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MEKETA
INVESTMENT GROUP

MEMORANDUM

TO: Members of the Investment Committee, CalPERS

FROM: Meketa Investment Group

DATE: March 16, 2020

RE: Semi-Annual Infrastructure Performance Review as of December 31, 2019

In our role as the Board Infrastructure Consultant, Meketa Investment Group ("Meketa") conducted a semi-annual performance review of the Infrastructure Portfolio ("the Portfolio") based on data provided in Wilshire's California Public Employees' Retirement System ("CalPERS") Real Assets Performance Analysis Review for the period ended December 31, 2019, and selected CalPERS reports.[1] This memorandum provides the Portfolio performance data and information on key policy parameters, along with summary market commentary.

Portfolio Performance[2]

CalPERS' Infrastructure Portfolio continues to significantly outperform its policy benchmark for all reporting periods shown below per Wilshire's reported performance based on State Street Bank's data.

Net Returns (%)	1 Year	3 Year	5 Year	10 Year
Infrastructure Portfolio Returns	7.3	12.2	11.2	14.6
Infrastructure Policy Benchmark[3]	4.6	5.9	5.4	6.0
Over (under) Performance	2.8	6.3	5.7	8.6

We do observe that one-year returns are lower than prior periods—but still above the benchmark. By comparison, a year ago the one year return was 11.3%, with three-, five-, and ten-year returns at 12.6%, 14.3%, and 15.2%, respectively (as of September 30, 2018). Meketa has commented previously that we expect prior period higher returns to moderate somewhat going forward. Other aspects of performance drivers are consistent with the Portfolio's positioning and expected evolution, as highlighted below.

[1] Real Assets Program Allocation, Characteristics, and Leverage Reports (pdf) and Datasheets (Excel), Period Ending September 30, 2019, and Real Assets Quarterly Performance Report, Partnership Financial Statements as of September 30, 2019.

[2] Per Wilshire's CalPERS Real Assets Performance Analysis Review for the period ended December 31, 2019, reported with a 1-quarter lag, so effectively as of September 30, 2019.

- Core, comprising over 80% of the Portfolio, continues to deliver the strongest returns among the risk categories, but has also moderated the most.
- Value Add has moderated somewhat and is the second place performer, but not hugely impactful at less than 10% of the Portfolio.
- Opportunistic is unchanged, but still the lowest performer, comprising 10% of the Portfolio.
- International continues to be the best performing segment, closely followed by Commercial. Essential is moderating, and Specialized is holding steady but remains the lowest performer.
- The Portfolio's one year yield is down, coming in below Staff's expectations of income between 3% and 5% over the long term, and is sitting at about one-quarter of total return instead of closer to one-third for recent prior periods.

New commitments to existing and new investment managers made in the last year are intended to further strengthen the portfolio and position it for the future market environment, including but not limited to expected investments in yield-generating core, global value add, and North American mandates. Additionally, older lower performing investments will continue to roll off with exits.

Implementation

The Portfolio's NAV as of September 30, 2019, was $4.70 billion, a decrease of $70 million, or 1.5%, compared to the March 31, 2019 NAV of $4.77 billion.[1] The current NAV represents 1.2% of the Total Fund.[2] As of July 2018, the Real Asset Program-level Policy Target is 13% (±5%) for the Real Estate, Infrastructure, and Forestland Portfolios collectively. This was generated from the 2018 ALM and intentionally eliminates prior portfolio-level targets. Previously, a 1% Interim Target was in effect for the Infrastructure Portfolio, as established under the 2013 Asset Liability Management ("ALM") study.[3]

The current NAV is essentially unchanged from six months prior, and only modestly higher than a year ago (which then was $4.48 billion). We have previously noted a challenge to increasing the Portfolio's NAV will be to tilt cash flows in favor of contributions, which has not been the balance of late. Over the third quarter, the Portfolio's distributions outpaced its contributions, approximately $150 million to $50 million, and over the last year they were roughly equal at $1.25 billion and $1.13 billion, respectively.

Notable investment activity for the period April 1, 2019 to September 30, 2019 includes CalPERS' transfer of its ownership interest in Gatwick Airport from a direct investment vehicle into a separate account as it continues to hold this investment following Vinci SA's acquisition of a controlling stake in the airport from Global Infrastructure Partners and affiliated investors.

[1] Values from CalPERS Real Assets Quarterly Performance Report, September 30, 2019 for visibility on quarterly cash flows.

[2] The Total Fund market value was $380.1 billion as of September 30, 2019, per Staff.

[3] Also per Staff 2017 Annual Program Review.

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Key Policy Parameters

The Portfolio is compliant with all key parameters related to diversification and other limits applicable at the Portfolio level, as demonstrated in the table below.

Key Portfolio Parameter	Policy Range/Limit	NAV 9/30/19 Exposure
Risk Classification	**(%)**	**(%) [1]**
Core	60-100	82.6
Value Add	0-25	6.9
Opportunistic-All Strategies	0-25	10.5
Geographic Region	**(%) [2]**	**(%) [3]**
United States	40-100	55.8
International Developed	0-60	43.7
International Developing	0-15	0.5
International Frontier	0-5	0.0
Manager Exposure[4]	**(%)**	**(%)**
Largest Partner Relationship	20 max	4.7
Investments with No External Manager	20 max	1.8
Leverage[5]		
Loan to Value	65% max	43.9%
Debt Service Coverage Ratio	1.25x min	1.90x

Market Commentary[1]

Market Activity

Transaction activity is holding steady at high levels. Preqin reports 1,301 completed deals with a transaction date in the second half of 2019, compared to 1,230 for the first half of the year, for a total of 2,531. The 2019 deal total represents a slight decrease from the 2,736 recorded in 2018 and from the 2017 peak of 3,324. At the same time, average deal value has steadily increased since 2013, and was up over 30% in 2019 from the 2018 calendar year average. The chart below illustrates these data and trends.

[1] Commentary based on analysis of aggregated and deal-level data from Preqin, and other Preqin data, unless otherwise cited. Prior year data may have changed from figures shown in prior reports.

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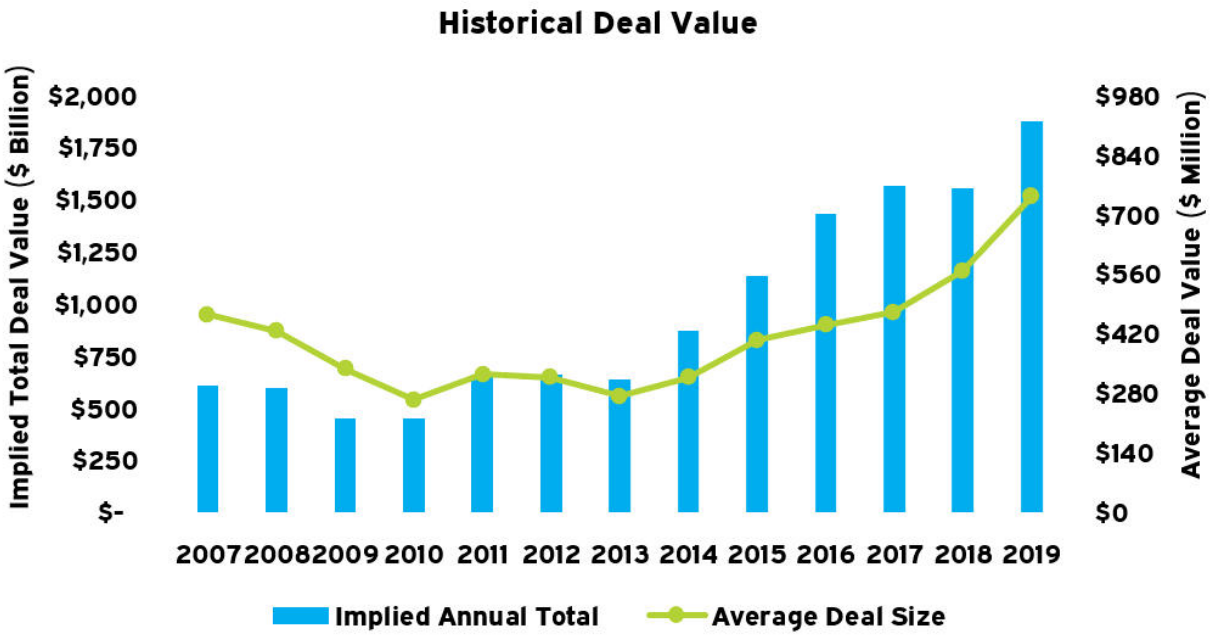
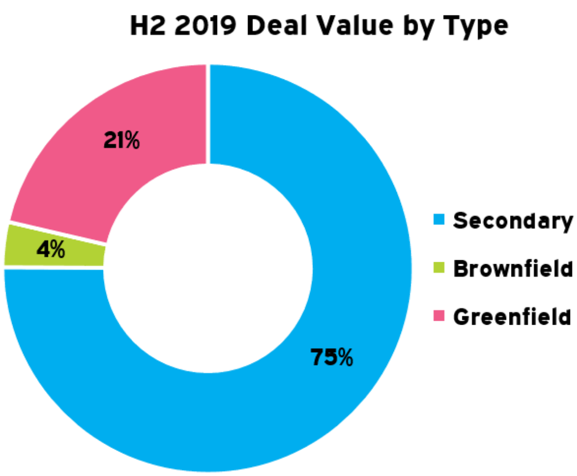
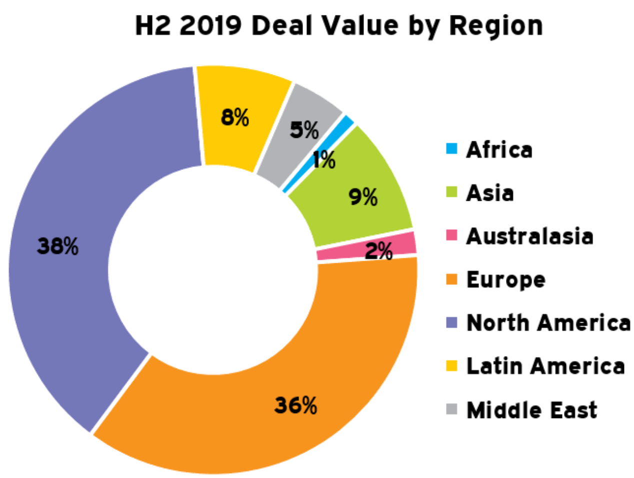


Total deal size in H2 2019 (including equity and debt) is only available for 371 transactions, or about 29% of total number of deals, representing $243 billion in deal value. Distribution by risk category,[1] geography, and sector for the deals for which size is available is shown below.





[1] According to Preqin: Secondary stage is a fully operational asset or structure that requires no investment for development; Brownfield is an existing, typically operating asset needing improvements, repairs, or expansion; and a Greenfield asset does not currently exist. These categories can roughly be mapped to Core, Value Add, and Opportunistic, respectively, ignoring other risk attributes such as geography and sector.

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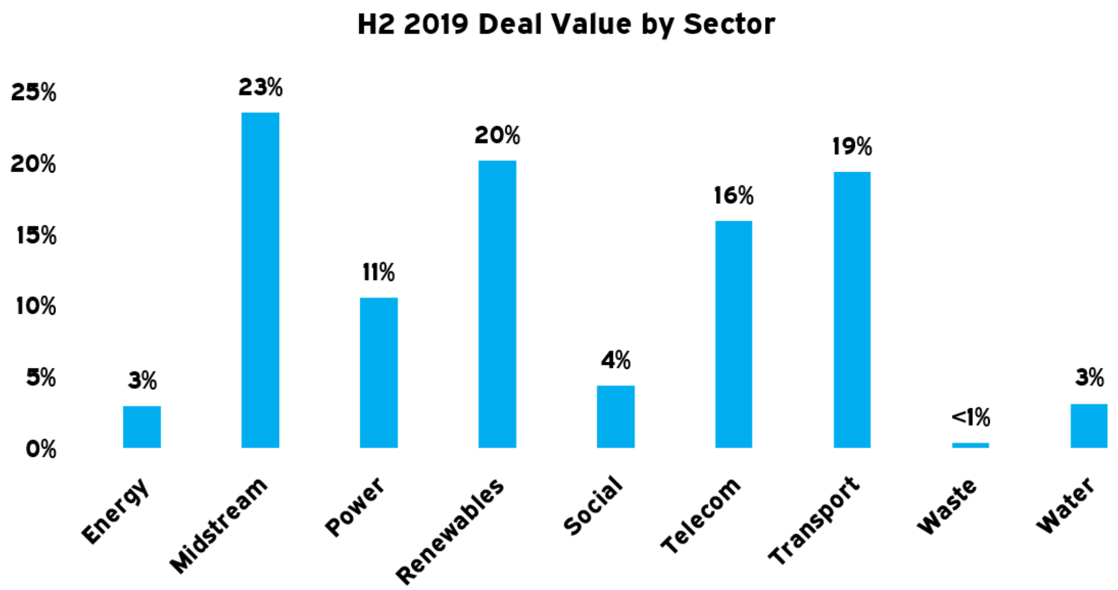
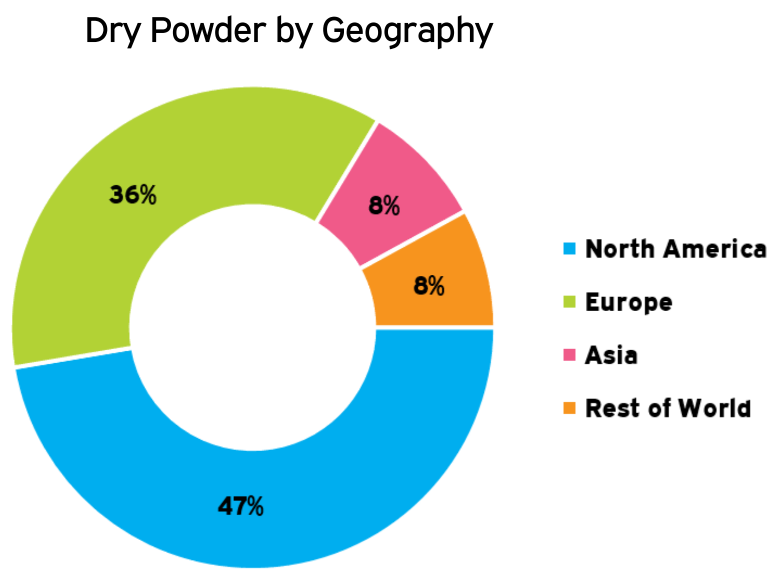


Dry Powder and Fundraising

As of December 2019, unlisted infrastructure funds[1] had $219 billion in dry powder, the highest year-end level on record and an increase of $31 billion from December 2018. Together, funds focused on North America and Europe, CalPERS' target geographies, accounted for approximately 83% of the total dry powder, as seen in the chart below.



[1] Preqin, includes funds and fund of funds.

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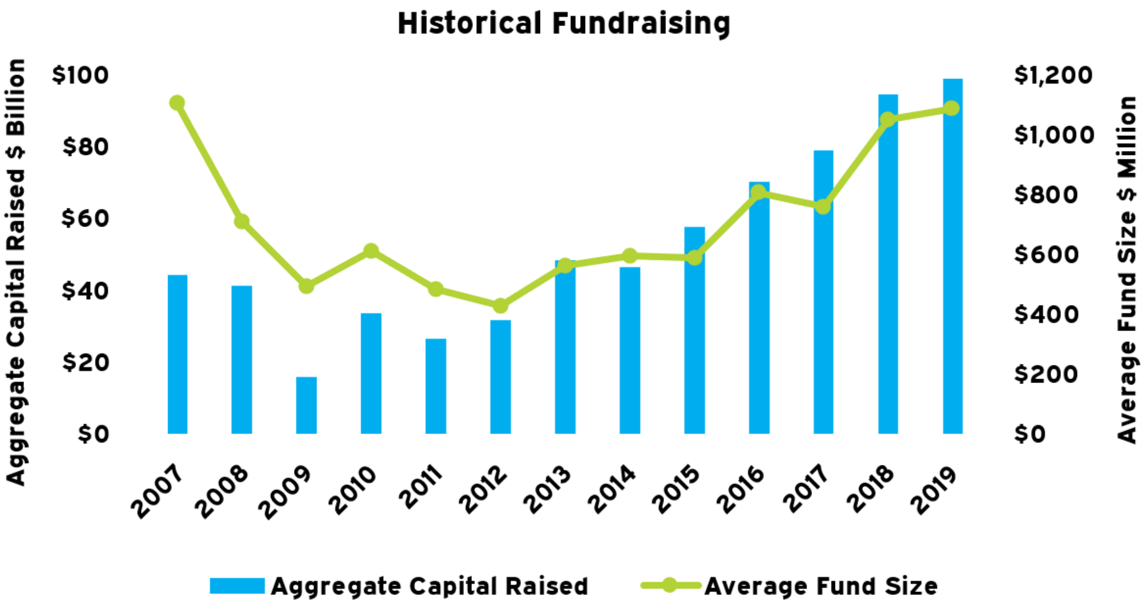
Infrastructure managers exceeded the record fundraising levels reached during 2018 with nearly $100 billion raised in 2019. In total, there were 101 funds raised during the year at an average fund size of approximately $1.1 billion,[1] in line with the previous year's average. A handful of managers continue to define new boundaries for the mega and large segment of the market, including two well-known names that are each raising their fourth funds, seeking $20 billion and $10 billion, respectively, and three other recognized names each targeting approximately $6 billion in commitments for their funds. The chart below illustrate these data and trends.



Market Outlook

Institutional demand for infrastructure continues at robust and record-setting levels. Some managers are responding by increasing their fundraising targets, average deal size, and/or number of deals. Some are responding by launching new strategies and platforms, some contiguous and some not with existing offerings. CalPERS' bench of long-time managers and new relationships with experienced teams offers proprietary deal flow and discipline in competitive opportunities that should help the Portfolio prudently navigate this market. Additionally, CalPERS' reliance on separate accounts that offer greater governance and lower fees than commingled vehicles should also support creative sourcing and diversified capital deployment.

[1] Average excludes funds for which fundraising totals were not provided.

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Conclusion

We believe the Portfolio's performance for trailing periods of one year and longer has been impressive relative to the benchmark. The Portfolio's performance does appear to be moderating somewhat, a possibility Meketa commented on in prior reports.

The Portfolio's development and its current position remains appropriate and consistent with applicable policies and guidances:

- *Risk*—Exposures are roughly within the middle of the classification policy ranges, with the exception of development stage, which has no investments;
- *Geography*—Exposures are within the categorical ranges;
- *Partner Relationships and Direct Investments*—Exposures are well below the maximums allowed; and
- *Leverage*—Metrics are comfortably compliant.

As we have observed in prior reports, the market environment remains challenging for buyers of core infrastructure—CalPERS' primary target. Recent expanded mandates with existing managers and selected new fund and separate account relationships should increase CalPERS' investment opportunity set, including both core and value add markets in the Portfolio's target geographies.

Please do not hesitate to contact us if you have questions or require additional information.

Sincerely,

Stephen P. McCourt, CFA	Lisa Bacon, CAIA
Managing Principal	Principal

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