Power transactions and trends

Q4 2018

EY

Building a better working world

Contents

Power transactions and trends Q4 2018
Overview

	Q4	Year-to-date (YTD)
Global deal value	US$30.7b	US$256.3b
Largest segment	Generation US$8.9b	Integrated US$121.6b
Largest region	Americas US$13.9b	Europe US$126.5b
Total deals	141	546

Chart 1: Global P&U deal value and volume by segment
(announced asset and corporate-level deals, Q4 2016–Q4 2018)

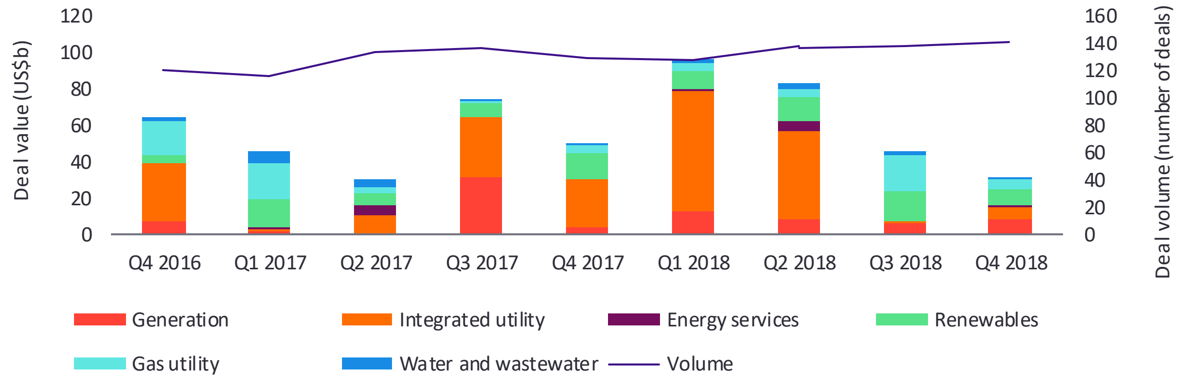
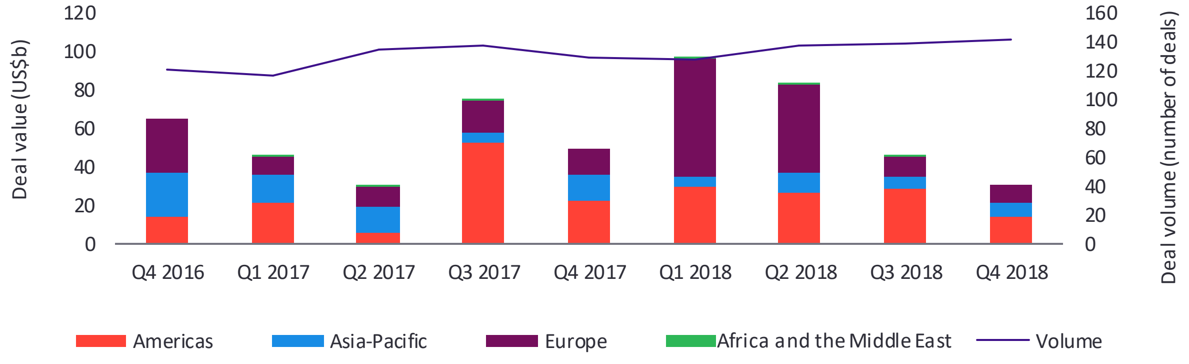


Chart 2: Global P&U deal value by region
(announced asset and corporate-level deals, Q4 2016–Q4 2018)



Note: All transaction information is EY analysis with data sourced from Mergermarket and S&P SNL.

Deal value hits all-time high in value and volume driven by M&A rebound in Europe

In 2018, deal value hit an all-time high, increasing 28% to US$256.3b with a record number of total deals – 546. Interest in P&U assets was driven by both financial sponsors and corporates, however corporates conducted 70% of all transactions and accounted for 80% of total deal value. Confidence in overall global economic growth, continued access to capital and project financing, coupled with low interest rates, created favorable M&A conditions in 2018, particularly during Q1 and Q2. These first two quarters contributed more than 70% of deal value with M&A then dropping from Q3 onward. The start of Q4 saw the beginning of the deterioration of global markets, and M&A in P&U dropped to the lowest quarterly value since Q2 2015. As we move into 2019, the M&A market will increase in complexity as interest rates continue to rise. The market may shift to favor lenders rather than borrowers, creating a more difficult environment for transactions.

Large integrated deals in Europe boost deal value

Europe was the region that contributed most to P&U deal value in 2018, with almost half (49%) of deals taking place here. Most of this investment was attributed to two large integrated deals in Q1 and Q2:

- E.ON's US$46.7b acquisition of Innogy from RWE was the largest deal of 2018 and a transformative transaction for Europe's energy sector. The deal saw RWE shift its focus to generation, particularly from renewable sources, while E.ON will now control networks and retail.
- The second largest deal was China Three Gorges' takeover bid for Portugal's EDP, which owns transmission and distribution across Europe.

Renewables make up almost half of deal volume

In 2018, renewables continued to be a large driver of deal volume, contributing 46% of total deal volume – 253 deals – across all regions. But despite making up almost half of all deals, renewables accounted for only 19% of total deal value (US$48.3b). Europe was the largest region for renewables M&A, attracting more than 40% of renewables total deal value and volume.

Generation and renewables dominate Q4 investments

A majority of Q4 deal value was attributed to renewables (US$9b) and generation (US$8.9b). Within the generation segment, US$3.9b of deal value was in large hydro generation, while US$1.8b was contributed by gas generation assets. The two largest deals in Q4 were in hydro generation in the Americas region.

Americas deal value driven by five megadeals

In 2018, five multibillion-dollar integrated deals contributed US$32b, or 32%, of the Americas total deal value. The largest integrated deal was announced in Q1; the all-stock merger of SCANA Corporation and Dominion Energy, which was approved and completed at the start of 2019. This deal was a strategic move by Dominion aimed at easing concerns from customers, regulators and investors after its failed new nuclear construction project in South Carolina.

2018 at a glance

Yearly investment profile

Americas

- US$98.9b deal value, 3% decrease from US$102.2b in 2017.
- US$36.1b deal value in integrated assets, driven by five multibillion-dollar deals in Q1 and Q2.
- The second largest, but most significant deal of the year, was the Dominion Energy acquisition of SCANA Corporation. The deal expands Dominion's presence in the Southeast and eases customer and regulatory concerns around SCANA's failed nuclear project.
- Liabilities associated with wildfires in California resulted in PG&E filing for bankruptcy in early 2019. The company's market capitalization has fallen from US$25b in mid-2018 to a low of US$3b in early 2019.

Europe

- US$126.5b deal value, 2.5x increase from US$50.3b in 2017.
- US$83.8b deal value in integrated assets, driven by four megadeals worth US$78.4b.
- The largest deal in the region was the US$46.6b acquisition of Innogy SE by E.ON SE from RWE. The deal was conducted to support E.ON's strategy to rationalize its portfolio and focus on energy networks and retail customer solutions.
- EU energy market reforms, including raising 2030 renewable energy targets, mandating Co2 caps on transport and removing subsidies for fossil fuel generation, are set to accelerate the clean energy transition.

Asia-Pacific

- US$29.7b deal value, 36% decrease from US$46.7b in 2017.
- US$15.4b deal value in generation assets, driven by two multibillion-dollar deals worth US$9.5b.
- The largest deal in the region was the US$5.2b acquisition of the Thai coal independent power producer (IPP) Glow Energy Public Co. Ltd. by Global Power Synergy Public Company Limited from Engie. The regulator approved the deal at the end of December.
- China continues to drive outbound M&A with US$34m of transactions conducted in foreign countries.

Africa and the Middle East

- US$1.2b deal value in 2018.
- Fossil fuel investment continues, but renewables are gaining momentum. In 2018, net capacity additions of thermal energy were 22.9 GW compared to 5.5 GW of renewables. New thermal generation is forecast to peak in 2019.
- A US$1b funding program by the World Bank will accelerate deployment of battery storage projects in Africa and other developing economies to drive renewable energy growth.

2018 at a glance (continued)

Capital outlook

Americas

- Elections in Brazil, Mexico and Colombia in 2018 and in Argentina in 2019 will influence energy policy.
- The implementation of the US Federal Energy Regulatory Commission (FERC) order 841, which requires wholesale energy, capacity and ancillary services markets to be opened to energy storage resources on a non-discriminatory basis, will drive increased investments in batteries.
- Support for renewable energy is being led by both corporates and at a local level in the US with states enacting more aggressive renewable portfolio standards. During 2018, Xcel Energy committed to 100% carbon-free electricity by 2050. Corporate buyers entered into over 6 GW of power purchase agreements (PPAs), a new US record.

Europe

- Utilities will focus on renewables as they continue to transform portfolios. In one example, Italy's Enel plans to invest US$12.5b in renewable energy schemes by 2021 to decarbonize its portfolio.
- Investment in EVs will ramp up, particularly as the cap on vehicle emissions is implemented across the EU. Sweden’s Vattenfall plans to become Europe’s largest operator of EV charging infrastructure by 2023, targeting a turnover of US$119m by expanding operations into Norway, the Netherlands, France and the UK.
- Investor interest in new technology, particularly grid-connected battery storage, will start to gain momentum. Ørsted announced the completion of its grid-connected 20 MW battery storage project in England in 2019.

Asia-Pacific

- Industrial groups from Japan and China are collaborating to develop EV charging standards to accelerate regional investment in EVs.
- Ahead of the Australian federal election in 2019, energy policy will likely be a hot topic – as little movement toward a clear national policy was made in 2018.
- The Vietnamese Government will open its wholesale power market to competition in 2019.
- China has moved to cut renewable subsidies, announcing at the start of 2019 that it would launch a series of subsidy-free wind and solar projects and reduce solar feed-in-tariffs (FiTs) to cap the number of new projects.

Africa and the Middle East

- Foreign investment in renewable energy development will continue in Africa. The Government of Finland has announced a financing package to boost wind power in Africa by 3,000 MW, in cooperation with the World Bank. The UK Government has announced US$126m in funding for African renewable energy projects to support the Renewable Energy Performance Platform (REPP).
- Governments are also supporting the development of renewable energy across the region. Morocco is planning to develop an additional 1.5 GW of wind and solar generation capacity to achieve its target of 42% renewable energy by 2020. Zambia is planning to set up 200 MW of solar capacity to reduce its dependency on hydropower.

Global capital flows (US$b) – 2018

Investor country

Target country	US	Germany	Portugal	Spain	Greater China	UK	France	Canada	Italy	Japan	Rest of the world	Total receipts
US	55.1							20.2		0.6	5.5	81.4
Germany		47.4									6.6	53.9
Portugal		0.2	0.1		27.4							27.6
Spain	4.4			1.4	3.8	4.7		1.6	0.2		1.4	17.5
Greater China					12.1							12.1
UK	5.9					3.2	0.6	0.3			0.6	10.6
France	3.0						3.4	0.3	0.1	0.1		6.9
Canada	0.2							6.1				6.3
Italy		0.1							3.0			3.1
Japan	0.3									0.9		1.2
Rest of the world	0.9			0.3	2.9	1.1	0.9	1.5	3.0	0.4	24.5	35.5
Total investment	**69.8**	**47.6**	**0.1**	**1.7**	**46.1**	**9.1**	**4.9**	**30.0**	**6.3**	**2.0**	**38.6**	**256.3**

0–10 | 10–20 | 20–30 | 30–40 | 40–50 | 50–100 | 100–260

Note: Numbers may not add to total due to rounding.

Capital flows

- The US attracted the most capital in 2018, with total M&A totaling US$81.4b. This included US$55.1 of domestic transactions and US$26.3 of inbound activity.
- Canada invested US$20.2b in the US (67.3% of total investment activity), with only US$6.1b of domestic investment.
- China was the top outbound investor, investing US$34b in foreign countries with US$32.6b (96%) targeted at Europe.

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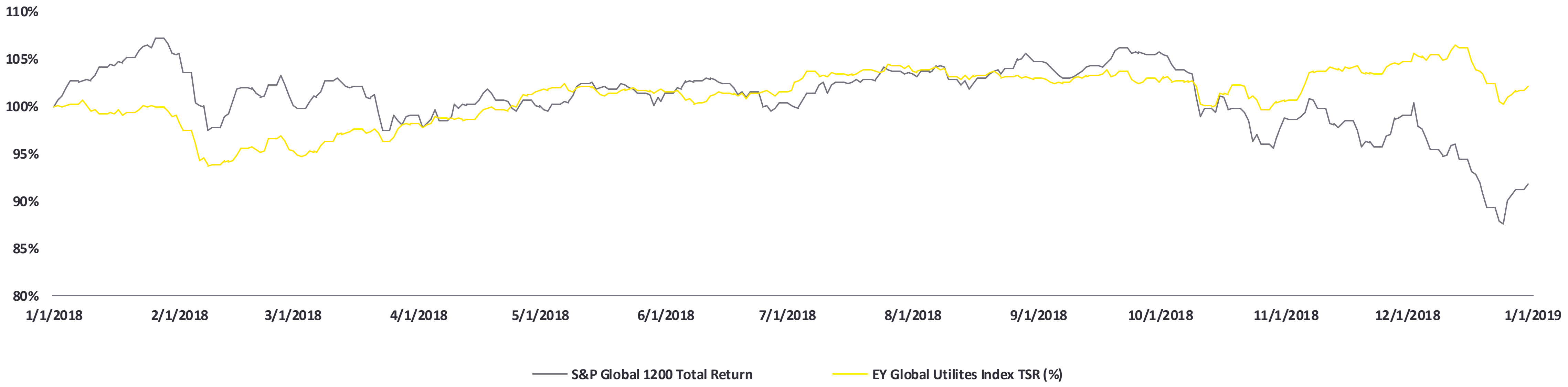
Global returns

Market loses value in 2018, but utilities remain stable

- Q4 saw the beginning of the deterioration of global markets. The S&P Global 1200 lost 13.1% in Q4, erasing all gains made in previous quarters and finishing the year with a total return of -8.2%.
- As political tensions weigh heavily on global markets, utilities remain a safe bet for investors with returns staying in positive territory for the year despite a slight drop at year-end. The EY Global Utilities Index[1] outperformed the market, both YTD and quarter-to-date (QTD), returning 0.03% and 2.1%, respectively.

	QTD TSR	YTD TSR
	TSR in % (from 1 October 2018 to 31 December 2018)	TSR in % (from 1 January 2018 to 31 December 2018)
S&P Global 1200	-13.1%	-8.2%
EY Global Utilities Index	0.03%	2.1%

Chart 3: Total shareholder return – global comparison

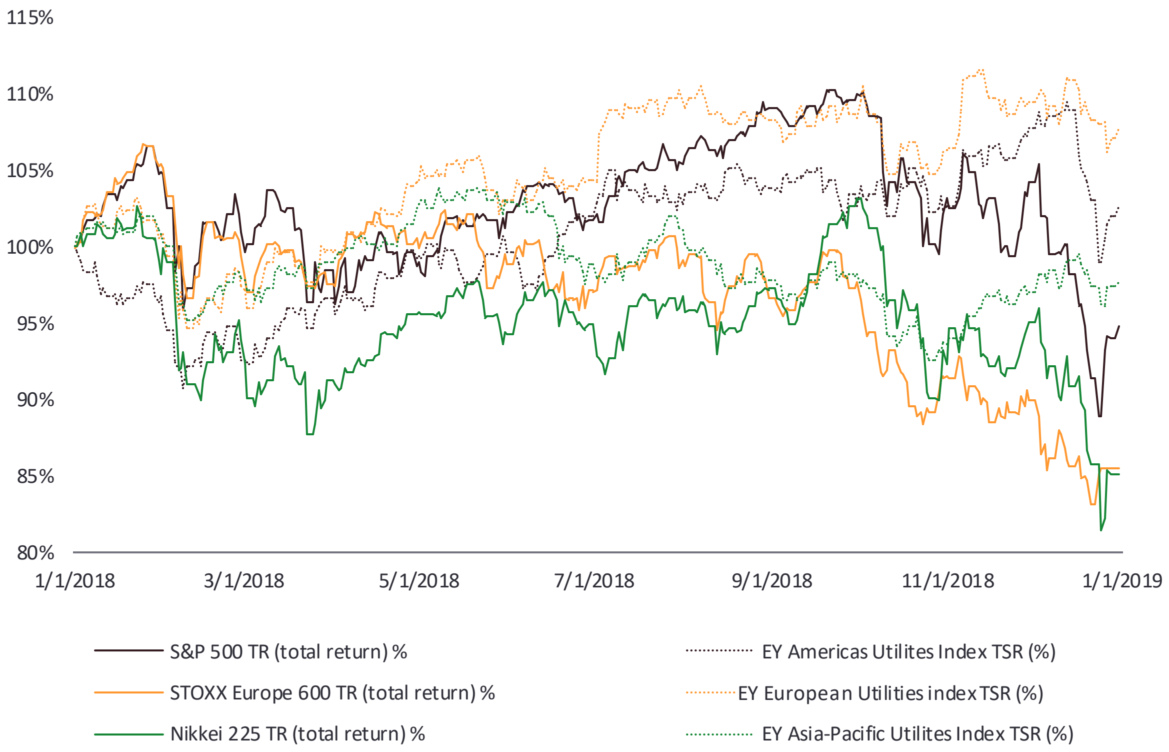


[1]The EY Global Utilities Index benchmarks the returns of 229 utilities globally using data sourced from S&P Capital IQ and other publicly available information. For a comprehensive list of utilities contained within the analysis, please refer to the appendix.

Regional TSR

European utilities outperform in 2018

Chart 4: Total shareholder return – regional comparison



	QTD TSR	YTD TSR
	TSR in % (from 1 October 2018 to 31 December 2018)	TSR in % (from 1 January 2018 to 31 December 2018)
Americas		
S&P 500	-13.8%	-5.2%
EY Americas Utilities Index	0.1%	2.7%
Europe		
STOXX Europe 600	-12.5%	-14.5%
EY European Utilities Index	-0.1%	7.8%
Asia-Pacific		
Nikkei 225	-17.5%	-14.9%
EY Asia-Pacific Utilities Index	-0.1%	-2.5%

Valuations

Americas

The YTD return of the EY Americas Utilities Index[2] was 2.7%, which is significantly higher than the regional market (as benchmarked by the S&P 500 index), which returned a full-year TSR of -5.2%.

Europe

The YTD TSR of the EY European Utilities Index[3] was 7.8%, which is significantly higher than the YTD TSR for the Europe benchmark index STOXX Europe 600, which performed poorly, returning -14.5% for the year. The EY European Utilities Index performed significantly better than all other regions, driven by high returns in generation, large market capitalization integrated assets and renewable assets.

Asia-Pacific

The EY Asia-Pacific Utilities Index[4] performed better than the Nikkei 225, the Asia-Pacific regional benchmark index.
Asia-Pacific utilities returned -2.5% YTD compared with the market at -14.9%. The QTD and YTD returns of the EY Asia-Pacific Utilities Index were also worse than the returns from other regional EY utilities indices.

[2] EY analysis is based on data sourced from S&P Capital IQ and other publicly available data. The EY Americas Utilities Index benchmarks the returns of 101 utilities headquartered in the Americas, the EY European Utilities Index benchmarks the returns of 54 utilities headquartered in Europe, the EY Asia-Pacific Utilities Index benchmarks the returns of 74 utilities headquartered in Asia-Pacific. For a comprehensive list of utilities contained within the analysis, please refer to the appendix.
[3] Ibid.
[4] Ibid.

TSR and valuations segment dashboard

	QTD TSR TSR in % (from 1 October 2018 to 31 December 2018)	YTD TSR TSR in % (from 1 January 2018 to 31 December 2018)	EV/FY2 EBITDA At 31 December 2018
Large market capitalization integrated	0.9%	3.2%	10.2x
Medium and small market capitalization integrated	4.3%	2.5%	9.6x
Gas utility	-3.7%	-0.5%	10.4x
Generation	5.4%	27.0%	7.7x
Renewables	-7.2%	-4.5%	12.0x
Water and wastewater	1.7%	4.5%	13.0x
EY Americas Utilities Index	**0.1%**	**2.7%**	10.5x
Large market capitalization integrated	0.2%	15.3%	7.2x
Medium and small market capitalization integrated	-0.8%	-1.2%	5.2x
Gas utility	0.7%	1.4%	9.1x
Generation	3.3%	27.2%	5.7x
Renewables	-3.1%	14.3%	9.1x
Water and wastewater	0.4%	-10.9%	8.1x
EY European Utilities Index	**-0.1%**	**7.8%**	**7.1x**
Large market capitalization integrated	-1.8%	2.8%	25.2x
Medium and small market capitalization integrated	-1.53%	2.5%	10.0x
Gas utility	-2.7%	16.5%	13.4x
Generation	11.3%	-4.3%	7.8x
Renewables	-7.2%	-19.2%	10.9x
Water and wastewater	-2.6%	-17.2%	9.5x
EY Asia-Pacific Utilities Index	**-0.1%**	**-2.5%**	**11.7x**

TSR >20% higher than the regional sector average; EV/FY2 EBITDA >20% discount (undervalued) compared with the regional sector average

TSR 0% to 20% higher than the regional sector average; EV/FY2 EBITDA between a 0% to 20% discount (undervalued) compared with the regional sector average

TSR 0% to 20% lower than the regional sector average; EV/FY2 EBITDA between a 0% to 20% premium (overvalued) compared with the regional sector average

TSR performance >20% lower than the regional sector average; EV/FY2 EBITDA >20% premium (overvalued) compared with the regional sector average

Americas

- Generation TSR was the highest-performing in the region, and this segment was the only one to consistently outperform the market. Medium and small market capitalization integrated assets TSR performed the worst, driven by negative returns of Spark Energy (-35.2%) and Crius Energy Trust (-42.9%). Large market capitalization integrated assets TSR was 3.2% despite the poor performance of PG&E Corporation (-47%) as a result of potential wildfire liabilities.
- The water and wastewater segment TSR performed better than in other regions.
- The Americas utilities EV/FY2 EBITDA sector traded at 10.5x. Water and wastewater assets traded at the highest multiple at 13x for Q4, higher than any other region.

Europe

- The generation segment QTD and YTD TSR were the highest-performing in the region, driven by a jump from Donbasenergo PJSC after the announcement that private equity investor Maksym Yefimov had acquired a minority stake for an undisclosed value in Q3. The water and wastewater segment TSR performed the worst.
- The large market capitalization integrated segment TSR performed better than in other regions.
- The European utilities sector traded at the lowest EV/FY2 EBITDA multiple during Q4, and renewables and gas utility assets traded the highest of all asset classes in Europe.

Asia-Pacific

- Gas utilities were the highest-performing YTD TSR segment in the region, and the only segment consistently outperforming the market. The renewables segment TSR performed the worst, with the worst returns across all regions.
- The Asia-Pacific utilities sector EV/FY2 EBITDA traded highest across all geographies and slightly higher than in Q3.

Note: EY analysis is based on data sourced from S&P Capital IQ. Please see the appendix for the detailed definitions, the company segment definitions and the company tagging for the valuations analysis.

EY Global Transaction Advisory Services P&U contacts

Miles Huq

EY Global P&U TAS Leader

Miles Huq became the EY Global Power & Utilities Transactions Advisory Leader in April 2018. Based in the Northeast US Region, Miles has more than 20 years' experience in corporate finance, with a particular focus on P&U. Miles holds an MBA from Duke University, and he is also a certified public accountant (CPA) in Maryland and is a member of the American Institute of Certified Public Accountants. Miles has assisted and advised on more than 200 M&A engagements involving major integrated electric, gas and water utilities, as well as renewable energy and cleantech transactions.

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Americas

Robust M&A market closes out 2018

Power transactions and trends Q4 2018
Americas

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In 2018, the Americas Power & Utilities (P&U) sector deal value fell by 3% driven by a 7% decline in the US, while the rest of the region recorded a year-on-year increase of 22%. As we move into 2019, the market may continue to shift to favor lenders rather than borrowers, creating a more difficult environment for transactions.

Miles Huq,
EY Global P&U TAS Leader

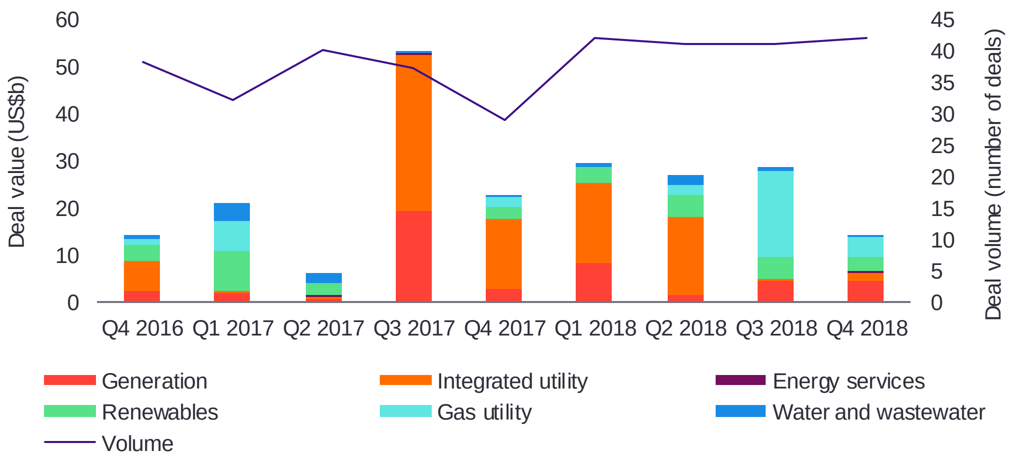
US$98.9b

2018 deal value, a 3% decrease on 2017

US$81.4b

US deal value in 2018, a 7% decrease from 2017

Chart 5: Americas deal value and volume by segment
(announced asset and corporate-level deals, Q4 2016–Q4 2018)



Transaction highlights

Water utility seeks growth in gas deal:

- In a landmark transaction that was the largest deal of the quarter, US water utility Aqua America announced plans to acquire Peoples Gas for US$4.3b. This deal, once complete, will create one of the largest publicly traded water utilities and natural gas local distribution companies in the US. Read more about the transaction rationale in our interview with Aqua's CFO Dan Schuller.

Corporate investors lead dealmaking:

- These buyers conducted 81% of the year's 115 deals, which contributed US$79.9b of the region's total deal value in 2018. Corporate investors also dominated the quarter, with 71% of the total deal value of US$13.9b.

Utilities divest renewables and generation assets:

- Across 2018, utilities divested US$18.1b of renewables assets (US$10.1b) and generation assets (US$8.0b) in a bid to streamline portfolios and de-leverage balance sheets. In Q4, in the largest generation deal of the quarter, AltaGas sold off large hydro generation for US$1b to financial investors.

Deals in hydro drive generation acquisitions:

- Investors acquired US$6.5b of large hydro assets in Canada, Brazil and Chile through 2018.

US federal policy favors coal while utilities back gas and corporates go green

"

It [the VFA] removes a lot of the risk complexity, which simplifies renewable energy. And we think it is better to address the contractual complexity once, up front, than to face price and weather risks for 15 years.[5]

Ken Davies,
Director of Innovation,
Microsoft Energy Strategies

Corporate demand drove growth in renewables

- In the US, corporate buyers procured 6.4 GW of solar and wind capacity, a big increase from 2.78 GW in 2017.
- In October, Microsoft and REsurety introduced the volume firming agreement (VFA) for PPAs. VFAs are designed to mitigate some of the risks associated with power generated by intermittent sources. The hourly variability of wind and solar creates complexity, risk and subsequent financial impacts for even the savviest energy buyers and is a significant deterrent to smaller companies and retailers entering the renewables market. The VFA allows customers to pay a higher price than in a traditional PPA, but reduces the risk by providing firm access to power at one price.
- We expect corporate PPAs to remain a major growth driver for renewables in 2019.

Federal support for fossil fuels, as states drive the renewable agenda

- Throughout 2018, the US Federal Government announced a number of proposed rules that are viewed as favorable to conventional generation. The repeal of the Clean Power Plan introduces the Affordable Clean Energy rule which is set to incentivize efficiency upgrades to coal-fired generation.
- However, state legislation continues to drive renewables and energy storage growth. Washington, DC has announced a 100% renewable goal by 2032, and New York is calling for a "Green New Deal," which includes goals of 9 GW offshore wind by 2035, 3 GW of energy storage by 2030 and 6 GW of distributed solar by 2025.

Utilities retired coal but see the upside in gas

- In 2018, a total of 16.9 GW of US power generation capacity was retired, with coal forming 70% (11.6 GW) of this.
- Gas-fired generation made up 21 GW of the 32 GW new capacity commissioned in the US in 2018.

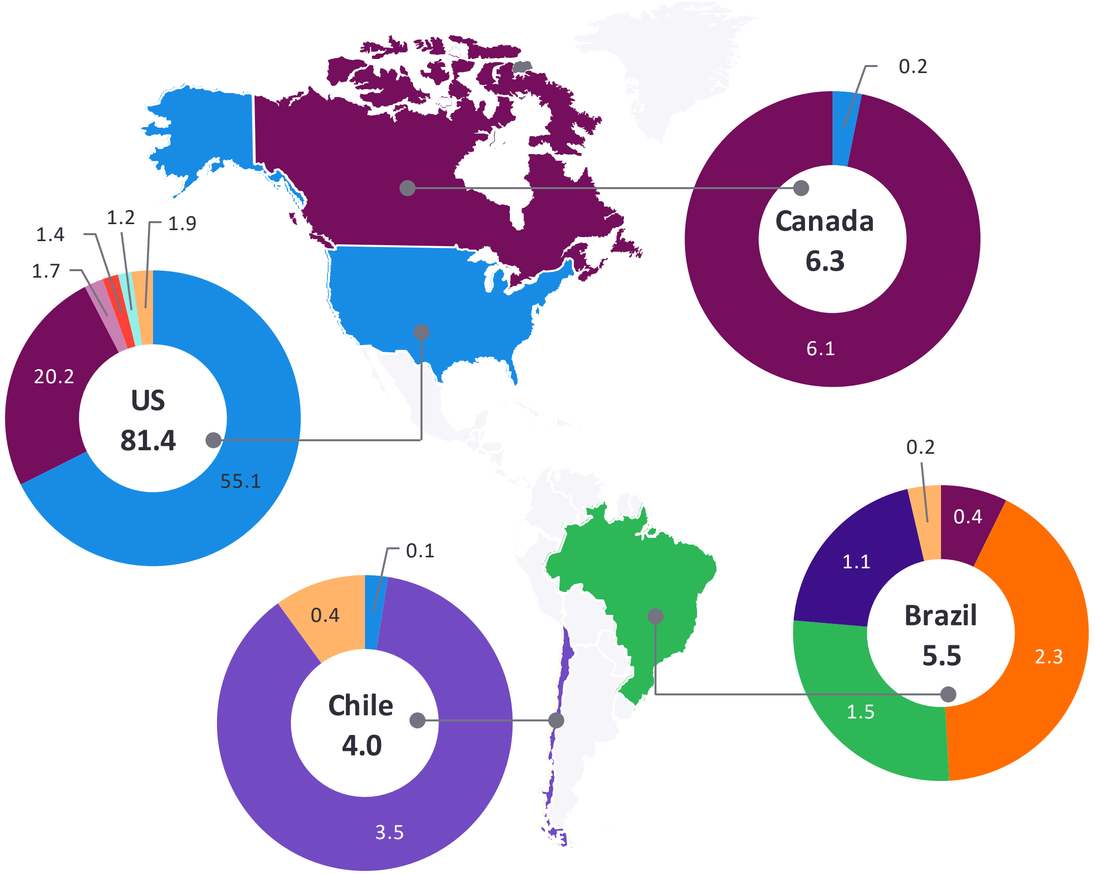
Utility interest grows in electric vehicle (EV) infrastructure

- In December, Arizona approved a policy that incentivizes utilities to roll-out public EV chargers by allowing them to recover their costs in general rates.
- In September, Duke Energy Florida announced the launch of an EV charging station pilot (Park and Plug) that will install 530 stations across Florida.
- In January 2018, Pacific Gas and Electric Company launched a US$130m program to build 7,500 EV charging stations in California.

[5] https://www.utilitydive.com/news/new-microsoft-contract-could-expand-corporate-renewable-energy-deals-to-sma/542527/.

US remains the region's top investment destination

Top investment destinations in Americas in 2018 (US$b)



Top investor countries in 2018

US | Canada | Chile | Italy | Switzerland | Brazil | Denmark | Bermuda | Greater China | Rest of the world

Note: Numbers may not add to total due to rounding.

82% of the region's deal value was conducted in the US.

The majority of transactions — **68% (US$67.2b)** — were domestic deals.

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Corporate investors are taking the lead in domestic dealmaking in the US with US$47.5b of investments in 2018 (86% of the domestic deals). The top five US domestic deals were all conducted by corporate buyers.

Miles Huq,
EY Global P&U TAS Leader

Top five Americas deals – Q4 2018

Announcement date	Target	Target country/ bidder country	Bidder	Deal value (US$b)	Bidder rationale	Segment
23 October	Peoples Natural Gas Company, LLC	US/US	Aqua America, Inc.	4.3	Provides new opportunities for regulated growth outside the traditional water sector	Gas utility
19 October	Companhia Energetica de Sao Paulo (Cesp) (97.75% stake)	Brazil/Brazil	Canada Pension Plan Investment Board (CPPIB); Votorantim Energia Ltda.	1.3	Aligns with growth objectives of the joint venture between Votorantim Energia and CPPIB to invest in renewable energy in Brazil	Generation: hydro
22 October	CPFL Energias Renovaveis S.A. (48.39% stake)	Brazil/China	State Grid Corporation of China (SGCC)	1.1	Gives SGCC 100% ownership, with plans to delist the company; this acquisition is in line with SGCC's strategy of acquiring foreign assets to expand its portfolio	Renewables: wind, solar, hydro and biomass
13 December	Forrest Kerr Hydroelectric Facility (55% stake); McLymont Creek Hydroelectric Facility (55% stake); Volcano Creek Hydroelectric Facility (55% stake)	Canada/Canada	Manulife Financial Corporation; Axium Infrastructure Inc.	1.0	Fits investors' strategy of acquiring assets with long-term returns	Generation: hydro
19 November	Trans Bay Cable LLC	US/US	NextEra Energy Transmission, LLC	1.0	Aligns with NextEra's strategy to grow its regulated asset base	Integrated: transmission

“

The Aqua America acquisition of Peoples Gas is a significant transaction in the US water investor-owned utilities space. This deal creates a larger diversified and fully regulated utility company operating in both water and gas with a stable capital structure set to capitalize on long-term growth opportunities.

Miles Huq,
EY Global P&U TAS Leader

Note: All deals are announced deals, and the values indicated are disclosed enterprise values comprised of equity and debt components. For a list of the top five deals in 2018, see appendix.

How water and gas may create a new pipeline of opportunities for utilities

The biggest transaction of the Americas power and utilities (P&U) sector in Q4 was Aqua America's announced acquisition of Pittsburgh-based Peoples, a regulated natural gas distribution company. The deal – set to complete in mid-2019 – is a game-changer for the sector and demonstrates a new type of sector convergence in the US. EY Global P&U Transaction Advisory Services Leader Miles Huq spoke to Aqua's CFO Dan Schuller about how the deal is value-accretive and why he expects cross-sector acquisitions to grow in prevalence in the future.

> "The Aqua-Peoples transaction is an industry first – the first time a publicly traded regulated water utility has acquired a major natural gas local distribution company.
>
> **Dan Schuller**
> Executive VP and CFO, Aqua America

The Aqua-Peoples transaction continues a trend of sector convergence as electric, gas and water utilities look for opportunities outside of their traditional sectors. It comes as the US utility landscape undergoes significant transformation, with sector convergence on the rise as companies look for growth opportunities.

“

Peoples is expected to grow its rate base at 8%–10%, and its addition to the Aqua portfolio adds about 740,000 customers and increases the overall rate base by nearly 50%.

Dan Schuller
Executive VP and CFO,
Aqua America

In the US, the water sector has been challenged to find transformative growth through M&A, as the industry is highly fragmented – there are more than 52,000 water systems across the country. Water utilities have traditionally looked for tuck-in acquisitions of small regulated utility systems; however, adding a significant number of customers via these deals is difficult.

With this in mind, and to stay competitive, under CEO Chris Franklin’s leadership, Aqua America developed a three-pronged growth strategy:

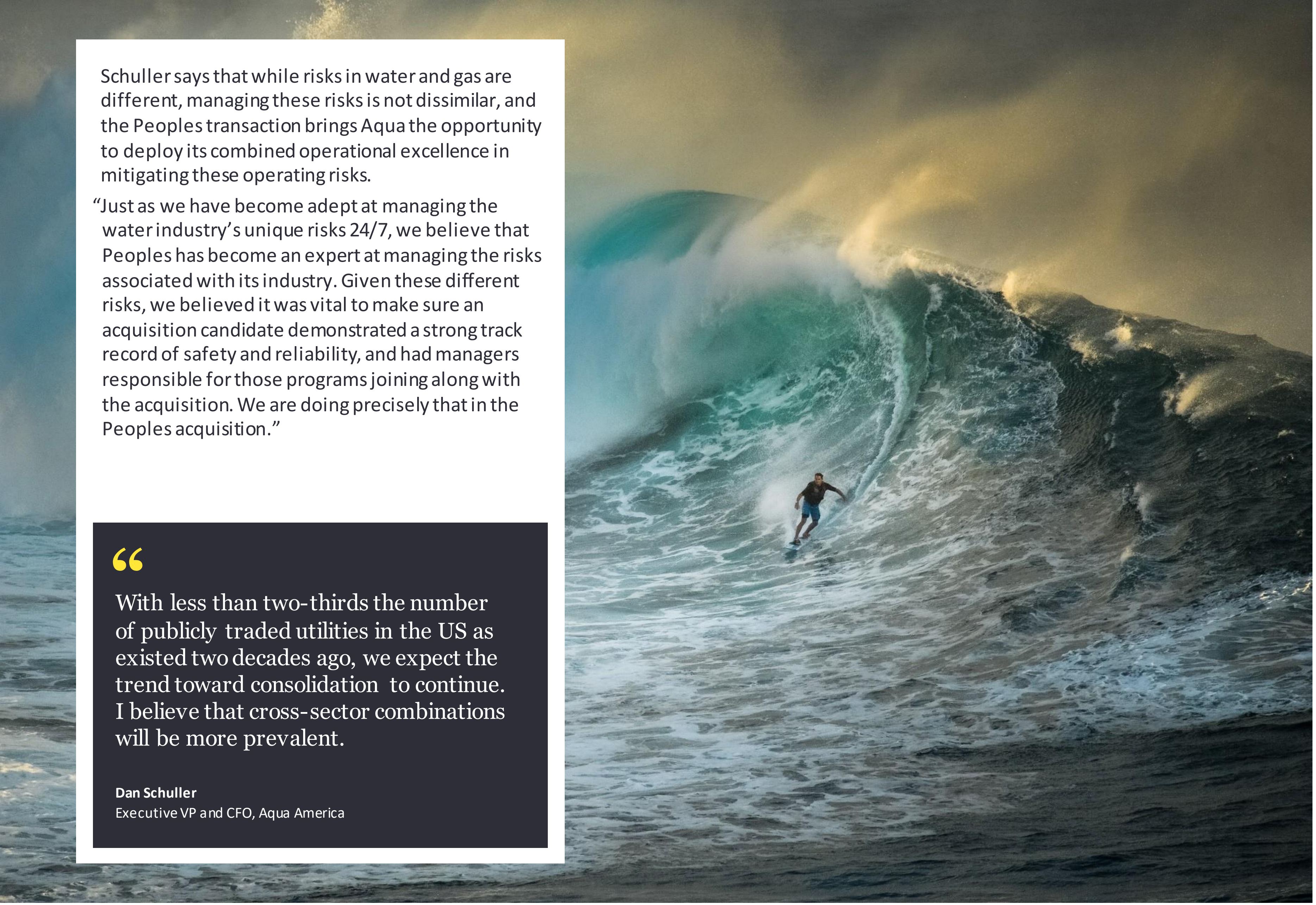
1. **Municipal initiative** – growth through the acquisitions of municipal water and wastewater systems
2. **Strategic M&A** – the opportunistic pursuit of large, regulated utility infrastructure targets
3. **Market-based activities (MBAs)** – the acquisition of businesses that complement Aqua’s regulated business and that capitalize on broader infrastructure renewal programs

The second and third prong of Aqua’s strategy are classified as potential convergence, which Dan Schuller says he sees as playing a bigger role in the US deal environment.

“We’ve certainly seen convergence over the last five years, with many larger electrics acquiring gas companies in order to enhance their earnings growth. Then, before our transaction, one of the New England electric and gas distribution companies waded in by acquiring a neighboring water utility,” says Schuller.

“Peoples is a great fit for Aqua. Gas and water aren’t as different as they may immediately appear. In both cases, a natural commodity is delivered via a pipe network, through a meter, into homes and businesses. The customer operations, call center, meter reading, billing and collections are all very similar.

“Like Aqua, Peoples is a nearly 100% regulated business operating within constructive regulatory environments, with a strong track record and a long capital expenditure runway. Plus, much like we have been running an accelerated pipe replacement program to improve service, reduce water quality complaints, reduce break rates and lessen water loss, the gas companies have stepped up their capex to improve safety and reliability. So, both the operating model and the capital investment model are very similar.”



Schuller says that while risks in water and gas are different, managing these risks is not dissimilar, and the Peoples transaction brings Aqua the opportunity to deploy its combined operational excellence in mitigating these operating risks.

"Just as we have become adept at managing the water industry's unique risks 24/7, we believe that Peoples has become an expert at managing the risks associated with its industry. Given these different risks, we believed it was vital to make sure an acquisition candidate demonstrated a strong track record of safety and reliability, and had managers responsible for those programs joining along with the acquisition. We are doing precisely that in the Peoples acquisition."

> "With less than two-thirds the number of publicly traded utilities in the US as existed two decades ago, we expect the trend toward consolidation to continue. I believe that cross-sector combinations will be more prevalent.
>
> **Dan Schuller**
> Executive VP and CFO, Aqua America

Aqua classifies the Peoples acquisition as strategic M&A, creating a larger, more diversified regulated infrastructure business. "This is really about adding another platform for growth," Schuller explains.

Since joining Aqua in 2015, Schuller has led the utility through a strategic program focused on transaction-based growth. His background has given him the experience needed to help engineer the Peoples deal – he previously played a key role in J.P. Morgan Asset Management's infrastructure investments team, leading its US regulated water and wastewater business and served on the board of the group's US natural gas local distribution company.

With civil engineering degrees from Purdue University, Schuller also worked as an engineer with a municipal infrastructure-focused firm in the Chicago area and as a management consultant with Paris-based Mars & Co.

Schuller, who became CFO in late 2018, says the utility's strategic initiatives focus on value-accretive growth opportunities.

"Peoples is expected to grow its rate base at 8%–10%, and its addition to the Aqua portfolio adds about 740,000 customers to the merged company and increases the overall rate base by nearly 50%," he explains.

In addition to rate base growth, Schuller points out that the Peoples deal has some additional attributes that are not immediately visible, including having an enterprise resource planning software system in place. "Peoples already has SAP, ensuring an efficient combination of our systems and adding an extra benefit to the transaction."

That said, the announcement of the transaction in October 2018 was not immediately welcomed by some investors, with Aqua's share price dropping 10% in the short term. Some were concerned about price to earnings multiple degradation. Schuller believes the reaction was mostly due to the nontraditional nature of the deal and announcing in a choppy market.

"It's one thing for us to tell the market that we're considering opportunities outside of water, but it's another to act on it. The announcement probably surprised some, and we saw a reaction to that. Certain funds, with investment mandates prohibiting exposure to fossil fuels, were forced to sell post the transaction announcement.

"But as we've had more conversations with the investment community, our stock has rebounded nicely, and we believe that trend will continue.
We believe our investors now better understand the rationale for the transaction and see that a pure gas utility, with a 15–20 year capex program, should trade at a price-to-earnings ratio not altogether different than that of a water company."

Schuller expects similar transactions in the market as sector convergence creates new opportunities and challenges in dealmaking. "Companies have discovered that the regulatory expertise, the capital investment expertise, and the similarities in business models trump the differences in commodities."

As convergence accelerates, the boundaries between sectors become blurred, and consolidation of ownership becomes more concentrated.

"With less than two-thirds the number of publicly traded utilities in the US as existed two decades ago, we expect the trend toward consolidation to continue. Within that, we believe that cross-sector combinations will be more prevalent."

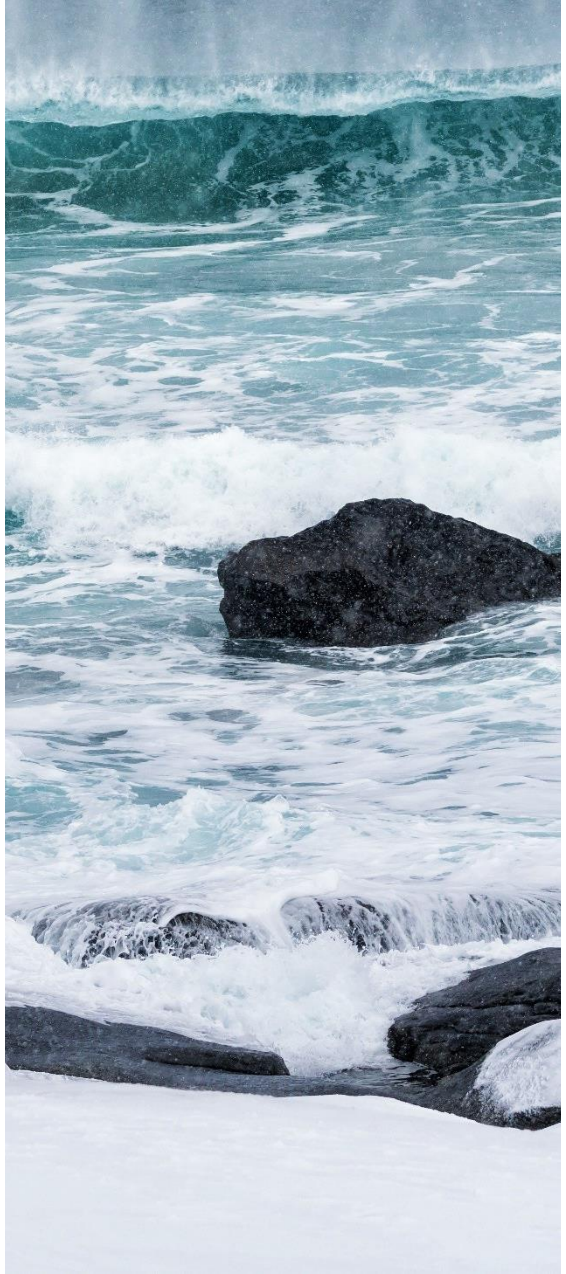
Despite the recent focus on expanding into new sectors, Aqua is still keenly focused on the water sector and expects changes in regulation to facilitate greater traditional M&A.

"Peoples is our large strategic acquisition for the foreseeable future, but we'll continue to pursue municipal transactions," says Schuller.

He says the merged company is anticipated to result in a strong balance sheet and investment-grade credit ratings, which are expected to fuel future growth.

A number of states have implemented Fair Market Value legislation to promote consolidation of smaller water systems by allowing buyers to recover through rates the full purchase price of the assets rather than the depreciated book value. In addition, there is the potential for new legislation that is meant to hold all utility owners to the same standards with respect to testing, routine maintenance, asset management and cybersecurity.

"The Fair Market Value legislation, which allows us to put purchase price into our rate base, has helped to increase the number of municipalities considering system sales, and we wouldn't want to be left out of that growth opportunity. We have added US$100m in rate base through these acquisitions in 2018 and have US$100m in deals set to close this year," explains Schuller.



"Now, as we integrate Peoples and focus our management on capital investments, we'll continue to pursue more municipal water and wastewater acquisitions across our footprint of Pennsylvania, Ohio, North Carolina, Illinois, Texas, New Jersey, Indiana and Virginia.

"We expect to see the water industry pursue other types of legislation that facilitate municipal system sales, because as an industry, we believe we can provide an important solution to many municipal systems that have difficulty addressing the capital needs of the utility or would prefer to allocate proceeds from a sale of the utility to other important community priorities."

This release contains forward-looking statements within the meaning of the Private Securities Litigation Reform Act of 1995. There are important factors that could cause actual results to differ materially from those expressed or implied by such forward-looking statements, including the factors discussed in Aqua America, Inc.'s Annual Report on Form 10-K and its Quarterly Report on Form 10-Q, which is filed with the Securities and Exchange Commission. For more information regarding risks and uncertainties associated with Aqua America's business, please refer to Aqua America Inc.'s annual, quarterly and other SEC filings. Aqua America, Inc. is not under any obligation – and expressly disclaims any such obligation – to update or alter its forward-looking statements whether as a result of new information, future events or otherwise.

Valuations snapshot – Q4 2018

1

In the Americas, the utilities segment outperformed the regional benchmark. The EY Americas P&U Utilities Index recorded a TSR of 0.1% for the quarter, with a YTD return of 2.7%. These returns are favorable when compared to the S&P 500 benchmark, which returned -13.8% and -5.2%, respectively.

2

The generation segment continued its bullish trajectory and was the only segment to consistently outperform the S&P 500, with a full-year return of 27%. This result was driven by the 65.5% YTD return of Companhia Energética de São Paulo.

3

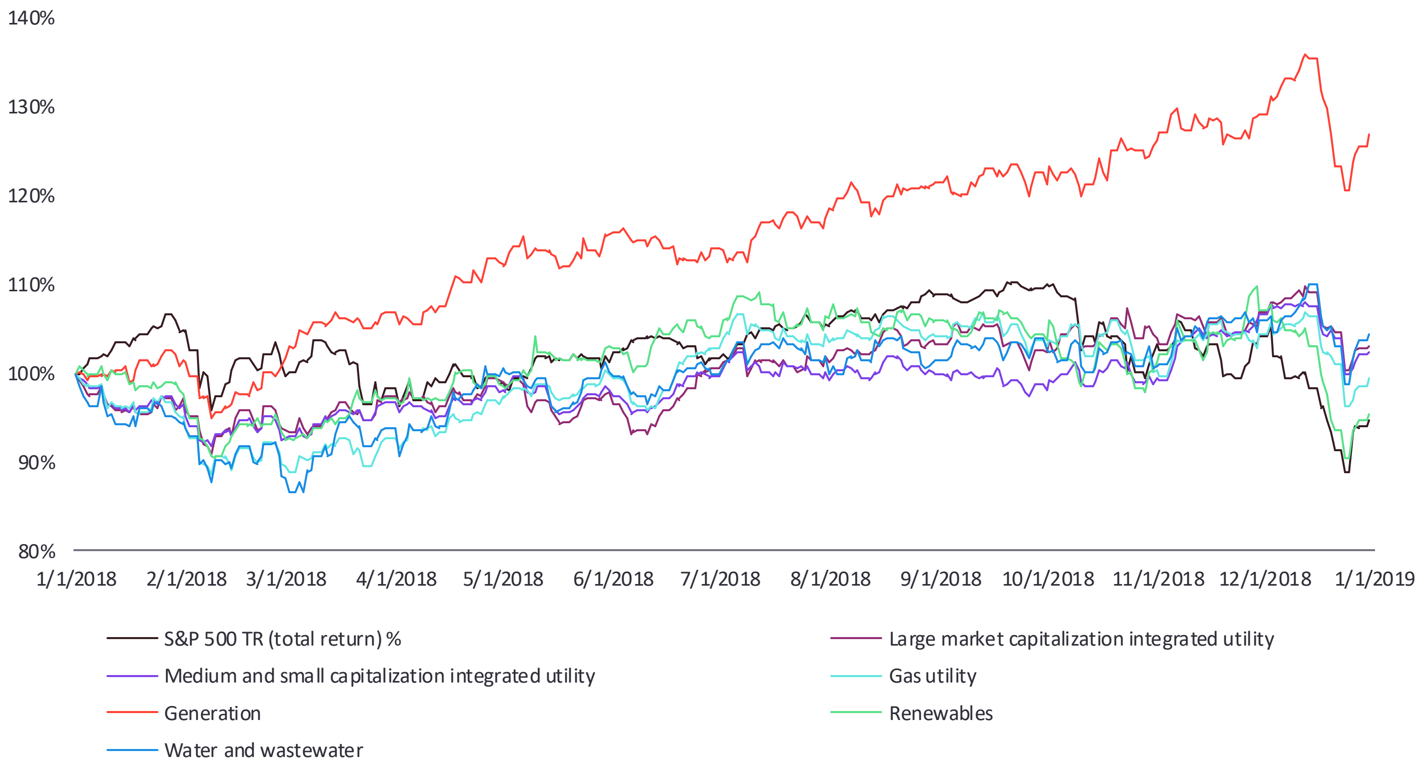
The EV/FY2 EBITDA of the sector was 10.5x, compared to 10.4x in Q3, signaling no major changes in market sentiments to 2020.

4

Water and wastewater assets traded at a premium to sector EV/FY2 EBITDA at 13.0x – the highest multiple for water and wastewater assets across all geographies.

Return over time

Chart 6: Total shareholder return by segment
(1 January 2018–31 December 2018)



Note: EY analysis is based on data sourced from S&P Capital IQ. Please see the appendix for the detailed definitions, the company segment definitions and the company tagging for the valuations analysis.

Valuations and TSR snapshot – Q4 2018

	QTD TSR TSR in % (from 1 October 2018 to 31 December 2018)	YTD TSR TSR in % (from 1 January 2018 to 31 December 2018)	EV/FY2 EBITDA At 31 December 2018
Large market capitalization integrated	0.9%	3.2%	10.2x
Medium and small market capitalization integrated	4.3%	2.5%	9.6x
Gas utility	-3.7%	-0.5%	10.4x
Generation	5.4%	27.0%	7.7x
Renewables	-7.2%	-4.5%	12.0x
Water and wastewater	1.7%	4.5%	13.0x
EY Americas Utilities Index	**0.1%**	**2.7%**	**10.5x**

- TSR >20% higher than the regional sector average; EV/FY2 EBITDA >20% discount (undervalued) compared with the regional sector average
- TSR 0% to 20% higher than the regional sector average; EV/FY2 EBITDA between a 0% to 20% discount (undervalued) compared with the regional sector average
- TSR 0% to 20% lower than the regional sector average; EV/FY2 EBITDA between a 0% to 20% premium (overvalued) compared with the regional sector average
- TSR performance >20% lower than the regional sector average; EV/FY2 EBITDA >20% premium (overvalued) compared with the regional sector average

TSR performance

- The generation segment was the highest performing segment in the region.
- Renewable assets performed the worst across the Americas segments.
- The performance of the large market capitalization integrated segment was impacted by the underperformance of PG&E, whose TSR reduced 47% during the year.
- The water and wastewater segment performed better than its global peer set.

Valuations performance

- The Americas utilities sector traded at a slight premium to Q3.
- Water and wastewater continue to trade at high multiples compared with other Americas segments and international water and wastewater companies.

Note: EY analysis is based on data sourced from S&P Capital IQ. Please see the appendix for the detailed definitions, the company segment definitions and the company tagging for the valuations analysis.

Performance snapshot – Q4 2018

Large market capitalization integrated

- The large market capitalization integrated segment returned a quarterly TSR of 0.88% and a YTD TSR of 3.18%.
- The quarterly TSR was above the regional index average of 0.15% for the quarter and above the regional YTD average of 2.70%.
- The two-year forward EV/EBITDA multiple for large market capitalization integrated traded at 10.2x at Q4, which is a discount of -2.70% to the average regional sector multiple, indicating potential undervaluation of this segment compared with others.

Medium and small market capitalization integrated

- The medium and small market capitalization integrated segment returned a quarterly TSR of 4.33% and a YTD TSR of 2.50%.
- The quarterly TSR was above the regional index average of 0.15% for the quarter and below the regional YTD average of 2.70%.
- The two-year forward EV/EBITDA multiple for medium and small market capitalization integrated traded at 9.6x at Q4, which is a discount of -8.38% to the average regional sector multiple, indicating potential undervaluation of this segment compared with others.

Generation

- The generation segment returned a quarterly TSR of 5.40% and a YTD TSR of 26.98%.
- The quarterly TSR was above the regional index average of 0.15% for the quarter and above the regional YTD average of 2.70%.
- The two-year forward EV/EBITDA multiple for generation traded at 7.7x at Q4, which is a discount of -26.37% to the average regional sector multiple, indicating potential undervaluation of this segment compared with others.

Gas utility

- The gas utility segment returned a quarterly TSR of -3.73% and a YTD TSR of -0.50%.
- The quarterly TSR was below the regional index average of 0.15% for the quarter and below the regional YTD average of 2.70%.
- The two-year forward EV/EBITDA multiple for gas utility traded at 10.4x at Q4, which is a discount of -0.85% to the average regional sector multiple, indicating potential undervaluation of this segment compared with others.

Renewables

- The renewables segment returned a quarterly TSR of -7.19% and a YTD TSR of -4.47%.
- The quarterly TSR was below the regional index average of 0.15% for the quarter and below the regional YTD average of 2.70%.
- The two-year forward EV/EBITDA multiple for renewables traded at 12.0x at Q4, which is a premium of 14.12% to the average regional sector multiple, indicating potential overvaluation of this segment compared with others.

Water and wastewater

- The water and wastewater segment returned a quarterly TSR of 1.73% and a YTD TSR of 4.48%.
- The quarterly TSR was above the regional index average of 0.15% for the quarter and above the regional YTD average of 2.70%.
- The two-year forward EV/EBITDA multiple for water and wastewater traded at 13.0x at Q4, which is a premium of 23.32% to the average regional sector multiple, indicating potential overvaluation of this segment compared with others.

M&A outlook and investment hotspots

US$24.9b

planned investment in regulated assets by American Electric Power to 2023

"

Order 841 was expected to open energy storage floodgates; but, while progress is being made on compliance, the pace is slow.

Miles Huq,
EY Global P&U TAS Leader

Improving conditions in Latin and South America generate investment opportunities

- Elections in Brazil, Mexico and Colombia in 2018 and in Argentina in 2019 should improve stability in these countries and will impact energy policies.
- In December, a 28 MW renewable energy tender in El Salvador received 18 bids from national and foreign investors. Final contracts are expected to be signed in the first half of 2019.
- In January 2019, Brazilian state-owned oil companies Petrobras and Total Eren agreed to form a joint venture to develop up to 500 MW onshore wind and solar projects in Brazil through 2024.
- Brazil auctioned 7,152 km of transmission lines in December, attracting investment of around US$1.6b.

Utilities will continue to drive greenfield investment in renewables

- Dominion Energy announced a target to develop 3 GW of solar and wind by 2022 and will launch an RFP in October to develop 500 MW of capacity in Virginia.
- Tenaska, a US-based renewable energy developer, has partnered with Capital Dynamics' Clean Energy Infrastructure to set up 2 GW of solar PV projects in the US Midwest.

Investment in energy storage to increase

- In February, the US FERC introduced order 841, which directs regional transmission organizations and independent system operators to develop the rules that will allow for the opening up of their wholesale energy, capacity and ancillary services markets to energy storage resources on a non-discriminatory basis. Operators submitted their rule changes at the end of 2018.
- In December, New York announced a target to set up 3 GW of energy storage by 2030, with an interim target of 1.5 GW by 2025.
- Duke Energy plans to invest US$500m in setting up 300 MW battery storage projects in North and South Carolina through 2033.

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EY

Europe

Reforms pave the way for Europe’s clean energy transition

> Today's message is clear: this is the last call for coal. We are taking a step beyond coal and a step toward the age of renewable energy.[6]

Florent Marcellesi,
Spanish lawmaker in the European Parliament's negotiating team

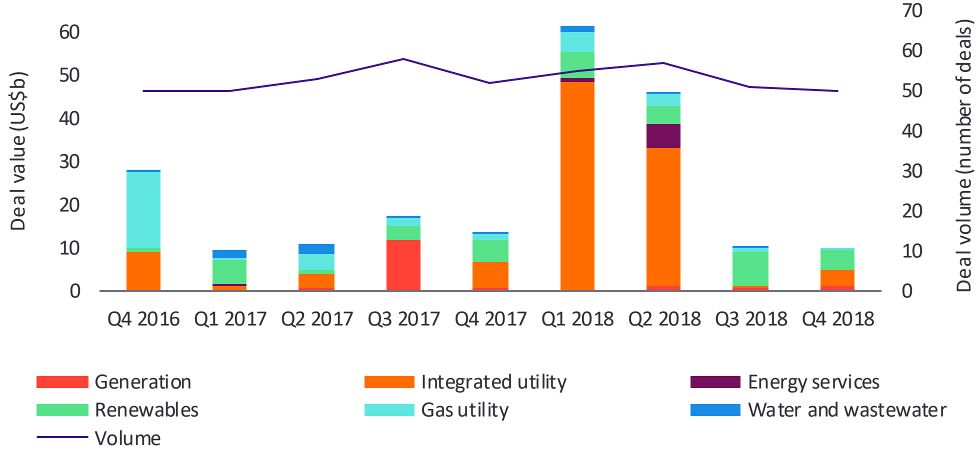
US$126.5b

deal value in 2018, 2.5x increase from 2017

US$79.9b

integrated assets deal value, driven by three megadeals

Chart 7: Europe deal value and volume by segment
(announced asset and corporate-level deals, Q4 2016–Q4 2018)



Transaction highlights

Quarter's largest deal in integrated segment:

- Alstom exercised its option to sell its stake of three separate joint ventures in renewables, nuclear and network assets to General Electric (GE) giving GE full ownership. Initial reports suggest that GE will sell the nuclear business.

Corporate investors lead acquisitions:

- In 2018, 139 deals worth US$98.2b (78% of deal value) were acquired by corporate investors, compared to 74 deals totaling US$28.3b by financial investors.
- Utilities conducted 55 deals in the region – 94% of the corporate deal value totaling US$92.1b. The US$46.6 acquisition of Innogy by E.ON shaped the sector's deal environment.

Investment in electric vehicles (EVs) continues:

- France's ENGIE announced the installation of 88 free EV rapid charging points in northern England.
- Aiming to reduce dependence on Asian EV battery supplies, the German Government announced a US$1.1b package to support domestic battery production.

[6] https://www.euractiv.com/section/electricity/news/eu-hammers-deal-on-coal-phase-out-with-special-polish-clause/.

European Union (EU) energy market reforms boost renewables and microgrids

EU finalizes energy market reforms

- In a landmark deal, the EU concluded negotiations on the energy market reform that will see all nations adopt a "clean energy package" of laws.
- The agreement removes coal subsidies and introduces Co2 performance standards on all new generation. The reform will also cut all capacity payments to existing coal generation by July 2025. Poland received a special clause allowing any contracts negotiated before 31 December 2019 to continue to receive capacity payments.
- The package also introduced "citizen energy communities" enabling customers within a community to produce and trade self-generated electricity, participate in demand response schemes, and access price comparison tools and dynamic electricity price contracts. The rules aim to allow customers to switch suppliers within 24 hours by 2026. The decision on grid ownership has been left to the discretion of national governments.

Renewable investments maintain momentum in the region

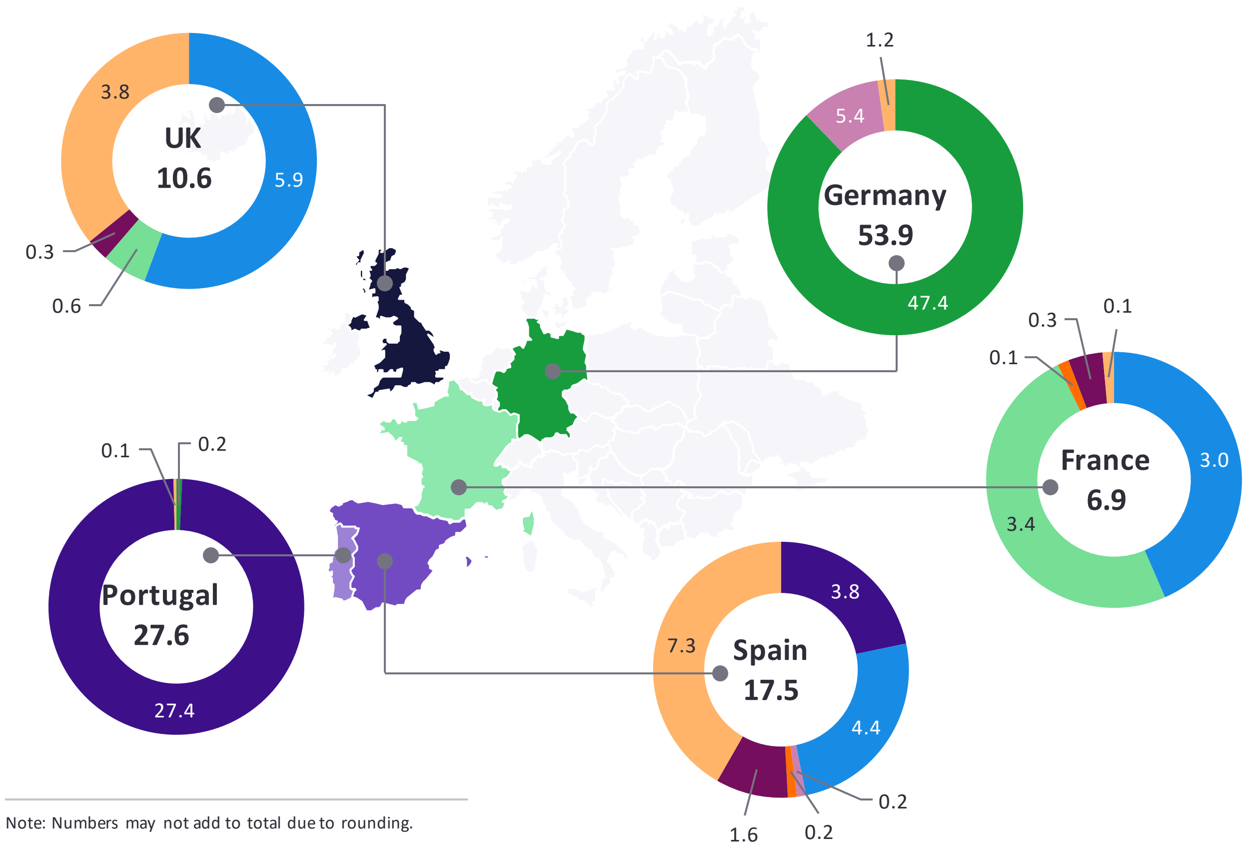
- In June, the EU raised 2030 renewable energy targets from 27% to 32% and may consider another increase in 2023. But, despite the change, some critics say the target will still not be high enough to enable the EU to meet its Paris Agreement commitment to reduce emissions.
- The French Government approved bids for 103 new solar power projects with a total capacity of 720 MW, as part of the country's target to add 3 GW of solar capacity to its energy mix by 2020.
- In October, the HSBC UK Pension Scheme announced plans to invest US$287m in solar and wind projects in the UK.
- Also, in October, the Spanish Government abolished its complex solar tax in a bid to boost the rate of solar installation by small-scale consumers.

Regulated utilities face revenue pressures into 2019 due to regulatory changes

- In the UK, Ofgem's proposed retail price cap came into effect on 1 January 2019. The change is forcing retailers to rationalize cost structures, with British Gas reported to lose more than US$80m under the cap. The utility's owner, Centrica, has launched a judicial review of the change.

Germany remained Europe's 2018 investment hotspot

Top investment destinations in Europe 2018 (US$b)



Note: Numbers may not add to total due to rounding.

87% of deal value was concentrated in four countries – Germany, Portugal, Spain and the UK.

53% of cross-border deals was conducted by Asia-Pacific investors, with Chinese investors contributing **US$32.6b** to M&A.

"Investors from China announced European deals worth US$32.6b in 2018. The country continues to dominate foreign investment into the region.[7]

Miles Huq,
EY Global P&U TAS Leader

Top investor countries in 2018

Germany | Greater China | US | Switzerland | France | Italy | Canada | Rest of the world

[7]https://globenewswire.com/news-release/2018/09/18/1572748/0/en/Ørsted-divests-50-of-Hornsea-1-Offshore-Wind-Farm.html.

Top five Europe deals – Q4 2018

Announcement date	Target	Target country/bidder country	Bidder	Deal value (US$b)	Bidder rationale	Segment
2 October	Three energy joint ventures (renewables, grid and nudear) (50% stake)	France/US	General Electric Company	3.0	Alstom exercised its option under the joint venture redemption rights to exit the venture within three years of its formation	Integrated
9 November	Eolia Renovables de Inversiones, S.C.R., S.A.	Spain/Canada	Alberta Investment Management Corporation (AIMCo)	1.6	Complements AIMCo's existing portfolio of global investments and helps increase its exposure to a large portfolio of renewables in Europe	Renewables: wind and solar PV
21 December	EF Solare Italia S.p.A. (50% stake)	Italy/Italy	F2i SGR SpA	1.2	Helps F2i grow its solar portfolio to more than 800 MW	Renewables: solar
16 October	Scottish Power Ltd (pumped storage, hydro and gas-fired generation assets)	UK/UK	Drax Group Plc	0.9	Supports Drax to expand its portfolio and create value from flexible low-carbon sources	Generation: hydro and gas
11 December	Vattenfall Waerme Hamburg GmbH (74.9% stake)	Germany/Germany	HGV Hamburger Gesellschaft fur Vermoegens- und Beteiligungsmanagement mbH	0.7	HGV exercised a call option to acquire the remaining share in Vattenfall Waerme Hamburg under an option granted when HGV acquired a 25% stake in the company in 2014	Integrated

Following Alstom's US$3b exit from its joint ventures, GE posted a US$23b write-down in goodwill.

Note: All deals are announced deals, and the values indicated are disclosed enterprise values comprised of equity and debt components. For a list of the top five deals in 2018, see appendix.

Valuations snapshot – Q4 2018

1. The EY European Utilities Index outperformed the regional benchmark – STOXX Europe 600 – with a QTD return of -0.1% and a YTD return of 7.8%.

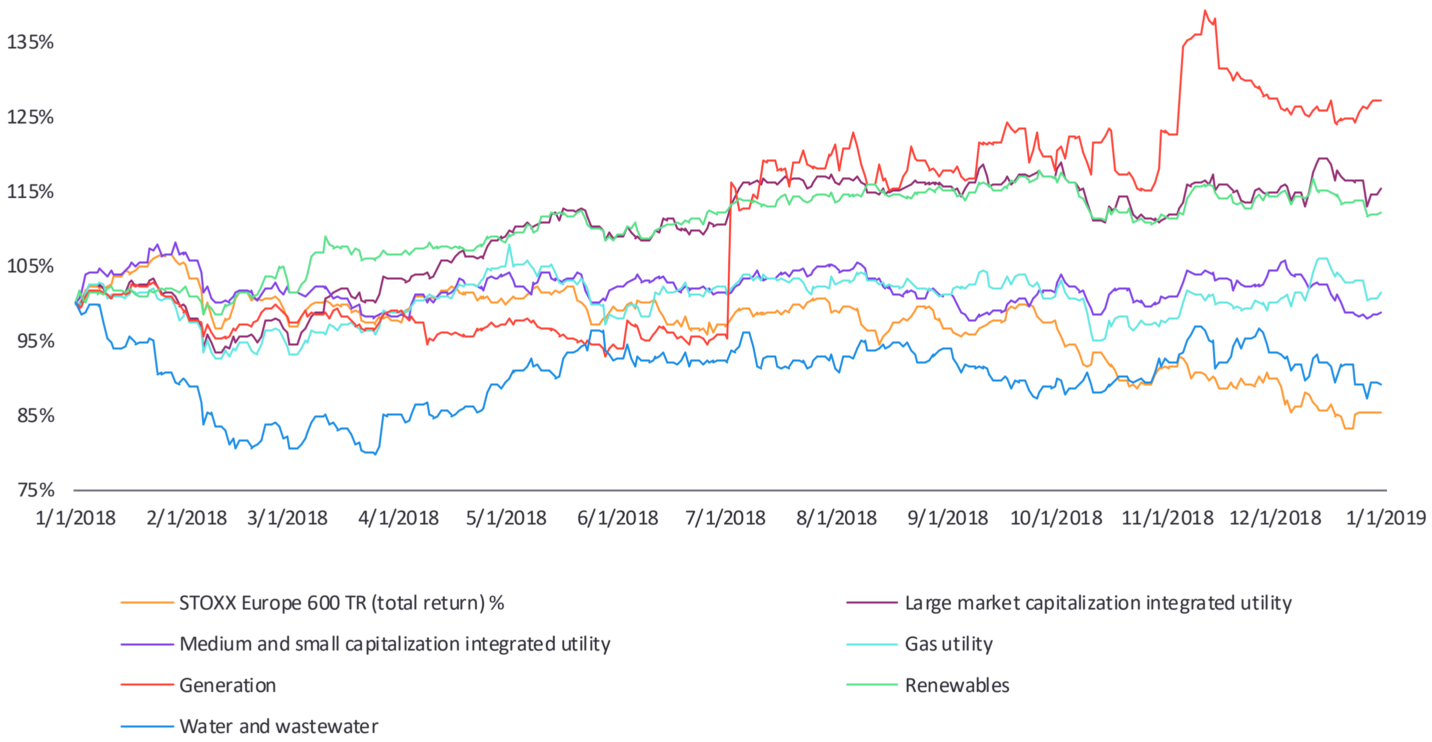
2. Large market capitalization integrated, generation and renewables assets drove the superior full-year return – particularly the performances of Verbund (87.9%), Public Joint Stock Company Donbasenergo (185%) and Terna Energy Societe Anonyme Commercial Technical Company S.A. (34%), respectively.

3. The sector's EV/FY2 EBTIDA multiple of 7.1x was slightly lower than the Q3 value of 7.3x.

4. The TSR of generation companies was the highest for the full year, adding 3.3% in Q4 for returns totaling 27.2% for the year.

Return over time – from base date

Chart 8: Total shareholder return by segment
(1 January 2018–31 December 2018)



Note: EY analysis is based on data sourced from S&P Capital IQ. Please see the appendix for the detailed definitions, the company segment definitions and the company tagging for the valuations analysis.

Valuations and TSR snapshot – Q4 2018

	QTD TSR TSR in % (from 1 October 2018 to 31 December 2018)	YTD TSR TSR in % (from 1 January 2018 to 31 December 2018)	EV/FY2 EBITDA At 31 December 2018
Large market capitalization integrated	0.2%	15.3%	7.2x
Medium and small market capitalization integrated	-0.8%	-1.2%	5.2x
Gas utility	0.7%	1.4%	9.1x
Generation	3.3%	27.2%	5.7x
Renewables	-3.1%	14.3%	9.1x
Water and wastewater	0.4%	-10.9%	8.1x
EY European utilities index	**-0.1%**	**7.8%**	**7.1x**

- TSR >20% higher than the regional sector average; EV/FY2 EBITDA >20% discount (undervalued) compared with the regional sector average
- TSR 0% to 20% higher than the regional sector average; EV/FY2 EBITDA between a 0% to 20% discount (undervalued) compared with the regional sector average
- TSR 0% to 20% lower than the regional sector average; EV/FY2 EBITDA between a 0% to 20% premium (overvalued) compared with the regional sector average
- TSR performance >20% lower than the regional sector average; EV/FY2 EBITDA >20% premium (overvalued) compared with the regional sector average

TSR performance

- Generation was the highest performing segment in the region.
- Water and wastewater assets performed the worst in the region.
- Large market capitalization integrated companies performed better than in other regions.

Valuations performance

- During Q4, the European utilities sector traded at the lowest multiple compared to other regions, indicating potential undervaluation.
- Gas utilities and renewables traded the highest of all asset classes in Europe in Q4.

Note: EY analysis is based on data sourced from S&P Capital IQ. Please see the appendix for the detailed definitions, the company segment definitions and the company tagging for the valuations analysis.

Performance snapshot – Q4 2018

Large market capitalization integrated

- The large market capitalization integrated segment returned a quarterly TSR of 0.17% and a YTD TSR of 15.28%.
- The quarterly TSR was above the regional index average of -0.13% for the quarter and above the regional YTD average of 7.76%.
- The two-year forward EV/EBITDA multiple for large market capitalization integrated traded at 7.2x at Q4, which is a premium of 1.59% to the average regional sector multiple, indicating potential overvaluation of this segment compared with others.

Medium and small market capitalization integrated

- The medium and small market capitalization integrated segment returned a quarterly TSR of -0.80% and a YTD TSR of -1.21%.
- The quarterly TSR was below the regional index average of -0.13% for the quarter and below the regional YTD average of 7.76%.
- The two-year forward EV/EBITDA multiple for medium and small market capitalization integrated traded at 5.2x at Q4, which is a discount of -26.96% to the average regional sector multiple, indicating potential undervaluation of this segment compared with others.

Generation

- The generation segment returned a quarterly TSR of 3.30% and a YTD TSR of 27.18%.
- The quarterly TSR was above the regional index average of -0.13% for the quarter and above the regional YTD average of 7.76%.
- The two-year forward EV/EBITDA multiple for generation traded at 5.7x at Q4, which is a discount of -20.42% to the average regional sector multiple, indicating potential undervaluation of this segment compared with others.

Gas utility

- The gas utility segment returned a quarterly TSR of 0.73% and a YTD TSR of 1.40%.
- The quarterly TSR was above the regional index average of -0.13% for the quarter and below the regional YTD average of 7.76%.
- The two-year forward EV/EBITDA multiple for gas utility traded at 9.1x at Q4, which is a premium of 27.13% to the average regional sector multiple, indicating potential overvaluation of this segment compared with others.

Renewables

- The renewables segment returned a quarterly TSR of -3.15% and a YTD TSR of 14.34%.
- The quarterly TSR was below the regional index average of -0.13% for the quarter and above the regional YTD average of 7.76%.
- The two-year forward EV/EBITDA multiple for renewables traded at 9.1x at Q4, which is a premium of 27.72% to the average regional sector multiple, indicating potential overvaluation of this segment compared with others.

Water and wastewater

- The water and wastewater segment returned a quarterly TSR of 0.38% and a YTD TSR of -10.93%.
- The quarterly TSR was above the regional index average of -0.13% for the quarter and below the regional YTD average of 7.76%.
- The two-year forward EV/EBITDA multiple for water and wastewater traded at 8.1x at Q4, which is a premium of 14.04% to the average regional sector multiple, indicating potential overvaluation of this segment compared with others.

M&A outlook and investment hotspots

US$12.5b

Enel's planned investment in renewable energy by 2021

"

Broadly, a cleaner and more efficient electricity sector, including generation, transmission, distribution, and loads will require intelligently-operated energy storage to enable more PV, wind, demand response to work in concert.[8]

Roger Lin,
VP of Marketing, Energy Solutions, NEC

Utilities focus on renewables to align with Europe's decarbonization and customer expectations

- Italy's Enel plans to invest US$12.5b in renewable energy schemes by 2021 to decarbonize its portfolio. The company plans to install 6,100 MW of wind power by 2021 (more than half of its total capacity of 11,600 MW).
- Electricity generator Scottish Power Ltd will invest in solar power as part of the company's move away from fossil fuels. The utility has sold its last gas-fired thermal power plant (TPP) to Drax Group in a bid to focus exclusively on renewables, which currently consist of onshore and offshore wind farms.
- Spain's Elawan Energy plans to set up a 90 MW wind park in southern Russia.

Investor interest in new technology will continue

- UK-based Eelpower, which provides flexible energy services, plans to deploy 1 GW of energy storage by 2022.
- Renault plans to build an energy storage facility using old EV batteries in early 2019 in France and Germany.
- Ørsted, a Danish utility, announced the completion of its grid-connected 20 MW battery storage project in England with batteries supplied by NEC Energy Solutions, a US-based battery provider.

Reduction on vehicle emissions paves way for further investment in EVs

- As part of the energy reform negotiations, the EU agreed to reduce Co2 emissions from new cars by 37.5% and 31% for vans by 2030.
- Sweden's Vattenfall plans to become Europe's largest operator of EV charging infrastructure by 2023, targeting a turnover of US$119m by expanding operations into Norway, the Netherlands, France and the UK.

[8] https://www.energy-storage.news/news/nec-delivers-orsteds-first-20mw-standalone-grid-battery-project.

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Asia-Pacific

Generation assets drive deal value

Asia-Pacific

"

With the CKI consortium proposal not proceeding, the way ahead for APA is very clear – we will continue to work on 'APA's Plan A,' which is the successful growth strategy that we have employed for almost two decades.[9]

Michael Fraser,
APA Group Chairman

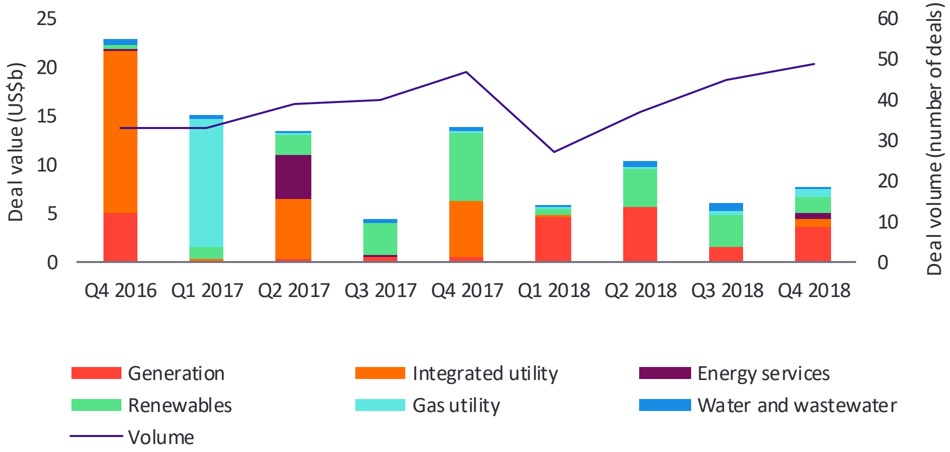
US$29.7b

2018 deal value, 36% decline from US$46.7b in 2017

US$15.4b

generation assets deal value (52% of total value)

Chart 9: Asia-Pacific deal value and volume by segment
(announced asset and corporate-level deals, Q4 2016–Q4 2018)



Transaction highlights

Deals in generation assets continue:

- 2018 hosted US$15.4b deals in generation assets, including 12 deals worth US$3.6b in Q4.

China's US$16b bid to acquire APA Group rejected:

- In August, a Hong Kong-based consortium led by CKI Group announced the proposed US$16b acquisition of US-owned APA Group, the largest oil and gas transmission business in Australia. But the bid was rejected by the Australian Government in November on the grounds of national interest. The announcement saw APA shares drop 11%, though they have since rebounded slightly. APA has resumed business as usual and is pursuing a gas pipeline acquisition in the US.

Distressed coal assets create pressure on India's power sector:

- In 2018, 34 Indian thermal projects with 40.1 GW of assets filed for insolvency (7 projects were resolved) due to issues including project implementation delays, contractual and tariff-related disputes, lack of power purchase agreements and fuel security concerns. In response, the Indian Government will start an asset reconstruction company (ARC) to warehouse stressed projects to ensure projects do not go into liquidation while demand recovers.

[9]https://www.smh.com.au/business/companies/apa-disappointed-with-cki-takeover-rejection-20181121-p50hcm.html.

Big ticket wind investment high on agenda

Policy support accelerates wind investment

- In November, with the aim of promoting offshore wind projects, the Japanese Government approved a bill that designates offshore wind areas and holds tenders for development. The rights for the development of the first project is expected in 2019.
- Also in Japan, the Tokyo Electric Power Company is reportedly seeking a European partner to build a US$9.2b offshore wind farm.
- In December, UK-based wind developer Enterprize Energy announced plans to develop a 3,400 MW offshore wind park in Vietnam. Vietnam has introduced a 20-year feed-in-tariff (FiT) for onshore wind power projects of US$8.5c/kWh and a FiT for offshore wind projects standing at US$9.8c/kWh.

Energy storage remains a priority

- In December, the Chinese Government approved its first large battery project – a US$240m pilot with estimated capacity of 720 MWh – to help balance fluctuations in grid-connected renewable energy. On completion, the project will be the largest storage virtual power plant in China.
- In January 2019, Australia's Muswellbrook Shire Council and utility AGL agreed to set up US$300m pumped hydro energy storage with a capacity of 250 MW. This project will help the region meet the generation shortfall expected when Liddell Power Station closes in 2022.
- China's State Grid Corporation plans to invest US$5.7b to build five pumped hydro storage plants as part of the country's commitment to boost large-scale energy storage capacity over the next decade by launching at least 40 GW of pumped hydro storage plants by 2020.

As US tariffs hit Chinese solar, manufacturers seek new markets

- The US's 30% levy on Chinese solar product imports reportedly saw exports of Chinese solar modules to the US fall to 46 MW in the period of January to September 2018 from 825 MW in 2017.
- In June, China announced it would not issue any new approvals for solar installations for the current year and cut the FiT subsidy, which had been a major driver for solar installations.
- These two factors have encouraged solar manufacturers to diversify their geographical reach, doubling exports to Australia and tripling those to Mexico. In Q3 2018, total exports increased 66% compared to Q3 2017.

Energy reforms aim to improve efficiency

- The Vietnamese Government announced plans to open its wholesale power market to competition in 2019.
- In India, the power sector makes up about 20% of all bad loans on banks' balance sheets. To ensure the long-term viability of the sector, the Government has made amendments to the Electricity Act of 2003, which, as well as ARC (see Transaction highlights), includes a proposal to change the way distribution subsidies are paid to customers. It is also considering mandated unbundling and making renewables producers exempt from stringent licensing requirements.

"

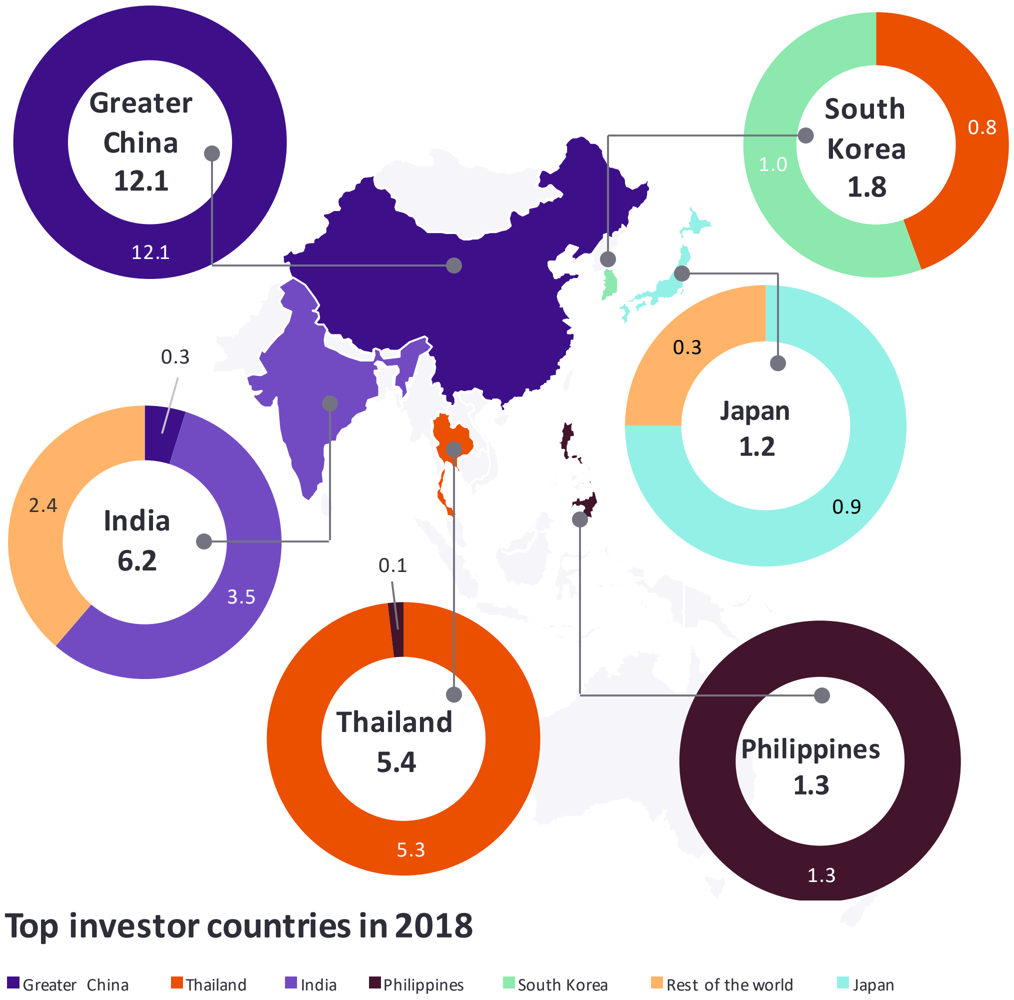
As Japan cuts its dependence on nuclear generation, we see new investment opportunities in renewables, and a number of international wind players being drawn to the market.[10]

Miles Huq,
EY Global P&U TAS Leader

[10] The proposed CKI acquisition of APA Group, while announced in 2018, is not included in the deal values and analyses in this annual review of P&U transactions and trends as it did not proceed to completion.

Greater China is the top investment destination in the region

Top investment destinations in Asia-Pacific 2018 (US$b)



Note: Numbers may not add to total due to rounding.

Greater China was the region's top investment destination, with 80 deals totaling US$12.1b.

85% – **US$25.2b** – of deals were domestic, with **US$12.1b** of these transaction conducted in Greater China.

> "Deep-pocketed Chinese investors keen to acquire strategic assets overseas will continue to drive investments within and outside the Asia-Pacific region.

Miles Huq,
EY Global P&U TAS Leader

Top five Asia-Pacific deals – Q4 2018

Announcement date	Target	Target country/ bidder region	Bidder	Deal value (US$b)	Bidder rationale	Segment
12 December	Yunnan Huadian Jinsha River Hydropower Development Co. Ltd. (23% stake)	China/China	Huadian Yunnan Power Generation Corporation Limited	0.9	Reduces the asset-liability ratio and improves the financial structure of acquisition target	Generation: large hydro
14 November	Prayagraj Power Generation Company Limited (75.01% stake)	India/Singapore	Resurgent Power Ventures Pte Limited	0.8	Supports growth potential of bidder; this transaction was a stressed asset sale initiated by the lenders	Generation: coal
14 November	Paju Energy Service Co., Ltd. (49% stake)	South Korea/Thailand	Electricity Generating Public Company Limited (EGCO)	0.8	Supports EGCO's strategy to create synergies and expand its business in South Korea	Generation: gas
6 November	GCL Intelligent Energy Co., Ltd. (90% stake)	China/China	Xiake Color Spinning Co., Ltd.	0.7	Aligns with Xiake Color Spinning's strategy to add clean energy and new technology assets to its portfolio; the sale is a backdoor listing that will take GCL public after two previous failed attempts to do so via a reverse merger and IPO	Energy services
24 November	China Power Dafeng Wind Power Company Limited (25.05% stake); SPIC Jiangsu Electric Power Co., Ltd. (29.28% stake); Shanghai Power New Energy Development Co., Ltd. (27.07% stake)	China/China	ICBC Financial Assets Investment Co., Ltd.	0.5	Furthers ICBC Financial's strategy of investing in high-growth assets	Renewables

The planned reverse merger of GCL Intelligent Energy with Xiake Color Spinning will be the third attempt by the company to go public in the last two years.

Note: All deals are announced deals, and the values indicated are disclosed enterprise values comprised of equity and debt components. For a list of the top five deals in 2018, see appendix.

EY

Valuations snapshot – Q4 2018

1. The EY Asia-Pacific Utilities Index recorded a TSR of -0.3% for the quarter, with a YTD return of -2.5%. The Index outperformed the regional benchmark Nikkei 225, which recorded a Q4 TSR of -17.5% and YTD TSR of -3.9%.

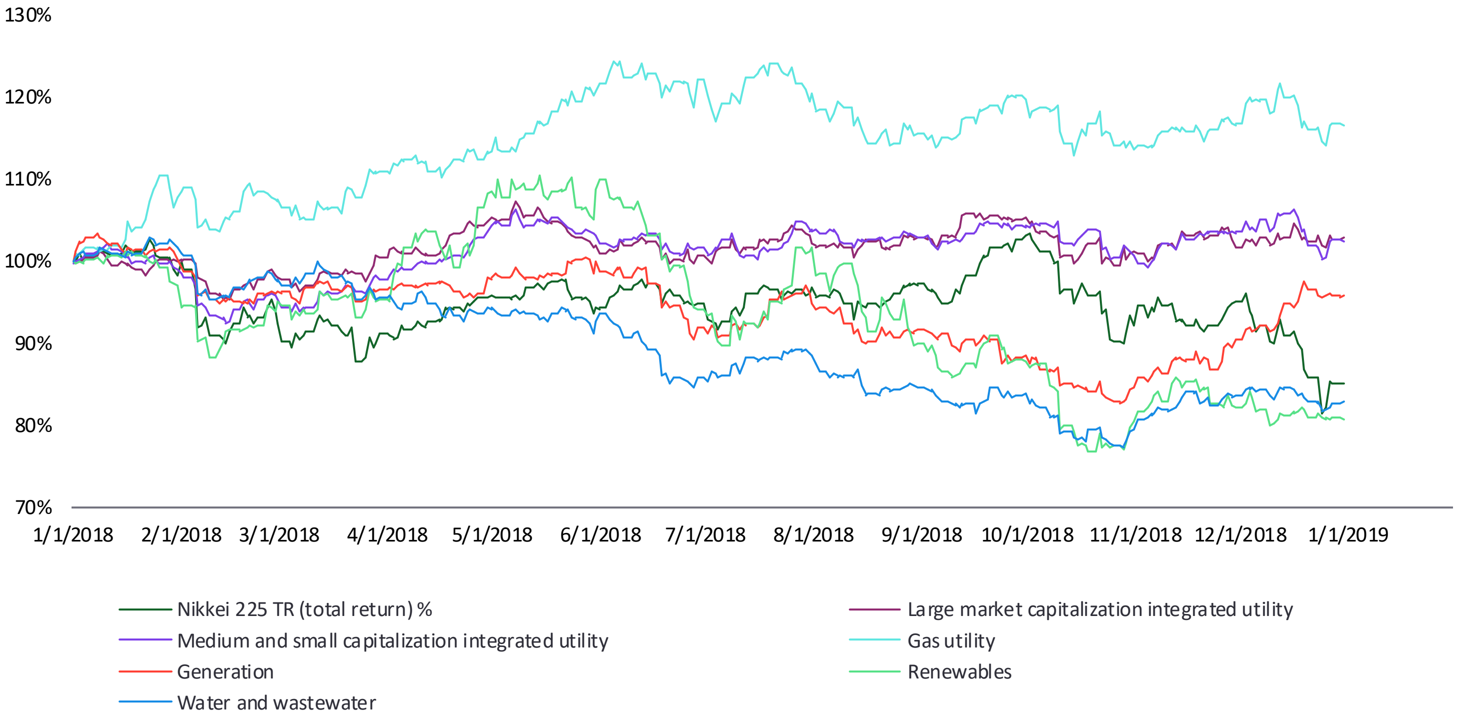
2. Gas was the highest performing segment in the region, and the only segment consistently outperforming the market with a YTD return of 16.5%. The APA share price rose to US$10.1 per share in August from an average of US$8.9, but then plunged 11% after its proposed acquisition by CKI was rejected in November.

3. The EV/FY2 EBITDA of the sector traded upward at 11.7x compared to 11.4x in Q3.

4. Renewables delivered negative QTD and YTD returns, ending the year with a TSR of -19.2%, the worst performing segment of all regions.

Return over time – from base date

Chart 10: Total shareholder return by segment
(1 January 2018–31 December 2018)



Note: Please see the appendix for information on the company assignment to each segment.

Valuations and TSR snapshot – Q4 2018

	QTD TSR TSR in % (from 1 October 2018 to 31 December 2018)	YTD TSR TSR in % (from 1 January 2018 to 31 December 2018)	EV/FY2 EBITDA At 31 December 2018
Large market capitalization integrated	-1.8%	2.8%	25.2x
Medium and small market capitalization integrated	-1.53%	2.5%	10.0x
Gas utility	-2.7%	16.5%	13.4x
Generation	11.3%	-4.3%	7.8x
Renewables	-7.2%	-19.2%	10.9x
Water and wastewater	-2.6%	-17.2%	9.5x
EY Asia-Pacific Utilities Index	**-0.1%**	**-2.5%**	**11.7x**

- TSR >20% higher than the regional sector average; EV/FY2 EBITDA >20% discount (undervalued) compared with the regional sector average
- TSR 0% to 20% higher than the regional sector average; EV/FY2 EBITDA between a 0% to 20% discount (undervalued) compared with the regional sector average
- TSR 0% to 20% lower than the regional sector average; EV/FY2 EBITDA between a 0% to 20% premium (overvalued) compared with the regional sector average
- TSR performance >20% lower than the regional sector average; EV/FY2 EBITDA >20% premium (overvalued) compared with the regional sector average

TSR performance

- The gas utility segment was the highest performing segment in the region YTD.
- Renewable assets performed the worst both YTD and QTD.
- The generation segment was the only segment with positive (+11.3%) returns this quarter in the region.

Valuations performance

- Large market capitalization integrated assets traded at a very high premium to the sector.
- Gas utility assets also continue to trade at a high multiple compared to the gas segment in all other regions and compared to the EY Asia-Pacific Utilities Index average.

Note: EY analysis is based on data sourced from S&P Capital IQ. Please see the appendix for the detailed definitions, the company segment definitions and the company tagging for the valuations analysis.

Performance snapshot – Q4 2018

Large market capitalization integrated

- The large market capitalization integrated segment returned a quarterly TSR of -1.77% and a YTD TSR of 2.77%.
- The quarterly TSR was below the regional index average of -0.14% for the quarter and above the regional YTD average of -2.52%.
- The two-year forward EV/EBITDA multiple for large market capitalization integrated traded at 25.2x at Q4, which is a premium of 115.59% to the average regional sector multiple, indicating potential overvaluation of this segment compared with others.

Medium and small market capitalization integrated

- The medium and small market capitalization integrated segment returned a quarterly TSR of -1.53% and a YTD TSR of 2.50%.
- The quarterly TSR was below the regional index average of -0.14% for the quarter and above the regional YTD average of -2.52%.
- The two-year forward EV/EBITDA multiple for medium and small market capitalization integrated traded at 10.0x at Q4, which is a discount of -14.73% to the average regional sector multiple, indicating potential undervaluation of this segment compared with others.

Generation

- The generation segment returned a quarterly TSR of 11.29% and a YTD TSR of -4.28%.
- The quarterly TSR was above the regional index average of -0.14% for the quarter and below the regional YTD average of -2.52%.
- The two-year forward EV/EBITDA multiple for generation traded at 7.8x at Q4, which is a discount of -32.88% to the average regional sector multiple, indicating potential undervaluation of this segment compared with others.

Gas utility

- The gas utility segment returned a quarterly TSR of -2.68% and a YTD TSR of 16.49%.
- The quarterly TSR was below the regional index average of -0.14% for the quarter and above the regional YTD average of -2.52%.
- The two-year forward EV/EBITDA multiple for the gas utility segment traded at 13.4x at Q4, which is a premium of 14.90% to the average regional sector multiple, indicating potential overvaluation of this segment compared with others.

Renewables

- The renewables segment returned a quarterly TSR of -7.22% and a YTD TSR of -19.17%.
- The quarterly TSR was below the regional index average of -0.14% for the quarter and below the regional YTD average of -2.52%.
- The two-year forward EV/EBITDA multiple for renewables traded at 10.9x at Q4, which is a discount of -7.07% to the average regional sector multiple, indicating potential undervaluation of this segment compared with others.

Water and wastewater

- The water and wastewater segment returned a quarterly TSR of -2.60% and a YTD TSR of -17.19%.
- The quarterly TSR was below the regional index average of -0.14% for the quarter and below the regional YTD average of -2.52%.
- The two-year forward EV/EBITDA multiple for water and wastewater traded at 9.5x at Q4, which is a discount of -18.65% to the average regional sector multiple, indicating potential undervaluation of this segment compared with others.

M&A outlook and investment hotspots

US$9.2b

of offshore wind tenders to be launched by Japan in 2019

"

We're agnostic about which mechanisms the Government might want to use but picking one and sticking with it over the long haul, that's what will promote investment. The best way to bring down prices is to [invest] in new supply.[11]

Brett Redman,
Chief Executive, AGL Energy

New wave of growth in EV charging

- CHAdeMO and the China Electricity Council, two industrial groups based out of Japan and China, respectively, are developing a global ultrafast charging protocol for EVs. They have invited other countries to join the initiative, as the confusion caused by incompatible charger standards remains one of the hurdles to faster adoption of EVs. A charging protocol for the region will provide an impetus to EV adoption.

Developing countries shift from coal to renewables

- According to Bloomberg New Energy Finance, new coal capacity added in India in 2017 was just 4 GW, down from 17 GW in 2016. In 2018, China added about 40 GW of new solar compared to 19 GW of thermal energy.

International investment in Japanese wind to ramp up

- In early 2019, Japan plans to launch offshore wind tenders for five zones to attract an investment of US$9.2b.This represents a major change for the Japanese wind industry, which earlier relied on FiTs for the development of offshore projects. The development of a tender-based system signifies that the Japanese Government is committed to long-term investment in the sector.

Investors and utilities hopeful for policy certainty in Australia post the election in 2019

- Throughout 2018, Australia was plagued by continuing energy policy indecision by the Federal Government. In early December, the Australian Energy Market Commission rejected the Government's proposed capped default price for customers. This indecision creates market risk and deters investment. In 2019, market participants are hopeful that the federal election will be the catalyst for the Government to create and enact a clear policy direction for the country.

[11] https://www.smh.com.au/business/companies/agl-s-new-boss-returns-serve-to-canberra-on-power-prices-20181218-p50mv9.html.

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Africa and the Middle East

More investment in coal but positive outlook for renewables

Africa and the Middle East

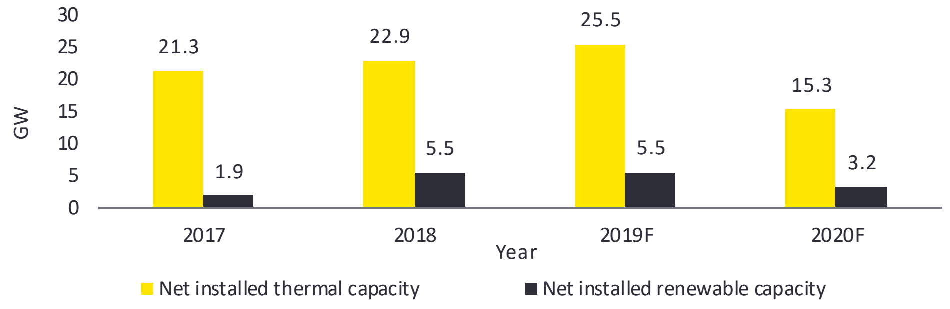
25.5 GW

additional thermal capacity forecast for 2019

23%

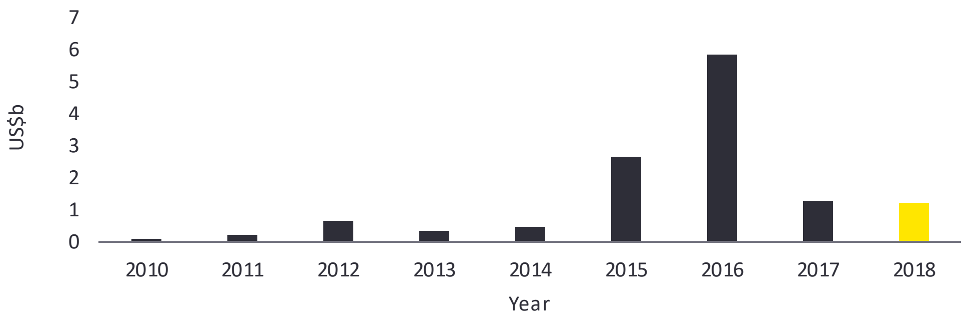
of West Africa’s total generation that will be contributed by solar, wind and biomass by 2030

Chart 11: Net capacity addition for thermal and renewable energy across Africa and the Middle East



Source: BMI database

Chart 12: Africa and the Middle East deal value
(announced asset and corporate-level deals, 2010–Q4 2018)



Source: EY analysis based on publicly disclosed data

Transaction highlights

Investment in coal generation continues:

- In 2018, construction began on new coal-fired power plants in the United Arab Emirates, Iran and Jordan. Oman also plans to build its first coal-fired power plant in Duqm to diversify its power generation mix, while Egypt plans to build its first coal-fired power plants in Ayoun Moussa and Hamrawein.
- This new thermal generation is forecast to peak in 2019, with 25.5 GW of net capacity additions.

Renewables will displace conventional generation in the medium term:

- As the economics of renewables reach parity with conventional generation, the installation of renewables will accelerate in both Africa and the Middle East. Investment in Africa will continue to be driven by foreign aid and private investment, while governments across the Middle East are tendering for large renewable capacity additions.
- Gulf countries are expected to invest more than US$16b in renewables by 2020.
- The Ethiopian Government is planning to expand the installed capacity in the country from 4,280 MW to 17,300 MW by 2025 by using hydro, wind, geothermal and biomass.

Solar and batteries meet the energy needs of both households and industry

"

The key for electrification in Africa lays in the combination of utility-scale power generation, mini grids and home systems.[12]

Jorge Lascas,
Managing Director, African Power Platform

Miners make off-take agreements with renewables

- In November, Australian firm Resolute Mining signed an agreement with Africa-focused power developer Ignite Energy to set up a 40 MW hybrid solar, battery and heavy fuel oil plant at its Syama Gold Mine in Mali.
- Zimbabwean mining firm RioZim signed a PPA to develop 180 MW of solar capacity to supply mine sites across Zimbabwe and reduce power costs.

Investors focus on off-grid solar and battery technologies in Africa

- The Green Climate Fund is providing US$31m of funding to deploy solar mini grids across 100 villages in Burkina Faso to reduce the country's reliance on fossil fuels and alleviate high power tariffs in the region.
- BBOXX, a UK-based off-grid renewable company, and General Electric have partnered to provide off-grid power systems to small businesses, schools and other organizations in the Democratic Republic of Congo.
- The World Bank has launched a US$1b funding program to accelerate deployment of battery storage projects in Africa and other developing economies to drive renewable energy growth.
- South Africa's Eskom has announced plans to build solar plus storage projects totaling 1,400 MWh. The UK Government is investing US$72m in this program.

[12] https://renewablesnow.com/news/interview-african-power-platform-launches-to-connect-players-in-exciting-market-626428/.

Saudi Arabia committed to renewables transition despite delays

> In the oil-producing heart of the Middle East, we're seeing investments in renewables at costs that are really game-changing.[13]

Adnan Amin,
Director General, International Renewable Energy Agency (IRENA)

9.5 GW: Saudi Arabia's solar and wind capacity target by 2030

(requiring 700 MW additional capacity each year)

Slow progress on renewables power tenders

- Saudi Arabia released its first wind power tender for 400 MW capacity in September; however, the project did not commence in December as planned.
- The US$200b 200 GW solar plant of SoftBank and Public Investment Fund of Saudi Arabia has also faced delays.

Accelerated activity expected in 2019

- In January 2019, Taqnia Energy announced the completion of the 10 MW Layla solar plant. This project is the first independent power producer to be connected to Saudi Arabia's grid, indicating a significant development in the country's energy policy and paving the way for similar projects in 2019.
- The Saudi Arabian Government is expected to issue tenders for a further 4 GW of renewable energy this year.

[13] https://www.forbes.com/sites/dominicdudley/2018/02/14/can-the-middle-east-make-a-success-of-renewable-energy-it-may-not-have-a-choice/#6fd741ba1da2.

Top five Africa and the Middle East greenfield investments – Q4 2018

Bidder company/country	Target country	Project description	Segment
Eranove Group/France	Côte d'Ivoire	Planning to build a 390 MW gas-fired power plant	Generation: gas
Cyrq Energy/US	Kenya	Planning to invest US$3b to build a 330 MW geothermal plant.	Renewables: geothermal
Agence Française de Développement (AFD)/France	South Africa	Extending finance of US$105m to invest in the country's power grid	Integrated: transmission
African Development Bank (AfDB)/Africa	South Africa	Providing financing of US$222m for constructing a 100 MW concentrated solar power (CSP) plant	Renewables: solar
The Dutch Development Bank (FMO) and Symbiotics/Switzerland	Tanzania	Investing US$32m to increase electricity access through off-grid solar solutions	Renewables: solar

“

It [the Cyrq Energy plant] will not only furnish Kenya with the much needed low-cost electricity but will generate quality jobs as well as facilitate technology transfer.[14]

Nicholas Goodman,
CEO, Cyrq Energy

[14] https://www.businessdailyafrica.com/markets/marketnews/US-firm-to-build-330MW-plant-in-Suswa/3815534-4828140-10560bg/index.html.

M&A outlook and investment hotspots

1,600 MW

solar capacity to be installed in Oman through 2025, at an investment of US$1.6b

Africa to continue to attract foreign investment in renewables

- The UK Government has announced US$126m in funding for African renewable energy projects to support the Renewable Energy Performance Platform (REPP). The REPP's goal is to "catalyze the growth" of the renewable energy sector in sub-Saharan Africa by helping developers overcome barriers to finance.
- Finland's Government, in cooperation with the World Bank, has announced a financing package to boost wind power in Africa by 3,000 MW.

Governments support greenfield investment in clean energy

- Burkina Faso has issued tenders for 30 MW solar energy in the country.
- Qatar General Electricity & Water Corporation (KAHRAMAA) has prequalified 16 bidders for a 500 MW solar PV plant tender. The successful bidder will be announced in early 2019, with the project expected to be commissioned in 2020.
- The Government of Botswana has issued a request for proposal to set up 12 solar PV plants as part of plans to achieve 100% electrification by 2025.
- Zambia is planning to develop 200 MW of solar capacity to reduce its dependency on hydropower.

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Appendix

Deal tables, detailed definitions and company inclusions for analysis

Top five Americas deals – 2018

Announcement date	Target	Target country/bidder country	Bidder	Deal value (US$b)	Bidder rationale	Segment
August/September	Enbridge Energy Partners LP (66.06% stake); Enbridge Energy Management, L.L.C. (88.33% stake); Spectra Energy Partners, LP (16.89% stake)	US/Canada	Enbridge Inc.	18.3	Helps streamline bidder's corporate and capital structures, improve its credit rating and mitigate impacts associated with regulatory changes that will impact the cash flows of master limited partnerships (MLPs)	Gas utility
3 January	SCANA Corporation	US/US	Dominion Energy Inc.	14.3	Expands Dominion's presence in the Southeast; increases its compounded annual earnings-per-share target growth rate to 8% through 2020 and reduces customer bills through refunds of US$1.3b	Integrated
23 April	Vectren Corporation	US/US	CenterPoint Energy Inc.	8.1	Leverages growing financial resources to expand competitive energy services across a larger US footprint with a view to also improve customer service levels	Integrated
21 May	Gulf Power Company	US/US	NextEra Energy Inc.	5.8	Improves NextEra's financial position and expands its customer base by 450,000 customers	Integrated
16 February	Enel Generación Chile (40.02% stake)	Chile/Chile	Enel Chile S.A.	3.3	Aligns with Enel Chile's strategy to consolidate the Chilean energy companies of majority shareholder Enel S.p.A and strengthen its leadership of Chile's energy market	Generation: hydro, wind, thermal

Top five Europe deals – 2018

Announcement date	Target	Target country/bidder country	Bidder	Deal value (US$b)	Bidder rationale	Segment
12 March	Innogy SE	Germany/Germany	E.ON SE	46.6	Supports E.ON's strategy to rationalize its portfolio and focus on energy networks and retail customer solutions	Integrated
11 May	Energias de Portugal S.A. (76.73% stake)	Portugal/China	China Three Gorges Corporation	27.4	Aligns with CTG's plan to make strategic investments in the European energy market	Integrated
26 July	Hornsea 1 (50% stake)	UK/US	Global Infrastructure Partners (GIP)	5.9	Aligns with GIP's strategy of acquiring stakes in under-construction renewable assets with a focus on long-term returns	Renewables: wind
25 May	Techem GmbH	Germany/Switzerland	Caisse de Depot et Placement du Quebec; Ontario Teachers' Pension Plan; Partners Group Holding AG	5.4	Consortium plans to assist Techem to introduce new technologies and geographically expand its energy invoicing and energy management offerings	Others: energy services
22 February	Gas Natural Fenosa (20.07% stake)	Spain/UK	CVC Capital Partners Limited; Corporacion Financiera Alba SA	4.7	Aligns with the investors' strategy of investing in assets with long-term stable returns	Integrated

Top five Asia-Pacific deals – 2018

Announcement date	Target	Target country/bidder country	Bidder	Deal value (US$b)	Bidder rationale	Segment
20 June	Glow Energy Public Co. Ltd.	Thailand/Thailand	Global Power Synergy Public Company Limited	5.2	Allows Global Power Synergy to benefit from Glow's high-quality generation assets, leverage potential business opportunities and increase market presence in Thailand	Generation
1 March	GD Power Development Co., Ltd. (22 subsidiaries); China Shenhua Energy Company Limited (18 subsidiaries)	China/China	GD Power Development Co. Ltd./China Shenhua Energy Company Limited Joint Venture	4.4	Joint venture is in line with the strategies of GD Power Development and China Shenhua Energy to reduce competition and improve core competitiveness	Generation: coal
2 April	Ostro Energy Pvt. Ltd.	India/India	ReNew Power Ventures	1.7	Enables ReNew Power to increase its installed capacity and consolidate its position in India's renewable energy market	Renewables: wind
20 September	Energy Development Corporation (EDC) (10.89% stake)	Philippines/Philippines	EDC	1.3	Delists EDC, giving the organization greater corporate flexibility and allowing it to offer shareholders a premium to the current share price	Renewables: geothermal
4 June	Orange Renewable Power Pvt. Ltd.; Chengdu Jinqiang Water Co., Ltd. (60% stake); Jiangyin Tianli Gas Co., Ltd. (37.23% stake)	India/India	Greenko Energy	0.9	Helps Greenko increase its installed capacity with 907 MW of solar and wind projects and 500 MW of assets under development	Renewables: solar and wind

Company segment definitions

Segment	EY definition
Large market capitalization	Utilities with market capitalization more than US$10b and engaged in multiple segments of the power value chain – generation, T&D, and retail or T&D and retail – and utilities that have T&D business and substantial presence in other segments, as well as from the perspective of revenues
Medium and small market capitalization	Utilities with market capitalization less than US$10b and engaged in multiple segments of the power value chain – generation, T&D, and retail or T&D and retail – and utilities that have T&D business and substantial presence in other segments, as well as from the perspective of revenues
Gas	Utilities that generate the majority of their revenues from downstream gas, including transmission, distribution and the sale of gas as an energy source
Generation	Utilities that generate the majority of their revenues from power production through large centralized (nonrenewable) sources, including coal, gas, oil, large hydro and nuclear
Renewables	Utilities that are engaged in generating power from centralized or distributed renewable energy sources, including solar, wind and small hydro
Water and wastewater	Utilities that manage water and wastewater networks and engage in the distribution, supply or treatment of water and wastewater

Americas company segment tagging for valuations analysis

Large market capitalization integrated
Alliant Energy Corp.
Ameren Corp.
American Electric Power Company, Inc.
Avangrid, Inc.
CenterPoint Energy, Inc.
CMS Energy Corp.
Consolidated Edison, Inc.
Dominion Energy, Inc.
DTE Energy Company
Duke Energy Corp.
Edison International
Entergy Corp.
Evergy, Inc.
Eversource Energy
Exelon Corp.
FirstEnergy Corp.
Fortis Inc.
NextEra Energy, Inc.
PG&E Corp.
PPL Corp.
Public Service Enterprise Group Inc.
Sempra Energy
Southern Company
WEC Energy Group, Inc.
Xcel Energy Inc.

Medium and small market capitalization integrated
Algonquin Power & Utilities Corp.
ALLETE, Inc.
ATCO Ltd.
Avista Corp.
Black Hills Corp.
Canadian Utilities Ltd.
Companhia Energética de Brasília - CEB
Crius Energy Trust
EDP - Energias do Brasil S.A.
El Paso Electric Company
Emera Inc.
Genie Energy Ltd.
Hawaiian Electric Industries, Inc.
Hydro One Ltd.
Just Energy Group Inc.
Light S.A.
MDU Resources Group, Inc.
MGE Energy, Inc.
NorthWestern Corp.
OGE Energy Corp.
Otter Tail Corp.
Pinnacle West Capital Corp.
PNM Resources, Inc.
Portland General Electric Company
SCANA Corp.
Spark Energy, Inc.
Unitil Corp.
Vectren Corp.

Gas
AltaGas Ltd.
Atmos Energy Corp.
Chesapeake Utilities Corp.
National Fuel Gas Company
New Jersey Resources Corp.
NiSource Inc.
Northwest Natural Holding Company
ONE Gas, Inc.
RGC Resources, Inc.
South Jersey Industries, Inc.
Southwest Gas Holdings, Inc.
Spire Inc.
TransCanada Corp.
UGI Corp.
Valener Inc.

Generation
Capital Power Corp.
CESP - Companhia Energética de São Paulo
NRG Energy, Inc.
The AES Corp.
TransAlta Corp.
Vistra Energy Corp.

Renewables
AES Tietê Energia S.A.
Boralex Inc.
Brookfield Renewable Partners L.P.
Canadian Solar Inc.
Clearway Energy, Inc.
Covanta Holding Corp.
CPFL Energias Renováveis S.A.
Innergex Renewable Energy Inc.
NextEra Energy Partners, LP
Northland Power Inc.
Ormat Technologies, Inc.
Pattern Energy Group Inc.
SunPower Corp.
Sunrun Inc.
TerraForm Power, Inc.
TransAlta Renewables Inc.
Vivint Solar, Inc.

Water and wastewater
American States Water Company
American Water Works Company, Inc.
Aqua America, Inc.
Artesian Resources Corp.
California Water Service Group
Connecticut Water Service, Inc.
Consolidated Water Co. Ltd.
Middlesex Water Company
SJW Group
The York Water Company

Europe company segment tagging for valuations analysis

Large market capitalization integrated
CEZ, a. s.
E.ON SE
EDP - Energias de Portugal, S.A.
Electricité de France S.A.
Endesa, S.A.
Enel SpA
ENGIE SA
Fortum Oyj
Iberdrola, S.A.
innogy SE
National Grid plc
Red Eléctrica Corporación, S.A.
RWE Aktiengesellschaft
SSE plc
Terna - Rete Elettrica Nazionale Società per Azioni
VERBUND AG

Medium and small market capitalization integrated
ACCIONA, S.A.
Alpiq Holding AG
Centrica plc
Drax Group plc
Elia System Operator SA
EnBW Energie Baden-Württemberg AG
Enea S.A.
EVN AG
PGE Polska Grupa Energetyczna S.A.
Public Joint Stock Company Inter RAO UES
Public Joint-Stock Company Moscow United Electric Grid Company
Public Power Corp. S.A.
Rosseti, Public Joint Stock Company
TAURON Polska Energia S.A.

Gas
AS Latvijas Gaze
Enagás, S.A.
Hera S.p.A.
Italgas S.p.A.
Naturgy Energy Group, S.A.
Rubis
Snam S.p.A.

Generation
A2A S.p.A.
Irkutsk Public Joint Stock Company of Energetics and Electrification
Public Joint Stock Company Donbasenergo
Public Joint-Stock Company Federal Hydro-Generating Company - RusHydro
Uniper SE

Renewables
aventron AG
EDP Renováveis, S.A.
Energiekontor AG
Falck Renewables S.p.A.
FUTUREN SA
Ørsted A/S
Terna Energy Societe Anonyme Commercial Technical Company S.A.

Water and wastewater
Pennon Group Plc
Severn Trent Plc
SUEZ SA
United Utilities Group PLC
Veolia Environnement S.A.

Asia-Pacific company segment tagging for valuations analysis

Large market capitalization integrated

- Chubu Electric Power Company, Inc.
- CK Infrastructure Holdings Ltd.
- CLP Holdings Ltd.
- Korea Electric Power Corp.
- Power Assets Holdings Ltd.
- Power Grid Corp. of India Ltd.
- Tenaga Nasional Berhad
- The Kansai Electric Power Company, Inc.

Medium and small market capitalization integrated

- AGL Energy Ltd.
- AusNet Services Ltd.
- BKW AG
- CESC Ltd.
- Contact Energy Ltd.
- Electric Power Development Co., Ltd.
- ERM Power Ltd.
- Genesis Energy Ltd.
- HK Electric Investments and HK Electric Investments Ltd.
- Hokkaido Electric Power Company, Inc.
- Hokuriku Electric Power Company
- JSW Energy Ltd.
- Kyushu Electric Power Company, Inc.
- Origin Energy Ltd.
- Ratchaburi Electricity Generating Holding Public Company Ltd.
- Shikoku Electric Power Company, Inc.
- The Chugoku Electric Power Co., Inc.
- The Tata Power Company Ltd.
- Tohoku Electric Power Company, Inc.
- Tokyo Electric Power Company Holdings, Inc.
- Trustpower Ltd.
- Vector Ltd.

Gas

- APA Group
- China Gas Holdings Ltd.
- ENN Energy Holdings Ltd.
- Korea Gas Corporation
- Osaka Gas Co., Ltd.
- PT Perusahaan Gas Negara (Persero) Tbk
- Shenzhen Gas Corp. Ltd.
- The Hong Kong and China Gas Company Ltd.
- Toho Gas Co., Ltd.
- Tokyo Gas Co., Ltd.

Generation

- Beijing Jingneng Clean Energy Co., Ltd.
- China Power International Development Ltd.
- Datang International Power Generation Co., Ltd.
- First Philippine Holdings Corp.
- GuiZhou QianYuan Power Co., Ltd.
- Huadian Power International Corp. Ltd.
- Huaneng Power International, Inc.
- Mercury NZ Ltd.
- NHPC Ltd.
- NTPC Ltd.
- OPG Power Ventures PLC
- Reliance Power Ltd.
- Zhejiang Zheneng Electric Power Co., Ltd.

Renewables

- CECEP Wind-power Corp. Co., Ltd.
- China Datang Corp. Renewable Power Co., Ltd.
- Huaneng Renewables Corp. Ltd.
- Kong Sun Holdings Ltd.
- Meridian Energy Ltd.
- Ning Xia Yin Xing Energy Co., Ltd.

Water and wastewater

- Beijing Enterprises Water Group Ltd.
- Beijing Water Business Doctor Co., Ltd.
- Binh Duong Water - Environment Joint Stock Company
- China Water Affairs Group Ltd.
- Chongqing Water Group Co., Ltd.
- Daiseki Co., Ltd.
- Eastern Water Resources Development and Management Public Company Ltd.
- Guangdong Investment Ltd.
- Luenmei Quantum Co., Ltd.
- Manila Water Company, Inc.
- SIIC Environment Holdings Ltd.
- TTW Public Company Ltd.
- Tus-Sound Environmental Resources Co., Ltd.
- VA Tech Wabag Ltd.
- WHA Utilities and Power Public Company Ltd.

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