Power transactions and trends

Q2 2018

Building a better working world

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Power transactions and trends Q2 2018

Overview

US$83b

global deal value

US$27.4b

largest deal of the quarter

46%

of deal volume in renewables

Chart 1: Global P&U deal value and volume by region
(announced asset and corporate-level deals, Q2 2016–Q2 2018)

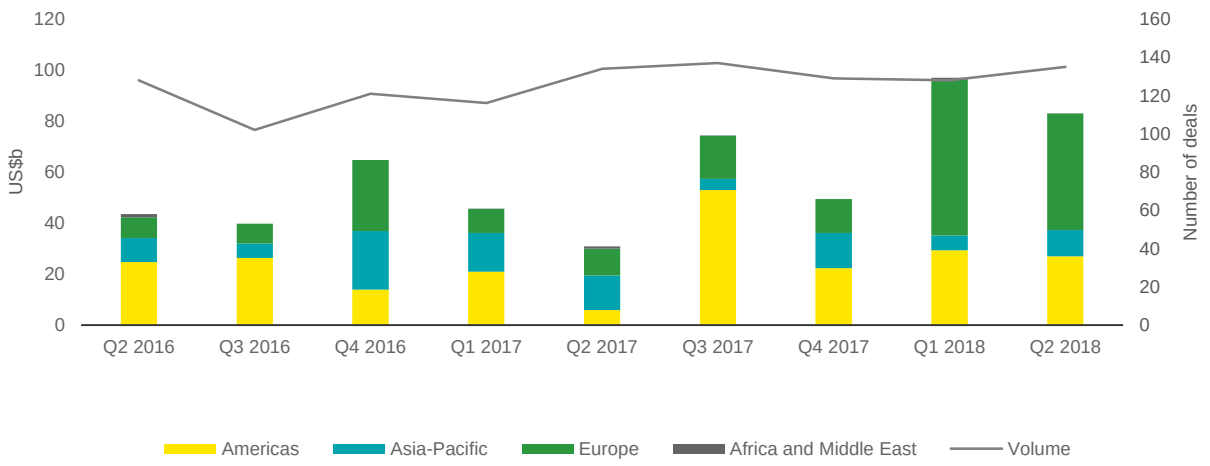
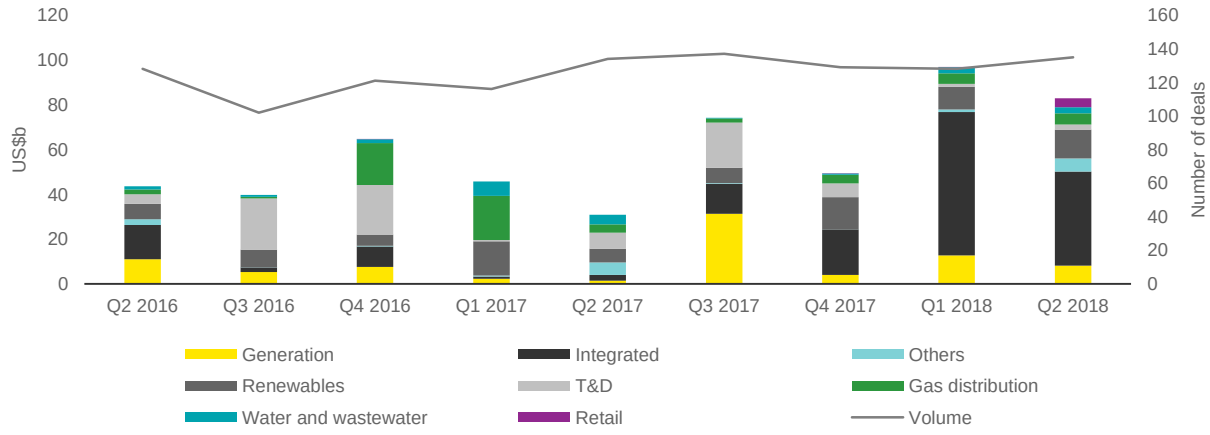


Chart 2: Global P&U deal value by segment
(announced asset and corporate-level deals, Q2 2016–Q2 2018)



Outbound investment soars

During Q2 2018, the global power and utilities (P&U) sector witnessed an interesting deal environment, marked by high historical deal value (though a 14% decline from Q1) and a 2.5x increase in outbound investment. A number of key themes are shaping M&A trends:

China is making inroads to Europe

China's Belt and Road Initiative saw it lead global outbound investment in Q2 with US$31.2b of announced cross-border energy deals. Much of this value (US$27.4b) was attributable to the takeover bid by China Three Gorges of Portugal's EDP, which owns transmission and distribution (T&D) assets across Europe.

Renewable energy investment continues

As in previous quarters, we saw a large number (63) of renewables deals, which contributed US$12.9b.

Developing markets accelerate M&A

This quarter saw the emergence of some different countries in significant deal activity. Thailand hosted US$5.3b of deals, India saw US$3.2b of deals and, in Estonia, deals by both domestic and foreign investors totaled US$600m.

More utilities are investing in new energy technology

Around the world, we see utilities exploring new technologies, including battery storage, electric vehicle (EV) infrastructure and digital grid technologies. Sweden's Vattenfall plans to become Europe's largest operator of EV charging infrastructure by 2023, targeting an investment of US$119m. This quarter saw Japan's TEPCO launch a subsidiary, TEPCO Ventures, which will develop and form joint ventures around the development of disruptive technologies, including distributed generation, storage, drones, Internet of Things technologies and power infrastructure.

Q2 at a glance

Quarterly investment profile

Americas

- Deal value decreased slightly to US$26.9b.
- The quarter saw US$18.4b investment in integrated and renewable assets.

  Most integrated deals were conducted with an aim to expand geographical footprint and increase customer base.
- US federal tax reforms are making an impact in the sector with investor-owned gas and electric utilities preparing to return billions to ratepayers nationwide.

  Several utility holding companies and diversified utilities with competitive generation segments have announced plans to raise capital through equity and debt issuances or plans to reduce capital expenditures to maintain credit metrics.

Europe

- M&A rebounded with US$45.7b of deal value, which made up 55% of total global deal value for the quarter.
- The European Union's updated Renewable Energy Directive sets a target of 32% renewables by 2030, which is expected to drive small-scale solar installations.

Asia-Pacific

- Deal value almost doubled to US$10.3b from Q1 (US$5.8b).
- China's solar subsidy reduction halted development of new solar farms and resulted in an oversupply of panels. Analysts estimate that global solar panel market prices will drop 24%, which is expected to stimulate demand and drive more installations around the world.

Africa and the Middle East

- Europe continues to be the region's main investor, as both financial sponsors and corporates look for opportunities outside their home markets.
- In March, the European Investment Bank (EIB) signed a US$25m financing plan for the installation of off-grid solar systems that will improve access to energy, particularly in Ethiopia, Kenya, Tanzania, Nigeria and Uganda.
- Across the Middle East, governments are driving investment in renewables as many increase their countries' clean energy targets.
- Analysts expect that a total of 22 GW of solar capacity will be installed in Bahrain, Jordan, Oman, Saudi Arabia and the United Arab Emirates (UAE) by 2023.

Q2 at a glance (continued)

Capital outlook

Americas

- As federal interest rates climb, US utilities' dividend yield premium relative to interest rates has fallen, making income investment in utilities less attractive.
- Investment in renewable energy will continue due to state-based policies. New York has launched a US$1.5b tender for renewables under the state's Clean Energy Standard (CES) that mandates a state-based renewable target of 50% by 2030.

Europe

- Renewable investments will increase in the region. As part of its latest energy plan, the Danish Government announced in April that it would develop an 800 MW offshore wind farm by 2027. The French Government has announced plans to launch a 300 MW solar power tender.
- Germany and Spain will emerge as hotspots. The German federal network agency for electricity, gas, telecommunications, post and railway has commenced a tender for 670 MW of onshore wind capacity in the country. Spain's Solaria Energía y Medio Ambiente plans to develop 1.3 GW of solar photovoltaic (PV) capacity by 2020.

Asia-Pacific

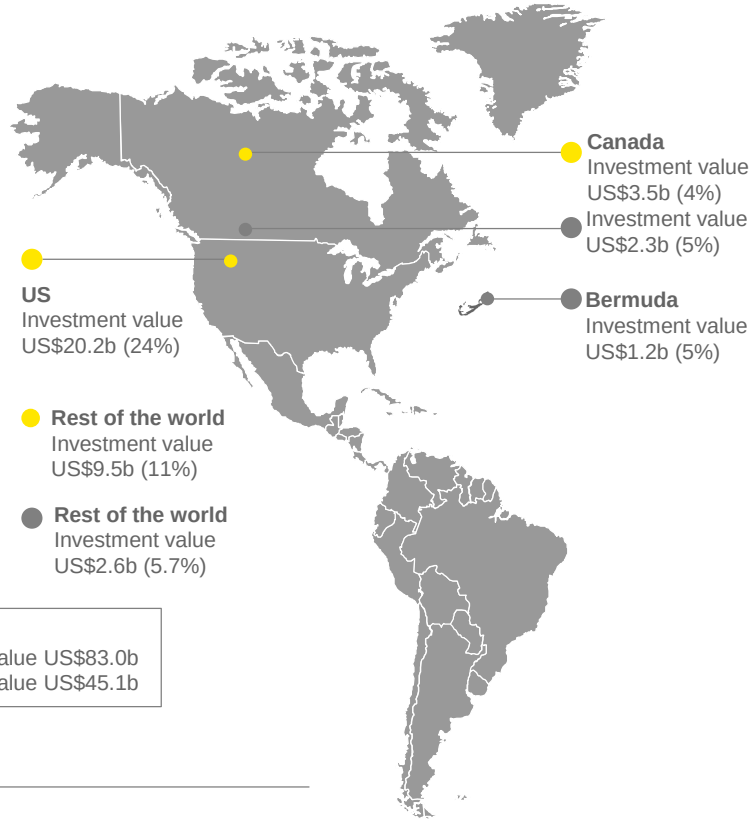
- Chinese utilities continue to drive cross-border M&A as demonstrated by the US$27b bid for EDP assets in Europe.
- We expect Chinese outbound investment activity to continue in line with the country's ambitious Belt and Road Initiative.
- Investment in new technology is expected to scale up in the region, as evident from the formation of China's Cathay Smart Energy Fund to invest in emerging technologies, including the Internet of Things, energy storage, distributed energy, smart energy and low carbon activities.

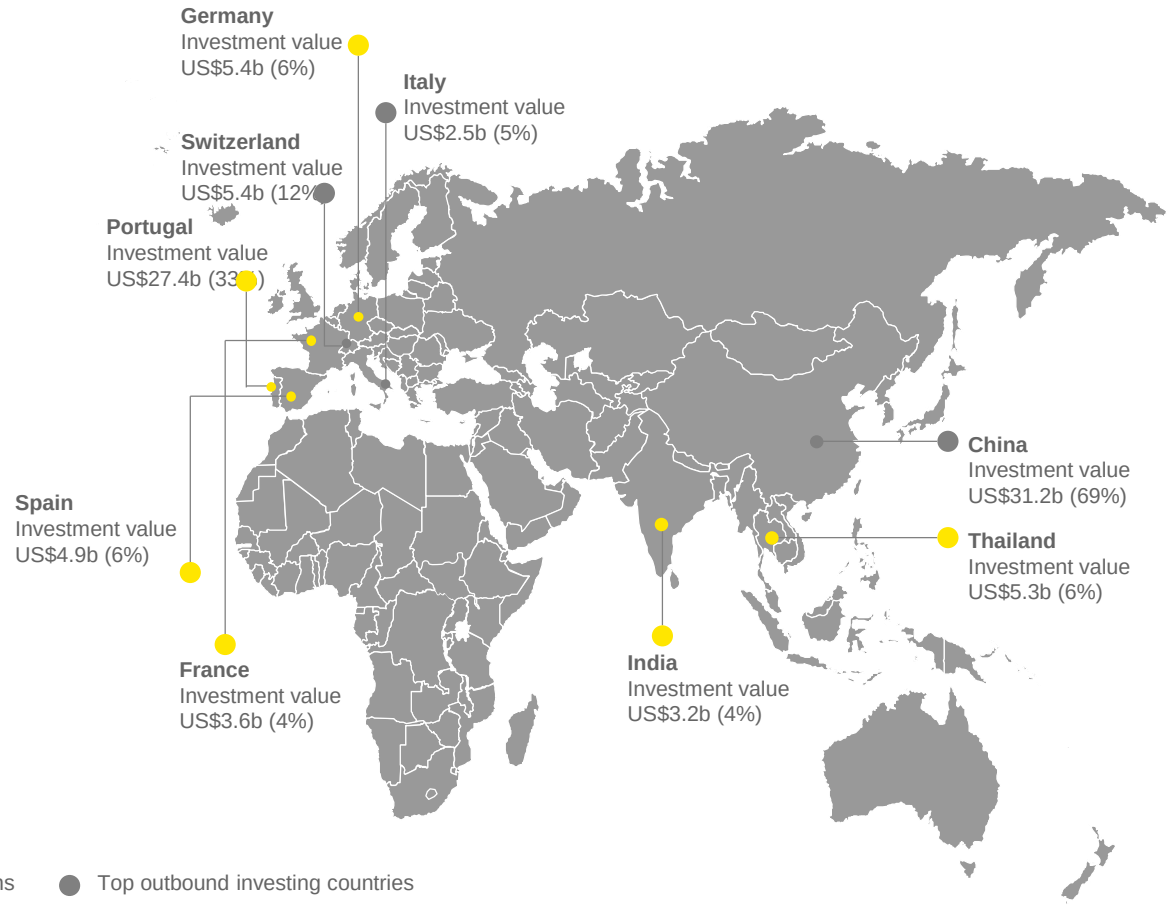
Africa and the Middle East

- Rural off-grid electrification is growing in Africa. The Ghanaian Government will invest US$230m to promote renewable energy, particularly in off-grid communities.
- Egypt will emerge as an investment hotspot. In May, Chinese integrated energy service provider Golden Concord Group signed an memorandum of understanding (MoU) with the Egyptian Government to build a solar panel production facility at a cost of up to US$2b.

Global capital flows

Investment activity globally by country, Q2 2018*





*Note: Percentages may not add to 100% due to rounding.

Top investment destinations Top outbound investing countries

Valuation dashboard

	Current EV/EBITDA multiple	Historic EV/EBITDA multiple	Forward EBITDA CAGR	Historic EBITDA CAGR
	The market capitalization weighted average of the current enterprise value (EV) (at June 2018)/next 12 months (NTM) (at June 2018) adjusted earnings before interest, tax, depreciation and amortization (EBITDA)	The market capitalization weighted five-year average of the actual quarterly EV/actual quarterly adjusted EBITDA (from June 2013 to June 2018)	Two-year forward (from Q2 2018) forecast compound annual growth rate (CAGR) of the market capitalization weighted adjusted EBITDA	Five-year historic (from Q2 2018) actual CAGR of the market capitalization weighted adjusted EBITDA
Generation	8.2x	12.1x	0.7%	-1.3%
Large market capitalization integrated	10.4x	9.9x	4.2%	4.2%
Medium and small market capitalization integrated	8.3x	10.6x	-4.6%	1.3%
Renewables	3.3x	9.4x	27.8%	-3.5%
Retail	5.4x	9.3x	-5.8%	-2.8%
Gas utility	11.4x	14.9x	8.7%	-4.5%
Water and wastewater	13.3x	12.1x	4.1%	6.4%
Americas sector	10.2x	10.5x	4.0%	3.1%
Integrated	8.2x	7.5x	7.2%	-3.0%
Renewables	7.7x	5.2x	19.2%	32.7%
Gas utility	11.0x	13.8x	4.7%	-10.4%
Water and wastewater	8.2x	nm[1]	nm	nm
Europe sector	8.8x	6.6x	10.4%	6.4%
Generation	8.5x	nm	nm	nm
Integrated	9.1x	13.0x	10.0%	0.1%
Renewables	10.4x	nm	nm	nm
Retail	8.1x	nm	nm	nm
T&D	8.5x	nm	nm	nm
Gas utility	8.3x	9.3x	4.5%	-2.9%
Water and wastewater	7.3x	7.7x	-18.2%	5.5%
Asia-Pacific sector	8.6x	10.0x	-1.3%	0.9%

EV/NTM EBITDA multiple compared with historic averages	Current EV/EBITDA multiple trading a premium (>20%)	Current EV/EBITDA multiple trading a slight premium (0% to 20%)	Current EV/EBITDA multiple trading a slight discount (0% to 20%)	Current EV/EBITDA multiple trading a discount (>-20%)
EBITDA CAGR	Negative EBITDA CAGR (<0)	Low EBITDA CAGR (0% to 5%)	Moderate EBITDA CAGR (5% to 10%)	High EBITDA CAGR (≥10%)

Valuations

Americas

- The Americas P&U sector traded at an average current EV/EBITDA multiple of 10.2x during Q2, a 3% discount to the average historic EV/EBITDA multiple of 10.5x.
- The region's average sector multiple remains above both Asia-Pacific and Europe.

Europe

- The Europe P&U sector traded at an average current EV/EBITDA multiple of 8.8x during Q2, a 33% premium to the average historic EV/EBITDA multiple of 6.6x.
- Europe was the only region where the current EV/EBITDA multiple traded at a premium to average historic multiples.

Asia-Pacific

- The Asia-Pacific sector traded at the lowest average current EV/EBITDA multiple of all regions.

1: nm: no meaningful data

Note: Only subsegments where data is available for three or more utilities are included. Please see the appendix for the detailed definition of each trading multiple, the company subsegment definitions and the company tagging for the valuations analysis.

Total shareholder return (TSR) dashboard

	Quarter-to-date TSR	Year-to-date TSR	Five-year-to-date TSR
	TSR in % (from 1 April 2018 to 1 July 2018)	TSR in % (from 1 January 2018 to 1 July 2018)	TSR in % (from 1 July 2013 to 1 July 2018)
Generation	4.4%	8.4%	3.3%
Large market capitalization integrated	3.5%	2.0%	71.2%
Medium and small market capitalization integrated	4.3%	2.1%	67.5%
Renewables	-0.7%	-9.1%	-49.2%
Retail	-15.6%	-21.3%	-5.5%
Gas utility	11.2%	8.4%	122.3%
Water and wastewater	7.0%	3.3%	126.8%
Americas sector	2.0%	-0.9%	48.1%
Integrated	1.2%	11.2%	77.0%
Renewables	2.4%	4.8%	91.0%
Gas utility	1.2%	1.4%	63.4%
Water and wastewater	-0.8%	-14.2%	49.4%
Europe sector	1.0%	0.8%	70.2%
Generation	-13.7%	-9.4%	7.3%
Integrated	-2.2%	-3.4%	4.6%
Renewables	-9.3%	-16.4%	nm
Retail	-2.2%	-7.1%	14.3%
T&D	-4.1%	-11.1%	54.6%
Gas utility	4.7%	11.7%	-3.1%
Water and wastewater	-13.3%	-23.2%	6.2%
Asia-Pacific sector	-5.1%	-7.1%	14.0%

TSR values	Negative TSR	Low TSR	Moderate TSR	High TSR
Quarter-to-date TSR	<0%	0%–3%	3%–6%	>6%
Year-to-date TSR	<0%	0%–4%	4%–7%	>7%
Five-year-to-date TSR	<0%	0%–44%	44%–89%	>89%

Valuations

Americas

- Water and wastewater companies and gas utilities stood out for their TSR performance, a trend that was not replicated in other regions.

Europe

- Renewables was the stand-out subsegment, achieving high EBITDA growth and TSR compared with other regions.

Asia-Pacific

- Gas utilities provided investors with the best returns both year-to-date and quarter-to-date.

Note: Please see the appendix for the detailed definition of each trading multiple, the company subsegment 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
Baltimore, Maryland, US

Miles Huq became EY Global Power & Utilities Transactions 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

Consolidation drives deal activity

Power transactions and trends Q2 2018

Americas

"Revenue pressures from tax reform and subdued demand are prompting further consolidation of integrated utilities – a trend that will drive M&A through 2018."

Miles Huq,
EY Global P&U TAS Leader

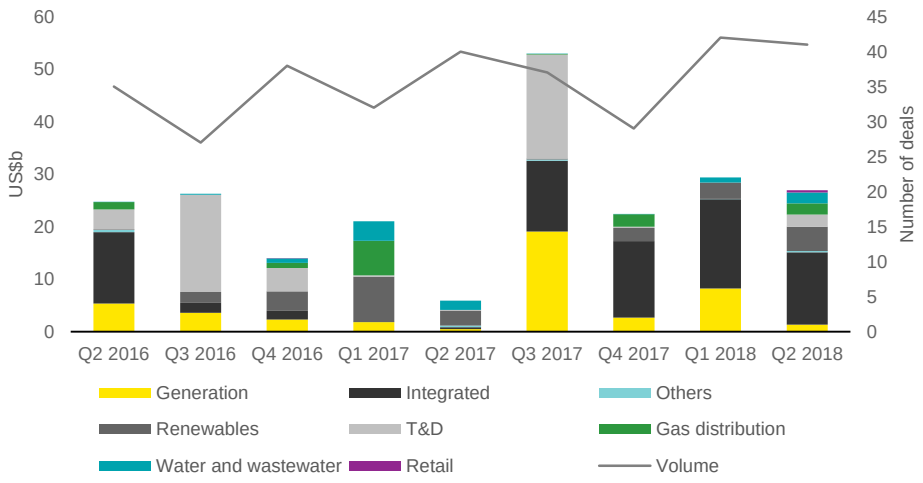
US$26.9b

deal value, 8% decline from Q1

US$13.8b

deal value in integrated assets, driven by two megadeals

Chart 3: Americas deal value and volume, by segment
(asset and corporate-level deals, Q2 2016–Q2 2018)



Transaction highlights

- **Largest deal in integrated segment:** CenterPoint Energy announced plans to acquire Vectren Corp., a US-based utility engaged in retail and energy services, for US$8b.
- **Corporate investors take lead in dealmaking:** Corporate investors completed 26 deals, which contributed 80%, or US$21.5b, of the region's deals.
- **Utilities divest generation assets:** AltaGas sold a 35% stake in three hydroelectric facilities for US$709m to assist with funding the acquisition of WGL Holdings. As part of a US$6.5b deal, Southern Company sold its stake in a number of gas generation plants to NextEra in a bid to reduce debt, preserve credit ratings and improve the overall contribution of state-regulated utilities.

Companies using M&A to adapt to change

Utilities are raising capital as tax reforms hit

In the US, federal tax reforms on regulated utilities are starting to make an impact. These reforms require regulated utilities to pass on tax cuts to customers via lower rates, putting pressure on revenues. To maintain credit ratings, some companies have responded to the reforms by raising additional equity:

- In May, **PPL Corporation** launched Q2's biggest capital offering of the sector to raise US$1.7b.
- In June, **Entergy Corp.** raised US$1.2b.
- **Southern Company** and **Duke Energy** have announced plans to raise additional equity this year.

These capital raises will provide short-term relief while regulators decide how to best compensate utilities.

Revenue pressures are also prompting further consolidation of these utilities. More than half of the quarter's deal value (US$13.8b) was contributed by two corporate acquisitions of integrated utilities looking to expand their customer bases.

World's biggest energy storage project

In June, **Pacific Gas and Electric Company** (PG&E) requested regulatory approval for the development of four energy storage projects totaling approximately 567 MW to replace three gas plants operating on a Reliability Must Run (RMR) contract. One of the four projects will be owned by PG&E, while the other three will be owned by a number of third parties.

The decision to install what will likely be the world's largest utility-owned storage project demonstrates the increasing economics of large-scale storage. If approved by the California Public Utilities Commission (CPUC), the first of PG&E's proposed projects is scheduled to come online by the end of 2019, with the other projects scheduled for completion by the end of 2020.

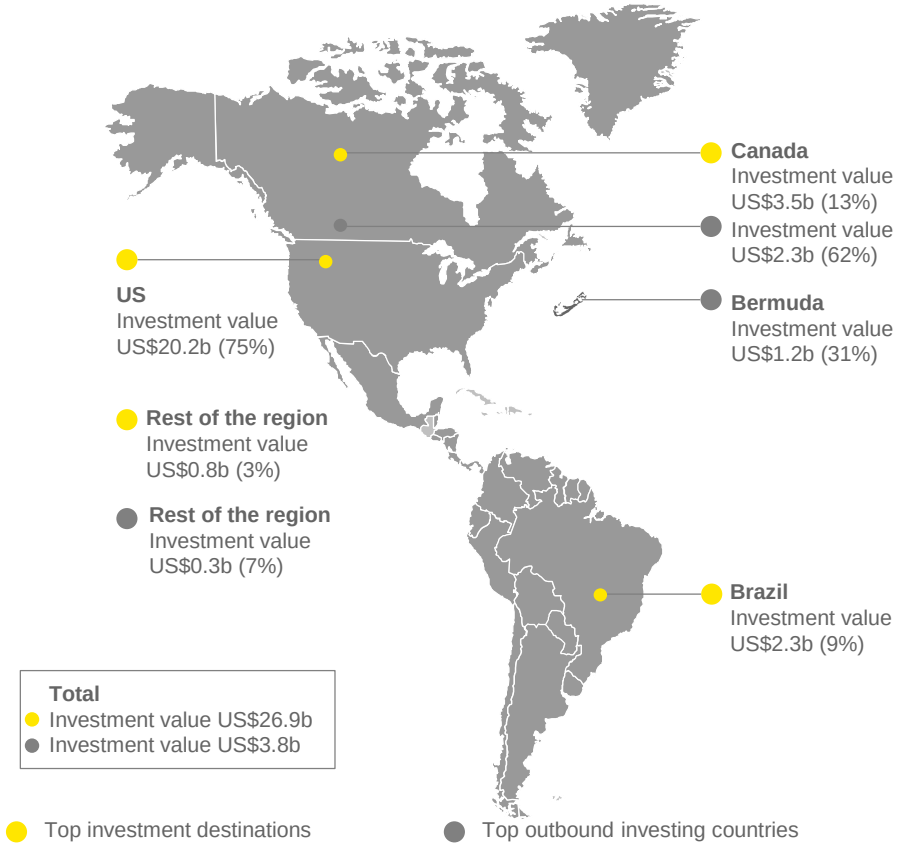
"Decreases in battery prices are enabling energy storage to become a competitive alternative to traditional solutions … We believe that battery energy storage will be even more significant in enhancing overall grid reliability, integrating renewables and helping customers save energy and money."[2]

Roy Kuga,
Vice President of Grid Integration and Innovation, PG&E

2: https://www.pge.com/en/about/newsroom/newsdetails/index.page?title=20180629_pge_proposes_four_new_cost-effective_energy_storage_projects_to_cpuc.

US dominates Q2 activity

Americas regional capital flows, Q2 2018*



*Note: Percentages may not add to 100% due to rounding.

75% of deal value was contributed by the US.

The majority of transactions — **78%** **(US$21.1b)** — were domestic deals.

Expect activity in Brazil to pick up during **2018.**

"Brazil is set to attract huge investment over the next few years, including a planned US$38b from State Grid Corporation of China."

Miles Huq,
EY Global P&U TAS Leader

Top five Americas deals – Q2 2018

Announcement date	Target	Target country/bidder country	Bidder	Deal value (US$)	Bidder rationale	Segment
23 April	Vectren Corporation	US/US	CenterPoint Energy Inc.	8.1b	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.	5.8b	Improves NextEra's financial position and expands its customer base by 450,000 customers	Integrated
17 April	AES Eletropaulo	Brazil/Italy	Enel S.p.A.	2.3b	Furthers Enel's strategy to strengthen its presence in the Brazilian distribution sector	T&D: electricity
7 June	SJW Group	US/US	California Water Service Group	1.9b	Transaction will improve operational efficiencies	Water and wastewater
9 May	Enbridge Inc. (49% in select wind assets)	Canada/Canada	Canada Pension Plan Investment Board (CPPIB)	1.3b	Aligns with CPPIB's strategy to expand into the North American wind market	Renewables: wind

The integrated CenterPoint/Vectren company will have:

US$29b	asset base
4.5 million	gas customers
2.5 million	electricity customers

All deal values indicated are announced deals with disclosed enterprise values comprised of equity and debt components.

Valuations snapshot – Q2 2018

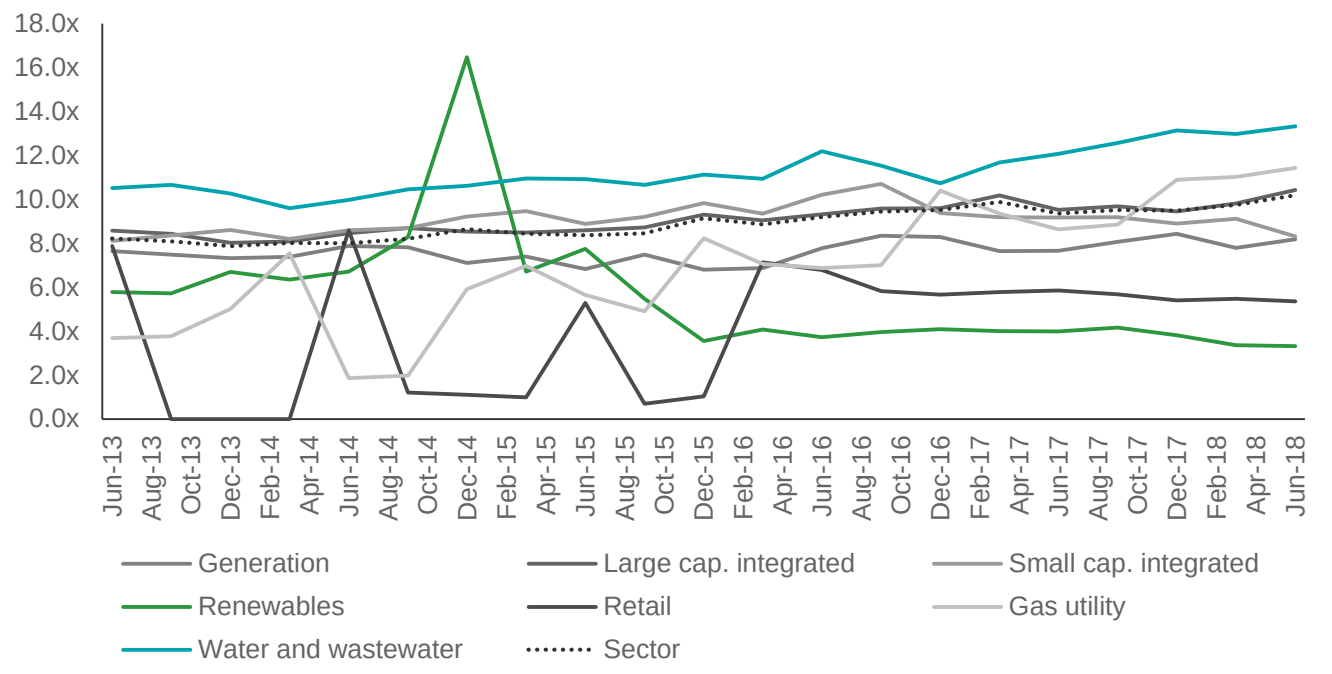
1. The Americas P&U sector traded at an average current EV/EBITDA multiple of 10.2x during Q2, a 3% discount to the average historic multiple of 10.5x.

2. Water and wastewater, gas utilities and large market capitalization integrated assets traded at a premium to sector multiples, while other assets traded at a discount.

3. Historic EBITDA CAGR was 3.1%, while analysts forecast the sector forward EBITDA CAGR to increase to 4.0%, driven by earnings growth in renewables and gas utility assets.

4. Year-to-date sector total shareholder return (TSR) was 2.0%, and the long-term return for investors was positive, with the five-year TSR as high as 48.1%.

Chart 4: Market capitalization weighted average EV/NTM EBITDA trading multiples for select utilities (Q2 2013–Q2 2018)



Note: Please see the appendix for the detailed definition of each trading multiple, the company subsegment definitions and the company tagging for the valuations analysis.

Valuations snapshot – Q2 2018 (continued)

Chart 5: Market capitalization weighted adjusted EBITDA CAGR for select utilities

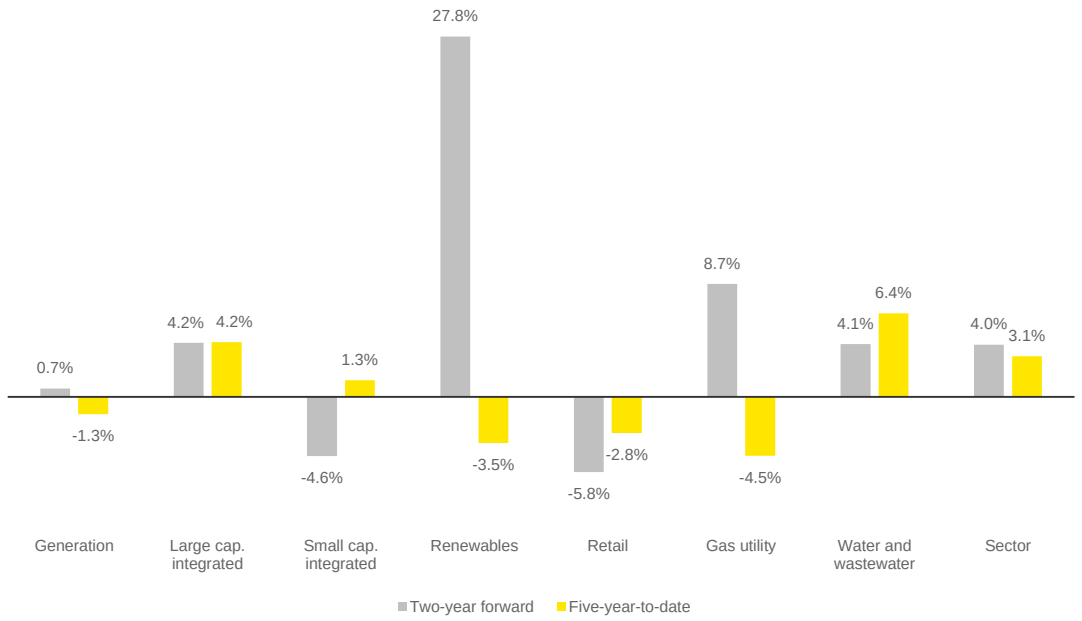
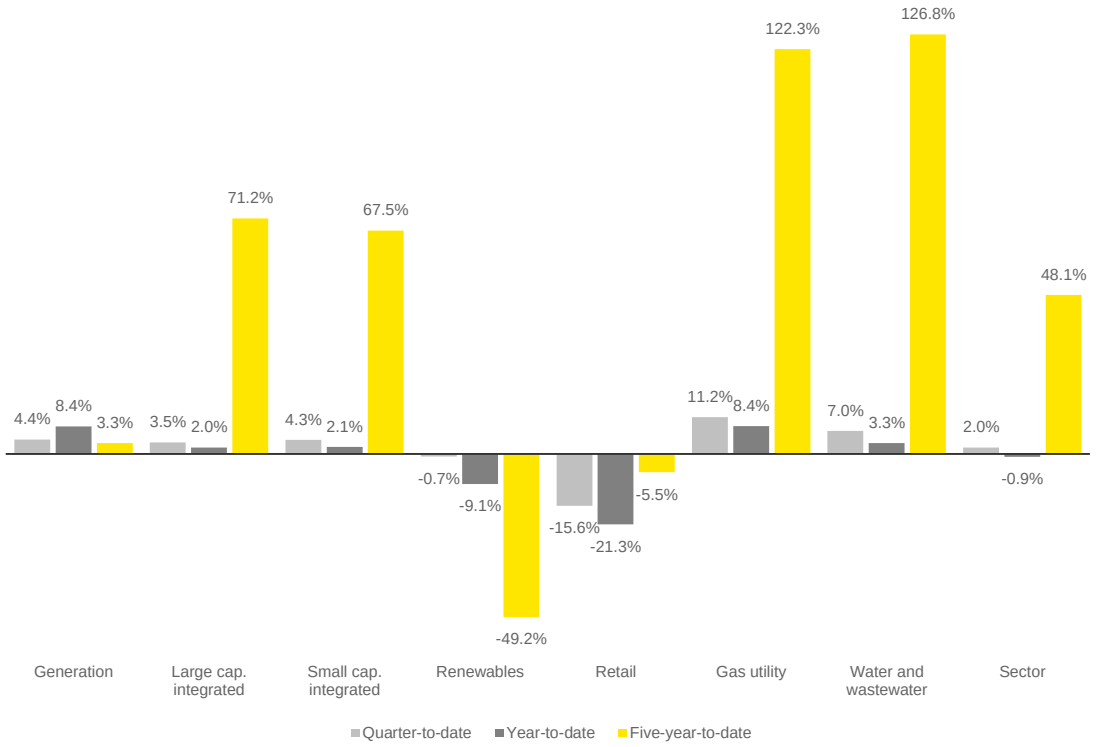


Chart 6: Total shareholder return for select utilities



Sources: Bloomberg, EY analysis

Valuations snapshot – Q2 2018 (continued)

Generation

- Companies traded at an average current EV/EBITDA multiple of 8.2x, a 33.0% discount to the historic average multiple of 12.1x.
- The current EV/EBITDA multiple traded at a discount of 20% to the current average sector multiple, indicating potential undervaluation of this asset class compared with others.
- Over the past five years, the historic EBITDA CAGR was -1.3%, which is expected to rise to 0.7% over the next two years.
- Quarterly TSR performance was 4.4%, compared with a year-to-date TSR of 8.4% and a five-year TSR of 3.3%.

Large integrated

- Companies traded at an average current EV/EBITDA multiple of 10.4x, a 5% premium to the historic average multiple of 9.9x.
- The current EV/EBITDA multiple traded at a premium of 2% to the current average sector multiple, indicating slight overvaluation of this asset class compared with others.
- Over the past five years, the historic EBITDA CAGR was 4.2%, and analysts predict this to grow at the same rate (4.2%) over the next two years.
- Quarterly TSR performance was 3.5%, compared with a year-to-date TSR of 2.0% and a five-year TSR of 71.2%.
- The five-year TSR was driven by high shareholder returns delivered by NextEra Energy (146%) and Ameren Corporation (117%).

Medium and small integrated

- Companies traded at an average current EV/EBITDA multiple of 8.3x, a 22% discount to the historic average multiple of 10.6x.
- The current EV/EBITDA multiple traded at a discount of 18% to the current average sector multiple, indicating potential undervaluation of this asset class compared with others.
- Over the past five years, the historic EBITDA CAGR was 1.3%; however, analysts predict this to decline to -4.6% over the next two years.
- Quarterly TSR performance was 4.3%, compared with a year-to-date TSR of 2.1% and a five-year TSR of 67.5%.
- The five-year TSR was driven by high shareholder returns delivered by Vectren Corp. (153%) and Avista Corporation (129%).

Valuations snapshot – Q2 2018 (continued)

Renewables

- Companies traded at an average current EV/EBITDA multiple of 3.3x, a 65% discount to the historic average multiple of 9.4x.
- The current EV/EBITDA multiple traded at a discount of 67% to the current average sector multiple, indicating potential undervaluation of this asset class compared to others.
- Over the past five years, the historic EBITDA CAGR was -3.5%; however, analysts predict this to increase to 27.8% over the next two years.
- Quarterly TSR performance was -0.7%, compared with a year-to-date TSR of -9.1% and a five-year TSR of -49.2%.
- Pattern Energy Group shares declined 14.8%, while shares of AES Tietê Energia dropped 23% in year-to-date prices.
- Several factors have contributed to declined returns:
  - Drought in Brazil has impacted the business of hydropower-generating utilities.
  - US policy uncertainty around renewables has shaken investor confidence.
  - Canada's Ontario Government introduced legislation allowing it to cancel 758 renewable energy contracts, almost all involving solar, that have not met key milestones.

Retail

- Companies traded at an average current EV/EBITDA multiple of 5.4x, a 42.0% discount to the historic average multiple of 9.3x.
- The current EV/EBITDA multiple traded at a discount of 47% to the current average sector multiple, indicating potential undervaluation of this asset class compared with others.
- Over the past five years, the historic EBITDA CAGR was -2.8%, which is expected to further decline to -5.8% in the next two years.
- Quarterly TSR performance was -15.6%, compared with a year-to-date TSR of -21.3% and a five-year TSR of -5.5%.

Valuations snapshot – Q2 2018 (continued)

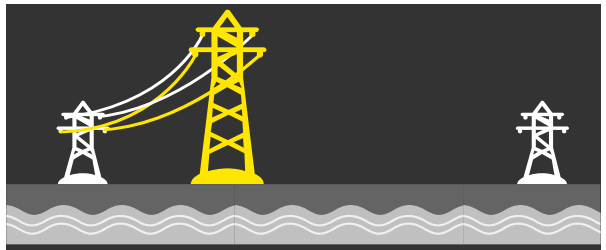
Gas

- Companies traded at an average current EV/EBITDA multiple of 11.4x, a 23% discount to the historic average multiple of 14.9x.
- The current EV/EBITDA multiple traded at a premium of 10% to the current average sector multiple, indicating potential overvaluation of this asset class compared with others.
- Over the past five years, the historic EBITDA CAGR was -4.5%; however, analysts predict this to increase to 8.7% over the next two years.
- Quarterly TSR performance was 11.2%, compared with a year-to-date TSR of 8.4% and a five-year TSR of 122.3%.
- The high five-year TSR values are driven by Atmos Energy Corp. (154%) and New Jersey Resources Corp. (158%). These utilities have delivered high returns and increased investor confidence through their ownership of rate-regulated assets and a growing customer base.

Water and wastewater

- Companies traded at an average current EV/EBITDA multiple of 13.3x, a 10% premium to the historic average multiple of 12.1x.
- The current EV/EBITDA multiple traded at a premium of 31% to the current average sector multiple, indicating potential overvaluation of this asset class compared with others.
- High premiums were reflected in the US$1.9b acquisition of SJW Group by California Water Service Group, which represented a premium of 9% over SJW's last trading day closing share price, which caused a 2% increase in enterprise value that day.
- Over the past five years, the historic EBITDA CAGR was 6.4%; however, analysts predict this to decrease to 4.1% over the next two years.
- Quarterly TSR performance was 7%, compared with a year-to-date TSR of 3.3% and a five-year TSR of 126.8%.
- The rebound in quarterly TSR value was driven by the high quarterly TSR of SJW Group (26%).

M&A outlook and investment hotspots



US$1t

American Council on Renewable Energy target for private sector investment in clean energy by 2030

"Investment in renewables and enabling technologies is set to soar in the US, creating diverse opportunities across the segment."

Miles Huq,
EY Global P&U TAS Leader

Renewable energy investment to continue: New York has launched a US$1.5b tender for renewables under the state's Clean Energy Standard (CES) that mandates a state-based renewable target of 50% by 2030. The aim is to develop 20 utility-scale projects. MidAmerican Energy Company is planning to invest US$922m to build a 591 MW wind project in Iowa. The American Council on Renewable Energy launched a campaign to attract US$1t in new US private sector investment by 2030 for both clean energy and enabling grid technologies. Sempra Energy is planning to sell its US wind and solar assets with a combined capacity of about 2,600 MW to optimize its portfolio.

Latin America continues to be an investment hotspot: Bow Power, a Spanish utility, is planning to build a 157 MW solar PV plant in southern Peru with an investment totaling US$215m. Columbian utility EPM is planning to sell US$1b of assets to fund its ongoing constructing of the 2.4 GW Ituango hydroelectric dam project.

Brazil to attract more investment: State Grid Corporation of China (SGCC) has announced plans to invest US$38b in Brazil over the next five years, with more than 60% of this to be directed to the transmission sector. Work should start soon on 33 renewable energy projects (totaling 1,024.5 MW of capacity at an average price of US$32.65/MWh) in contracts awarded under the A-4 energy auction run by Brazil's energy regulator Agência Nacional de Energia Elétrica (ANEEL). The projects will be completed by 2022. ANEEL has also launched a tender for the construction, operation and maintenance of 2,600km of transmission lines and 23 substations across 16 states totaling US$1.6b.

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Europe

Chinese investors drive deal value

Power transactions and trends Q2 2018

Europe

"The EU mandate on clean energy is a landmark agreement that will shape the investment agenda of the region's utilities."

Miles Huq,
EY Global P&U TAS Leader

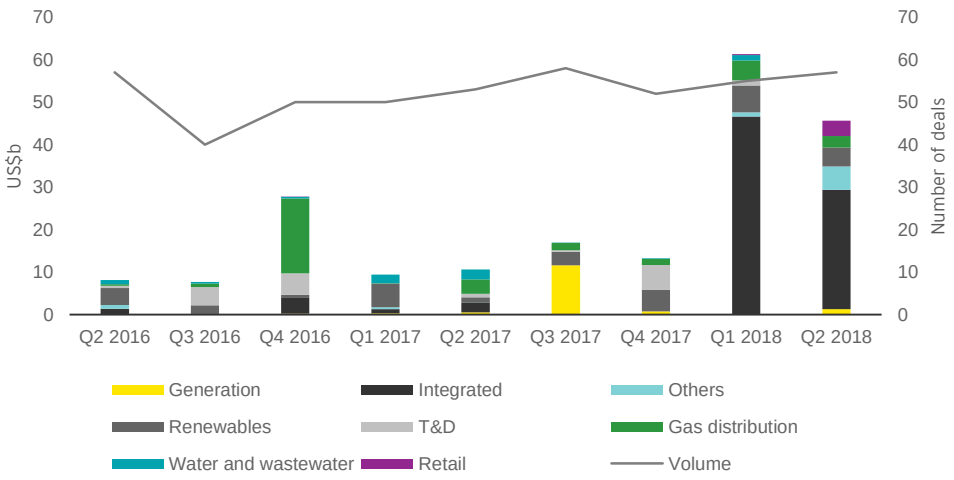
US$45.7b

total deal value, 26% decline from Q1 2018

32%

EU-mandated renewable energy target by 2030

Chart 7: Europe deal value and volume, by segment
(asset and corporate-level deals, Q2 2016–Q2 2018)



Transaction highlights

- **Corporate investors drive deal value and volume:** These buyers conducted 42 deals worth US$36.2b in Q2.
- **Increased M&A in energy services and new technology:** Q2 saw US$5.5b attributed to energy services and new technology deals.
- **Utilities divest assets to improve financials:** Spanish energy services utility Abengoa sold off its 16.7% stake in Atlantica Yield for US$345m. Similarly, Orsted, a Danish utility, sold off its 50% stake in Enecogen, the Netherlands-based 870 MW gas-fired power plant, for an undisclosed value.
- **More investment in generation:** Four deals in gas and large hydro generation assets totaled US$1.3b.

Growing investment in clean energy

New EU mandate set to boost renewables

The agreement by the European Union (EU) to achieve 32% renewable energy consumption by 2030 reflects the central role that clean energy, and the technologies that support it, are playing in Europe's P&U sector. This new Renewable Energy Directive will also give consumers the right to produce, consume, store and sell excess generated power, which will see an increased uptake of small-scale solar installations and more investment in energy storage. The Directive also proposed the phaseout of palm oil from transport use by 2030, which will further drive the adoption of electric vehicles (EVs) across Europe.

China makes inroads into Europe

The largest announced deal (US$27.4b) of the European sector during Q2 was the unsolicited bid by China Three Gorges Corporation (CTG) to buy the remaining 76.7% stake in EDP (CTG is already EDP's largest shareholder). CTG also bid to acquire EDP Renovaveis, the renewable energy arm of EDP, for US$1.3b.

Both deals face big hurdles, but, if they complete, CTG will own 100% of both companies, representing the continuing deep inroads China is making into utility assets across the globe.

European utilities explore new technologies

We see boosted investment from European utilities in the technologies transforming their sector:

- EDF will invest US$9.9b to develop 10 GW of energy storage by 2035.
- Austrian utility Wiener Netze awarded a contract to a consortium led by Siemens to deploy 1.6m smart meters.
- In June, Engie acquired Flashnet, a Romanian Internet of Things company that develops intelligent energy management systems for cities.
- Enel X has partnered with IONITY to install 20 high-power EV charging stations in Italy by the end of 2019.

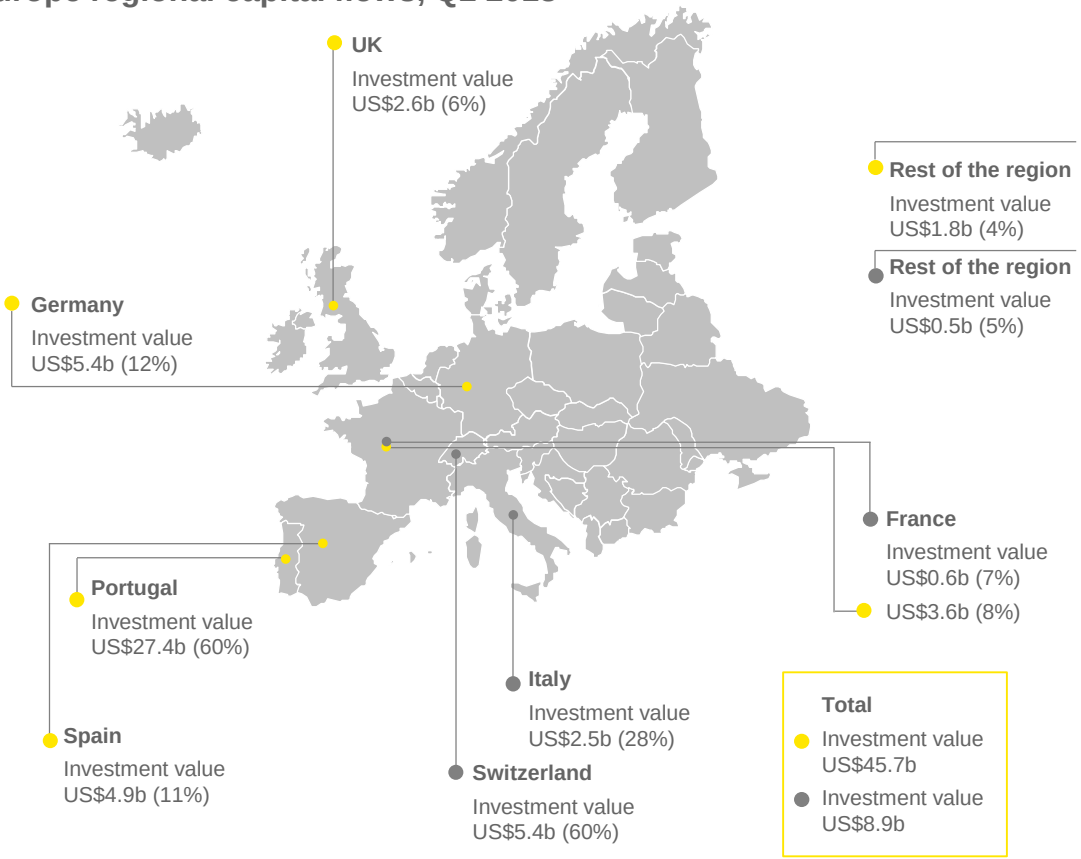
Convergence driving deals

- Total S.A. to acquire a 74.33% stake in Direct Energie for US$3.2b to allow expansion across the entire gas-electricity value chain
- Repsol S.A. to acquire low-emission electricity generation assets and the gas and electricity retail business of Spanish retailer Viesgo Espana for US$870m

The Repsol deal aligns with the company's strategic plan to grow its gas and electricity customer base to 2.5 million and expand its market share beyond 5% by 2025.

Portugal boosted by EDP deal

Europe regional capital flows, Q2 2018*



*Note: Percentages may not add to 100% due to rounding.

Top investment destinations Top outbound investment regions

Portugal dominated inbound investment due to the announced deal by China Three Gorges to buy the remaining stake in EDP.

"We expect Germany and Spain to attract greenfield investment in the coming quarters as both countries have announced ambitious renewables developments."

Miles Huq,
EY Global P&U TAS Leader

Top five Europe deals – Q2 2018

Announcement date	Target	Target country/bidder country	Bidder	Deal value (US$)	Bidder rationale	Segment
11 May	Energias de Portugal S.A. (76.73% stake)	Portugal/China	China Three Gorges Corporation	27.4b	Aligns with CTG's plan to make strategic investments in the European energy market	Integrated
25 May	Techem GmbH	Germany/ Switzerland	Caisse de depot et placement du Quebec; Ontario Teachers' Pension Plan; Partners Group Holding AG	5.4b	Consortium plans to assist Techem to introduce new technologies and geographically expand its energy invoicing and energy management offerings	Others: energy services
18 April	Direct Energie S.A.	France/France	Total S.A.	3.2b	Furthers Total's strategy to expand along the gas-electricity value chain	Retail
4 April	Redexis Gas S.A. (50.1% stake)	Spain/China	Universities Superannuation Scheme Limited; ATP Group; CNIC Corporation Limited; Guoxin Guotong Fund LLP	2.5b	Supports buyers' plans to seek growth opportunities	Gas distribution
11 May	EDP Renovaveis, S.A.	Spain/China	China Three Gorges Corporation	1.3b	Supports CTG's target of expanding into the European market	Renewables

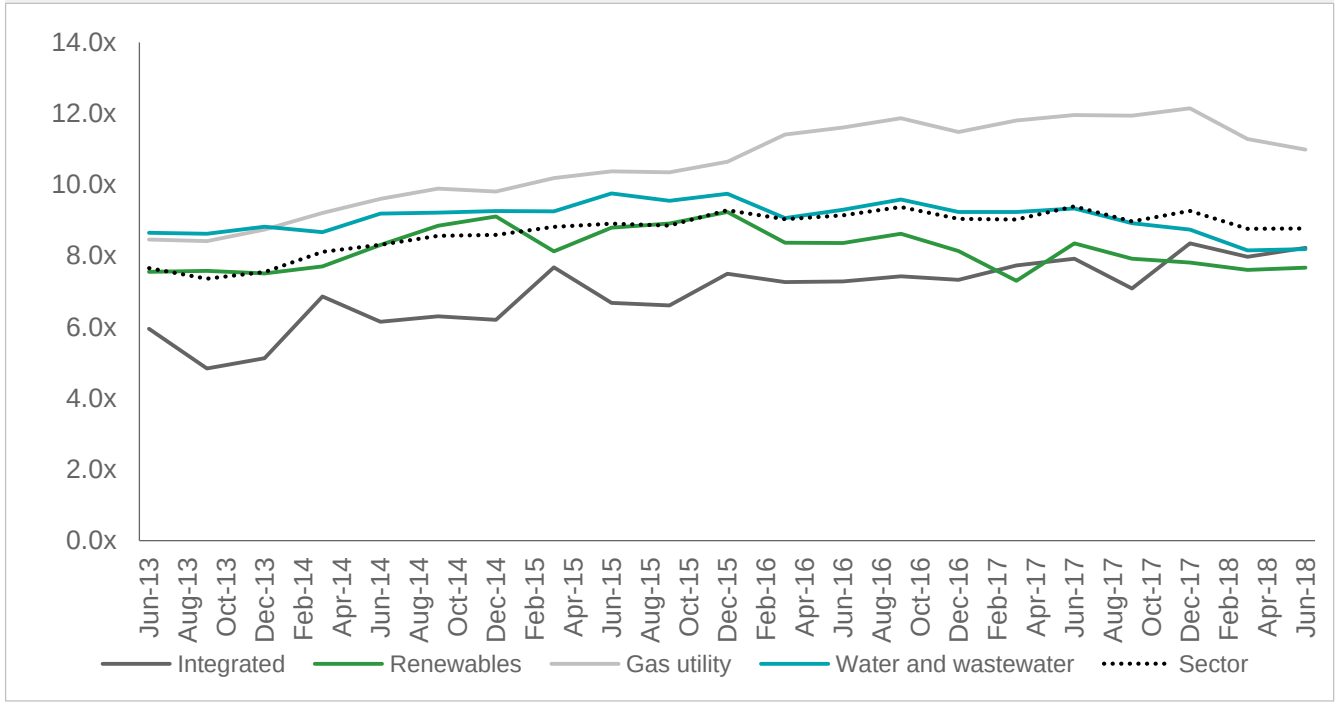
China's growing presence in the European utilities market is reflected in three major deals this quarter.

All deals are announced deals, and the values indicated are disclosed enterprise values comprised of equity and debt components.

Valuations snapshot – Q2 2018

1. The Europe P&U sector traded at an average current EV/EBITDA multiple of 8.8x during Q2, a 33% premium to the average historic multiple of 6.6x.
2. Gas utilities traded at a premium to sector multiples, while other assets traded at a discount.
3. Historic EBITDA CAGR was 6.4%, while analyst forecast sector forward EBITDA CAGR to increase to 10.4% driven by earnings growth in renewable assets.
4. Year-to-date sector total shareholder return (TSR) was 0.8%. However, over the long term, companies returned a high five-year TSR of 70.2%.

Chart 8: Market capitalization weighted average EV/NTM EBITDA trading multiples for select utilities (Q2 2013–Q2 2018)



Note: Please see the appendix for the detailed definition of each trading multiple, the company subsegment definitions and the company tagging for the valuations analysis.

Valuations snapshot – Q2 2018 (continued)

Chart 9: Market capitalization weighted adjusted EBITDA CAGR for select utilities

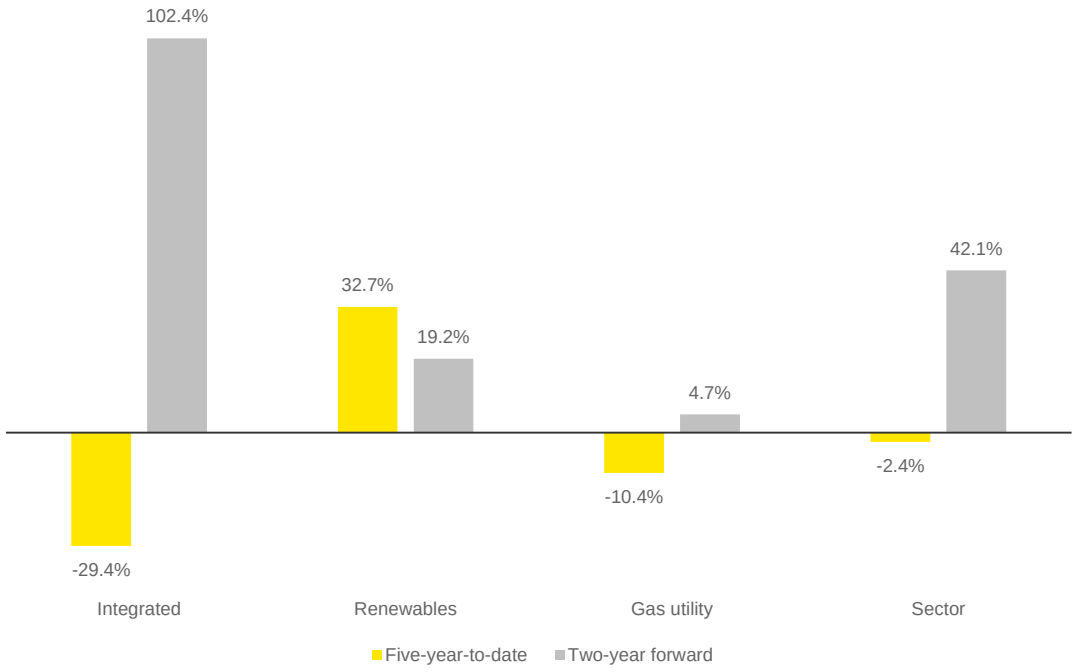
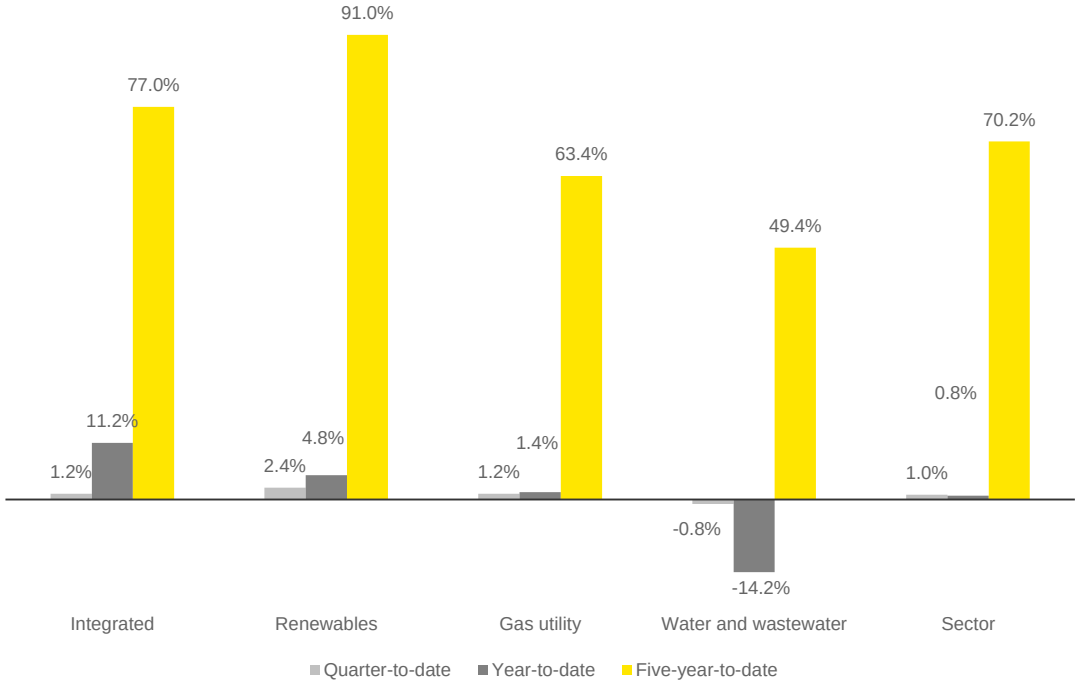


Chart 10: Total shareholder return for select utilities



Note: Adjusted EBITDA numbers for water and wastewater utilities were not available.

Valuations snapshot – Q2 2018 (continued)

Integrated

- Companies traded at an average current EV/EBITDA multiple of 8.2x, a 10% premium to the historic average multiple of 7.5x.
- The current EV/EBITDA multiple traded at a discount of 6.2% to the current average sector multiple, indicating potential undervaluation of this asset class compared with others.
- Over the past five years, the historic EBITDA CAGR was -3.0%; however, analysts predict this to increase to 7.2% over the next two years.
- Quarterly TSR performance was 1.2%, compared with a year-to-date TSR of 11.2% and a five-year TSR of 77.0%.
- The decreasing TSR is attributable to negative returns from:
  - Enel (quarterly TSR -9%, year-to-date TSR -6%)
  - Polska Grupa Energetyczna S.A. (quarterly TSR -14%, year-to-date TSR -27%)
  - ENEA (quarterly TSR -14%, year-to-date TSR -25%)

Renewables

- Companies traded at an average current EV/EBITDA multiple of 7.7x, a 48% premium to the historic average multiple of 5.2x, indicating strong investor confidence.
- The current EV/EBITDA multiple traded at a discount of 13% to the current average sector multiple, indicating potential undervaluation of this asset class compared with others and indicating some further upside potential. The EU agreement on the Renewable Energy Directive should drive continued investor confidence in this asset class.
- Over the past five years, the historic EBITDA CAGR was 32.7%; however, analysts predict this to decrease to 19.2% over the next two years.
- Quarterly TSR performance was 2.4%, compared with a year-to-date TSR of 4.8% and a five-year TSR of 91.0%.

Valuations snapshot – Q2 2018 (continued)

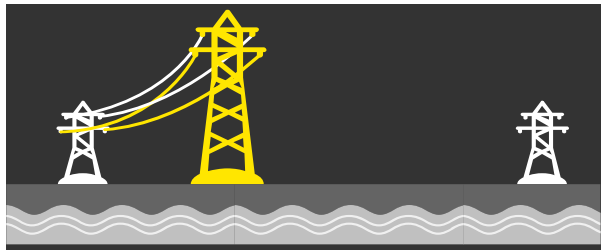
Gas

- Companies traded at an average current EV/EBITDA multiple of 11.0x, a 20% discount to the historic average multiple of 13.8x.
- The current EV/EBITDA multiple traded at a premium of 25% to the current average sector multiple, indicating continued overvaluation of this asset class compared with others.
- Over the past five years, the historic EBITDA CAGR was -10.4%; however, analysts predict this to increase to 4.7% over the next two years.
- Quarterly TSR performance was 1.2%, compared with a year-to-date TSR of 1.4% and a five-year TSR of 63.4%.

Water and wastewater

- Companies traded at an average current EV/EBITDA multiple of 8.2x.
- The current EV/EBITDA multiple traded at a discount of 6.6% to the current average sector multiple, indicating potential undervaluation of this asset class compared with others.
- Quarterly TSR performance was -0.8%, compared with a year-to-date TSR of -14.2% and a five-year TSR of 49.4%. The year-to-date TSR was negative for all utilities in the sample, driven by limited growth prospects for municipal water utilities in Europe and rising costs as compliance with the EU's Water Framework Directive makes extraction more expensive.

M&A outlook and investment hotspots



US$68.8m

Endesa's investment in an 84.9 MW Spanish solar PV plant

"Renewables and new energy technologies will top the investment agenda of Europe's utilities through 2018."

Miles Huq,
EY Global P&U TAS Leader

Greenfield development of renewables to continue: The French Government has announced plans to launch a 300 MW solar power tender. As part of its latest energy plan, the Danish Government announced in April that it would develop an 800 MW offshore wind farm by 2027. Spain's Endesa is planning to spend US$68.8m to build an 84.9 MW solar PV plant in Totana, Spain. Scatec Solar, a renewable energy integrator based in Norway, has entered agreements with investment firm Rengy Development to develop three solar PV projects in Ukraine, with a combined capacity of 47 MW.

Investment in new technology to top the capital agenda: Orsted, a Danish utility, plans to build and operate a 20 MW battery storage project in the UK to support a grid stability project at National Grid. Sweden's Vattenfall plans to become Europe's largest operator of EV charging infrastructure by 2023, targeting a turnover of US$119m. Engie, Hitachi and Mitsubishi Motors are collaborating on a demonstration project to investigate the potential for EVs to act as energy storage within an office building. UK utility Centrica is working with LO3 – the US technology firm behind the pioneering Brooklyn Microgrid – to test a peer-to-peer electricity trading market in Cornwall, UK.

Germany and Spain to emerge as hotspots: Bundesnetzagentur, the German federal network agency for electricity, gas, telecommunications, post and railway, has commenced a tender for 670 MW of onshore wind capacity in the country. The tender, which marks the country's third onshore wind auction in 2018, has set a bid price capped at US$0.074 per kWh. Solaria Energía y Medio Ambiente, a Spanish renewable utility, plans to develop 1.3 GW of solar PV capacity in Spain by 2020.

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Asia-Pacific

Renewables push deal volume

Power transactions and trends Q2 2018

Asia-Pacific

"While the biggest energy deal of the quarter was in generation, renewables are driving most investment opportunities in the Asia-Pacific."

Miles Huq,
EY Global P&U TAS Leader

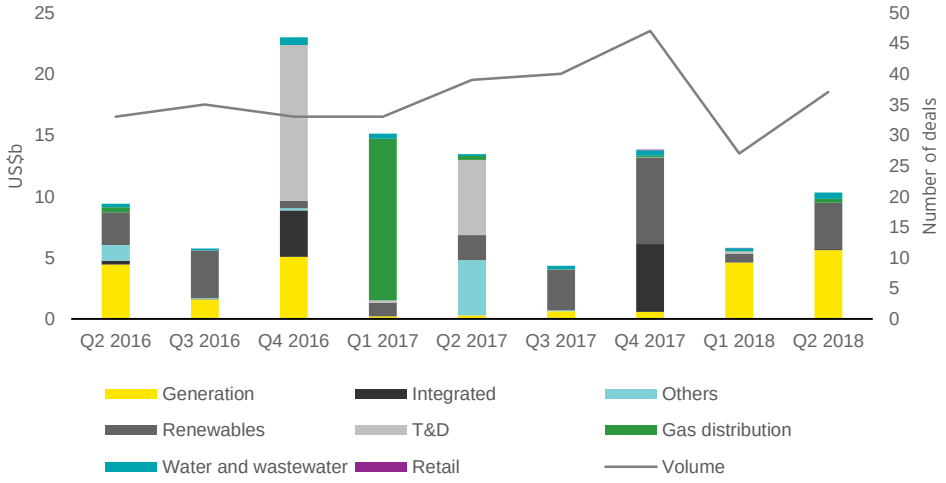
US$10.3b

deal value, a 78% increase quarter-on-quarter

50%

of total deal value contributed by region's largest deal

Chart 11: Asia-Pacific deal value and volume, by segment
(asset and corporate-level deals, Q2 2016–Q2 2018)



Transaction highlights

- **Largest deal in generation:** The region's largest announced deal was the US$5.2b acquisition of a 69.1% stake in Thailand's Glow Energy Public Company by another Thai utility, Global Power Synergy Public Company, which is owned by Engie.
- **Push for renewables continues to drive investment:** Solar and wind deal value more than doubled to US$3.8b in Q2.
- **Corporate investors take the lead:** Both the value (US$9.1b) and volume (28) of deals contributed by corporate investors increased in Q2.
- **Investments in transmission and distribution (T&D) declined:** This segment recorded no deals.
- **Utilities are exploring new technology**: In June, Australian utility AGL launched Energy Insights, a new energy service that will provide greater insights to consumers into energy usage. Japan's TEPCO launched a subsidiary, TEPCO Ventures, which will develop and form joint ventures around the development of disruptive technologies.

Opportunities in energy technologies

Clean energy developments increase

While the quarter's top deal was in generation, it was the renewables segment that continued to drive much of the Asia-Pacific region's deal volume, with 25 clean energy deals totaling US$3.8b. In a notable development, in July, the Bangladesh Power Development Board launched a tender to develop 200 MW of grid-connected solar capacity across four locations in that country. Also in July, Trung Nam Solar Power announced plans to invest US$216.5m to build a 204 MW solar PV project in Vietnam.

Chinese solar decision will impact global market

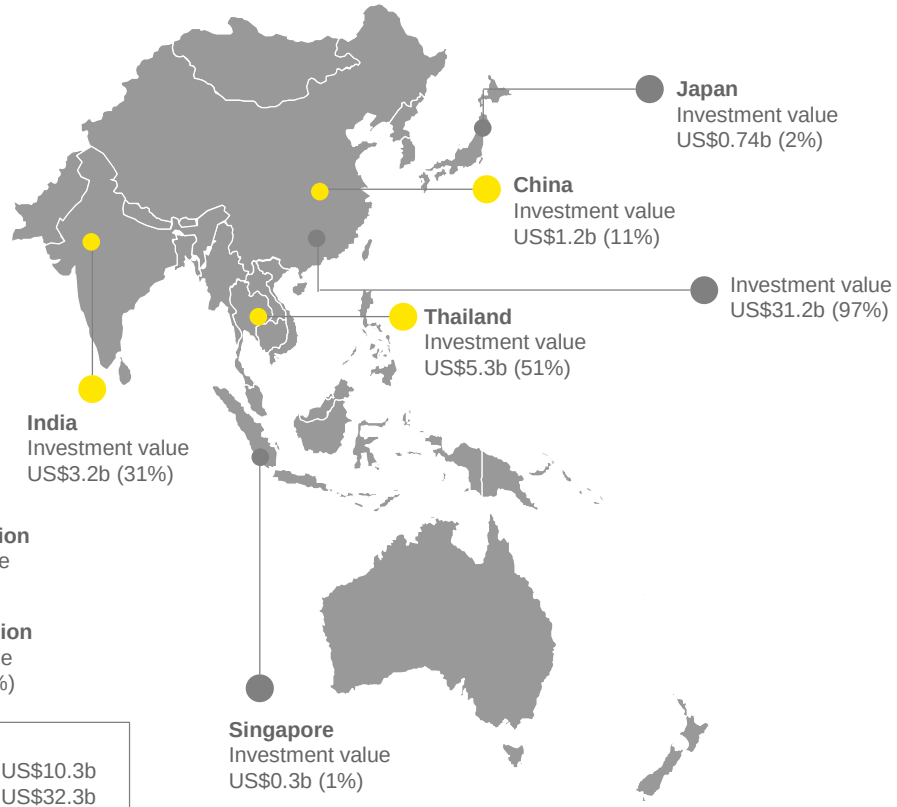
An announcement in May by the Chinese Government that it would reduce solar plant subsidies halted the development of a number of solar farms. This decision caused a temporary oversupply of panels and saw their price drop to a record low of 27.8 cents/watt in June. With China the world's biggest supplier of solar panels, this price drop will increase the price competitiveness of Chinese panels — even after the introduction of US trade tariffs — and improve the economics of solar generation, at least in the short term.

Australian utilities explore new technologies

We see continuing investment in new energy technologies across Australia, including an announcement in March by the Australian Renewable Energy Agency that it would award US$7.7m to Simply Energy to build a centrally managed 8 MW virtual power plant across Adelaide. The plant will involve the in-home installation of 1,200 Tesla Powerwall 2 batteries and is expected to be in operation by the end of 2019.

Domestic deals lead

Asia-Pacific regional capital flows, Q2 2018*



Rest of the region
Investment value
US$0.6b (6%)

Rest of the region
Investment value
US$0.1b (0.90%)

Total
Investment value US$10.3b
Investment value US$32.3b

*Note: Percentages may not add to 100% due to rounding.

Top investment destinations Top outbound investing countries

83% of deal value contributed by domestic deals in Thailand and India

97% increased outbound investment, mostly driven by China

"We expect Chinese outbound investment activity to continue, in line with the country's ambitious Belt and Road Initiative."

Alex Zhu,
EY Greater China P&U TAS Leader

Top five Asia-Pacific deals – Q2 2018

Announcement date	Target	Target country/bidder country	Bidder	Deal value (US$)	Bidder rationale	Segment
20 June	Glow Energy Public Co. Ltd.	Thailand/Thailand	Global Power Synergy Public Company Limited	5.2b	Allows Global Power Synergy to benefit from Glow's high-quality generation assets, leverage potential business opportunities and increase market presence in Thailand	Generation
2 April	Ostro Energy Private Limited	India/India	ReNew Power Ventures	1.7b	Enables ReNew Power to increase its installed capacity and consolidate its position in India's renewable energy market	Renewables: wind
4 June	Orange Renewable Power Pvt. Ltd*.	India/India	Greenko Energy	0.9b	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
30 May	Chengdu Jinqiang Water Co., Ltd. (60% stake)	China/China	Beijing Capital	0.4b	Supports Beijing Capital's strategy to improve its business structure and profitability	Water and wastewater
19 May	Jiangyin Tianli Gas Co., Ltd. (37.23% stake)	China/China	Shanghai Dazhong Public Utilities	0.3b	Helps Shanghai Dazhong increase its gas asset holdings and boost profitability	Renewables: wind

The Glow Energy sale price represents a premium of 4.3% to Glow's closing price a day prior to the deal's announcement on 20 June.

All deals are announced deals, and the values indicated are disclosed enterprise values comprised of equity and debt components.

*Note: Recent reports indicate that this deal is facing some barriers to completion, so ongoing monitoring is advised.

Valuations snapshot – Q2 2018

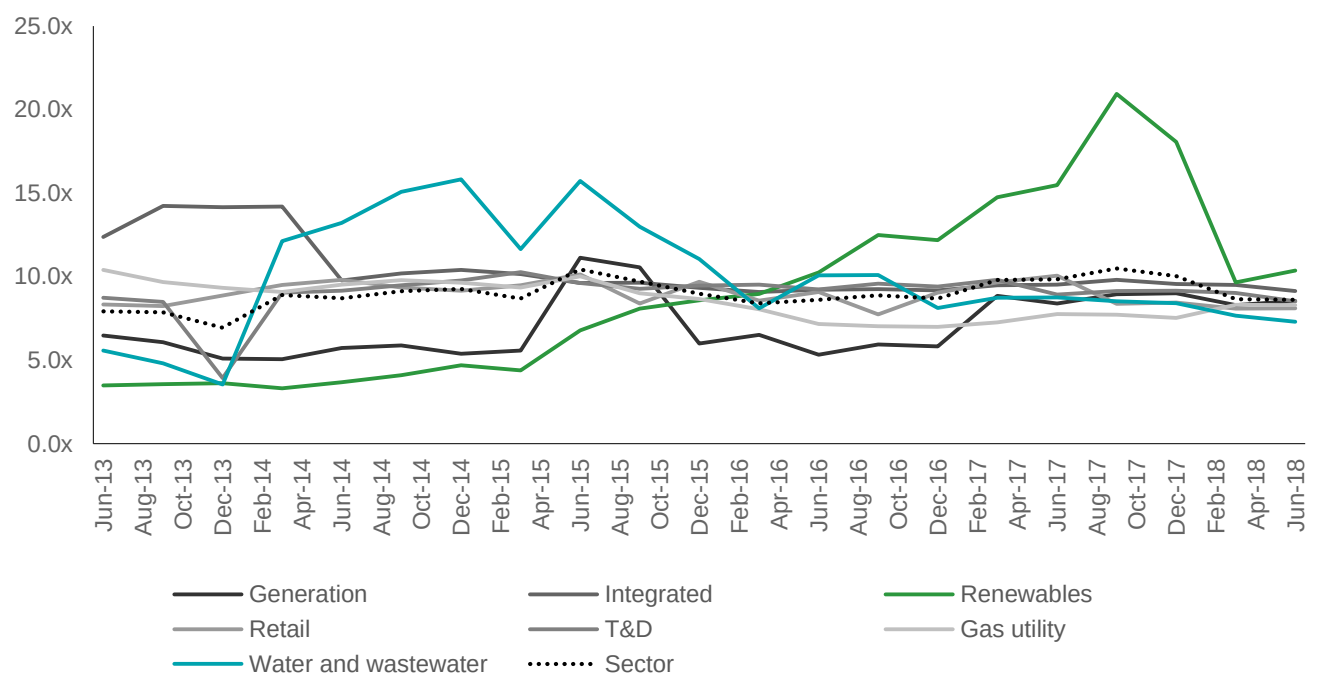
1. The Asia-Pacific P&U sector traded at an average current EV/EBITDA multiple of 8.6x during Q2, a 14% discount to the average historic multiple of 10.0x.

2. Integrated and renewable assets traded at a premium to sector multiples, while other assets traded at a discount.

3. Historic EBITDA CAGR was 0.9%, while analysts forecast sector forward EBITDA CAGR to decrease to -1.3%, driven by decreased earnings from water and wastewater assets.

4. Year-to-date sector total shareholder return (TSR) was -7.1%, compared with a five-year TSR of 14.0%.

Chart 12: Market capitalization weighted average EV/NTM EBITDA trading multiples for select utilities (Q2 2013–Q2 2018)



Note: Please see the appendix for the detailed definition of each trading multiple, the company subsegment definitions and the company tagging for the valuations analysis.

Valuations snapshot – Q2 2018 (continued)

Chart 13: Market capitalization weighted adjusted EBITDA CAGR for select utilities

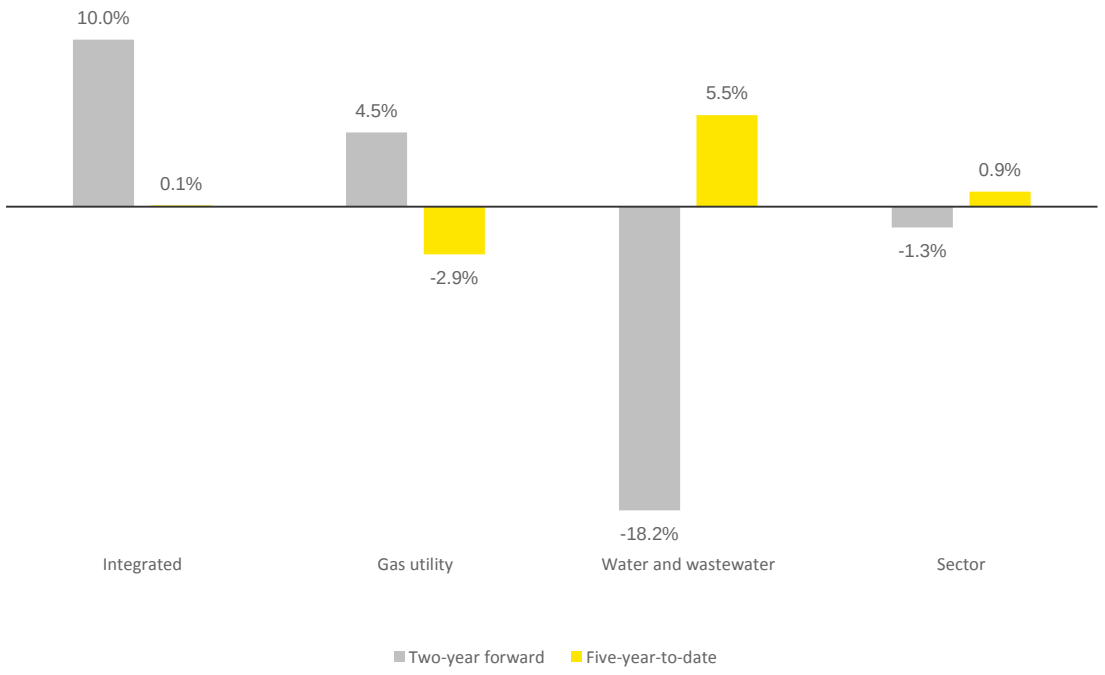
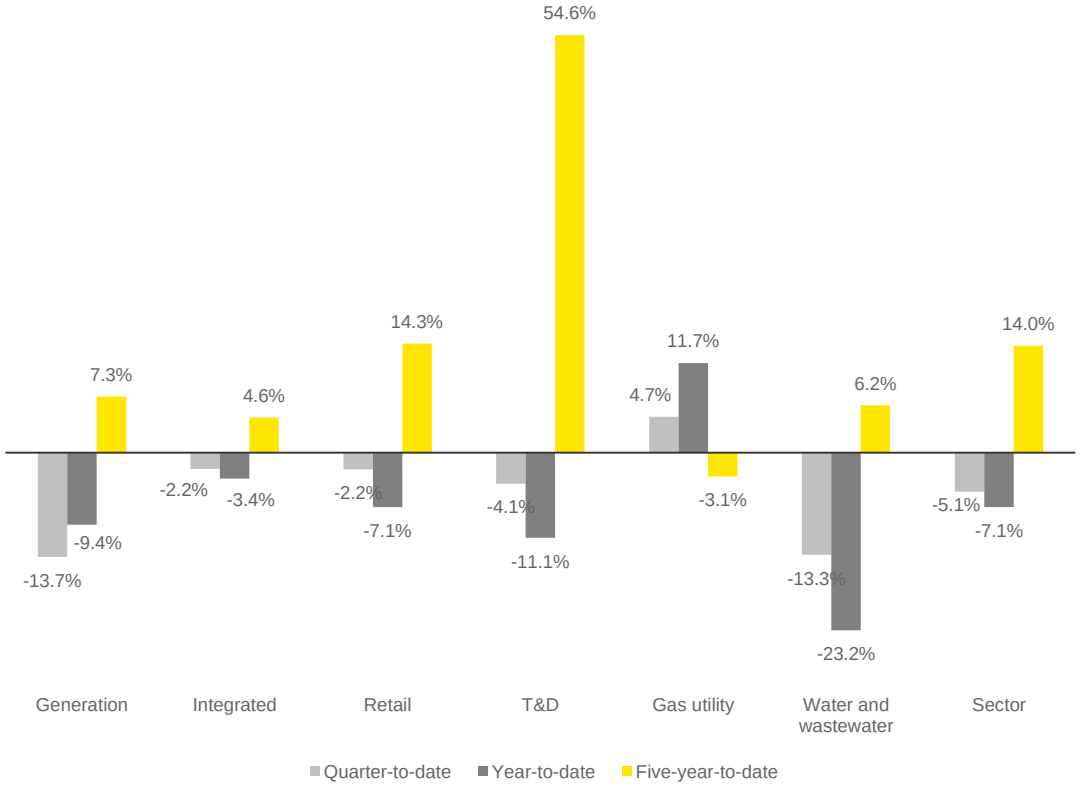


Chart 14: Total shareholder return for select utilities



Note: Adjusted EBITDA numbers for generation, retail, T&D were not available.

Valuations snapshot – Q2 2018 (continued)

Generation

- Companies traded at an average current EV/EBITDA multiple of 8.5x.
- The current EV/EBITDA multiple traded at a slight discount of 0.8% to the current average sector multiple.
- Quarterly TSR performance was -13.7%, compared with a year-to-date TSR of -9.4% and a five-year TSR of 7.3%.
- The negative quarterly TSR was driven by low shareholder returns from OPG Power Ventures (-80%) and Datang International (-41%).

Integrated

- Companies traded at an average current EV/EBITDA multiple of 9.1x, a 30% discount to the historic average multiple of 13x.
- The current EV/EBITDA multiple traded at a premium of 6.1% to the current average sector multiple, indicating potential overvaluation of this asset class compared with others.
- Over the past five years, the historic EBITDA CAGR was 0.1%; however, analysts predict this to increase to 10.0% over the next two years. Earnings growth is being driven by a positive outlook for these utilities. Chubu Electric and Tokyo Electric Power plan to transfer their thermal power assets to JERA (thermal power company owned 50% each by Chubu Electric and TEPCO Holdings) in April 2019.
- Quarterly TSR performance was -2.2%, compared with a year-to-date TSR of -3.4% and a five-year TSR of 4.6%.
- The negative quarterly TSR was driven by two Indian utilities: JSW Energy (-14%) and Tata Power Company (-12%).

Renewables

- The average current EV/EBITDA multiple of these companies declined over the quarter to trade at 10.4x, with the fall due to a decrease in enterprise values at Ningxia, YinXing Energy and Kong Sun.
- The current EV/EBITDA multiple traded at a premium of 20.5% to the current average sector multiple, indicating potential overvaluation of this asset class compared with others.
- Quarterly TSR performance was -9.3%, compared with a year-to-date TSR of -16.4%.
- The negative TSR (both quarterly and year-to-date) was attributed to negative returns by Chinese renewable companies Ningxia and Kong Sun.

Valuations snapshot – Q2 2018 (continued)

Retail

- Companies traded at an average current EV/EBITDA multiple of 8.1x.
- The current EV/EBITDA multiple traded at a discount of 5.9% to the current average sector multiple, indicating potential undervaluation of this asset class compared with others.
- Quarterly TSR performance was -2.2%, compared with a year-to-date TSR of -7.1% and a five-year TSR of 14.3%.

T&D

- Companies traded at an average current EV/EBITDA multiple of 8.5x.
- The current EV/EBITDA multiple traded at a discount of 1.1% to the current average sector multiple, indicating fair value of this asset class compared with others.
- Quarterly TSR performance was -4.1%, compared with a year-to-date TSR of -11.1% and a five-year TSR of 54.6%.
- The negative quarterly and year-to-date TSRs were attributed to negative returns from utilities in India, New Zealand and Australia (one utility in each region).

Valuations snapshot – Q2 2018 (continued)

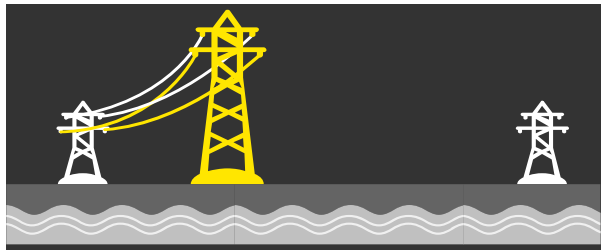
Gas

- Companies traded at an average current EV/EBITDA multiple of 8.3x, a 10% discount to the historic average multiple of 9.3x.
- The current EV/EBITDA multiple traded at a discount of 3.6% to the current average sector multiple, indicating potential undervaluation of this asset class compared with others.
- Over the past five years, the historic EBITDA CAGR was -2.9%; however, analysts predict this to increase to 4.5% over the next two years.
- TSR performance was 4.7%, compared with a year-to-date TSR of 11.7% and a five-year TSR of -3.1%.
- Although a number of gas utilities have delivered positive returns over the past five years, the average TSR has been impacted by a negative five-year TSR at Perusahaan Gas Negara Persero and Shenzhen Gas Corporation.

Water and wastewater

- Companies traded at an average current EV/EBITDA multiple of 7.3x, a 5.0% discount to the historic average multiple of 7.7x.
- The current EV/EBITDA multiple traded at a discount of 15.2% to the current average sector multiple, indicating potential undervaluation of this asset class compared with others.
- Over the past five years, the historic EBITDA CAGR was 5.5%; however, analysts predict this to decrease to -18.2% over the next two years. The decrease is being driven by a decline in the two-year forward adjusted EBITDA of Manila Water and SIIC Environment Holdings.
- TSR performance was -13.3%, compared with a year-to-date TSR of -23.2% and a five-year TSR of 6.2%.

M&A outlook and investment hotspots



22%

of Japan's electricity mix to be contributed by nuclear by 2030

"This region's energy sector offers diverse and exciting investment opportunities, particularly in renewables and the scaling up of new technologies."

Miles Huq,
EY Global P&U TAS Leader

Focus on renewables: Apple has set up a clean energy fund to invest US$300m in the development of 1 GW of renewable energy in China through 2022. Vietnam has announced it will triple the amount of electricity generated from renewables to reduce its increasing reliance on coal. US integrated power producer Pattern Energy plans to install 33 MW of wind capacity on the island of Shikoku in western Japan. The Asian Development Bank plans to invest US$40m in Indonesia's first 21 MW utility-scale solar PV plant.

More nuclear development: In May, Japan released its latest energy policy which stated that nuclear will make up 22% of the country's power supply by 2030 (from a current base of 2%). Indonesia, Malaysia, the Philippines, Thailand and Vietnam are all in various stages of nuclear power development. It is expected that, by 2040, these countries will add 5 GW of nuclear capacity.

Cross-border acquisitions from China to continue: Chinese utilities continue to drive cross-border M&A as demonstrated by the US$27b bid for EDP assets in Europe.

Investment in new technologies to scale up: Total Energy Ventures (Total S.A.'s energy venture capital arm), Chinese venture capital firm Hubei High Tech and Cathay Capital, a French-Chinese private equity firm, have announced the formation of the Cathay Smart Energy Fund. The fund's mandate is to invest in emerging technologies in China, including the Internet of Things, energy storage, distributed energy, smart energy and low-carbon activities.

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Africa and the Middle East

Renewables drive investment amid transformation

EY

Power transactions and trends Q2 2018

Africa and the Middle East

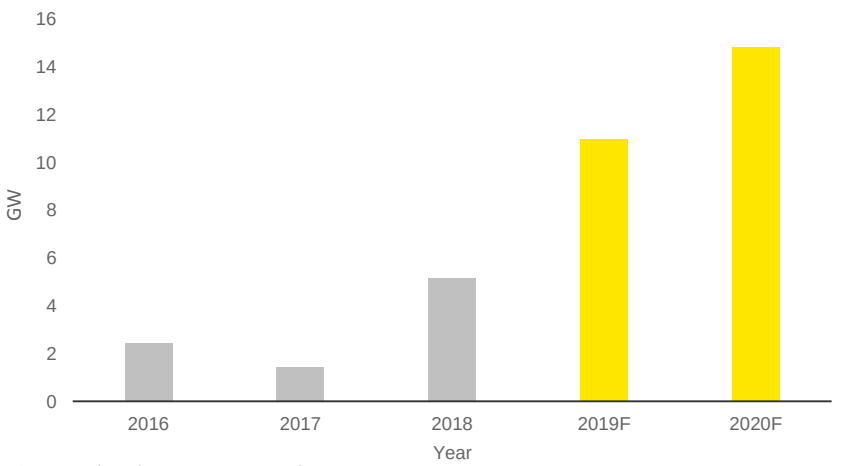
US$370b

expected investment in renewable energy in Gulf countries by 2020

US$17.6b

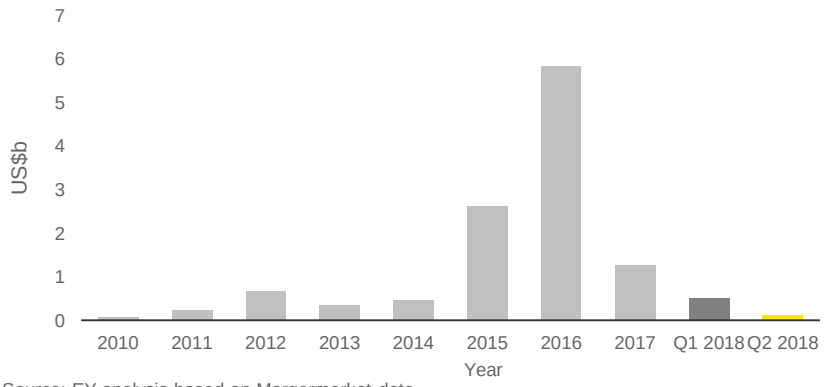
expected investment in MENA smart grid by 2027

Chart 15: Africa and Middle East solar installed capacity



Source: Bloomberg New Energy Finance

Chart 16: Africa and Middle East
(announced asset and corporate-level deals, 2010–Q2 2018)



Source: EY analysis based on Mergermarket data

Transaction highlights

- **Investment in greenfield renewable energy continues:** In Senegal, Engie and global investment manager Meridiam will build two solar PV projects totaling 60 MW under the International Finance Corporation's Scaling Solar program. Spanish utility Elawan Energy signed a power purchase agreement with Eskom to develop a 102 MW wind farm in South Africa with an expected investment of US$175m.
- **Increasing investment in water and wastewater management:** Veolia agreed to construct and set up water and wastewater treatment plants at two power stations in Egypt. Also in Egypt, the Government has awarded a US$58.3m contract to improve and expand an Alexandria wastewater treatment plant to French utility Suez and partner Arab Contractors Company. In Oman, the Oman Power and Water Procurement Company has signed an agreement to develop a reverse osmosis desalination plant capable of producing 25m gallons of desalinated water per day.

Investment in solar accelerates

"While the transformations reshaping the P&U sectors of Africa and the Middle East are vastly different, both are powered by renewables."

Miles Huq,
EY Global P&U TAS Leader

Foreign investors help boost African electrification

Electrification remains the priority of Africa's P&U sector, and efforts are ramping up to attract foreign investment, particularly in new renewable energy projects. Europe continues to be the region's main investor, as both financial sponsors and corporates look for opportunities outside their home markets:

- In March, the European Investment Bank (EIB) signed a US$25m financing plan for the installation of off-grid solar systems that will improve access to energy, particularly in Ethiopia, Kenya, Tanzania, Nigeria and Uganda.
- In April, Swedish wave energy developer Seabased forged a partnership with Ghanaian renewable company TC Energy to construct a 100 MW wave energy project in Ada, Ghana.

Middle East countries increase clean energy targets

Across the Middle East, governments are driving investment in renewables as many increase their countries' clean energy targets. Analysts expect that a total of 22 GW of solar capacity will be installed in Bahrain, Jordan, Oman, Saudi Arabia and the United Arab Emirates (UAE) by 2023. As renewable capacity increases, there is a growing focus on strengthening networks and investing in smart grid technologies. Saudi Arabia, Egypt and the UAE are expected to lead the region in smart grid adoption and investments in the coming years.

Africa offers both greenfield and brownfield opportunities

"South Africa aims to attract US$100b of investment over five years and will auction 1.8 GW of renewable energy capacity worth US$4b by the end of November 2018."

Miles Huq,
EY Global P&U TAS Leader

US$10b to be invested in South Africa's energy sector by the Kingdom of Saudi Arabia

100 MW solar energy plant to be built in South Africa by Saudi utility ACWA Power

Brownfield opportunities increase

We're seeing an uptick in brownfield investments across the region:

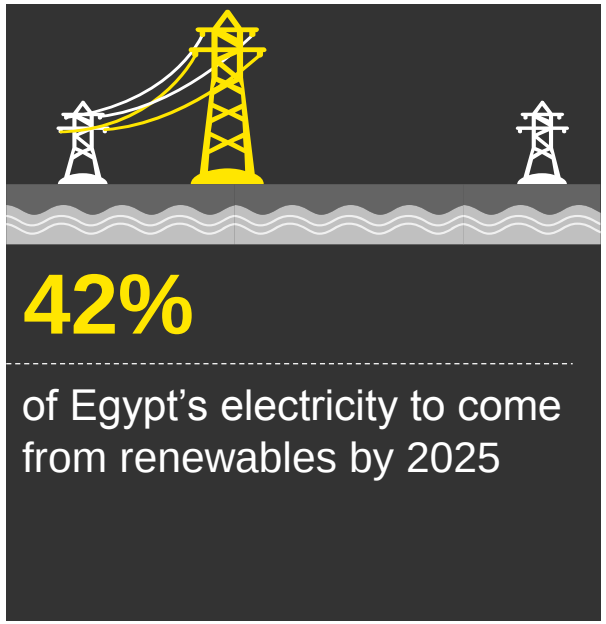
- In South Africa, German independent energy company ENERTRAG acquired a 50% interest in 1.8 GW of wind power projects owned by local company Genesis Eco-Energy Developments.
- South African-based African Energy Partners Limited acquired Kenyan diesel power station operator Iberafrica Power for US$62 million.
- In Israel, water desalination company IDE Technologies Ltd. acquired the remaining 49% stake in Sorek Desalination Ltd.

Top five Africa and Middle East deals – Q2 2018

Bidder company/country	Target country	Project description	Segment
Clean Technology Fund (CTF)/African Development Bank (AfDB)	Kenya	Provided US$49.5m loan to help build a 35 MW geothermal power plant	Renewables: geothermal
Multilateral Investment Guarantee Agency (MIGA)	Namibia	Provided US$18m guarantee to support the construction, operation and maintenance of two 5 MW solar power plants	Renewables: solar
AfDB	Nigeria	Provided a US$1.5m grant to support the construction of two new 100 MW renewables projects	Renewables
AfDB	Cote d'Ivoire	Will act as partial credit guarantor for Zola EDF Cote d'Ivoire (ZECI) to access a US$27.8m loan from Societe Generale de Banque en Cote d'Ivoire to enable ZECI to install 100,000 solar pay-as-you-go solar systems at rural households in Cote d'Ivoire	Renewables: solar
US Trade and Development Agency	Mozambique	Awarded grant to eleQtra (Mozambique) Limitada for a feasibility study to assess the viability of developing two 60 MW wind plants	Renewables: wind

All major deals in Q2 took place in Africa and in the renewables segment.

M&A outlook and investment hotspots



"Opportunities to invest in the region's energy sector will expand, with a focus on renewables in both Africa and the Middle East."

Miles Huq,
EY Global P&U TAS Leader

Solar investment to continue: Iran's renewable energy agency says investors from Germany, Italy, France and Greece are financing solar power plants in the province of Yazd, with production capacity expected to increase from 10 MW to 70 MW by the end of 2018. Iran is boosting investment in renewables to meet its 2020 renewable energy target of 5,000 MW. The Oman Power and Water Procurement Company has issued a request for proposals for a US$500m 500 MW utility-scale solar power project. UAE-based renewable energy company Phanes Group has signed a memorandum of understanding (MoU) to develop three Mozambique solar plants with a cumulative capacity of 200 MW.

Growing momentum for rural and off-grid electrification in Africa: Ghana will spend US$230m to promote the use of renewable energy, particularly in off-grid communities. Kenya's Powerhive and South Africa's Sun Exchange will invest US$23m in microgrids in Kenya and sub-Saharan Africa through 2023.

New investments in energy storage: Jordan is investing in its first 30 MW electricity storage project to support expanding solar and wind generation. Sterling and Wilson, a global solar equipment procurement company, plans to construct 30 MWh of energy storage facilities in West Africa across three sites.

Egypt emerges as an investment hotspot: Chinese integrated energy service provider Golden Concord Group signed an MoU with the Egyptian Government to build a solar panel production facility at a cost of up to US$2b. Solar energy firm Enerray will build three ground-mounted PV projects totaling 1.8 GW at Egypt's Benban Solar Park. Egypt also plans to reduce electricity subsidies by more than $800m by the end of the financial year, paving the way for increased private investment.

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Appendix

Valuations analysis details

Valuation metric definitions

Multiple	Definition
Current EV/EBITDA multiple	The market capitalization weighted average of the current enterprise value (EV) (at June 2018)/next twelve months (NTM) (at June 2018) adjusted earnings before interest, tax, depreciation and amortization (EBITDA)
Historic EV/EBITDA multiple	The market capitalization weighted five-year average of the actual quarterly EV/actual quarterly adjusted EBITDA (from June 2013 to June 2018)
Forward EBITDA CAGR	Two-year forward (from Q2 2018) forecast compound annual growth rate (CAGR) of the market capitalization weighted adjusted EBITDA
Historic EBITDA CAGR	Five-year historic (from Q2 2018) actual CAGR of the market capitalization weighted adjusted EBITDA
Quarter-to-date TSR	Total shareholder return (TSR) in percent (from 1 April 2018 to 1 July 2018)
Year-to-date TSR	TSR in percent (from 1 January 2018 to 1 July 2018)
Five-year-to-date TSR	TSR in percent (from 1 July 2013 to 1 July 2018)

Note: All EBITDA values are adjusted EBITDA values, and all subsegment EV/EBITDA multiples are weighted by market capitalization.

Company subsegment definitions

Subsegment	EY definition
Electricity T&D	Utilities that generate the majority of their revenues from transmitting and distributing electricity, as opposed to the sale of energy
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
Gas utilities	Utilities that generate the majority of their revenues from downstream gas, including transmission, distribution and the sale of gas as an energy source
Renewables	Utilities that are engaged in generating power from centralized or distributed renewable energy sources, including solar, wind and small hydro
Retail	Utilities that generate the majority of their revenues from delivering power to consumers, which includes utilities that generate and sell power to consumers (“gentailers”) but excludes companies that are fully vertically integrated
Integrated utilities	Utilities 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
Large market capitalization	Requires a utility to have a market capitalization above US$10b
Medium and small market capitalization	Requires a utility to have a market capitalization of less than US$10b
Water and wastewater	Utilities that manage water and wastewater networks and engage in the distribution, supply or treatment of water and wastewater

Americas company subsegment tagging for valuations analysis

Subsegment	Company	Data availability
Generation	Dynegy Inc./Vistra	🟢
	NRG Energy, Inc.	🟢
	The AES Corporation	🟢
	TransAlta Corporation	🟢
Large market capitalization integrated	Ameren Corporation	🟢
	American Electric Power Co., Inc.	🟢
	Avangrid, Inc.	🟢
	Berkshire Hathaway Energy Company	🔴
	CenterPoint Energy, Inc.	🟢
	CMS Energy Corporation	🟢
	Comisión Federal De Electricidad	🔴
	Consolidated Edison Inc.	🟢
	Dominion Energy, Inc.	🟢
	DTE Energy Company	🟢
	Duke Energy Corporation	🟢
	Edison International	🟢
	Entergy Corporation	🟢
	Evergy, Inc.	🔴
	Eversource Energy	🟢

Subsegment	Company	Data availability
Large market capitalization integrated	Exelon Corporation	🟢
	FirstEnergy Corp.	🟢
	National Grid USA	🔴
	NextEra Energy, Inc.	🟢
	PG&E Corporation	🟢
	PPL Corporation	🟢
	Public Service Enterprise Group Incorporated	🟢
	Sempra Energy	🟢
	Southern Company	🟢
	WEC Energy Group, Inc.	🟢
	Xcel Energy Inc.	🟢
Medium and small market capitalization integrated	ALLETE, Inc.	🟢
	Alliant Energy Corporation	🟢
	Avista Corporation	🟢
	Black Hills Corporation	🟢
	Companhia Energética de Brasília - CEB	🟢
	EDP - Energias do Brasil S.A.	🟢
	El Paso Electric Company	🟢

Americas company subsegment tagging for valuations analysis (continued)

Subsegment	Company	Data availability
Medium and small market capitalization integrated	Hawaiian Electric Industries, Inc.	●
	Light S.A.	●
	MDU Resources Group, Inc.	●
	MGE Energy, Inc.	●
	NorthWestern Corporation	●
	OGE Energy Corp.	●
	Otter Tail Corporation	●
	Pinnacle West Capital Corporation	●
	PNM Resources, Inc.	●
	Portland General Electric Company	●
	SCANA Corporation	●
	Unitil Corporation	●
	Vectren Corporation	●
Renewables	AES Tietê Energia	●
	CPFL Energias Renovaveis	●
	NextEra Energy Partners, LP	●
	NRG Yield, Inc.	●
	Pattern Energy Group Inc.	●
	Sky Solar Holdings	●

Subsegment	Company	Data availability
Renewables	SunPower Corporation	●
	Sunrun Inc.	●
	TerraForm Power, Inc.	●
	TransAlta Renewables Inc.	●
	Vivint Solar Inc.	●
Retail	AEP Energy	●
	Ambit Energy	●
	Amigo Energy	●
	Cirro Energy	●
	Crius Energy Trust	●
	Genie Energy	●
	Just Energy	●
	Spark Energy	●
Gas utility	Atmos Energy Corporation	●
	Chesapeake Utilities Corporation	●
	National Fuel Gas Company	●
	New Jersey Resources Corporation	●
	NiSource Inc.	●

Americas company subsegment tagging for valuations analysis (continued)

Subsegment	Company	Data availability
Gas utility	NW Natural	🟢
	ONE Gas, Inc.	🟢
	Piedmont Natural Gas Co. Inc.	🔴
	Questar Corporation	🔴
	RGC Resources, Inc.	🟢
	South Jersey Industries, Inc.	🟢
	Southwest Gas Corporation	🔴
	Spire Inc.	🟢
	UGI Corporation	🟢
	WGL Holdings Inc.	🟢

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

Europe company subsegment tagging for valuations analysis

Subsegment	Company	Data availability
Generation	Public Joint Stock Company Donbasenergo	🟢
Integrated	Acciona S.A.	🟢
	Centrica plc	🔴
	CEZ, a. s.	🟢
	E.ON UK	🔴
	EDF Energy	🔴
	Electricite de France S.A.	🔴
	Endesa S.A.	🟢
	ENEA S.A.	🟢
	Enel SpA	🟢
	Engie S.A.	🔴
	Fortum Oyj	🟢
	Iberdrola S.A.	🟢
	Innogy	🔴
	Irkutskenergo PJSC	🔴
	Npower	🔴
	Polska Grupa Energetyczna S.A.	🟢
	RWE	🟢
	ScottishPower	🔴

Subsegment	Company	Data availability
Integrated	SSE plc	🔴
	Verbund AG	🟢
Renewables	EDP Renováveis	🟢
	Energiekontor AG	🟢
	Falck Renewables SpA	🟢
	Futuren S.A.	🟢
	Terna Energy SA (Terna Energy Societe Anonyme Commercial Technical Company S.A.)	🟢
Retail	British Gas	🟢
Electricity T&D	Elia System Operator	🔴
	National Grid plc	🔴
	Red Electrica Corporacion S.A.	🟢
	Terna SPA	🟢
Gas utility	Enagas S.A.	🟢
	Geoplin	🔴
	Latvijas Gaze	🟢
	Snam SPA	🟢
	Swissgas	🔴

Europe company subsegment tagging for valuations analysis (continued)

Subsegment	Company	Data availability
Gas utility	VNG – Verbundnetz Gas Aktiengesellsch	🔴
Water and wastewater	Ad Visegrad	🔴
	Biwater Holdings Limited	🔴
	Severn Trent Plc	🟢
	Suez Environnement	🟢
	United Utilities	🟢
	Veolia Environnement S.A.	🟢

Asia-Pacific company subsegment tagging for valuations analysis

Subsegment	Company	Data availability
Generation	Huadian Power International Corporation Limited	🟢
	Datang International Power Generation Company	🟢
	Huaneng Power International	🟢
	NHPC Ltd.	🟢
	NTPC Ltd.	🟢
	OPG Power Ventures PLC	🟢
	Reliance Power Ltd.	🔴
	Zhejiang Zheneng Electric Power	🟢
Integrated	Chubu Electric Power Company	🟢
	Chugoku Electric Power	🟢
	CLP Group	🔴
	Contact Energy Limited	🔴
	Electric Power Development	🟢
	JSW Energy Limited	🟢
	KEPCO	🔴
	The Tata Power Company Limited	🟢

Subsegment	Company	Data availability
Renewables	China Datang Corp Renewable Power	🔴
	Guizhou Qianyuan Power	🔴
	Kong Sun Holdings	🟢
	Meridian Energy	🟢
	NingXia YinXing Energy	🟢
Retail	AGL Energy	🟢
	Contact Energy Limited	🔴
	ERM Power	🟢
	Genesis Energy Ltd.	🟢
	Origin Energy	🟢
	Trustpower Ltd.	🟢
Electricity T&D	AusNet Services	🟢
	Power Grid Corp of India Ltd.	🟢
	Vector Limited	🟢
Gas utility	APA Group (recent takeover offer)	🔴
	China Gas Holdings Ltd.	🔴
	Duet Group	🔴

Asia-Pacific company subsegment tagging for valuations analysis (continued)

Subsegment	Company	Data availability
Gas utility	Korea Gas Corporation	🟢
	Osaka Gas Co.	🟢
	Perusaahan Gas Negara PERSERO	🟢
	Seibu Gas	🔴
	Shenzhen Gas Corp. Ltd.	🟢
	Toho Gas	🟢
	Tokyo Gas Co. Ltd.	🔴
Water and wastewater	TTW Public Company Limited	🔴
	VA Tech Wabag Limited	🟢
	Beijing Enterprises Water Group Limited	🔴
	Beijing Water Business Doctor Co., Ltd.	🔴
	Binh Duong Water Supply Sewerage Environment Limited Company	🔴
	China Water Affairs Group Limited	🔴
	Chongqing Water Group Co., Ltd.	🔴
	Eastern Water Resources Development and Management Public Company Limited	🟢

Subsegment	Company	Data availability
Water and wastewater	Guangdong Investment Limited	🔴
	Luenmei Quantum Co., Ltd	🔴
	Manila Water Company, Inc.	🟢
	Ranhill Holdings Berhad	🔴
	SIIC Environment Holdings Ltd.	🟢
	Tus-Sound Environmental Resources Co., Ltd.	🔴
	WHA Utilities and Power Public Company Limited	🔴

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