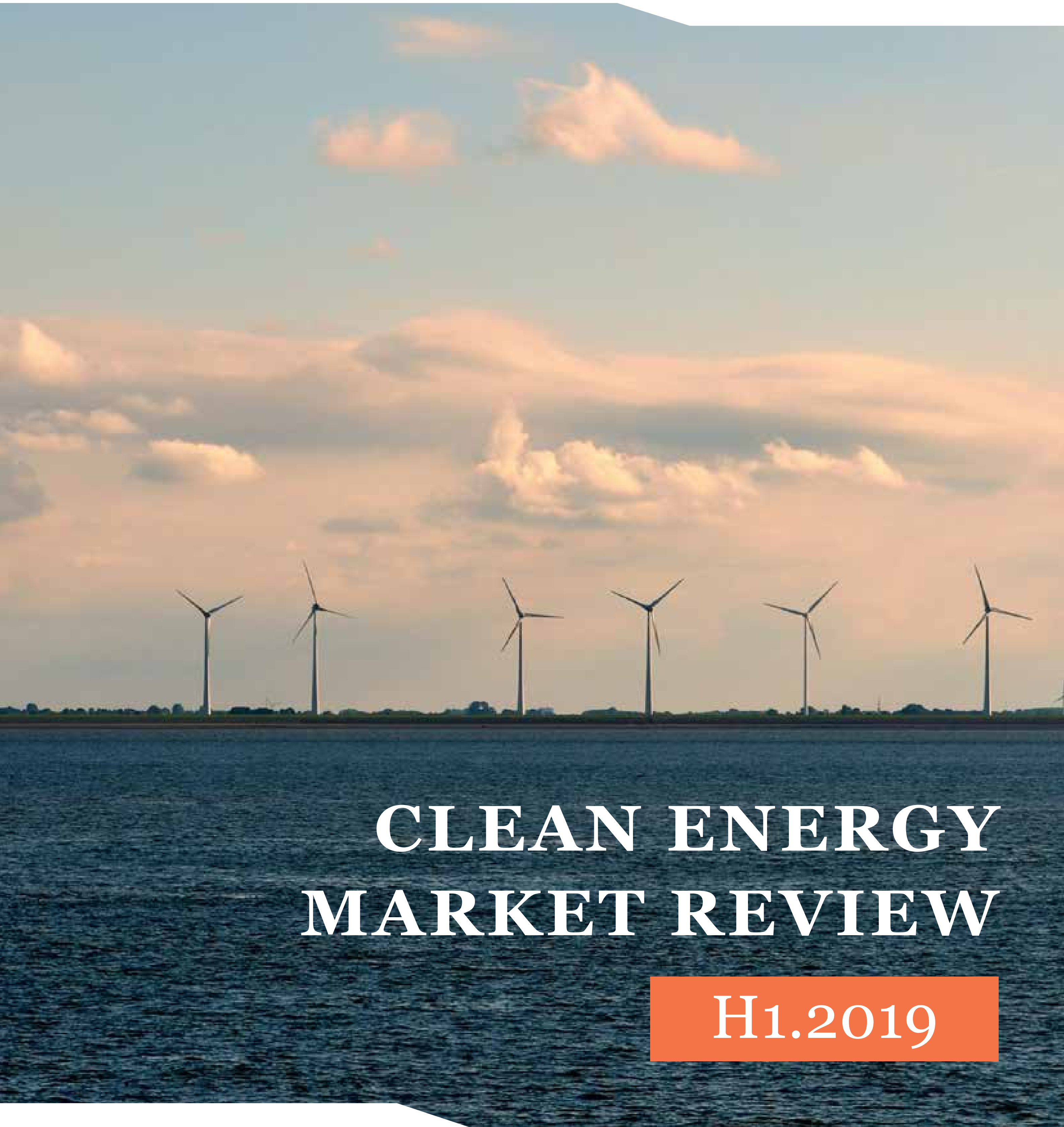
clean energy pipeline



CLEAN ENERGY MARKET REVIEW

H1.2019

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CLEAN ENERGY MARKET REVIEW H1.2019

This Clean Energy Market Review, sponsored by global law firm Taylor Wessing, analyses project finance, mergers and acquisitions, and green bonds deal activity during the first half of 2019 (H1 19).

Q&A WITH CARSTEN BARTHOLL

Head of the International Industry Group Energy at global law firm Taylor Wessing

What has been some of the biggest clean energy financing market trends in 2019?

Our practice has witnessed a much wider global spread of financing non-subsidised/fully merchant projects.

With the slowdown of newly installed capacity, particularly in Germany, investors and financiers in recent years have expanded their geographical activities significantly both in Europe and further abroad.

In Europe, increased activity can be seen mostly in France, Scandinavia and Spain. In addition, the southeast pacific region has seen a lot of activity.

Moreover, with solar PV getting closer and closer to (or reaching) grid parity, we have seen many PPA or otherwise merchant-based projects being financed.

Given the higher risk profile of such projects at present, there are some interesting hybrid financing structures being developed, all of which continues to prove the competitive, economic viability of renewable energy projects without the need for state-backed remuneration.

Is European greenfield renewable energy financing still an attractive proposition?

There are several markets in Asia Pacific which are gaining more and more prominence as an attractive destination for renewables investments, but Western Europe remains an important market as well.

However, greenfield FDI has dropped in Europe mainly due to certain policy constrictions, especially when considering the decline in the German wind energy market, which is owing to regulatory mistakes embodied in the currently applicable feed-in law in Germany – though we expect this relatively subdued period to pass.

Carsten Bartholl

What are some of the biggest challenges facing the renewable energy project market?

For Germany, it is the unfavourable situation in the onshore wind sector and the corresponding drop in financing of wind energy projects.

The new capacity currently being added to the market is not enough to meet the German federal government's target of 65% renewables in the energy mix by 2030.

Likewise, the possibility of regulatory changes in practically every jurisdiction may rapidly change the financing and investment mood and environment, but that applies to other forms of investments as well.

With renewable energy projects becoming more and more independent from subsidy mechanisms, these challenges may even become less important in the nearer future.

Is Europe's secondary clean energy market still as competitive as it has been over the past four/five years?

Yes and in our opinion the secondary market is still increasing. This can be seen from the number and size of several substantial portfolio deals on the market in 2018/2019. The reasons are clear: there are a number of projects owned by funds that may wish to close their investments and put them on the market, where the demand is still remains very high.

Furthermore, the acquisition and financing of existing projects makes it easier from a commercial, and often legal, perspective as a proven record of both energy production and income.

What have been Taylor Wessing's major achievements in the global clean energy finance sector in 2018/2019 to date?

Over the past year, I believe we have succeeded in strengthening our clean project financing and transaction advisory activities in the renewable energy sector and expanding respective cross-border project advisory activities, in particular regarding onshore wind and solar technologies.

In 2017/2018, Taylor Wessing advised and accompanied clean energy projects in various development phases with a volume of more than 1,000 MW.

We have now more than doubled our project volume to over 2,500 MW in 2018/2019.

Also to note, our international practice was further bolstered with the recent addition of an experienced infrastructure finance team for our office in Paris.

TaylorWessing

Global law firm Taylor Wessing LLP is a leading and trusted adviser when it comes to the financing of renewable energy and sustainability projects across Europe and several international emerging market jurisdictions.

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GLOBAL PROJECT FINANCE AMOUNTS TO $93B IN H1.19

Global renewable energy project financing declined by 23% in the first half of 2019 compared with the same corresponding period last year.

New investment in clean energy projects declined in the consolidated markets of Europe, North America, and Latin & Central as a result of subdued deal activity, while project financing volumes surged across Africa & the Middle East and Asia Pacific.

Global clean energy project financing investment amounted to $92.7 billion in H1.19, representing a 23% decrease in investment from H1.18.

- Asia Pacific - $53.2 billion [+0.5%]
- Europe - $16.7 billion [-21.3%]
- North America - $11.1 billion [-65%]
- Africa & Middle East - $7.6 billion [+61%]
- Latin & Central America - $3.9 billion [+62%]

China increased its overall financing volume by 76% to invest a substantial $42.7 billion in clean energy projects over the first six months of the year. The Asian powerhouse emerged as the largest international market for both solar [$8.4 billion] and wind [$33.4 billion] in H1.19.

Two major offshore wind deals closed in the Asia Pacific market in H1.19, involving the 640 MW Yunlin offshore wind farm in Taiwan and the 500 MW Shanwei Houhu in the Guangdong province, which are the second and fourth largest project financing transactions so far this year, respectively.

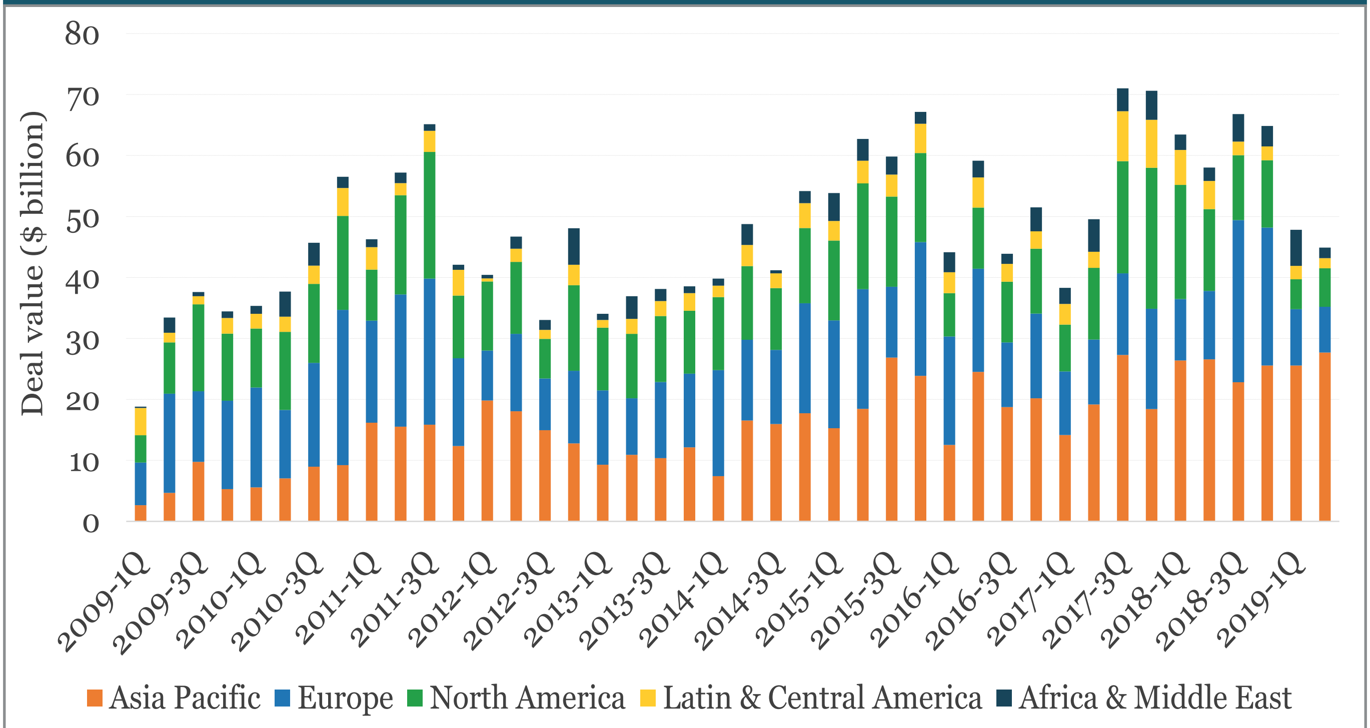
Yunlin is the currently largest offshore wind project to be financed in Asia Pacific and attracted the attention of some of the world's most notable lenders and developers.

Yunlin is owned by wpd (73%) and a Sojitz-led consortium (27%), which also includes The Chugoku Electric Power Co. Inc., Chudenko Corporation, Shikoku Electric Power Co. Inc. and JXTG Nippon Oil & Energy Corporation.

There were 19 banks and three export credit agencies (EKF, Euler Hermes, and Atradius) that came on board to close the NT$94 billion (€2.7 billion) financing deal.

The four Taiwanese banks in the syndicate comprised: Cathay United Bank, CTBC Bank, E.SUN Bank, Taipei Fubon Commercial Bank.

GLOBAL CLEAN ENERGY PROJECT FINANCE BY REGION - Q1.2009 TO Q2.2019



The 15 international lenders participating in the financing of Yulin involved: BNP Paribas, Commerzbank, Crédit Agricole Corporate and Investment Bank, DBS Bank, Deutsche Bank, ING Bank, KfW-IPEX Bank, Mizuho Bank, MUFG Bank, Natixis, OCBC, Siemens Bank, Société Générale, Standard Chartered Bank and Sumitomo Mitsui Banking Corporation.

The United States lost its top position to China after clean energy project investment moved in the opposite direction, after a 65% decline from $26.3 billion in H1.18 to just $9 billion in H1.19.

The slump in US project financing was particularly pronounced in the Wind sector which saw $10 billion fewer investments being made, $5.9 billion in H1.19, against the same period in 2018.

Solar project investment also more than halved to $3 billion in H1.19.

The United Kingdom positioned itself as the third largest global renewable energy project finance market in H1.2019.

Top 5 Project Finance Deals in H1.2019

Mohammed bin Rashid Al Maktoum Solar Park (Phase IV)
Country: UAE
Deal value: $4.20 billion
Sponsors: Shanghai Electric Group Co. Ltd; Acwa Power; Silk Road Fund

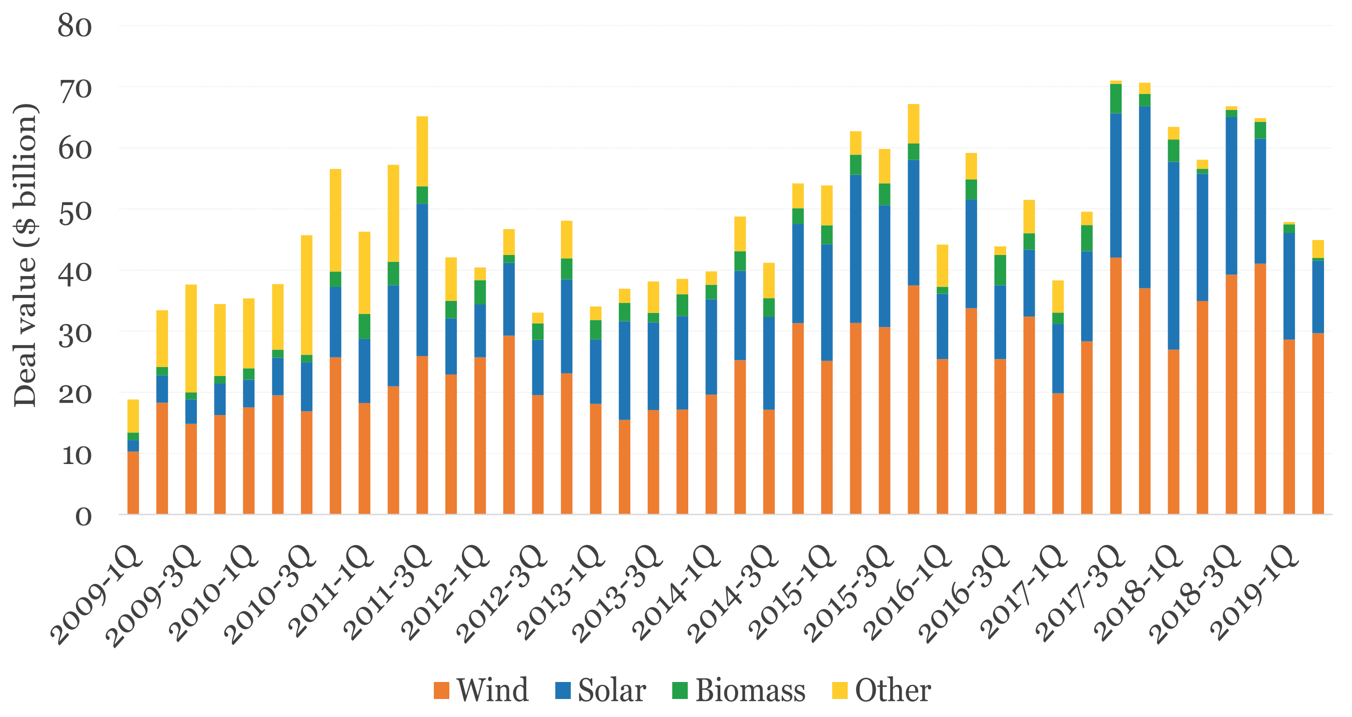
Yunlin Offshore Wind Farm (640MW)
Country: Taiwan
Deal value: $2.98 billion
Sponsors: WPD AG; Chugoku Electric Power Co. Inc.; Sojitz Corporation; JXTG Nippon Oil & Energy; Shikoku Electric Power Co. Inc.; Chudenko Corp

Beatrice Offshore Wind Farm (588MW)
Country: UK
Deal value: $2,560 million
Sponsors: SSE plc; Copenhagen Infrastructure Partner; Repsol Nuevas Energias UK

Shanweihouhu Offshore Wind Farm (500MW)
Country: China
Deal value: $1,245 million
Sponsor: Guangdong Baolihua New Energy

Pinnapuram Energy Storage Plant (1200MW)
Country: India
Deal value: $1,000 million
Sponsor: Greenko Group

GLOBAL CLEAN ENERGY PROJECT FINANCE BY SECTOR - Q1.2009 TO Q2.2019



The UK's total deal volume relating to clean energy project financing amounted to $5.4 billion.

Scottish renewables was a prime mover for the 76% increase in project financing from last year's corresponding figures in the UK, thanks to the successful refinancing of the Beatrice offshore wind farm and three separate onshore wind deals in Scotland.

Beatrice's refinancing was the third largest clean energy project financing transaction to take place in H1.19.

The 588 MW offshore wind farm was commissioned earlier in May and is currently owned by: SSE Renewables (40%), Copenhagen Infrastructure Partners (35%) and Red Rock Power Limited (25%).

There were 29 commercial and institutional lenders and 24 hedging banks involved in the refinancing consortium.

At a total cost of $4.2. billion, ACWA Power, Shanghai Electric Group, and the Silk Road Fund (the sponsors) were involved in the largest transaction of H1.19 after reaching financial close on Phase IV of the Mohammed bin Rashid Al Maktoum Solar Park in the United Arab Emirates.

This deal alone pushed the UAE up to fourth place in Clean Energy Pipeline's top five project finance countries in H1.19.

The fourth phase project holds notable accolades including the lowest CSP Levelised Cost of Electricity, at 7.3 US$ cents per kWh, and formerly the lowest Levelised Cost of Electricity for photovoltaic technology, at 2.4 US$ cents per kWh, which was surpassed in Portugal's solar auctions in August 2019.

The project will also feature the world's tallest solar tower (260m) and the largest thermal storage capacity (15 hours), allowing for 24/7 baseload electricity.

There were local, Chinese, and international banks participating in March to help finance fourth phase project.

The lenders included: Agricultural Bank of China, Bank of China, China Everbright Bank, China Minsheng Bank, Commercial Bank of Dubai, Commercial Bank International, Industrial and Commercial Bank of China, Natixis, Standard Chartered Bank and Union National Bank. In addition, Bank of China, Commercial Bank of Dubai, Emirates NBD Bank, First Abu Dhabi Bank, Mashreq bank and Union National Bank.

The 800 MW third phase solar PV project is scheduled to come online in 2020, while the 200 MW second and 13 MW first phases were commissioned in 2017 and 2013, respectively.

DEWA launched the Request for Qualification (RfQ) process earlier this month for the fifth phase of the project.

The fully-operational Mohammed bin Rashid Al Maktoum Solar Park is expected to have a total installed capacity of 5 GW by 2030.

Despite closing a number of prominent transactions, Australia's renewable energy project financing market still declined by just under 70% in the first half-year period of 2019.

Australian clean energy project's reaching financial close totalled $3.3 billion in H1.19, compared with the $10.7 billion worth of deals completed in H1.18.

CLEAN ENERGY M&A FALLS TO $35B IN H1.19

Global clean energy M&A transactions nearly halved in size as market activity significantly slowed in the first half of 2019.

Clean Energy Pipeline's Data and Research team reported a 40% decline in renewable energy M&A deal volume, which fell to $35 billion in H1 2019 when compared to the $69.4 billion of transactions recorded in the sector during H1 2018.

The slowdown in clean energy M&A financing was the result of a lower number of deals and a lack of big deals in 2019, especially where global offshore wind investment is concerned.

Europe experienced the largest decline in deal volume as clean energy M&A financing decreased by 62% to $17.9 billion.

M&A renewables deal financing in North America's clean energy sector also dipped by 30% to $10.5 billion.

Asia Pacific was the only global region in Clean Energy Pipeline's database where M&A clean energy financing actually increased, from $2.7 billion in H1.18 to just over $3 billion in H1.19.

Clean energy financing in the Africa & Middle East market also contracted by 59% to $94 billion in the period.

Deal activity remained stable in Latin & Central America with $3.3 billion worth of clean energy M&A financing transactions recorded in H1.19.

Despite the slowdown in overall M&A financing, the outlook for operational clean energy assets remains positive for the remainder of the year.

Clean Energy Pipeline's Data and Research team pointed to a 29% increase in the amount of effective renewable energy capacity that was acquired over the first six months of the year that is currently in operation.

Europe (4.9 GW) and North America (4.7 GW) continue to be the biggest markets for renewable energy projects in operation, though a number of countries in Asia Pacific (2.4 GW) are emerging as being particularly noteworthy for new investment.

This resulted in 13.7 GW of operational clean energy assets being acquired in H1.19, against 10.6 GW in H1.18.

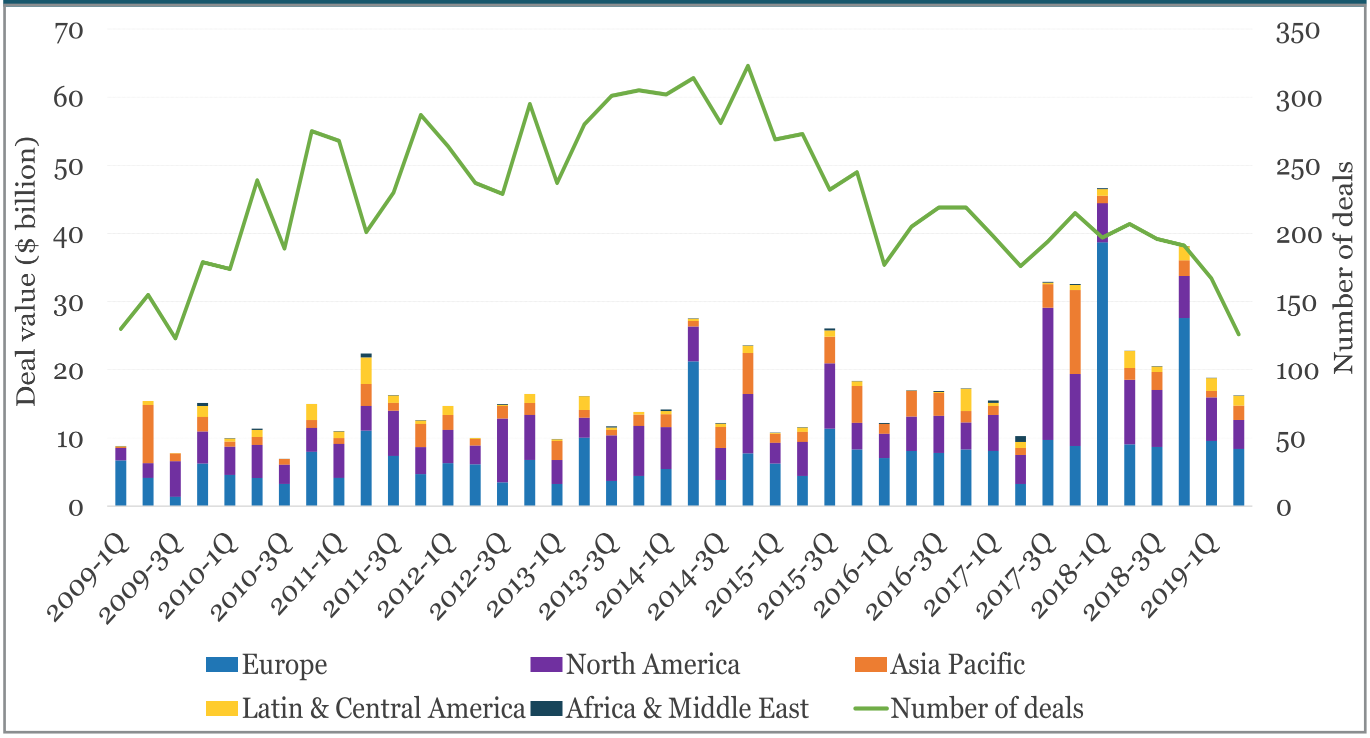
However, M&A financing related to clean energy assets under construction took a dramatic tumble to just 4.4 GW when compared with the 39.5 GW of assets acquired in the previous year's corresponding period.

The amount of pre-construction renewable energy capacity acquired in H1.19 also fell by 24% to 15.7 GW in H1.19.

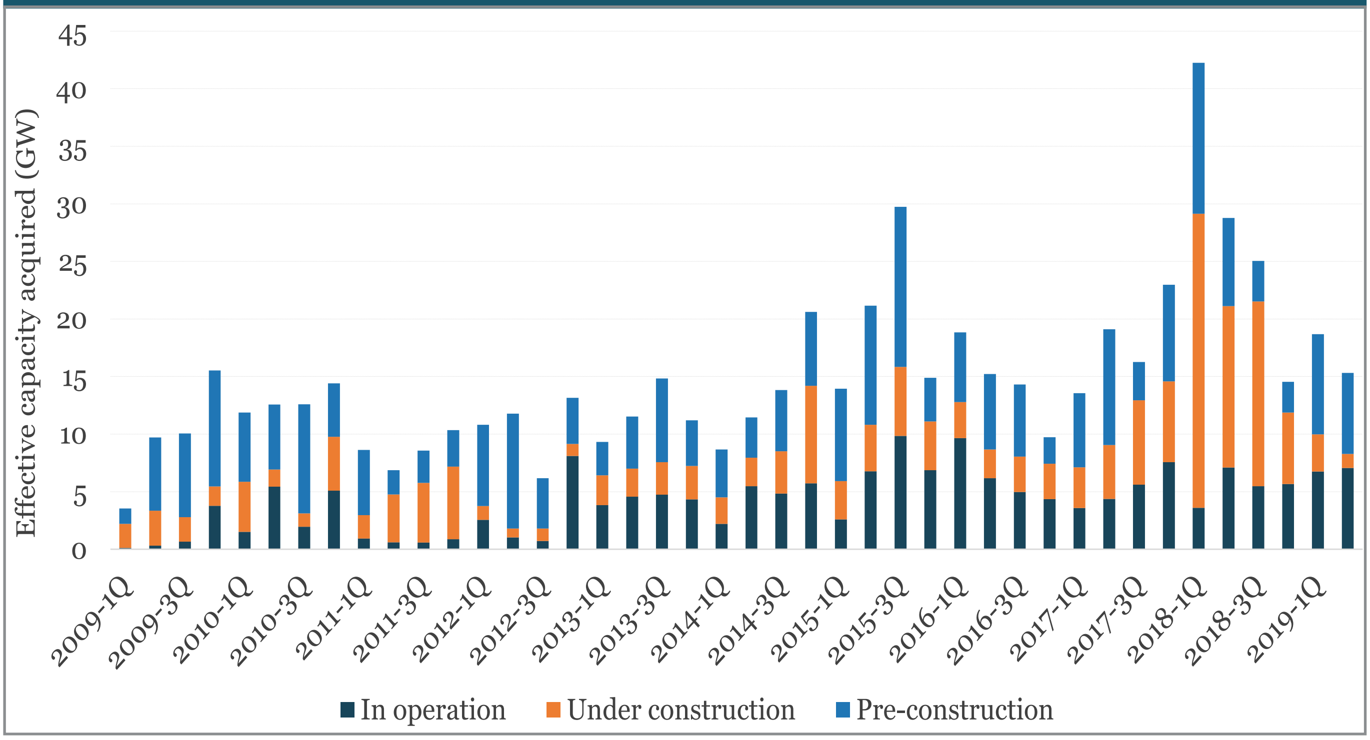
Top 5 M&A Deals in H1.2019

Stronelairg & Dunmaglass Wind Farms Country: UK Deal value: $832 million Acquirer: Greencoat UK Wind plc
Clean Earth Inc. Country: USA Deal value: $625 billion Acquirer: Harsco Corporation
Assurua Complex Wind Complex Country: Brazil Deal value: $492 million Acquirer: Omega Geracao
Alpiq Holding Country: Switzerland Deal value: $489 million Acquirers: EOS Holding / EBM
Jiangsu Shunfeng Photovoltaic Technology Country: China Deal value: $447 million Sponsor: Asia Pacific Resources Development Investment Ltd

GLOBAL CLEAN ENERGY M&A BY REGION - Q1.2009 TO Q2.2019



EFFECTIVE RENEWABLE ENERGY CAPACITY ACQUIRED - Q1.2009 TO Q2.2019



GREEN BOND MARKET TOTALS $111B IN 2019

Global green bond transactions amounted to $111.2 billion in H1.2019.

Sustained activity from corporates, banks and government bond issuers in the first six months of 2019 ensured that the financing solution for climate change projects continued to attract new and existing investors.

Clean Energy Pipeline's Research and Data team today reported a 20% increase in green bond investment against the half-year same period in 2018 and an even larger 83% gap from H1.17 as part of the transition to a climate resilient economy.

Support for the sustainability financing instrument grew as corporate green bond issuances totalled $51 billion [+18%] with government/municipality green bonds also expanding to $27.7 billion [+88%].

Investment/commercial banks slowed their activity by 12% from the same period last year to complete $21.1 billion green bond issuances, while development bank green bond deal activity remained level at $9.7 billion.

Green bond highlights

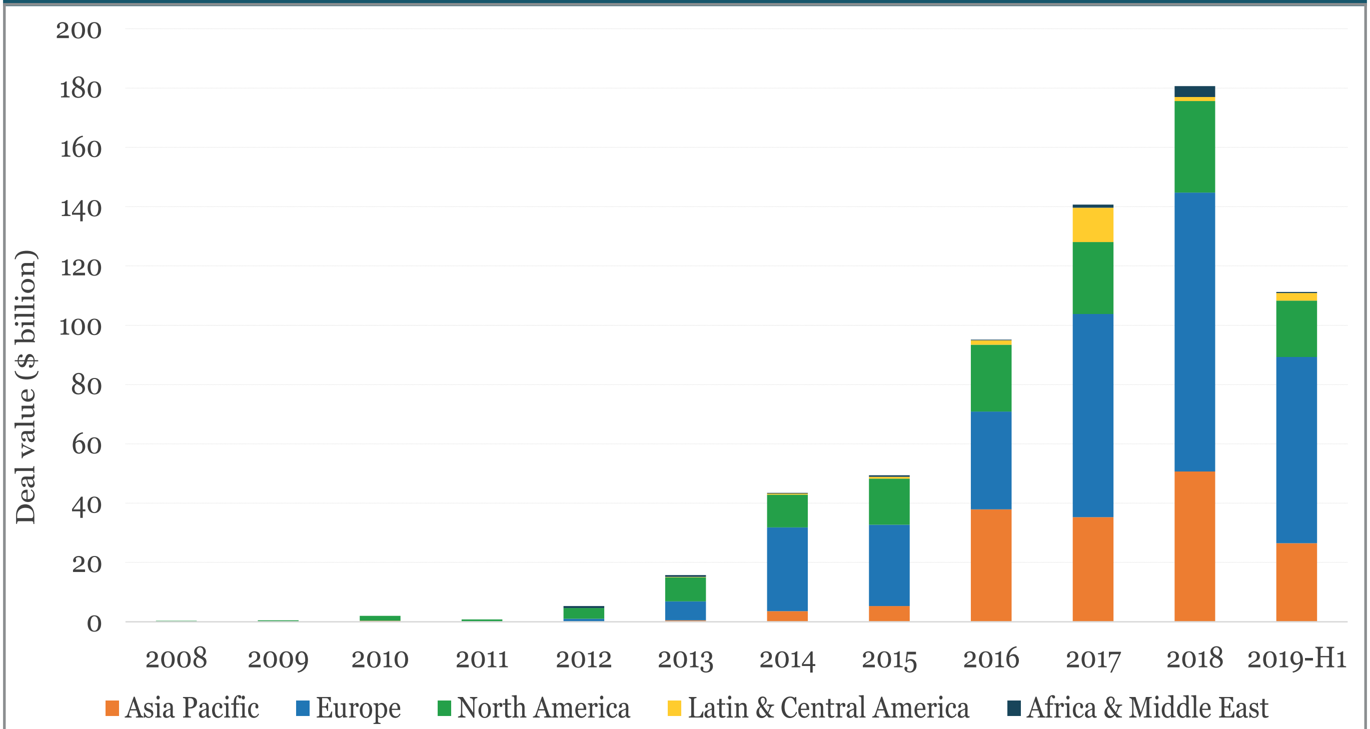
International markets worldwide view the low carbon transition as an exciting means to doing green business and shifting capital towards the sustainability agenda.

- Europe – $62.8 billion [+23.7%]
- Asia Pacific – $26.4 billion [+11.2%]
- North America – $18.9 billion [+24%]
- Latin & Central America – $2.5 billion [+422%]
- Africa & Middle East – $358 million [-78%]

There have been a number of notable green bond issuances made over 2019, with a number of corporates making new or re-renewed commitments in the market.

German bank KfW returned to Australia in July with a successful A$450 million ($315 million) 'Green Kangaroo' bond since its market debut four years earlier. This was followed up with a fresh Sterling-denominated bond in the same month totalling £650 million.

GREEN BOND ISSUANCES BY REGION - 2008 TO H1.2019



In June, German renewables developer BayWa successfully issued its first green bond with a total volume of €500 million, as Swedish energy company Vattenfall also launched its maiden green bond at €500 million to back its upcoming investments in green energy and climate-smart solutions.

ENGIE's own €1.5 billion green bond this year saw the French energy supplier become the largest corporate issuer of green bonds.

The Dutch State Treasury Agency (DSTA) announced in May the successful inaugural green bond issuance of the Netherlands where it raised €5.98 billion through a direct auction model.

The sovereign green bond was heavily oversubscribed as the book reached up to a stunning €21.2 billion in just over 90 minutes.

The World Bank (€1.5 billion), TenneT (€1.25 billion) and Ireland's Electricity Supply Board (€500 million) were among those in the mix.

Western Europe was the biggest market for green bonds in H1.19 as those EU countries supported $40.7 billion worth of green bond issuances.

Green bond deal activity in the U.S. market increased by 39% to $16 billion in the first half of 2019.

Markets in South East Asia also continued to embrace green bonds with $5 billion issuances, with the Rest of Asia accounting for $4.2 billion.

TOP 10 GREEN BOND ISSUING COUNTRIES - H1.2019

Country	H1. 2019 ($m)	Entire 2018 ($m)	Total to date ($m)
France	16,800	25,392	79,187
USA	16,067	26,239	118,043
Netherlands	11,797	11,362	39,701
China	10,408	27,076	87,256
Germany	7,226	10,314	51,489
Sweden	6,759	5,940	22,778
Spain	3,684	12,950	29,390
South Korea	3,104	2,678	7,482
Canada	2,890	4,513	16,972
Australia	2,399	5,027	12,398

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