Colossal six months for offshore wind supports renewable energy investment in first half of 2020
Colossal six months for offshore wind supports renewable energy investment in first half of 2020

Global investment in new renewables capacity rose 5% in 1H 2020, defying Covid-19 recession

• Offshore wind financings in 1H 2020 totaled $35 billion, up 319% year-on-year and in fact well above 2019’s record full-year figure (a revised $31.9 billion). The first half of this year saw investment decisions made on 28 sea-based wind farms, including the largest ever, the 1.5GW Vattenfall Hollandse Zuid array off the coast of the Netherlands, costing an estimated $3.9 billion.

• Overall investment in new renewable energy capacity (excluding large hydro-electric dams of more than 50MW) was $132.4 billion in the first half of 2020, up 5% from a revised $125.8 billion in the same period of 2019. Onshore wind investment slipped 21% to $37.5 billion, while that for solar fell 12% to $54.7 billion.

• China was the largest market yet again, investing $41.6 billion in 1H 2020, up 42% compared to the same period in 2019 thanks to its offshore wind boom. Europe secured $36.5 billion, up 50%, while the U.S. slipped 30% to $17.8 billion.

• BNEF’s data for corporate-level investment in renewables and energy-smart technologies such as battery storage show that equity raising by specialist companies on public markets was $2.4 billion in the first half of 2020, down 43%. Investment from venture capital and private equity funds was up 10% at $2.5 billion.

• The charts on the pages to follow show trends in overall clean energy investment, including investment in renewable energy capacity but also equity raising by specialist companies in renewables and related areas such as energy storage. This “total clean energy investment” figure was $137 billion, a 4% increase on 1H 2019. See chart on right.
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Global new investment in clean energy
1Q 2006 - 2Q 2020

Quarterly trends, new investment

$bn

Four quarter running average
Quarterly trends, new investment

Global new investment in clean energy, by region
1Q 2006 - 2Q 2020

$bn
Quarterly trends, new investment

Global new investment in clean energy, by sector
1Q 2006 - 2Q 2020

$bn

Solar  Wind  Biofuels  Other  Corp finance
Global new investment in clean energy, by asset class

1Q 2006 - 2Q 2020

Quarterly trends, new investment

$bn

Asset Finance  Small Scale Solar  Public Markets  VC&PE

BloombergNEF
Global new investment in clean energy, VC/PE
1Q 2006 - 2Q 2020

Quarterly trends, new investment

$bn
Global new investment in clean energy, public markets

1Q 2006 - 2Q 2020

Quarterly trends, new investment
Quarterly trends, new investment

Global new investment in clean energy, AMER

1Q 2006 - 2Q 2020

$bn

- Solar
- Wind
- Other
- Corp finance
Global new investment in clean energy, APAC
1Q 2006 - 2Q 2020

Quarterly trends, new investment

- Solar
- Wind
- Other
- Corp finance
Quarterly trends, new investment

New investment in clean energy
United States
1Q 2006 - 2Q 2020

$bn

Four quarter running average
Quarterly trends, new investment

New investment in clean energy
United States, by sector

1Q 2006 - 2Q 2020

$bn

Solar
Wind
Other
Corp finance
Quarterly trends, new investment

New investment in clean energy
Europe
1Q 2006 - 2Q 2020

$bn

Four quarter running average

BloombergNEF
Quarterly trends, new investment

New investment in clean energy
Europe, by sector

1Q 2006 - 2Q 2020

$bn


Solar Offshore Onshore Other Corp finance
New investment in clean energy
China
1Q 2006 - 2Q 2020

Quarterly trends, new investment

$bn

Four quarter running average
Quarterly trends, new investment

New investment in clean energy
China, by sector
1Q 2006 - 2Q 2020

$bn

Solar  Wind  Other  Corp finance
New investment in clean energy
Australia
1Q 2006 - 2Q 2020

$bn

Four quarter running average
Quarterly trends, new investment

New investment in clean energy

Brazil

1Q 2006 - 2Q 2020

$bn

0 2 4 6 8 10 12 14 16 18 20

Four quarter running average
Quarterly trends, new investment

New investment in clean energy

France

1Q 2006 - 2Q 2020

$bn

Four quarter running average
New investment in clean energy
Germany
1Q 2006 - 2Q 2020

$bn

Four quarter running average
New investment in clean energy
India
1Q 2006 - 2Q 2020

$bn

Quarterly trends, new investment

Four quarter running average
New investment in clean energy

Japan

1Q 2006 - 2Q 2020

$bn

Quarterly trends, new investment

Four quarter running average
Quarterly trends, new investment

New investment in clean energy
United Kingdom

1Q 2006 - 2Q 2020

$bn

Four quarter running average
Quarterly trends, funds in circulation

Quarterly trends since 1Q 2006
Global clean energy, funds in circulation, by region
1Q 2006 - 2Q 2020
Global clean energy, funds in circulation, by sector
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Quarterly trends, funds in circulation

Solar  Wind  Corp finance  Biofuels  Other
Global clean energy, funds in circulation, by asset class

1Q 2006 - 2Q 2020

Quarterly trends, funds in circulation

$bn

Asset fin acq & refin
Corporate m&a
PM exits
PE buy outs

BloombergNEF
Top deals

Top deals for 2020
# Top asset finance deals

## 2020

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Country</th>
<th>Sector</th>
<th>Capacity</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vattenfall Hollandse Zuid Offshore Wind Portfolio</td>
<td>Netherlands</td>
<td>Wind</td>
<td>1,540MW</td>
<td>$3,850m</td>
</tr>
<tr>
<td>SSE Seagreen Offshore Wind Portfolio Phase I</td>
<td>United Kingdom</td>
<td>Wind</td>
<td>1,140MW</td>
<td>$3,839m</td>
</tr>
<tr>
<td>CIP Changhua Zone Changfang Xidao Offshore Wind Portfolio</td>
<td>Taiwan</td>
<td>Wind</td>
<td>600MW</td>
<td>$3,632m</td>
</tr>
<tr>
<td>EDF and Enbridge Fecamp Offshore Wind Farm</td>
<td>France</td>
<td>Wind</td>
<td>497MW</td>
<td>$2,713m</td>
</tr>
<tr>
<td>Iberdrola St Brieuc Offshore Wind Farm</td>
<td>France</td>
<td>Wind</td>
<td>496MW</td>
<td>$2,664m</td>
</tr>
</tbody>
</table>
## Top venture capital & private equity deals
### 2020

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Country</th>
<th>Type of Transaction</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Altus Power America Inc</td>
<td>United States</td>
<td>PE Expansion</td>
<td>$850m</td>
</tr>
<tr>
<td>Scale Microgrid Solutions Inc</td>
<td>United States</td>
<td>PE Expansion</td>
<td>$300m</td>
</tr>
<tr>
<td>Alchemy Renewable Energy LLC</td>
<td>United States</td>
<td>PE Expansion</td>
<td>$100m</td>
</tr>
<tr>
<td>Terres d’Energie SAS</td>
<td>France</td>
<td>PE Expansion</td>
<td>$99m</td>
</tr>
<tr>
<td>Commonwealth Fusion Systems</td>
<td>United States</td>
<td>Venture Capital</td>
<td>$84m</td>
</tr>
</tbody>
</table>
## Top public market deals 2020

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Country</th>
<th>Type of Transaction</th>
<th>Equity Raised</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jinko Power Technology Co Ltd</td>
<td>China</td>
<td>IPO</td>
<td>$366m</td>
</tr>
<tr>
<td>Trina Solar Co Ltd</td>
<td>China</td>
<td>IPO</td>
<td>$359m</td>
</tr>
<tr>
<td>Enphase Energy Inc</td>
<td>United States</td>
<td>Convertible</td>
<td>$320m</td>
</tr>
<tr>
<td>Plug Power Inc</td>
<td>United States</td>
<td>Convertible</td>
<td>$200m</td>
</tr>
<tr>
<td>Scatec Solar ASA</td>
<td>Norway</td>
<td>Secondary</td>
<td>$198m</td>
</tr>
</tbody>
</table>
Annual trends, new investment

Annual trends since 2006
Global new investment in clean energy
2006 - 2020

$bn
Global new investment in clean energy, by region

2006 - 2020

$bn
Global new investment in clean energy, by sector
2006 - 2020

$bn

Annual trends, new investment

Solar  Wind  Other  Corp finance  Biofuels
New investment in clean energy
United States
2006 - 2020

$bn
New investment in clean energy
United States, by sector
2006 - 2020

$bn

Annual trends, new investment

<table>
<thead>
<tr>
<th>Year</th>
<th>Wind</th>
<th>Solar</th>
<th>Other</th>
<th>Corp finance</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>31.8</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2007</td>
<td>34.8</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>2008</td>
<td>35.1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2009</td>
<td>24.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2010</td>
<td>35.5</td>
<td></td>
<td></td>
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<tr>
<td>2011</td>
<td>52.9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2012</td>
<td>43.0</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>39.7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2014</td>
<td>43.9</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>2015</td>
<td>54.0</td>
<td></td>
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<tr>
<td>2016</td>
<td>49.8</td>
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<tr>
<td>2017</td>
<td>54.7</td>
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<td></td>
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<tr>
<td>2018</td>
<td>53.7</td>
<td></td>
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<tr>
<td>2019</td>
<td>71.9</td>
<td></td>
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</tr>
<tr>
<td>2020</td>
<td>28.5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
New investment in clean energy
Europe
2006 - 2020

$bn

Annual trends, new investment
New investment in clean energy
Europe, by sector
2006 - 2020

$bn
New investment in clean energy
China
2006 - 2020

$bn
New investment in clean energy
China, by sector
2006 - 2020
$bn

Annual trends, new investment
Definitions and FAQs

How BloombergNEF defines clean energy
Venture capital and private equity (VCPE)
Early and late stage venture capital funding rounds of pure play renewable energy companies as well as funds raised privately for the purposes of expansion.

Public markets (PM)
Funds raised by publicly quoted or OTC quoted pure play renewable energy companies on the capital markets. This may be through IPOs or follow-on offerings like secondary offerings, private investment in public equity or PIPEs, convertibles etc.

Asset finance
The new build financing of renewable energy generating projects as well as smart metering and energy storage projects - smart metering and energy storage investment are only reported annually. Renewable energy generating projects includes both electricity generating and biofuels producing assets. Projects may be financed off the owner's balance sheet, or through financing mechanisms such as project finance, syndicated equity from institutional investors, or project bonds underwritten by banks.

Re-invested equity
Isolates values for balance sheet-financed project investments by companies who have raised money privately or publicly over the past 12 months. The purpose of this category is to prevent double counting of money raised publicly or privately that has been invested in clean energy assets.

Small scale solar
Given the technical limitations in tracking small-scale solar projects, BloombergNEF's asset finance database excludes projects below roughly 1MW. Unlike utility scale asset investment, small-scale solar investment is based on top-down analyst estimates.

Government R&D
Government r&d figures are sourced from the IEA, IMF, OECD, and various government agencies.

Corporate R&D
The Bloomberg Terminal is used to source corporate r&d figures for key quoted companies in all clean energy sectors.
### Definitions and FAQs

#### Definitions

#### Sectors

**Wind**
Electricity generation using wind turbines. Included in this sector, are players across the entire value chain of both onshore and offshore developments. From manufacturers of turbines, components and subassemblies to developers, generators, utilities and engineering firm.

**Solar**
All technologies which capture energy directly from the sun. These include production of electricity using semiconductor-based photovoltaic (pv) materials, use of concentrated sunlight to heat fluids that drive power generation equipment (solar thermal), and passive methods which use sunlight to heat water. Whilst company level investment of passive methods is recorded, investment in passive projects is not.

**Biofuels**
Liquid transportation fuels including biodiesel and bioethanol. These can be derived from a range of biomass sources, including sugar cane, rape seed, soybean oil or non-food cellulosic feedstock. Our database excludes producers of base biomass, but includes suppliers of everything from the processing technologies and equipment, through the logistics of distribution, to manufacturers of energy systems which are specially adapted for the use of biofuels and products, and the services on which they depend.

**Biomass & waste**
Electricity and/or heat produced with bio-based feedstocks, typically through incineration but also through more advanced processes like gasification or anaerobic digestion. This sector also includes waste-to-energy which includes energy produced through landfill gas projects and incineration of municipal and industrial waste.

**Energy smart technologies**
This sector covers technologies like digital energy, smart grids, power storage, hydrogen and fuel cells, advanced transportation and energy efficiency on both the demand and supply side.

**Other renewables**
Includes small hydro - hydro projects with capacities smaller or equal to 50MW; geothermal - extraction of useful power from heat stored in the earth; marine - the extraction of tidal, wave and thermal energy from the ocean.
Q1: Why is there a difference between the sum of the quarterly figures and the annual figures?
Quarterly figures do not include certain asset classes which we only produce annually. These asset classes are corporate and government r&d and asset finance for energy smart technologies, in other words, smart meters and energy storage investment.

Q2: Which countries are included in Europe?
Europe includes all 28 EU countries, and non-EU countries like Switzerland, Norway, Turkey and Russia. The majority of clean energy investment stems from the EU though.
Download the underlying data and create your own charts

BloombergNEF clients can navigate to the web platform (BNEF.com) or run BNEF <GO> in a terminal window to download the relevant data that supplies this publication. Customizable charts and data sets are available for further insight relating to clean energy investment.

Run BNEF <GO>, click "BNEF Tools", click "Clean Energy" and select "Investment"

Log onto BNEF.com, hover over "Flagship" and click "Clean Energy Investment"
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- Digital industry

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