Clean Energy Investment Trends, 2019

Late surge in offshore wind financings helps 2019 renewables investment to overtake 2018

BloombergNEF

January 16, 2020

Late surge in offshore wind financings helps 2019 renewables investment to overtake 2018

A string of billion-dollar deals off coasts of mainland China and Taiwan, and in British, French and Dutch waters, made 2019 an all-time high for offshore wind.

• The late surge in offshore wind financings took capacity investment in that sector to $29.9 billion, up 19% on 2018 and $2 billion more than in the previous record year of 2016. The first of France's offshore wind projects to be financed, the 480MW, $2.5 billion Saint Nazaire, got its go-ahead in the third quarter.

• Looking at the overall renewable energy capacity investment figures for 2019, wind (onshore and offshore) led the way with $138.2 billion globally, up 6%. Solar was close behind, at $131.1 billion, down 3%.

• China was yet again the biggest investor in renewables, at $83.4 billion in 2019, but this was 8% down on 2018 and the lowest since 2013. It saw a 10% rise in wind investment to $55 billion, but solar fell 33% to $25.7 billion, less than a third of the boom figure reached in 2017.

• BNEF's wider-definition of total clean energy investment, which includes money going into research and development, and into specialist companies via public market share issues and venture capital and private equity deals, was $363.3 billion in 2019, fractionally up on the previous year's revised $362.5 billion.

• Within this total, public markets invested $9.3 billion in clean energy, 13% less than in 2018, while VC/PE investors put in $10.5 billion, up 6% and their highest figure since 2010. U.S. electric car companies accounted for the biggest deals in both categories: Tesla with an $862.5 million public market secondary issue, and Rivian Automotive with a $1.3 billion private equity round.

$363.3bn Global clean energy investment in 2019

19% Increase in offshore wind investment compared to 2019
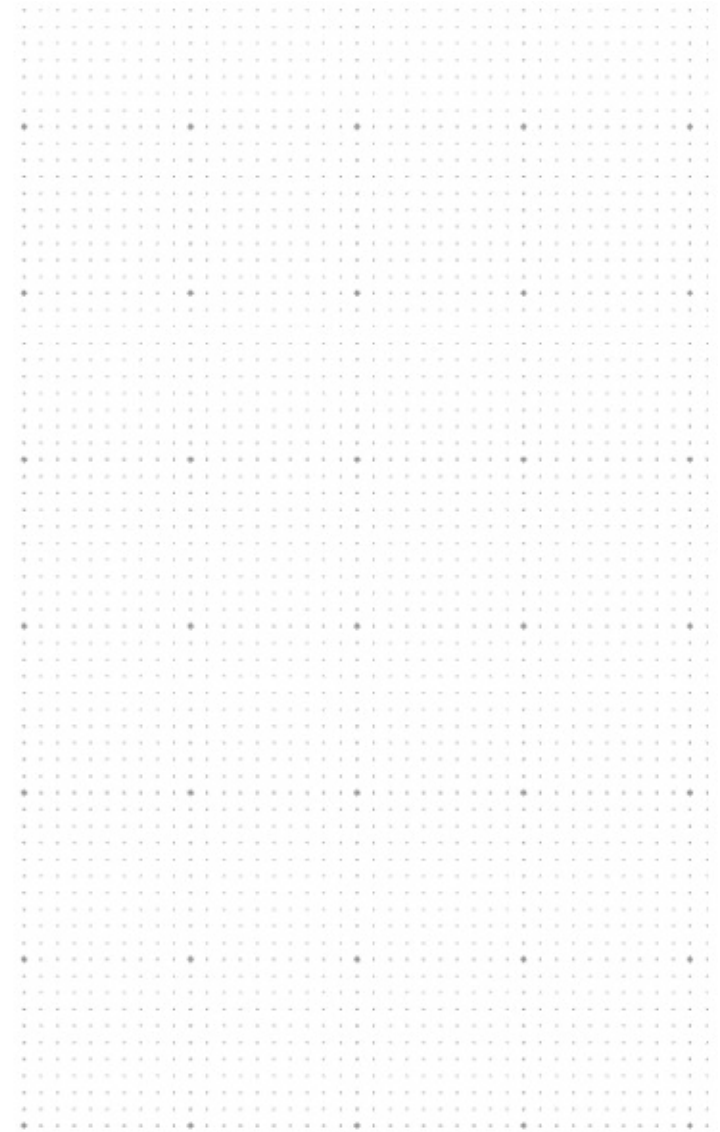
Global new investment in clean energy
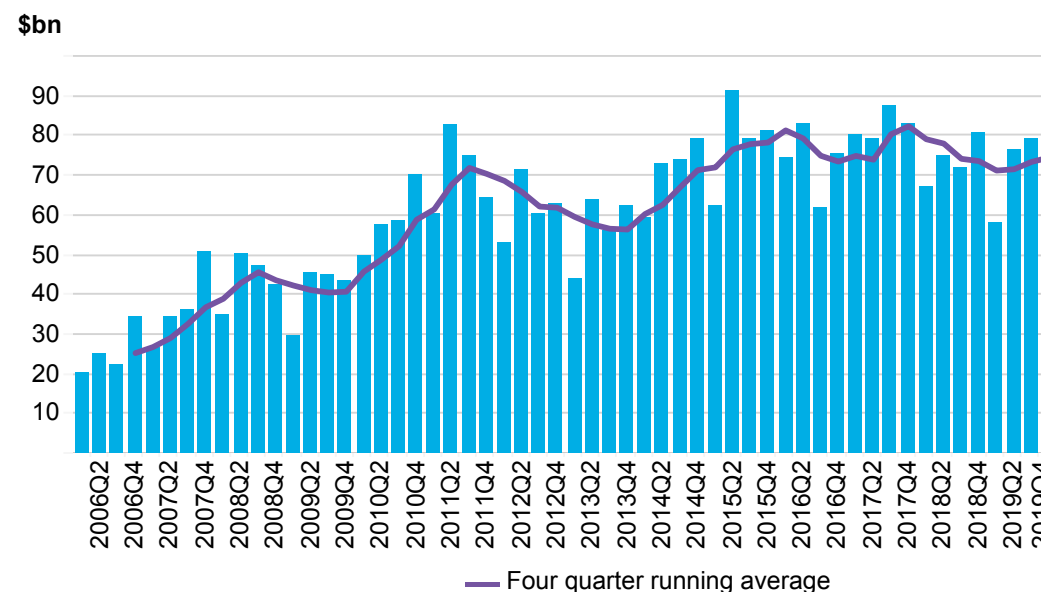
Four quarter running average

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Quarterly trends since 1Q 2006

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Global new investment in clean energy

1Q 2006 - 4Q 2019

$bn

Four quarter running average

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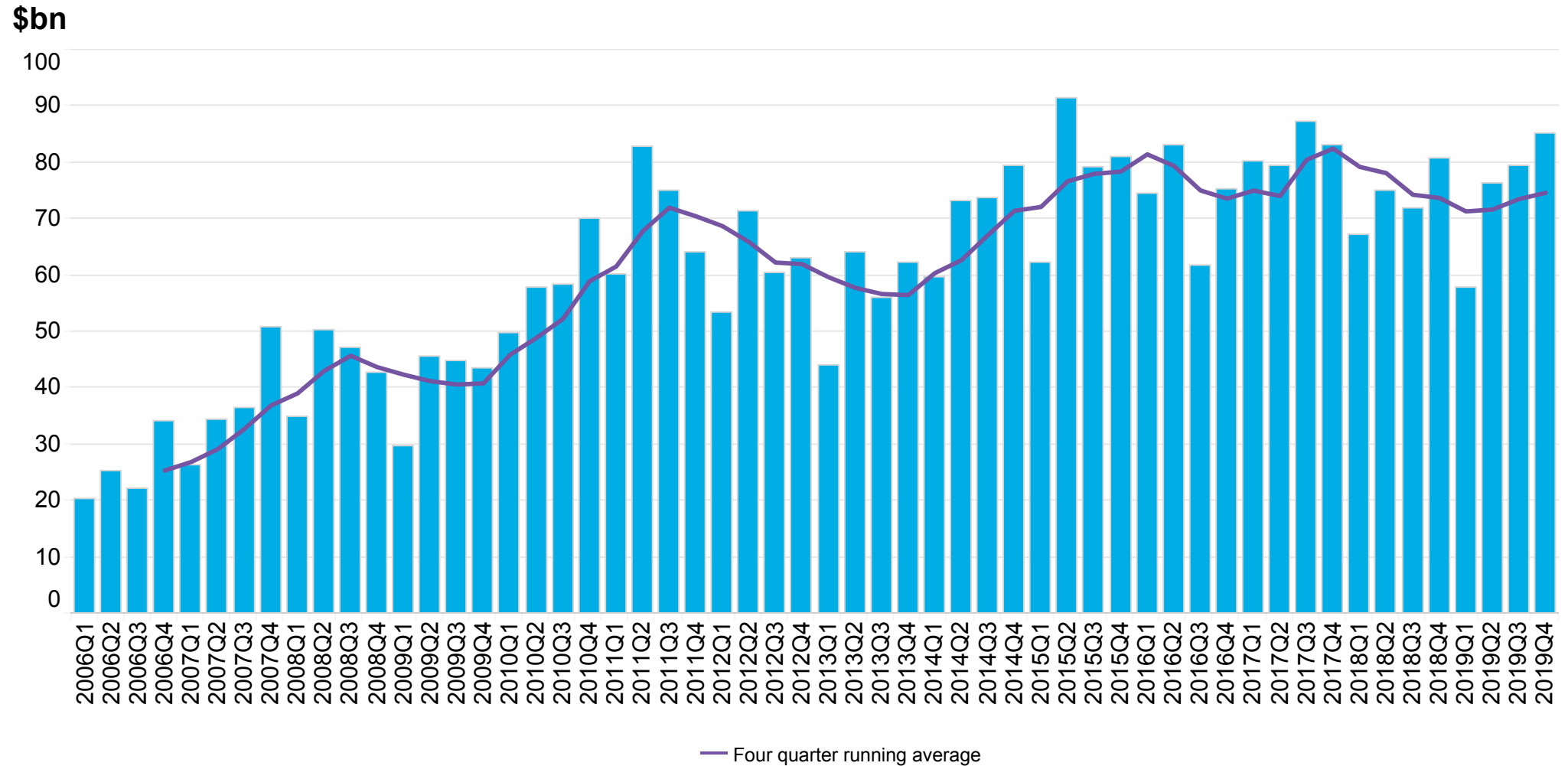
Global new investment in clean energy, by region

1Q 2006 - 4Q 2019

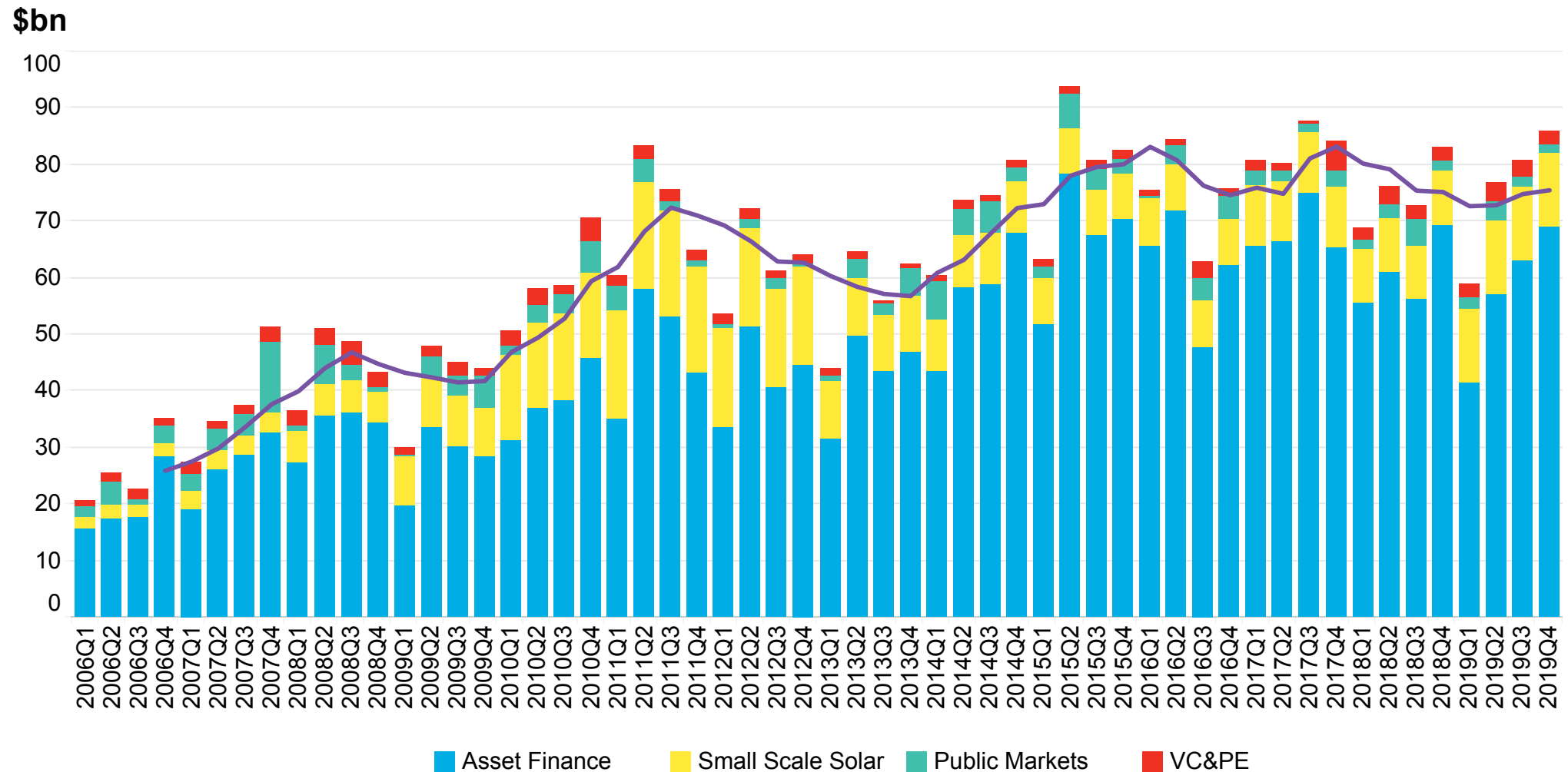BloombergNEF
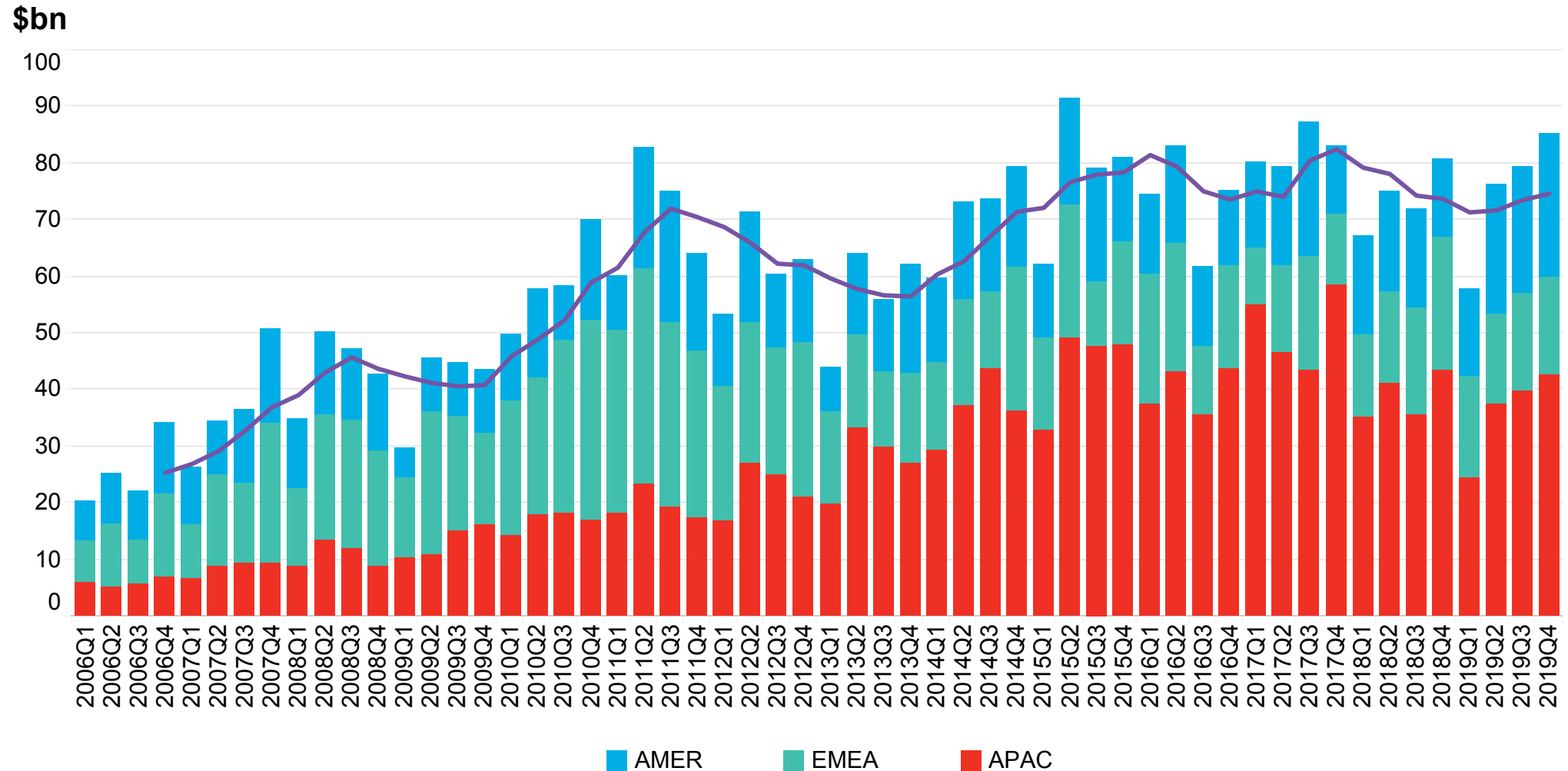
Global new investment in clean energy, by sector

1Q 2006 - 4Q 2019

BloombergNEF
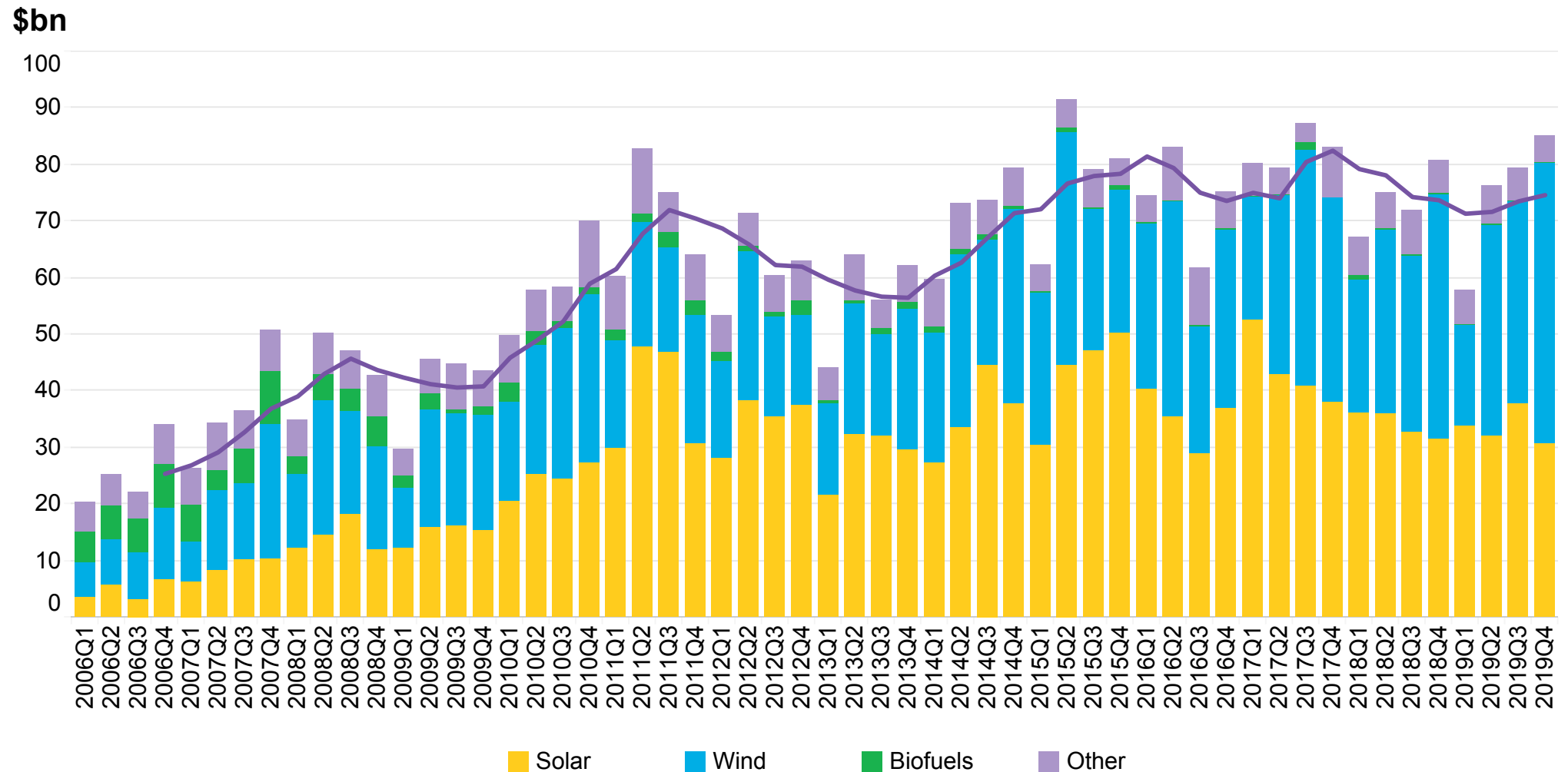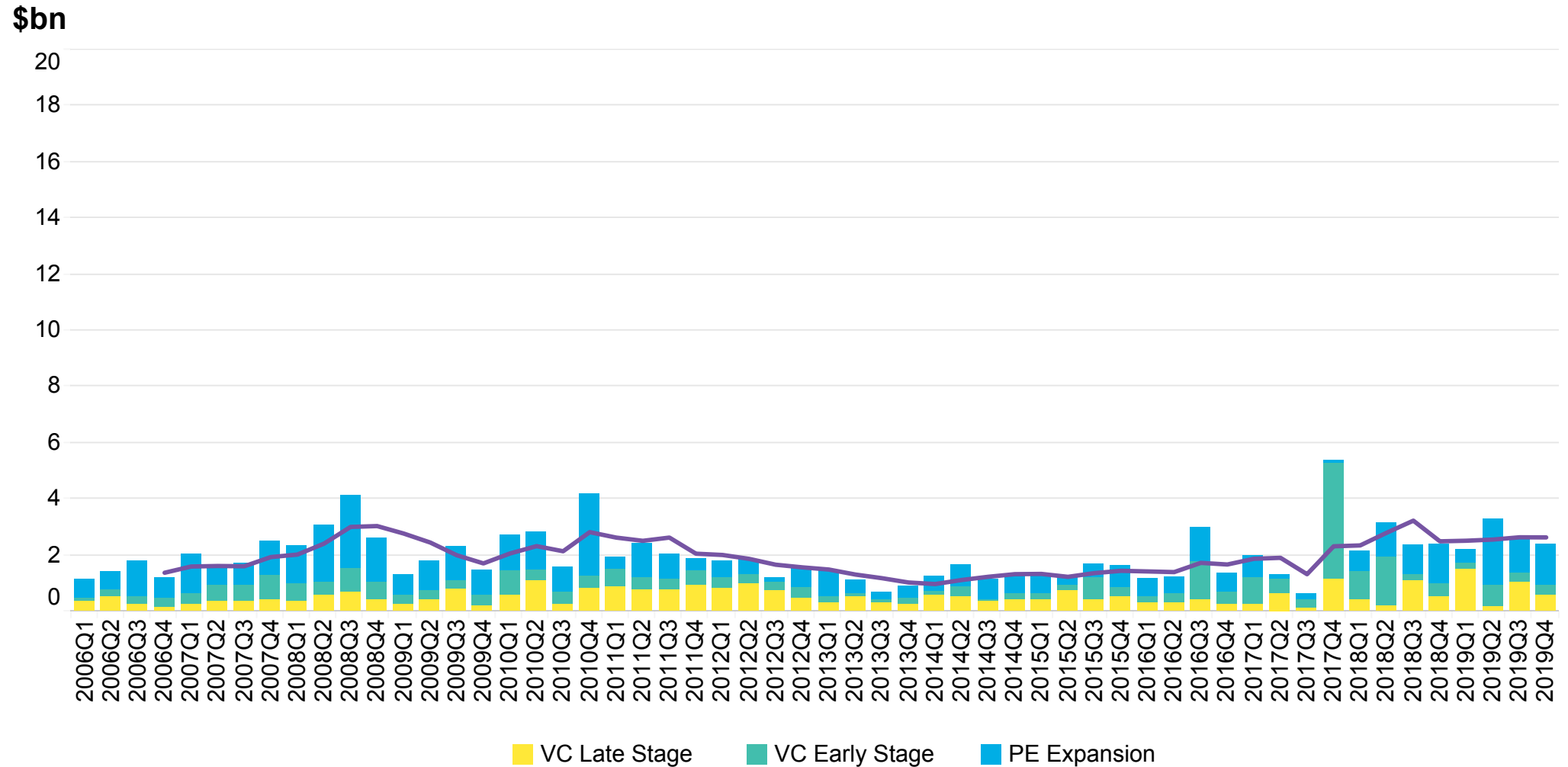
Global new investment in clean energy, by asset class

1Q 2006 - 4Q 2019

$bn

Legend: Asset Finance | Small Scale Solar | Public Markets | VC&PE

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Global new investment in clean energy, VC/PE

1Q 2006 - 4Q 2019

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Quarterly trends, new investment

Global new investment in clean energy, public markets

1Q 2006 - 4Q 2019

$bn

Legend: IPO (blue), Secondary & PIPE (yellow), OTC (teal), Convertible & Other (red)

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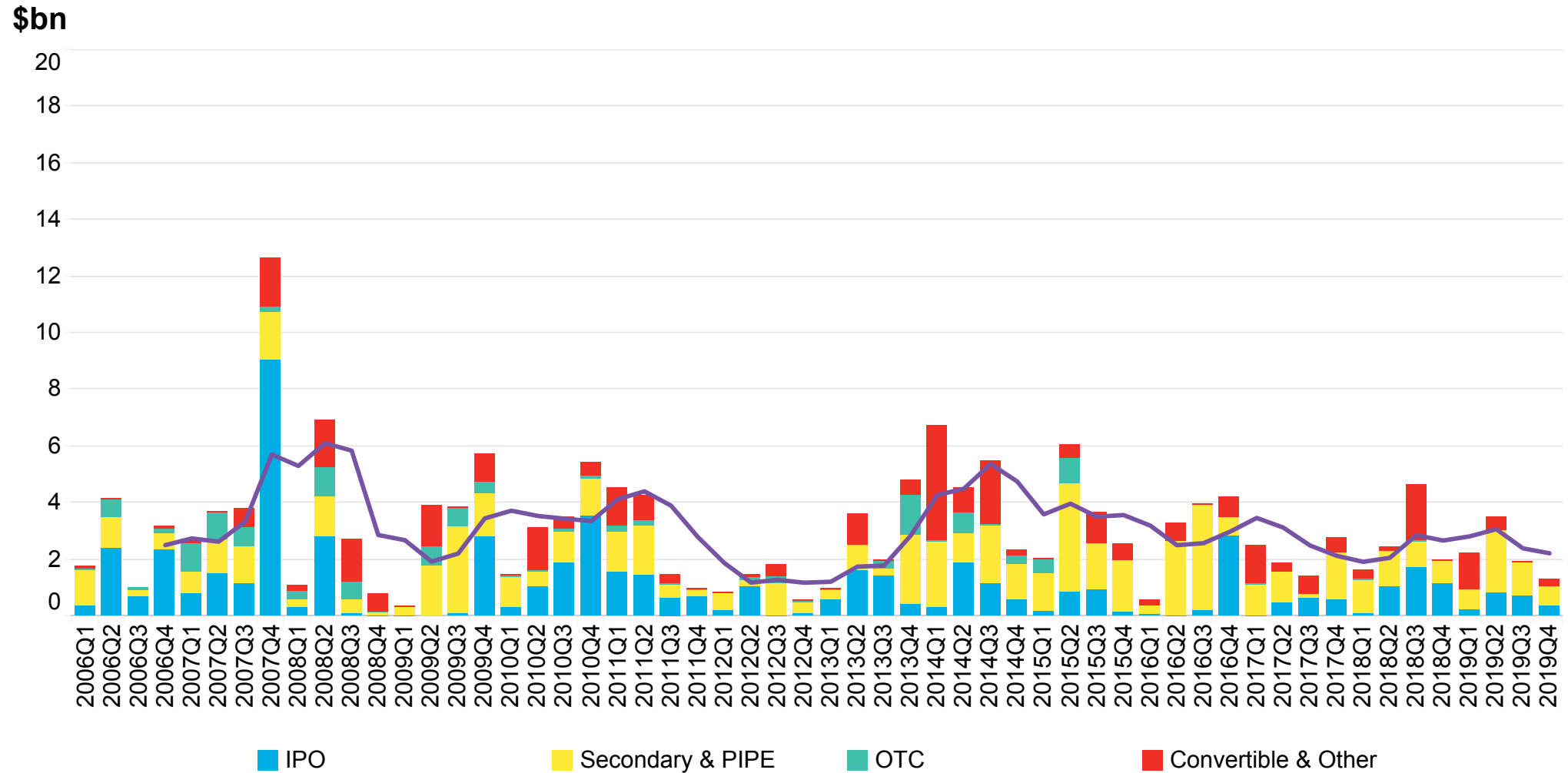
Global new investment in clean energy, AMER

1Q 2006 - 4Q 2019

BloombergNEF
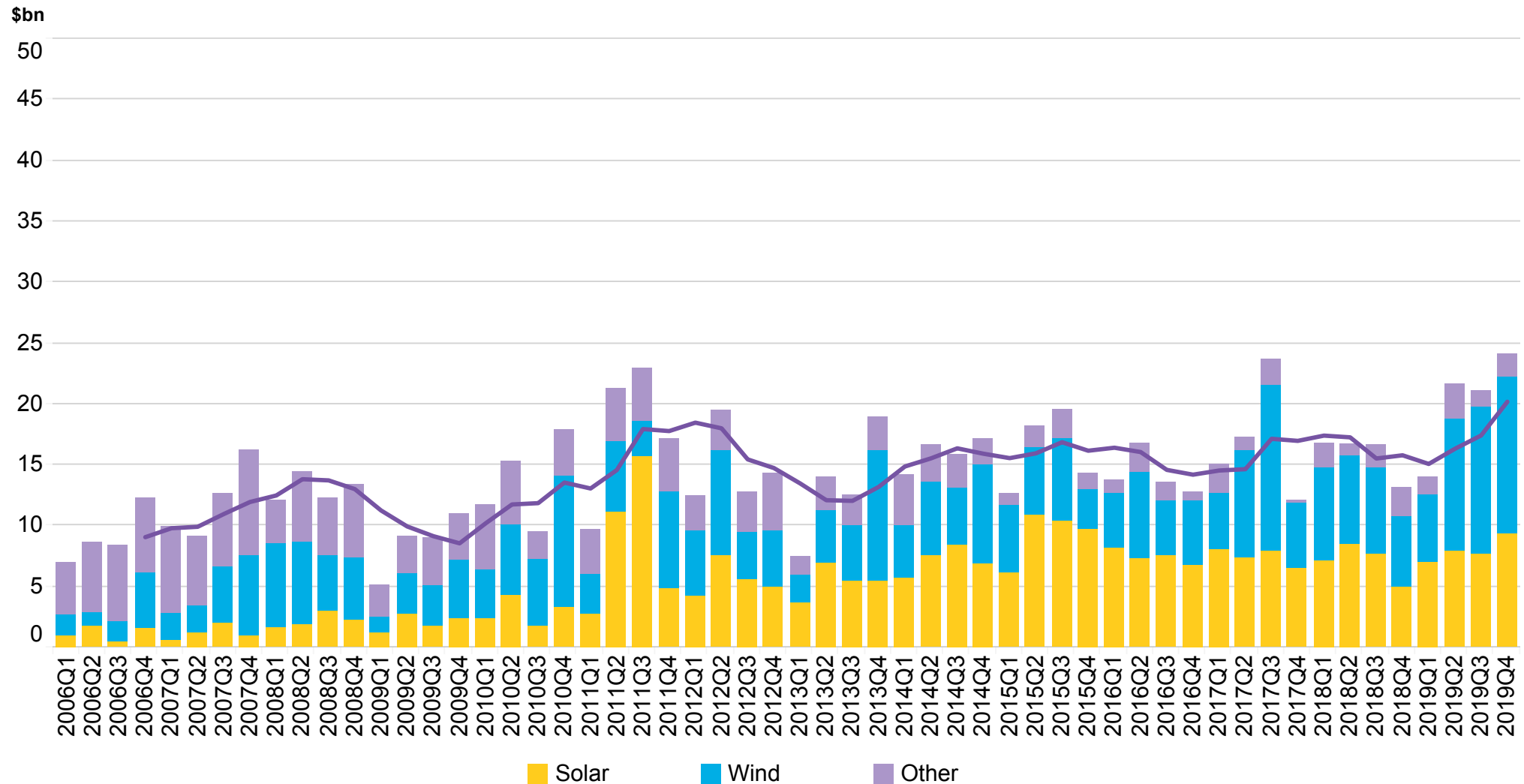
Global new investment in clean energy, EMEA

1Q 2006 - 4Q 2019

$bn

Legend: Solar, Wind, Other

BloombergNEF
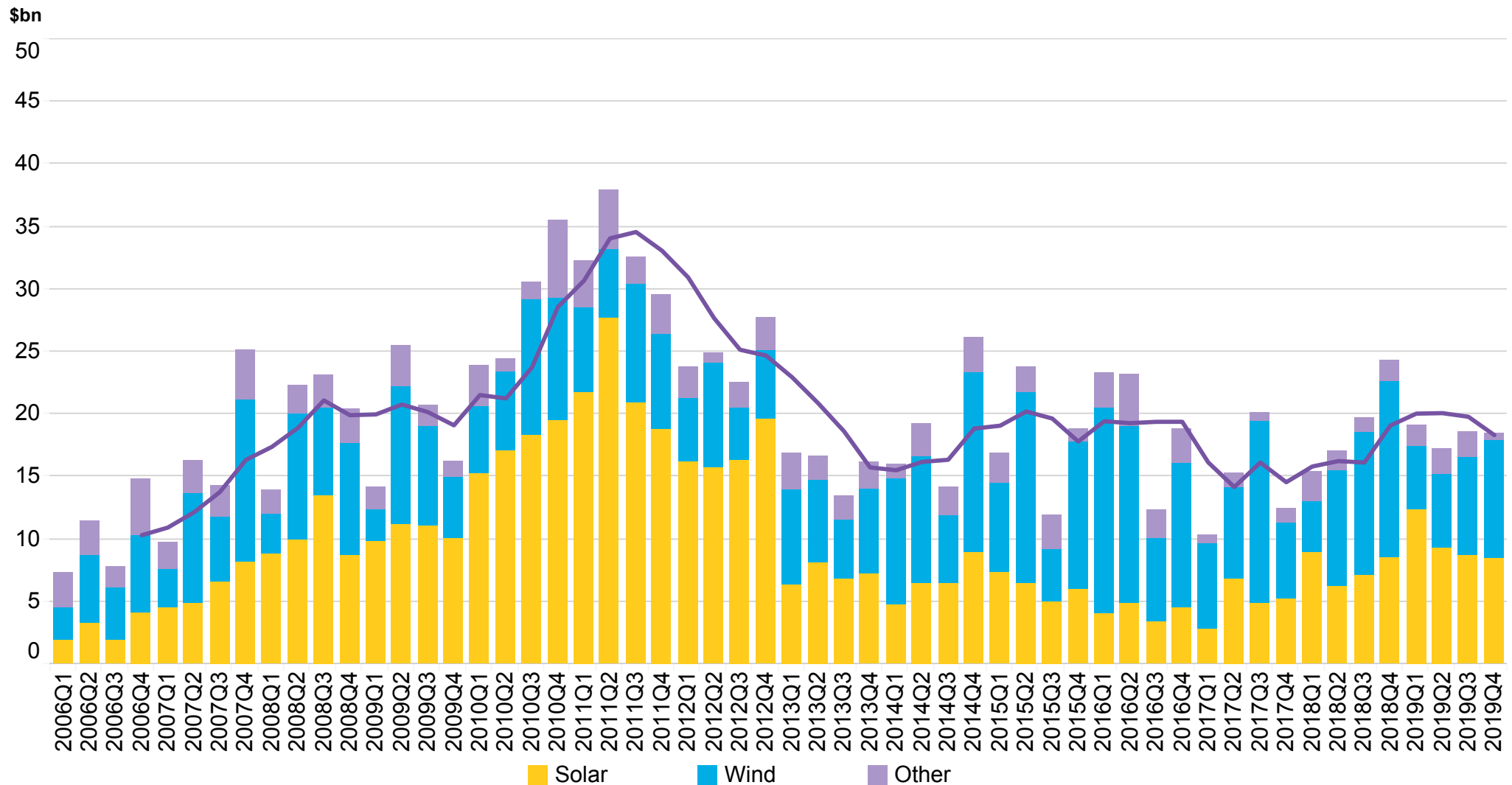
Global new investment in clean energy, APAC

1Q 2006 - 4Q 2019

BloombergNEF
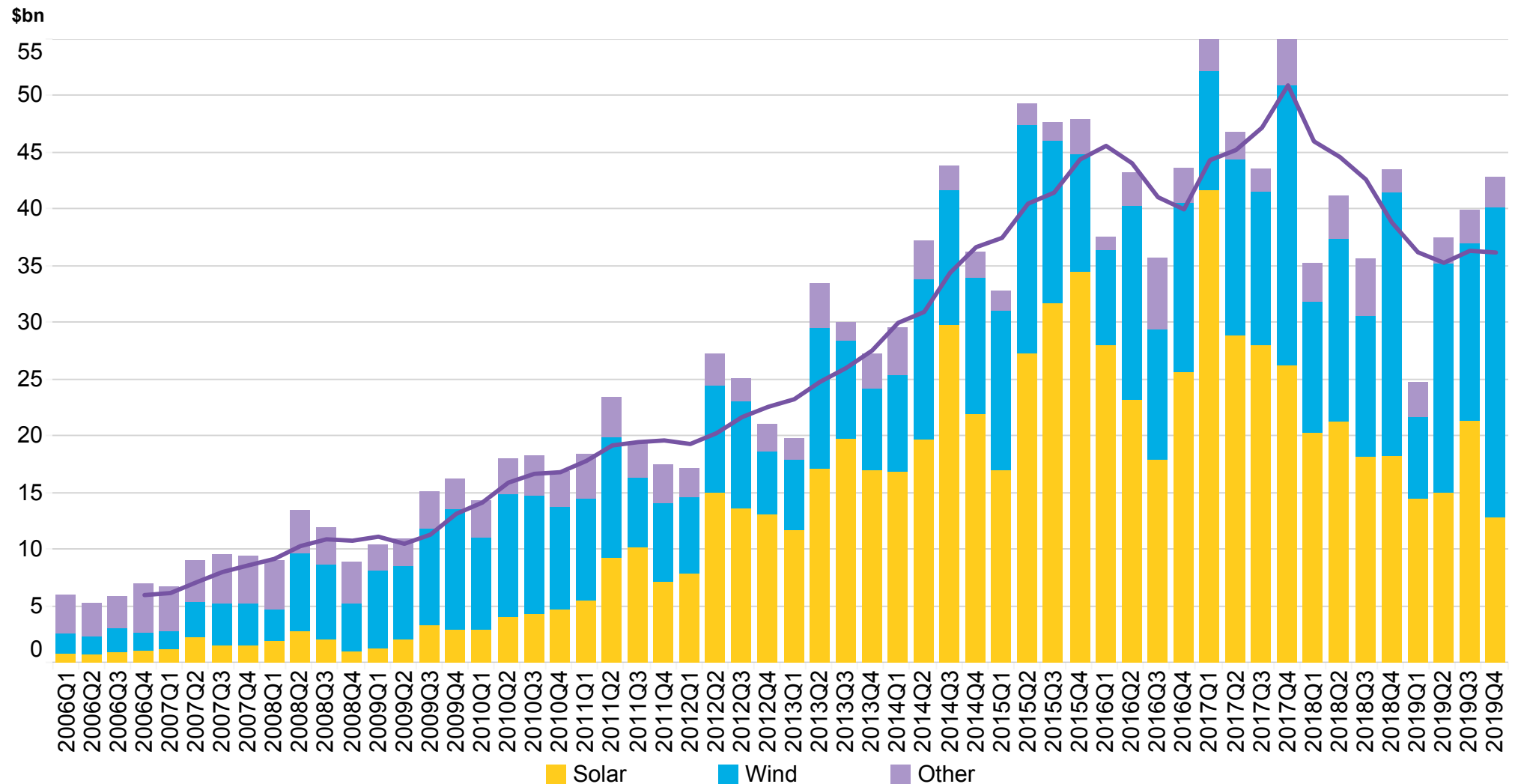
New investment in clean energy United States

1Q 2006 - 4Q 2019

$bn

Four quarter running average

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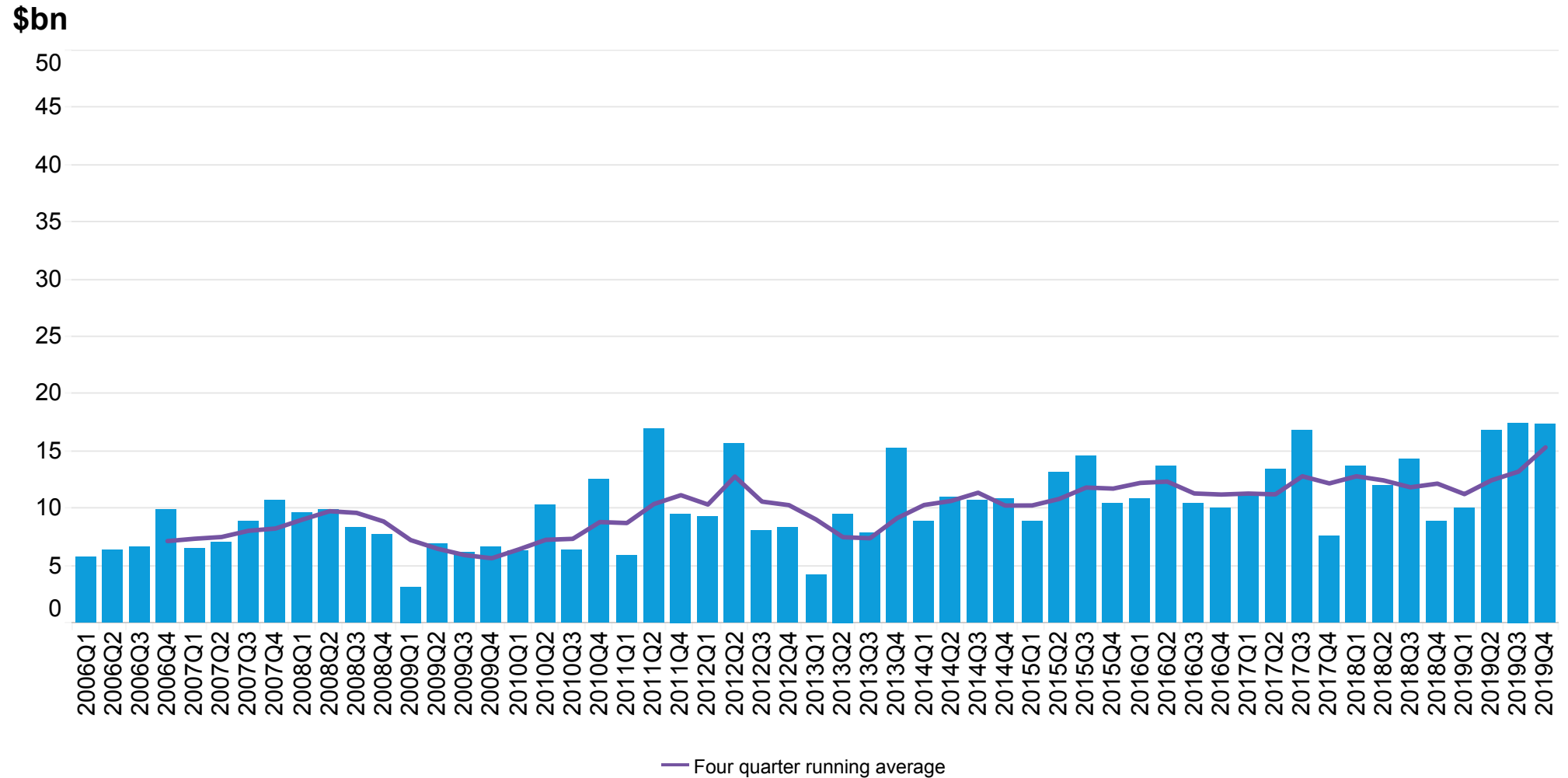
Quarterly trends, new investment

New investment in clean energy United States, by sector

1Q 2006 - 4Q 2019

$bn

Solar Wind Other

14

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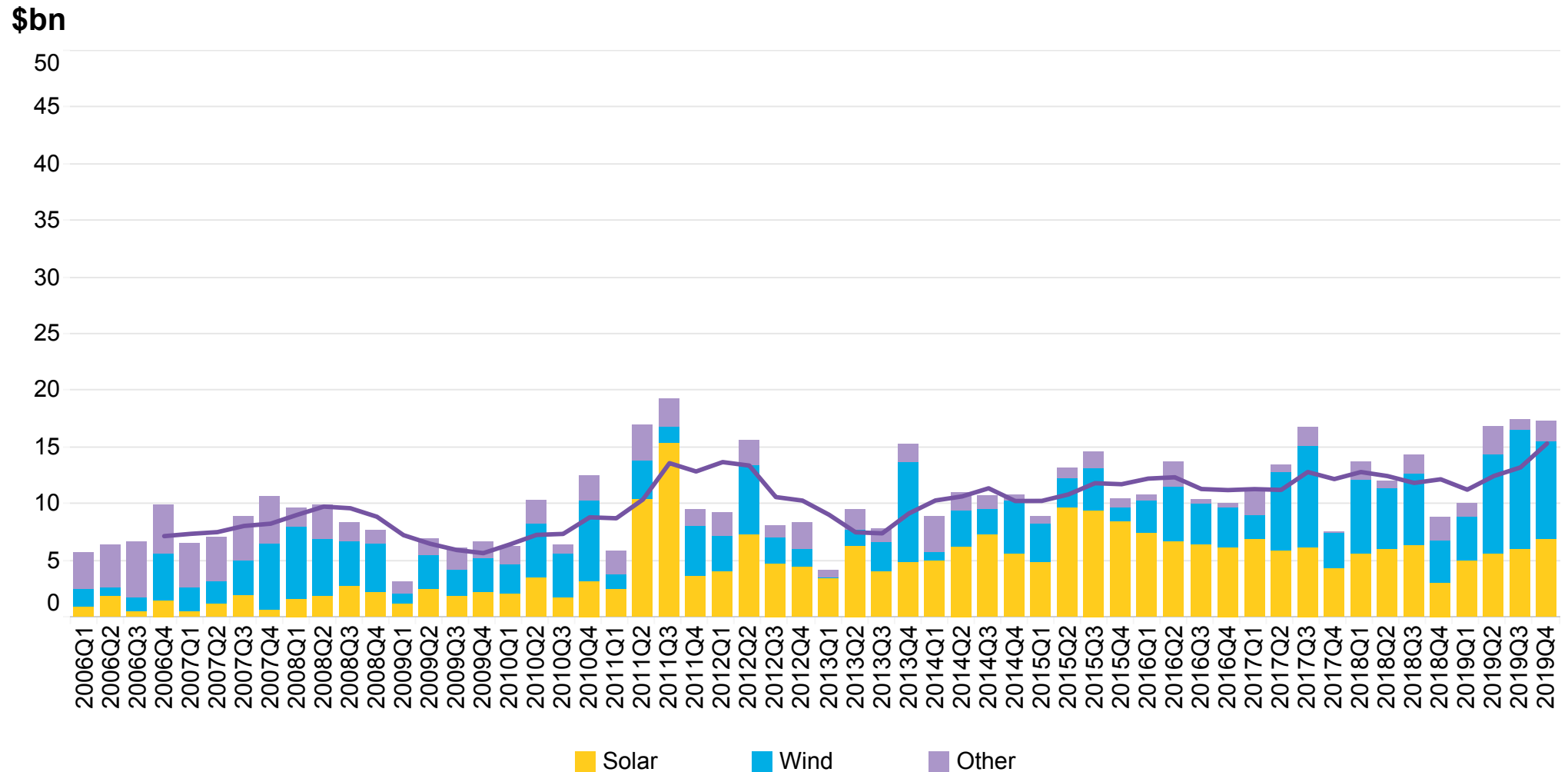
New investment in clean energy Europe

1Q 2006 - 4Q 2019

$bn

Four quarter running average

BloombergNEF
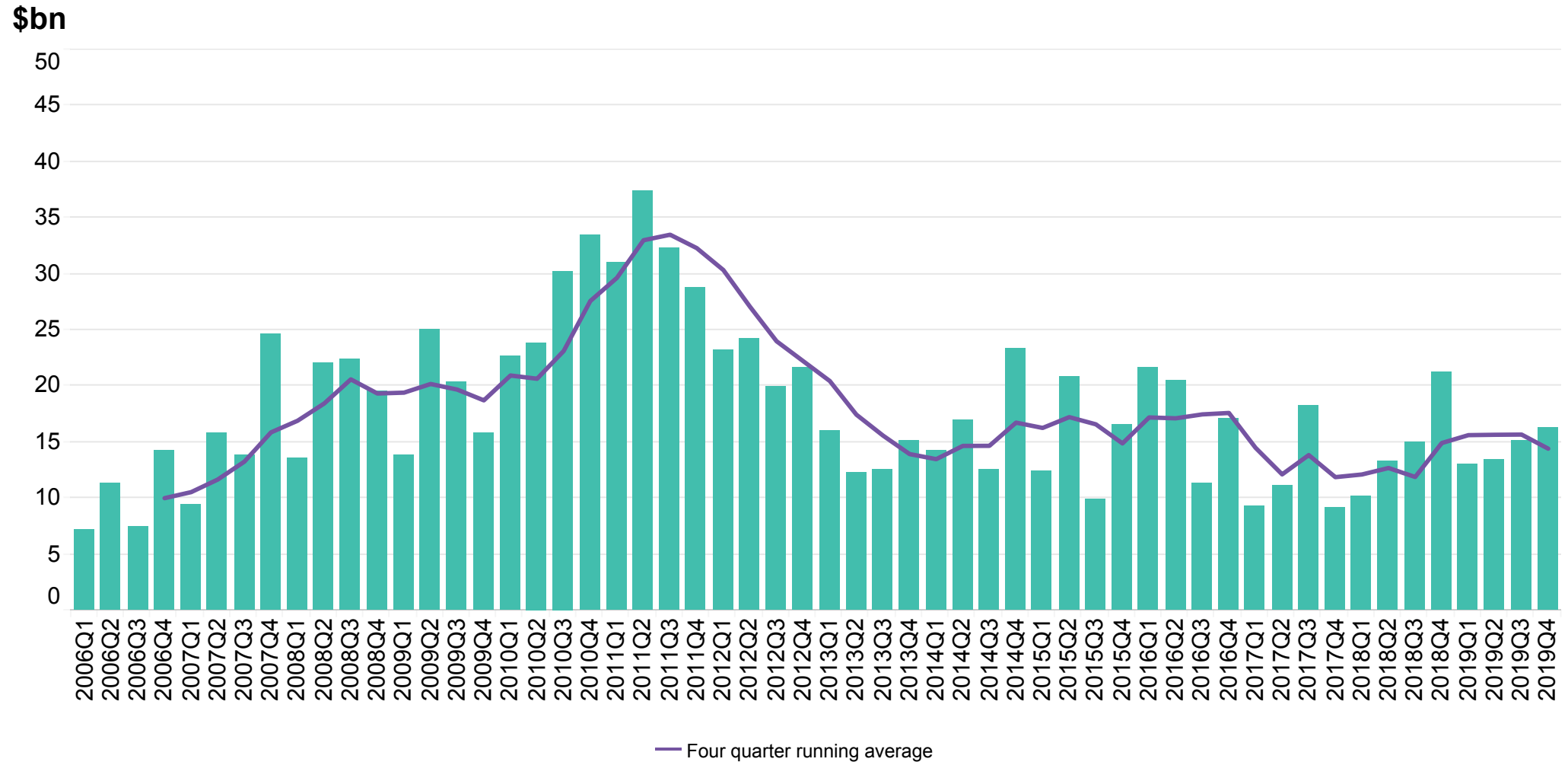
Quarterly trends, new investment

New investment in clean energy Europe, by sector

1Q 2006 - 4Q 2019

$bn

Legend: Solar, Offshore, Onshore, Other

BloombergNEF
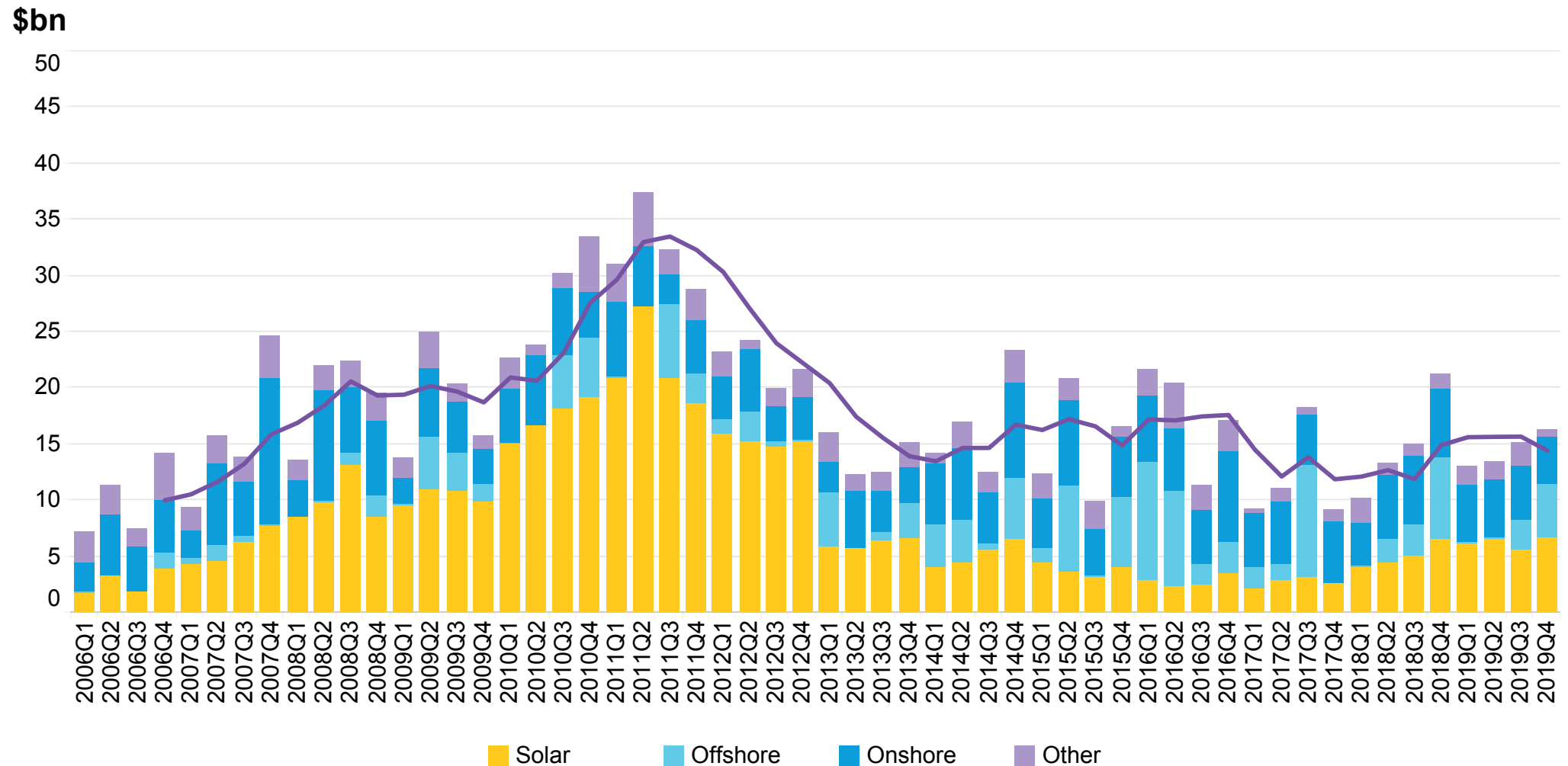
Quarterly trends, new investment

New investment in clean energy China

1Q 2006 - 4Q 2019

$bn

— Four quarter running average

BloombergNEF
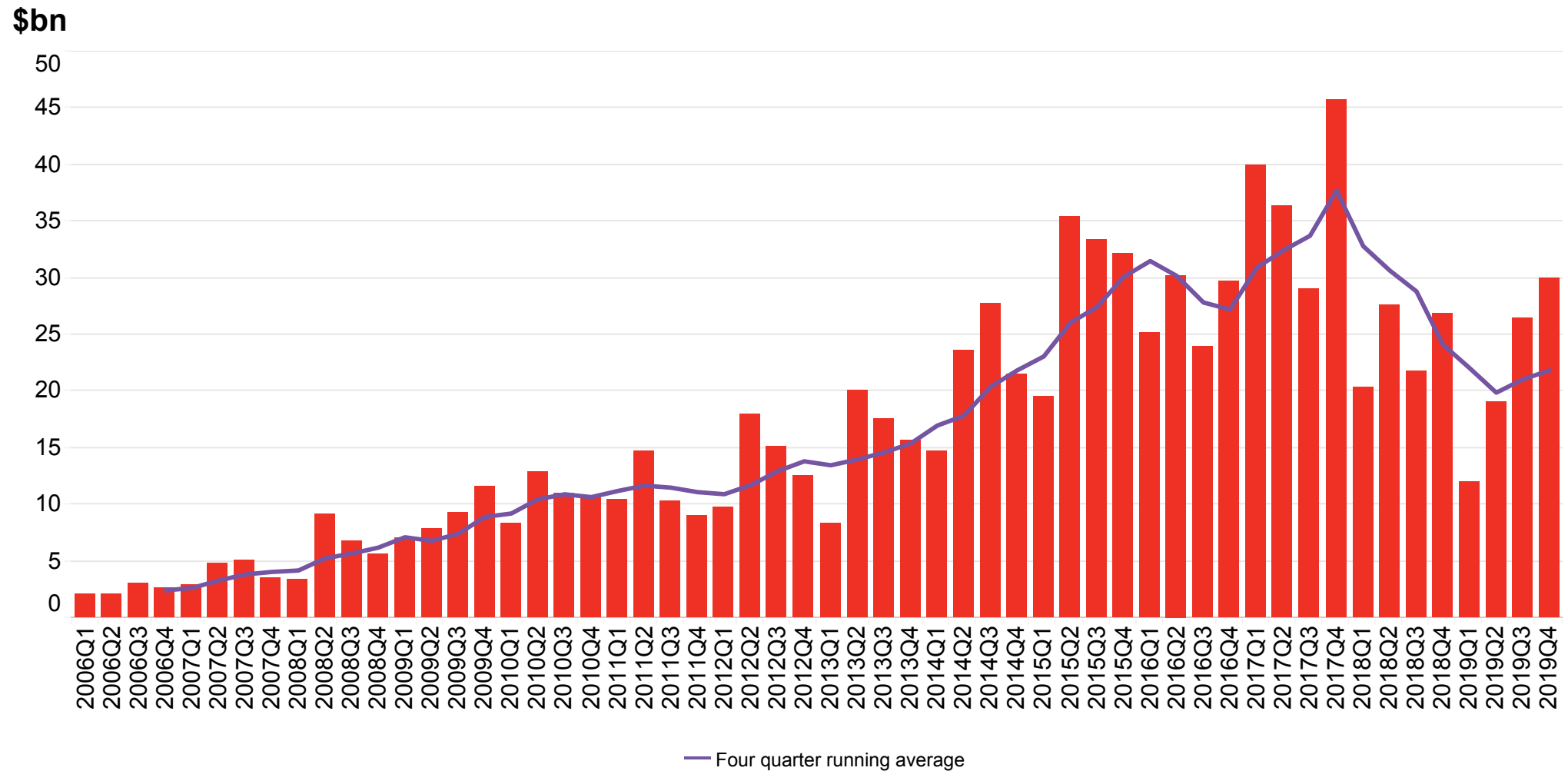
Quarterly trends, new investment

New investment in clean energy China, by sector

1Q 2006 - 4Q 2019

$bn

Solar   Wind   Other

BloombergNEF
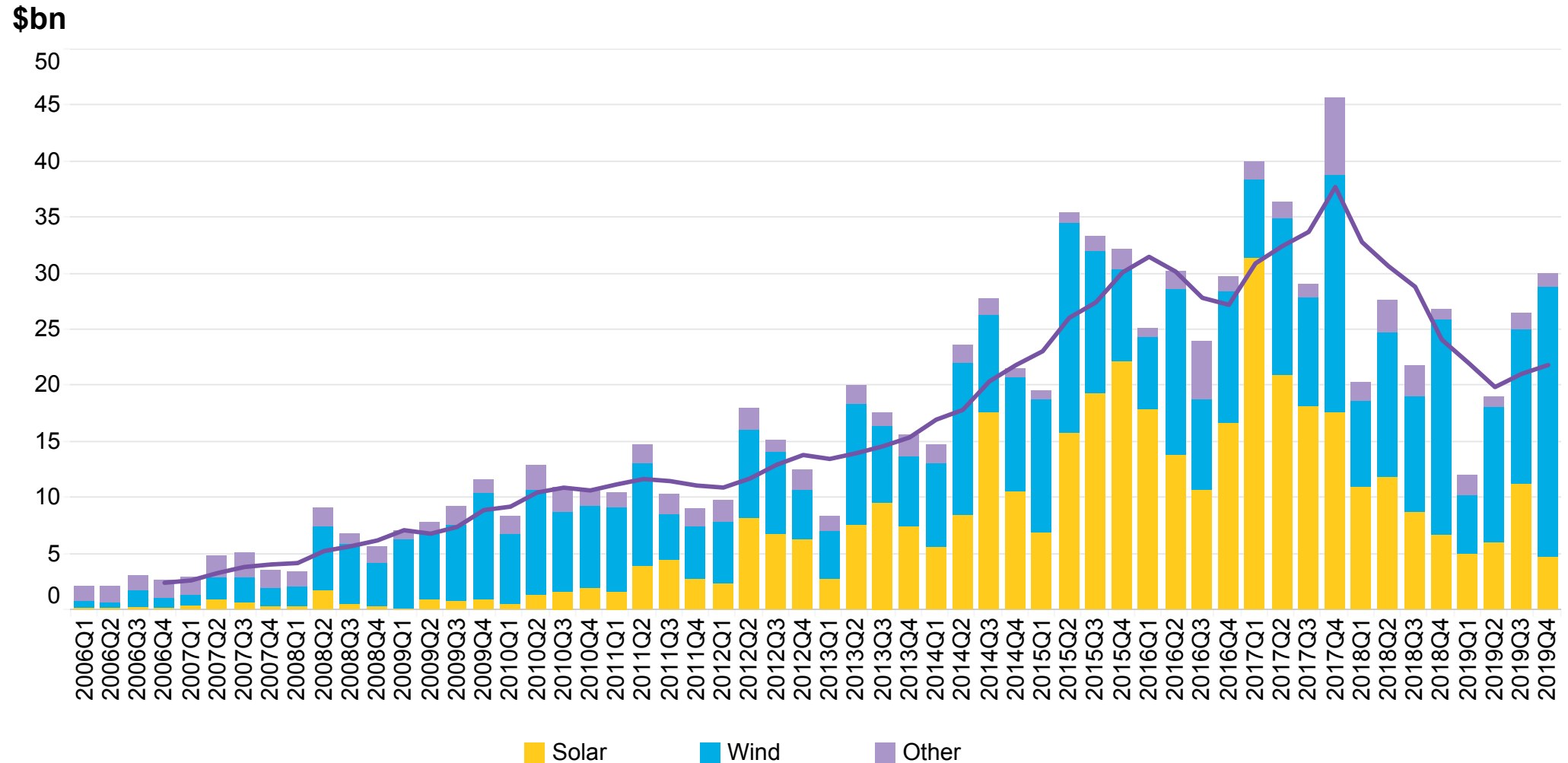
New investment in clean energy Australia

1Q 2006 - 4Q 2019

BloombergNEF
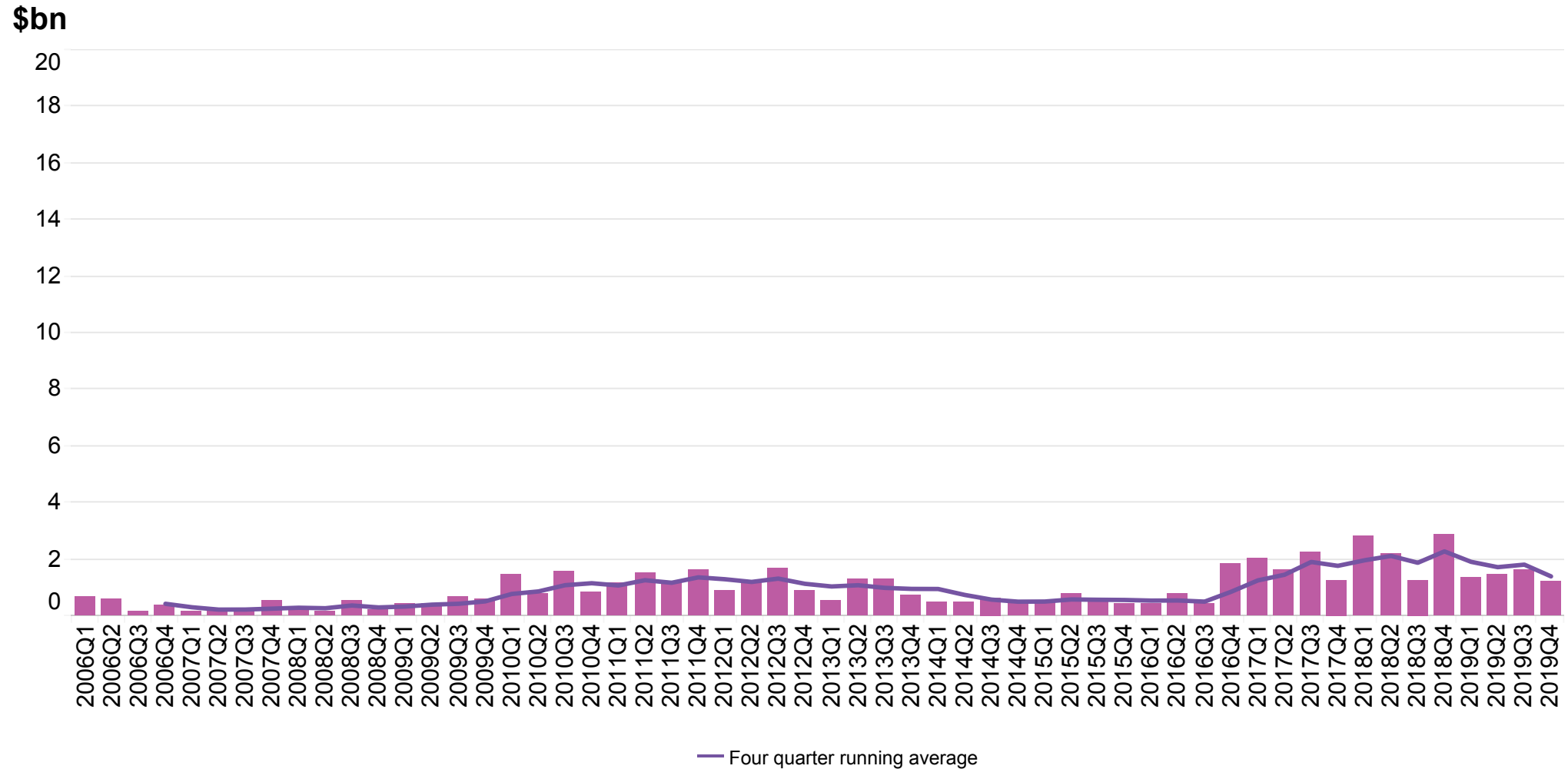
Quarterly trends, new investment

New investment in clean energy Brazil

1Q 2006 - 4Q 2019

BloombergNEF
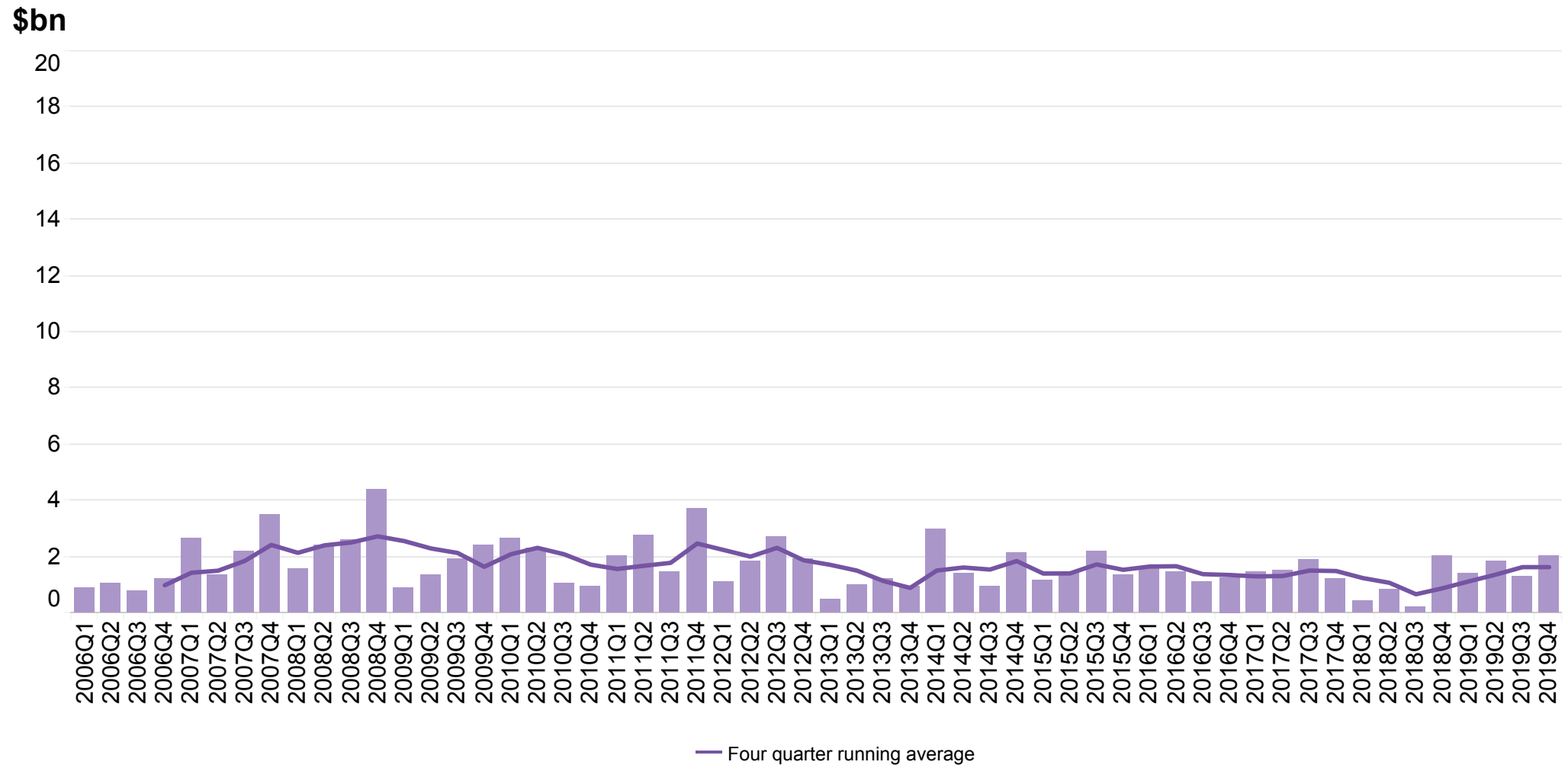
New investment in clean energy France

1Q 2006 - 4Q 2019

BloombergNEF
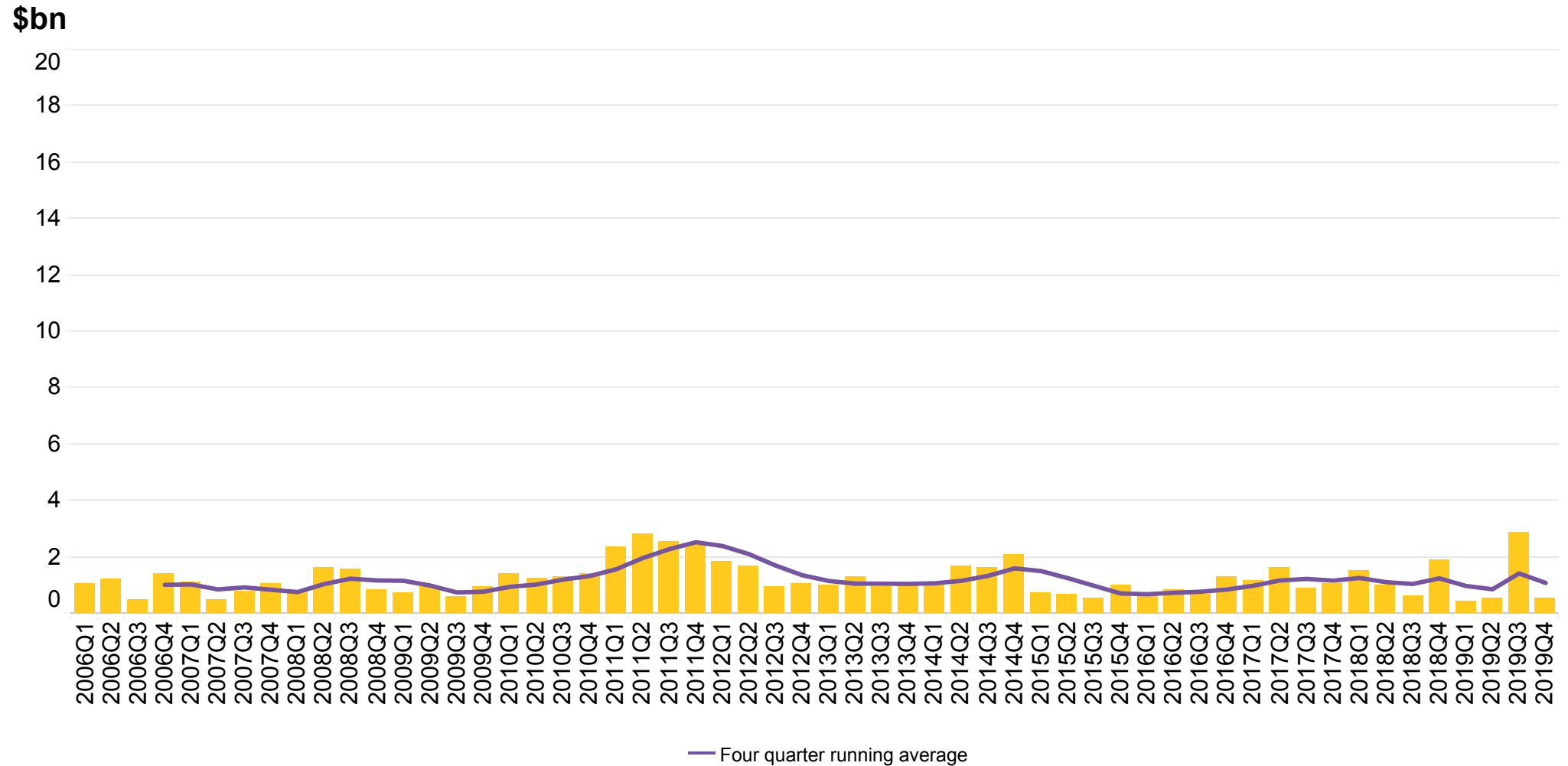
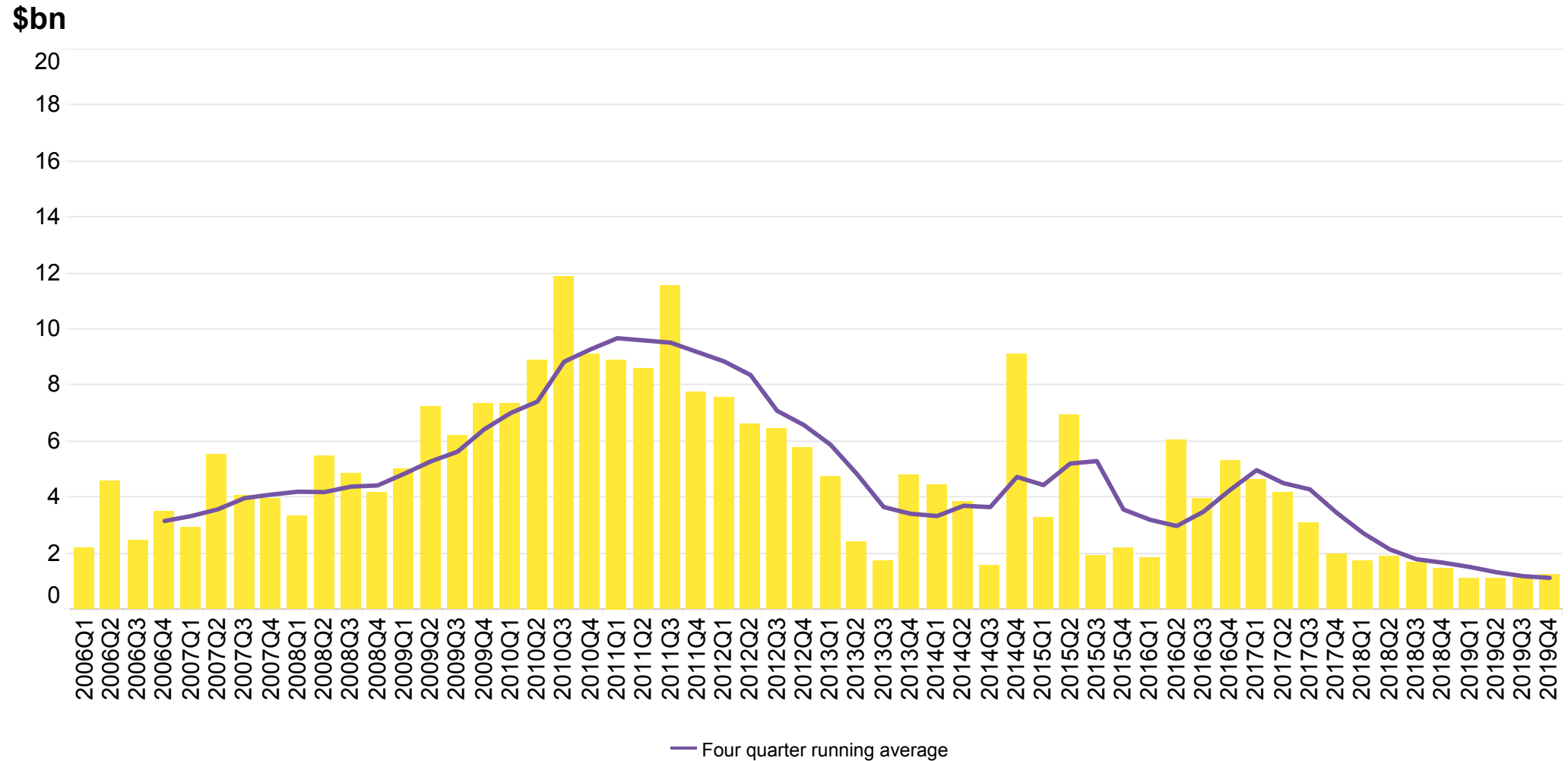Quarterly trends, new investment

New investment in clean energy Germany

1Q 2006 - 4Q 2019

BloombergNEF

New investment in clean energy India

1Q 2006 - 4Q 2019

$bn

Four quarter running average

BloombergNEF
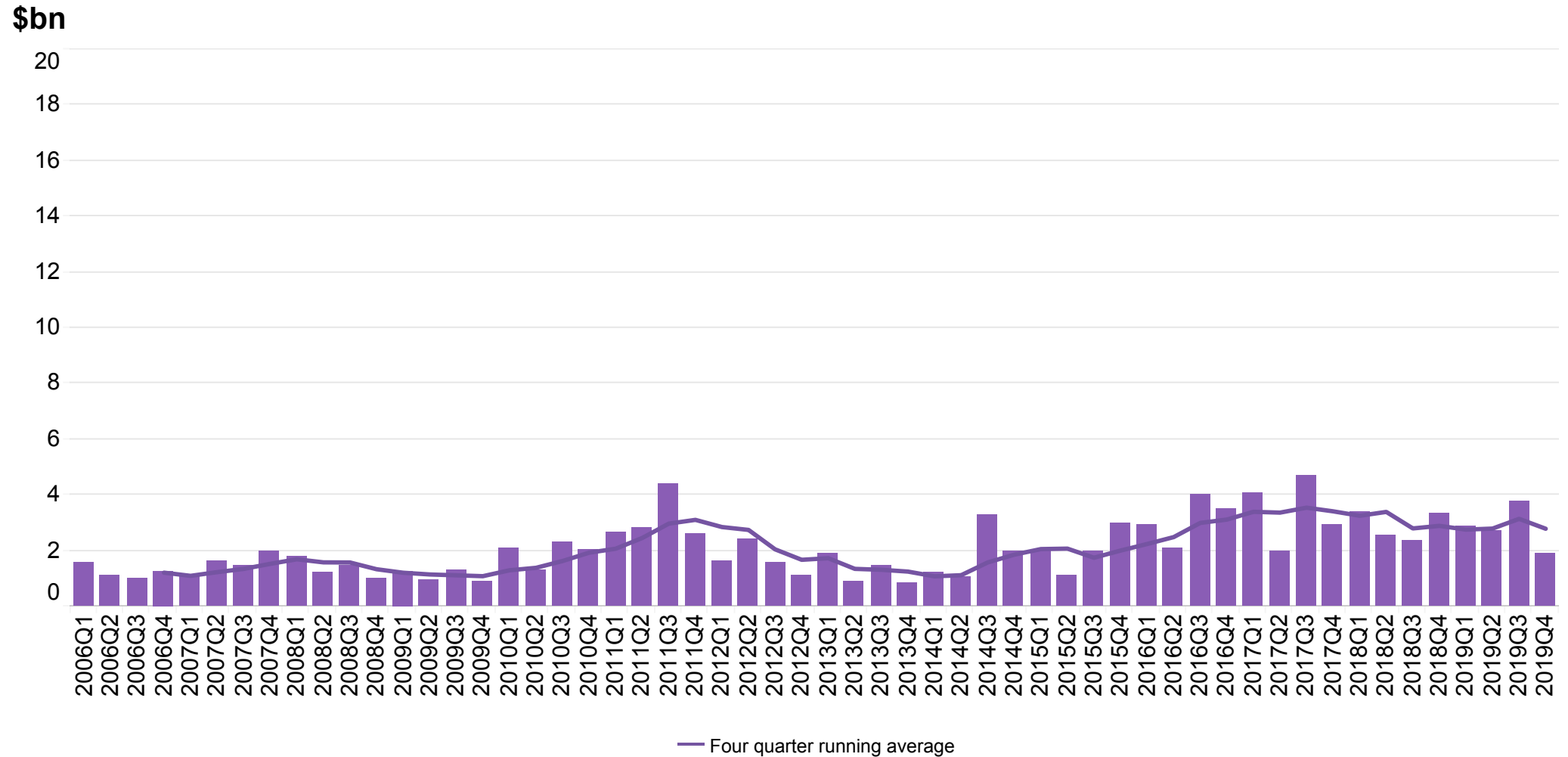
New investment in clean energy Japan

1Q 2006 - 4Q 2019

$bn

Four quarter running average

BloombergNEF
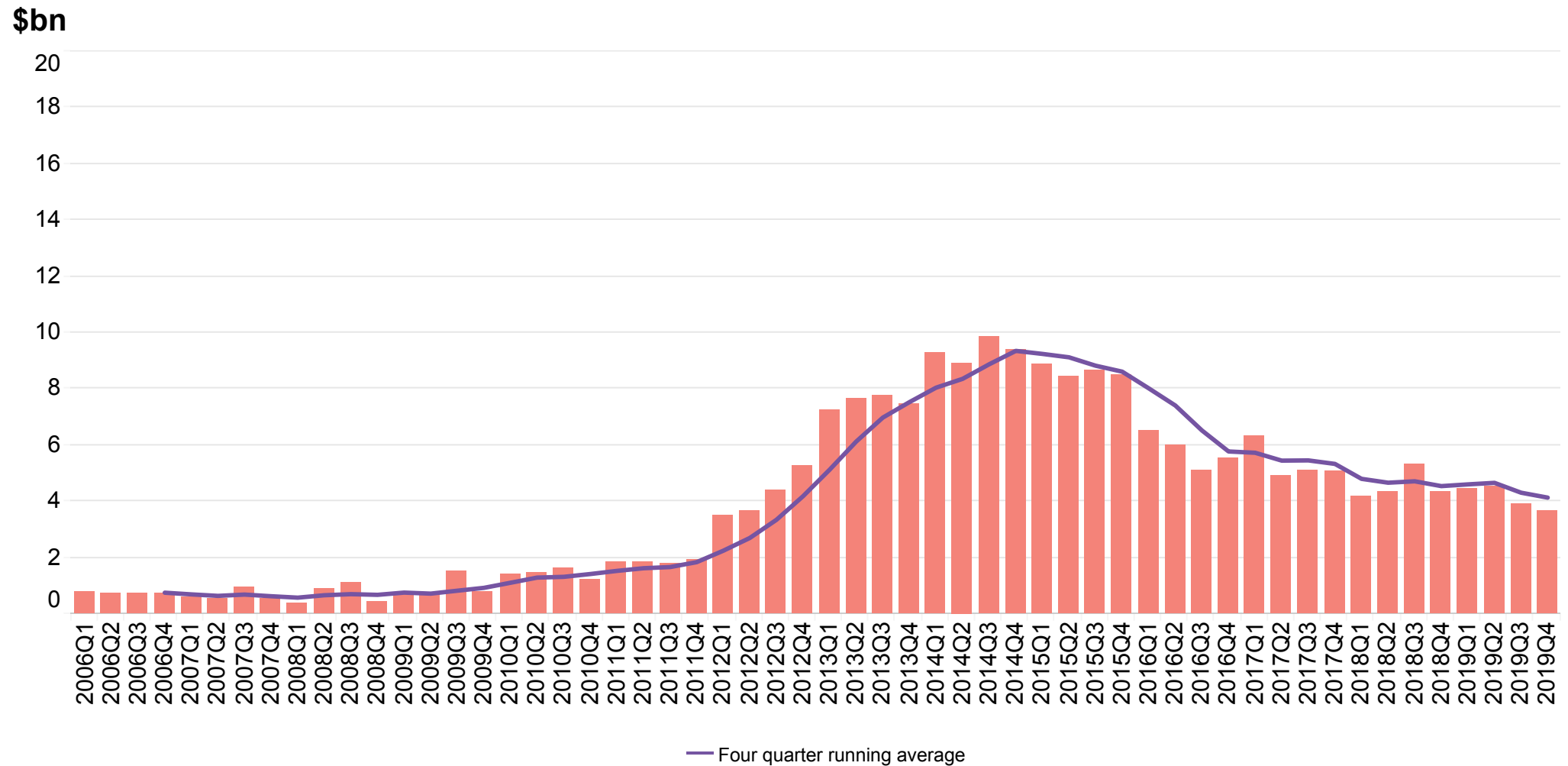
New investment in clean energy United Kingdom

1Q 2006 - 4Q 2019

BloombergNEF
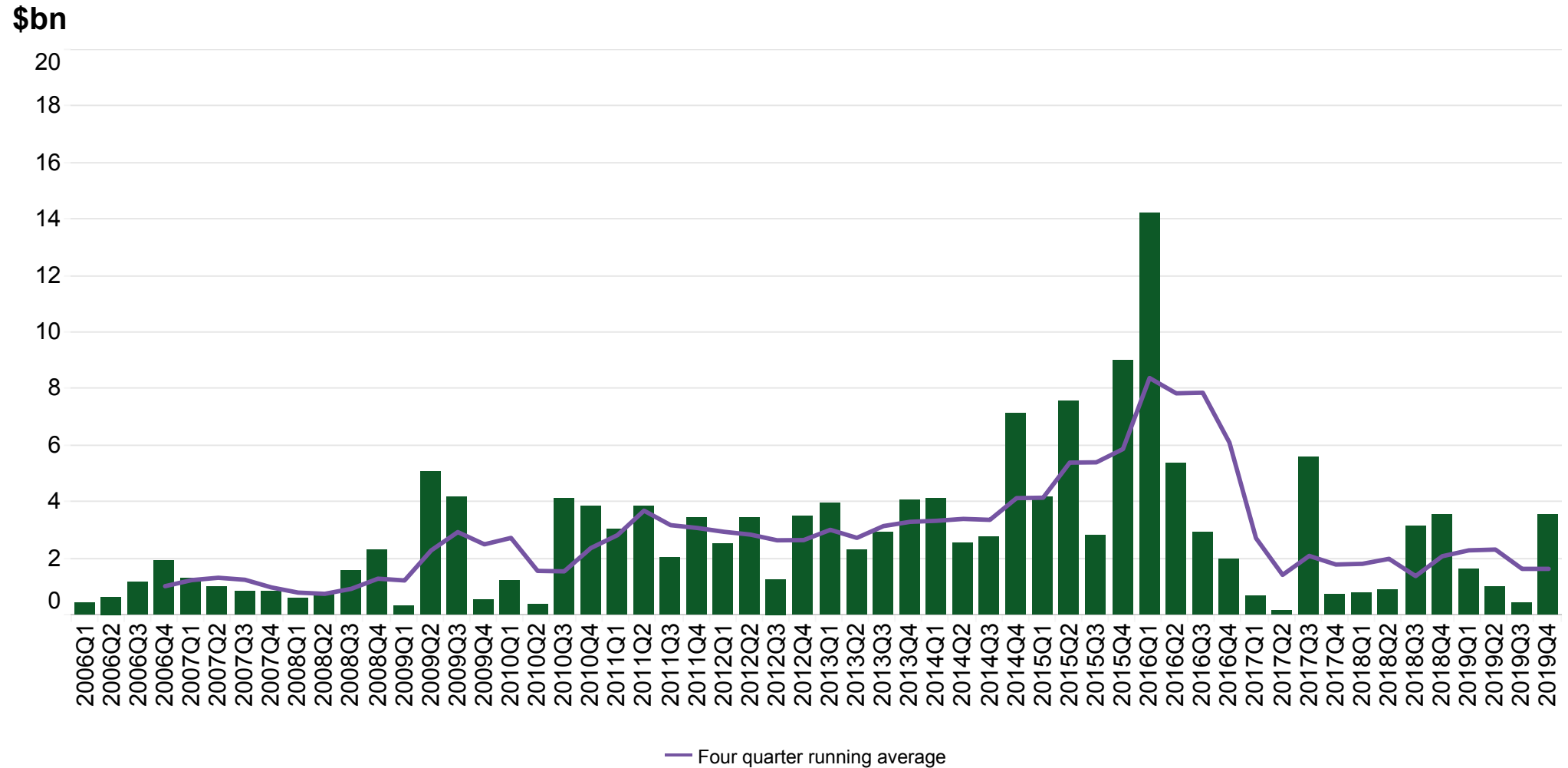
Quarterly trends, funds in circulation

Quarterly trends since 1Q 2006

Global clean energy, funds in circulation, by region

1Q 2006 - 4Q 2019

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Global clean energy, funds in circulation, by sector

1Q 2006 - 4Q 2019

$bn

Solar   Wind   Other   Biofuels

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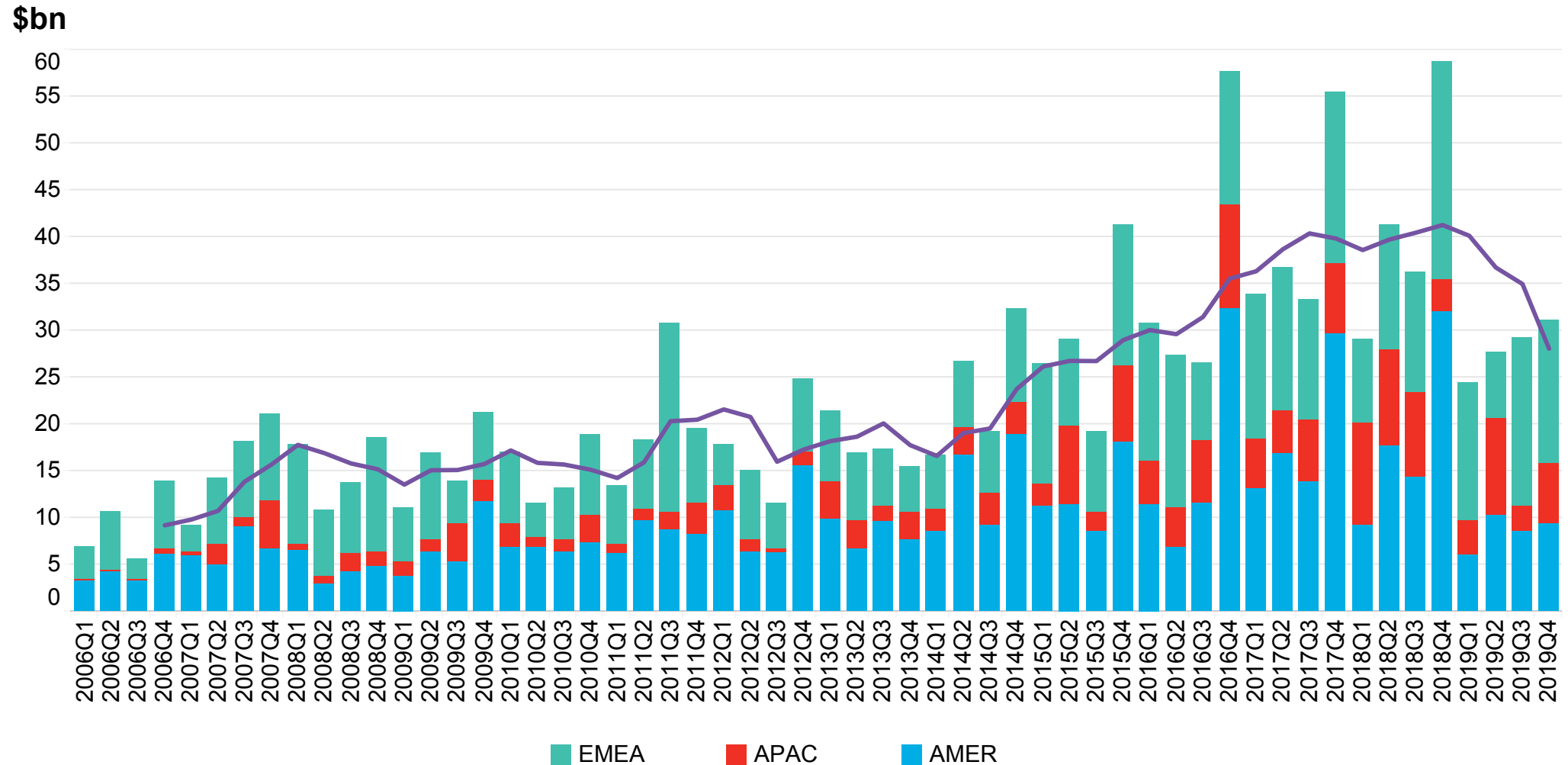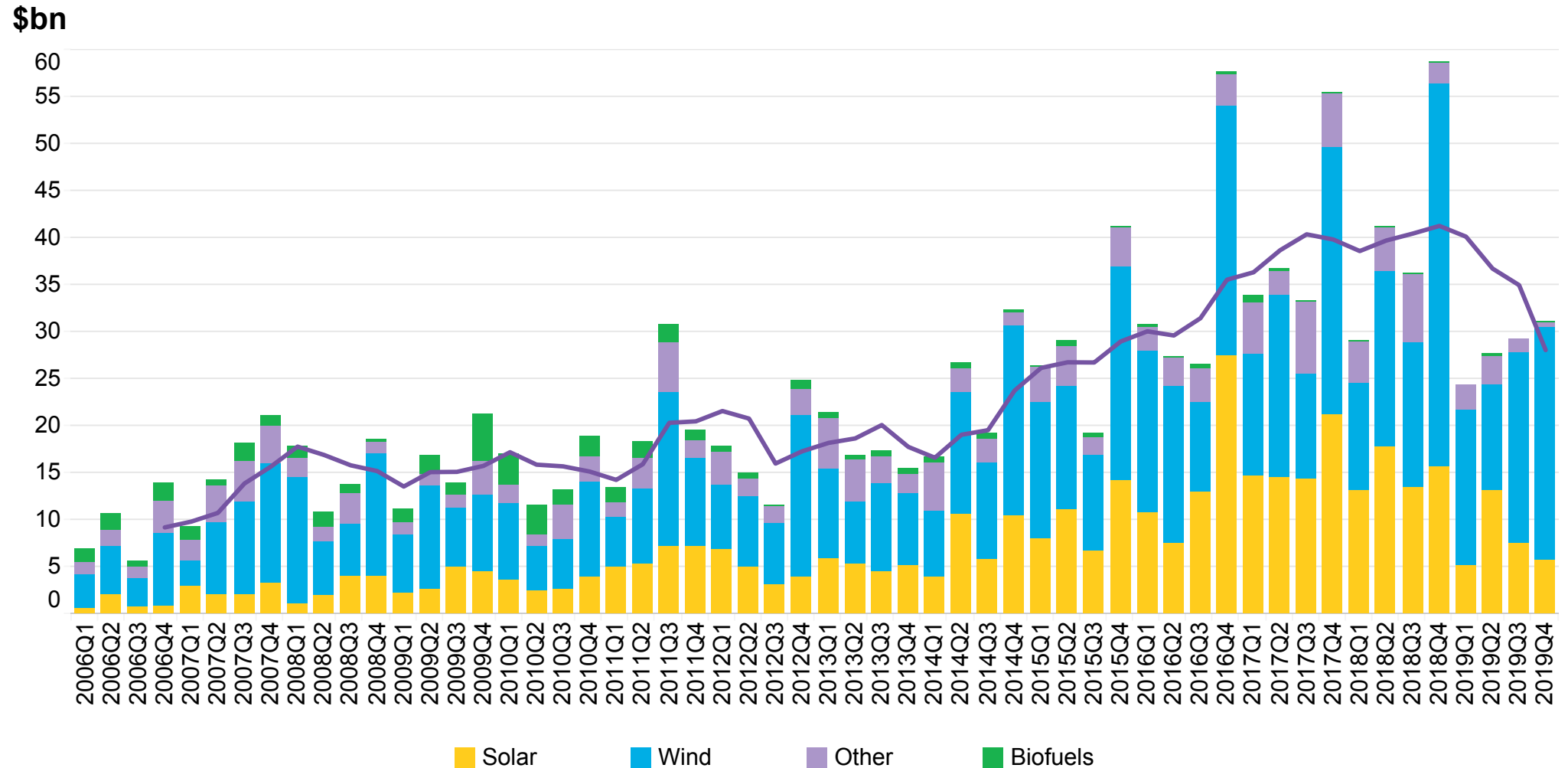
Quarterly trends, funds in circulation

Global clean energy, funds in circulation, by asset class

1Q 2006 - 4Q 2019

$bn

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

Top deals

Top deals for 2019

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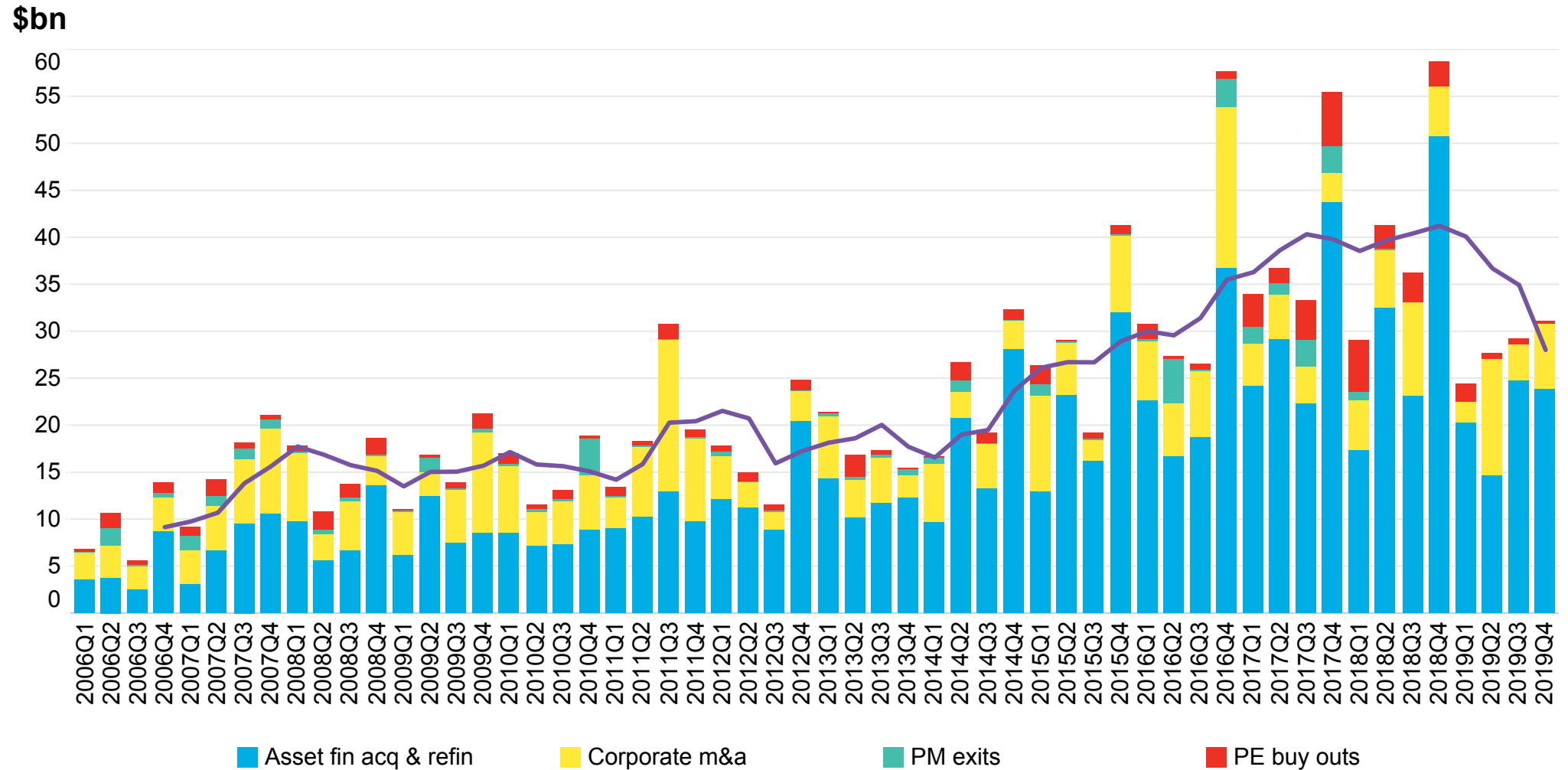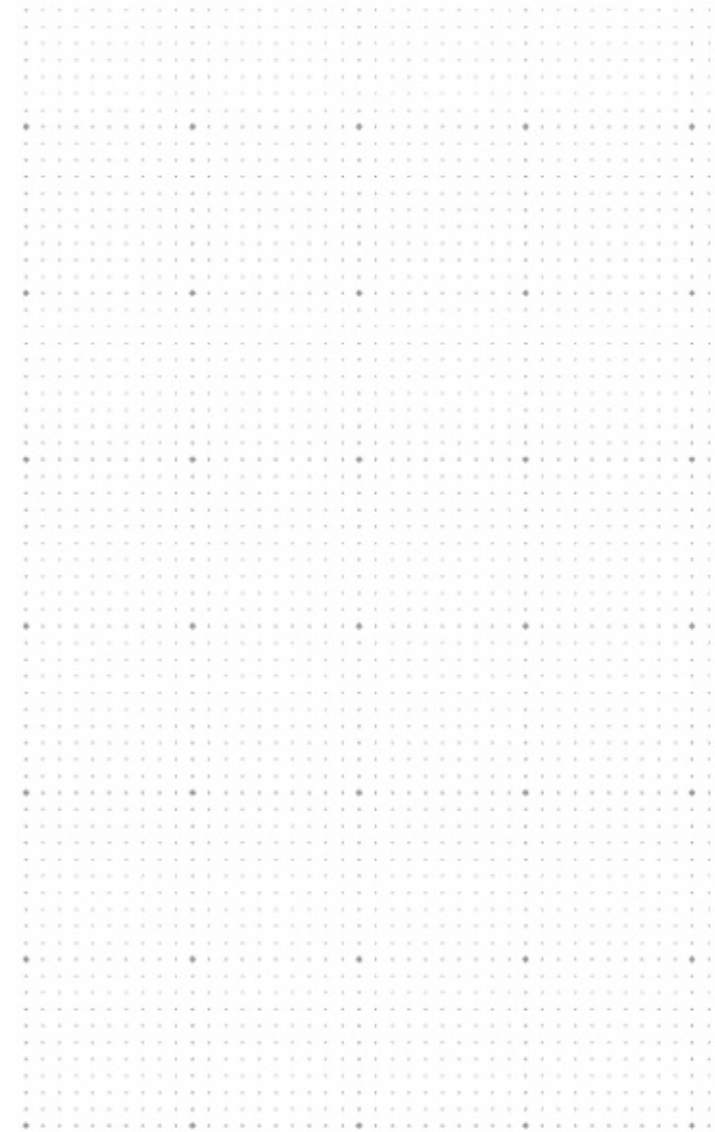# Top asset finance deals

2019

Project Name	Country	Sector	Capacity	Value
Al Maktoum IV Tower and Parabolic trough STEG Plant	United Arab Emirates	Solar	700MW	$3,900
EDF and ESB Neart na Gaoithe Offshore Wind Farm	United Kingdom	Wind	432MW	$3,422
Wpd & Starwind Offshore Yunlin Offshore Wind Farm	Taiwan	Wind	640MW	$3,028
EDF Enbridge Saint Nazaire Offshore Wind Farm	France	Wind	480MW	$2,539
Swancor & Macquarie Formosa II Miaoli Offshore Wind Farm	Taiwan	Wind	376MW	$2,045

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Top venture capital & private equity deals

2019

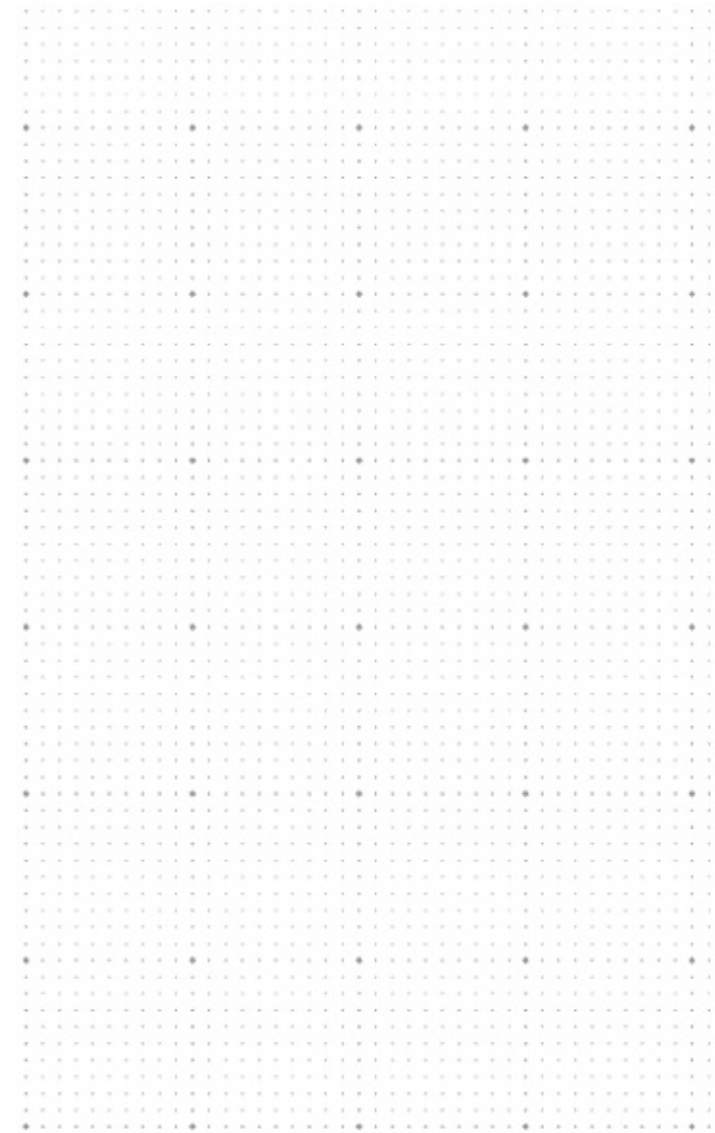| Project Name	Country	Sector	Type of Transaction	Value
Rivian Automotive Inc	United States	Energy smart technologies	PE Expansion	$1,300
Lucid Motors Inc	United States	Energy smart technologies	PE Expansion	$1,000
NorthVolt AB	Sweden	Energy smart technologies	PE Expansion	$1,000
Greenko Energy Holdings	India	Solar	PE Expansion	$824
Rivian Automotive Inc	United States	Energy smart technologies	VC Late Stage	$700

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Top public market deals

2019

Project Name	Sector	Type of Transaction	Equity Raised
Tesla Inc	Energy smart technologies	Secondary	$863
NIO	Energy smart technologies	Convertible	$650
Greencoat UK Wind PLC/Funds	Wind	Secondary	$488
Xinyi Energy Holdings Ltd	Solar	IPO	$466
Sterling & Wilson Solar Ltd	Solar	IPO	$414

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Annual trends, new investment

Annual trends since 2006

Annual trends, new investment

Global new investment in clean energy

2006 - 2019

$bn

Year	Value
2006	120.1
2007	168.2
2008	200.7
2009	195.1
2010	270.8
2011	322.8
2012	289.7
2013	266.8
2014	327.7
2015	356.5
2016	344.5
2017	392.4
2018	362.5
2019	363.3

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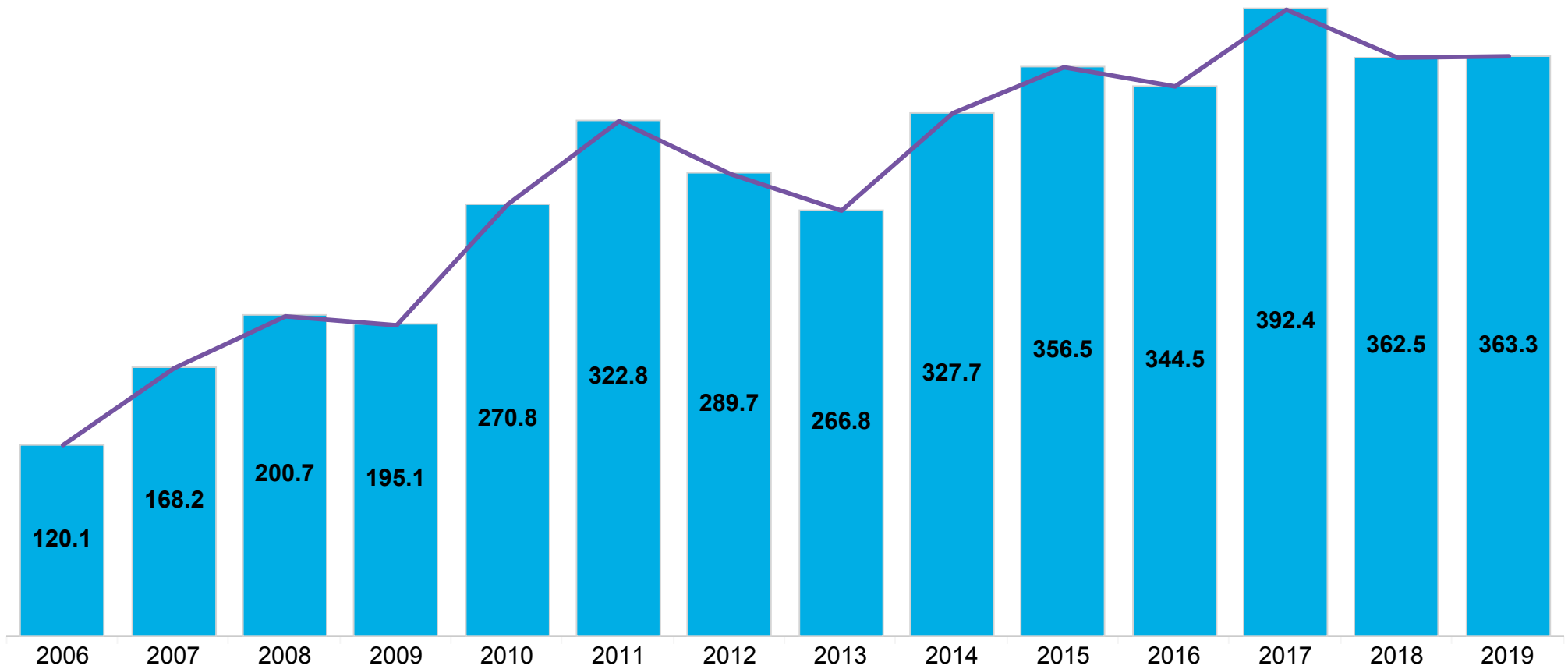
Annual trends, new investment

Global new investment in clean energy, by region

2006 - 2019

$bn

APAC   EMEA   AMER

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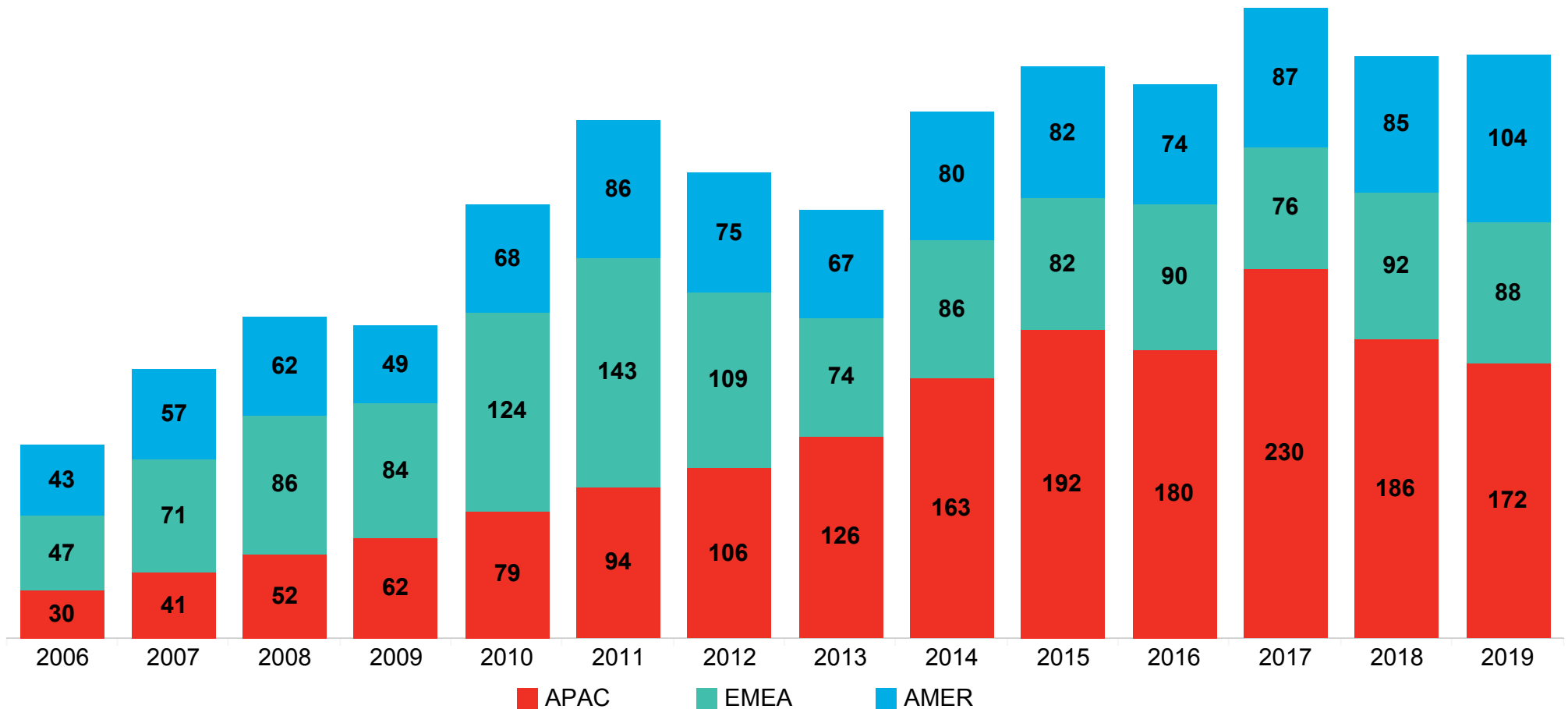
Global new investment in clean energy, by sector

2006 - 2019

$bn

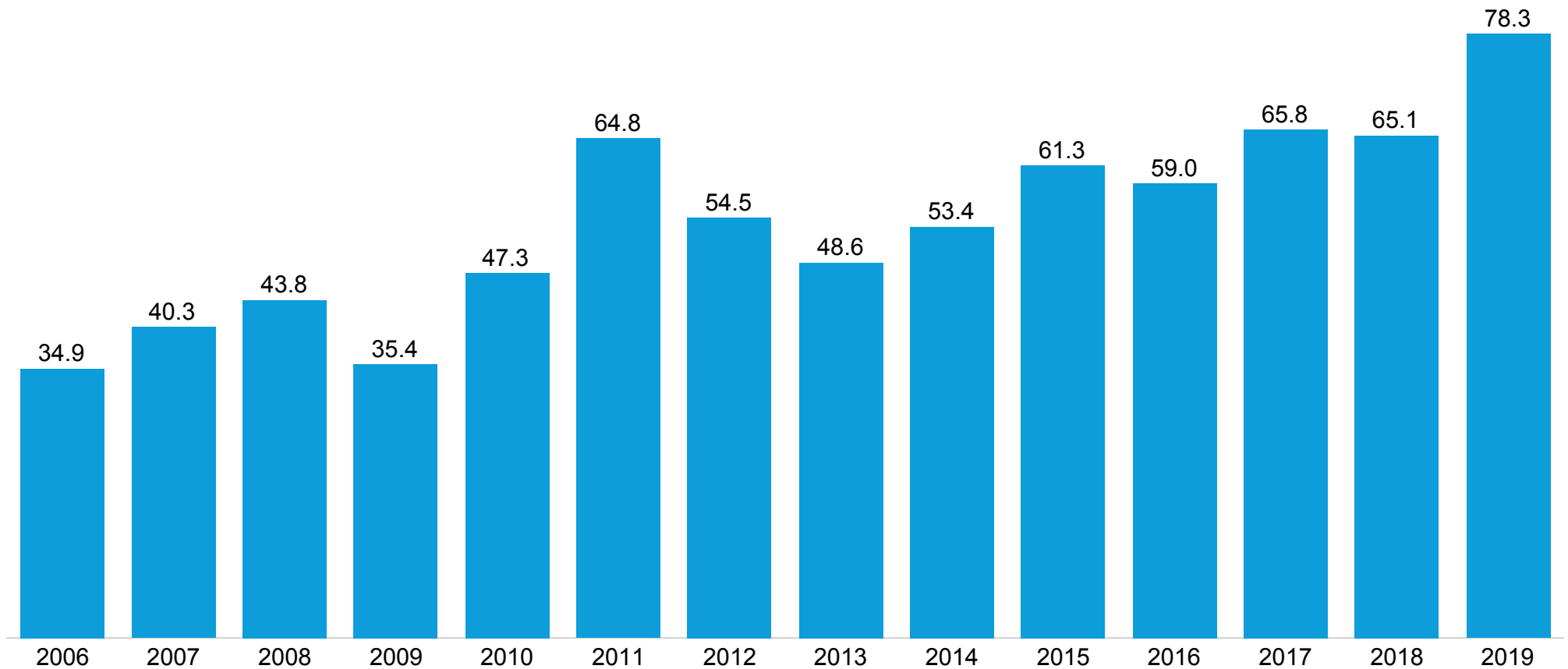|	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Biofuels	26	26												
Other	37	46	49	50	61	69	60	58	63	57	73	75	83	77
Wind	35	59	74	72	98	83	78	83	111	120	123	133	133	143
Solar	22	37	61	64	102	160	144	120	148	177	146	181	144	141

Legend: Solar — Wind — Other — Biofuels

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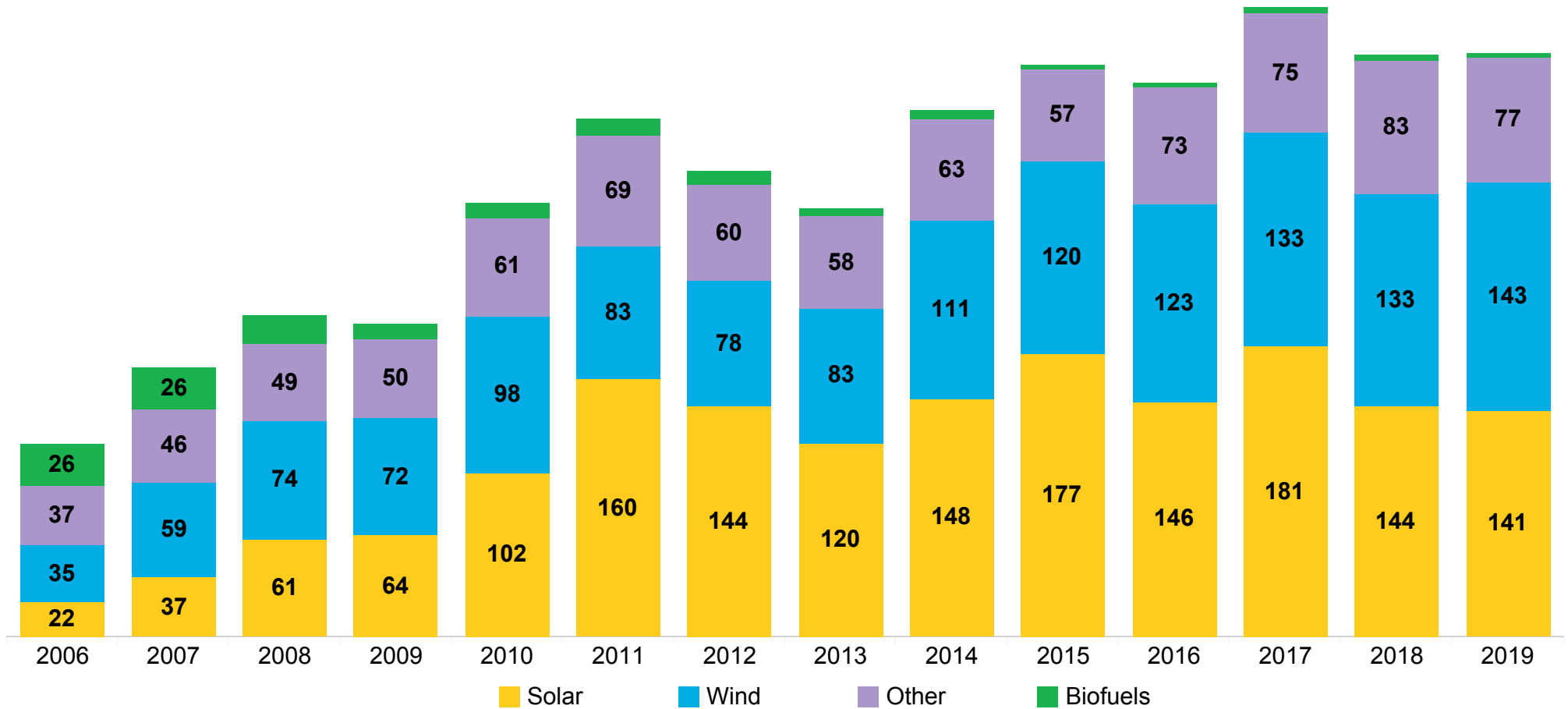
Annual trends, new investment

New investment in clean energy United States

2006 - 2019

$bn

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New investment in clean energy United States, by sector

2006 - 2019

$bn

Legend: Wind (blue), Solar (yellow), Other (purple)

Annual totals: 2006: 34.9, 2007: 40.3, 2008: 43.8, 2009: 35.4, 2010: 47.3, 2011: 64.8, 2012: 54.5, 2013: 48.6, 2014: 53.4, 2015: 61.3, 2016: 59.0, 2017: 65.8, 2018: 65.1, 2019: 78.3

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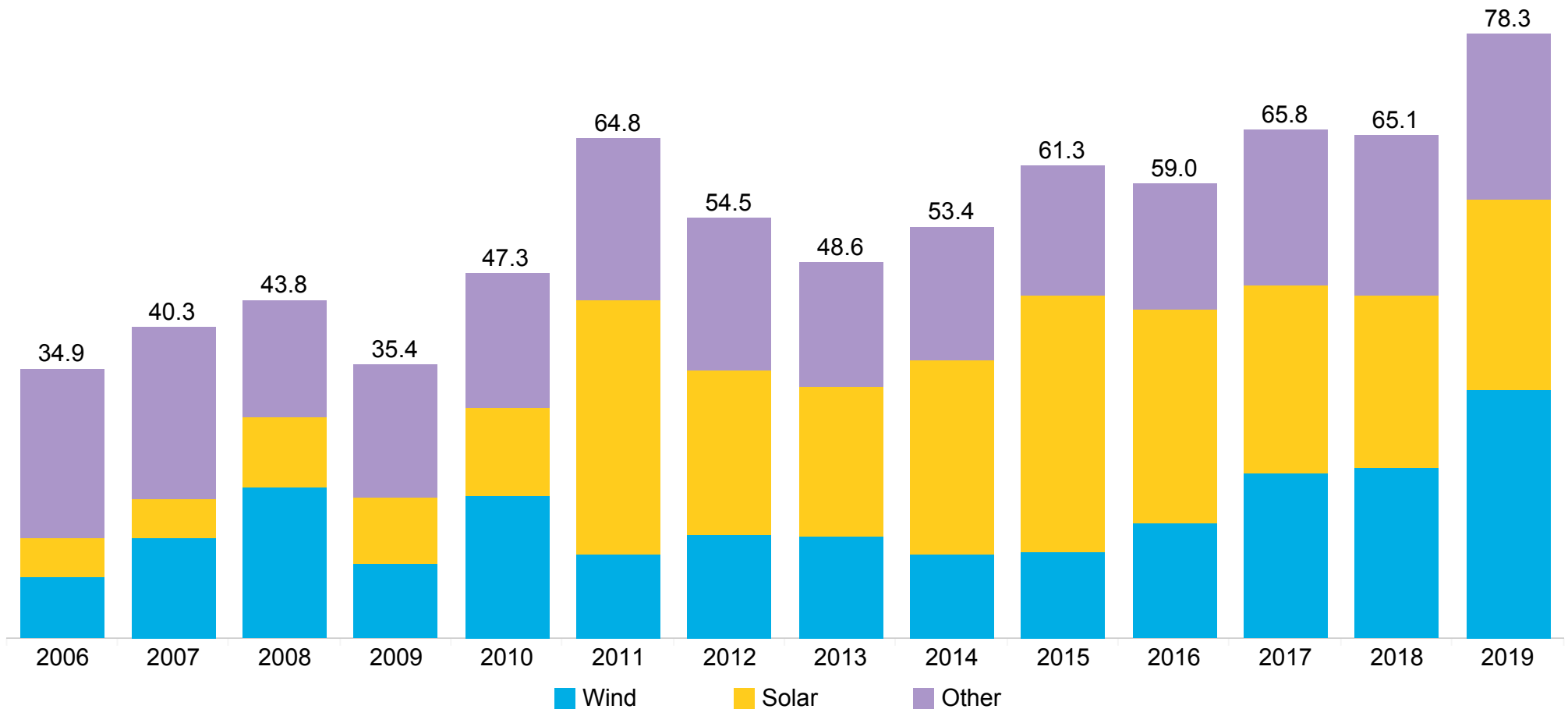
Annual trends, new investment

New investment in clean energy Europe

2006 - 2019

$bn

Year	Value
2006	45.6
2007	69.8
2008	84.7
2009	83.4
2010	120.0
2011	139.7
2012	99.6
2013	67.1
2014	78.5
2015	71.2
2016	83.6
2017	63.9
2018	78.3
2019	76.4

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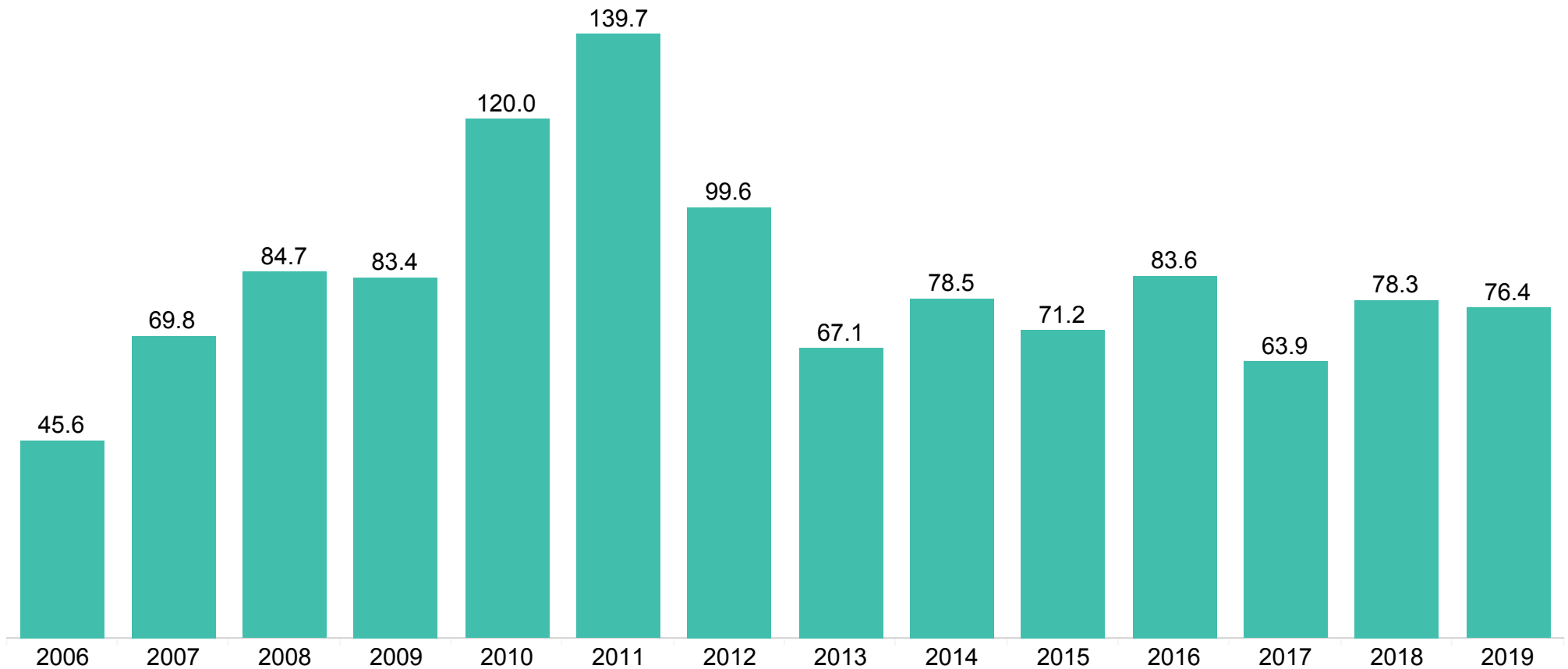
New investment in clean energy Europe, by sector

2006 - 2019

$bn

Legend: Onshore · Offshore · Solar · Other
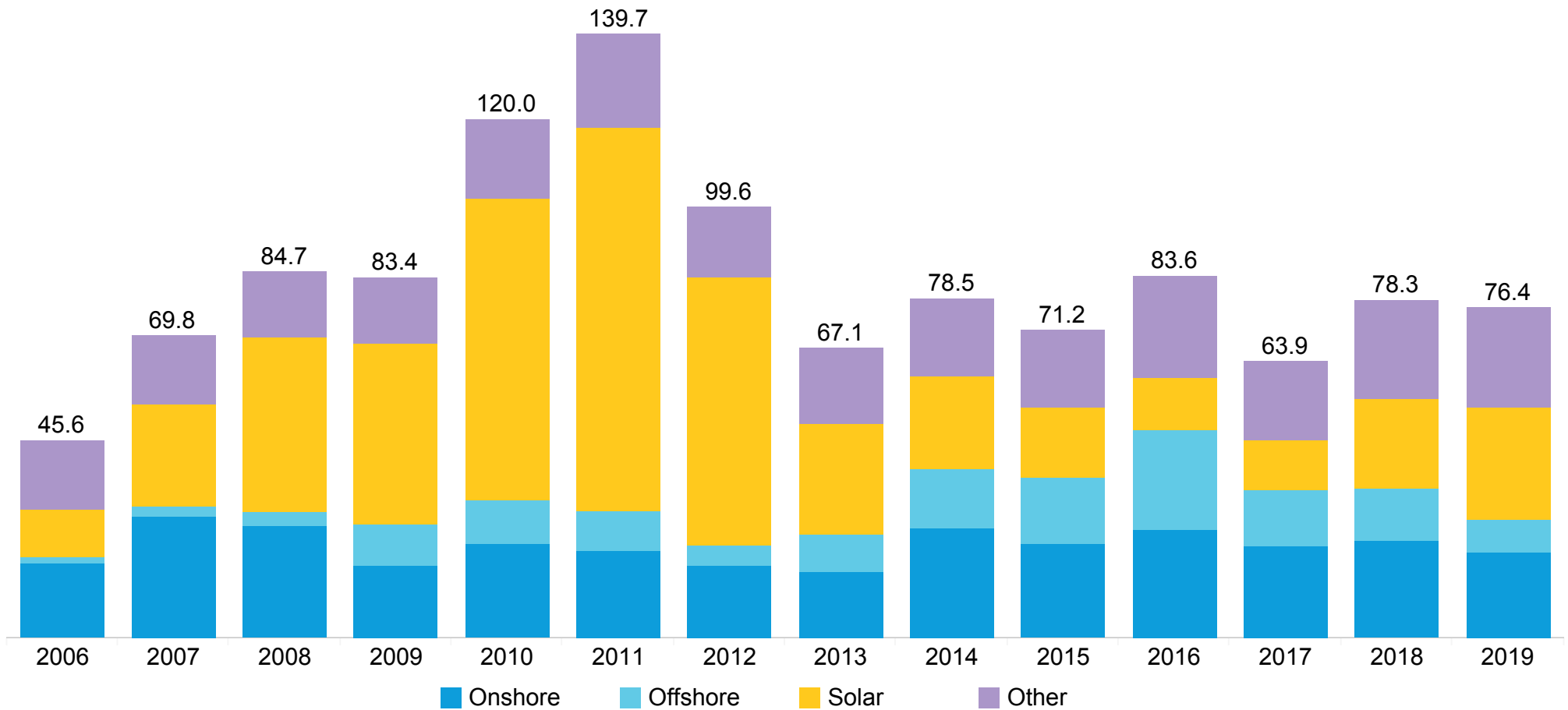
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New investment in clean energy China

2006 - 2019

$bn

10.7	17.4	26.2	37.4	45.9	48.8	60.6	66.6	92.8	124.6	115.7	162.4	110.1	100.4
2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
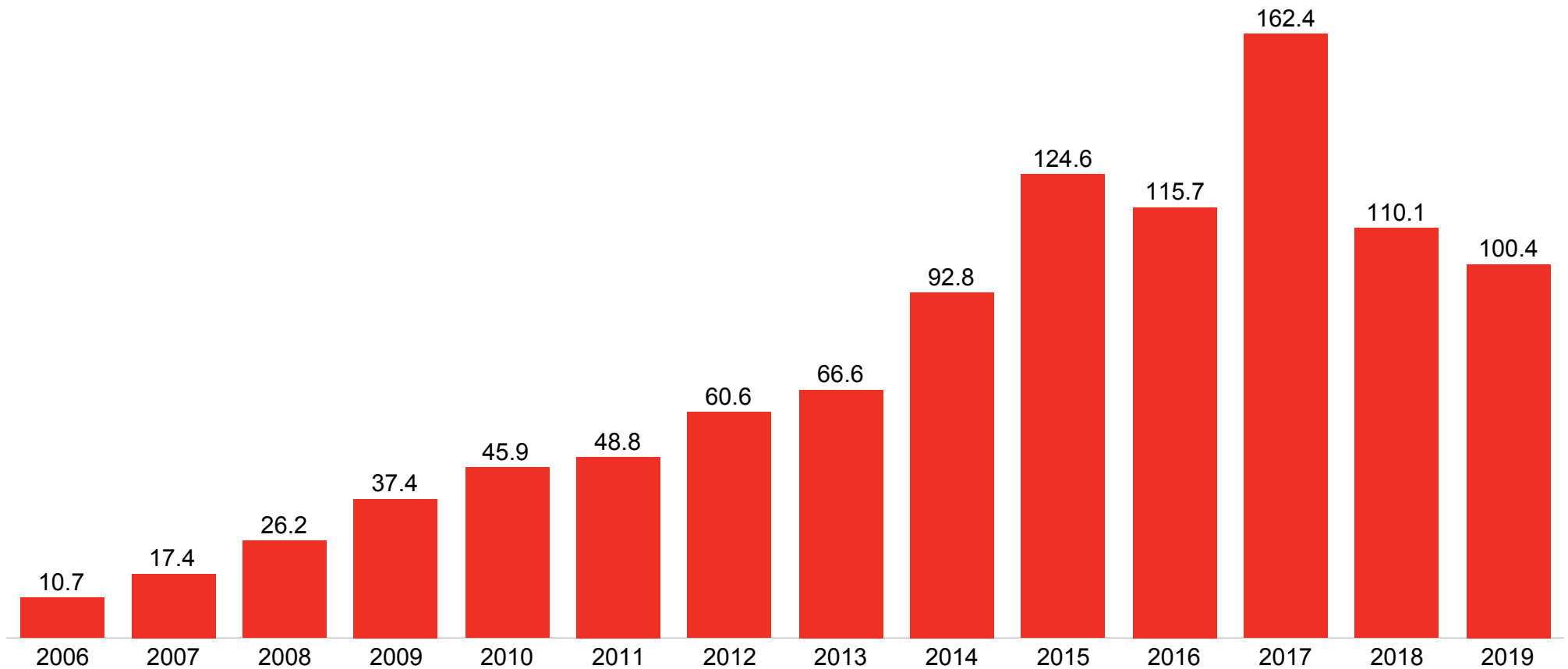
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New investment in clean energy China, by sector

2006 - 2019

$bn

Solar   Wind   Other
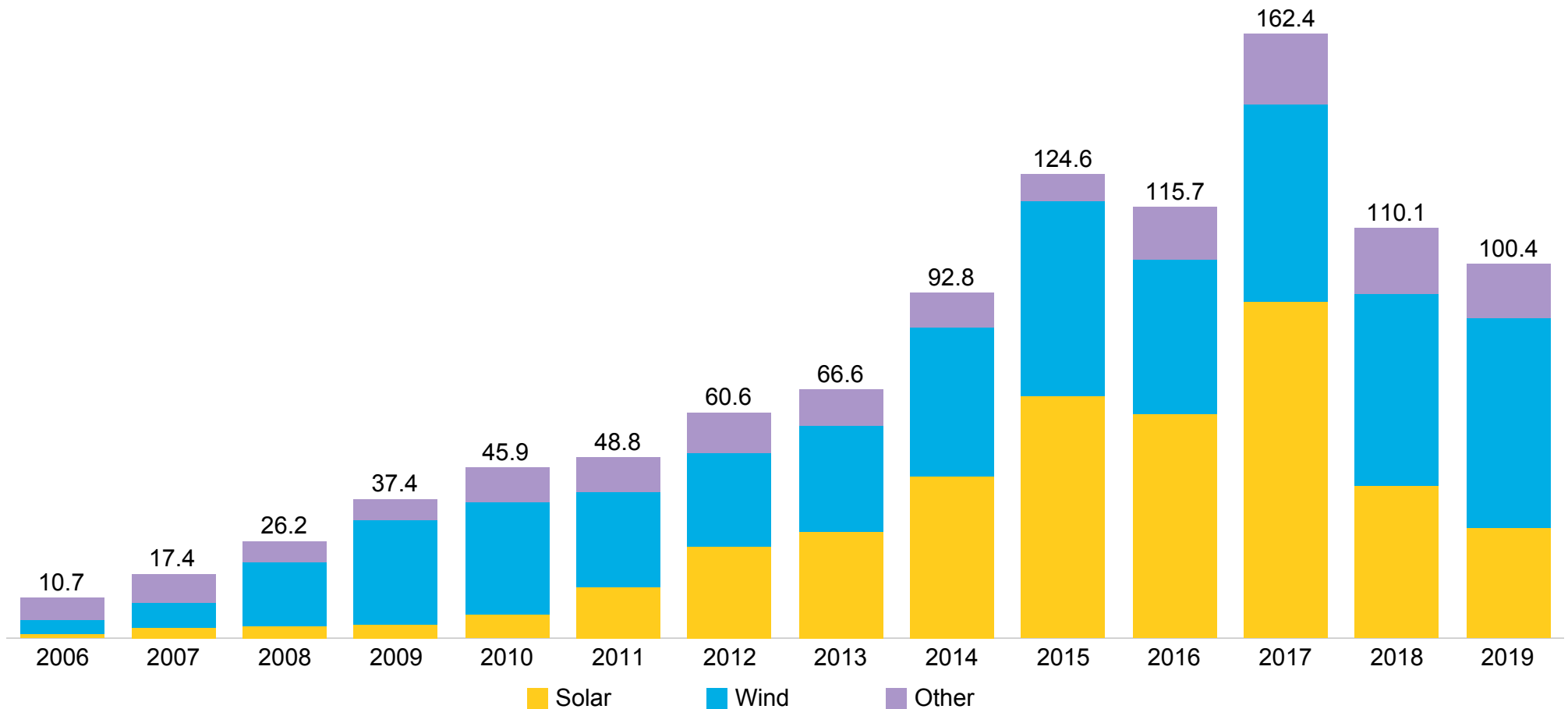
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Definitions and FAQs

How BloombergNEF defines clean energy

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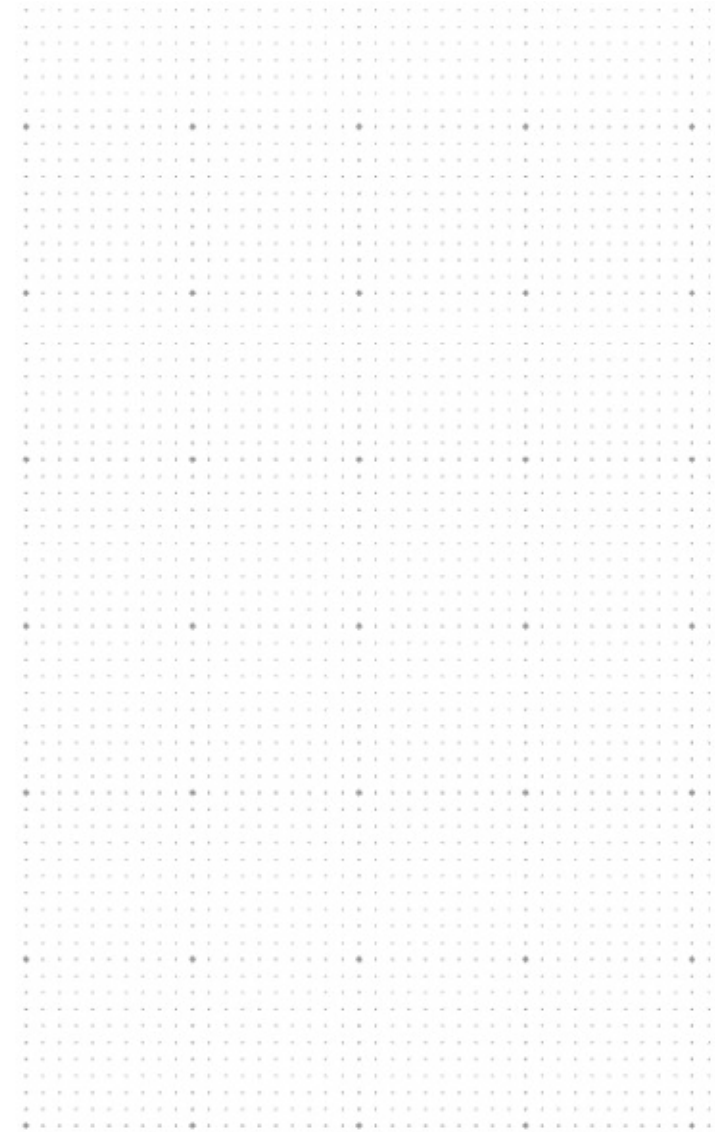
Definitions

Asset classes

Venture capital and private equity (VCPE)

Early and late stage venture capital funding rounds of pure play clean 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 clean 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.

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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.

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FAQs

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

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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.

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

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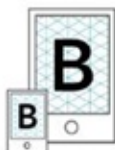
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