2018 PREQIN GLOBAL INFRASTRUCTURE REPORT

SAMPLE PAGES

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CONTENTS

INFRASTRUCTURE: 2017 IN NUMBERS

INFRASTRUCTURE HIGHLIGHTS

$916bn
Estimated aggregate value of the 2,378 infrastructure deals completed globally in 2017.

$418bn
Unlisted infrastructure assets under management reached a record $418bn as at June 2017.

69
unlisted infrastructure funds reached a final close in 2017, securing an aggregate $65bn.

$18.8bn
Size of the largest deal completed in 2017: Sempra Energy's acquisition of an 80% stake in Oncor from Energy Future Holdings.

INVESTOR SATISFACTION

93%
of surveyed investors feel their infrastructure investments have met or exceeded their expectations over the past year.

53%
of surveyed investors have a positive perception of infrastructure; only 9% have a negative perception.

CAPITAL CONCENTRATION

42%
of total capital raised in 2017 was secured by the five largest funds closed.

$992mn
Average size of unlisted infrastructure funds closed in 2017.

COMPETITION FOR ASSETS

$150bn
Amount of dry powder held by infrastructure firms as at June 2017.

59%
of surveyed fund managers believe that asset pricing will be their biggest challenge in 2018.

DEAL FLOW

$378mn
Average size of infrastructure deals completed in 2017, the highest amount since 2008.

51%
of infrastructure deals completed in 2017 were in the renewable energy industry, a nine-percentage-point rise since 2008.

RECORD ASSETS CREATING A COMPETITIVE DEAL ENVIRONMENT

- Tom Carr, **Preqin**

2017 was a year of significant positives for the infrastructure asset class. Assets under management continued to grow over the year – 2017 represents another record high – and strong investor demand drove fundraising activity. However, the sustained levels of growth presented challenges: managers struggled to put record levels of capital to work, with deal activity falling behind levels seen in 2016. This is an indication that while demand for infrastructure assets remains strong, sourcing attractive investment opportunities at prices that will deliver strong risk-adjusted returns is proving challenging in this competitive environment. Another key trend has emerged among the firms responsible for raising the capital: the industry is becoming even more concentrated, with a small number of managers securing increasingly large proportions of capital, while smaller managers are left to compete for the remaining capital.

A STRONG YEAR FOR FUNDRAISING

Over $65bn was raised by funds reaching a final close in 2017, almost matching the record $66bn secured in 2016. Global Infrastructure Partners III alone secured $15.8bn in January 2017, making it the largest unlisted infrastructure fund ever closed. There has been a general decline in the number of funds reaching a final close each year, with 2017 recording the lowest number (69) since 2011. Reflective of the importance of a proven track record and investment strategy expertise to investors, the largest firms continue to have greater fundraising success, with 42% of capital secured in 2017 represented by the five largest funds closed. The launch of Blackstone Infrastructure I in May 2017, an open-ended vehicle targeting $40bn for global infrastructure investments, demonstrates the long-term trend for larger proportions of capital being raised by a small band of managers.

In the past decade, core and core-plus funds have dominated unlisted infrastructure fundraising, representing 54% of the total number of funds closed and 57% of aggregate capital raised. Demand for such assets has contributed to both the elevated levels of competition among fund managers and the significant increase in costs for financing infrastructure projects.

While the number (166) of funds in market remains at similar levels to previous years, these vehicles are targeting a record $122bn in institutional capital. With competition among GPs higher than ever, firms have been spending more time on the road to set themselves apart from their competitors and raise the necessary institutional capital to meet their targets.

A SLOWDOWN IN TRANSACTIONS

The annual number of infrastructure deals completed fell in 2017 for the first time in a decade: 2,378 transactions were completed for an estimated aggregate $916bn, representing a 6% drop in number but an 8% increase in estimated aggregate value from 2016. With record levels of capital chasing infrastructure assets, pricing has risen, which has meant managers have struggled to find attractive infrastructure assets at prices that will meet their investors' return expectations. GPs are also seeing more competition from large direct investors, many of which are willing to pay a premium for infrastructure assets in the current market.

While the proportion of infrastructure deals completed outside developed markets has steadily increased since 2008, North America and Europe remain the key destinations. However, the increasingly competitive environment may result in GPs targeting more affordable assets outside established markets in search of relative value.

INVESTOR APPETITE REMAINS STRONG

High levels of capital distributions over the past two years, coupled with strong risk-adjusted returns, have left investors more than satisfied with the asset class. Ninety-three percent of respondents to Preqin's latest survey of institutional investors stated that the performance of their infrastructure investments had met or exceeded their expectations in the past 12 months, compared to 89% and 77% of survey respondents in 2016 and 2015 respectively. With significant capital left to re-invest, it is unsurprising that 39% of respondents expect to invest more capital in infrastructure over the next 12 months than in the previous year. However, it is vital that fund managers remain aware of, and find ways to address, investors' key concerns, such as rising asset valuations.

OUTLOOK FOR 2018

Infrastructure remains an important component in the portfolios of the growing number of investors attracted by the strong risk-adjusted returns and inflation-hedging characteristics on offer. While surveyed investors have announced their intention to commit more capital to the asset class in 2018, fundraising will remain a challenge for most fund managers in a market where the largest firms dominate.

Despite infrastructure funds producing strong returns in recent years, both fund managers and investors share concerns over the increasing competition for assets and the resulting effect of rising asset prices, which is likely to eat into eventual net returns. These concerns may explain the drop in the number of deals completed in 2017, following a year-on-year rise since 2008. With dry powder levels reaching a record $150bn, and showing no signs of slowing down, fund managers will have to find ways of overcoming the competitive environment in order to put investors' capital to work. This may involve moving up the risk/return spectrum, and looking more to emerging markets in search of affordable assets, with 40% of investors surveyed expecting to increase their allocation to the region over the long term.

IN FOCUS: FUNDRAISING BY PRIMARY STRATEGY

Fig. 4.44: Unlisted Infrastructure Fundraising in 2017 by Primary Strategy

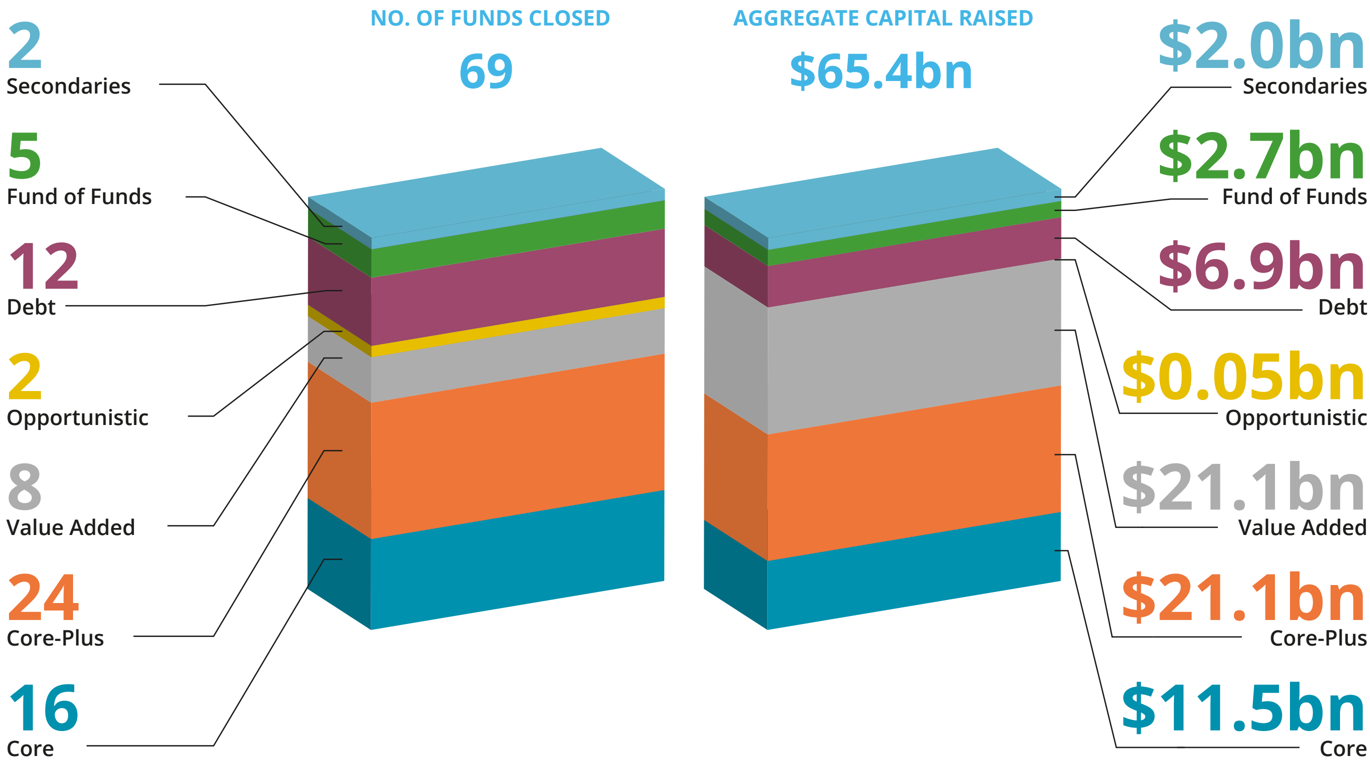
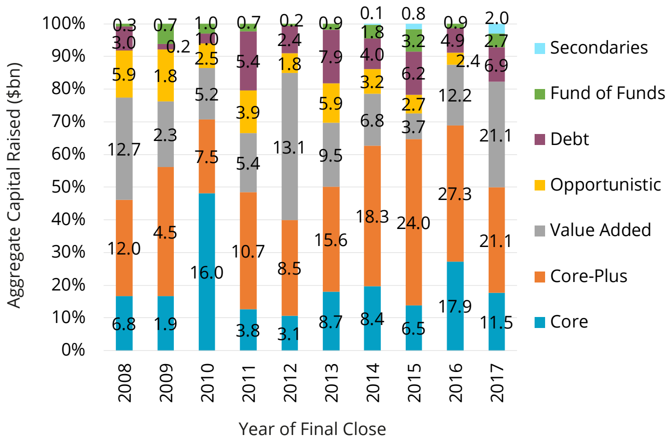
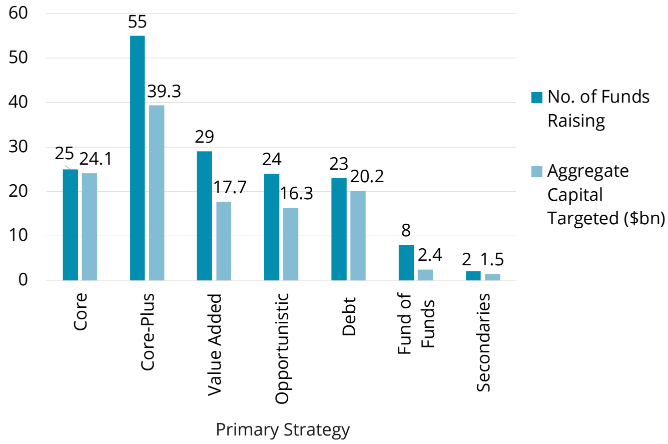


Fig. 4.45: Aggregate Capital Raised by Unlisted Infrastructure Funds by Primary Strategy, 2008 - 2017



Source: Preqin Infrastructure Online

Fig. 4.46: Unlisted Infrastructure Funds in Market by Primary Strategy (As at January 2018)



Source: Preqin Infrastructure Online

OPPORTUNITIES IN ENERGY INFRASTRUCTURE

- Himanshu Saxena, **Starwood Energy Group**

Tom Carr: What is Starwood Energy's strategy in the infrastructure space?
Himanshu Saxena: Starwood has been actively investing in the energy infrastructure space since 2004. We have raised two funds in this period and are now managing about $3bn of equity capital. We are a value-add manager that is looking for opportunistic investments that can benefit from our team's extensive technical, commercial and financial expertise.

We are investing in opportunities to buy or build energy infrastructure assets. On the build side, on a very disciplined basis, we are supporting developers move their projects through development, construction and operations. We have built gas-fired assets; renewable assets including wind, solar and biomass; transmission assets and most recently battery storage assets. On the buy side, we have acquired existing gas-fired assets on a very selective basis.

TC: You have just taken on the CEO role at Starwood Energy. What does it mean for the strategy of the firm going forward?
HS: I have been at Starwood Energy for ~10 years and I am proud of the team we have built and the support that our investors have shown in us. As CEO, I will continue the value-add strategy that has consistently delivered for our investors. It is a rapidly changing marketplace and our ability to switch between buying or building assets and to switch from one technology to another will enable us to continue finding attractive investment opportunities.

TC: What makes greenfield attractive at this time?
HS: Starwood will selectively build new assets if it can identify long-term customers for energy and/or capacity from such assets. We have built assets for customers and have signed contracts as long as 50 years with these customers. Our customers range from utilities, municipalities, intermediaries such as banks, ISOs such as CAISO and corporate customers such as Target and General Motors.

We are continuing to see very strong customer interest for a wide variety of infrastructure projects including transmission and renewables. That is translating into Starwood continuing to build new infrastructure assets.

TC: Why are corporate customers interested in renewables?
HS: Many Fortune 500 companies have voluntarily established sustainability targets. Additionally, these corporate customers see the opportunity to directly procure renewable energy from projects as a means to hedge their energy costs at very attractive prices. Customers such as Facebook, Microsoft, Amazon, Google, General Motors and Target have been some of the most active buyers of renewable energy in 2017 and 2016. We expect this trend to continue in the future.

The cost of building renewables continues to fall given the declining prices of solar panels and wind turbines. This translates into very attractive deals for the corporate customers, and therefore we continue to see new corporate customers procuring renewable energy.

Recently, we signed a long-term power purchase agreement with General Motors (GM) for a wind farm we are building in Ohio. GM has a sizeable manufacturing footprint in Ohio and this agreement will allow it to procure cost effective sustainable energy for the long-term. On the other hand, this agreement allows us to finance this project and to create low-risk cash flow streams.

TC: What are your thoughts on battery storage?
HS: As renewable penetration grows, the need for batteries becomes more significant. In California, for example, the goal is to move towards 50% renewables. At that high level, it becomes imperative to have a mechanism that can absorb and distribute excess generation created by renewable resources. Batteries are ideal solutions to that problem. We believe batteries will become a key part of the power supply chain and over time, will become as commonplace as solar is now. The cost of batteries is falling rapidly and that should continue to result in rapid penetration of batteries in this space.

TC: What do you see as the most important changes within the US energy sector right now?
HS: Although gas prices have started to firm up recently, we are still in a historically low gas price environment. The US is awash in shale gas which is upending the way this country produces and uses energy. Low gas prices result in low wholesale power prices which then result in old coal and nuclear plants becoming economically obsolete. As the coal and nuclear plants retire, they have to be replaced by newer technologies such as gas-fired and renewable assets. The industry is going through a significant transformation and a natural de-carbonizing of the economy is underway. This creates a window of opportunity for investors like us.

TC: How does your approach differ from that of other players operating in the industry today?
HS: What we do takes a lot of patience and expertise. Some of our projects take months, and some take years to develop. We are not deploying a multibillion-dollar fund. The amount of capital we are investing is perfectly sized to deploy in $50-150mn chunks, and we can be patient in nurturing the projects and crafting the deals piece by piece to create value. That amount of time and expertise is something that a number of our competitors do not have, or are not able or willing to develop.

TC: What are the key things you look for in the projects you invest in, both the greenfield developments and the opportunistic acquisitions you mentioned?
HS: When we speak about greenfield, we are speaking about a very specific type of project. We will only commit meaningful capital to a new greenfield project when we have a long-term committed revenue contract from an investment-grade counterparty. We will only commit significant capital when we have all the operating permits in place, and when we have a fixed price and full wrap – which mean a full guarantee – engineering, procurement and construction contract. So when we talk about a disciplined approach, that is what we mean.

For operating projects, we look for assets that need more than just capital. We are looking for opportunities where we can bring in our operational expertise – whether increasing the capacity or increasing the efficiency – or where we can do something on the financial side of the business.

TC: With the amount of money that has been raised for US infrastructure and US energy increasing, do you see more competition in the market? Is that making it harder to find opportunities, or do you see more opportunities right now?
HS: For development opportunities, we see limited competition. That is simply because many of these new sources of capital – whether pension funds or life insurance companies or sovereign wealth funds – are not looking to compete in that space. There is a lot of capital in the market chasing assets, but that capital is chasing larger assets with very low risk and very reliable cash flows. We tend to build those assets and then sell them to such investors.

TC: So it is creating an exit opportunity for you more than anything else?
HS: Yes, we have seen more competition among potential buyers of our assets than we have competitors for the acquisitions of assets we go after.

TC: Are there any key challenges in the market at the moment that you are facing, and what do you do to mitigate those?
HS: There is no shortage of assets to buy. On any given day, there are tens of thousands of megawatts of capacity available for sale, both operating projects and development projects.

Many of our projects are originally developed by independent developers, and we will get involved when that developer needs a capital partner as well as a technical partner that can fix things, put together the key contracts and get a project done.

TC: What about moving forward; how do you expect your sector to evolve in the coming few years?
HS: One of the big questions is how quickly more distributed power generation technologies will take hold. Right now, there is no single distributed technology that is an alternative to the centralized grid systems in North America and Europe, but there is some progress being made. We are keeping a very close eye on that area and considering how we might participate. On the way to becoming more distributed in the next decade, we will first see the current carbon-heavy power sources give way to less carbon-intensive centralized sources.

TC: Do you see more demand for energy exposure from investors and are they interested in the sort of development stage projects you focus on?
HS: As a value-add manager active in greenfield, we see increasing interest on the part of institutional investors in having that exposure. We have seen some move forward with direct investing and many have done it very well, but we have also seen recognition that greenfield energy infrastructure development takes a long time and a lot of expertise. So some institutional investors have backed off on direct investing in this area. The whole market is becoming more educated and more sophisticated, with differentiation of strategies and investment approaches by managers like us, as well as larger institutional infrastructure investors.

STARWOOD ENERGY GROUP

Starwood Energy™ actively pursues attractive, risk-adjusted returns from both opportunistic acquisitions and development of energy infrastructure assets. Starwood Energy™ targets investments in hard assets with a promise of strong cash flows. Starwood Energy™ believes that this approach reduces downside potential, provides financial flexibility and broadens exit alternatives. Starwood Energy™ also targets greenfield and brownfield development opportunities where it can add value through its development expertise. Starwood Energy™ is actively pursuing solar, wind and other renewable energy projects in response to the rapidly rising need for green energy in North America.

Starwood Energy™ specializes in energy infrastructure investments, with a focus on power generation, transmission, storage, and related projects. Through Starwood Energy Infrastructure Fund, including successor funds and affiliated investment vehicles, Starwood Energy™ has raised approximately $3bn of equity capital and has executed transactions totalling more than $6bn in enterprise value. The Starwood Energy™ team brings extensive development, construction, operations, acquisition and financing expertise to its investments.

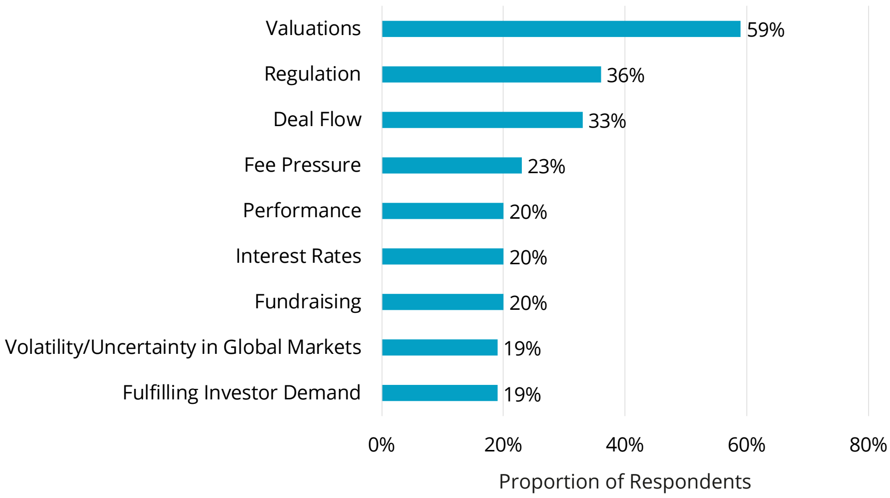
Additional information about Starwood Energy Group as well as Starwood Capital Group can be found at:

www.starwoodenergygroup.com

FUND MANAGER OUTLOOK FOR 2018

Increasing demand for infrastructure assets from institutional investors in recent years is a key driver in the growth of the industry, with institutions attracted to the stable cash flows and strong risk-adjusted returns that infrastructure funds can provide over the long term. This has resulted in a rising number of active fund managers in the asset class: there are currently 534 active infrastructure fund managers worldwide, up from 519 at the end of 2016, with approximately $418bn in aggregate AUM. In November 2017, Preqin surveyed over 60 infrastructure fund managers to gain an insight into the key issues affecting their businesses, deal flow and financing, as well as their outlook for the coming year.

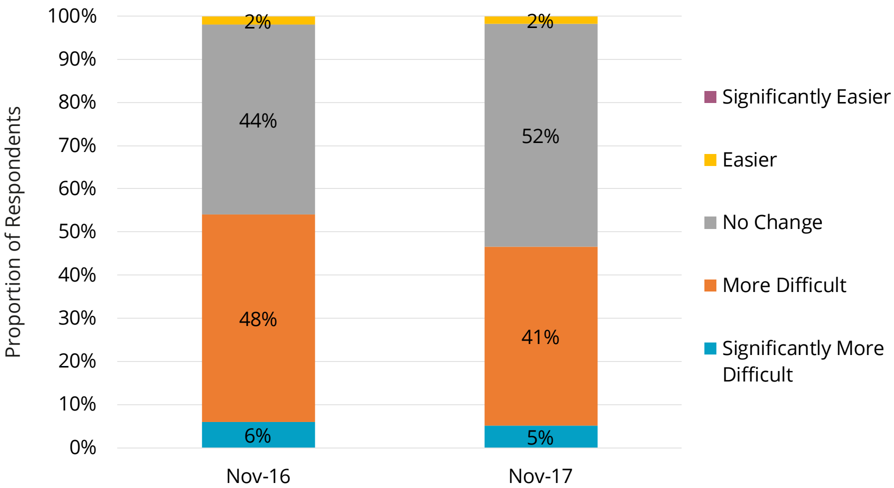
Fig. 5.1: Key Challenges Facing Unlisted Infrastructure Fund Managers in 2018



Source: Preqin Fund Manager Survey, November 2017

> ***"Valuations have emerged as the key challenge facing GPs in 2018***

Fig. 5.2: Fund Manager Views on the Difficulty of Finding Attractive Investment Opportunities Compared to 12 Months Ago, 2016 vs. 2017



Source: Preqin Fund Manager Survey, November 2016 - 2017

KEY CHALLENGES

In recent years, the infrastructure industry has seen increased participation among groups other than GPs, including corporate buyers and institutions that have the resources to invest directly in the asset class, such as large sovereign wealth funds. High levels of industry participation have pushed dry powder held in unlisted infrastructure funds to a record $150bn as at June 2017 – it is therefore no surprise that valuations and deal flow have emerged among the three biggest challenges facing GPs in 2018 (Fig. 5.1). However, 46% of fund managers surveyed are finding it more difficult to source attractive opportunities compared to 12 months ago, which is down from 54% surveyed at the end of 2016 (Fig. 5.2).

Regulation is viewed as the second biggest issue facing GPs in the infrastructure market in 2018, as cited by 36% of respondents. This is likely a reflection of issues such as Brexit and its potential ramifications for the legal and regulatory environment in Europe and uncertainty around areas such as subsidies in the renewables industry. These challenges are closely linked to other concerns cited by fund managers, such as uncertainty in global markets and the potential impact of this on the fundraising environment and the performance of infrastructure funds.

Key observations on infrastructure assets by primary strategy include:

- A majority of respondents believe there is more competition for **core** and **core-plus** assets compared to 12 months ago (Fig. 5.3), driven by investor demand for established and yielding infrastructure assets that can deliver steady cash streams.
- Over two-thirds (70%) of firms have also seen more competition for **debt** strategies, with the infrastructure debt industry becoming increasingly prominent due to regulatory

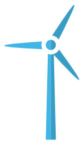
SECONDARY STAGE DEALS

$18.8bn

Value of the largest secondary stage deal in 2017, Sempra Energy's acquisition of an 80% stake in Oncor from Energy Future Holdings.

42%

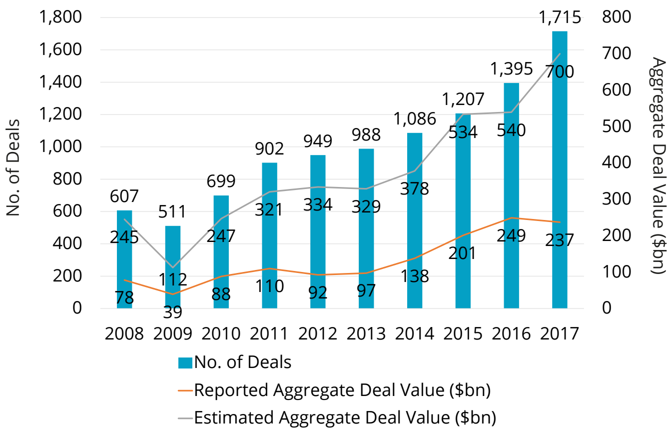
of secondary stage transactions completed in 2017 took place in Europe.



20%

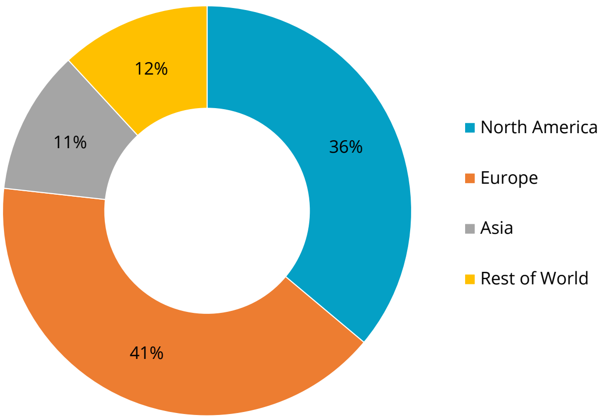
of secondary stage deals completed in 2017 involved wind power assets.

Fig. 11.43: Secondary Stage Infrastructure Deals Completed Globally, 2008 - 2017



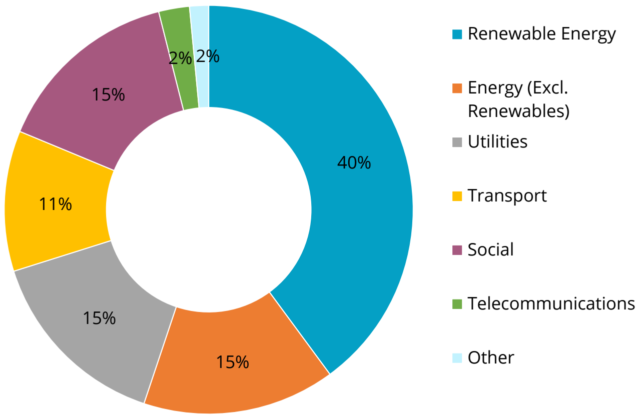
Source: Preqin Infrastructure Online

Fig. 11.44: Secondary Stage Infrastructure Deals Completed by Region, 2008 - 2017



Source: Preqin Infrastructure Online

Fig. 11.45: Secondary Stage Infrastructure Deals Completed by Industry, 2008 - 2017



Source: Preqin Infrastructure Online

Fig. 11.46: Notable Secondary Stage Infrastructure Deals Completed in 2017

Asset	Location	Industry	Investor(s)	Deal Size (mn)	Stake (%)	Date
Oncor	US	Power Distribution	Sempra Energy	18,800 USD	80	Aug-17
Essar Oil	India	Natural Resources	Rosneft, Trafigura, United Capital Partners	12,900 USD	98	Feb-17
Rosneft	Russia	Energy	CEFC China Energy Company	9,100 USD	14	Sep-17
Maersk Oil	Denmark	Natural Resources	Total SA	7,450 USD	100	Aug-17
Veresen	Canada	Natural Resources Pipelines	Pembina Pipeline Corporation	9,700 CAD	100	May-17

Source: Preqin Infrastructure Online

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