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CLEANTECH PRIVATE EQUITY INVESTMENT HITS $10 BILLION

Global cleantech companies attracted over $10 billion in financing from venture capital and private equity (VC/PE) investors in 2018 amid renewed interest for climate mitigation technologies.

Investors significantly increased their financing activity last year across the spectrum of low carbon technologies, from electric vehicle manufacturers to solar panel suppliers to energy storage installers.

However, the latest renewables financing figures from UK-based news and data platform Clean Energy Pipeline are in stark contrast to the total investment volume recorded in 2017.

Clean energy companies across the world continue to rely on favourable policy measures, such as ones arising from legally binding environmental targets, to help grow and develop their businesses.

Climate mitigation is an issue that will not be resolved any time soon, despite the want and need from nearly every state jurisdiction, and the resulting effect has helped transform sustainability into a relatively stable, long-term investment.

But over the past few years, political uncertainties in some of the most mature markets across Europe and North America have effectively stalled cleantech financing, falling to its lowest point since the global economic crisis.

The market has rebounded since and newly published statistics show an over 120% increase in VC/PE clean investment in 2018 from the previous corresponding year.

According to Clean Energy Pipeline, $2.5 billion of investments were made to support the early growth stages of cleantech companies, which were made between the Series A to C funding rounds.

Approximately $4.8 billion of venture capital funding was invested in green companies in the later stages of growth, while $2.8 billion was set aside for development/seed capital.

Green transportation attracted the highest portion (46%) of VC/PE investment in 2018, particularly in China where domestic policies surrounding air pollution have underpinned a surge in activity from electric vehicle manufacturers.
Green transportation financing totalled $5.3 billion in 2018 and $3.9 billion of that amount was directed towards the Asia Pacific (APAC) market.

In fact, there were $1.3 billion of VC/PE deals alone involving Chinese eMobility companies.

In terms of total investment volume, solar technology companies proved to be the next most popular choice for VC/PE investors in 2018.

The future outlook for renewable energy in general is very positive.

The falling cost of clean energy generation technologies, particularly solar PV, means projects are now economically viable without any form of government remuneration and have largely reached grid parity against fossil fuels.

Constant innovation has pushed down the levelised cost of electricity and ultimately drove $2.1 billion of VC/PE investment into the solar sector last year.

Solar power projects can now be constructed on a subsidy-free basis, even in countries of low irradiation like the UK, where they are able to generate a fixed income for investors that is independent of state support – the point where all low carbon technology companies should be aiming for.

Early indications for VC/PE investment in 2019 already looks strong.

February has already witnessed transactions such as that of C-Capture, a UK start-up focused on carbon capture and storage which raised £3.5 million in an equity funding round led by investors Drax, IP Group and even BP Ventures, the VC arm of oil giant BP.

The business of climate mitigation will undoubtedly bring up new opportunities for VC/PE cleantech investors over the coming months and years.

Cleantech financing is still a relatively nascent market but the long-term outlook remains robust.
Clean energy corporate and project M&A financing has reached its highest peak after $128 billion of investments were made in 2018.

The record figure was derived from an influx of takeovers involving large renewables corporations, offshore wind farms and clean energy portfolios.

Specifically on the project side, investors acquired 110 GW of renewable energy assets.

This included just under 27 GW of pre-construction capacity being purchased last year, while investors also acquired 61 GW and 21 GW of under-construction and operational projects, respectively.

The top five global clean energy M&A markets in 2017 were: the United States, the UK, Germany, Australia and France.

Germany

Germany leapfrogged both the US and the UK to become the leading country for clean energy corporate and project M&A activity in 2018.

With $33 billion of deals recorded, data collated by Clean Energy Pipeline shows a 289% increase in overall financing from the previous corresponding year.

Germany ranked first after a spike in M&A activity in its wind sector, particularly in offshore wind, as investments amounted to a record $30 billion.

United States of America

The US was the both the leading project finance and M&A market in 2017.

However, America has lost its first place rankings to China in project financing and now Germany in M&A despite a robust number of transactions taking place in 2018.

US clean energy corporate and project M&A transactions totalled $24.9 billion last year, according to Clean Energy Pipeline, down from $34.9 billion in the preceding year.

One of positive takeaway in the US was the 73% increase in solar M&A financing to $10.3 billion last year.
United Kingdom

The UK has long been one of the most attractive second markets for renewable energy assets and investor interest remains considerably strong.

This was evidenced by a $5 billion increase in total investment volume, amounting to $15.4 billion in 2018.

Solar and onshore/offshore wind M&A financing made respectable gains last year.

Solar investment increased by just over 5% to $1.6 billion, though wind investment made an even bigger jump at 40% to $9.7 billion.

Ireland

Ireland was a surprising entry into Clean Energy Pipeline’s corporate and project M&A finance rankings.

The addition of Ireland was the result of Caisse de dépôt et placement du Québec and Brookfield Business Partners LP’s $13.2 billion takeover of Johnson Controls’ Power Solutions business in November 2018.

Switzerland

Switzerland rounds off the top five clean energy corporate and project M&A investment markets in 2018, totalling $7.3 billion.

Much like Ireland, Swiss M&A financing was bolstered by Hitachi Ltd.’s acquisition of ABB’s Power Grids business.

Another notable takeover was 3S Solar Plus AG’s acquisition of Meyer Burger’s Solar Systems division.
Clean energy project financing reached its highest ever annual level as the total investment volume peaked at $253 billion.

The five leading clean energy countries in 2018 were responsible for over half of all the investment made into renewables projects worldwide, amounting to $148 billion.

The top five global clean energy project financing markets in 2017 were: the US, China, Brazil, the UK, and Germany.

China

China ranked as Clean Energy Pipeline’s leading project finance market in 2018, overtaking the United States to the top spot.

The Asian powerhouse recorded $61.6 billion of project finance investment for the year, increasing its total investment volume by 45% over 2017’s figures.

Wind project investment was highest in China and totalled $44 billion, with solar financing reaching close to $14 billion.

Wind and solar investment increased by 71% and 23%, respectively.

United States of America

The $44.1 billion of clean energy project investments made in the US last year wasn’t enough to stop the market losing its leading position to China.

Wind investment in the US still went up by 63% to $28 billion and by 35% to $15.2 billion for large-scale solar projects.

Renewables project financing decreased by 5% year-over-year from 2017.

United Kingdom

A 12% increase in clean energy project financing saw the UK reclaim the third place mantle, moving up one position from fourth.

The UK recorded $16 billion of renewables project investment in 2018, underpinned by $11.3 billion of wind deals, particularly in the offshore wind sector.
Solar investment did increase by 15% thanks to the advent of subsidy-free developments, though the relatively lack of new deals meant project financing in the sector totalled just $2.6 billion.

The UK was responsible for three of the five biggest clean energy project finance deals in 2018, all of which were offshore wind transactions.

**Australia**

Australia recorded the third largest yearly increase (52%) after $14.5 billion was invested into its greenfield renewables sector.

Solar was the hottest investment in Australia last year as evidenced by the 64% increase in project financing to $9.2 billion.

The volume of onshore wind transactions increased by a respectable 31% to $4.5 billion of project financing deals.

**Spain**

Spain was by far the most improved market thanks to clean energy projects being financed off the back of previously awarded contracts from its 2017 renewables auctions.

The Spanish renewables market was bolstered by landmark 452% increase in project financing for a combined investment of $11.6 billion, from just $2.1 billion in 2017.

The addition of subsidy-free solar projects to Spain helped take the country's overall solar investment to $7.6 billion (+66%).

Onshore wind project financing made a 27% yearly gain to $3.1 billion.

### Top 10 Countries by Clean Energy Project Finance Volume (2018)

<table>
<thead>
<tr>
<th>Country</th>
<th>2018 (Gb)</th>
<th>2017 (Gb)</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>61.7</td>
<td>42.6</td>
<td>45%</td>
</tr>
<tr>
<td>United States of America</td>
<td>44.1</td>
<td>46.2</td>
<td>-5%</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>16.5</td>
<td>14.7</td>
<td>12%</td>
</tr>
<tr>
<td>Australia</td>
<td>14.6</td>
<td>9.6</td>
<td>52%</td>
</tr>
<tr>
<td>Spain</td>
<td>11.6</td>
<td>2.1</td>
<td>452%</td>
</tr>
<tr>
<td>India</td>
<td>10.6</td>
<td>12.2</td>
<td>-13%</td>
</tr>
<tr>
<td>Brazil</td>
<td>6.6</td>
<td>15.8</td>
<td>-58%</td>
</tr>
<tr>
<td>Mexico</td>
<td>6.3</td>
<td>10.8</td>
<td>-42%</td>
</tr>
<tr>
<td>Belgium</td>
<td>5.3</td>
<td>1.3</td>
<td>320%</td>
</tr>
<tr>
<td>Sweden</td>
<td>4.6</td>
<td>2.7</td>
<td>73%</td>
</tr>
</tbody>
</table>
EUROPE HOME TO 70% OF TOP GREEN BOND ISSUANCES IN 2018

The top ten global green bond issuances amounted to just over $32 billion in 2018 and featured a diverse list of issuers from corporates to government municipalities to banks.

Green bond issuances have increased in volume every year since the first green bond was launched in 2007 by the European Investment Bank.

The overall volume of green bonds in 2018 totalled over $180 billion, a 28.5% increase on the amount issued in 2017 ($140 billion).

**Iberdrola SA [Spain]**

Iberdrola arranged a €5.3 billion ($6.58 billion) green loan. BBVA acted as the facility and sustainability agent for the loan.

This was the largest green bond issuance of 2018.

**Government of France - July**

The French government underlined its commitment to green bonds with the launch of a €5 billion ($5.9 billion) ‘green Euro medium term note programme’ to finance transport projects in the greater Paris region.

The transaction, dated July 2018, marked its second issuance of last year.

**Government of France - June**

Government of France’s first issuance of the year involved €4 billion (USD4,669.65 million) of green bonds in June 2018.

The maturity date for the green bonds is June 25, 2039.

**Government of Ireland**

The National Treasury Management Agency (NTMA) announced a €3 billion ($3.4 billion) green bond launch in October 2018.

This was Ireland’s first-ever sovereign green bond, maturing on March 18, 2031.

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**Global Green Bond Issuances by Region (2008-2018)**

![Barcode chart showing green bond issuances by region from 2008 to 2018.](chart.png)

Legend:
- **Europe**
- **Asia Pacific**
- **North America**
- **Latin & Central America**
- **Africa & Middle East**

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Clean Energy Market Review 2018
ING Group NV [Netherlands]

ING issued €2.7 billion worth of green bonds in November 2018 to help fund a green loan portfolio of new and existing loans in the renewable energy and green building sectors.

The €1.5 billion and €1.25 billion green bonds will mature on November 9, 2025 and November 9, 2030, respectively.

Bank of America Merril Llynch [USA]

Bank of America Corp issued a $2.25 billion green bond to support clean energy projects. The green bonds will mature in May 2022.

This was Bank of America’s fourth overall corporate green bond issuance, with the US financial institution raising $4.3 billion to date.

Société du Grand Paris [France]

Société du Grand Paris announced that it has issued a €1.75 billion ($2 billion) of green bonds – the French public transportation company’s first ever green bond.

The bonds mature on October 22, 2028.

TCorp (New South Wales Treasury Corporation) [Australia]

T Corp announced that it has issued A$1800 million (USD1310.09 million) of green bonds. The maturity date for the bonds is 15 November, 2028.

DNB Group [Norway]

DNB Boligkreditt, a subsidiary of Norwegian bank DNB, raised €1.5 billion ($1.77 billion) from its first green covered bond, maturing in June 2025.

Industrial and Commercial Bank of China Ltd. [China]

The $1.58 billion green bond, part of ICBC’s USD10 billion MTN programme, is the largest ever green bond listing on London Stock Exchange and the first Chinese issuance on ISM.

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**Top 10 Green Bond Issuing Countries (2018)**

<table>
<thead>
<tr>
<th>Country</th>
<th>2018 ($b)</th>
<th>2017 ($b)</th>
<th>% change</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>27.1</td>
<td>17.5</td>
<td>54%</td>
</tr>
<tr>
<td>USA</td>
<td>26.2</td>
<td>20.2</td>
<td>30%</td>
</tr>
<tr>
<td>France</td>
<td>25.4</td>
<td>18.5</td>
<td>37%</td>
</tr>
<tr>
<td>Spain</td>
<td>13.0</td>
<td>6.2</td>
<td>107%</td>
</tr>
<tr>
<td>Netherlands</td>
<td>11.4</td>
<td>4.3</td>
<td>162%</td>
</tr>
<tr>
<td>Germany</td>
<td>10.3</td>
<td>10.9</td>
<td>-6%</td>
</tr>
<tr>
<td>UK</td>
<td>6.0</td>
<td>5.4</td>
<td>11%</td>
</tr>
<tr>
<td>Sweden</td>
<td>5.9</td>
<td>3.7</td>
<td>59%</td>
</tr>
<tr>
<td>Japan</td>
<td>5.8</td>
<td>2.4</td>
<td>136%</td>
</tr>
<tr>
<td>Australia</td>
<td>5.0</td>
<td>3.2</td>
<td>56%</td>
</tr>
</tbody>
</table>
Clean Energy Pipeline understands the global renewable energy investment landscape and delivers real-time news, transaction data and analytics on this increasingly complex sector. Our in-house team identifies the latest investment, M&A, project finance, fund and regulatory announcements. In addition, we deliver proprietary content including interviews, analysis, insight reports and events.

Find out how we can support delivering on your business objectives by contacting:

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