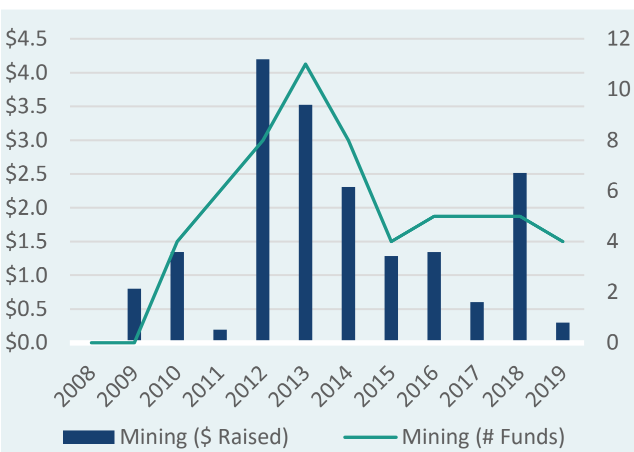
Source: BP

1. Bloomberg New Energy Finance, New Energy Outlook 2019.

Metals and mining

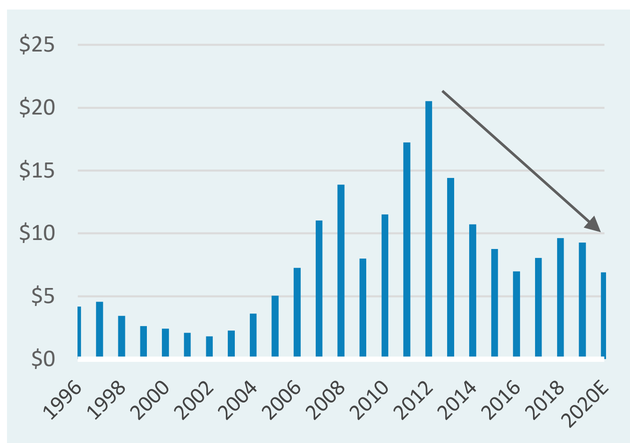
- Fundraising in the private equity mining segment has been lumpy and quite modest since the GFC. 2019 saw a significant decrease after a notable uptick in fundraising in 2018. The landscape for fundraising in mining will be one to watch as more institutions implement strong ESG programs that will undoubtedly impact mining GPs. We could see a scenario where fundraising improves if investors see the benefit of funding the extraction of materials that contribute to our shift away from fossil fuels.
- After a modest recovery from a cyclical low in 2016, mining exploration budgets are expected to decrease by 29% in 2020 due to limited access to financing and lockdown measures in place in many countries mining companies operate. Despite short term challenges, macro trends of increasing demand for industrial metals remain in place. Our overall outlook within mining is positive with a notable challenge in finding enough investment opportunities that meet our underwriting criteria.
- On the investment side, we have participated in the mining sector by backing teams with expertise in financing mining projects which delivers a high income return with some upside associated with a structured equity security. We are more bullish on base/industrial metals which longer-term will benefit from a shift away from fossil fuels. We are less bullish on bulk and energy-related commodities.

FUNDRAISING IN MINING



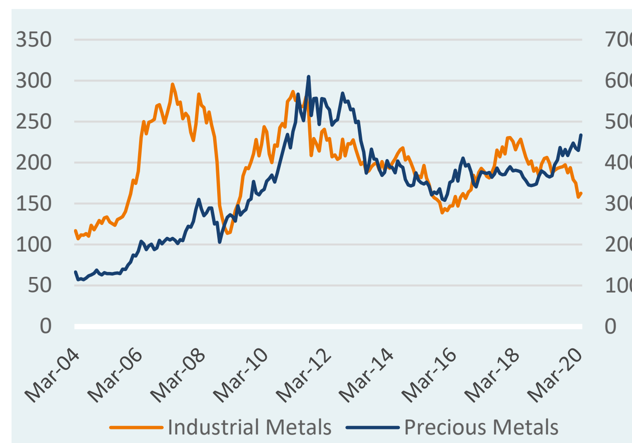
Source: Preqin

CAPITAL EXPENDITURE IN MINING ($B)



Source: S&P Global Market Intelligence

METAL PRICES

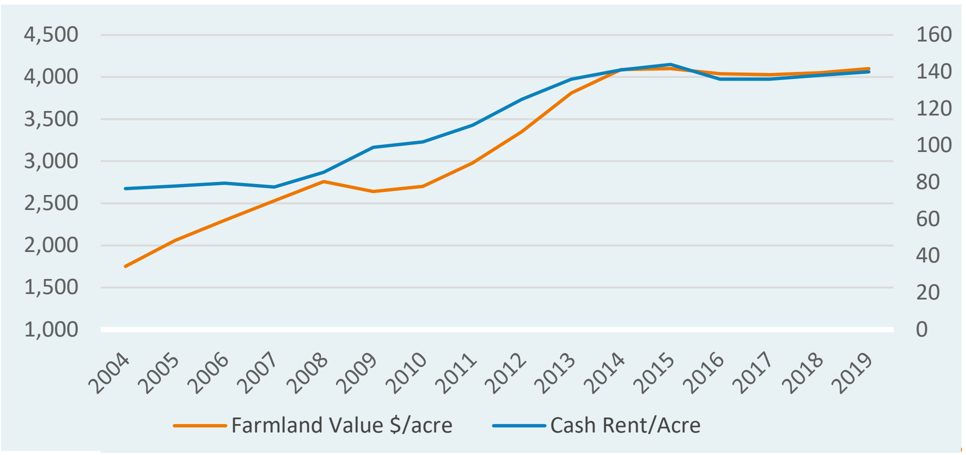


Source: Bloomberg

Agriculture

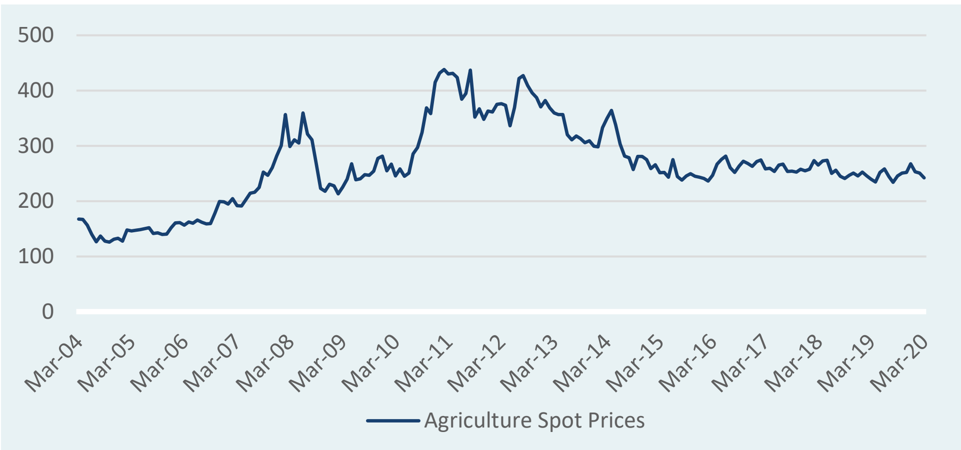
- Farmland values nationally have remained largely flat since 2014, despite a challenging commodity price environment over the last 5 years. That has put pressure on investment returns as income yields have been flat-to-down and capital appreciation has not materialized. For new investors, the investment return potential looks disappointing as rental yields remain stubbornly low (3-4% on average) and land values appear expensive.
- In the row crop segment, rental yields hover around 3% which is insufficient in our opinion for most institutional investors. Permanent crops offer the potential of higher income yields but also carry greater risk and operational expertise. There are additional ways to add value through crop selection, improving crop yields and selling land for higher-and-better-use cases. In addition, managers can control a greater share of the food production value-chain which carries higher returns but also higher operational risk.
- We tend to favor agriculture strategies that both own land for crop production and control the operating verticals that bring food to the consumer. Strategies that can capture more value through processing, storage and marketing, offer the potential of higher returns.

U.S. NATIONAL FARMLAND VALUES VS CASH RENTS



Source: USDA

BLOOMBERG AGRICULTURE PRICES

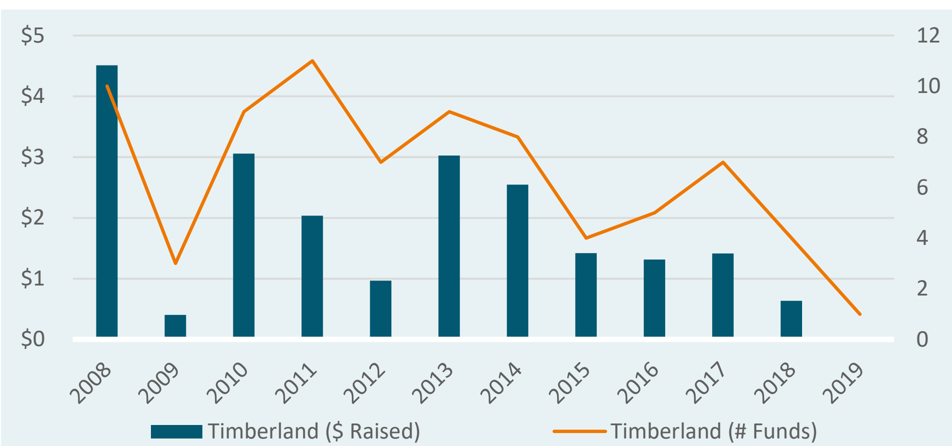


Source: Bloomberg, as of 3/31/20

Timberland

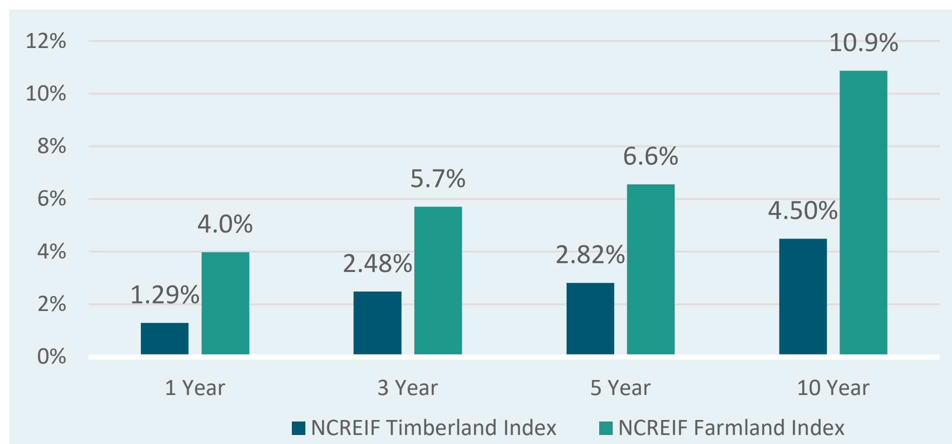
- Fundraising has continued to be a challenge within the timber industry with Preqin having 1 timber fund raised in 2019. Despite a lack of capital being raised by TIMOs, the investment opportunity within timber has not materially improved.
- One other effect of the fundraising trend in timberland is the cluster of "zombie" funds raised in the pre-GFC period that are finding liquidity a challenge. The mismatch in buyers and sellers in other markets could present a buying opportunity but a reluctance on the part of selling timber managers to realize a loss has kept prices elevated and thus expected returns low.
- The past 10 years have been lackluster for timber investors, achieving a trailing average return of 4.5%, according to the NCREIF Timberland Index. Many TIMO funds have fared worse than the index due to leverage and/or less favorable geographic exposures within their portfolio. The 10-year returns prior to the GFC were more than double the returns experienced after, so investors may ask, which returns we are likely to see in the decade ahead. We believe the asset class was undergoing a unique shift in the 90s and early 2000s that drove high double-digit returns that aren't repeatable in today's market.

FUNDRAISING IN TIMBERLAND



Source: Pitchbook/Preqin

TIMBERLAND TRAILING PERFORMANCE



Source: NCREIF (as of 3/31/20)

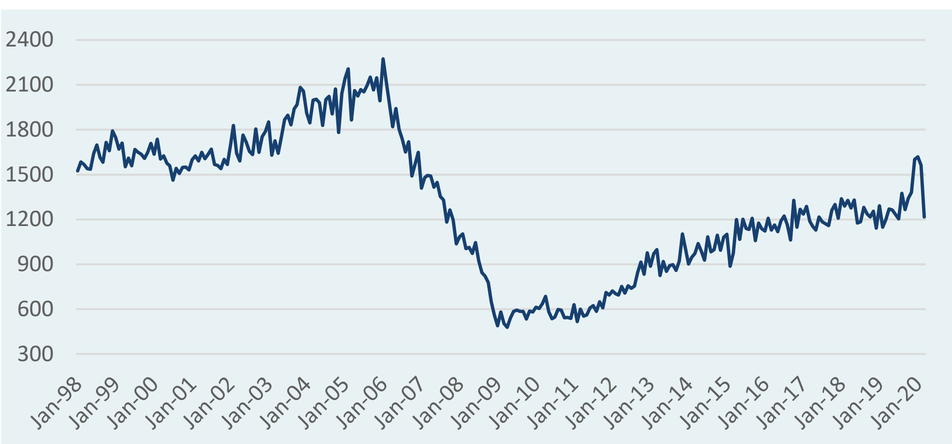
Timberland (continued)

— Housing starts have experienced a slow rebound since the GFC as millennials delayed buying and urban living trends reduced demand for single family homes. There was a surge in housing starts in 2019 but the impact of Covid-19 caused a sharp reversal in the first quarter of 2020.

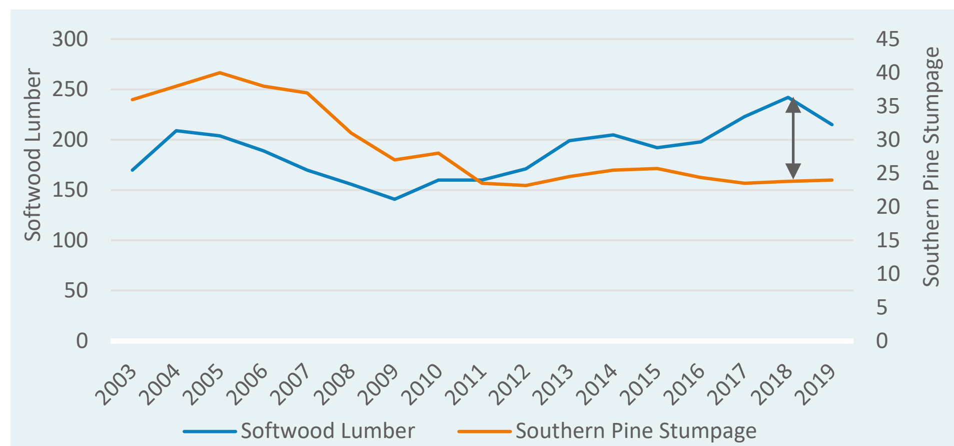
— As the chart on the bottom right indicates, one of the challenges that timber investors have faced is that the price they received for their trees (southern pine stumpage) began to decline during the GFC and largely never recovered. With housing construction turning around in 2015/16, lumber prices began to respond but the prices that timberland owners received did not. Two critical issues have kept stumpage prices depressed, excess supply of trees in the region and a lack of mill density that has created bottle necks in lumber production.

— The impact of Covid-19 is likely to be a short-term headwind for lumber prices and the timber industry as a whole. That said, given the lack of highly leveraged players in the timber market, we don't expect a stressed buying opportunity to emerge.

U.S. HOUSING STARTS



SOUTHERN PINE STUMPAGE VS SOFTWOOD LUMBER PRICES



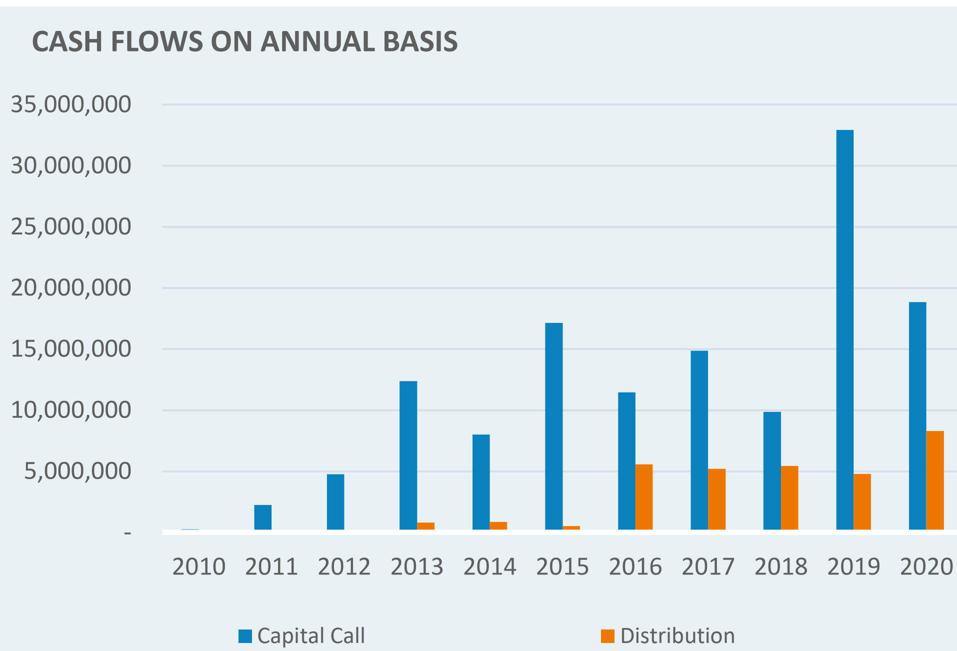
Source: St. Louis Fed, as of 3/1/20

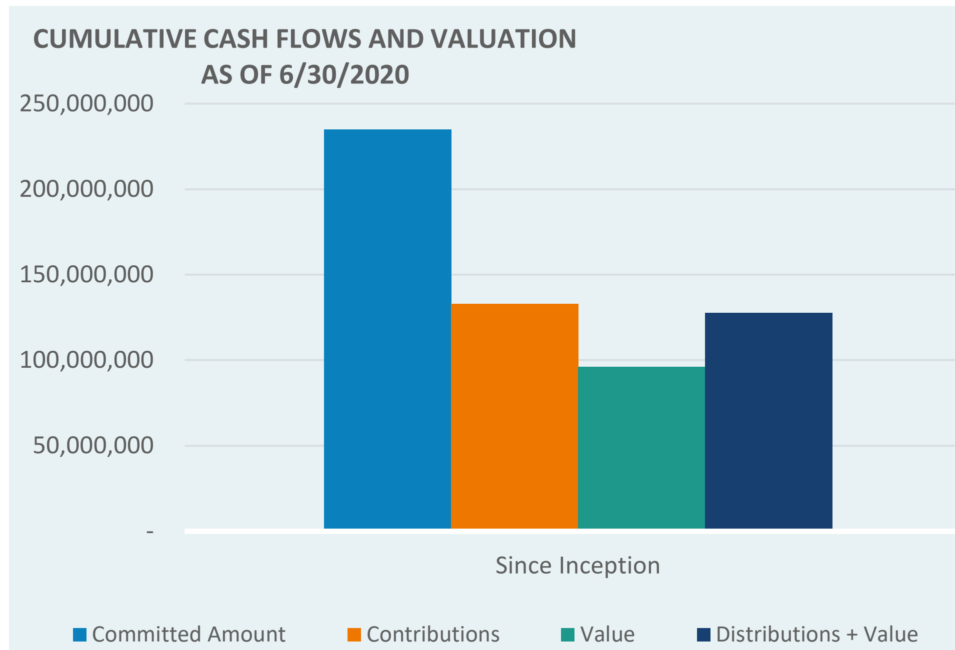
Real Asset Performance

Performance

— The portfolio is currently valued at $96.1 million. Together with $31.5 million in realized distributions, the Total Value at $127.6 million is approximately $5.2 million below $132.8 million total capital contributions, resulting in a total value multiple of 0.96x and a net IRR of -1.52%. If we exclude the investment in Sheridan, the portfolio IRR would be +6.10%. Capital weighted average investment age of the portfolio is 3.2 years.

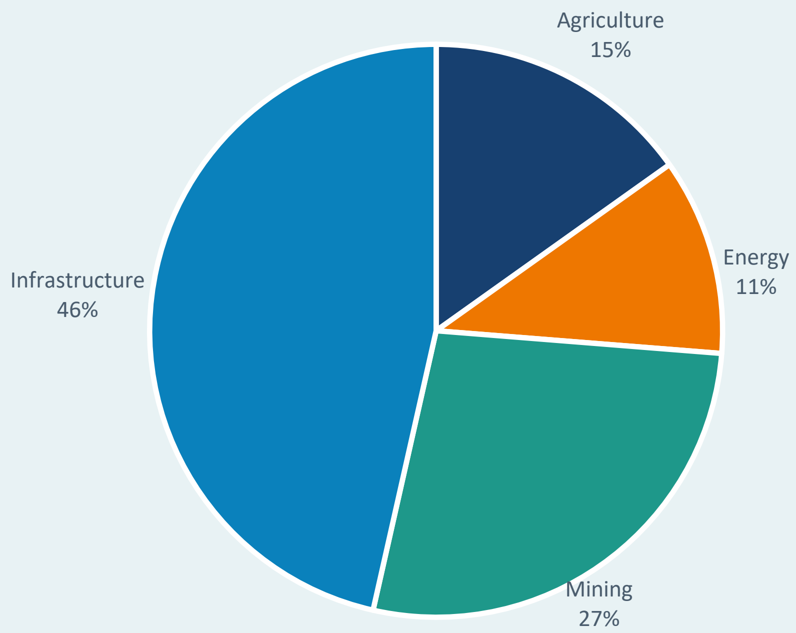
— Within Private Real Assets, the current allocation of market value exposure is 15.2% to Agriculture, 11.3% to Energy, 27.2% to Mining, and 46.3% to Infrastructure. The Portfolio is expected to be diversified over a period of 3 to 5 years.



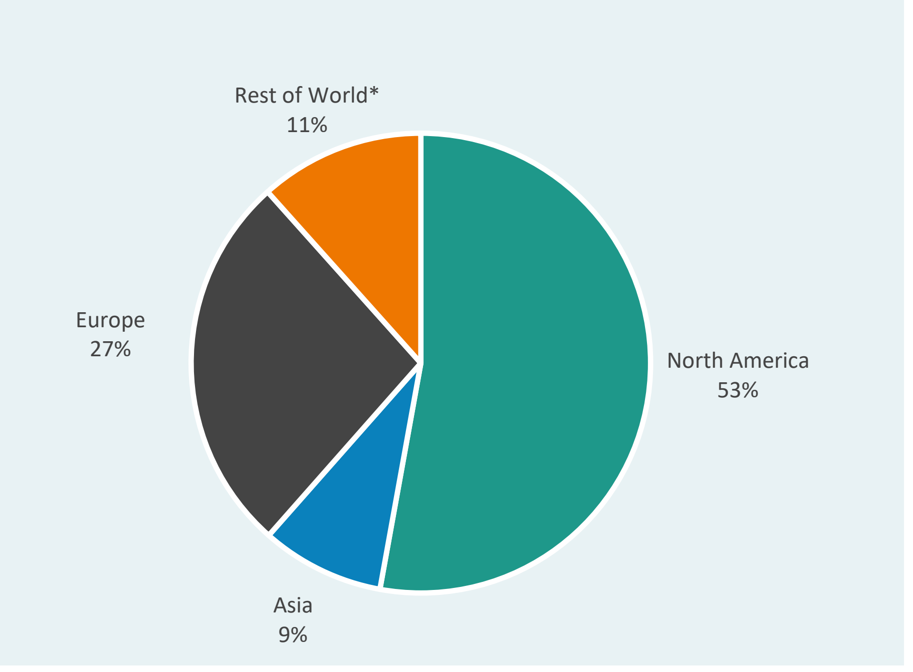


Investment Type	Commitment	Current Exposure	Current Exposure as % of Portfolio
Agriculture	15,000,000	14,586,536	15.2%
Energy	49,800,000	10,865,564	11.3%
Mining	55,000,000	26,175,927	27.2%
Infrastructure	115,000,000	44,464,590	46.3%
Total Portfolio	**234,800,000**	**96,092,617**	**100.0%**

REAL ASSETS PORTFOLIO: CURRENT EXPOSURE



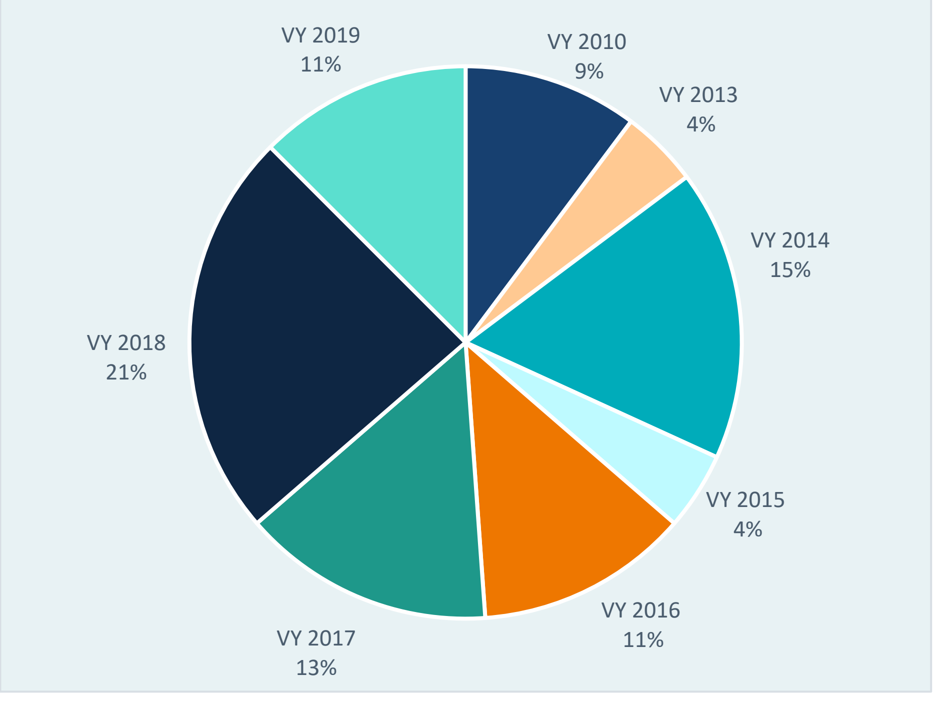
Geography	Reported Fair Value
North America	50,788,320
Asia	8,324,034
Europe	25,813,717
Rest of World*	11,166,545
Total Portfolio	**96,092,617**



Based on invested capital as of June 30, 2020, if provided by the partnerships. The portfolio is expected to be US-biased given the mandate to hedge domestic inflation.

** Rest of World includes Australia, Chile, Senegal, DRC, and Burkina Faso.*

Vintage Year	Commitment as of 6/30/2020	% of Portfolio Commitment	Reported Value as of 6/30/2020
2010	20,000,000	8.5%	0
2013	10,000,000	4.3%	2,734,423
2014	35,000,000	14.9%	25,225,921
2015	10,000,000	4.3%	12,771,048
2016	25,000,000	10.6%	10,680,892
2017	29,800,000	12.7%	13,681,384
2018	50,000,000	21.3%	21,012,650
2019	25,000,000	10.6%	9,986,299
2020	30,000,000	12.8%	0
Total Portfolio	**234,800,000**	**100%**	**96,092,617**



The portfolio is increasingly diversified by vintage year with larger capital commitments expected over the next 2-3 years.

— SamCERA committed $25.0 million to EQT Infrastructure V, a re-up with an existing GP relationship for SamCERA within the infrastructure portfolio.

— Several GPs within SamCERA's portfolio are coming back to market in 2021 so we will be revisiting those opportunities for potential re-ups. We are also working on a sustainable real asset strategy that could be an interesting investment opportunity with the additional benefit of being ESG-friendly.

— As the shift away from commodity-oriented sectors continues, we will look opportunistically for strategies in the space, but we expect infrastructure to occupy a larger share of real asset portfolios going forward.