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INSIGHT REPORTS



CLEAN ENERGY MARKET REVIEW

Q1.2018

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Q1.2018 Clean Energy Market Review

This Clean Energy Market Review, sponsored by Eversheds Sutherland, analyses venture capital, private equity, project finance, mergers and acquisitions, public markets and green bonds activity during Q1.2018.

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Global clean energy investment, defined as the sum of project finance, small scale project investment, venture capital & private equity and public markets deal values, totalled \$62.1 billion in Q1 2018, according to Clean Energy Pipeline's latest quarterly analysis.

Q1 2018 ranked among the strongest performing opening quarters on record, particularly true when it came to Project/Asset renewables investment.

"At Eversheds Sutherland, we have seen the impact from Government sponsored programmes of utility scale solar PV projects outside Europe, supported by IFIs, boosting deal flow," commented Conrad Purcell, Partner at international law firm Eversheds Sutherland.

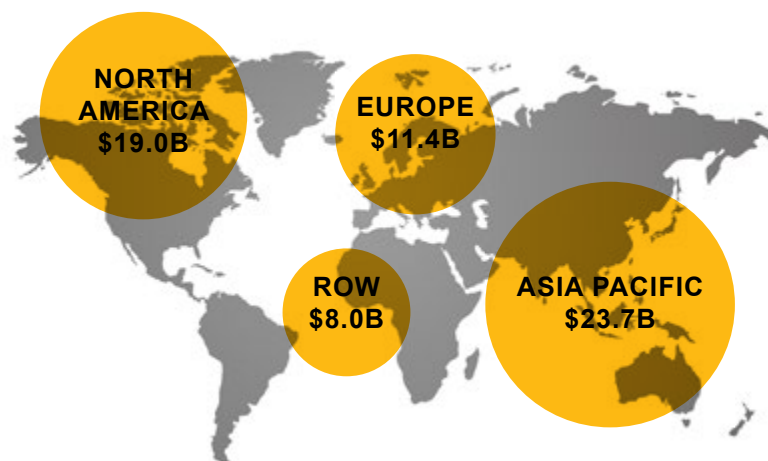
"Otherwise projects continue to be well supported by high levels of liquidity in the banking sector for construction phase projects and competitively priced institutional debt in relation to refinancing of operational projects."

Total clean energy investment also rose across the majority of clean energy markets: Africa & Middle East [+34%], Asia Pacific [+18%], Latin & Central America [+26%], and North America [+47%], while investment in Europe [-21%] fell off in comparison to Q1 2017's consolidated deal value.

"If 2017 was a year of recovery, then 2018 looks to be the year where clean energy financing reaches the heights set from a few years prior," said Chenwu Qian, Senior Data Analyst at Clean Energy Pipeline.

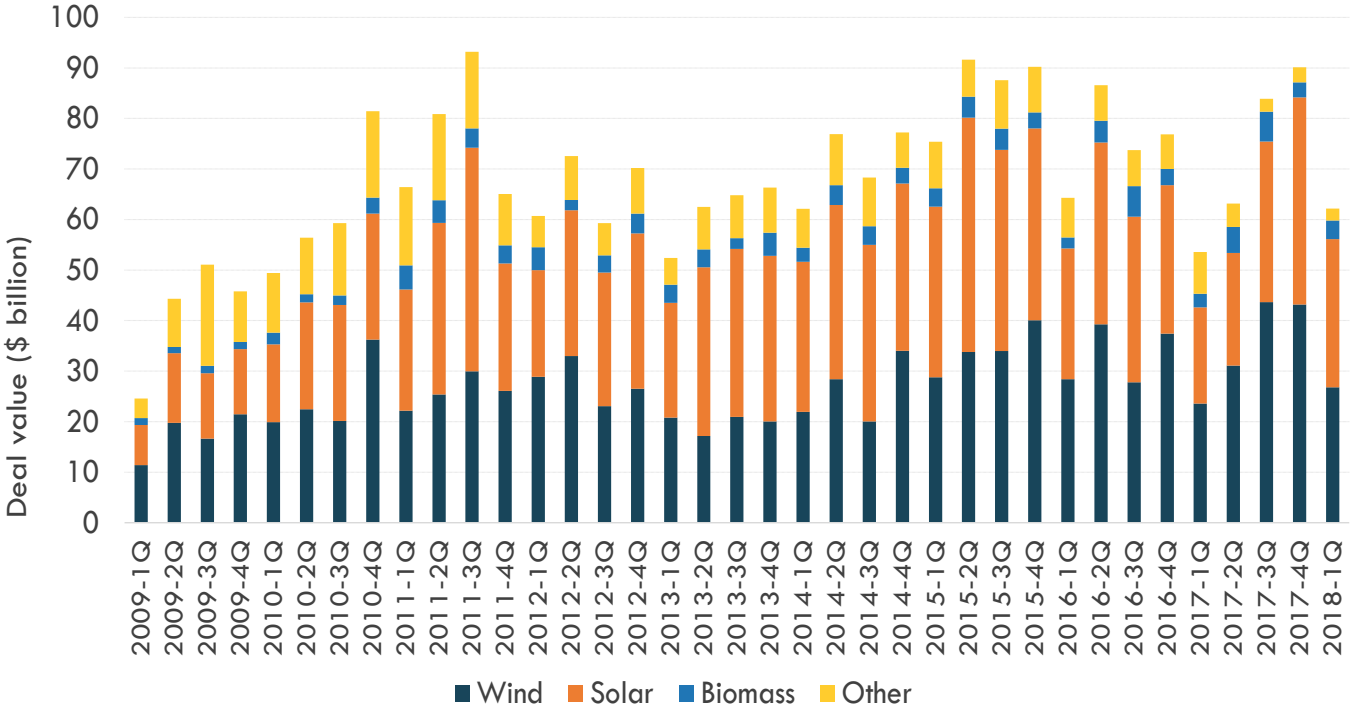
"The figures from Q1 2018 suggest that new greenfield opportunities continue to be seized upon and that operational renewable energy projects remain among the most attractive assets for long-term, stable cash flows.

Clean energy investments by region in Q1.2018

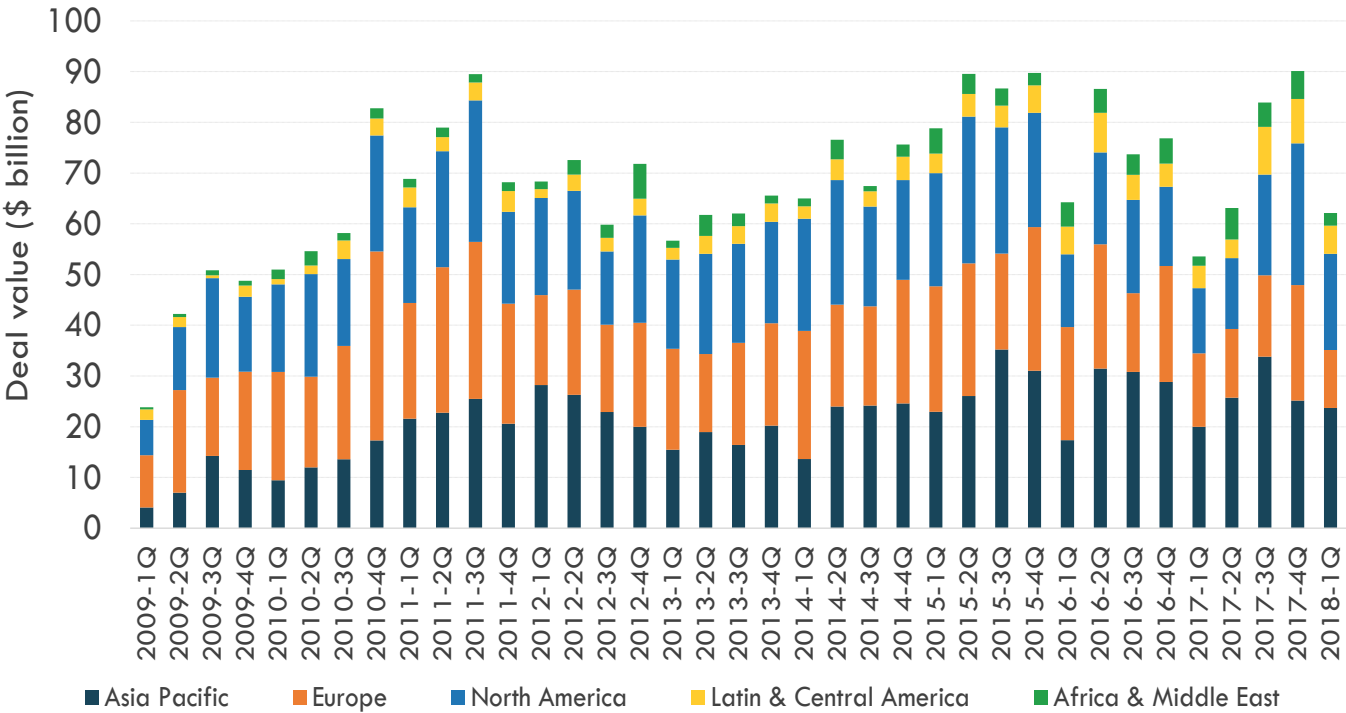


* ROW = Africa, Middle East, Latin & Central America

GLOBAL CLEAN ENERGY TOTAL INVESTMENT BY SECTOR Q1.2009 TO Q1.2018



GLOBAL CLEAN ENERGY TOTAL INVESTMENT BY REGION Q1.2009 TO Q1.2018



Project finance records strongest first quarter ever

Global clean energy project financing in 2018 has already resulted in the strongest first quarter performance on record.

Clean Energy Pipeline's data-team tracked \$60 billion of renewables deals taking place in Q1 2018, almost double the amount invested in the previous year's opening quarter.

Before Q1 2018, the highest first quarter recorded by Clean Energy Pipeline came in 2015, which eventually turned out to be a record year overall for clean energy project financing.

"Listed and private renewables infrastructure vehicles have raised significant volumes of capital in the last few years, driven in part by increased comfort from institutional investors in the sector," commented Mark Brennan, Investment Manager at Foresight Group, a UK-based infrastructure and private equity investment manager.

"This is naturally pulling through to strong deal-flow and financing activity. Globally, there are particular areas where Foresight sees renewables investment continuing to accelerate, for example the Australian solar market, with project finance playing a material role."

Healthy global market performance

Clean Energy Pipeline's figures show total project investment increasing in Africa & the Middle East, Asia Pacific, Latin & Central America and North America.

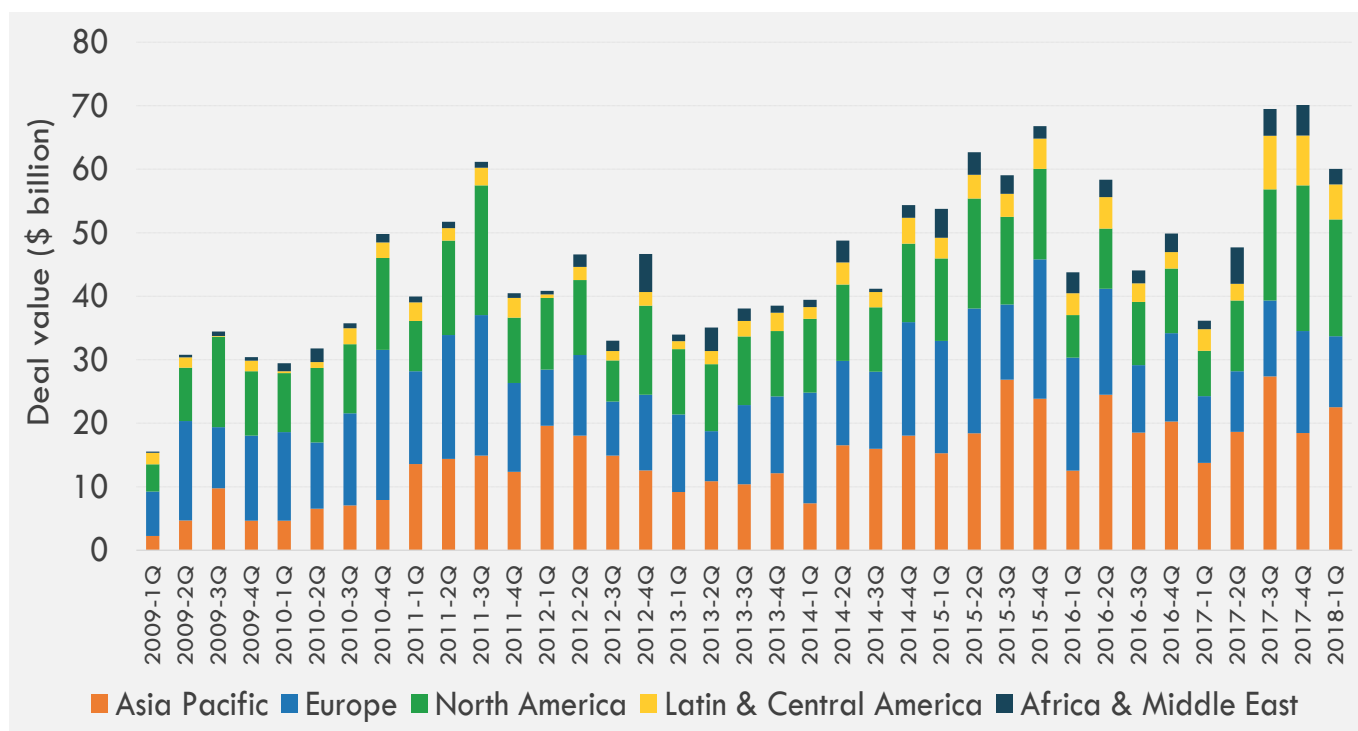
Europe was the only clean energy market that experienced a slight dip in its share of the consolidated clean energy project financing data.

Asia Pacific preserved its position as the largest clean energy financing market in the world after accruing \$22.5 billion of deals in the quarter.

What's more impressive is that APAC renewables project financing increased by 63% from the amount invested in Q1 2017, as well as 22% higher than Q4 2017.

North America overtook Europe as the second largest global clean energy geography after \$18.4 billion of investment was poured into the region during the first quarter.

GLOBAL CLEAN ENERGY PROJECT FINANCE BY REGION
Q1.2009 TO Q1.2018



The slight increase in European project financing meant the market fell to third place globally, though clean energy investment remained fairly robust at \$11.1 billion, compared with \$10.5 billion in the previous year's corresponding period.

Once again, investment in number of emerging clean energy markets showed little sign of abating.

This translated into an over 83% increase in Africa & Middle East clean energy project financing to \$2.4 billion, and a 63% rise in Latin & Central America to \$5.5 billion.

Solar project investment overtakes wind power

Project finance investment in the solar sector overtook wind for the first quarter ever.

After 36 successive quarters tracked by Clean Energy Pipeline dating back to 2009, solar project investment has never been greater than the sum of onshore and offshore financing until Q1 2018.

Figures from the Clean Energy Pipeline team highlight \$28.8 billion of global solar project investment taking place in the first quarter of 2018, compared with \$26.7 billion of financing for wind technologies.

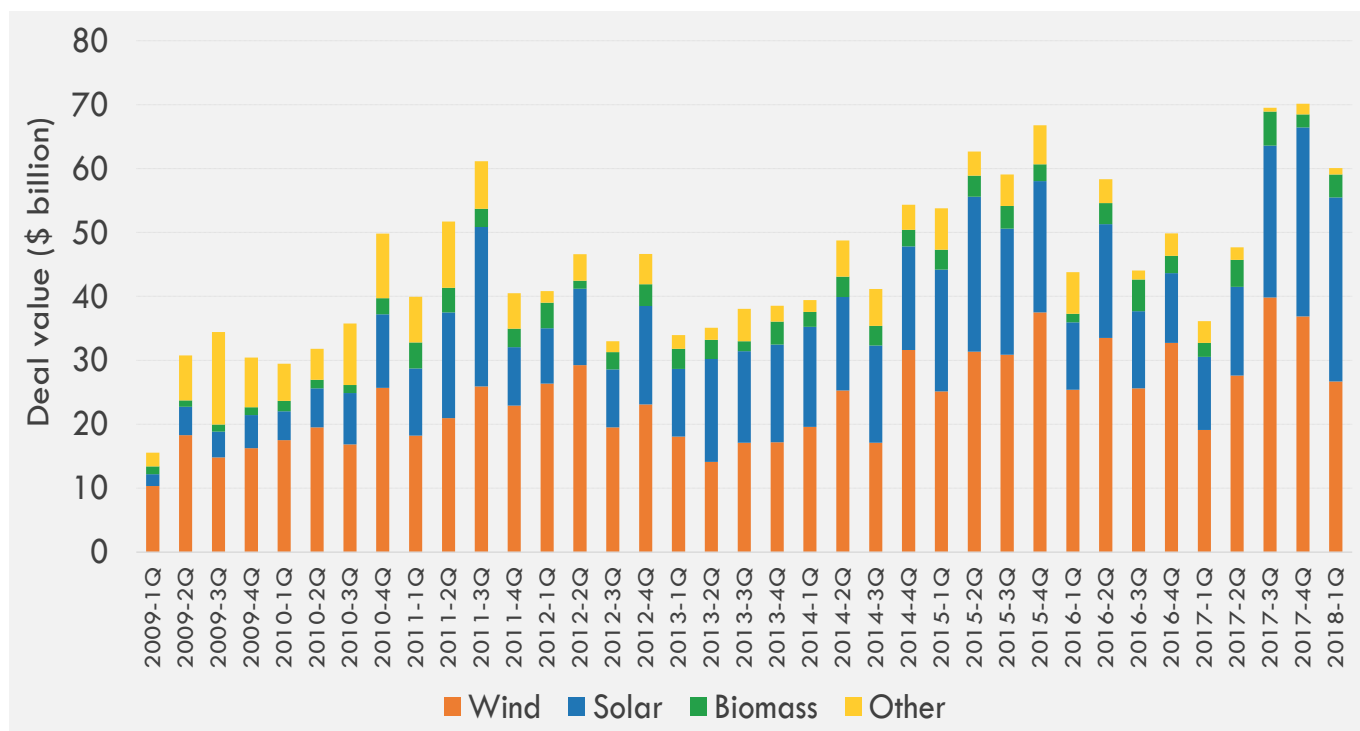
Q1 2018 was also the second strongest quarter on record for solar financing since \$29.5 billion was invested into the sector in Q4 2017.

Top 5 Project Finance Deals in Q1.2018

<p>Maryland Offshore Wind Farm (268MW) Country: USA Deal value: \$1.40 billion Sponsor: US Wind Inc.</p>
<p>Pleinmont 1 and 2 Solar PV Plant (500MW) Country: USA Deal value: \$1.33 billion* Sponsor: SPower Holding</p>
<p>Solomon Forks Onshore Wind Farm (474MW) Country: USA Deal value: \$966 million* Sponsor: Infinity Renewables</p>
<p>Jiaxing Pinghu Offshore wind farm (890MW) Country: China Deal value: \$890 million Sponsor: Zhejiang Water Resources and Hydropower Investment Group</p>
<p>Gujarat Solar PV Portfolio (300MW) Country: India Deal value: \$875 million* Investor: Suzlon Energy Ltd.</p>

* estimated by Clean Energy Pipeline

GLOBAL CLEAN ENERGY TOTAL PROJECT FINANCE BY SECTOR Q1.2009 TO Q1.2018



Green bond investment totals over \$32 billion

Global green bond issuers raised \$32.6 billion from the debt financing instrument in Q1 2018.

The figure marks a 38% drop in green bond activity from Q4 2017, which was the largest amount of green bonds to have been launched in a single quarter.

However, the figure was 8% greater than the green bond capital raised over Q1 2017.

Most of the green bond activity in Q1 2018 took place in the Europe and the Asia Pacific.

In Europe there were \$19 billion of green bonds issued, and in APAC there were \$8 billion green bonds transactions over the three-month period.

Spain top issuing country in Q1 2018

Spain was responsible for \$7 billion of green bonds in Q1 2018, or 23% of the total amount issued globally, and is now home to \$20 billion of green bond issuances since 2008.

Spanish infrastructure and energy company Iberdrola SA issued the largest green bond of the quarter in January at \$6.5 billion.

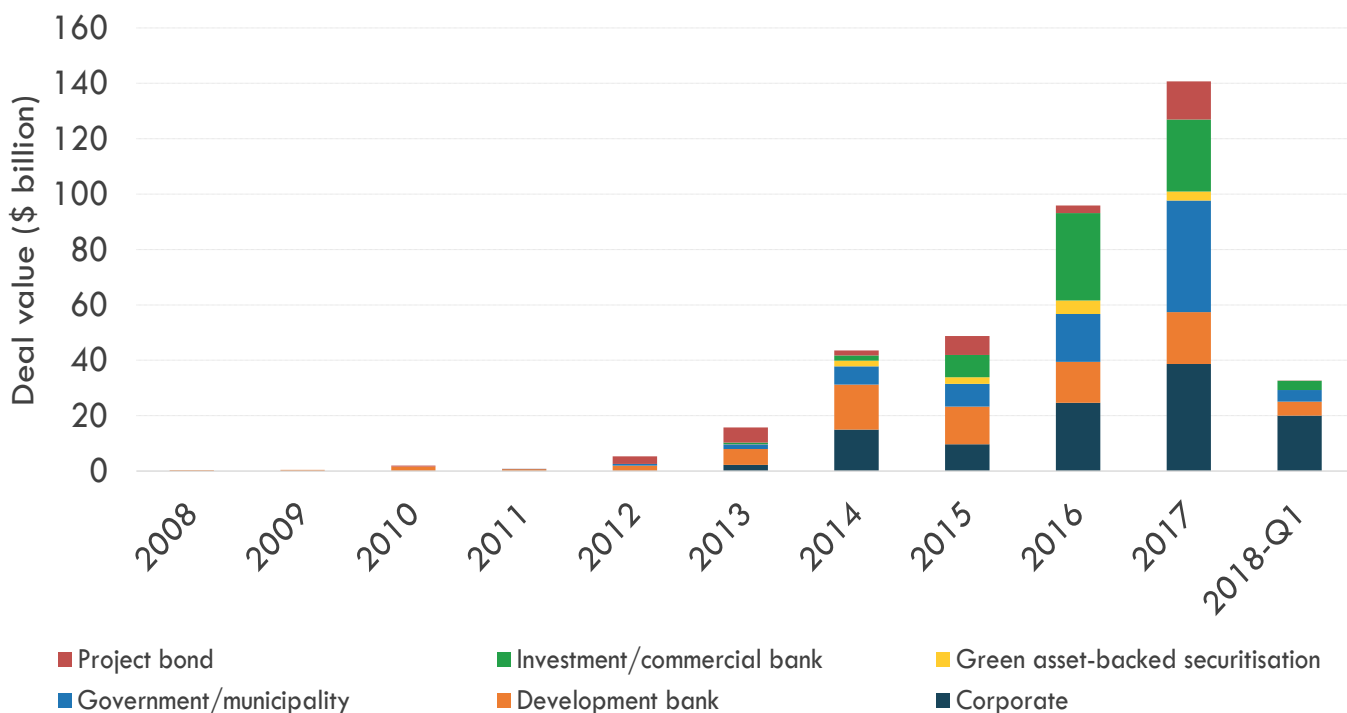
The capital raised will be used to finance projects linked to energy efficiency and renewable energy.

Another notable issuance in Europe came when Italian energy company Enel launched in January a \$1.5 billion green bond – the second largest of the quarter.

Clean Energy Pipeline's figures also show that 73% of the green bond transactions from January to March came from either corporate green bonds or government green bonds.

Development banks were responsible for approximately 15% of green bond issuances in the quarter.

GLOBAL GREEN BOND ISSUANCES BY DEAL TYPE
2008 TO Q1.2018



Top 10 issuing countries and notable deals in Q1.2018

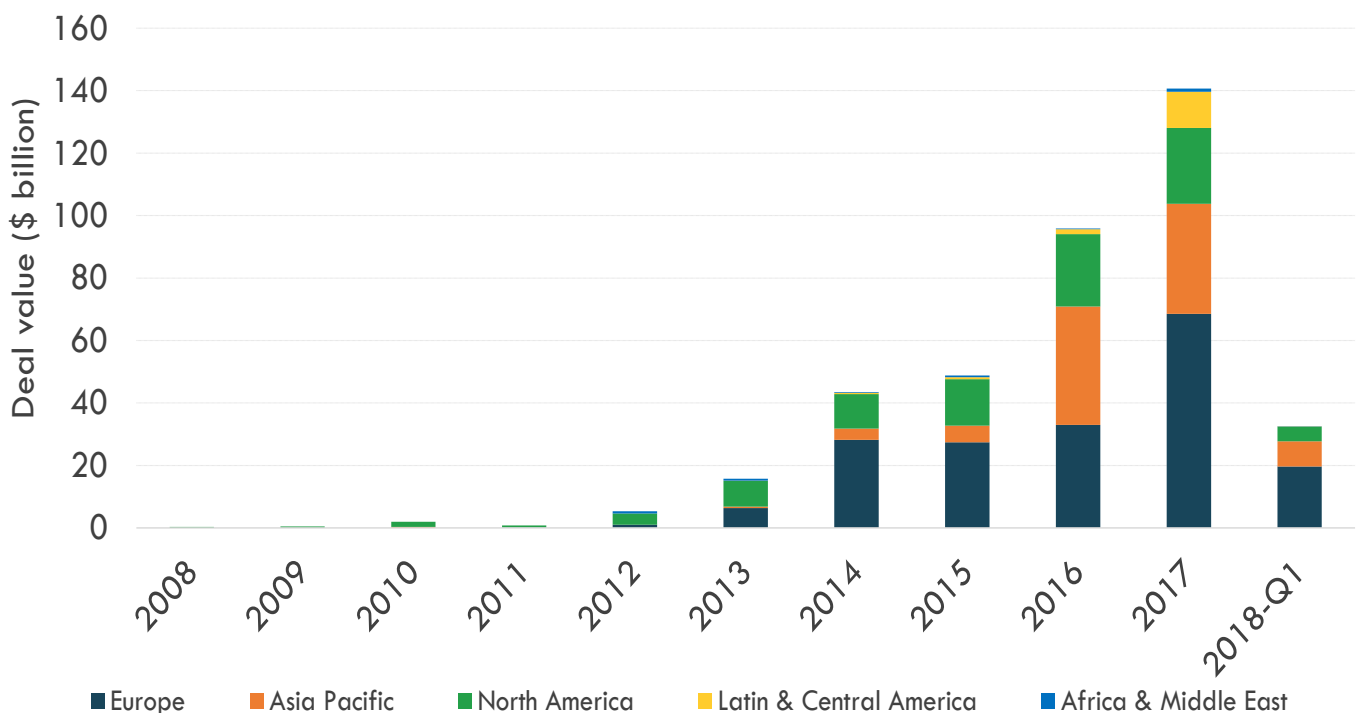
Top 10 green bond issuing countries in Q1.2018

Country	2017 (\$m)	Since 2008 (\$m)
Spain	7,588.27	20,344.40
China	4,445.73	54,218.13
USA	3,481.33	79,218.81
France	2,805.48	39,800.36
Germany	1,776.73	35,725.02
Luxembourg	1,539.97	19,607.44
Italy	1,499.13	6,759.33
Malaysia	1,440.00	3,501.45
Indonesia	1,250.00	1,600.00
Poland	1,243.07	2,188.87

Top 10 green bond deals in Q1.2018

Issuer	Deal value (\$m)	Date
Iberdrola S.A.	6,580	2018-01
Enel Spa	1,499	2018-01
Permodalan Nasional Berhad	1,440	2018-02
International Finance Corporation (IFC)	1,420	2018-03
Government of Indonesia	1,250	2018-01
Government of Poland	1,243	2018-02
Innogy	1,243	2018-01
SpareBank 1	1,199	2018-01
ENGIE (f.k.a. GDF SUEZ SA)	1,190	2018-01
Yancheng Chengnan New District Development Construction Investment Co. Ltd	1,000	2018-03

GLOBAL GREEN BOND ISSUANCES BY REGION 2008 TO Q1.2018



M&A deal activity breaks a seven-year record

Clean energy M&A reached its highest ever deal value at \$39.8 billion in Q1 2018, breaking a seven-year record stretching back to Q2 2011.

The figure was 36% greater than the total volume recorded by Clean Energy Pipeline's data-team in Q1 2017, which came to \$29.2 billion.

There were two main reasons for the unprecedented increase in the sector's M&A volume: several high-value corporate acquisitions, and an increase in the number of development-/construction-stage assets being purchased.

The top five M&A transactions by deal value were all corporate/YieldCo acquisitions worth over \$1 billion.

However, the largest M&A deal to be announced was German energy company E.ON's \$25 billion acquisition of counterpart innogy SE.

The remaining M&A transactions in Clean Energy Pipeline's top 10 by deal value were all acquisitions regarding sizeable solar and wind portfolios.

The project-type acquisition with the largest deal value was ContourGlobal LP's purchase of a 250 MW solar portfolio in Spain from ACCIONA Energia.

Europe dominates global M&A market

Europe was by far the largest global M&A market with a record \$32.4 billion of transactions undertaken in Q1 2018, as well as the only global market to note an increase (184%) when compared with the previous year's corresponding quarter.

Concurrently, M&A deal value decreased by quite a margin across Africa & Middle East, Asia Pacific, Latin & Central America, and North America.

M&A activity in Africa & the Middle East decreased by the largest margin, falling 92% to just \$48 million.

Latin & Central America's M&A deal value fell from \$6.5 billion in Q1 2017 to just \$802 million in this year's first quarter, an 87% decrease in margin.

According to Clean Energy Pipeline's figures, APAC M&A volume more than halved to just over \$1 billion.

North America, the second largest M&A market in Q1 2018, also experienced declining M&A deal volumes (-31%) to \$5.5 billion.

Over 42GW of effective capacity being acquired

Another indication of how much M&A deal activity took place in the first three months in 2018 was through the amount of effective renewable energy capacity acquired by investors.

Clean Energy Pipeline's data-team tracked just over 42 GW of clean energy capacity that changed hands over the quarter, particularly where development- and construction-stage accounting for over 91% of the total capacity.

The acquisition of operational clean energy assets remained steady at 3.5 GW, almost exactly the same when compared with Q1 2017.

However, the acquisition of renewables assets in pre-construction increased by 103% from the same period to 13.1 GW, while the acquisition of clean energy assets under construction surged by 623% to 25 GW.

Top 5 M&A Deals in Q1.2018

Target: innogy SE
Country: Germany
Acquirer: E.ON SE
Deal value: \$25.6 billion

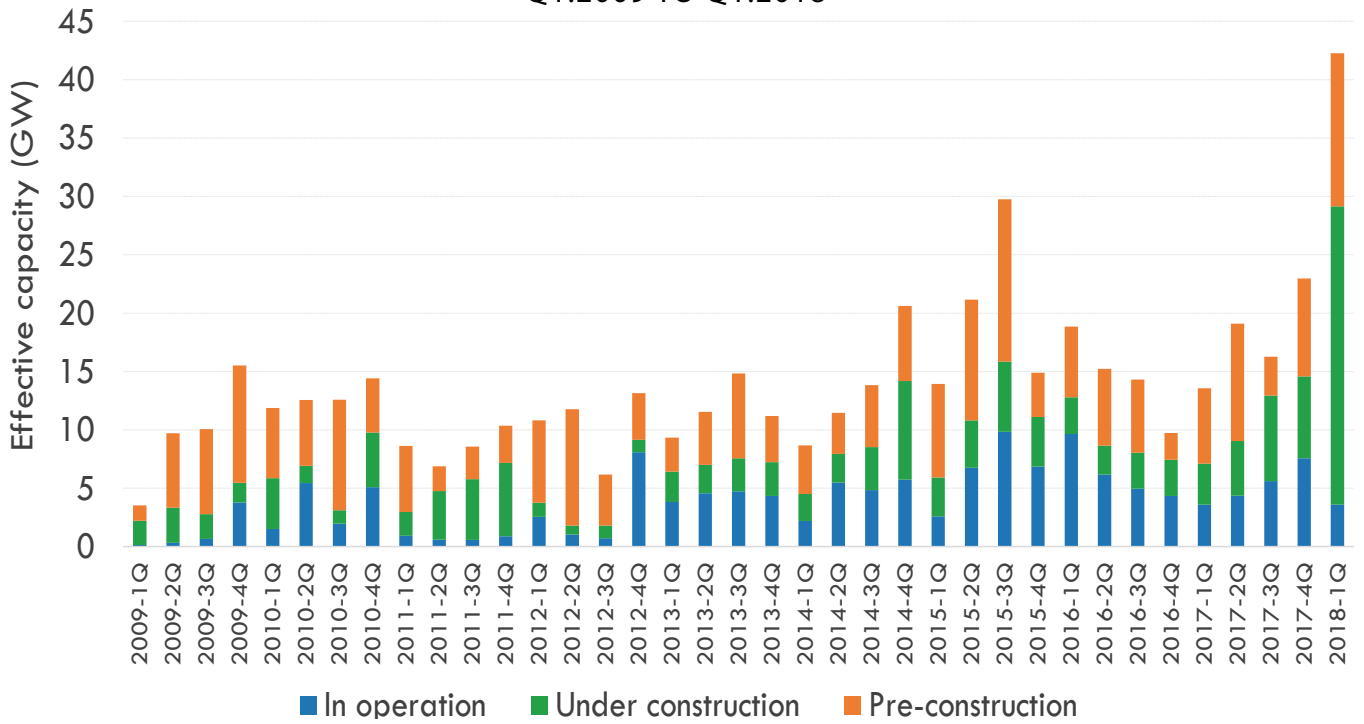
Target: NRG Yield Inc.
Country: USA
Acquirer: Global Infrastructure Partners
Deal value: \$1.38 billion

Target: Saeta Yield SA
Country: Spain
Acquirer: TerraForm Power Inc.
Deal value: \$1.20 billion

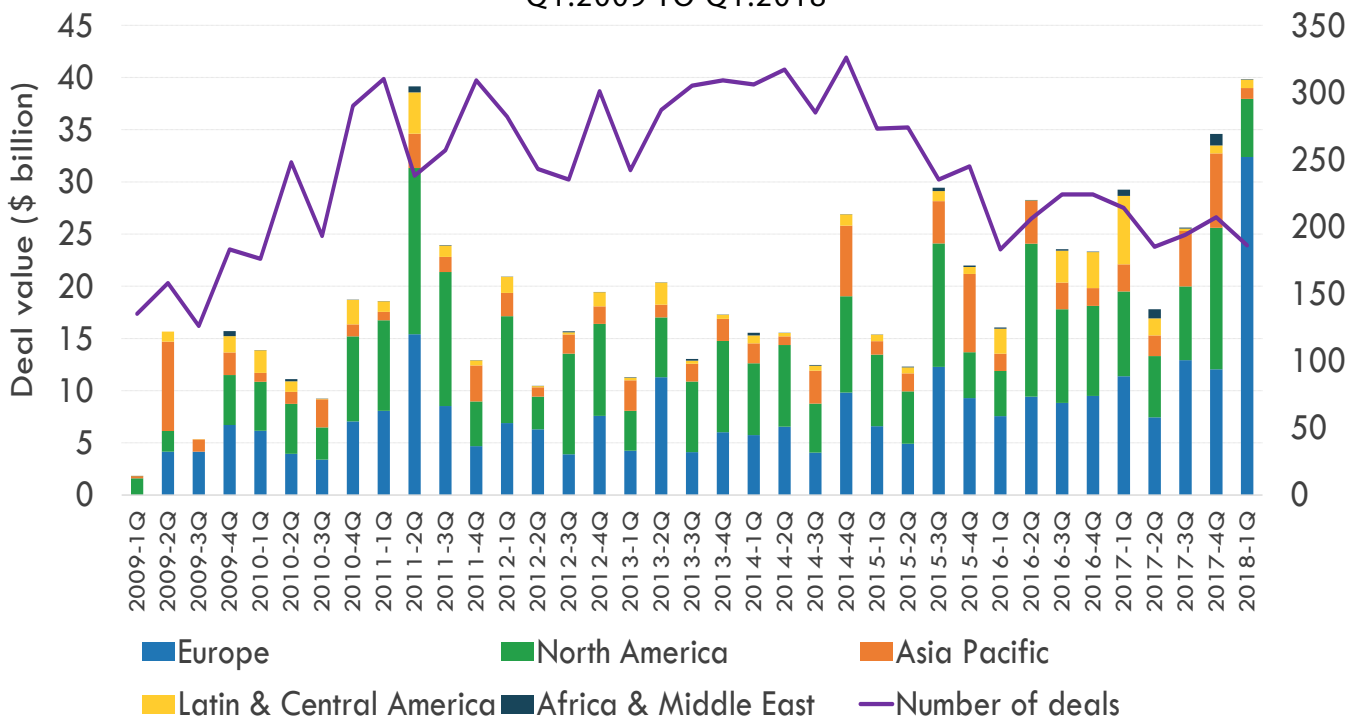
Target: 50Hertz Transmission GmbH
Country: Germany
Acquirer: Elia System Operator SA
Deal value: \$1.20 billion

Target: 8point3 Energy Partners
Country: USA
Acquirer: Capital Dynamics
Deal value: \$977 million

RENEWABLE ENERGY EFFECTIVE CAPACITY ACQUIRED Q1.2009 TO Q1.2018



GLOBAL CLEAN ENERGY M&A DEAL ACTIVITY Q1.2009 TO Q1.2018



VC/PE investments recover sharply in Q1.2018

VC/PE investments in Q1 2018 breached the \$1 billion mark after consecutively failing to do so in the previous two quarters.

However, Clean Energy Pipeline's data-team still recorded a 9% decrease on the \$1.8 billion invested in Q1 2017 and a 20% reduction from Q1 2016.

The majority of the \$1.6 billion VC/PE deals were made in Asian and North America, split \$1.04 billion and \$394 million between the two markets, respectively.

VC/PE activity in China was responsible for an overwhelming majority (\$1.03 billion) of the APAC transactions in the quarter, an almost three-fold increase compared to the \$350 million worth of deals that took place in Q1 2017.

China green vehicle dominates the sector

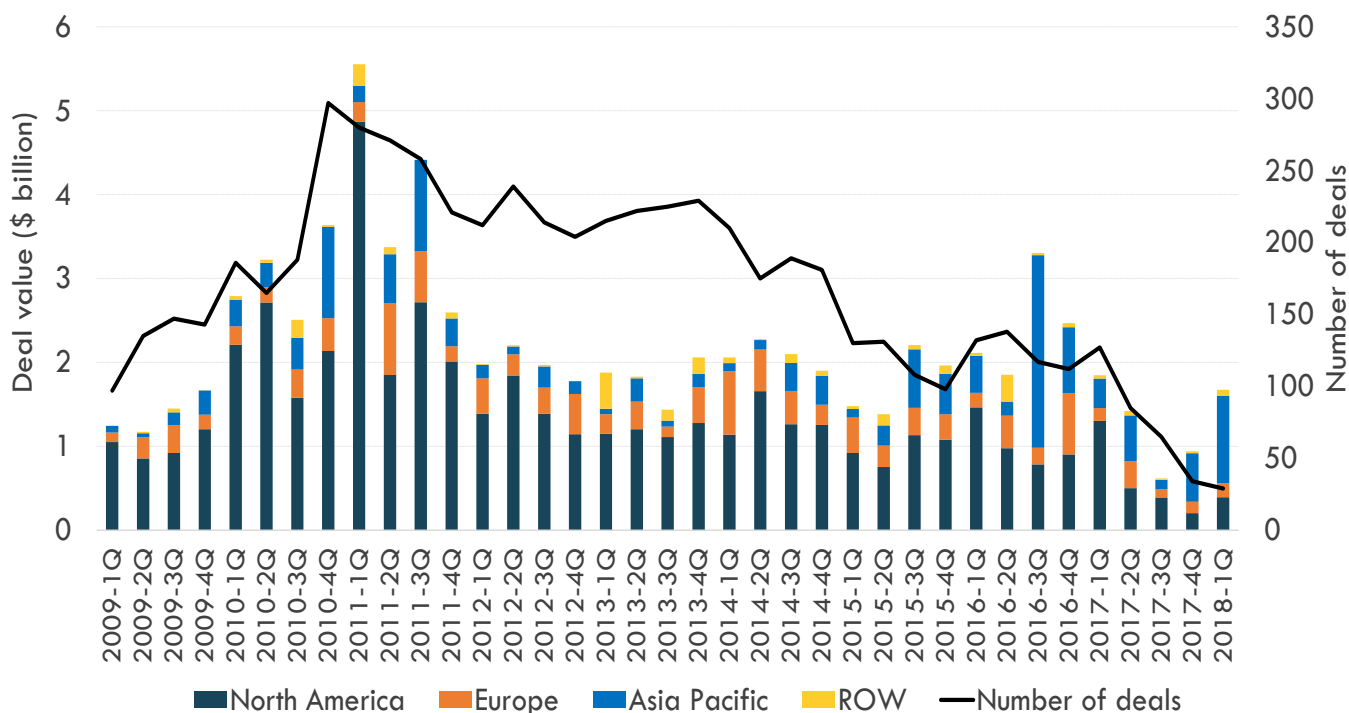
In the first quarter of 2018, green transportation companies attracted more than 60% of total VC/PE investments.

The solar sector accounted for about 27% of the \$1.6 billion amount invested over Q1 2018.

The remaining VC/PE deals were in the wind, biofuels, energy storage and marine sectors.

The largest investment made in the quarter was a \$475 million late-stage venture capital deal in China. Green transportation firm Beijing CHJ Information Technology benefited from the near-half a billion commitment.

GLOBAL CLEAN ENERGY VENTURE CAPITAL & PRIVATE EQUITY
Q1.2009 TO Q1.2018



* ROW = Africa, Middle East and Latin & Central America

Public market activity slides to record low

Public market activity in the first quarter of 2018 wavered to just \$485 million

This was the slowest quarter for public market financing since Clean Energy Pipeline's records began in in 2009.

Global public market activity shrank by 86% when compared to the first quarter of 2017.

Of the amount raised in Q1 2018, initial public offerings (IPOs) accounted for 24.6% of the activity while secondary offerings accounted for 75.31%.

Three public market deals worth \$194 million took place in China, and the remaining four capital raises were in Sweden, the UK, India and Canada.

Solar, marine, hydro and environmental protection were the sectors to benefit from the public market offerings.

Brookfield closes largest offering of Q1

The biggest public markets deal of the quarter took place in Canada.

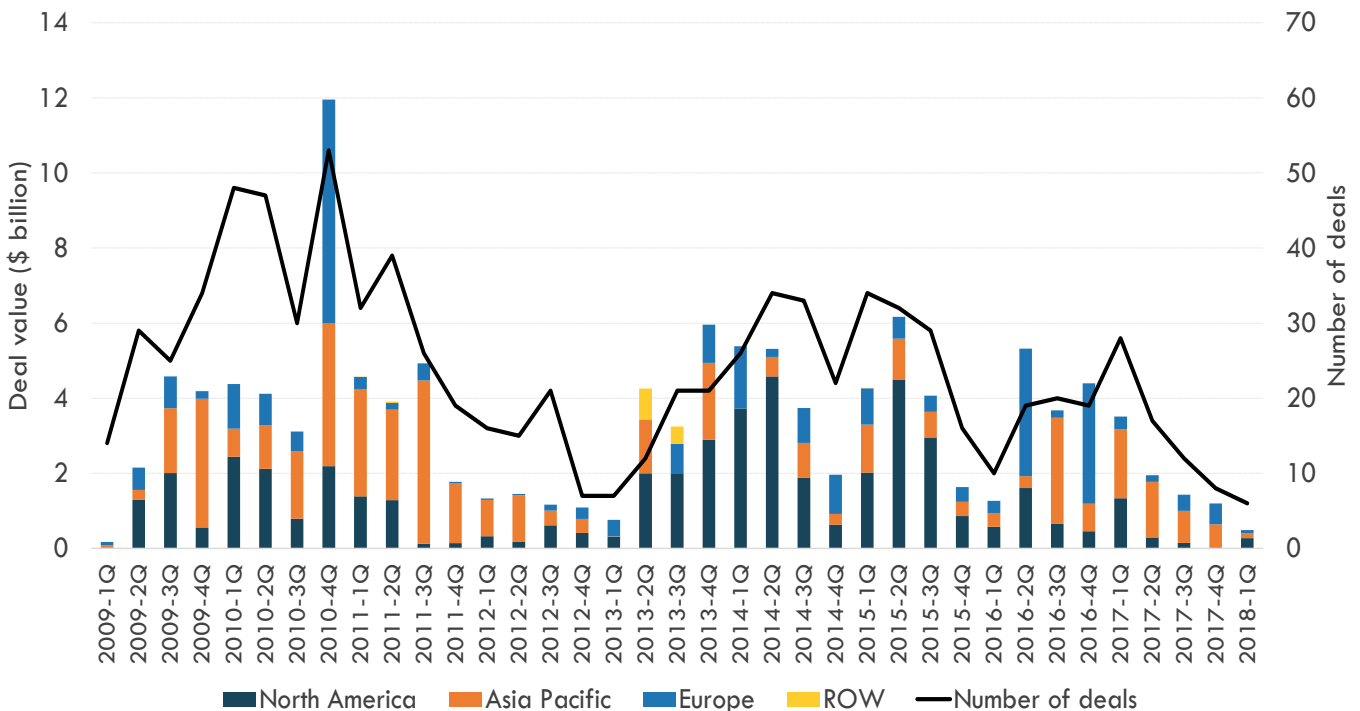
Brookfield Renewable Energy Partner's collected C\$200 million from its sale of 8,000,000 Class A units. Brookfield said it would use the net proceeds of the secondary offering to 'repay indebtedness'.

The only other deal to exceed the \$100 million mark was China-based environmental protection company Penyao Envirn Protection's IPO at \$112 million.

Proceeds from the IPO will finance two water treatment facilities in Changchun City, as well as providing the company with working capital.

In the UK, The Renewables Infrastructure Group Ltd. (TRIG) concluded an \$80 million secondary offering to raise capital for its revolving acquisition facility, which will ultimately help fund its pipeline of project acquisitions.

GLOBAL CLEAN ENERGY PUBLIC MARKETS BY REGION
Q1.2009 TO Q1.2018



* ROW = Africa, Middle East and Latin & Central America

CLEAN ENERGY MONTHLY REVIEWS IN Q1.2018

Since the beginning of 2018, Clean Energy Pipeline's Monthly Reviews have provided a selection of exclusive interviews and features that were published on www.cleanenergypipeline.com during the month. Bespoke graphs and analytics based on deals tracked by our in-house data team at the end of the publications are available for citation.



March 2018

Ardian Confident of Growing Mega Renewables IPP Platform

Stefano Mion, Ardian, Managing Director & Co-Head of Ardian Infrastructure US

Greencoat MD Wants New Faces for Expansion Plans

Richard Nourse, Greencoat Capital, Managing Partner

Why Trump's Solar Tariff Isn't as Harmful as You Might Fear?

Barry Gold, ORIX USA, Head of Infrastructure and Renewable Energy

Coillte Kicks off Sales Process of Irish Wind Farm Portfolio

Fergal Leamy, Coillte, CEO

[See other interviews](#)

JLEN in Talks with Investors, Sets Bar at £200m

Chris Tanner, John Laing Capital Management, Director

BNP Paribas Ramps up Clean Energy Commitment

Mark Muldowney, BNP Paribas, Managing Director (Energy & Infrastructure)

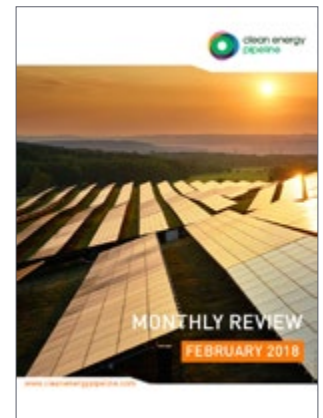
Triodos Bank to Grow Lending Activities

Philip Bazin, Triodos Bank, Environment Team Leader

CEE Group Plans New Fundraising, in Midst of Solar PV, Wind Investment Strategy

Jens Schnoor, CEE Group, Investment Director

[See other interviews](#)



February 2018



January 2018

Tackling the UK's Waste Problem

Hamish McPherson, Bioenergy Infrastructure Group, CEO

Eolus To Seek Construction Financing on 130 MW Wind Project

Per Witalisson, Eolus, CEO

Statkraft EVP Foresees Winds of Change

Jürgen Tzschoppe, Statkraft International Power, Executive Vice President

New Dentons Energy Expert Joins Amid Dutch Green Revolution

Jan Jakob Peelen, Dentons, Partner

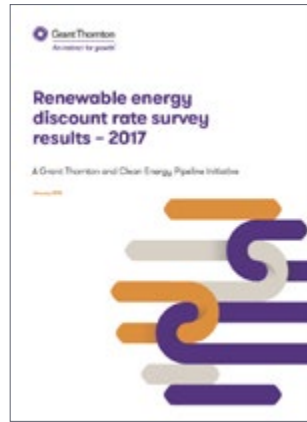
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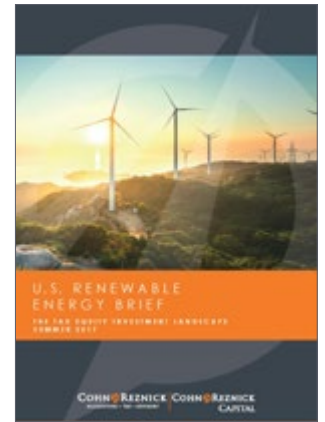
Brazil Clean Energy Investment Guide



Renewable Energy Discount Rate Survey Results - 2017



Renewables Infrastructure Investment in Africa



US Renewable Energy Brief: The Tax Equity Investment Landscape



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Clean Energy Pipeline understands the global renewable energy investment landscape and delivers real-time news, transaction data and analytics on this increasingly complex sector. Our in-house team identifies the latest investment, M&A, project finance, fund and regulatory announcements. In addition, we deliver proprietary content including interviews, analysis, insight reports and events.

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DRIVING GREEN INVESTMENT

Clean Energy Pipeline understands the global renewable energy investment landscape and delivers real-time news, transaction data and analytics on this increasingly complex sector. Our in-house team identifies the latest investment, M&A, project finance, fund and regulatory announcements. In addition, we deliver proprietary content including interviews, analysis, insight reports and events.

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