



BUREAU VAN DIJK

M&A Review

Cleantech

January 2017



The following report details mergers and acquisitions activity in the cleantech sector in January 2017 using data from the Zephyr database.

It focuses on global deals activity by target company within the cleantech sector.

Click [here](#) to access the raw data in an Excel spreadsheet.

Bureau van Dijk recently expanded its definition of the “Cleantech” industry, which has resulted in increased deal volumes and aggregated deal values.

PE, VC and DC value up against decline in volume

The value of private equity, venture capital and development capital (PE, VC and DC) investment in cleantech companies advanced significantly in January, despite a 12 per cent decrease by volume. In total there were 15 deals worth a combined USD 1,597 million in the month under review, compared to 17 deals worth USD 206 million in December, suggesting higher individual deal valuations for the four-week period.

A similar result is seen on a 12-month comparison as value jumped while volume declined from USD 236 million invested across 34 deals in January 2016.

PE, VC and DC investment in January was one of the highest recorded for the 12-months under review and was supported by one deal that represented 58 per cent of total value. November 2016 (USD 1,758 million), August 2016 (USD 2,513 million) and June 2016 (USD 5,476 million) were the only months to record a higher aggregate value.

Private equity, venture capital and development capital deals by volume and value

Announced date	No of deals	Total deal value (mil USD)
Jan-17	15	1,597
Dec-16	17	206
Nov-16	21	1,758
Oct-16	29	927
Sep-16	22	280
Aug-16	37	2,513
Jul-16	21	165
Jun-16	17	5,476
May-16	25	1,593
Apr-16	22	876
Mar-16	31	499
Feb-16	24	583
Jan-16	34	236



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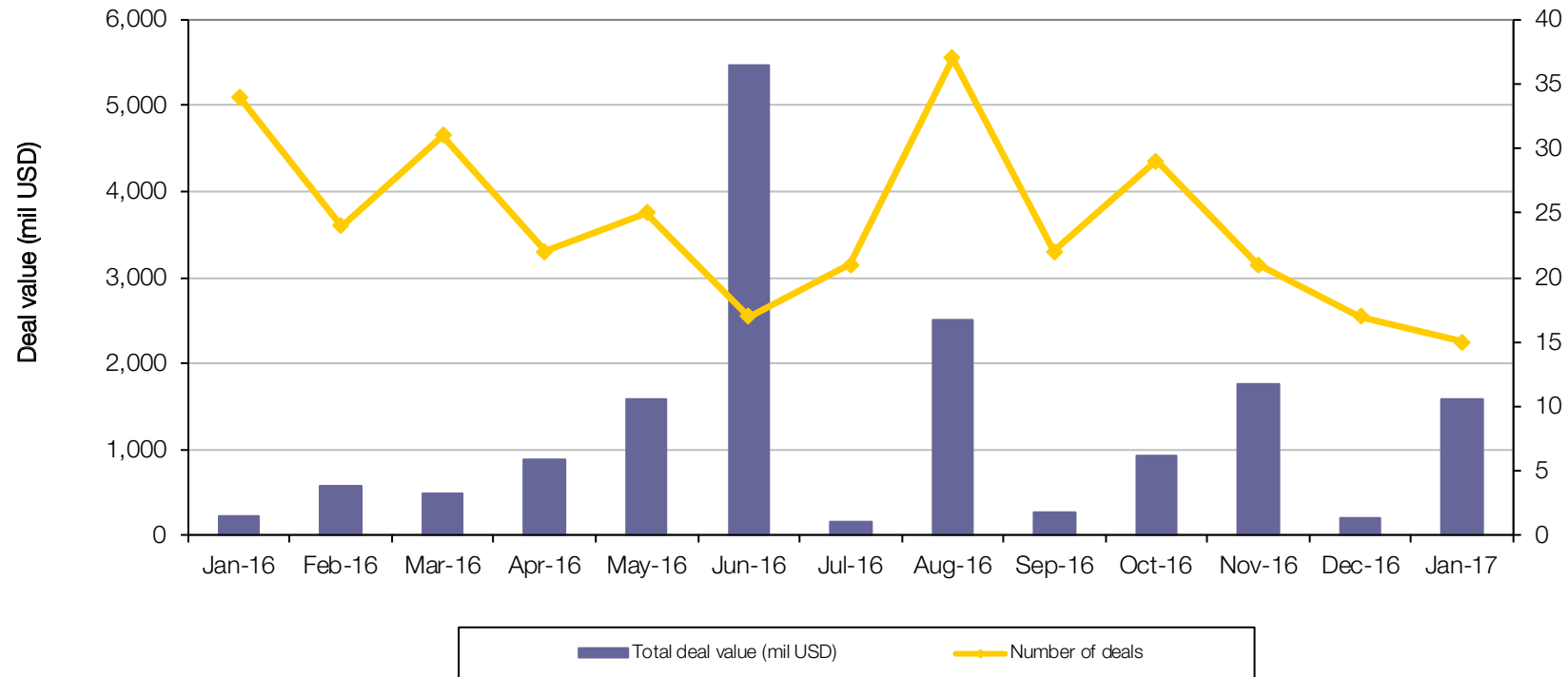
m&a research catalyst



Combining deal and company data



Private equity, venture capital and development capital deals by volume and value





US-based hydroelectricity generation operator targeted in largest deal

The largest PE, VC and DC deal targeting global cleantech companies in January involved FirstEnergy selling four natural gas generating plants and a hydroelectric power station in Pennsylvania and Virginia to LS Power Equity Partners' subsidiary Aspen Generating for USD 925 million. This deal accounts for 58 per cent of the month's total value (USD 1,597 million).

There was one other PE, VC and DC deal worth more than USD 100 million in January. That deal involved EFG-Hermes Private Equity buying TerraForm UK 2 Intermediate Holdings and TerraForm UK 3 Intermediate Holding from TerraForm Power's SunEdison Yieldco for USD 584 million. This deal accounted for a further 37 per cent of the month's total value and was worth significantly more than the third largest deal as Macquarie Capital Group, via its subsidiary M Pureum, paid USD 52 million to acquire South Korean food waste treatment service provider Re-Clean.

Eight of the 15 deals announced in January took the form of minority stake investments and funding rounds, with six deals being institutional buy-outs, including the three largest deals.

Investors in the top transactions included Angeleno Group, Invitalia Ventures and AHL Venture Partners.

US companies lead by volume and value

PE, VC and DC buyers favoured cleantech companies based in the US in January as the country was targeted in four deals worth a combined USD 939 million. However, it is worth noting almost this entire amount was attributable to Aspen buying FirstEnergy's assets for USD 925 million. In a similar pattern companies based in the UK were targeted in two deals worth USD 584 million, all of which is attributable to the TerraForm UK and EFG-Hermes deal.

In terms of value South Korea was the third most valuable cleantech country with USD 52 million, followed by China with USD 6 million and Poland, France and Kenya, which received investments of USD 5 million each.

There were 11 different countries targeted in January, with only the US and the UK targeted in more than one deal. Other countries include Germany, Singapore, Kenya and Spain.



Private equity, venture capital and development capital deals by value

	Deal value (mil USD)	Deal type	Target	Target business description	Target country	General Partner/Fund Manager	Deal status
1.	925	IBO 59% and 100%	FirstEnergy Generation LLC, Allegheny Energy Supply Company LLC's 4 natural gas generating plants in Pennsylvania; FirstEnergy Generation LLC, Allegheny Generating Company's interests in an undisclosed Virginia hydroelectric power station	Hydroelectric power station operator; Hydroelectric power station operator	US; US	LS Power Equity Partners	Pending
2.	584	IBO 100%	TerraForm UK 3 Intermediate Holdings Ltd; TerraForm UK 2 Intermediate Holdings Ltd	Solar electrical energy farms operator; Solar electrical energy farms operator holding company	GB; GB	EFG-Hermes Private Equity	Announced
3.	52	IBO 95%	Re-Clean Co., Ltd	Food waste treatment services	KR	Macquarie Capital Group Ltd	Completed
4.	7	Minority stake	EdeniQ Inc.	Biofuels manufacturer, Cellulosic technologies for biofuel production developer, Ethanol manufacturer	US	Flint Hills Resources LLC; Angeleno Group LLC; Cyrus Capital Partners LP; I2BF LLC	Completed
5.	6	Minority stake	Wildcat Discovery Technologies Inc.	Clean energy sector advanced materials research and development services	US		Completed
6.	6	Capital Increase 8%	Kairui Environmental Protection Technology Co., Ltd	Energy-saving and environmental technology development services, Resin catalysts manufacturer	CN	Zhuhai Qianheng Investment Management Co., Ltd	Pending
7.	5	IBO 19%	Orzel Bialy SA	Refined lead production services, Waste lead-acid batteries and accumulators recycling services	PL	Pinebridge Investments LLC	Announced
8.	5	Minority stake	Cozynergy SAS	Energy efficiency home renovation services	FR	BTP Capital Investissement SCR; Demeter Partners; Credit Mutuel Arkea SA; Le Comptoir de l'Innovation SASU; IRDI-ICSO	Completed
9.	5	Minority stake	PowerGen Renewable Energy East Africa Ltd	Solar-based renewable energy systems provider	KE	Stichting DOB Equity; AHL Venture Partners	Completed
10.	2	Minority stake	40South Energy Srl	Wave and tidal energy converters manufacturer, Wave energy production services	IT	Enel Green Power SpA; Invitalia Ventures SGR SpA	Completed



Private equity, venture capital and development capital deals by value (cont'd)

	Deal value (mil USD)	Deal type	Target	Target business description	Target country	General Partner/Fund Manager	Deal status
11.	1	Minority stake	Koolbridge Solar Inc.	Solar energy products manufacturer	US		Completed
12.	1	Minority stake 20%	Hydrokemos SL	Water treatment equipment manufacturer	ES	Victoria Venture Capital Sociedad de Capital Riesgo Pyme SA	Completed
13.	n.a.	IBO majority stake	JPL Holdings Pte Ltd	Wind power generator holding company	SG	Abraaj Capital Ltd	Announced
14.	n.a.	IBO 100%	JUWI Energieprojekte GmbH's Gollenberg, Germany based wind farm	Wind Farm	DE	CEE Holding GmbH & Co KGaA	Announced
15.	n.a.	Minority stake 25%	Hywind (Scotland) Ltd	Wind energy production services	GB	Masdar Capital	Completed



Target countries by volume - private equity, venture capital and development capital deals

Target country	Jan-16	Dec-16	Jan-17
US	12	4	4
UK	4	1	2
France	4	0	1
Spain	0	1	1
Italy	0	0	1
China	3	2	1
Germany	1	1	1
Singapore	0	0	1
Kenya	0	0	1
Poland	0	0	1
South Korea	0	0	1

Target countries by value - private equity, venture capital and development capital deals

Target country	Jan-16 (mil USD)	Dec-16 (mil USD)	Jan-17 (mil USD)
US	119	117	939
UK	6	0	584
South Korea	0	0	52
China	85	58	6
Poland	0	0	5
France	11	0	5
Kenya	0	0	5
Italy	0	0	2
Spain	0	3	1



Private equity, venture capital and development capital investors

	Company name	Number of deals	Number with consideration	Total deal value (mil USD)	Average deal value (mil USD)
1.	LS Power Equity Partners	1	1	925	925
2.	EFG-Hermes Private Equity	1	1	584	584
3.	Macquarie Capital Group Ltd	1	1	52	52
4.	Leeeum Private Equity Co., Ltd	1	1	52	52
5.	Corstone Asia Co., Ltd	1	1	52	52
6.	Angeleno Group LLC	1	1	7	7
7.	I2BF LLC	1	1	7	7
8.	Flint Hills Resources LLC	1	1	7	7
9.	Cyrus Capital Partners LP	1	1	7	7
10.	Zhuhai Qianheng Investment Management Co., Ltd	1	1	6	6
11.	Pinebridge Investments LLC	1	1	5	5
12.	Le Comptoir de l'Innovation SASU	1	1	5	5
13.	BTP Capital Investissement SCR	1	1	5	5
14.	IRDI-ICSO	1	1	5	5
15.	Demeter Partners	1	1	5	5
16.	Credit Mutuel Arkea SA	1	1	5	5
17.	Stichting DOB Equity	1	1	5	5
18.	AHL Venture Partners	1	1	5	5
19.	Invitalia Ventures SGR SpA	1	1	2	2
20.	Victoria Venture Capital Sociedad de Capital Riesgo Pyme SA	1	1	1	1



M&A value declines for second consecutive month

Both the volume and value of mergers and acquisitions (M&A) targeting cleantech companies declined in January to 249 deals worth USD 8,946 million. Value decreased 10 per cent against a 4 per cent decrease by volume from 260 deals worth USD 9,931 million, representing the second consecutive decline month-on-month (November 2016: 269 deals worth USD 12,084 million).

The decline by value was more evident year-on-year, falling 19 per cent from USD 10,985 million, while volume fell at a slower rate of 2 per cent from 253 deals, in January 2015.

Despite the decline in the month under review, one deal worth more than USD 1,000 million supported M&A value and involved Canadian natural gas gathering company AltaGas raising USD 1,614 million in a public offering of subscription receipts.

Four deals were worth over USD 500 million in January. These included UK Green Investment Bank buying a 75 per cent stake in UK-based wind farm operator Lincs Wind Farm for USD 888 million.

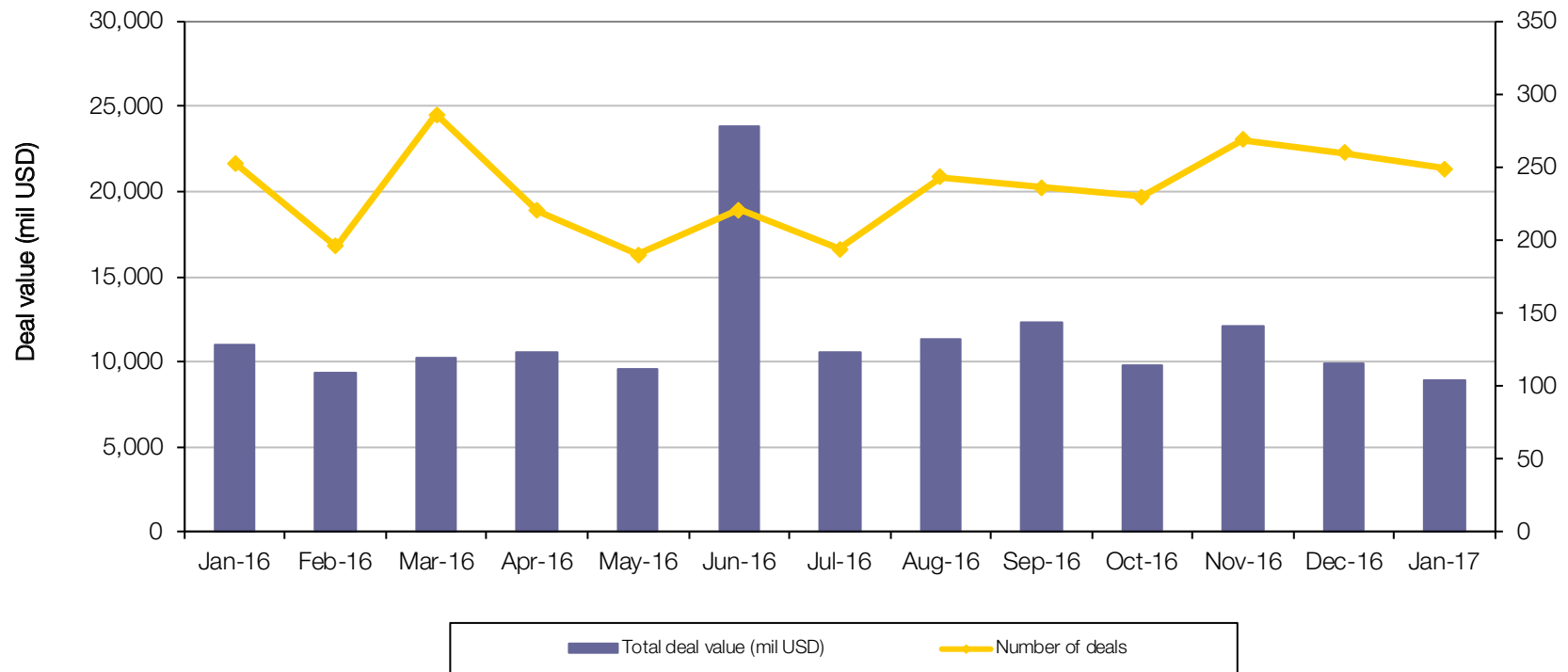
Having been targeted in the largest deal by value it comes as no surprise Canada attracted the most investment in January with USD 2,018 million; however, China was on its heels with USD 2,015 million and was also the most prolific target in terms of M&A with 73 deals, more than double second placed Germany (30 deals).

Deals by volume and value

Announced date	No of deals	Total deal value (mil USD)
Jan-17	249	8,946
Dec-16	260	9,931
Nov-16	269	12,084
Oct-16	230	9,846
Sep-16	236	12,353
Aug-16	243	11,355
Jul-16	194	10,576
Jun-16	221	23,816
May-16	190	9,547
Apr-16	220	10,571
Mar-16	286	10,191
Feb-16	196	9,356
Jan-16	253	10,985



Deals by volume and value





Top 20 deals by value

	Deal value (mil USD)	Deal type	Target	Target business description	Target country	Acquiror	Deal status
1.	1,614	Capital Increase 27%	AltaGas Ltd	Coal-fired base-load generation services, Natural gas gathering services, Natural gas liquids (NGLs) storage services, Natural gas liquids (NGLs) transmission services, Natural gas processing services, Natural gas transportation services, Power plant construction services, Wind power generation services	CA		Completed
2.	925	IBO 59% and 100%	FirstEnergy Generation LLC, Allegheny Energy Supply Company LLC's 4 natural gas generating plants in Pennsylvania; FirstEnergy Generation LLC, Allegheny Generating Company's interests in an undisclosed Virginia hydroelectric power station	Hydroelectric power station operator; Hydroelectric power station operator	US; US	Aspen Generating LLC	Pending
3.	888	Acquisition 75%	Lincs Wind Farm Ltd	Wind farm operator	GB	UK Green Investment Bank plc	Announced
4.	584	IBO 100%	TerraForm UK 3 Intermediate Holdings Ltd; TerraForm UK 2 Intermediate Holdings Ltd	Solar electrical energy farms operator; Solar electrical energy farms operator holding company	GB; GB	Vortex Solar UK Ltd	Announced
5.	430	Capital Increase 15%	GEM Co., Ltd	Environmental composite wood board manufacturer, Recyclable plastic tray manufacturer, Used batteries, electronic wastes and other waste collection services, Used batteries, electronic wastes and other waste recycling services	CN	Investors; Mr Xu Kaihua	Pending
6.	310	Minority stake 5%	IOI Corporation Bhd	Food fats manufacturing holding company, Golf courses operating holding company, Hotel operating holding company, Oleo-chemical manufacturing holding company, Palm oil and rubber plantation operating holding company, Palm oil manufacturing holding company, Palm oil products trading service holding company, Palm oil refineries operating holding company, Property developing holding company, Property investment service holding company, Renewable energy generation service holding company	MY	Amanahraya Trustees Bhd	Completed



Top 20 deals by value (cont'd)

	Deal value (mil USD)	Deal type	Target	Target business description	Target country	Acquiror	Deal status
7.	307	Capital Increase 5%	AltaGas Ltd	Coal-fired base-load generation services, Natural gas gathering services, Natural gas liquids (NGLs) storage services, Natural gas liquids (NGLs) transmission services, Natural gas processing services, Natural gas transportation services, Power plant construction services, Wind power generation services	CA	The Ontario Municipal Employees Retirement System	Completed
8.	241	Capital Increase 9%	Summit Materials Inc.	Asphalt and concrete paving services holding company, Cement manufacturer holding company, Construction services holding company, Quarry mining and processing services holding company, Ready-mix concrete manufacturer holding company, Recycling and waste management services holding company	US		Completed
9.	241	Capital Increase	Summit Materials Holdings LP	Asphalt and concrete paving services holding company, Cement manufacturer holding company, Construction services holding company, Quarry mining and processing services holding company, Ready-mix concrete manufacturer holding company, Recycling and waste management services holding company	US	Summit Materials Inc.	Announced
10.	197	Minority stake increased from 8% to 15%	Dongjiang Environmental Co., Ltd	Industrial hazardous waste collection and management services, Industrial hazardous waste treatment services	CN	Guangdong Rising Assets Management Co., Ltd	Pending
11.	192	Acquisition 64%	Cetrel SA	Environmental waste treatment services provider, Water supply and treatment services provider	BR	Braskem SA	Announced
12.	182	Joint venture 100%	Chongqing Shenhua Thin Film Solar Energy Technology Co., Ltd	Solar cells and components manufacturer	CN	Shanghai Electric Group Co., Ltd; Shenzhen Laibao Hi-Tech Co., Ltd; China Energy Conservation Co., Ltd; National Institute of Clean-and-Low-Carbon Energy; Chongqing Liangjiang New Area Strategic Emerging Industry Equity Investment Fund Management Co., Ltd	Completed



Top 20 deals by value (cont'd)

	Deal value (mil USD)	Deal type	Target	Target business description	Target country	Acquiror	Deal status
13.	154	Capital increase acquired 13%, to hold 46%	SIIC Environment Holdings Ltd	Solid waste incineration services holding company, Wastewater treatment services holding company, Water treatment services holding company	SG	Shanghai Industrial Holdings Ltd	Pending
14.	134	Capital Increase 27%	GS E&R Corporation	Oil and gas exploration services, Oil and gas stations operator, Power generation services, Solar power generation services, Warehousing and storage facilities operator, Wind power generation services	KR		Announced
15.	133	Minority stake 1%	DONG Energy A/S	Bioenergy and thermal energy producer, Energy distributor, Oil and gas exploration services, Wind energy producer	DK		Completed
16.	116	Minority stake 8%	Eging Photovoltaic Technology Co., Ltd	Solar cell manufacturer	CN	Shenzhen Qinchengda Investment Management Co., Ltd	Announced
17.	115	Minority stake 3%	NRG Energy Inc.	Electricity and fuel trading services, Electricity supplier, Fossil fuel electricity producer, Nuclear energy electricity producer, Power generation facilities construction services, Solar energy electricity producer, Thermal energy electricity producer, Wind energy electricity producer	US	Bluescape Energy Partners LLC	Completed
18.	112	Acquisition 100%	UKA Umweltgerechte Kraftanlagen zur Windnutzung GmbH & Co. KG's Duben-Sud wind park; UKA Umweltgerechte Kraftanlagen zur Windnutzung GmbH & Co. KG's Karche II wind park	Wind power generation services; Wind power generation services	DE; DE	Commerz Real AG	Completed
19.	97	Minority stake 5%	Jiangsu Akcome Science & Technology Co., Ltd	Aluminum ground support manufacturer, Photovoltaic power plants construction services, Photovoltaic power plants operation services, Solar cell used aluminum frame manufacturer	CN		Completed
20.	95	Joint venture 100%	Undisclosed solar power plant investment services joint venture in China	Solar power plants investment services	CN	Taiwan Life Insurance Co., Ltd; Undisclosed joint venture partners	Announced



Target countries by volume

Target country	Jan-16	Dec-16	Jan-17
China	50	66	73
Germany	19	41	30
US	25	15	25
Spain	18	16	14
UK	17	8	12
Thailand	7	7	8
Canada	6	5	8
South Korea	8	15	7
Italy	5	5	7
France	7	4	6
Australia	7	6	6
Sweden	9	11	4
Cayman Islands	5	2	4
India	14	5	4
Singapore	4	3	4
Denmark	0	2	4
Philippines	1	1	4
Norway	1	4	3
Taiwan	2	0	3
Malaysia	4	5	3

Target countries by value

Target country	Jan-16 (mil USD)	Dec-16 (mil USD)	Jan-17 (mil USD)
Canada	473	299	2,018
China	1,974	1,828	2,015
US	6,579	385	1,745
UK	120	413	1,491
Malaysia	4	3	339
South Korea	138	247	214
Germany	235	396	205
Brazil	0	0	192
Singapore	17	16	184
Denmark	0	24	133
Taiwan	13	0	69
Spain	352	347	55
Philippines	0	3,000	48
Italy	202	57	46
Sri Lanka	0	5	29
France	120	15	26
Cayman Islands	150	207	21
Portugal	0	57	18
Australia	67	10	17
Thailand	69	26	15



IPOs by volume and value

Announced date	No of deals	Total deal value (mil USD)
Jan-17	3	48
Dec-16	1	16
Nov-16	2	0
Oct-16	1	66
Sep-16	5	518
Aug-16	3	46
Jul-16	3	37
Jun-16	9	1,408
May-16	2	2,790
Apr-16	3	199
Mar-16	3	510
Feb-16	1	18
Jan-16	5	251



January IPOs

Target name	Zhejiang HRV Electric Co., Ltd	Renova Inc.	Gia Lai Hydropower Joint Stock Company
Deal value (mil USD)	40	8	n.a.
Deal type	Planned IPO 25% on Shenzhen Stock Exchange ChiNext Board	Planned IPO 7% on Tokyo Mother Board	Planned IPO on HoChiMinh Stock Exchange
Target country	CN	JP	VN
Target business	Wind power converters manufacturer	Environment consulting services, Environment research services, Plastic recycling services	Hydropower generation services, Power plant construction services
Announced date	13/01/2017	20/01/2017	16/01/2017
Deal status	Pending	Pending	Announced

Notes to editors

The search criteria uses a key word system based on the targets' business description

The key words and phrases are: "alternative energy" OR "alternative power" OR "biomass" OR "bioenergy" OR "bio energy" OR "bio-energy" OR "biofuel" OR "fuel cell" OR "hydrogen" OR "photovoltaic" OR "renewable energy" OR "reusable energy" OR "re-usable energy" OR "solar" OR "waste to energy" OR "wind power" OR "wind farm" OR "wave power" OR "geothermal" OR "geothermal" OR "hydropower" OR "hydro-power" OR "bio-diesel" OR "biodiesel" OR "energy resource management" OR "electric vehicle" OR "water purification" OR "intelligent power" OR "air quality" OR "energy efficiency" OR "thin film energy" OR "thin-film energy" OR "energy efficiency software" OR "energy storage" OR "battery power" OR "water treatment" OR "waste management" OR "biogas" OR "anaerobic digestion" OR "wastewater" OR "green construction" OR "green buildings" OR "smart meter" OR "smart grid" OR "energy monitoring" OR "marine energy" OR "solar thermal" OR "algae" OR "green energy" OR "cleantech" OR "clean tech" OR "environmental technology" OR "greentech" OR "charging station" OR "green infrastructure" OR "clean energy" OR "tidal power" OR "tidal energy" OR "biodegradable" OR "alternative fuel" OR "landfill" OR "wind electric power generation" OR "wind power generation" OR "wind turbine" OR "desalination" OR "membrane bioreactor" OR "energy storage" OR "energy saving" OR "water resources surveying" OR "water resources mapping" OR "photovoltaic power" OR "hydroelectric power" OR "waste electric power generation" OR "sewage treatment" OR "green industry" OR "electric vehicle maintenance" OR "water treatment" OR "environmental protection technology" OR "waste treatment" OR "solar power project construction" OR "solar power" OR "solar electric power" OR "Water quality analyser" OR "Water quality analyzer" OR "Air pollution control equipment" OR "Air pollution control technology" OR "solar energy generation" OR "waste to energy" OR "waste-to-energy" OR "recycling" OR "hydro electric power" OR "hydro-electric power" OR "wind energy" OR "solar photovoltaic energy generation" OR "wind park"

Activity is based on the activity of the target company

Deal status is announced, completed, pending or unconditional