

Volume 1, Issue 5

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Real Assets Spotlight

Infrastructure | Natural Resources

November 2016



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In this month's feature article, we take a closer look at the renewable energy infrastructure industry, including fundraising, deals, investors and more.



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- Dr. Chris Wedding, CEO, IronOak Energy



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Did you know...?



You can download all the data in this month's Spotlight in Excel.

Wherever you see this symbol, the data is available for free download on Excel. Just click on the symbol and your download will begin automatically. You are welcome to use the data in any presentations you are preparing; please cite Preqin as the source.



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Preqin Acquires Baxon Solutions



I am very pleased to announce that Preqin has now acquired a controlling stake in Baxon Solutions, effective from November. This is the natural next step in the strategic partnership that we formed with them in January 2015, and this second phase will build on the successes of the past two years. Although we have already been working closely alongside the Baxon team, I'm excited to take our partnership to the next level, and fully incorporate Baxon within the Preqin group – best of all, founders Jorge and Paula remain as shareholders and senior members of the management team.

The private equity industry is facing a period of increasing reporting and regulatory challenges, and Baxon's platform is well-placed to help fund managers in navigating them. Its portfolio management and reporting system is a market-leading solution to a real need within the industry, and it has a tremendous reputation with its growing customer base for delivering services of real and enduring value to private equity GPs and their LPs. Preqin's expertise and position within the industry, meanwhile, puts us in an ideal position to support Baxon, and our initial focus following this acquisition will be the further development of the Baxon platform, as well as expanding into a number of other geographic regions.

To customers of both Preqin and Baxon, I would like to share this exciting news with you, and to say that this is simply the next step in a long process. I believe that there is a huge amount of potential for how Preqin and Baxon can work together, and we will look to our clients and partners to show us what their needs are. Both companies stand on their own as offering important services for the industry, and together they offer a powerful array of tools to fund managers, investors, and service providers. We look forward to sharing the next stages of Baxon's development with you, and until then I hope you will continue to gain from the insight, data, and analysis that Preqin offers.

Thank you,

Mark O'Hare, CEO

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In Focus: The Changing Landscape of Renewable Energy Infrastructure

Renewable energy-focused infrastructure funds have been a significant part of the private sector’s response to the growing demand for capital in this emerging industry. Although the need for renewable energy sources has been recognized for some time, the most economically effective and sustainable methods are still being developed. We take a look at this increasingly important sector.

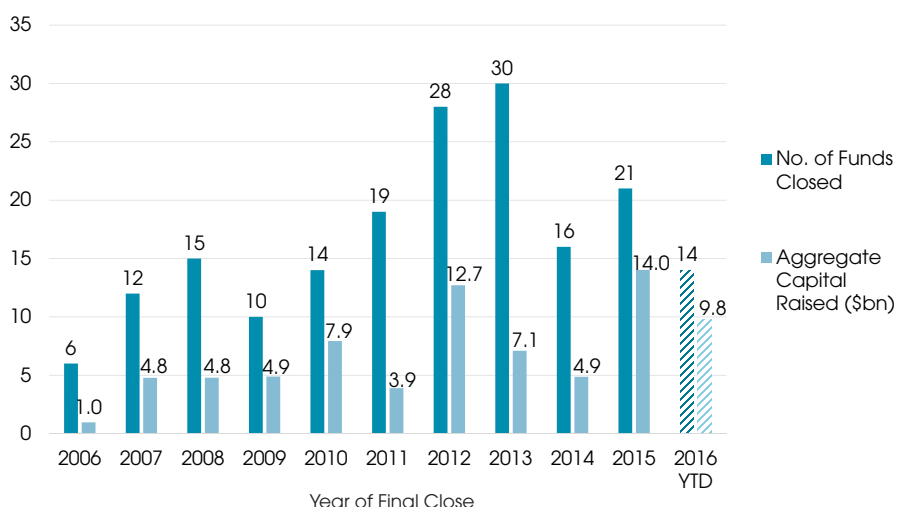
How Has the Unlisted Market Grown over Time?

Fundraising for unlisted renewable energy funds has increased in recent years, with a record amount of capital secured in 2015 (\$14.0bn) and the amount secured by September 2016 (\$9.8bn) already surpassing full-year 2013 and 2014 totals (\$7.1bn and \$4.9bn respectively, Fig. 1). Over this period, the number of funds closed annually has fallen from a peak of 30 funds closed in 2013 to just below half that number in 2016 to date. This is illustrative of the increasingly competitive infrastructure fundraising market, where fewer funds are closing, but are securing greater amounts of capital each year. [BlackRock Renewable Income EU Fund](#) is among the largest infrastructure funds focusing on renewable energy to hold a final close in 2016, after securing €650mn in investor commitments. The fund makes unlevered investments in wind and solar power projects in Western Europe.

The size of the renewable energy market relative to the rest of the infrastructure market has varied over time. In 2016 so far, renewable energy funds represent 34% of the number of unlisted infrastructure funds closed and a fifth of aggregate capital secured (Figs. 2 & 3). Despite fewer renewable energy funds closing in 2016 compared with 2015, renewables represent a larger proportion of the infrastructure fund market.

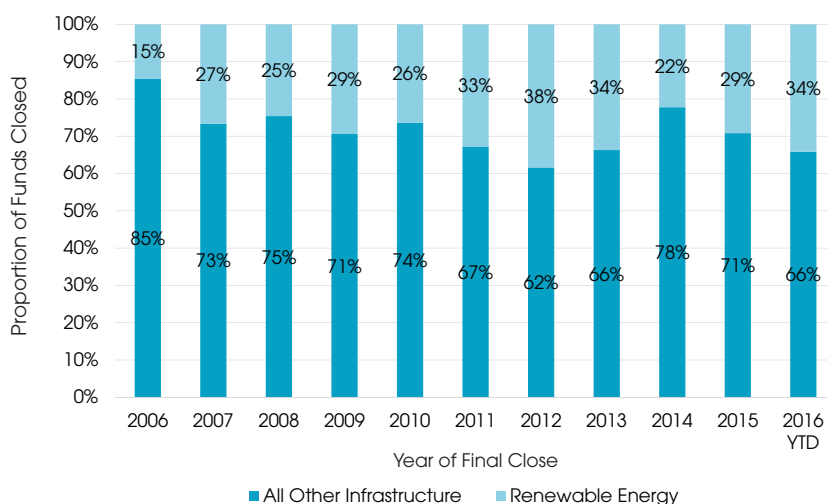
However, the majority of infrastructure firms raising renewable energy vehicles have often found it challenging to raise sufficient capital to reach their initial targets: 53% of funds that have held a final close since 2006 have failed to reach their target, although a significant proportion (39%) have surpassed it, indicative of the success some fund managers can have when raising capital. In 2016 so far, funds closed have secured an average of 107% of their target capital; this is a substantial increase on the average secured between 2008 and 2015 (87%).

Fig. 1: Annual Renewable Energy-Focused Unlisted Infrastructure Fundraising, 2006 - 2016 YTD (As at September 2016)



Source: Preqin Infrastructure Online

Fig. 2: Infrastructure Funds Closed: Renewable Energy vs. All Other Infrastructure, 2006 - 2016 YTD (As at October 2016)



Source: Preqin Infrastructure Online

In terms of the deal market, renewable energy transactions have accounted for 38% of all infrastructure deals in 2016 so far, increasing substantially from 19% in 2006 (Fig. 4). While the proportion of aggregate deal size has fluctuated over time, Preqin’s [Infrastructure Online](#) shows there has still been considerable

growth in the value of renewable deals, rising from accounting for 3% of all deals in 2006 to 74% in 2016 YTD.

The significant growth of the renewables industry over the past decade can be seen in Fig. 5. While the number of completed renewable energy deals



has fallen annually since 2013, the numbers are still relatively high and greatly surpass the numbers seen in the period 2006-2009. Furthermore, the estimated aggregate value of renewable deals has grown from \$30.8bn in 2006 to a peak of \$168.2bn in 2012, although these estimates have stabilized at approximately \$117bn annually since.

Where Is Investment Going?

The types of asset involved in renewable energy transactions have evolved over the past 10 years. Perhaps the most notable change is the emergence of solar power, which accounted for 3% of completed deals in 2006 and now represents 42% of the number of renewable energy deals (Fig. 6). In contrast, wind power and hydropower have seen reduced activity over the same period, with wind deals falling from accounting for 63% of renewable transactions in 2006 to 41% in 2016 so

far; hydropower has fallen from 19% to 9% in the same period.

As with other infrastructure deals, Europe is the main hub for deal activity. The region has accounted for the largest proportion of renewable energy deals every year since 2006 (Fig. 7). However, both Europe and North America have given up some of the market to Asia during the same period: Asia's role in the industry has grown steadily, from accounting for 8% of deals in 2006 to 19% in 2016 to date. In terms of specific country, the US has seen the largest number of completed renewable energy deals in recent times, with 661 deals completed since 2011, while the UK is second with 458 deals over the same period.

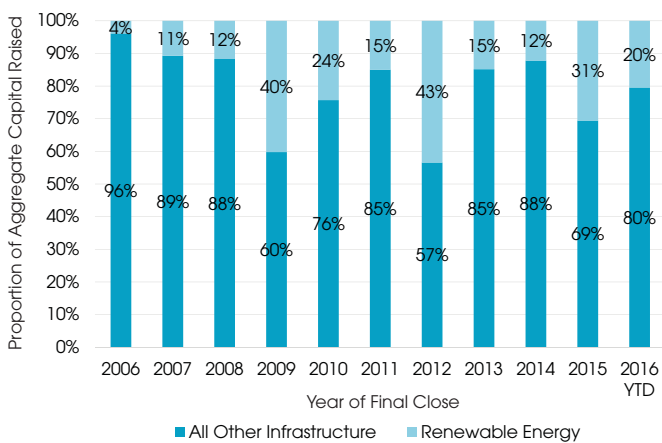
Participants in renewable energy deals have been acquiring assets at different project stages compared with 10 years ago, with a shift from greenfield

transactions to secondary stage assets. This is reflective of a more developed industry where there is a greater supply of fully operational renewable energy assets following a decade of global investment and political support for the industry. Greenfield assets accounted for 46% of completed renewable energy deals in 2015, compared with 68% in 2006; conversely, secondary stage assets grew from representing 28% in 2006 to 46% in 2015 (Fig. 8). As expected, the European renewable energy market is more mature, with 47% of European renewable energy deals since 2010 involving secondary stage assets, higher than any other region (Fig. 9).

Who Is Investing?

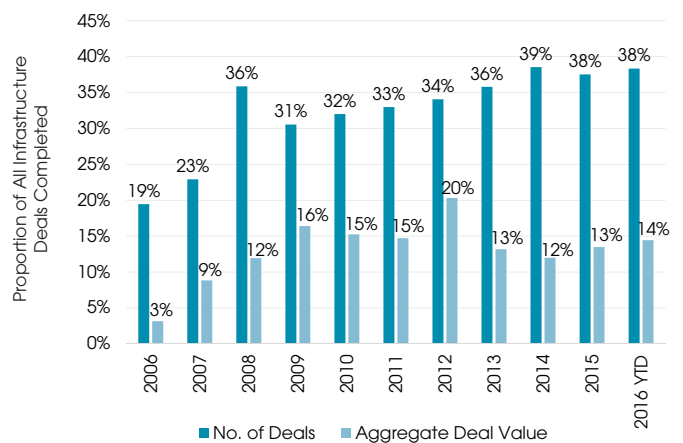
Preqin's [Infrastructure Online](#) contains detailed information on more than 1,300 investors in infrastructure with a preference for renewable energy

Fig. 3: Aggregate Capital Raised: Renewable Energy vs. All Other Infrastructure, 2006 - 2016 YTD (As at October 2016)



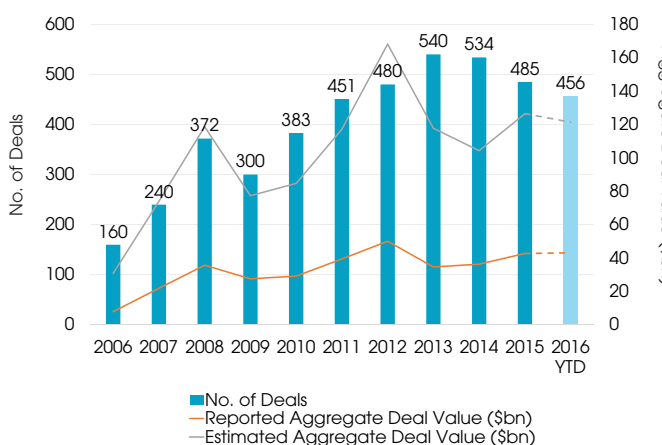
Source: Preqin Infrastructure Online

Fig. 4: Renewable Energy Deals as a Proportion of All Completed Infrastructure Deals, 2006 - 2016 YTD (As at October 2016)



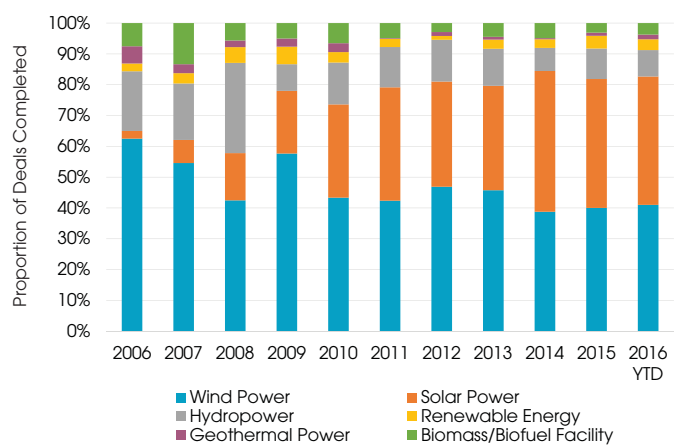
Source: Preqin Infrastructure Online

Fig. 5: Completed Renewable Energy Infrastructure Deals by Number and Aggregate Value, 2006 - 2016 YTD (As at October 2016)



Source: Preqin Infrastructure Online

Fig. 6: Completed Renewable Energy Infrastructure Deals by Sector, 2006 - 2016 YTD (As at October 2016)



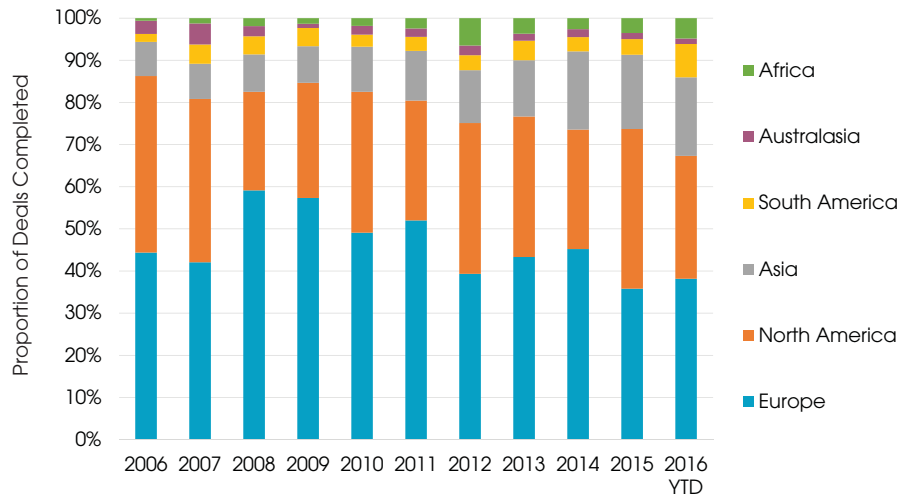
Source: Preqin Infrastructure Online



infrastructure investment. Renewable energy is cited as a preference by 46% of infrastructure investors, a larger proportion than any other sector – with the exception of energy as a whole – which is favoured by 62% of investors (Fig. 10).

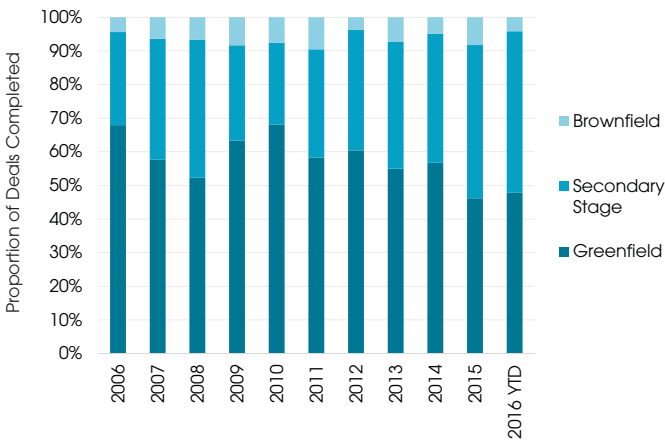
North America-based investors represent the largest proportion (46%) of institutions globally with a preference for renewable energy investments, significantly larger than Europe-based investors, which account for 28% (Fig. 11). Given the maturity of the European renewable energy sector, largely bolstered by EU directives and incentives, Europe-based investors might be expected to represent a larger proportion of this investor universe. However, when examining the participation of investors in renewable energy by country, Belgium, Denmark, Italy, Norway, Sweden and France all feature in the top 10 countries with the largest proportion of investors with a preference for renewables.

Fig. 7: Completed Renewable Energy Deals by Region, 2006 - 2016 YTD (As at October 2016)



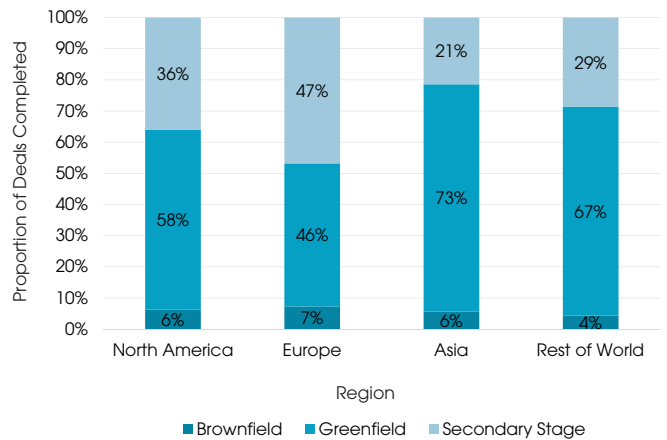
Source: Preqin Infrastructure Online

Fig. 8: Completed Renewable Energy Deals by Project Stage, 2006 - 2016 YTD (As at October 2016)



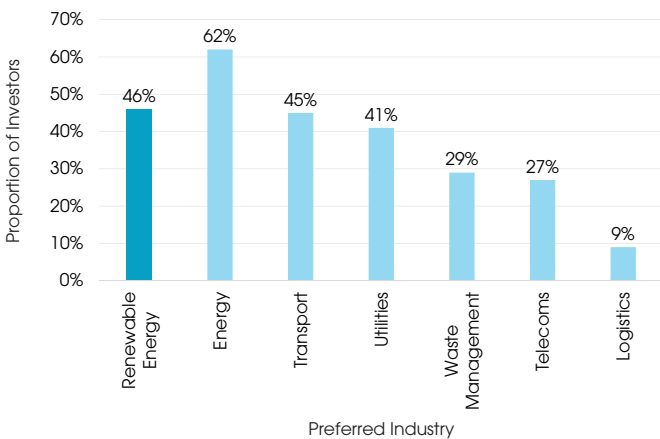
Source: Preqin Infrastructure Online

Fig. 9: Completed Renewable Energy Deals by Region and Project Stage, 2010 - 2016 YTD



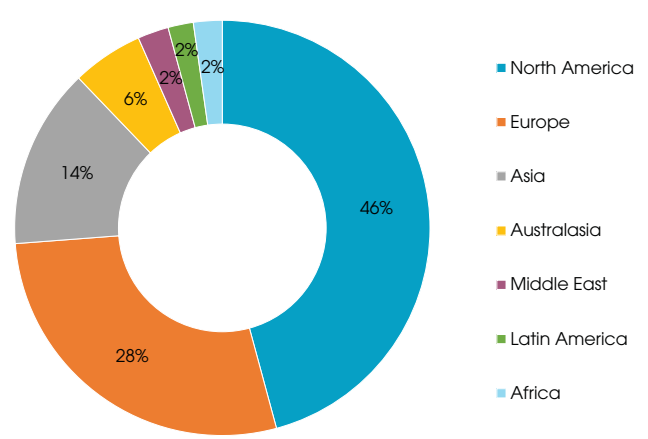
Source: Preqin Infrastructure Online

Fig. 10: Institutional Investors in Infrastructure by Industry Preference



Source: Preqin Infrastructure Online

Fig. 11: Institutional Investors in Infrastructure with a Preference for Renewable Energy by Location



Source: Preqin Infrastructure Online



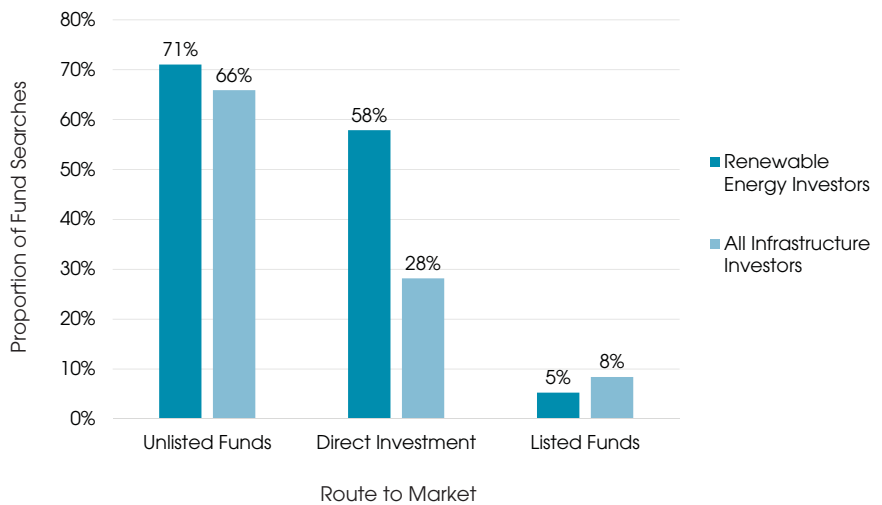
Half of active institutions will target Europe for their renewable energy infrastructure investments in the next 12 months, double the proportion that plan to seek North American opportunities (25%).

Unlisted funds are the preferred route to market for renewable energy investors, with 71% of investors looking to make investments in the next 12 months favouring this route, while direct investment is favoured by a larger proportion (58%) of investors seeking exposure to renewable energy, rather than infrastructure as a whole (28%, Fig. 12).

Outlook

With the global community making efforts to achieve targets in the reduction of greenhouse gas emissions, demand for capital in the development of renewable energy technologies and assets has grown; this has driven both the growth in the fundraising and deal markets in the past decade. As technology advances, the capacity of renewable assets to generate a larger amount of the energy output will further drive appetite for the

Fig. 12: Preferred Route to Market of Infrastructure Investors in the Next 12 Months: All Infrastructure Investors vs. Renewable Energy Investors



Source: Preqin Infrastructure Online

sector in the long term. However, it is up to funds securing assets now to deliver sustainable and steady returns to investors, which has been the expectation of the infrastructure asset

class in order for institutional investors to continue to make commitments to these vehicles.



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The Mainstreaming of Renewable Energy Infrastructure Investing: Risks, Returns and Emerging Sectors

- Dr. Chris Wedding, CEO, IronOak Energy



When I first assessed the financial merits of a large solar infrastructure project in 2004, the results were not impressive, even though the \$75mn investment would have generated glowing headlines for our LPs.

Oh, how times have changed.

In 2015, renewable energy investments in the power sector were 30% greater than investments in all other forms of conventional power combined ([BNEF](#), 2016).

Moreover, investment analysts project that solar power will be cheaper than conventional electricity in roughly 70% of the world's countries by next year ([Deutsche Bank](#), 2015). Even today, solar and wind power are often chosen by utilities as the cheapest form of new electric generation capacity.

As a result of the economic attractiveness of renewable energy, its annual electricity production is expected to grow over 600% between 2016 and 2040. During that same period, hydropower, coal and natural gas power production are projected to grow roughly 27%, 11% and 0% respectively ([BNEF](#), 2016).

What is Causing This Growth?

First, let's be clear: capital allocation to this sector is not about sacrificing market-based returns in favour of lofty environmental or social missions.

Instead, investors run the gamut from niche private equity firms to the biggest banks in the world. As examples, Goldman Sachs, Citi and Bank of America have made public commitments to invest \$350bn in renewable energy by 2025.

The key drivers include the following:

1. Falling costs of capital to finance renewable energy infrastructure.
2. Falling costs of renewable energy components and projects.
3. Increasing national renewable energy targets, policies and incentives.
4. Changing public sentiment.

Falling Costs of Capital

When I began investing in solar power infrastructure, unlevered IRR expectations were in the teens for projects in the US. However, today average unlevered IRRs range from 6% to 10% in the US, with greater upside potential in smaller projects or those in emerging economies. This is largely attributed to investors becoming more comfortable with renewable energy technologies, warranties and company balance sheets.

Falling Costs of Renewable Energy Components and Projects

Despite frequent quips that renewable power is still "too expensive," the levelized cost of electricity (LCOE) for solar and wind is often the lowest among all new electricity sources. When subsidies are also factored in, the LCOE are even lower. This data is a reflection of capital and operating expenses today, not in some distant future.

For example, consider that the costs for solar panels and wind turbines have fallen by 80% and 35% respectively, since 2009 ([IRENA](#), 2016). In terms of LCOE, the range for medium and large solar projects and wind projects contracted today are \$30-86 per megawatt-hour, compared with natural gas- and coal-fired power plants at \$61-151 per megawatt-hour ([Lazard](#), 2016; [PV-Tech](#), 2016; [CleanTechnica](#), 2016).

Increasing National Renewable Cleantech Targets, Policies and Incentives

The number of country-level renewable energy targets is up roughly four-fold from 43 countries in 2005 to 164 countries in 2015. Interestingly, developing countries account for 80% of these targets ([IRENA](#), 2015).

For more information, the [International Energy Agency](#) maintains an interactive database of renewable energy policies around the world.

Changing Public Sentiment

Typically, the growth in renewable policies is a function of rising public interest in the benefits of this sector.

As of 2012, over 85% of consumers around the world prefer to see more renewable energy on the grid ([BNEF](#), [Vestas](#), 2012). As for motivations, 87% of US citizens view renewable energy as important to the future of the country; 82% focus on electricity cost savings and 34% care about its environmental benefits ([SolarCity](#), [CleanEdge](#), [NASDAQ](#), 2015).

Misperceptions about Risk and Return

Despite the mainstreaming of this sector, when I speak at investor conferences and talk with potential new investors, I am surprised by the persistent negative perspectives about renewable energy.

I believe this is due to the disproportionate influence of three factors:

1. Subversive, yet isolated, retroactive renewable energy policy changes (example: retroactive cuts to feed-in tariffs in Spain and Italy).
2. Poor venture capital returns in the late 2000s (example: bankruptcies by solar panel makers such as Solyndra).
3. Leading proponents are often environmental groups (example: investors respond differently to data from Greenpeace than if produced by the financial industry).

As for policy concerns, very few sectors are immune to regulatory risks. Some renewable energy policies have been stable (e.g. state tax credits, accelerated depreciation benefits) and others have struggled with predictability (e.g. US Production Tax Credit for wind projects). Perhaps more importantly, renewable energy investments are largely immune to many significant risks present in conventional energy industries, such as those posed by geopolitics and commodity markets.



As for the worries regarding risk versus return, recent investment industry data highlights a very different story than the outdated, negative headlines stemming from cleantech venture capital investments years ago. High-risk, early stage venture investments are a tiny portion of overall renewable energy investments, making up just \$6bn of the total \$445bn invested globally in 2015. The majority of that capital (approximately 70%) was allocated to lower risk renewable energy infrastructure.

Attractive Risk-Adjusted Returns in Renewable Energy Infrastructure

As is well known, most infrastructure funds offer limited downside risks with predictable returns over a long period of time, with below-average correlation to broader financial markets.

Fig. 1 illustrates how the aggregate net IRR for infrastructure funds (orange line) compares to five other asset classes: less variability and above-average net IRRs for the aggregated fund performance shown.

In addition, Preqin performance data indexed to 2007 show that the growth of the infrastructure asset class has been more attractive than distressed private equity, real estate, venture capital, buyout, fund of funds and the S&P 500.

While renewable energy investments do not constitute the entirety of the infrastructure category, their fraction of all infrastructure investments has grown two-fold in the last 10 years, from 19% in 2006 to 28% in 2015, and accounted for 54% in Q3 2016.

Accordingly, I would suggest that the risk/return profile of the broader infrastructure sector is a respectable proxy of the

appeal of the renewable energy sector as well.

As a further indication of the attractive risk/return profile of renewable energy, it is worth highlighting that its fraction of all energy infrastructure investments has increased, from 59% in 2006 to 73% in 2015. One reason for this movement away from conventional energy is due to its underperformance compared with private equity since 2012. Note that oil & gas investments constitute approximately 63% of Preqin's natural resources category.

Emerging Trends in Renewable Energy Infrastructure Investing

Most infrastructure investors that are comfortable with this sector only place capital in large solar and wind projects.

In mature markets, this creates increasing competition for projects and is partly to blame for yield compression.

As a response, an increasing number of GPs are looking at new ways to raise and place capital with different investment strategies within the renewable energy sector. Here are three areas worth consideration, starting with the most obvious:

1. Developing Nations Present Greater Relative Opportunities

The EU was the early leader for renewable energy investments. Today, the US and China lead the world, but increased competition has dampened IRR expectations.

In contrast, developing countries are attracting greater investor interest due to the potential to achieve higher absolute financial returns and place more capital

with less competition among investors (Fig. 2).

Because of these factors, in addition to higher GDP and energy demand growth, renewable energy investment in the developing world exceeded capital allocation in the developed world for the first time in 2015 (EY, 2016).

Considerations for investors:

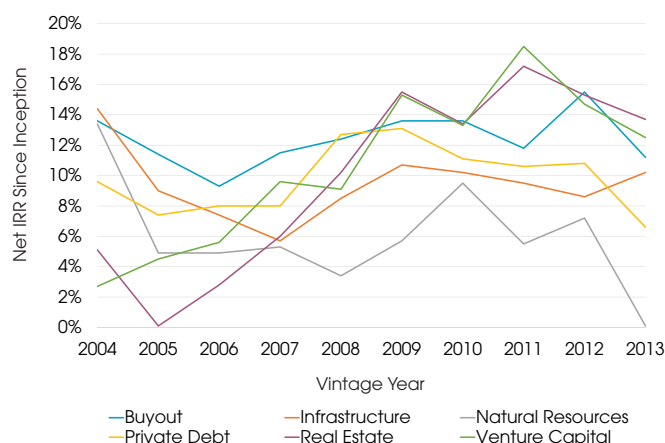
- Political, economic and currency risk: investing in less mature markets carries additional risks, yet too often these receive insufficient attention from confident investors. Insurance products from organizations such as the Overseas Private Investment Corporation (OPIC) can hedge against some of these risks.
- Markets are idiosyncratic and local knowledge is key: the unspoken rules of doing business are sometimes as important as what is written in regulations. Investing in developing countries requires experienced partners with trusted local relationships and intimate understanding of the cultural aspects of closing deals.

2. Smaller Solar Projects Offer Aggregation and Higher Return Potential

Growth in the global solar market has been surprising to most international energy agencies and conventional energy giants. Consider that global annual solar installations have grown from 1 MW in 2005 to approximately 73 MW this year, with 105 MW projected in 2021 (GTM, 2016).

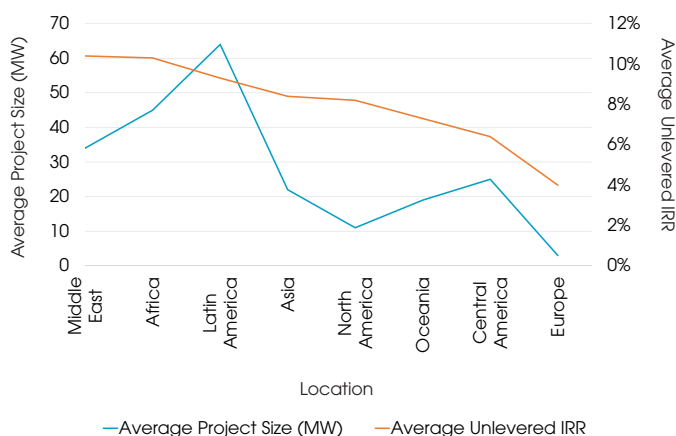
This market expansion has been dominated by large utility scale projects.

Fig. 1: Median Net IRRs by Strategy and Vintage Year



Source: Preqin Infrastructure Online

Fig. 2: Solar Project Size and Unlevered IRR by Location



Source: Mercatus, 2016



In the US, the residential market has also scaled rapidly, with more than one million homes equipped with solar. However, the commercial solar market in the US and some other markets has experienced relatively little expansion, largely due to higher transaction costs and challenges in underwriting credit.

Efforts are underway by many investors to standardize contracts, create unique channels for larger pipelines of similar projects and implement software solutions to reduce diligence and closing costs. As an example, we are currently using these three strategies with our investment partners to facilitate better access, stronger returns and greater scale in the smaller, distributed solar sector.

Considerations for investors:

- Underwriting credit risk for non-rated offtakers: many commercial offtakers do not have an official credit rating and success in efficiently assessing these counterparty risks has been limited. Innovative approaches to evaluating credit risk at scale is critical to lowering transaction costs and acquiring customers.
- Solar on polluted real estate: other niche solar strategies are still underutilized. One such combination is the location of smaller utility scale solar projects on real estate, where actual or perceived environmental contamination has prevented its redevelopment. In the US alone, there are 500,000 such sites. We have co-managed the investment in two solar-on-landfill projects, where stakeholders benefitted from new property taxes, new lease payments and electricity cost savings.

3. Energy Storage Becomes the New High-Growth Sector

Today, hype is greater than reality when it comes to battery installations. However, that is changing.

Despite more than 70 different battery chemistries in the lab or in the field, there is far less actual technology risk than many perceive. As an illustration, consider that 96% of batteries installed in the US in 2015 were based on lithium-ion chemistries (GTM, 2016).

With battery costs expected to fall 40-50% between 2015 and 2020, market analysts project that battery installations will undergo a 25x growth from today to 2028, with a market valued at \$250bn (Lazard, 2016; BNEF, 2016).

As a sign of what is coming, this year we played a key role in one of the largest commitments to third-party battery financing to date: more than \$100mn in a large energy storage portfolio committed to a leading global investor.

While costs receive the majority of the attention in determining the financial merits of investments in energy storage, the other side of the equation is value.

Today, nearly all battery installations monetize just one of their 13 potential benefits (RMI, 2015). These isolated revenue streams may come from peak shaving power in order to reduce electricity demand charges, or receiving payments by utilities for frequency regulation services. However, estimates suggest that using batteries in this simplified manner only takes advantage of 1-50% of their useful capacity (RMI, 2015).

Considerations for investors:

- Risk factors: technology risks are overstated for more established technology, such as lithium-ion; however, the same cannot be said about risks in more marginal battery chemistries. Moreover, outdated policies still present barriers to battery market expansion. Early investors may be rewarded over the investment hold period by more favourable regulations which are likely to permit additional revenue

streams. To mitigate risk and entice investment, we are seeing creative deal structures such as quasi-debt instruments structured with parent guarantees, cross collateralization and equity kickers.

- Siting with or without renewable energy: most batteries today are not co-located with renewable energy systems. This is likely to change for behind-the-meter systems, which are seeing greater integration facilitated by smarter software. But larger utility batteries are likely to remain separate from solar and wind installations while providing a variety of services to the broader grid, such as deferring multi-billion-dollar transmission system upgrades.

Conclusion

For decades, renewable energy has been relegated to a tiny niche viewed as expensive and irrelevant. Those days are over. Yet most investors are still looking backward, not forward. Many do not see the dramatic changes in the global energy mix accelerating right now.

If the goals agreed upon by nearly 200 countries in last year's Paris Climate Agreement become reality, the world will need to invest roughly \$1tn per year between now and 2030 (IEA, 2015). This amount is almost three times as large as today's annual renewable energy investment. Even if those goals are only partially met, the need for private capital is expected to be a multiple of today's capital allocation to the sector.

Going forward, there exists an historic opportunity for investors to place large volumes of capital in renewable energy infrastructure projects with limited downside and respectable net IRRs.







As the author William Gibson has noted, "The future is already here – it's just not very evenly distributed."

IronOak Energy:

IronOak Energy is a renewable energy investment advisory and research firm. Headquartered in the US, IronOak helps investors place capital in the solar, energy storage and electric vehicle sectors via deal origination, diligence and market analysis.

Dr. Chris Wedding is the CEO and Founder of IronOak Energy. He has over 15 years of experience in private equity, entrepreneurship, clean energy, real estate and executive education. On the side, he is a faculty member at Duke University and the University of North Carolina at Chapel Hill. He brings a global perspective, with experience in 19 countries and language abilities in Spanish and Japanese. Dr. Wedding earned an MS and PhD from the University of North Carolina at Chapel Hill where he studied environmental management, business strategy and city planning.

Website: www.ironoak.energy | Contact: +1 (888) 249-3013

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	 FUND COVERAGE	20,687 Private Equity Funds	22,860 Hedge Funds	6,011 PE Real Estate Funds	1,124 Infrastructure Funds	2,155 Private Debt Funds
 FIRM COVERAGE	10,537 Private Equity Firms	8,602 Hedge Fund Firms	3,690 PE Real Estate Firms	513 Infrastructure Firms	1,375 Private Debt Firms	864 Natural Resources Firms
 PERFORMANCE COVERAGE	5,611 Private Equity Funds	14,867 Hedge Funds	1,595 PE Real Estate Funds	222 Infrastructure Funds	774 Private Debt Funds	447 Natural Resources Funds
 FUNDRAISING COVERAGE	2,395 Private Equity Funds	15,965 Hedge Funds	1,034 PE Real Estate Funds	196 Infrastructure Funds	297 Private Debt Funds	258 Natural Resources Funds
 DEALS COVERAGE	BUYOUT 49,383 + 22,866 Buyout Deals** Exits	VENTURE CAPITAL 108,569 + 13,153 Venture Deals*** Exits	REAL ESTATE 23,610 Real Estate Deals	INFRASTRUCTURE 21,629 Infrastructure Deals		

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*Private Equity includes buyout, venture capital, distressed, growth, natural resources and mezzanine funds.
 **Buyout deals: Preqin tracks private equity-backed buyout deals globally, including LBOs, growth capital, public-to-private deals, and recapitalizations. Our coverage does not include private debt and mezzanine deals.
 ***Venture capital deals: Preqin tracks cash-for-equity investments by professional venture capital firms in companies globally across all venture capital stages, from seed to expansion phase. The deals figures provided by Preqin are based on announced venture capital rounds when the capital is committed to a company.





Real Assets Industry News

Alastair Hannah presents the latest infrastructure and natural resources industry news, featuring Nordic-based investors in recently closed infrastructure funds and real assets funds currently in market.

New Senior Advisor at DC Placement Advisors

[DC Placement Advisors](#) recently appointed Jauri Juho Yrjana Hakka as a Senior Advisor on its board. Jauri brings 30 years of experience in asset management, capital markets and alternative investments to the role, as well as long-standing relationships with Nordic-based landmark firms. He is currently the Founder and Managing Director of Widhaby Advisors, as well as an active member on the Board of Association of Professional Fund Investors in Switzerland.

Nordic-Based Investors Looking to Invest in Real Assets in the Next 12 Months

[Finnish State Pension Fund](#) plans to invest in natural resources funds on an opportunistic basis in the next 12 months, maintaining a preference for renewable energy exposure in Europe. The public pension fund has approximately €17.9bn in total assets and invests in natural resources as part of its infrastructure allocation.

[PKA AIP \(PKA\)](#) will invest in natural resources through both unlisted funds and direct investments in the next 12 months. It will invest in energy funds as part of its DKK 13bn 'PKA AIP 2 Private Funds' private equity mandate. PKA will consider investing in energy funds from this mandate over the next 12 months and will also invest in renewable energy as part of its infrastructure mandate 'PKA AIP 2 Direct Program'. This program, which runs from 2015 to 2017, will make direct equity and debt investments in Northern European infrastructure opportunities.

Nordic-Based Investors in Infrastructure Funds

Helsinki-based [Finnfund](#) committed \$10mn to [Central American Mezzanine Infrastructure Fund II](#), which held a final close in July on \$188mn. The Finland-based government agency had an existing relationship with [LAP Latin American Partners](#), having also committed \$5mn to its first infrastructure mezzanine fund, [Central American Mezzanine Infrastructure Fund](#).

[Nykreidit](#), a Copenhagen-based investment company, committed \$50mn to [AMP Capital Infrastructure Debt Fund](#), which held a third close in January on \$1bn. The fund targets the transportation, energy and utilities sectors with a mandate to invest in Europe, North America and OECD countries.

Nordic Infrastructure Deals

Preqin's [Infrastructure Online](#) contains information on 37 Nordic deals completed since January 2016, with an aggregate value of \$2.5bn. Recently completed transactions for Nordic assets include [Skanska](#), which was awarded the contract to construct the [E16 Bagn-Bjorgo Road and Tunnel](#) by the Norwegian Public Roads Administration for €80.17mn in September. In May, [Energinet.dk](#) acquired a 100% stake in [DONG Gas Distribution](#) for DKK 2.3bn. The asset provides natural gas to residential and commercial customers in Denmark.

Real Assets Spotlight - November 2016: In Numbers



17 Months

Average time spent on the road by renewable energy funds currently in market.



41%

Proportion of unlisted natural resources first-time funds in market that have been on the road for two years or more.



\$1.1bn

Average deal size for airport assets in 2016.



107%

Proportion of target size achieved by renewable energy-focused funds closed in 2016 so far.

Nordic-Based Natural Resources Funds in Market

Preqin's [Natural Resources Online](#) contains information on three Nordic-based unlisted natural resources funds in market, which are currently targeting a combined \$1.2bn. [Norvestor Equity's](#) [Norvestor Oil Service Fund](#) is seeking NOK 1bn in investor capital to focus on investments in the Nordic oil & gas sector.

[Danish Agribusiness Fund \(DAF\)](#) is currently seeking DKK 6bn to invest in the improved production, distribution and sales of food in developing countries. DAF is a collaboration between the Danish government and a group of institutional investors, managed by [IFU](#). The fund will support projects where Denmark-based agricultural or food production companies are co-investors or suppliers of technology.

Nordic-Based Infrastructure Funds in Market

Preqin's [Infrastructure Online](#) currently tracks two Nordic-based infrastructure funds currently raising capital. [Obligo Global Infrastruktur II](#) is a fund of funds vehicle managed by [Obligo Investment Management](#), which is seeking €300mn for commitments to managers primarily targeting core and opportunistic infrastructure investments.

[Sole Shipping Special Opportunities Fund II](#) is seeking \$250mn to invest in global sale and leaseback opportunities in the shipping sector. The fund, managed by Norway-based [Sole Shipping](#), held a first close in September on \$100mn.

DISTRESSED ENERGY & REAL ESTATE: INVESTMENTS & WORKOUTS

January
12-13, 2017
Houston, TX

Confirmed Bank Workout, Investor and Service Providers Speaking as of November 10 Include:

<p>Jim Paul, <i>Director, ALPS Group</i> Paul Kang, <i>President/CIO, Altacap</i> David Butler, <i>Managing Partner, Argosy Real Estate Partners</i> Sean Britain, <i>Managing Director, Bayside Capital</i> Kevin Hogan, <i>Principal, Bayside Capital</i> Mike Brand, <i>Senior Director - Real Assets, Cambridge Associates</i> Mark Clemans, <i>President/CEO, Carrier Energy Partners</i> JW Sikora, <i>CEO, Cibolo Energy Partners</i> Debra Morgan, <i>Managing Director, C-III Asset Management</i> Dave Magill, <i>Senior Vice President, Competitive Power Ventures</i> David Dunn, <i>Managing Partner, Cross Sound Management</i> Sean Dalfen, <i>President & Chief Investment Officer, Dalfen America Corp.</i> Janet Weiss, <i>Partner, Dorsey & Whitney LLP</i></p>	<p>Jesse B. Thompson III, <i>Business Economist - Houston, Federal Reserve Bank of Dallas</i> Todd Filsinger, <i>Filsinger Energy Partners</i> P. Brent Grundberg, <i>Partner, Glendale Energy Capital, LLC</i> Thomas Turner, <i>EVP, Special Assets Manager, Grandpoint Bank</i> Don Dimitrievich, <i>Managing Director, Highbridge Principal Strategies</i> Jonathan Needle, <i>Chief Legal Officer, Houston Firefighters' Relief and Retirement Fund</i> Karr Ingham, <i>Economist, InghamEcon, LLC</i> Arthur Weissman, <i>Chief Investment Officer, LDJ Capital Multi-Family Office</i> Brooks Gaul, <i>Director, Liquidity Services</i> Taylor Meyer, <i>Vice President, Morgan Stanley Real Estate</i> John Keeton, <i>Partner, Morningside Funding LLC</i> Dan Dooley, <i>Managing Director, Morris Anderson</i> Bruce Goldstein, <i>Managing Director, MorrisAnderson</i></p>	<p>Shravan Parsi, <i>Co-CEO & Principal, NAPA, LLC</i> Jim Noteware, <i>CEO, Noteware Development/Pacific V</i> Sebastian Jano, <i>Senior Vice President - Invest, Pardee Resources Company</i> Timothy Berry, <i>Managing Principal, Pennybacker Capital, LLC</i> Dan Farrell, <i>Chairman & CEO, Privos Capital</i> Anna Aaron, <i>Vice President, Portfolio Manager, Regions Bank</i> Jim Manatt, <i>Chairman/CEO, Thrust Energy</i> Keith Schneider, <i>Senior Vice President, TriGate Capital, LLC</i> John D'Amico, <i>Director, Trimont Real Estate Advisors</i> Matt Mildren, <i>Vice President, Tug Hill Real Estate Partners</i> Joel Minamide, <i>Senior Vice President, US Bank N A</i> Tony Ross, <i>Executive Vice President & Chi, Woodforest National Bank</i></p>
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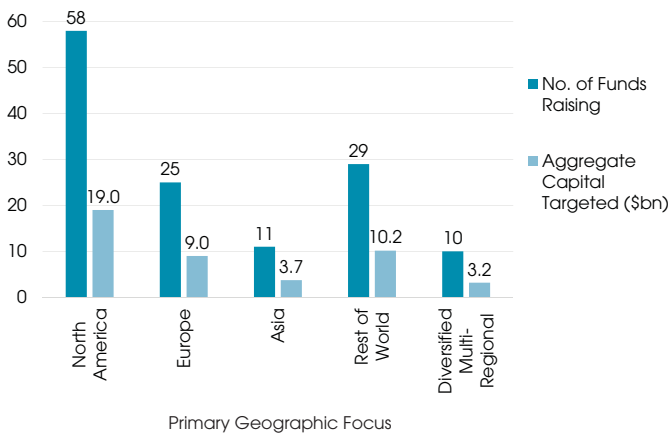
www.preqin.com/NRO



First-Time Natural Resources Funds

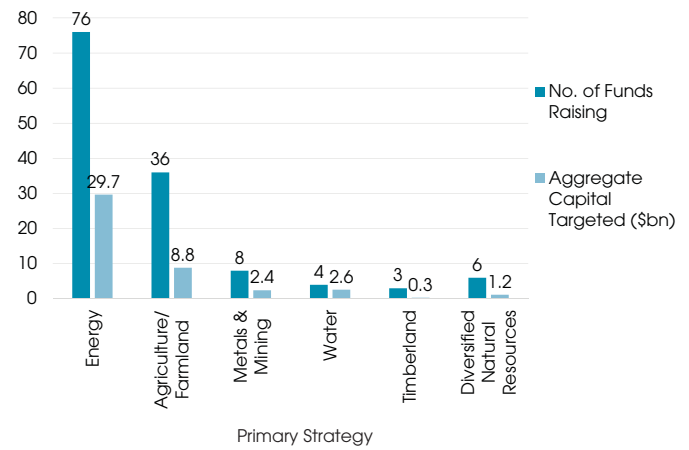
Morgan McKinnon-Snell looks at first-time natural resources funds currently in market, including primary geographic focus, target size, time spent in market and more.

Fig. 1: First-Time Unlisted Natural Resources Funds Currently in Market by Primary Geographic Focus (As at October 2016)



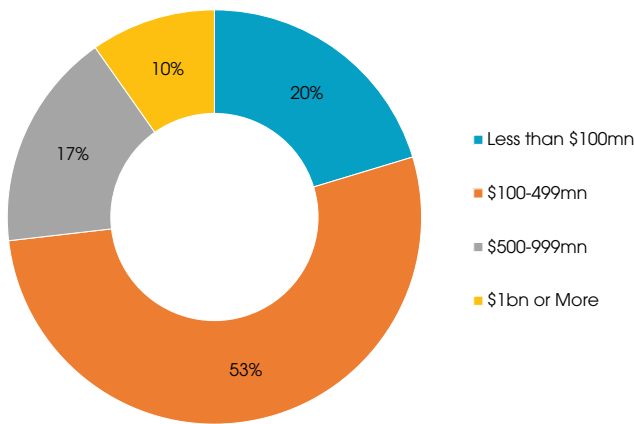
Source: Preqin Natural Resources Online

Fig. 2: First-Time Unlisted Natural Resources Funds Currently in Market by Primary Strategy (As at October 2016)



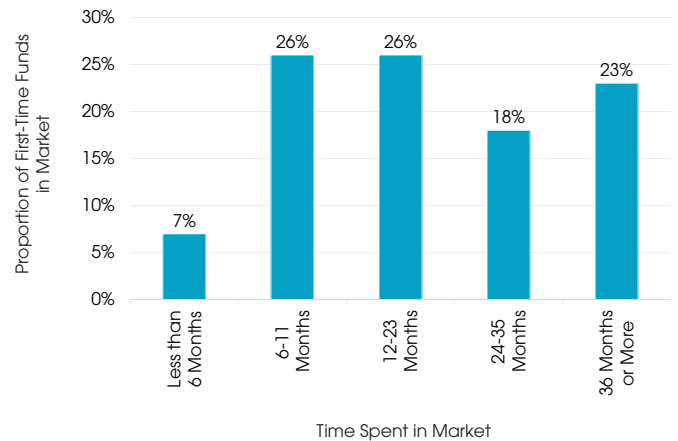
Source: Preqin Natural Resources Online

Fig. 3: First-Time Unlisted Natural Resources Funds Currently in Market by Target Size (As at October 2016)



Source: Preqin Natural Resources Online

Fig. 4: First-Time Unlisted Natural Resources Funds by Time Spent in Market (As at October 2016)



Source: Preqin Natural Resources Online

Fig. 5: Five Largest First-Time Unlisted Natural Resources Funds Currently in Market (As at October 2016)

Fund	Firm	Headquarters	Primary Strategy	Target Size (mn)	Geographic Focus
Powering Australian Renewables Fund	AGL Energy	Australia	Energy	3,000 AUD	Australasia
Nigeria Infrastructure Fund	Pecora Capital	US	Agriculture/Farmland	2,000 USD	Africa
Bastion Infrastructure Fund I	Bastion Infrastructure Group	Canada	Energy	2,000 USD	Global
AMP Capital Infrastructure Debt Fund III	AMP Capital Investors	Australia	Energy	2,000 USD	Global
GIB Offshore Wind Fund	UK Green Investment Bank	UK	Energy	1,000 GBP	Europe

Source: Preqin Natural Resources Online



Institutional Investors in Water

Matthew Bacco analyzes institutional investors with a preference for water investments by type, preferred route to market, source of allocation and assets under management.



309

Number of institutional investors with a preference for water investments tracked by Preqin's Natural Resources Online.



14%

Proportion of institutional investors in natural resources that invest in water.



\$15.1tn

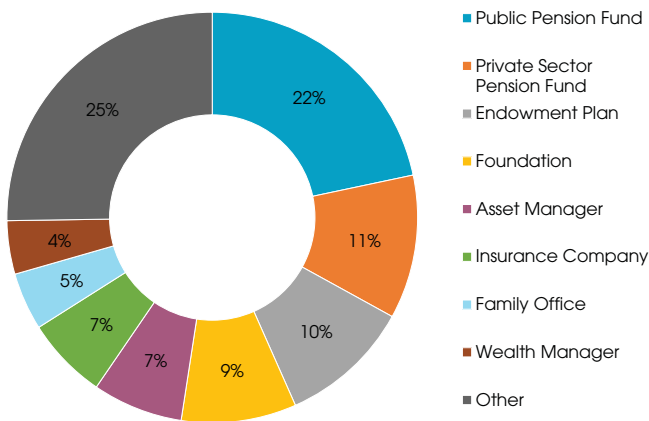
Total assets under management of institutional investors with a preference for water investments.



45%

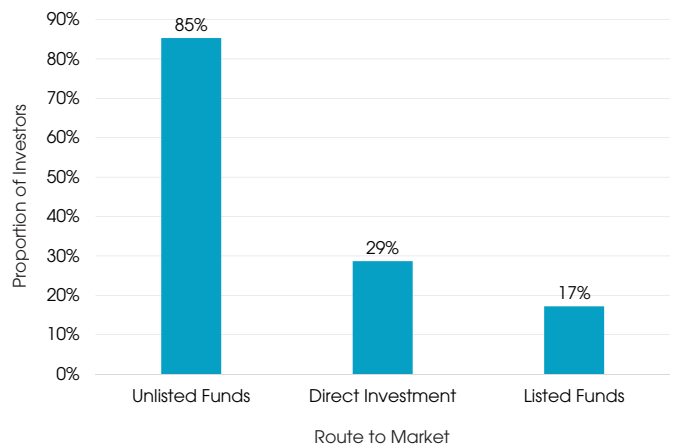
Proportion of institutional investors with a preference for water investments that are based in North America.

Fig. 1: Institutional Investors with a Preference for Water Investments by Type



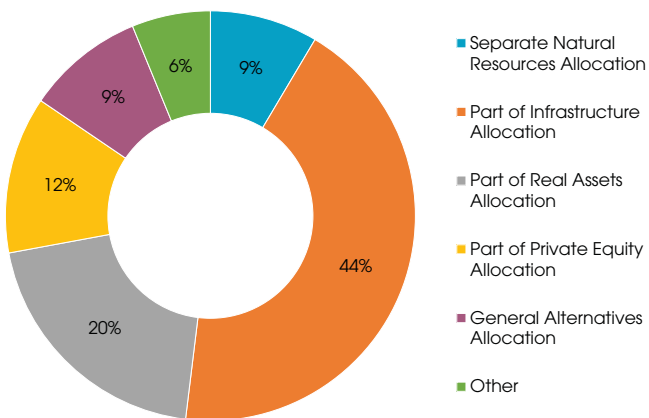
Source: Preqin Natural Resources Online

Fig. 2: Preferred Route to Market of Institutional Investors with a Preference for Water Investments



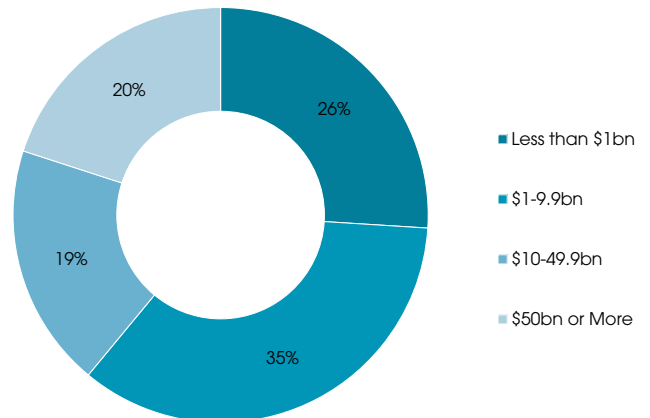
Source: Preqin Natural Resources Online

Fig. 3: Institutional Investors with a Preference for Water Investments by Source of Allocation



Source: Preqin Natural Resources Online

Fig. 4: Institutional Investors with a Preference for Water Investments by Assets under Management



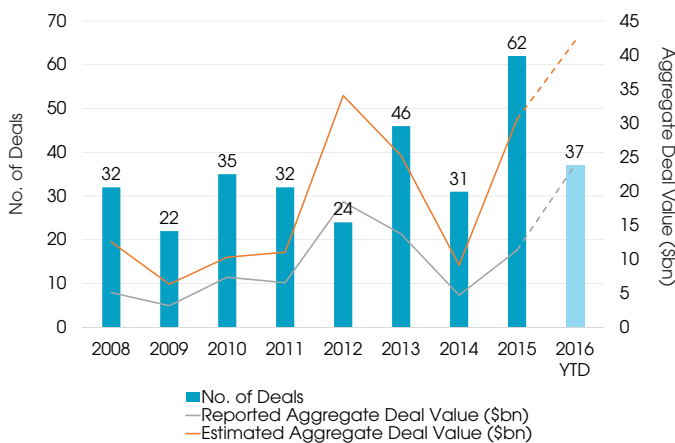
Source: Preqin Natural Resources Online



Airport Infrastructure Deals

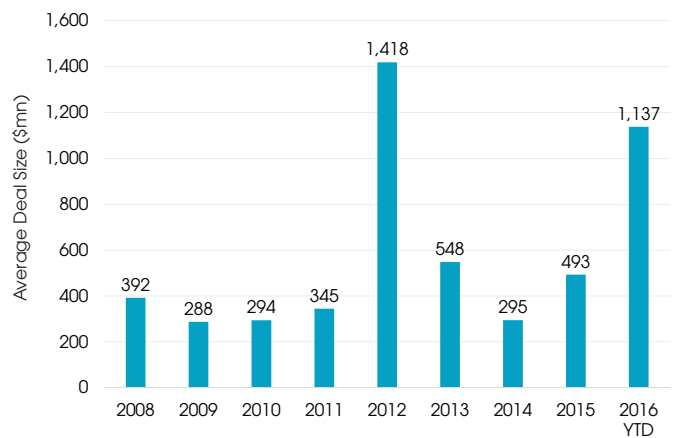
Jeremy Lieu examines airport infrastructure deals, including average deal size over time, regional variation and the largest airport deals completed since 2012.

Fig. 1: Number and Aggregate Value of Completed Airport Infrastructure Deals Globally, 2008 - 2016 YTD (As at October 2016)



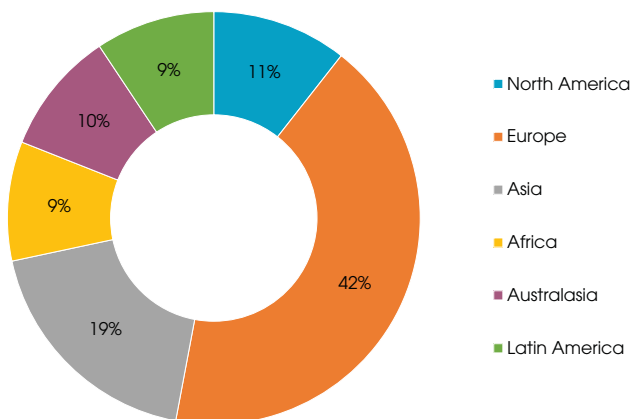
Source: Preqin Infrastructure Online

Fig. 2: Average Size of Completed Airport Infrastructure Deals, 2008 - 2016 YTD (As at October 2016)



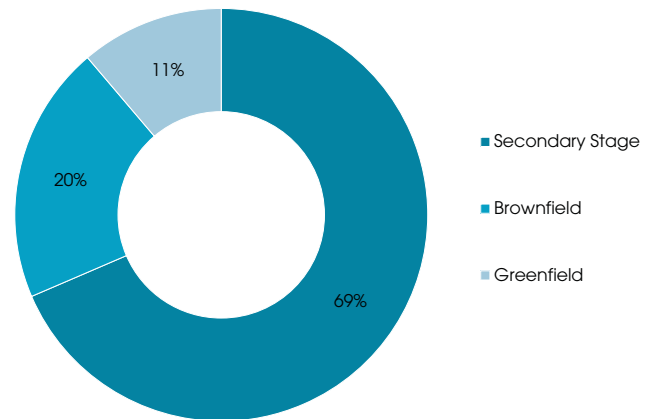
Source: Preqin Infrastructure Online

Fig. 3: Completed Airport Infrastructure Deals by Region, 2008 - 2016 YTD (As at October 2016)



Source: Preqin Infrastructure Online

Fig. 4: Completed Airport Infrastructure Deals by Project Stage, 2008 - 2016 YTD (As at October 2016)



Source: Preqin Infrastructure Online

Fig. 5: Five Notable Completed Airport Infrastructure Deals, 2012 - 2016 YTD (As at October 2016)

Asset	Location	Project Stage	Investor(s)	Deal Size (mn)	Stake (%)	Transaction Date
Guarulhos International Airport	Brazil	Brownfield	Construtora OAS, FUNCEF, PETROS, PREVI	16,200 BRL	51	Feb-12
Dassault Reliance Aerospace	India	Greenfield	Dassault Systemes, Reliance Infrastructure	7,900 EUR	100	Sep-16
Kuwait International Airport Terminal PPP	Kuwait	Brownfield	Limak Holding	4,340 USD	100	May-16
ANA-Aeropostos de Portugal	Portugal	Secondary Stage	VINCI Concessions	3,080 EUR	95	Feb-13
LaGuardia Airport Central Terminal Building	US	Brownfield	Meridiam, Skanska, Unidentified Investor(s)	4,000 USD	100	Jul-15

Source: Preqin Infrastructure Online



Conferences Spotlight

Conference	Dates	Location	Organizer	Preqin Speaker	Discount Code
FundForum Middle East	20 - 22 November 2016	Dubai	KNect365	–	–
Australian Investors Summit	21 - 22 November 2016	Melbourne	marcus evans Summits	–	–
FT European Infrastructure Summit	30 November 2016	London	Financial Times Live	–	–
Private Wealth Management Summit	4 - 6 December 2016	Las Vegas, NV	marcus evans Summits	–	–
Alternative Investing Summit	4 - 6 December 2016	Dana Point, CA	Opal Financial Group	–	–
CLO Summit	4 - 6 December 2016	Dana Point, CA	Opal Financial Group	–	–
Global AgInvesting Europe 2016	5 - 7 December 2016	London	HighQuest Group	–	15% Discount - Preqin2016
Privcap Game Change: Energy 2016	7 - 8 December 2016	Houston, TX	Privcap	–	–
Distressed Energy & Real Estate: Investments & Workouts	12 - 13 January 2017	Houston, TX	IMN	–	15% Discount - PQ15
European Family Office Winter Symposium 2017	1 - 2 February 2017	London	Opal Financial Group	–	–
SuperReturn International	27 February - 2 March 2017	Berlin	KNect365	–	10% Discount - FKR2428PRQW
Family Office Winter Forum 2017	1 March 2017	New York	Opal Financial Group	–	–
North American Pensions Summit	20 - 21 March 2017	Chicago, IL	marcus evans Summits	–	–
FT African Infrastructure Financing and Development 2017	23 March 2017	London	Financial Times Live	–	–
The 4th Annual Real Estate Private Equity Forum on Land, Homebuilding & Condo Development (East)	4 - 5 April 2017	Miami, FL	IMN	–	15% Discount - PQ15
Impact Investing Forum 2017	23 - 25 April 2017	Boca Raton, FL	Opal Financial Group	–	–
Family Office & Private Wealth Management Forum 2017	24 - 26 July 2017	Newport, RI	Opal Financial Group	–	–

Distressed Energy & Real Estate: Investments & Workouts

Date: 12 - 13 January 2017
Information: <http://www.imn.org/energy17>
Location: Houston, TX
Organizer: Information Management Network

Investors are scrambling to set up investment vehicles to capitalize on energy losses due to declining oil prices. IMN's conference examines both the loan workouts and investment opportunities. Attendees will consist of special assets/restructuring professionals within banks (those with energy portfolios), oil & gas/private equity investors, and various service providers.