

Clean Energy Investment Trends, 3Q 2017

2017, following in 2016's footsteps

Abraham Louw

October 5, 2017



**Bloomberg
New Energy Finance**

Wind Boost Investment in 3Q

The third quarter of 2017 saw \$66.9 billion invested in clean energy around the world, up 3% from 2Q this year and 40% higher than 3Q 2016

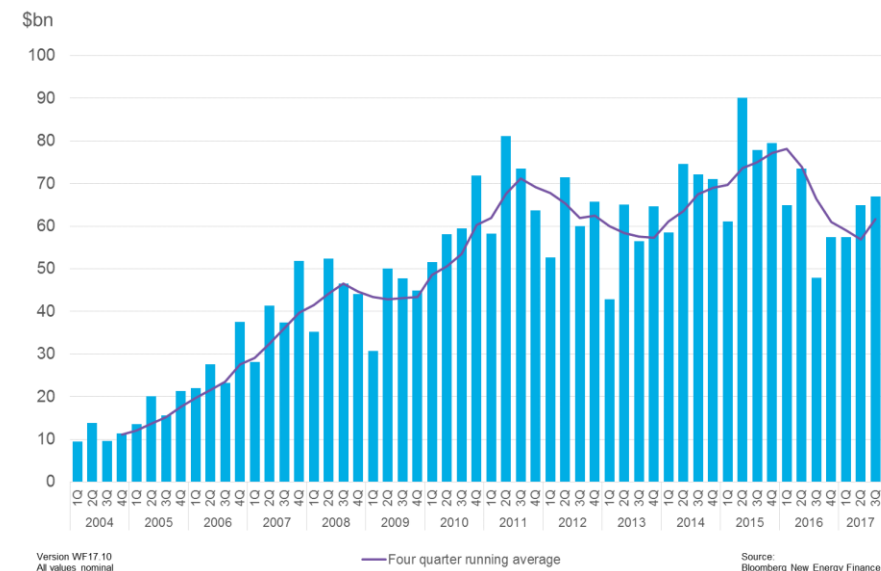
- The numbers for the July-to-September quarter mean that investment in 2017 so far is running 2% above that in the same period of last year, suggesting that the annual total is likely to finish up close to, or a little ahead of, 2016's figure of \$287.5 billion
- Asset finance of utility-scale renewable energy projects jumped 72% globally compared to the same quarter of last year, reaching \$54.3 billion
- Quarterly wind investment reach \$34.3 billion in 3Q, the highest since 2Q 2016 and ahead of solar investment of \$30.5 billion
- The stand-out deal of the third quarter of 2017 was the 2GW Wind Catcher project in the Oklahoma Panhandle costing \$4.5 billion

\$66.9 billion Global clean energy investment in 3Q

3% Q3 quarter-on-quarter growth in clean energy investment

40% Rise in year-on-year quarterly investment

Global New Investment in Clean Energy



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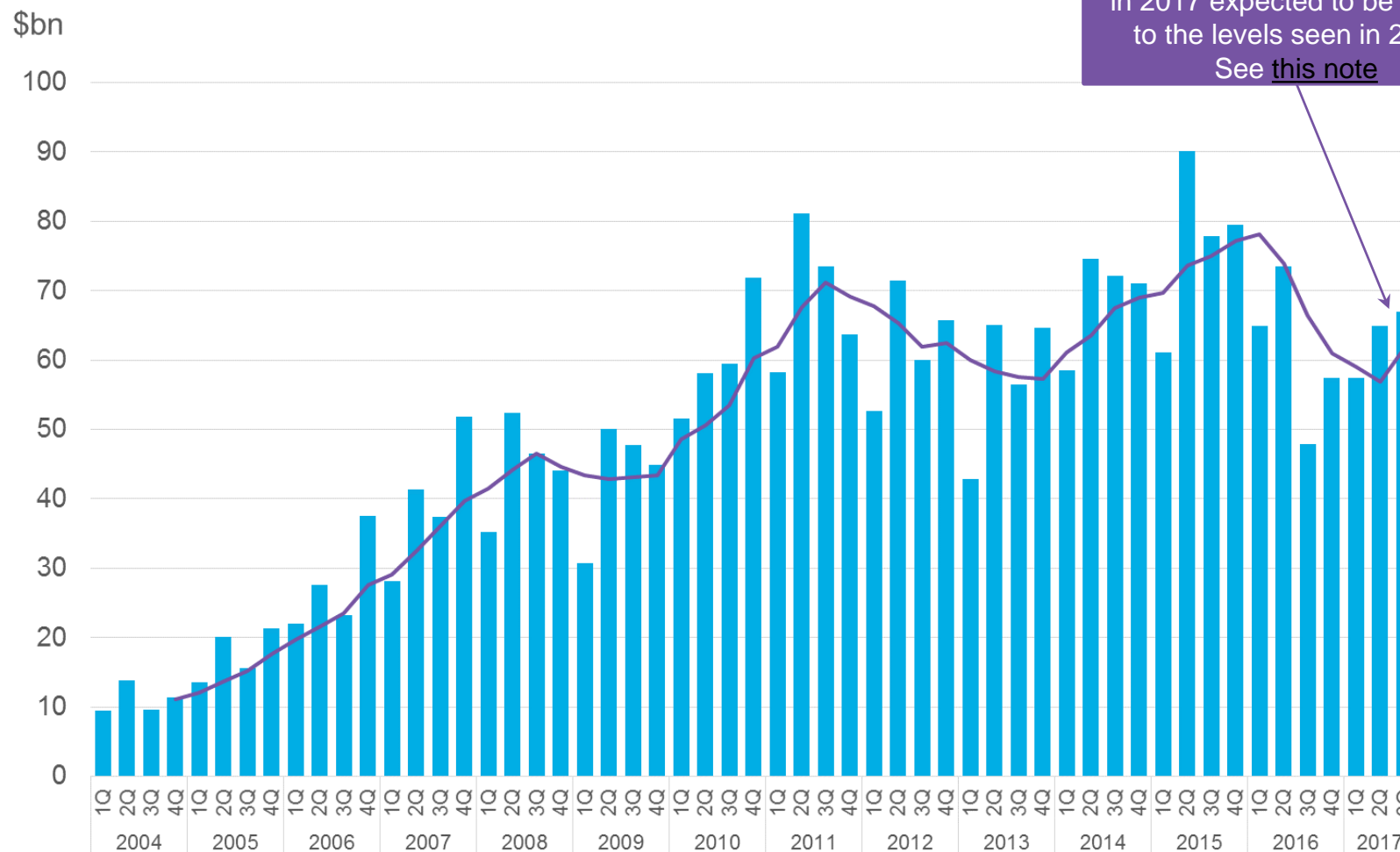
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Quarterly Trends, New Investment

Quarterly trends since 1Q 2004

Global New Investment in Clean Energy

1Q 2004 – 3Q 2017



Clean energy investment levels in 2017 expected to be similar to the levels seen in 2016. See [this note](#)

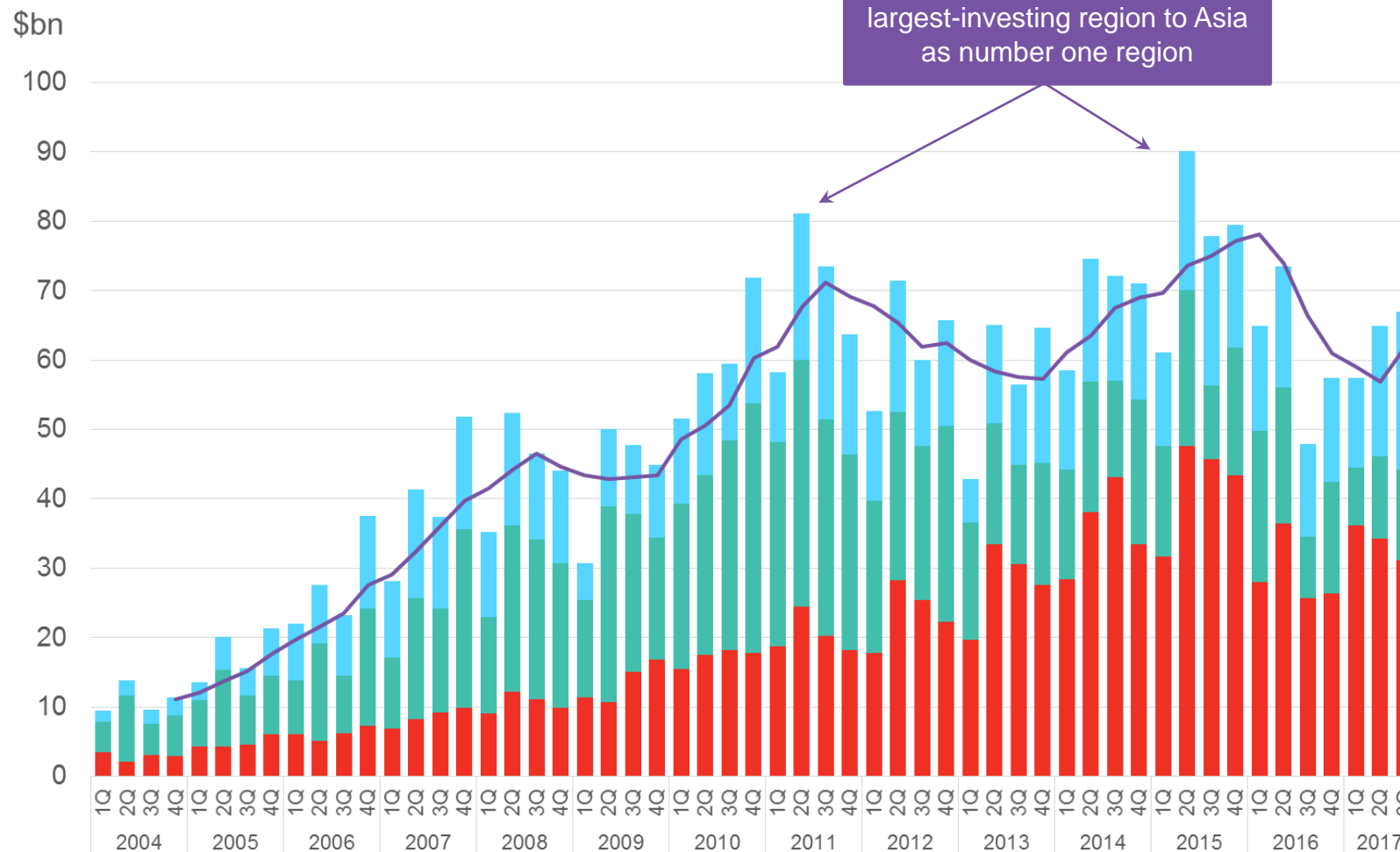
Version WF17.10
All values nominal

— Four quarter running average

Source:
Bloomberg New Energy Finance

Global New Investment in Clean Energy, by Region

1Q 2004 – 3Q 2017



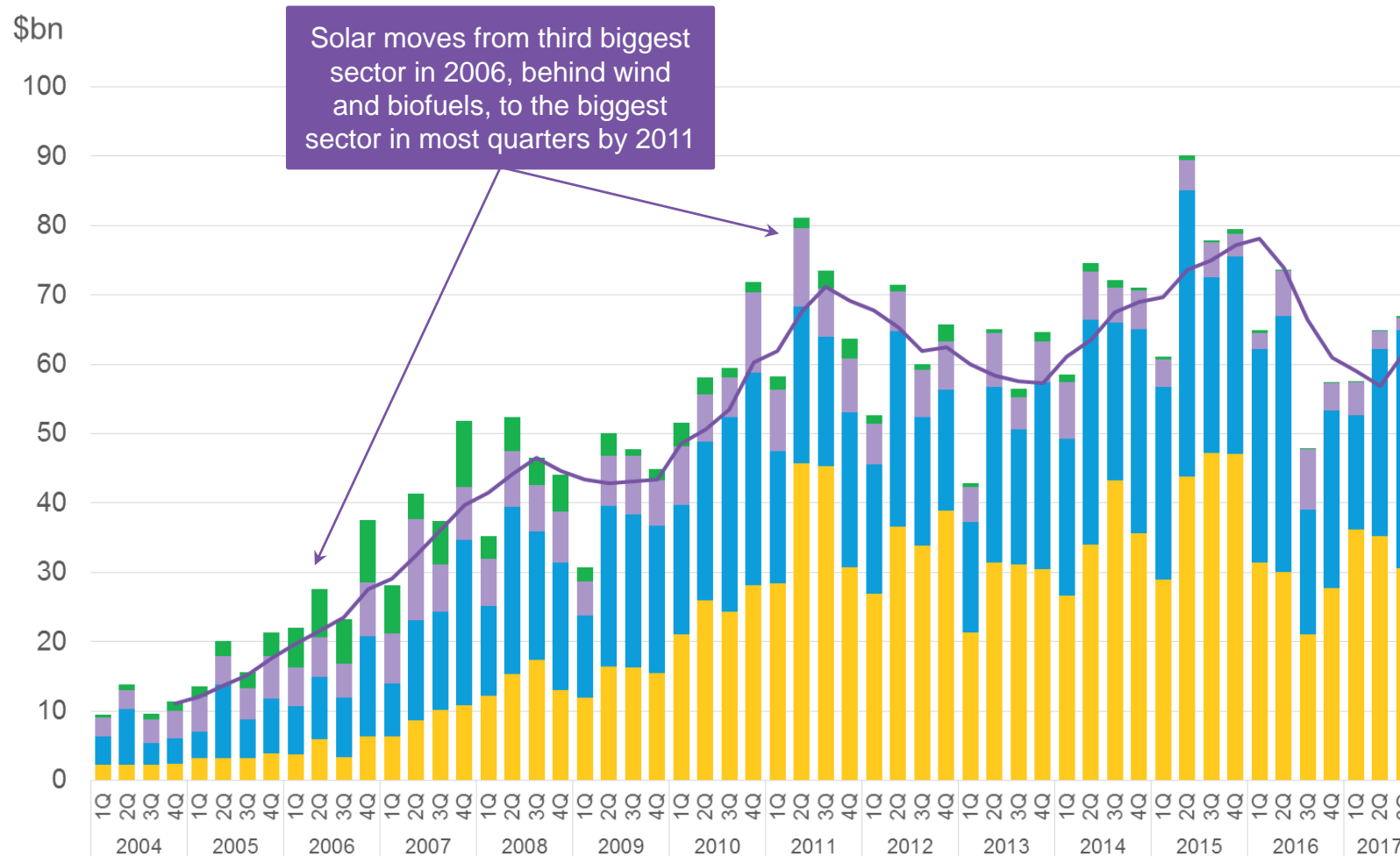
Version WF17.10
All values nominal

■ APAC ■ EMEA ■ AMER

Source:
Bloomberg New Energy Finance

Global New Investment in Clean Energy, by Sector

1Q 2004 – 3Q 2017



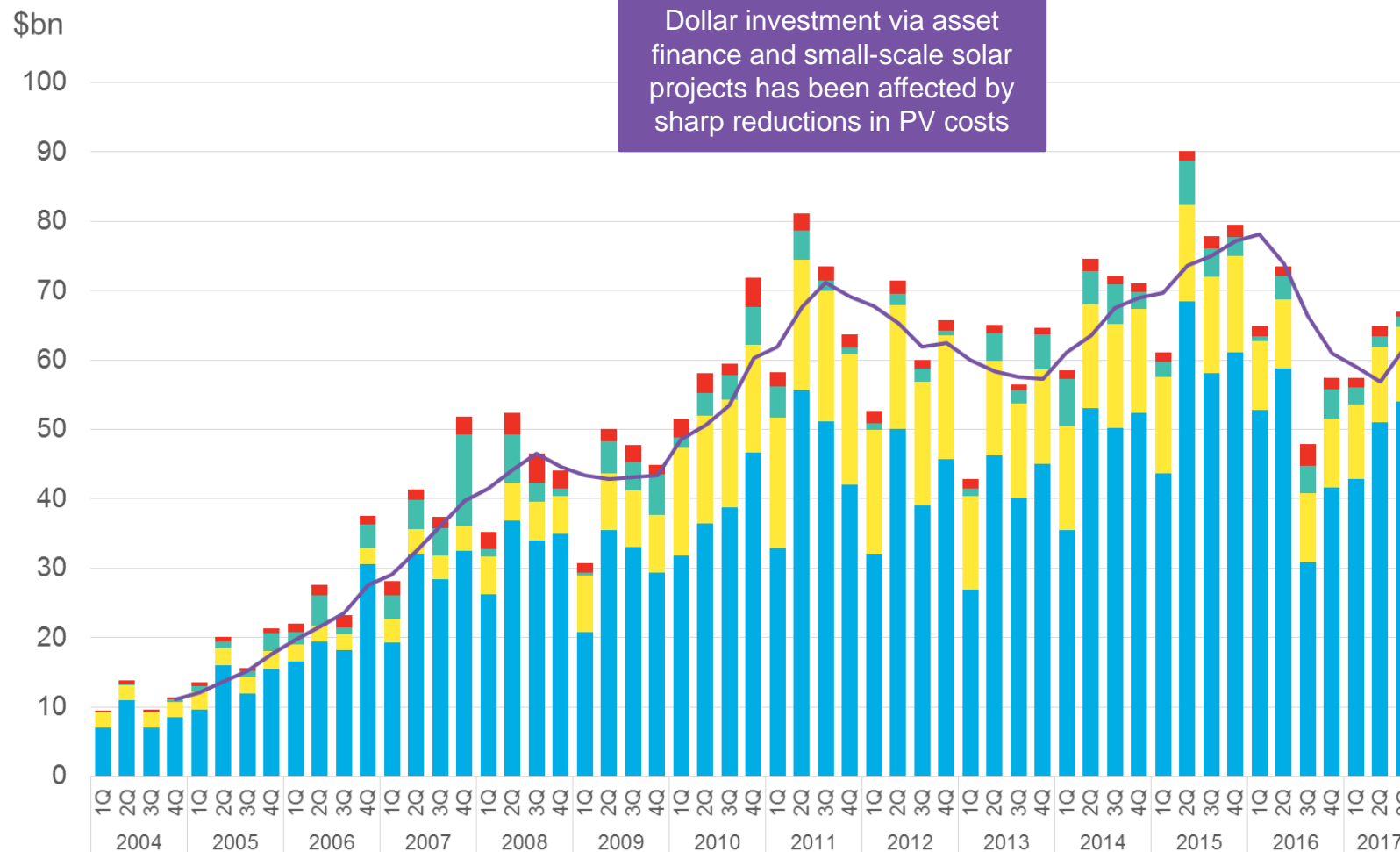
Version WF17.10
All values nominal

■ Solar ■ Wind ■ Other ■ Biofuels

Source:
Bloomberg New Energy Finance

Global New Investment in Clean Energy, by Asset Class

1Q 2004 – 3Q 2017



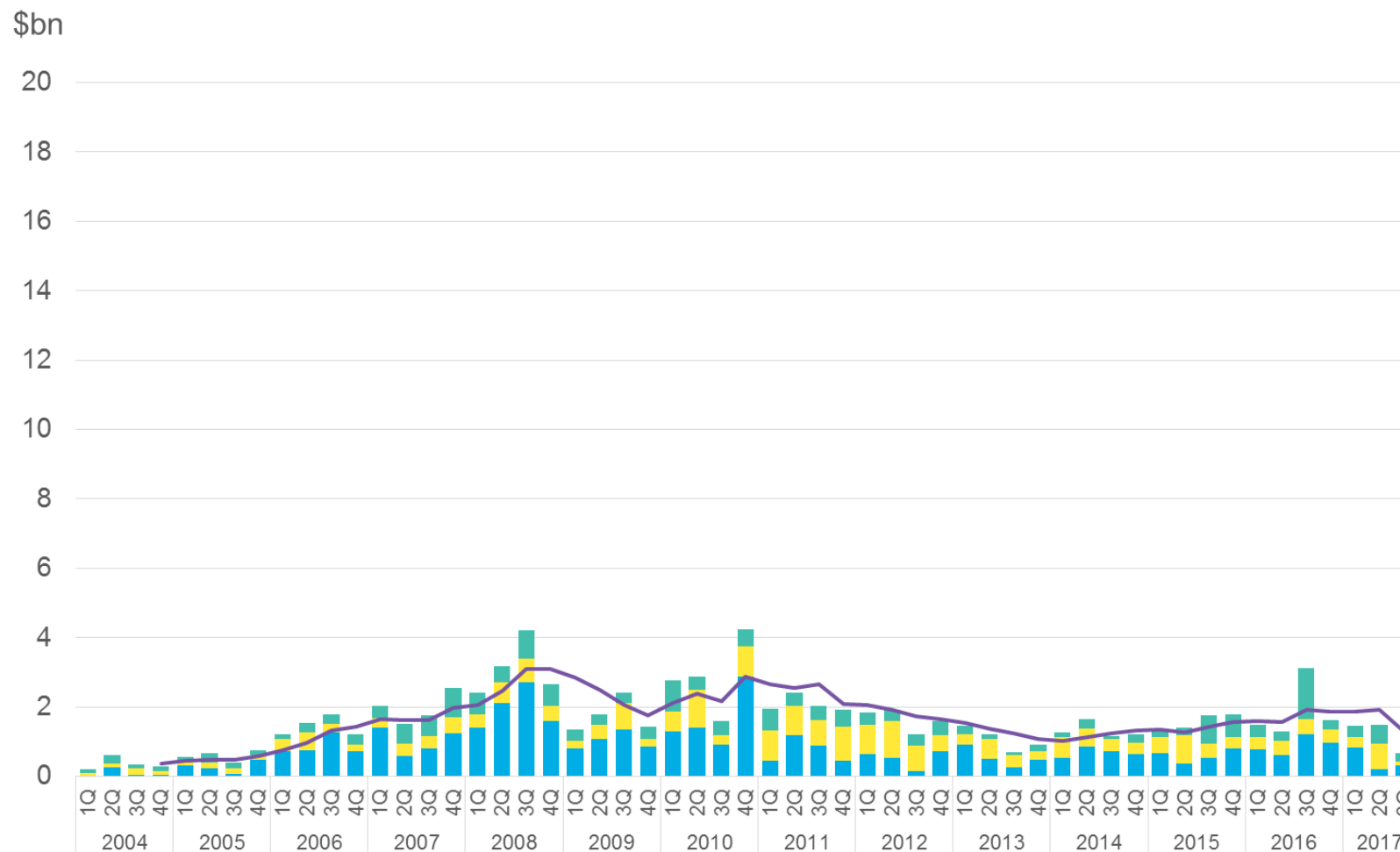
Version WF17.10
All values nominal

Asset finance Small scale solar Public markets VC/PE

Source:
Bloomberg New Energy Finance

Global New Investment in Clean Energy, VC / PE

1Q 2004 – 3Q 2017



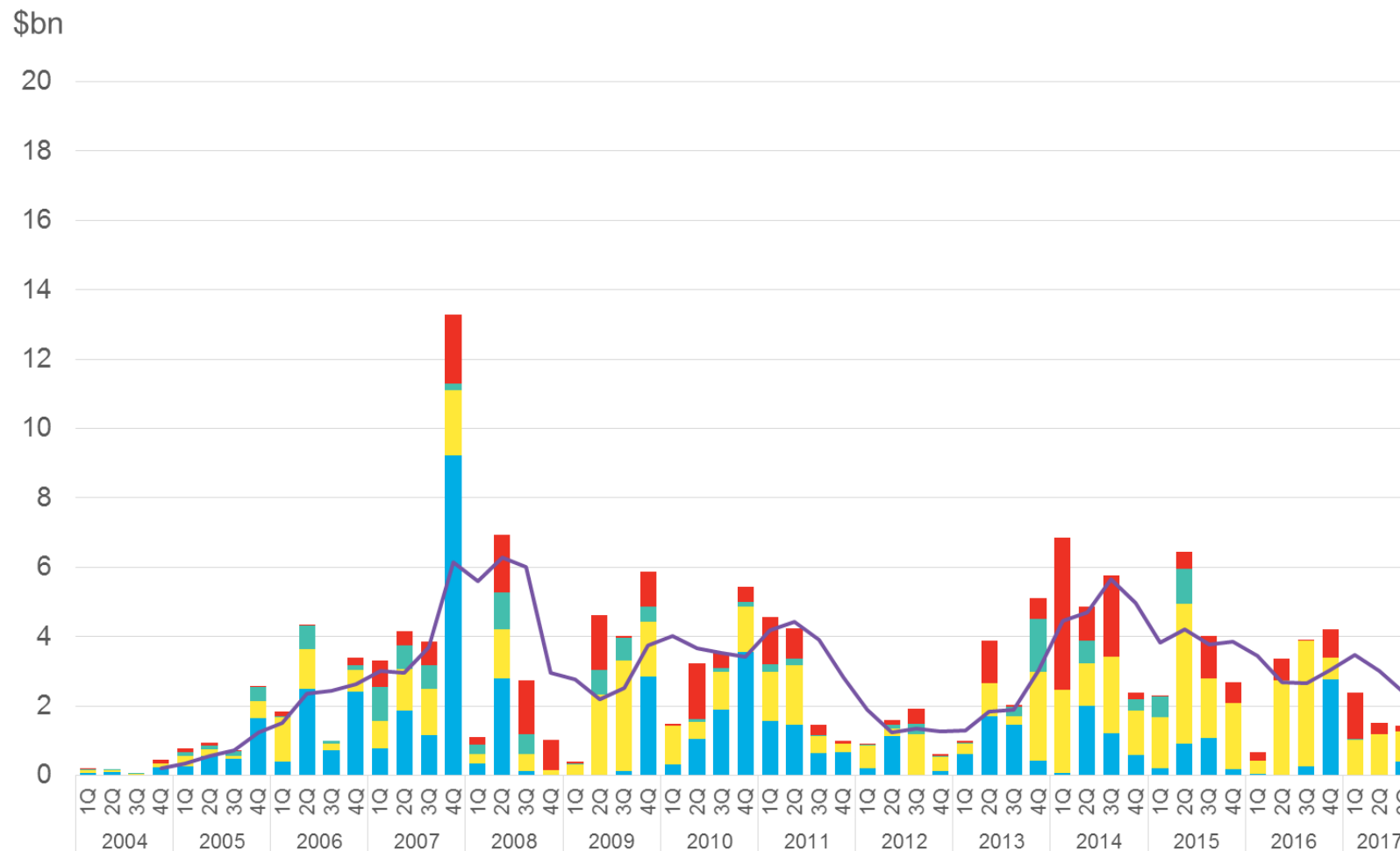
Version WF17.10
All values nominal

■ PE expansion ■ VC late ■ VC early

Source:
Bloomberg New Energy Finance

Global New Investment in Clean Energy, Public Markets

1Q 2004 – 3Q 2017



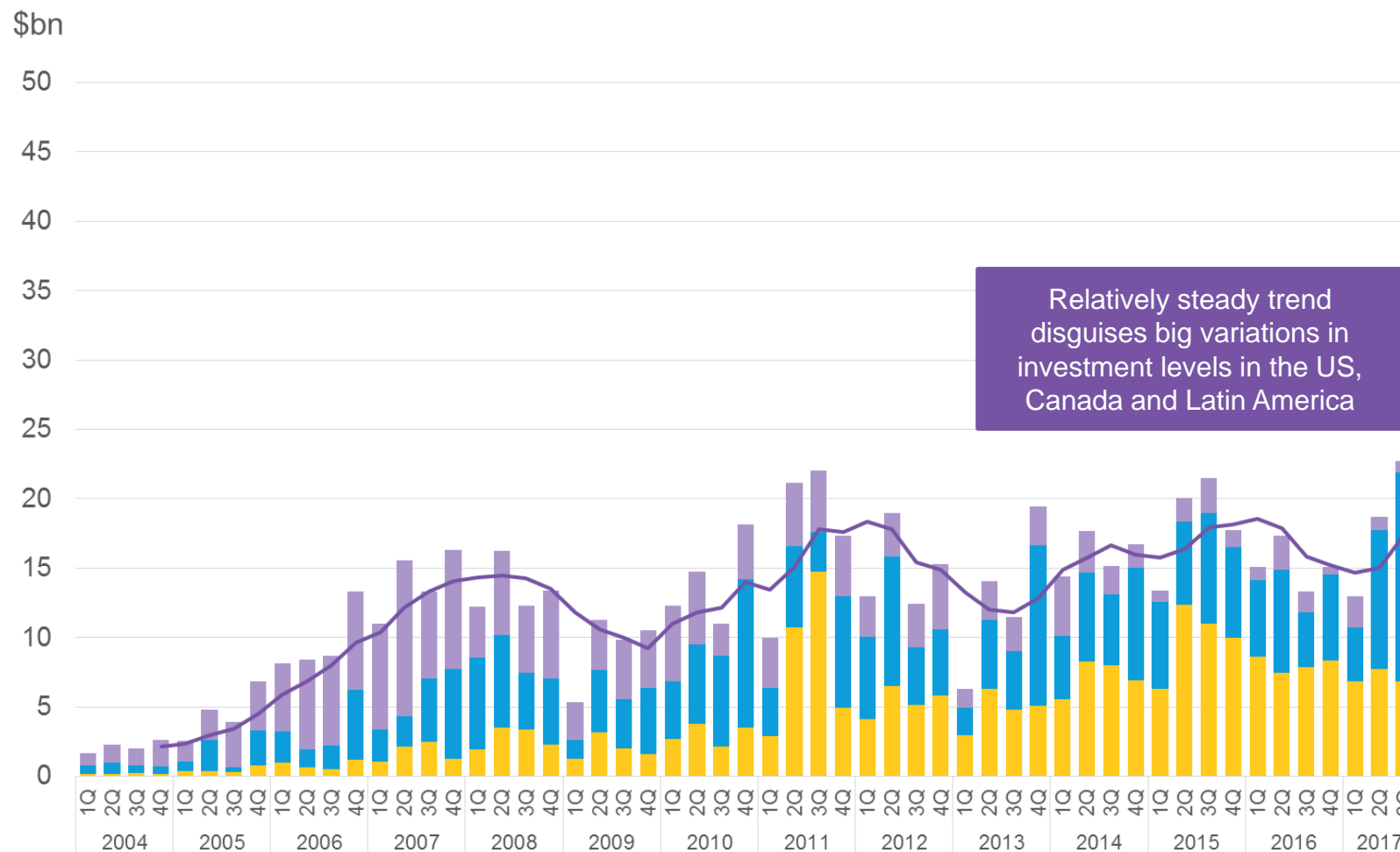
Version WF17.10
All values nominal

■ IPO ■ Secondary & PIPE ■ OTC ■ Convertible & other

Source:
Bloomberg New Energy Finance

New Investment in Clean Energy AMER

1Q 2004 – 3Q 2017



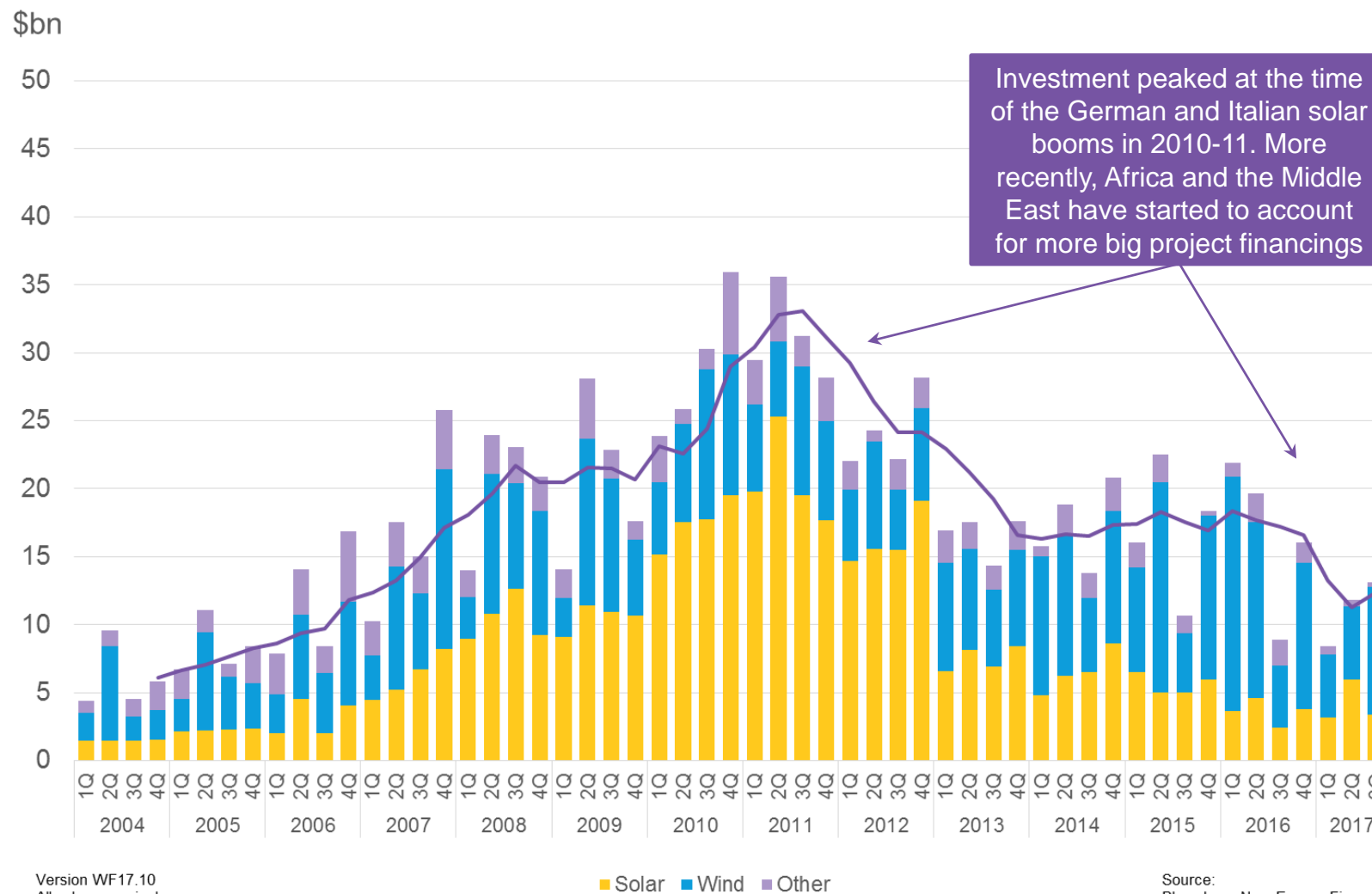
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All values nominal

■ Solar ■ Wind ■ Other

Source:
Bloomberg New Energy Finance

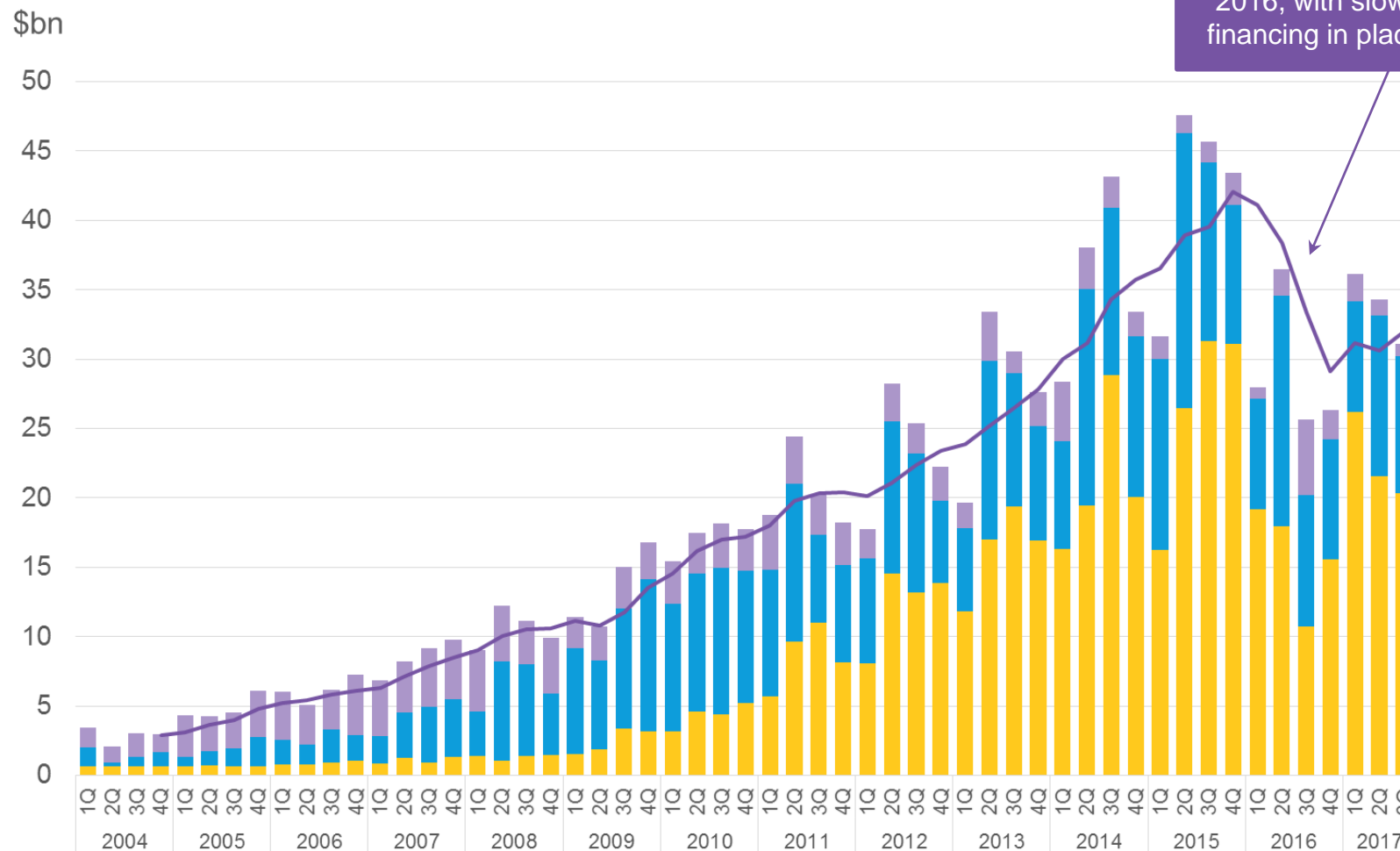
New Investment in Clean Energy EMEA

1Q 2004 – 3Q 2017



New Investment in Clean Energy APAC

1Q 2004 – 3Q 2017



Version WF17.10
All values nominal

■ Solar ■ Wind ■ Other

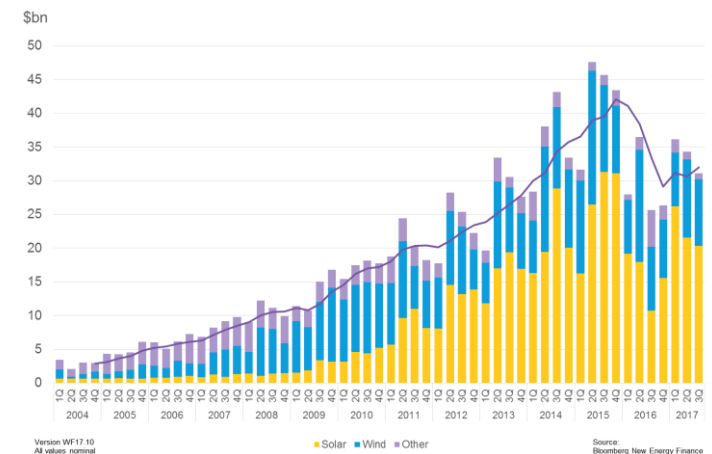
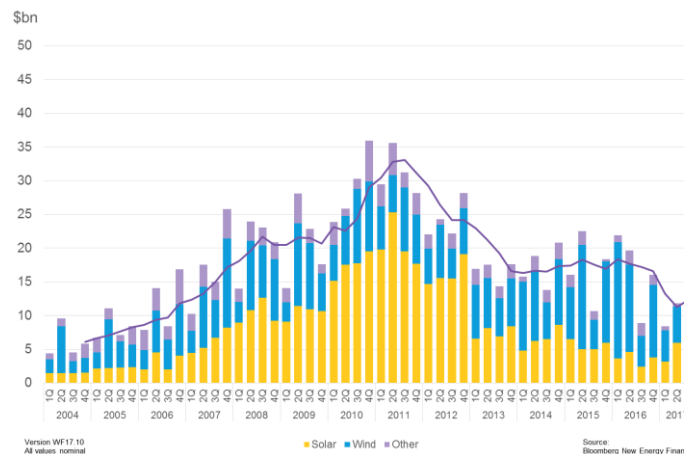
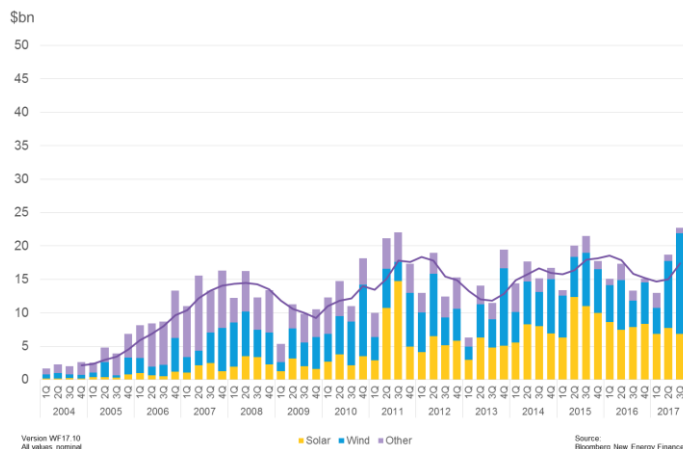
Source:
Bloomberg New Energy Finance

Comparing AMER, EMEA & APAC

Is AMER breaking out of the \$15 - \$20bn range?

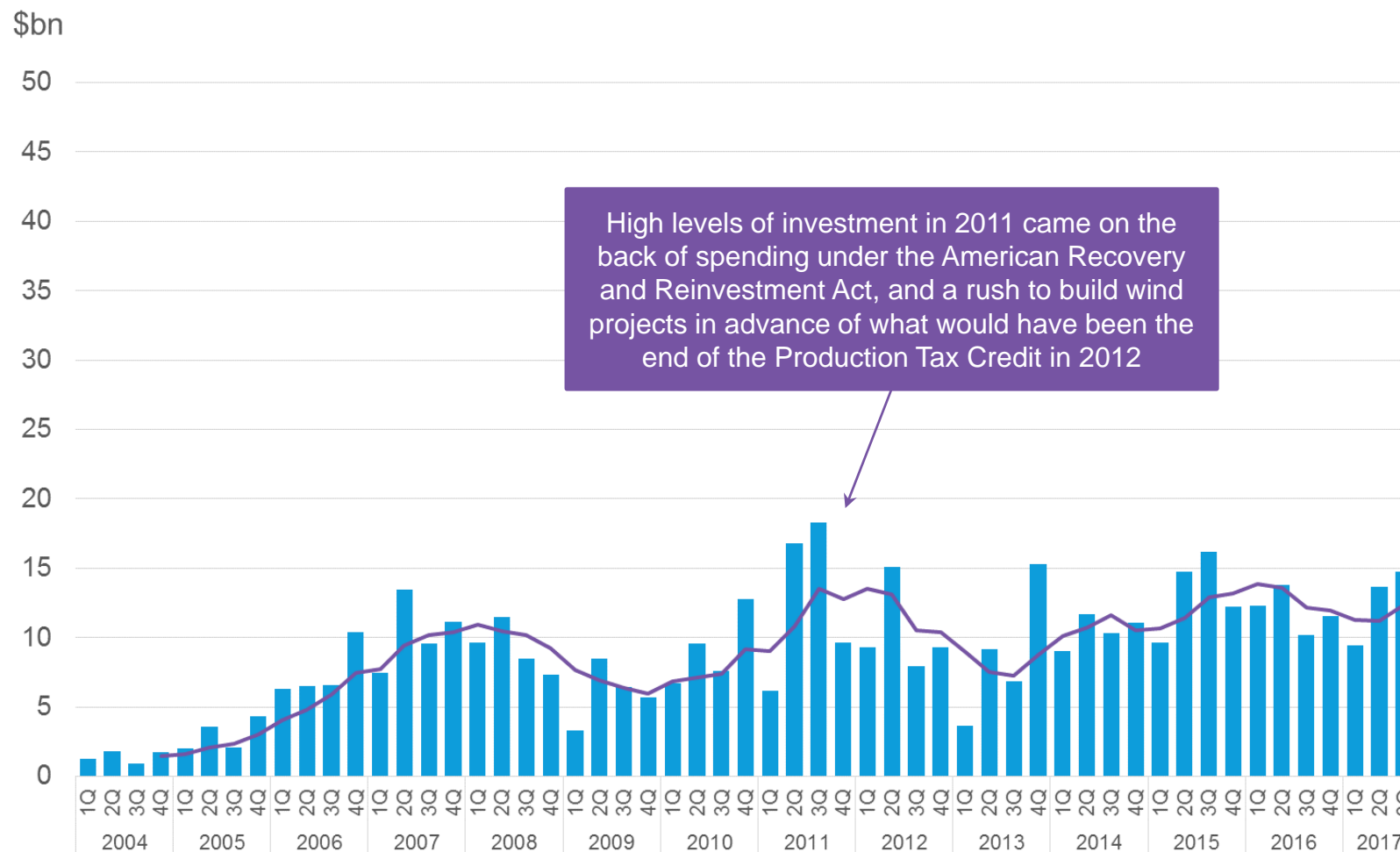
Will EMEA ever experience the highs of 2010 & 2011 again?

Has 2015 been APAC's turning point?



New Investment in Clean Energy United States

1Q 2004 – 3Q 2017



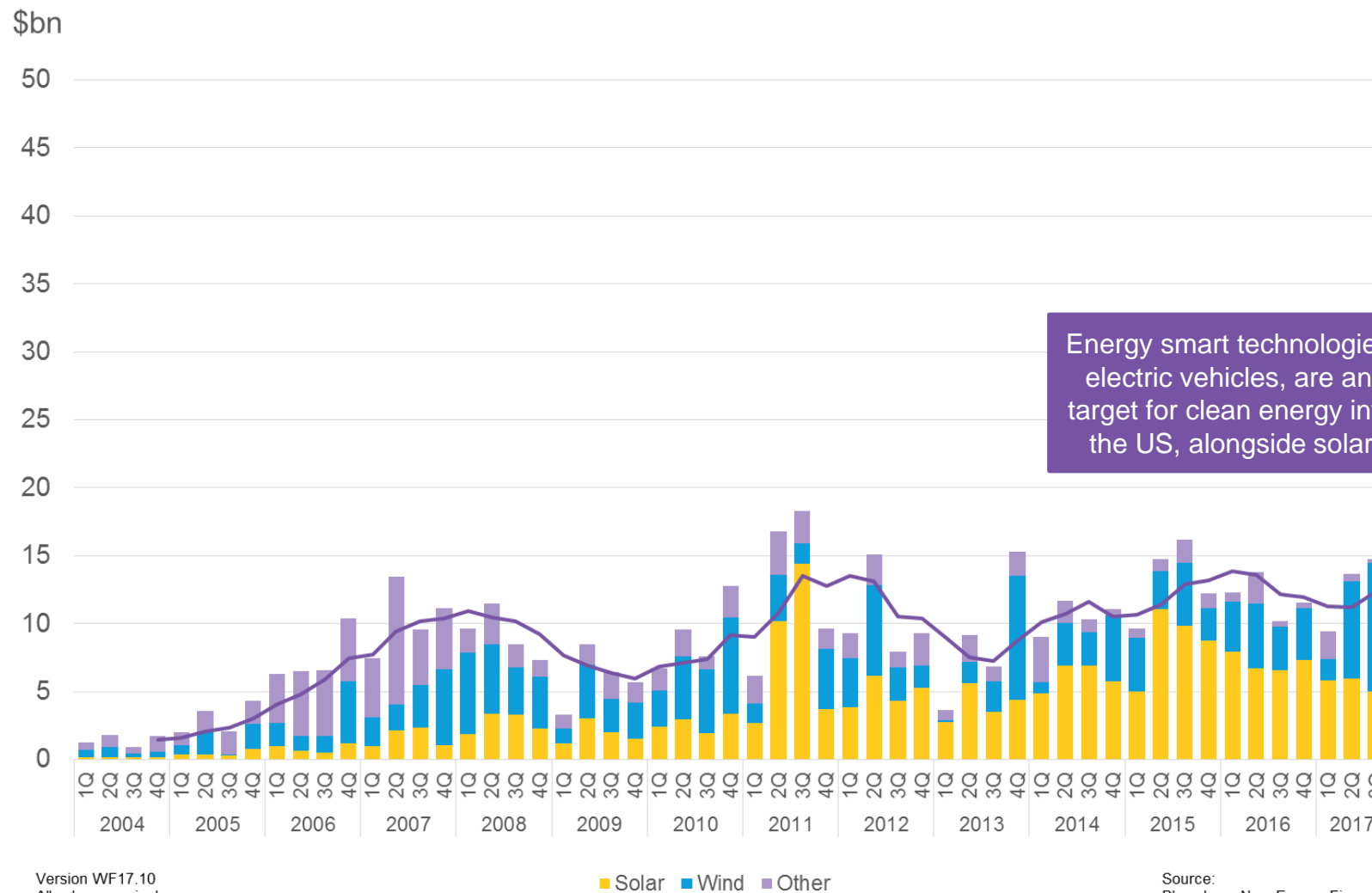
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All values nominal

— Four quarter running average

Source:
Bloomberg New Energy Finance

New Investment in Clean Energy United States, by Sector

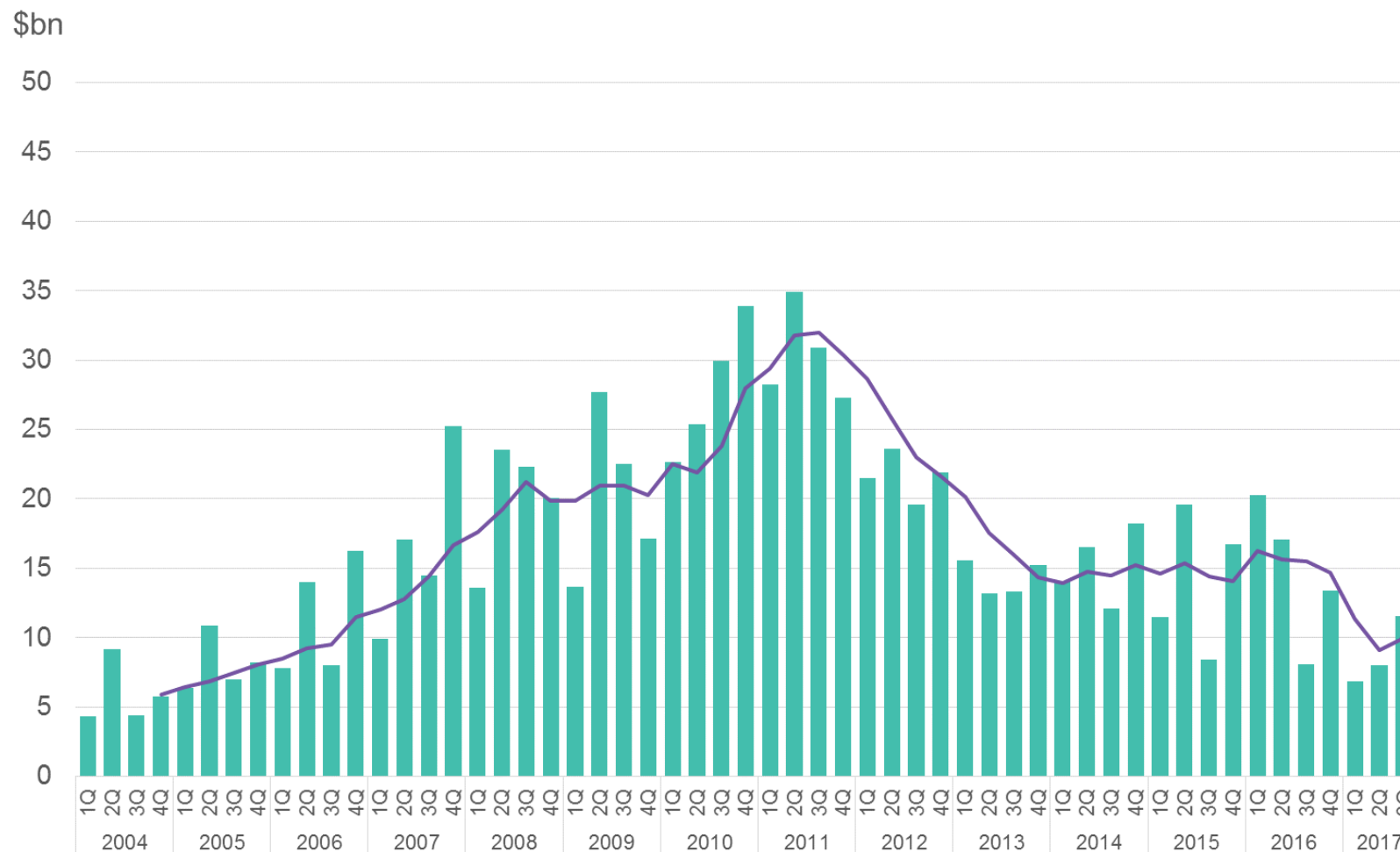
1Q 2004 – 3Q 2017



Source:
Bloomberg New Energy Finance

New Investment in Clean Energy Europe

1Q 2004 – 3Q 2017



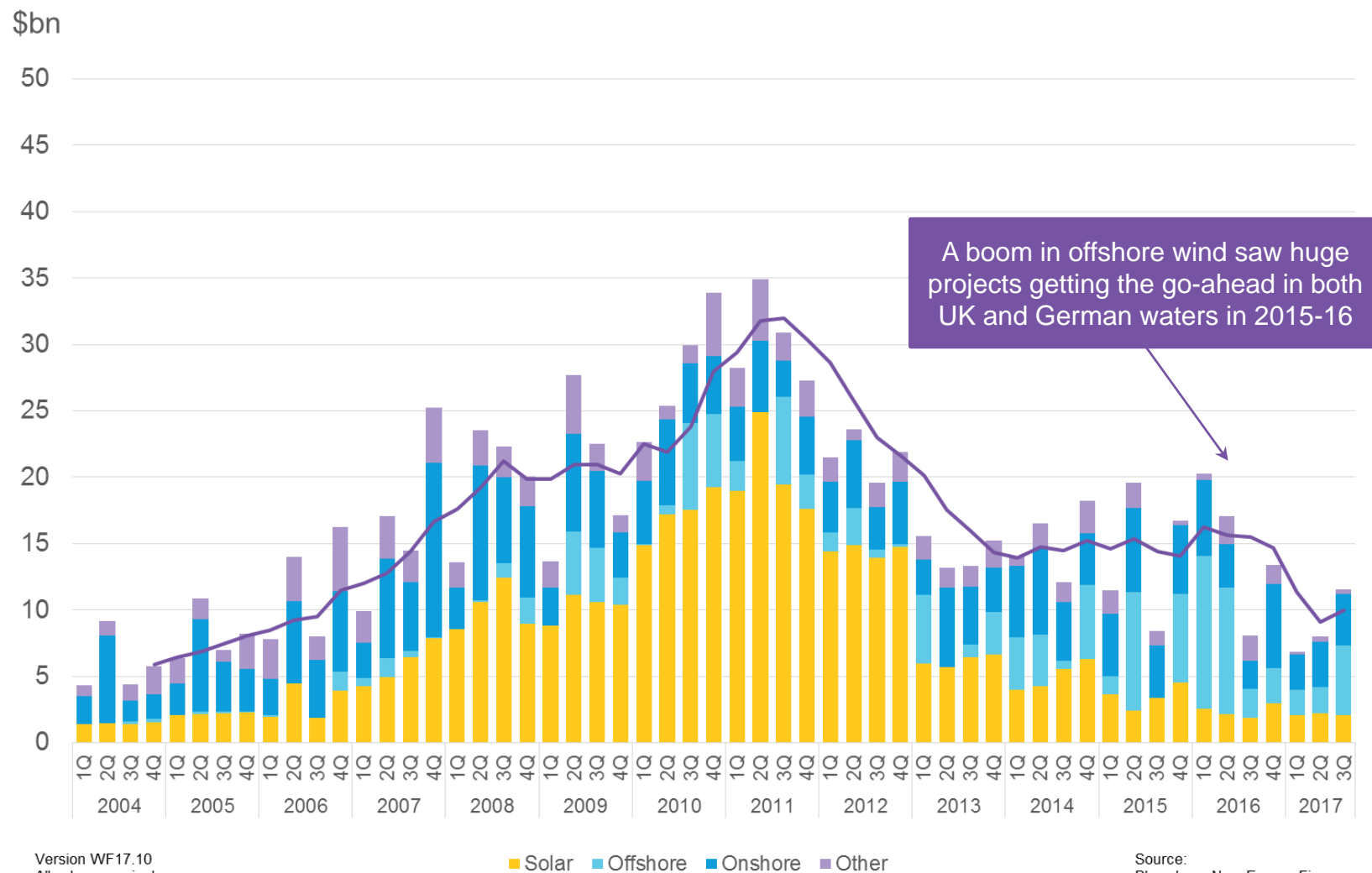
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— Four quarter running average

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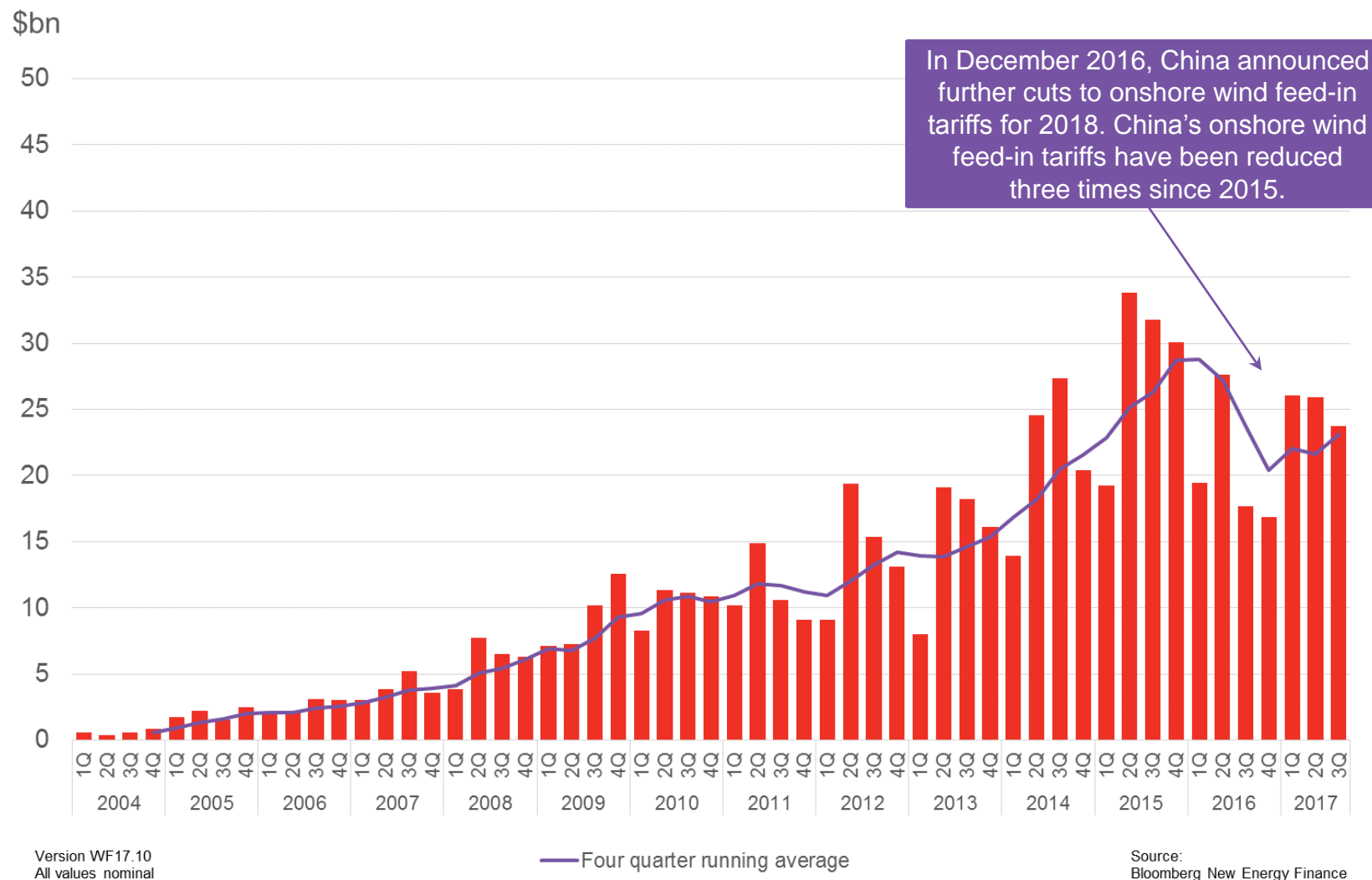
New Investment in Clean Energy Europe, by sector

1Q 2004 – 3Q 2017



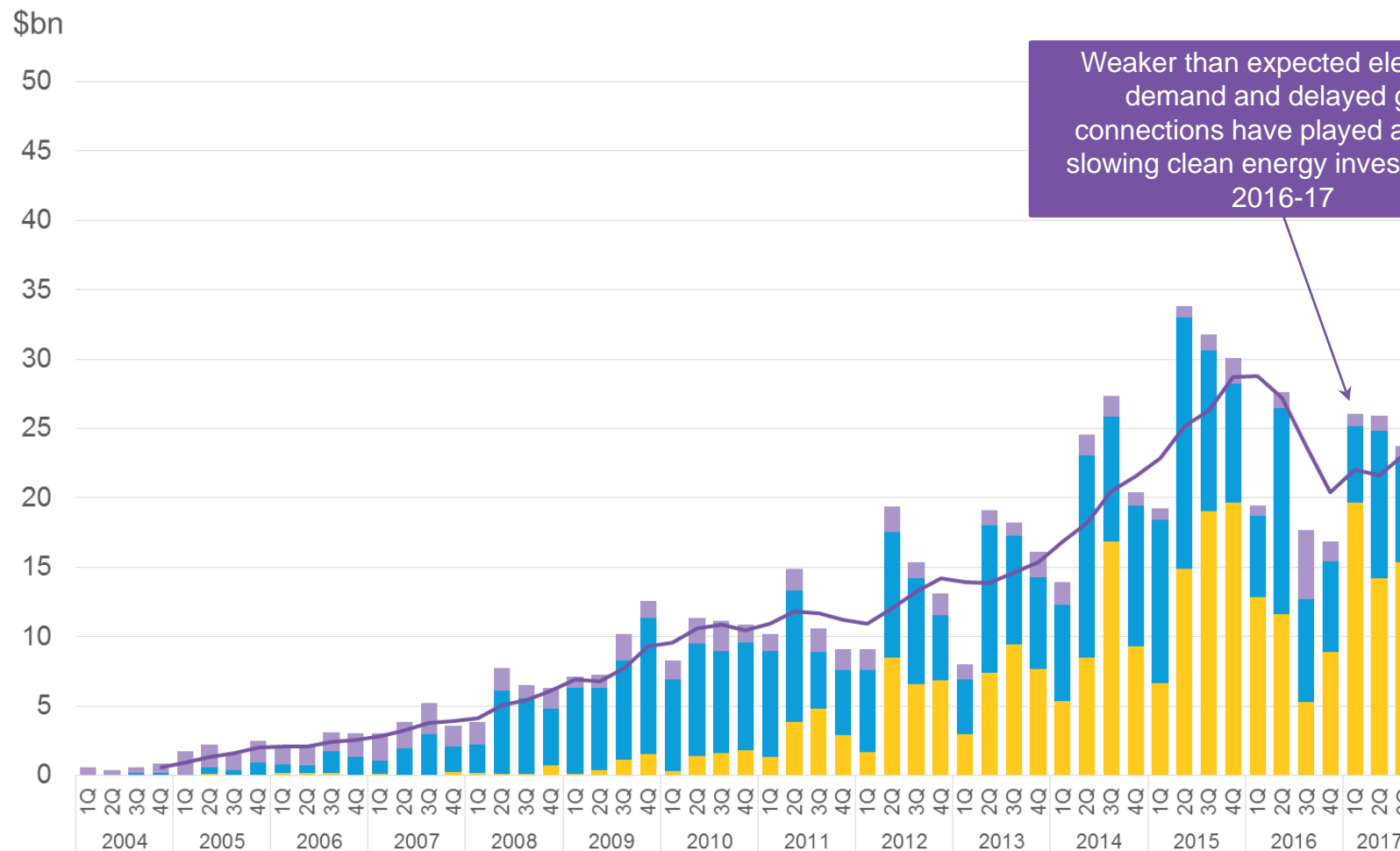
New Investment in Clean Energy China

1Q 2004 – 3Q 2017



New Investment in Clean Energy China, by sector

1Q 2004 – 3Q 2017



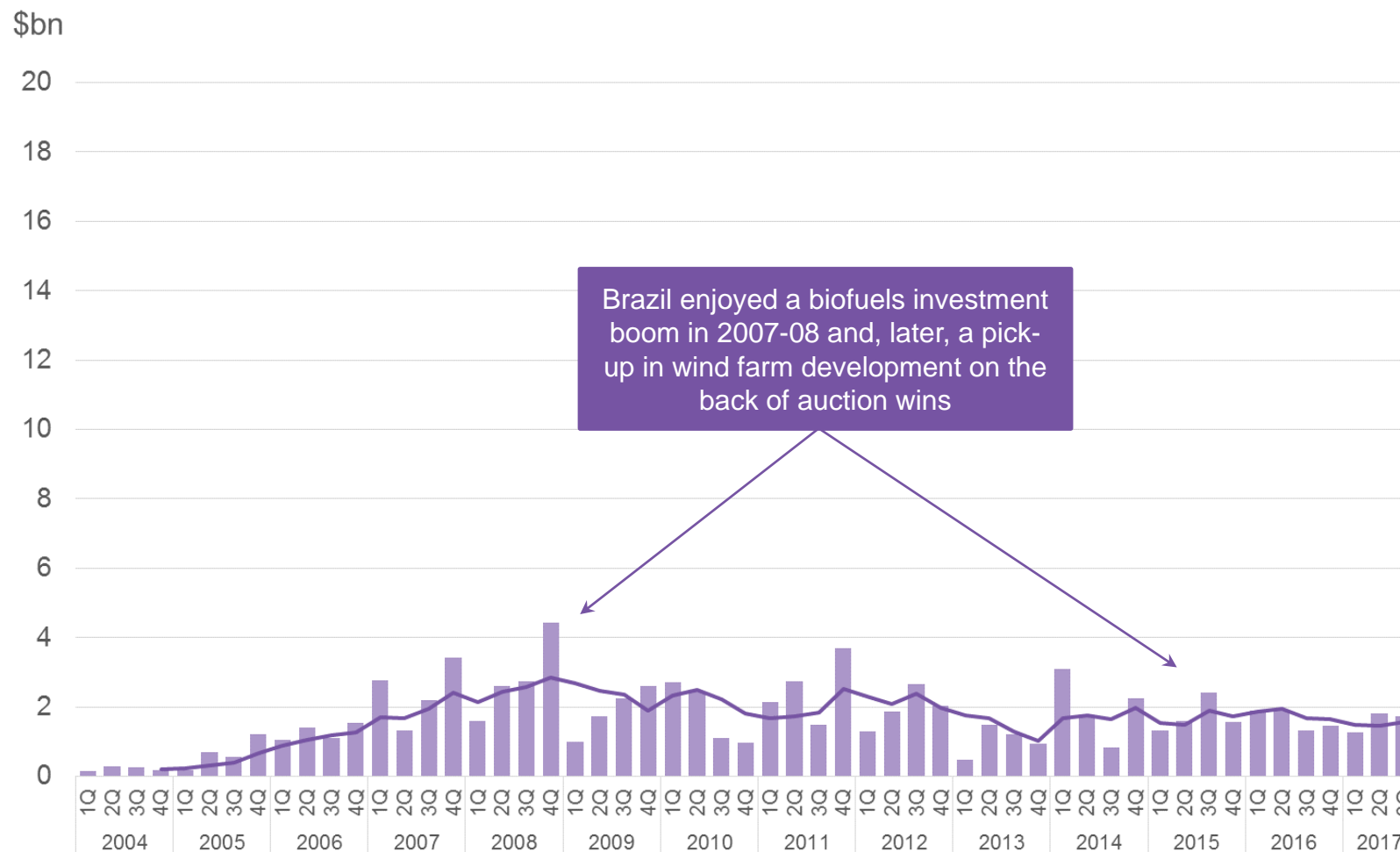
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■ Solar ■ Wind ■ Other

Source:
Bloomberg New Energy Finance

New Investment in Clean Energy Brazil

1Q 2004 – 3Q 2017



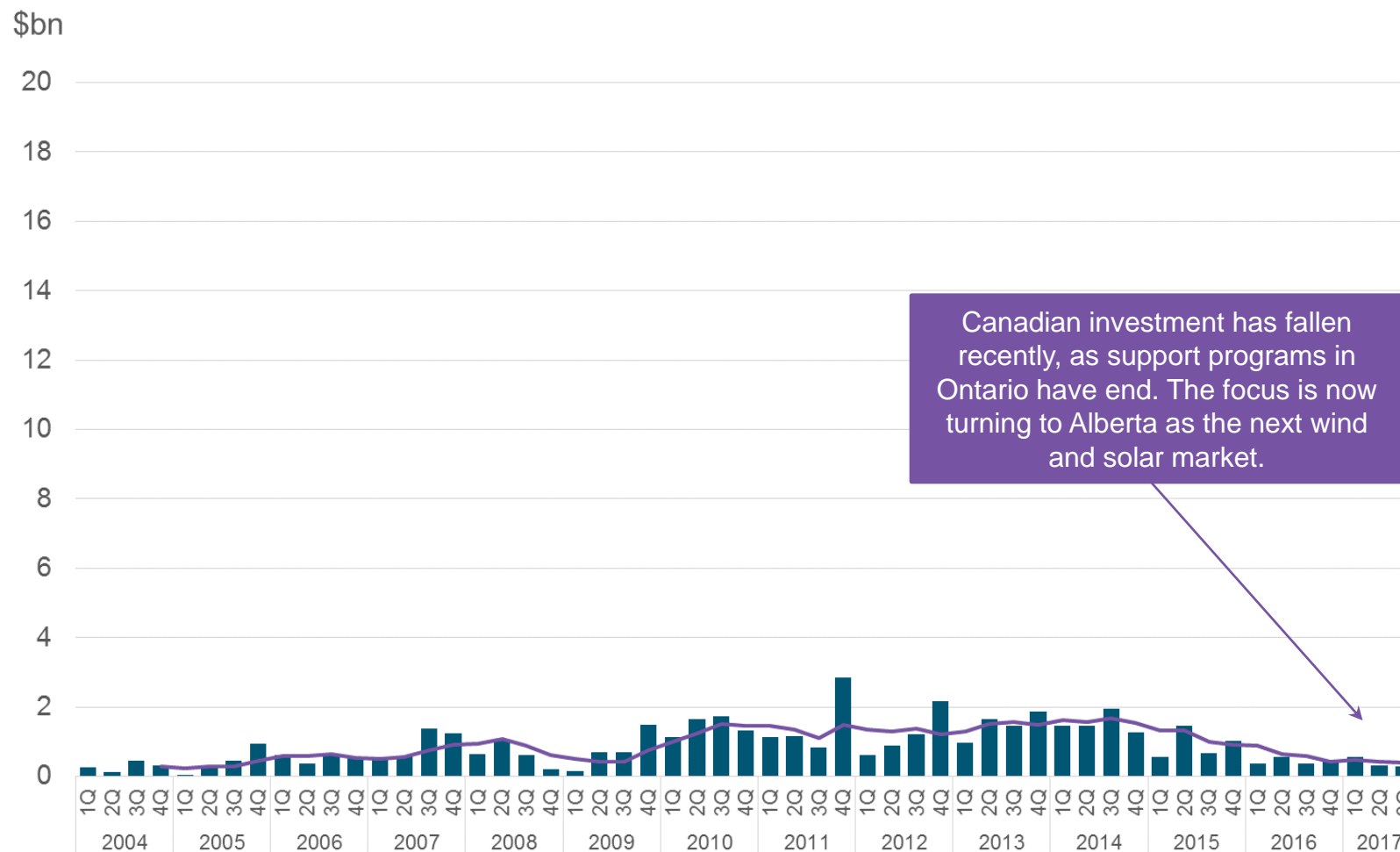
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— Four quarter running average

Source:
Bloomberg New Energy Finance

New Investment in Clean Energy Canada

1Q 2004 – 3Q 2017



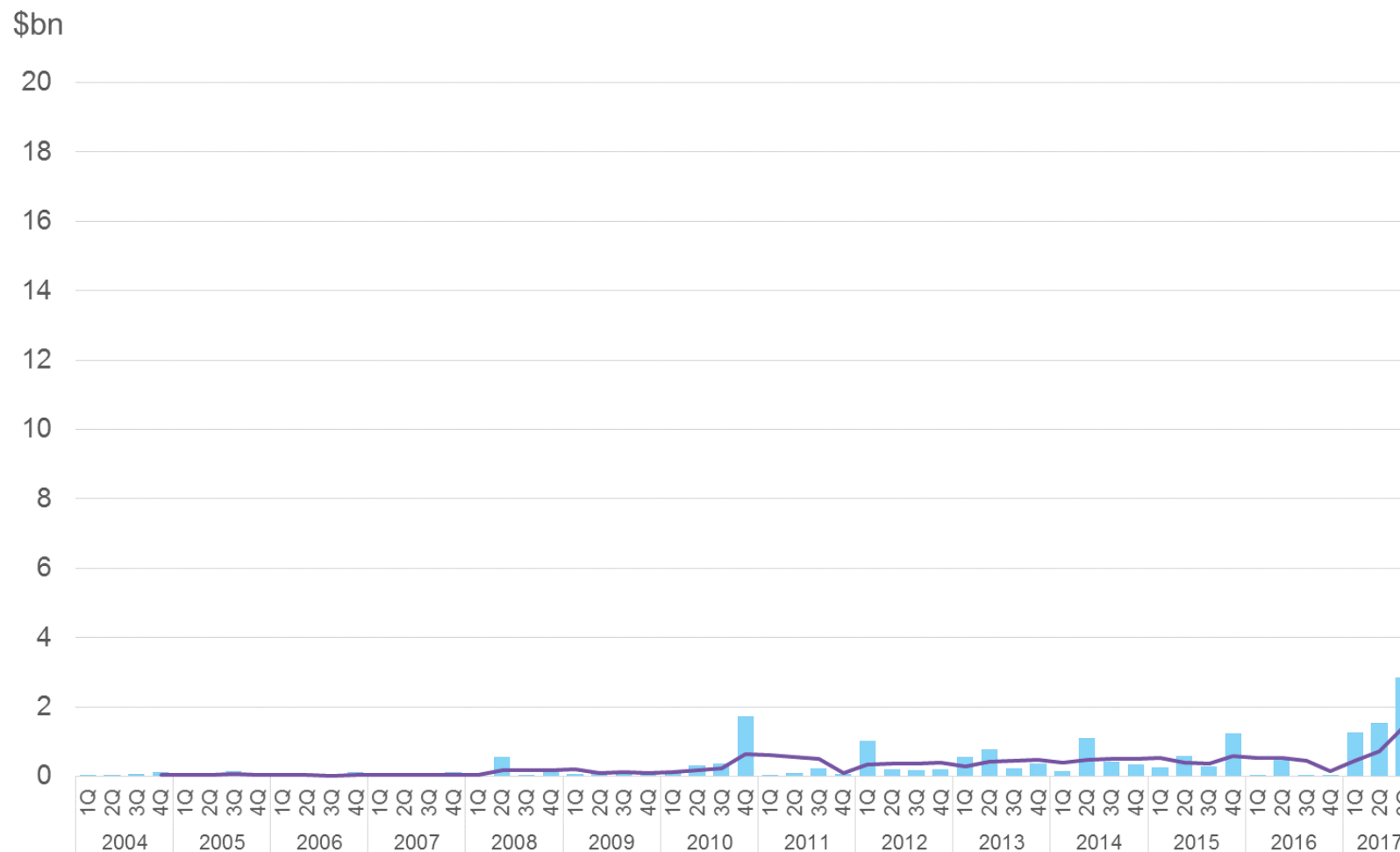
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— Four quarter running average

Source:
Bloomberg New Energy Finance

New Investment in Clean Energy Mexico

1Q 2004 – 3Q 2017



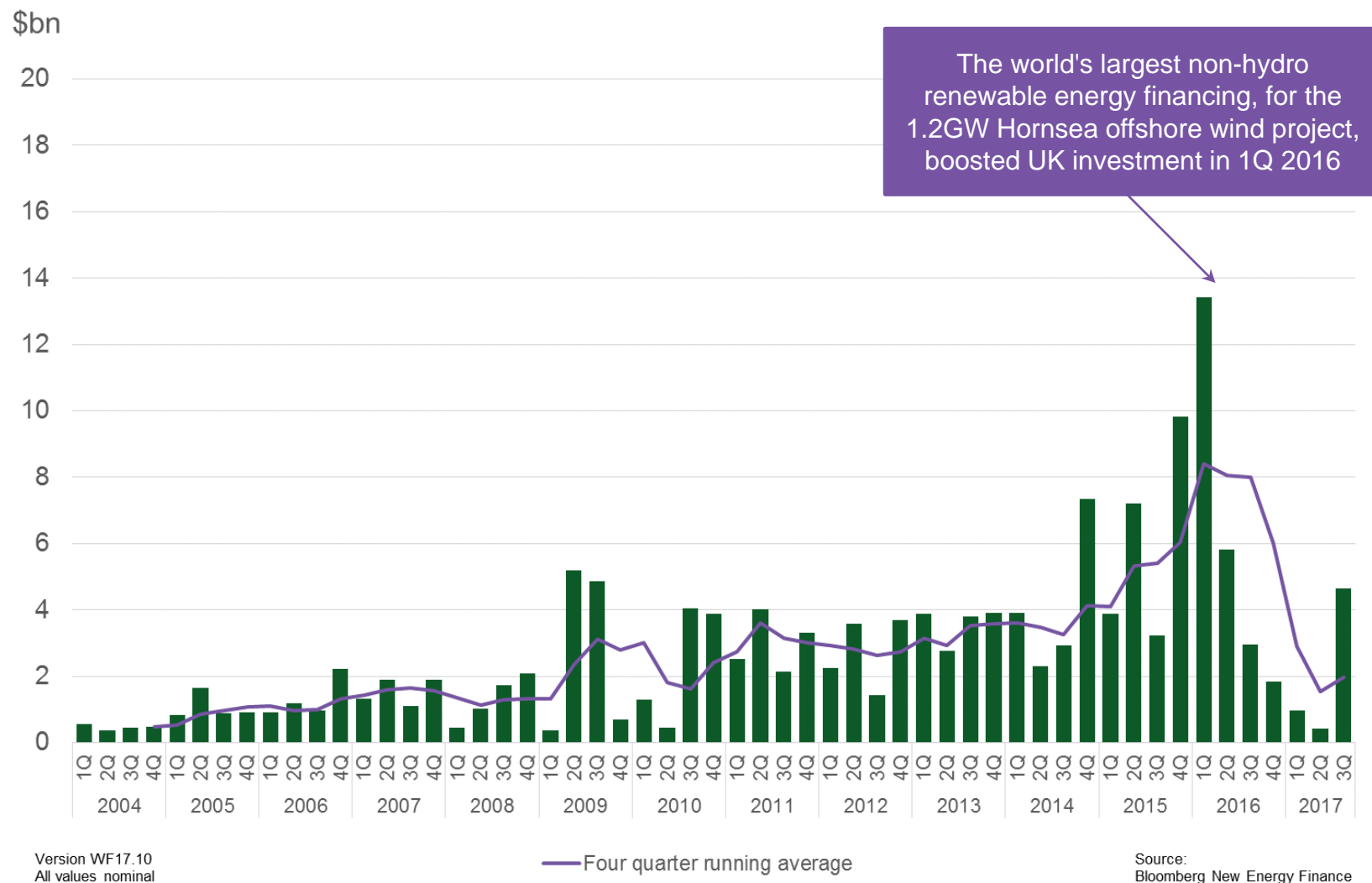
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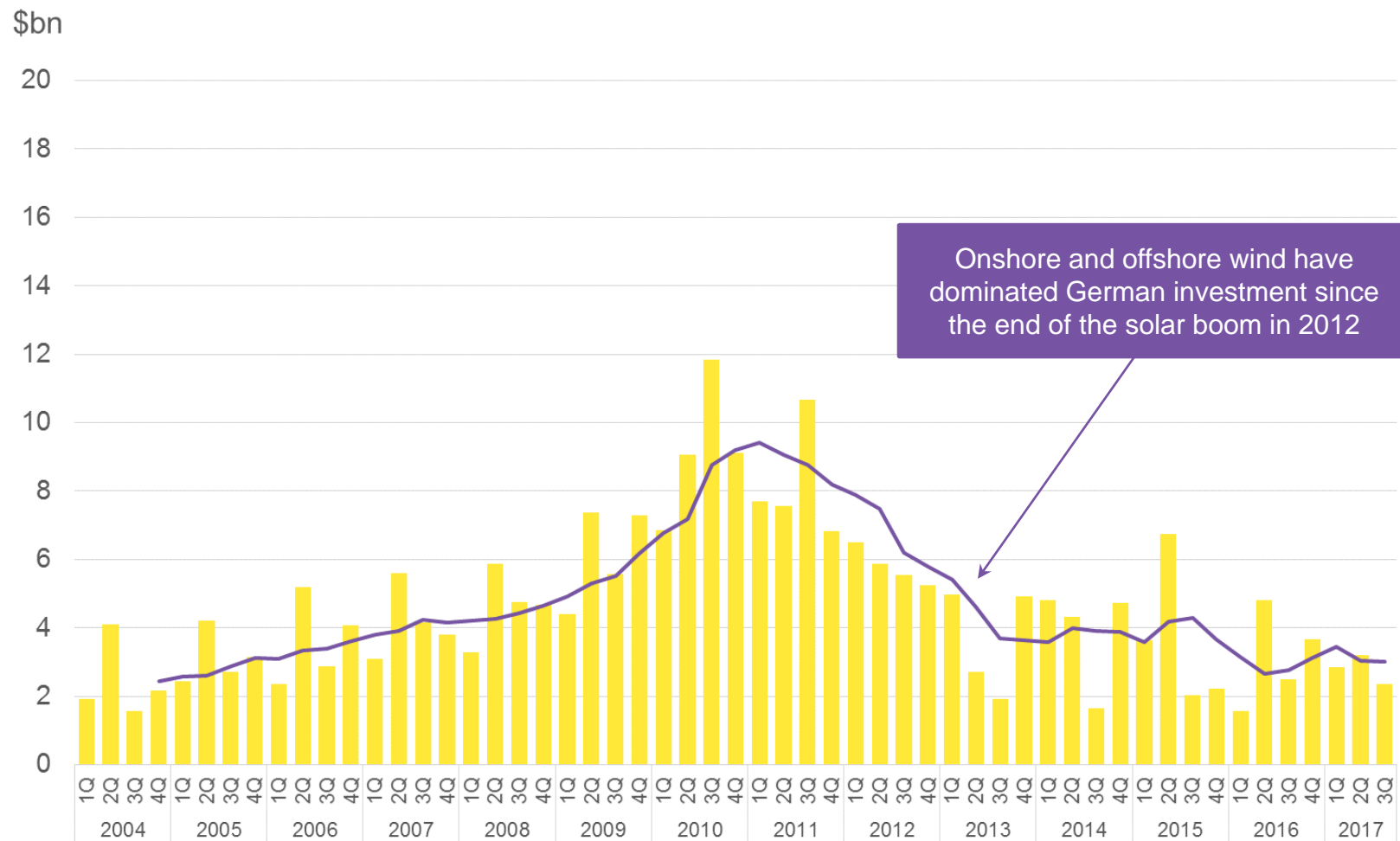
New Investment in Clean Energy United Kingdom

1Q 2004 – 3Q 2017



New Investment in Clean Energy Germany

1Q 2004 – 3Q 2017



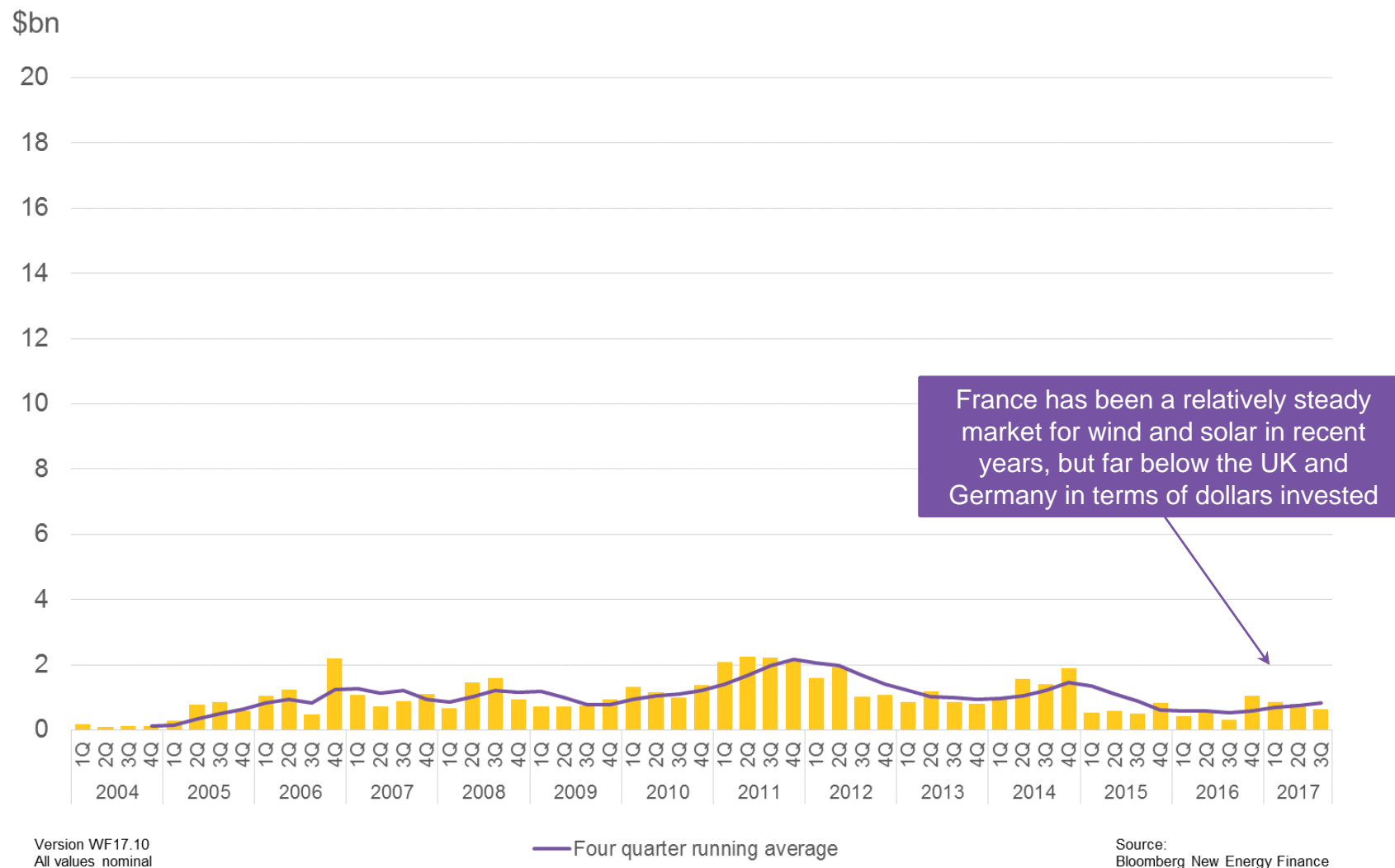
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— Four quarter running average

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Bloomberg New Energy Finance

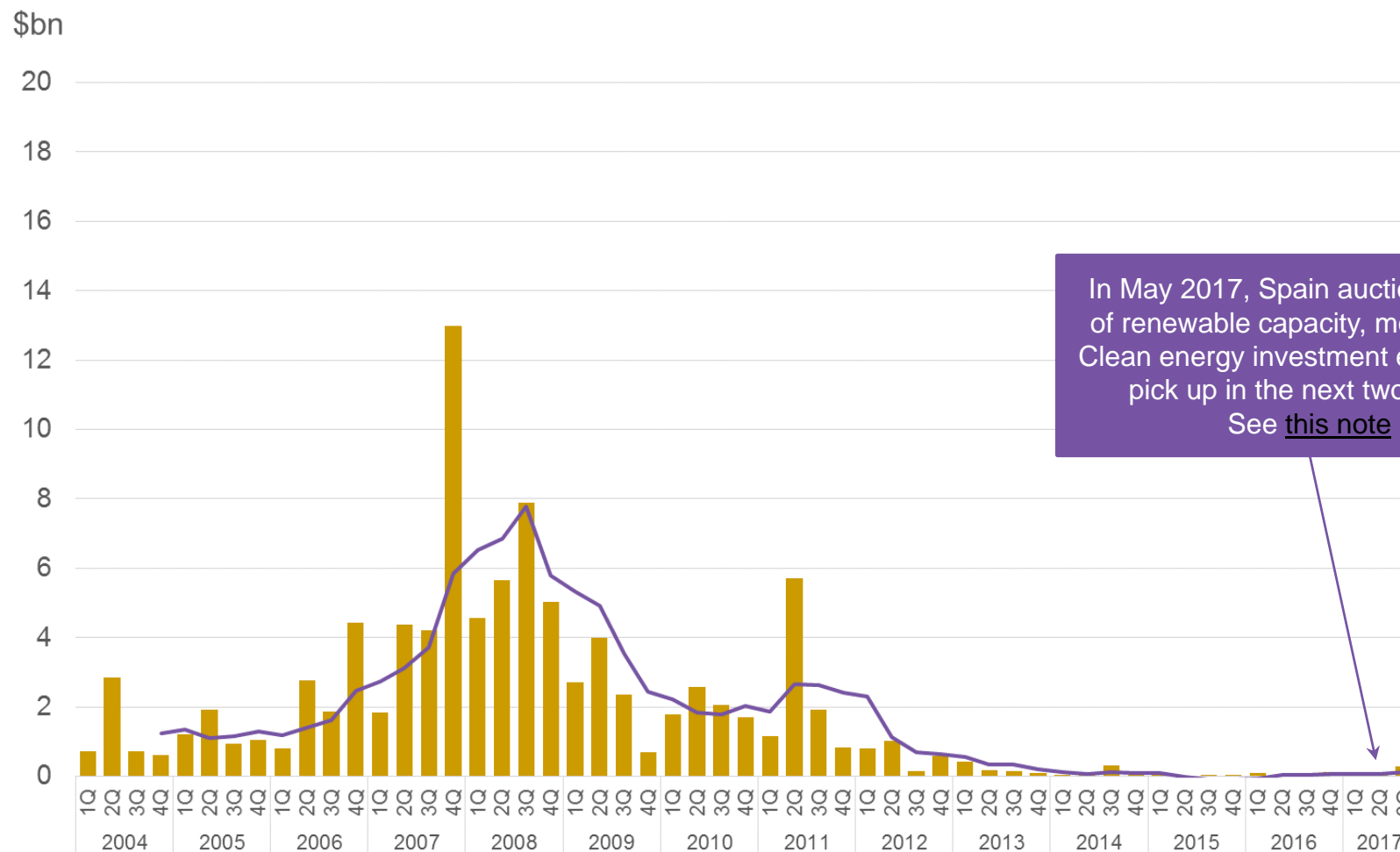
New Investment in Clean Energy France

1Q 2004 – 3Q 2017



New Investment in Clean Energy Spain

1Q 2004 – 3Q 2017



In May 2017, Spain auctioned 3GW of renewable capacity, mostly wind. Clean energy investment expected to pick up in the next two years. See [this note](#)

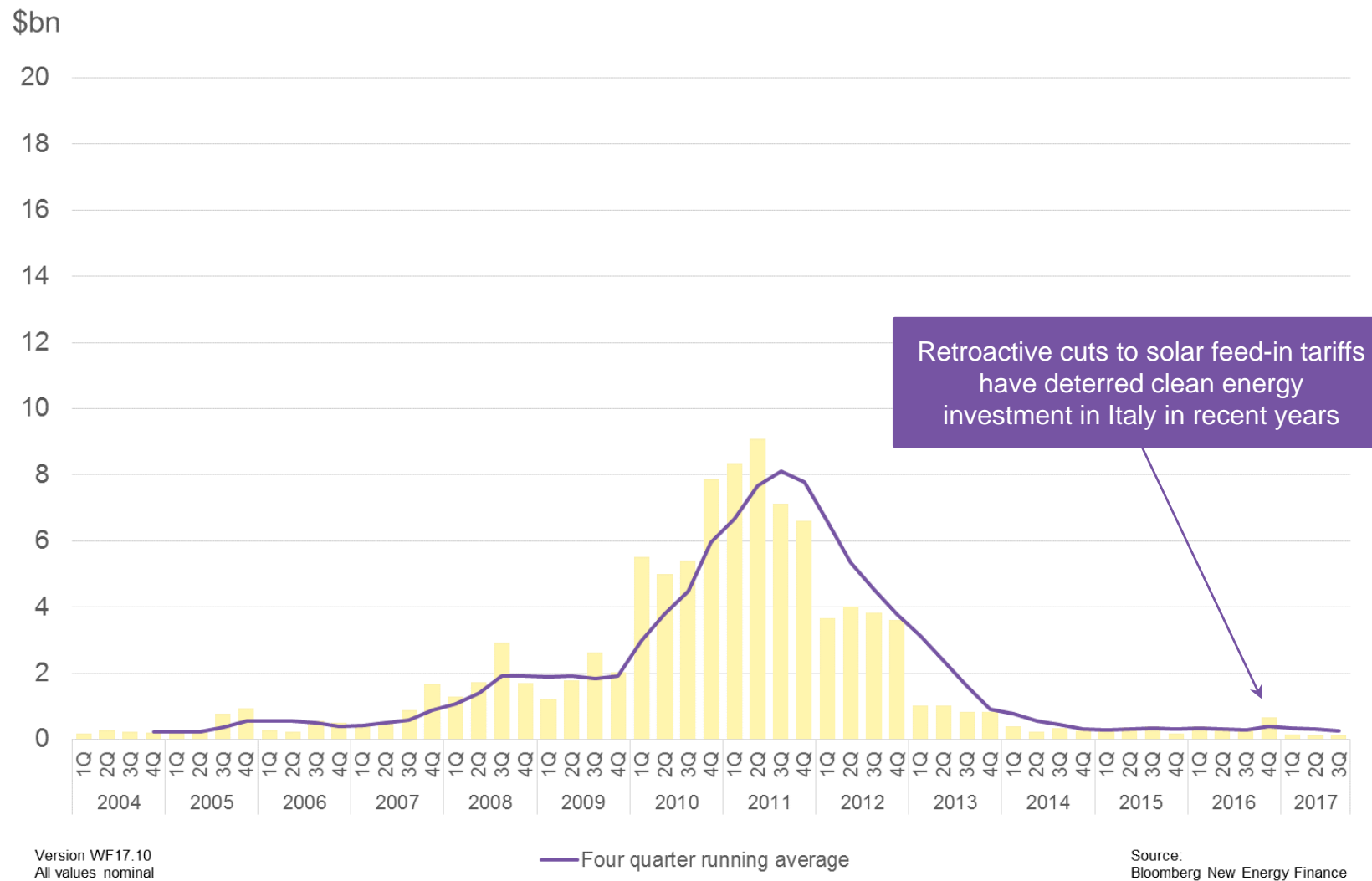
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All values nominal

— Four quarter running average

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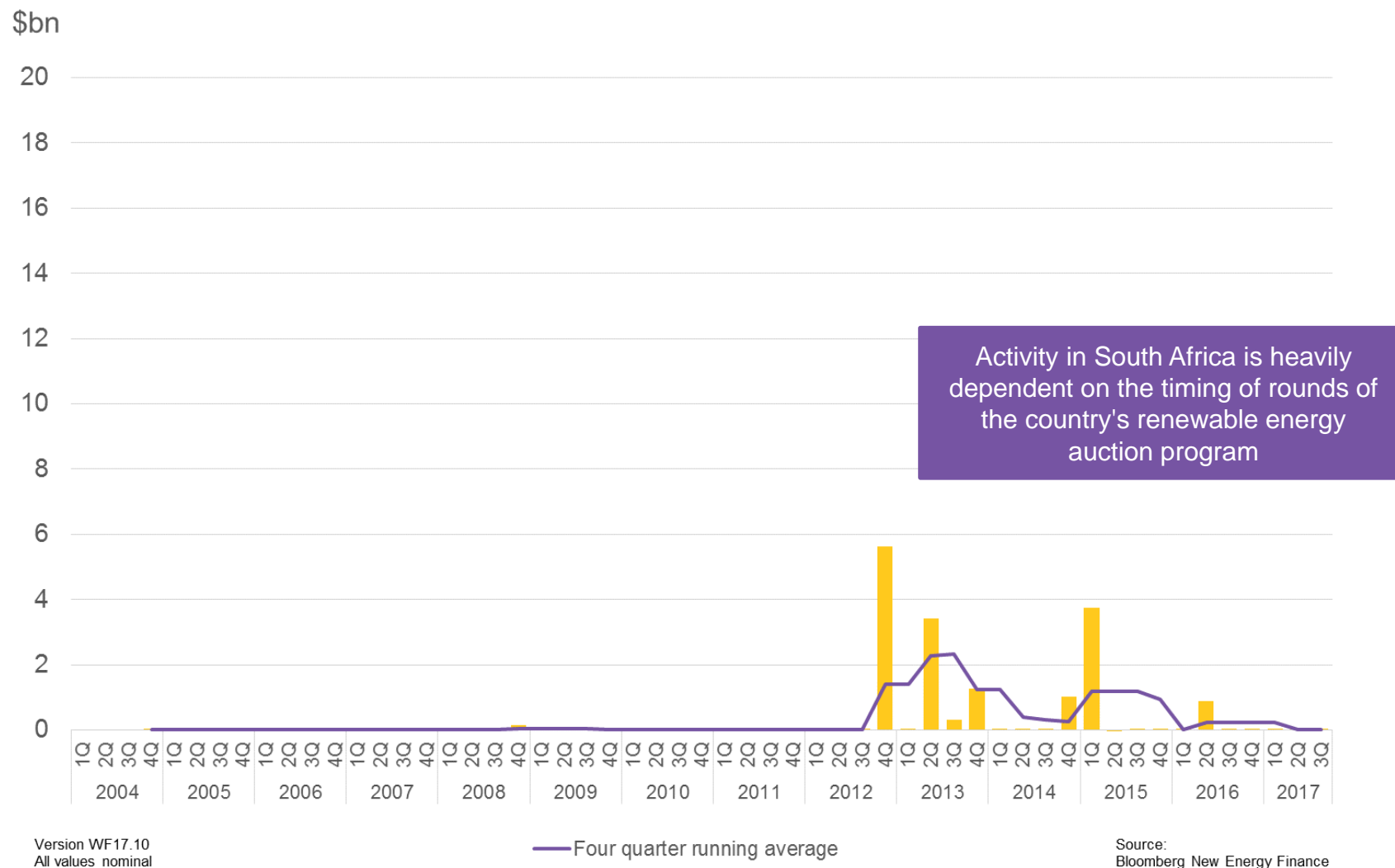
New Investment in Clean Energy Italy

1Q 2004 – 3Q 2017



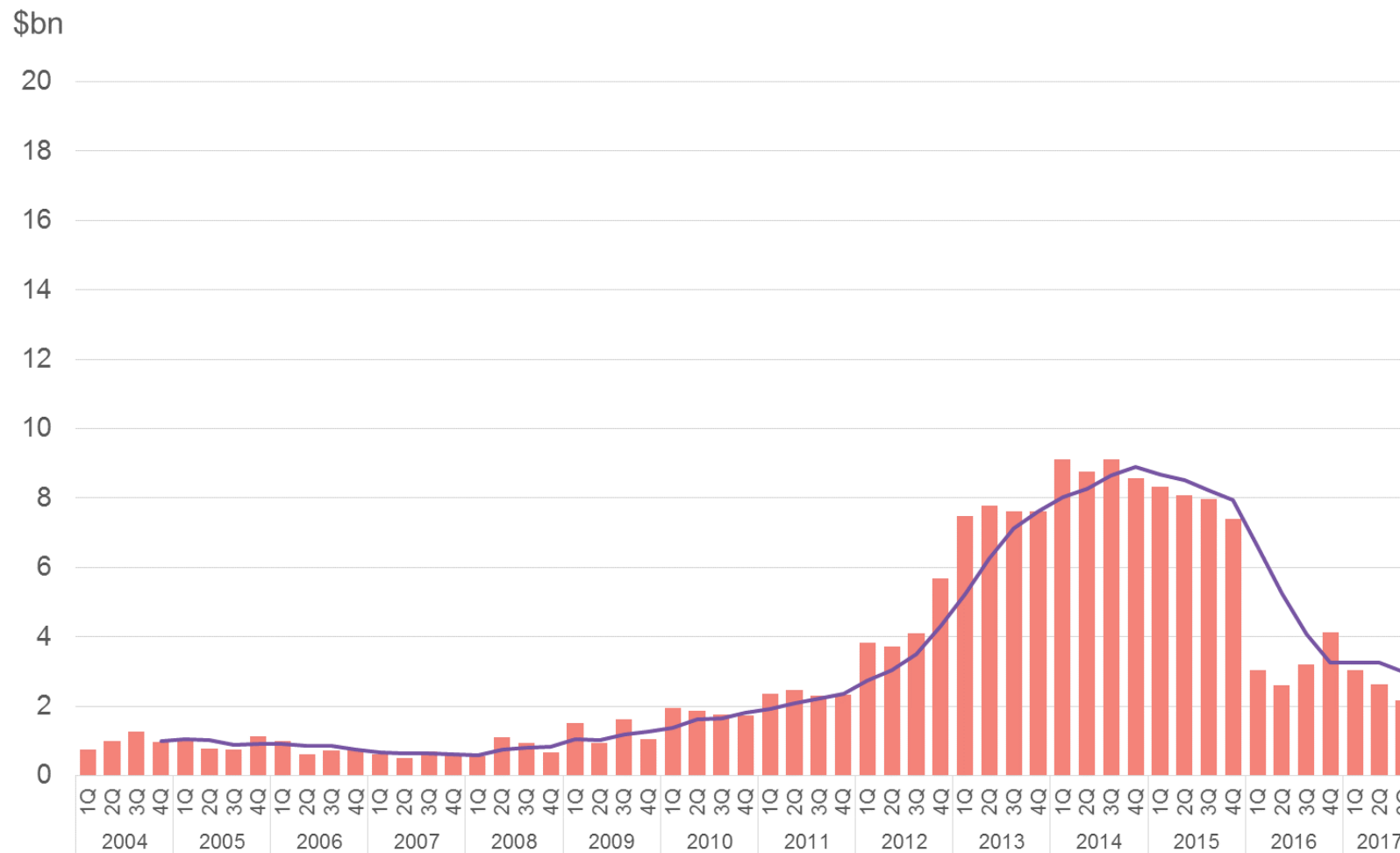
New Investment in Clean Energy South Africa

1Q 2004 – 3Q 2017



New Investment in Clean Energy Japan

1Q 2004 – 3Q 2017



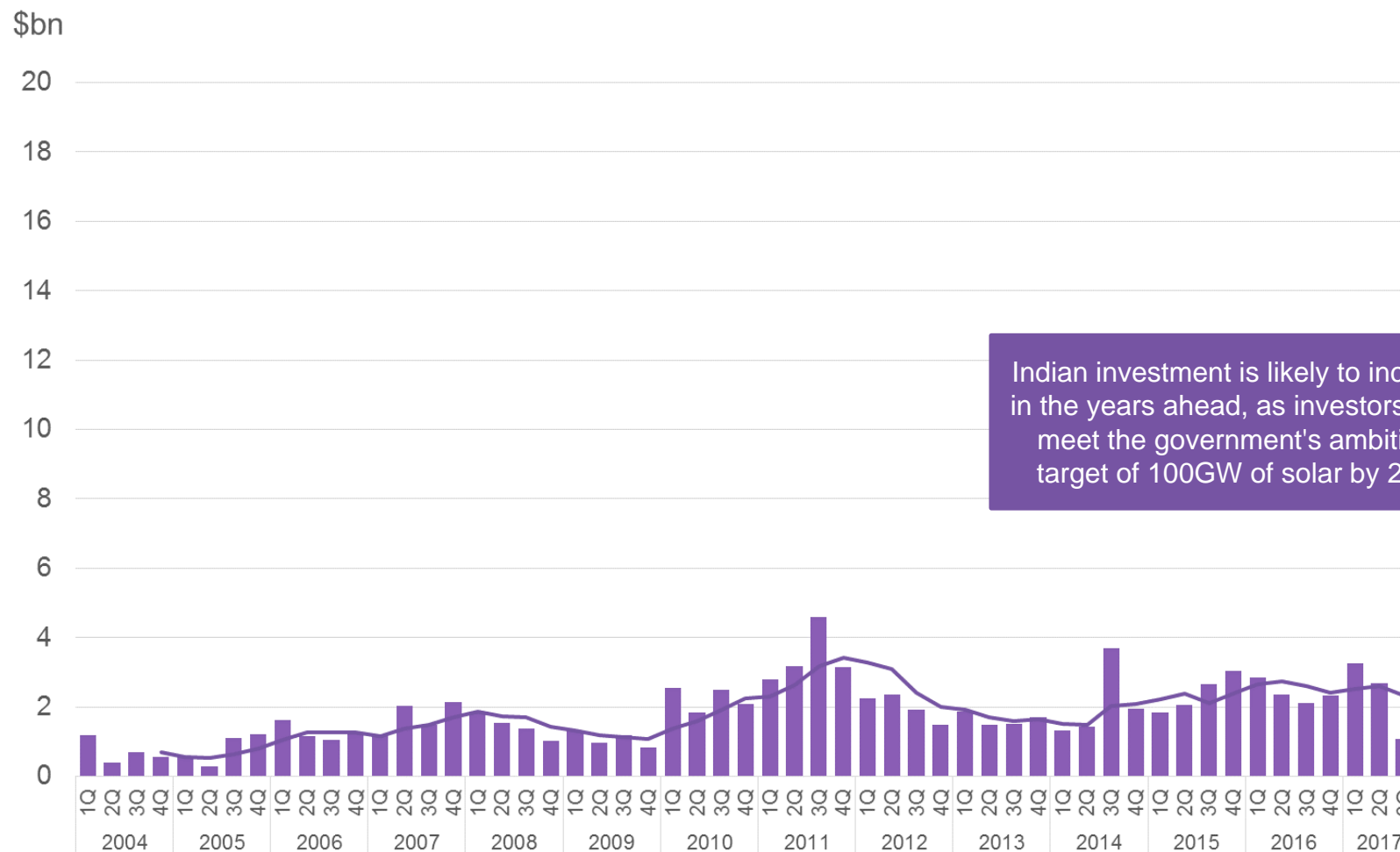
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— Four quarter running average

Source:
Bloomberg New Energy Finance

New Investment in Clean Energy India

1Q 2004 – 3Q 2017



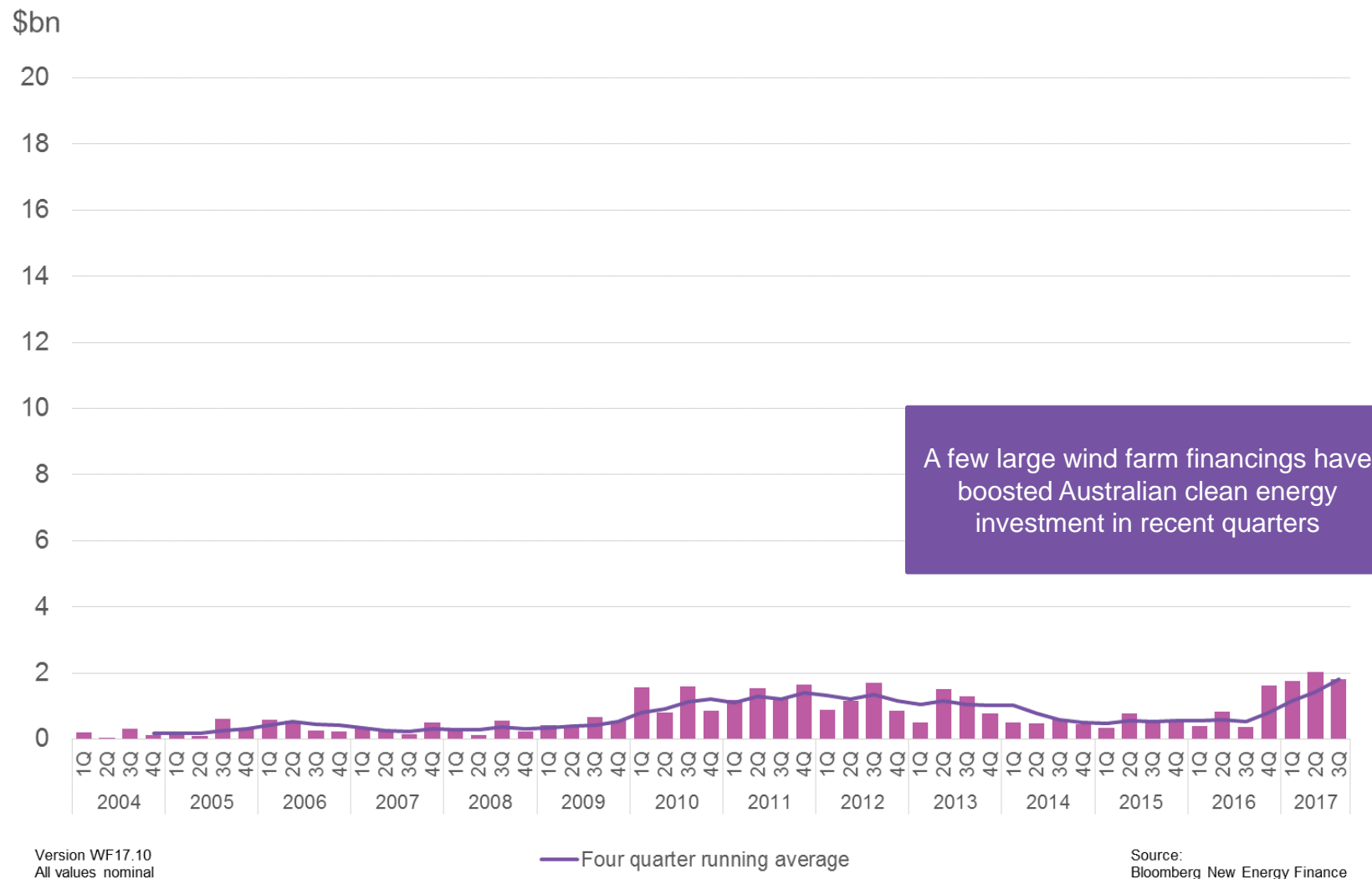
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All values nominal

— Four quarter running average

Source:
Bloomberg New Energy Finance

New Investment in Clean Energy Australia

1Q 2004 – 3Q 2017



Quarterly Trends, Funds in Circulation

Quarterly trends since 1Q 2004

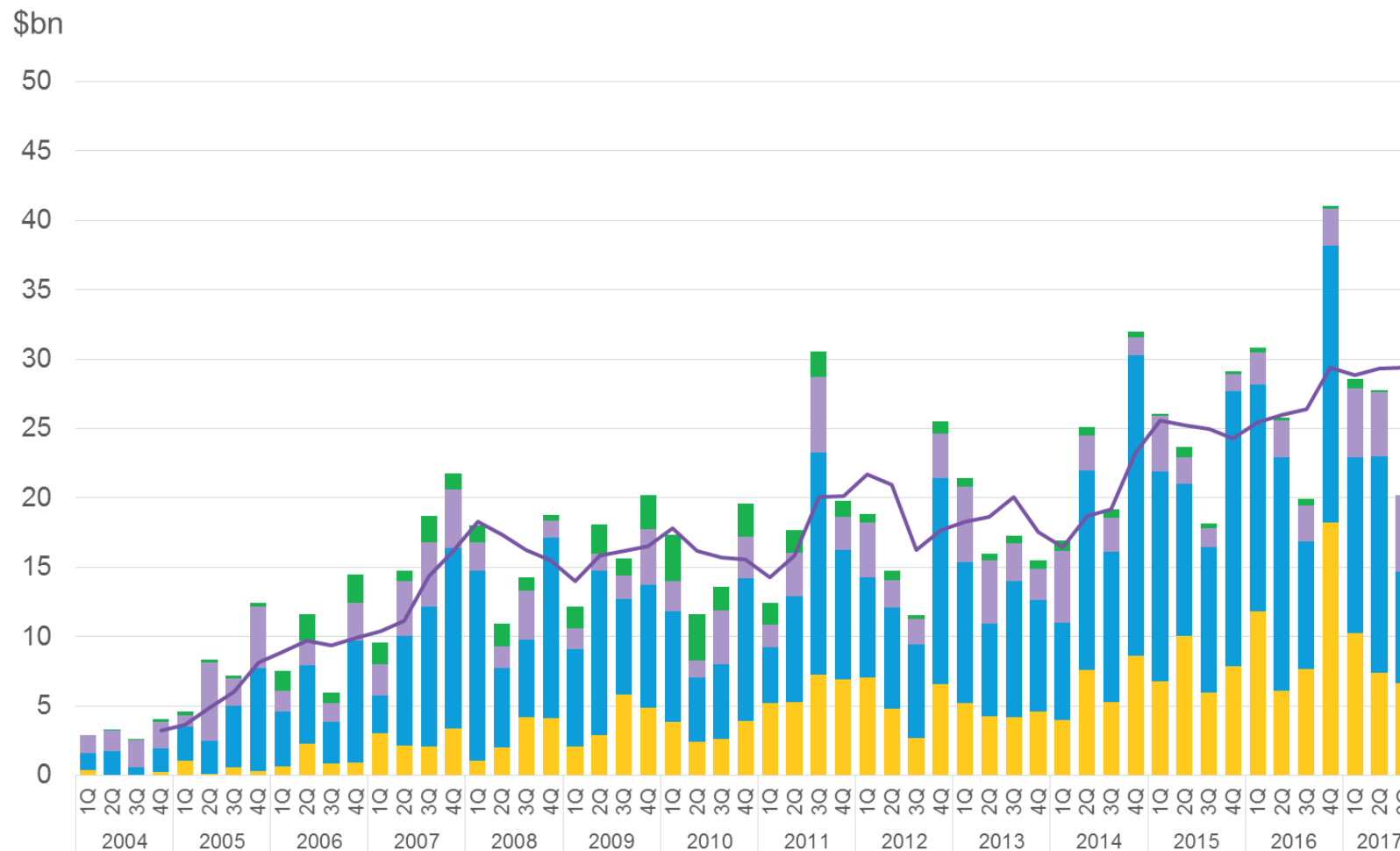
Global Clean Energy, Funds in Circulation, by Region

1Q 2004 – 3Q 2017



Global Clean Energy, Funds in Circulation, by Sector

1Q 2004 – 3Q 2017



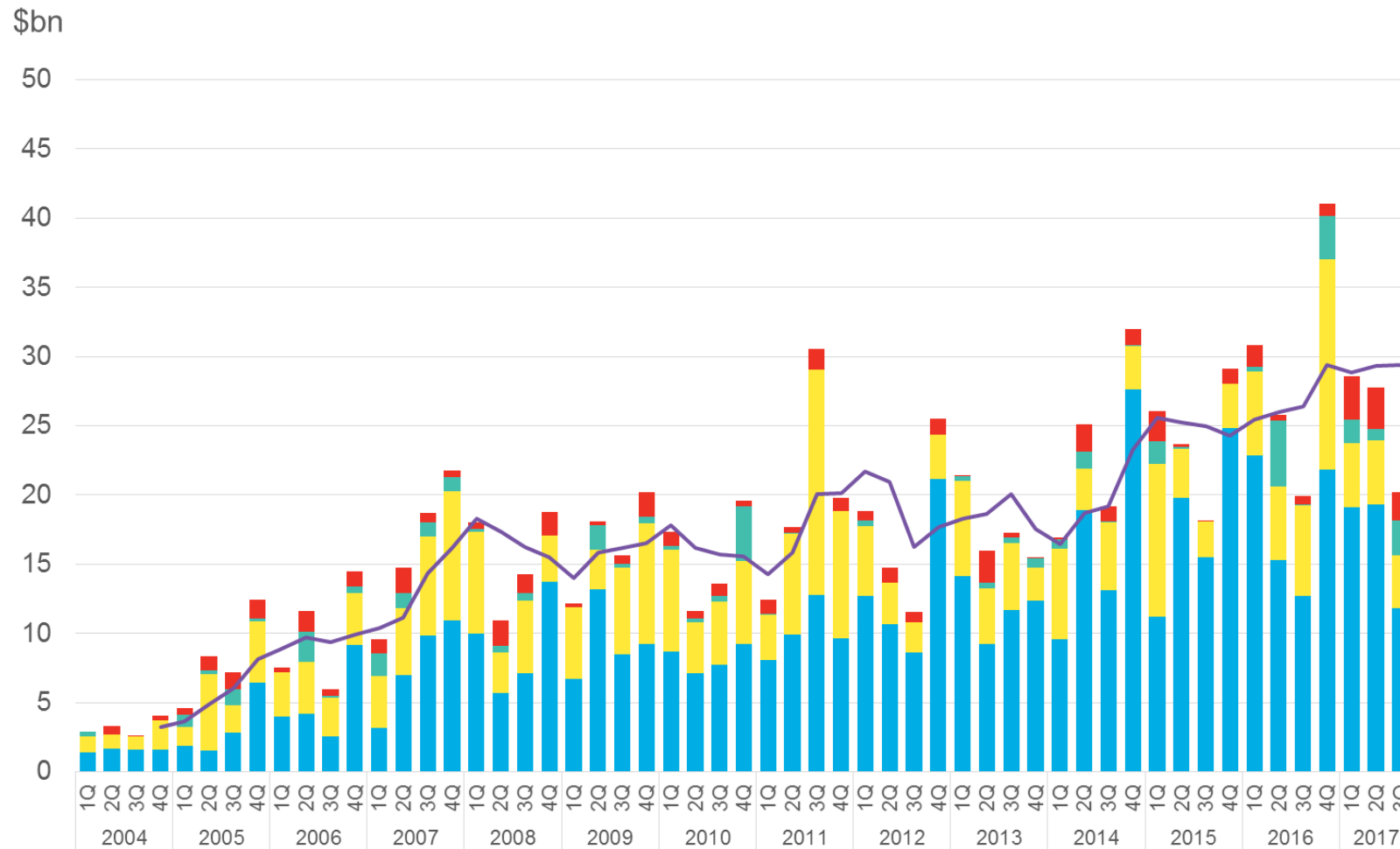
Version WF17.10
All values nominal

■ Solar ■ Wind ■ Other ■ Biofuels

Source:
Bloomberg New Energy Finance

Global Clean Energy, Funds in Circulation, by Asset Class

1Q 2004 – 3Q 2017



Version WF17.10
All values nominal

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

Source:
Bloomberg New Energy Finance

Top Deals

Top Quarterly Deals for 3Q 2017

Top Asset Finance Deals

3Q 2017

Project Name	Country	Sector	Type of Transaction	Capacity	Value
Oklahoma Wind Catcher Wind Farm	U.S.	Wind	Equity	2,000 MW	\$4,500m
Hornsea Project Two Offshore Wind Farm	U.K.	Wind	Equity	1,386 MW	\$3,673m
Deutsche Bucht Offshore Wind Farm	Germany	Wind	Debt	252 MW	\$1,550m
Guohua Dongtai Offshore Wind Farm Phase IV H2	China	Wind	Equity	300 MW	na
GD Power Zhoushan Putuo 6# 2 Offshore Wind Farm	China	Wind	Debt	252 MW	\$663m

Top Venture Capital / Private Equity Deals

3Q 2017

Organisation	Country	Sector	Type of Transaction	Value
Clean Max Enviro Energy Solutions	India	Solar	PE - Expansion capital	\$109m
Green Hedge Energy UK	U.K.	Energy Storage	PE - Expansion capital	\$39m
Advanced Microgrid Solutions	U.S.	Energy Storage	VC - Series B / Second round	\$34m
Romeo Systems	U.S.	Energy Storage	VC - Seed / angel	\$30m
GlassPoint Solar	U.S.	Solar	VC - Further / Pre-IPO round	\$20m

Top Public Market Deals

3Q 2017

Organisation	Stock Exchange	Sector	Type of Transaction	New Equity Raised
Beijing Shouhang Resources Saving	Shanghai Stock Exchange	Solar	Secondary & PIPE	\$675m
Greencoat Renewables	AIM (London)	Wind	IPO	\$314m
Capital Stage Finance	Hamburg Stock Exchange	Solar	Convertible & Other	\$116m
John Laing Environmental Assets Group	London Stock Exchange	Services & Support	Secondary & PIPE	\$51m
Brenmiller Energy	Tel Aviv Stock Exchange	Solar	IPO	\$13m

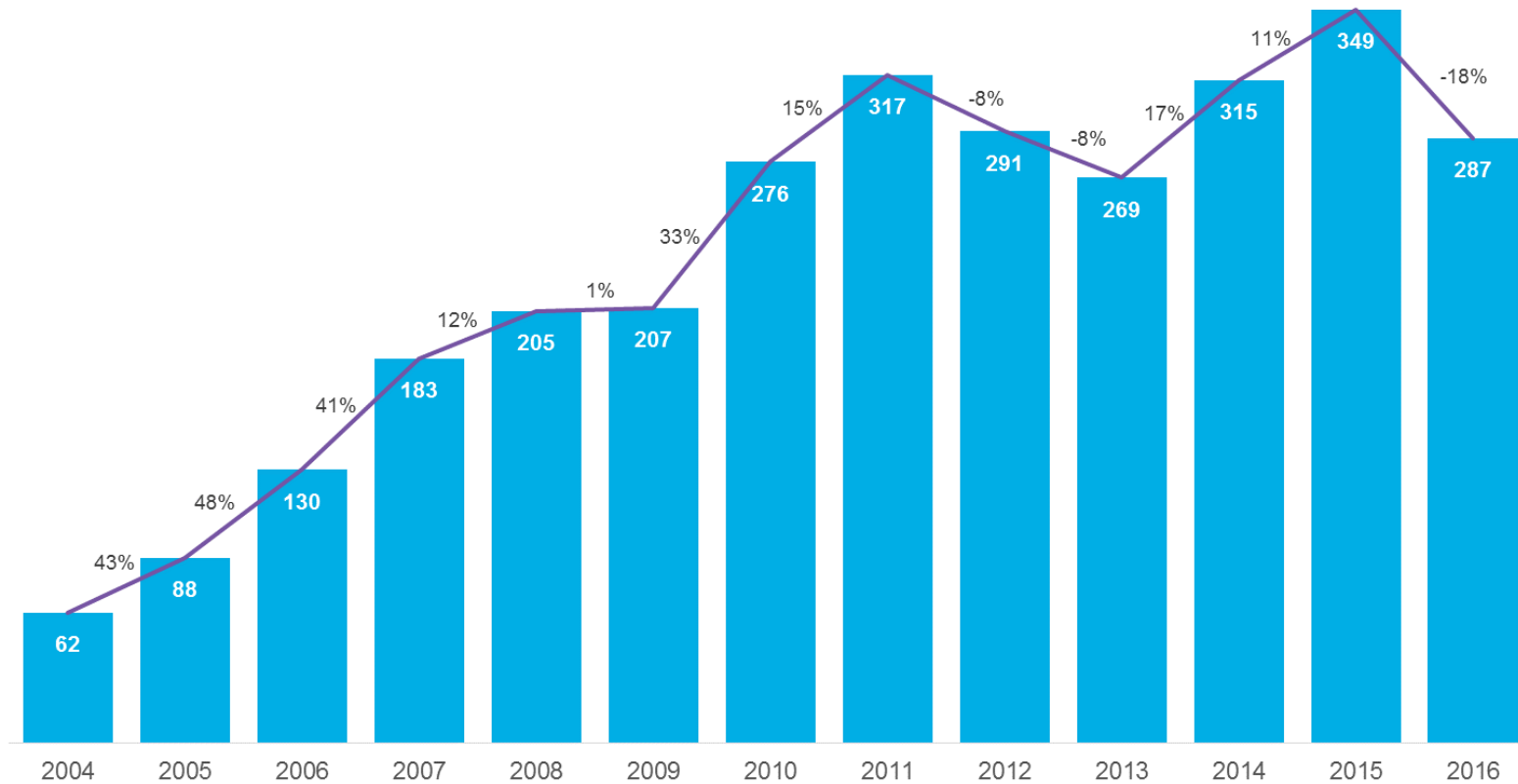
Annual Trends, New Investment

Annual trends since 2004

Global New Investment in Clean Energy

2004 – 2016

\$bn



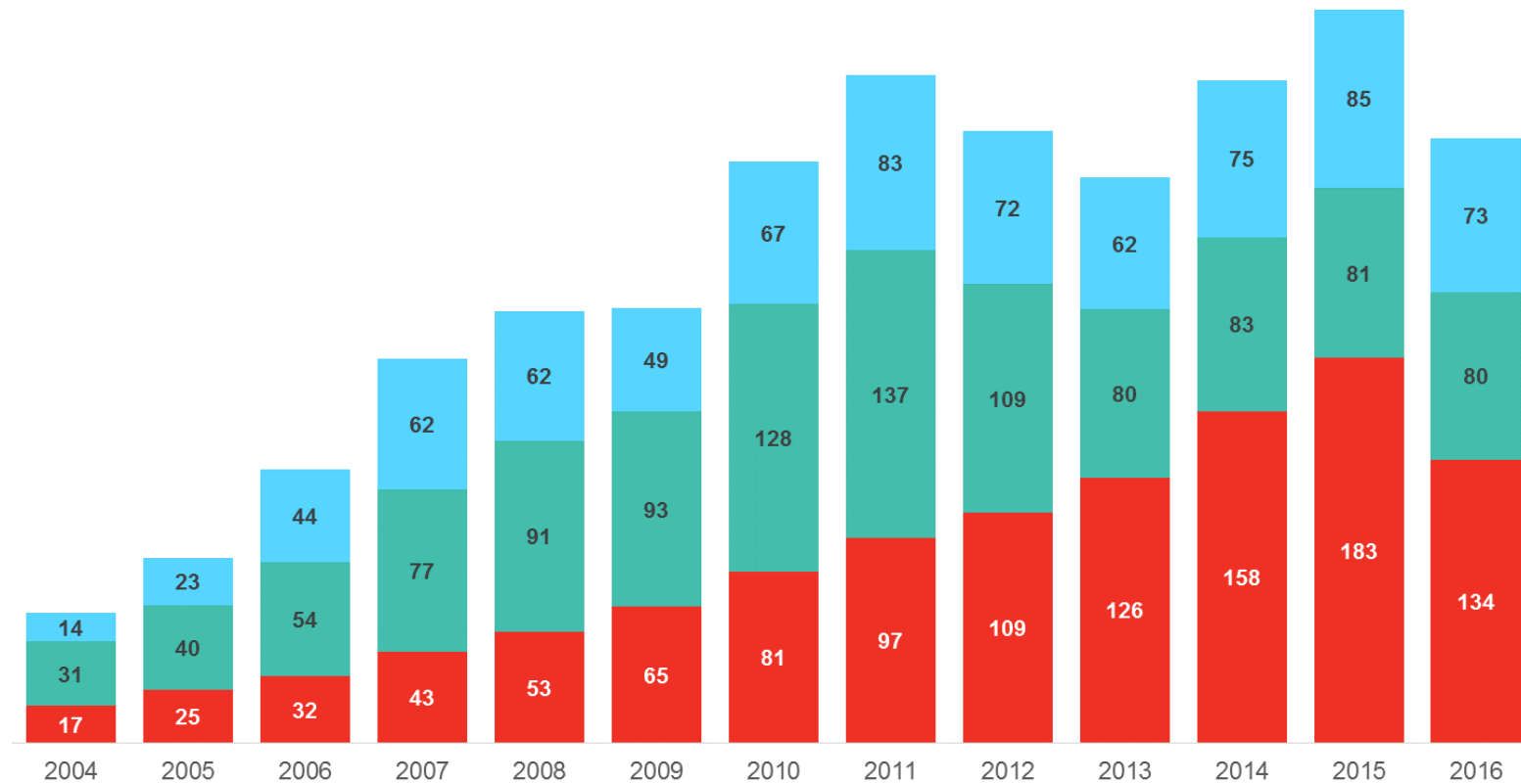
Version WF17.07
All values nominal

Source:
Bloomberg New Energy Finance

Global New Investment in Clean Energy by Region

2004 – 2016

\$bn



Version WF17.07
All values nominal

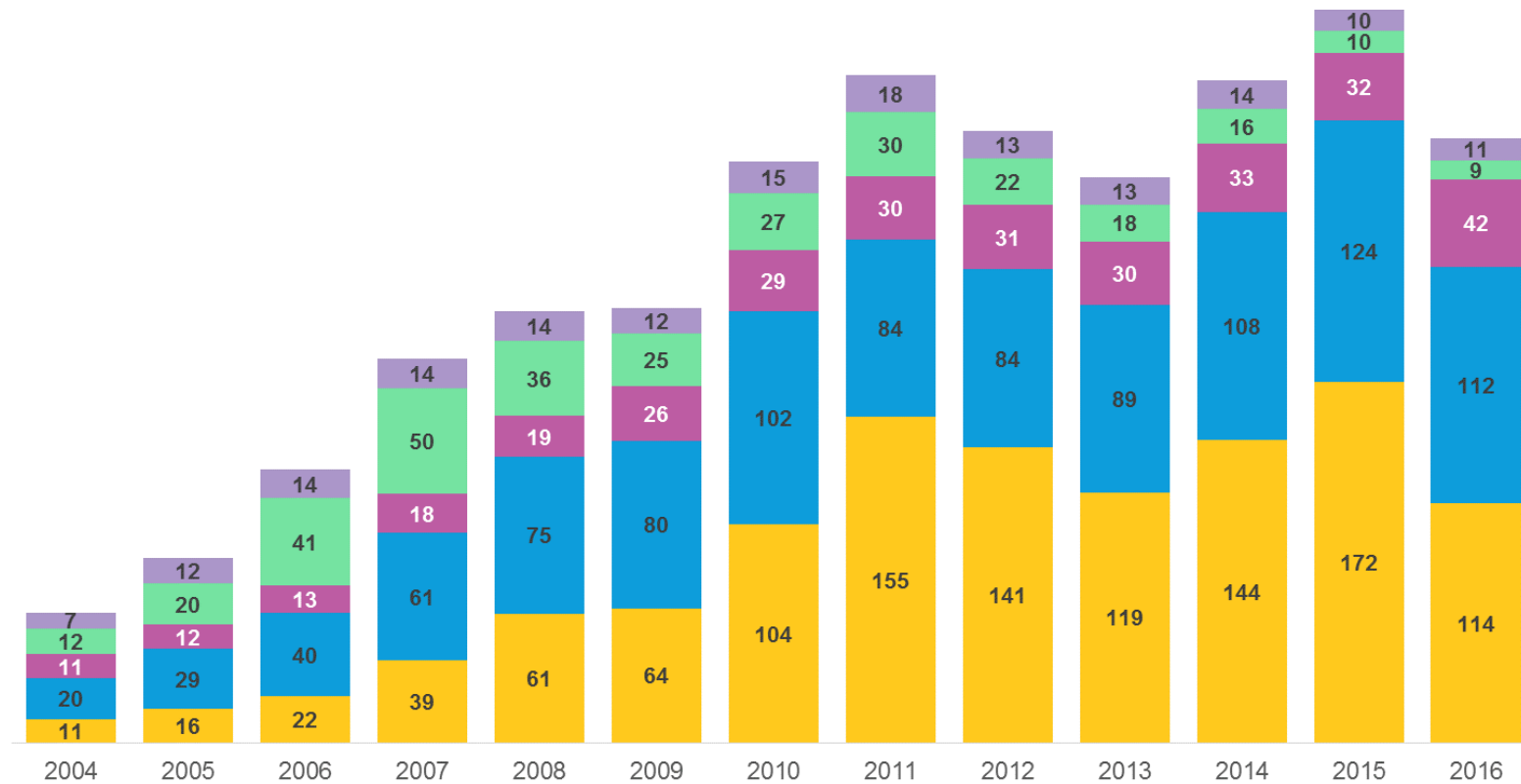
■ APAC ■ EMEA ■ AMER

Source:
Bloomberg New Energy Finance

Global New Investment in Clean Energy by Sector

2004 – 2016

\$bn



Version WF17.07
All values nominal

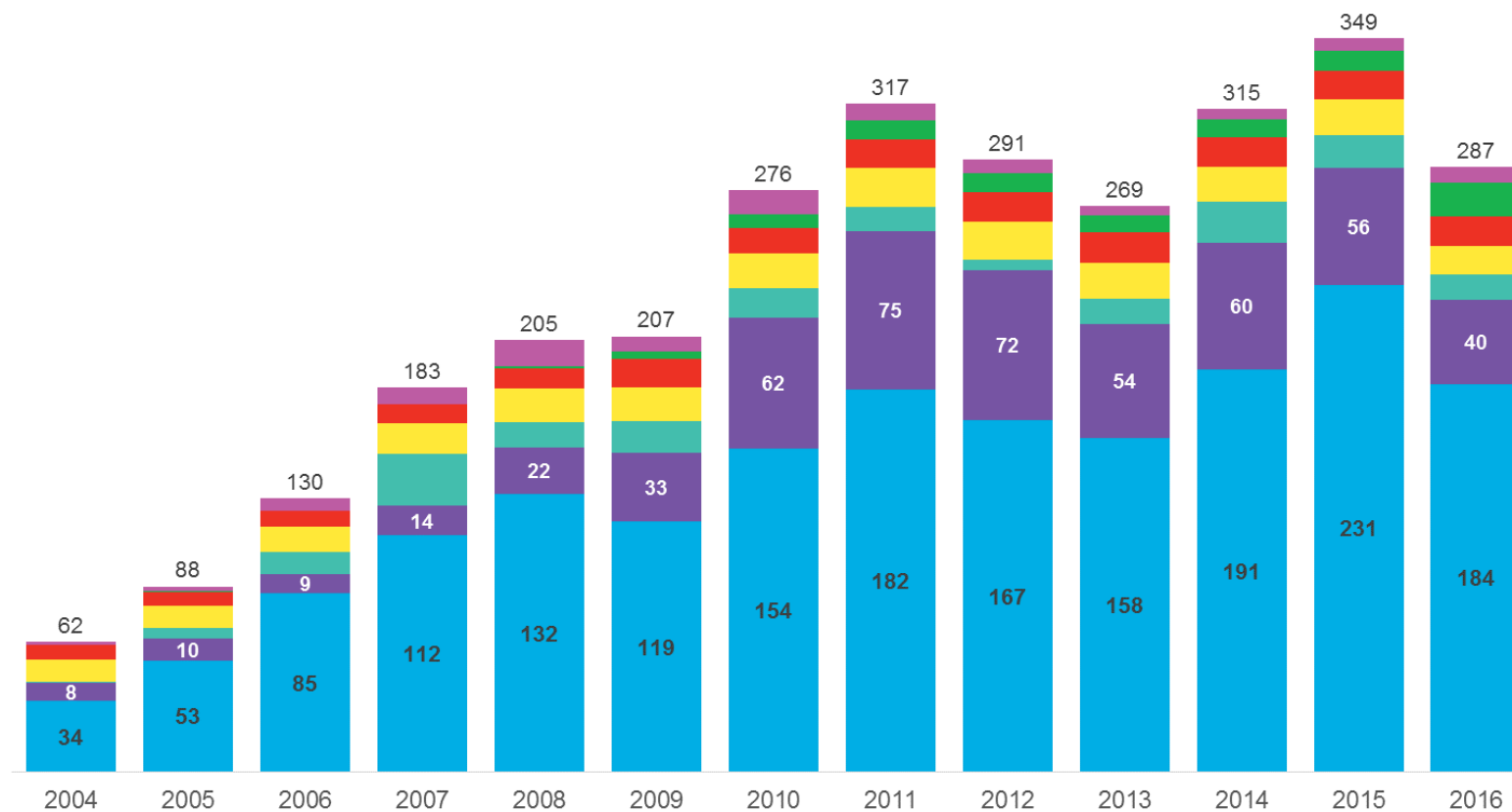
■ Solar ■ Wind ■ Energy smart technologies ■ Bioenergy ■ Other

Source:
Bloomberg New Energy Finance

Global New Investment in Clean Energy by Asset Class

2004 – 2016

\$bn



Version WF17.07
All values nominal

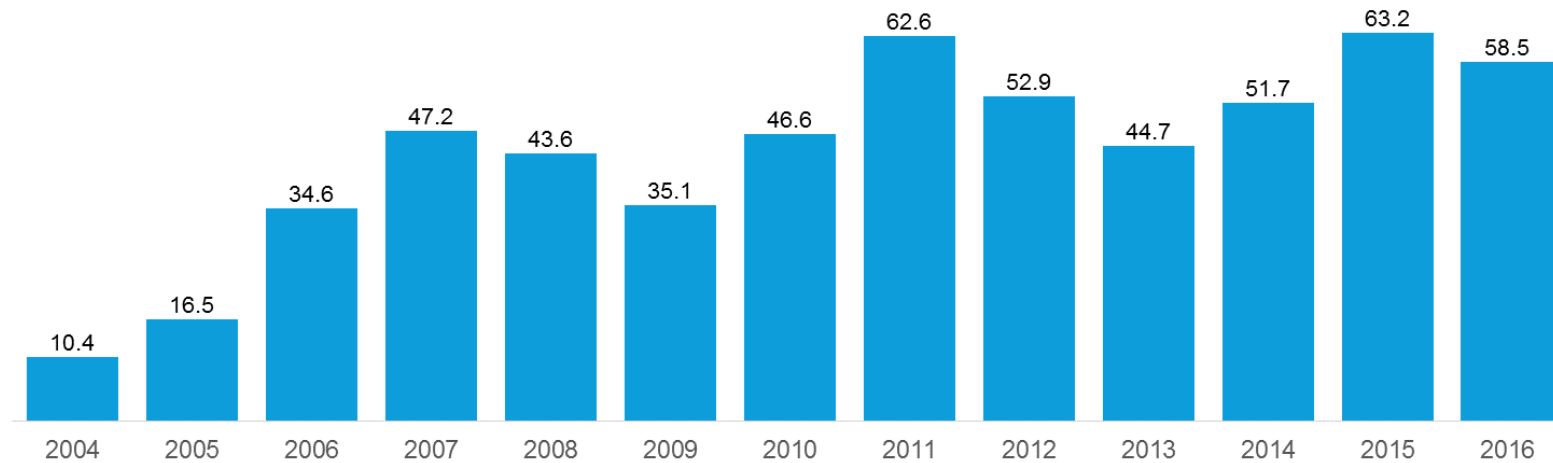
■ Asset fin ■ Small-scale solar ■ Public markets ■ CorpR&D ■ GovR&D ■ Asset fin (EST) ■ VCPE

Source:
Bloomberg New Energy Finance

New Investment in Clean Energy United States

2004 – 2016

\$bn



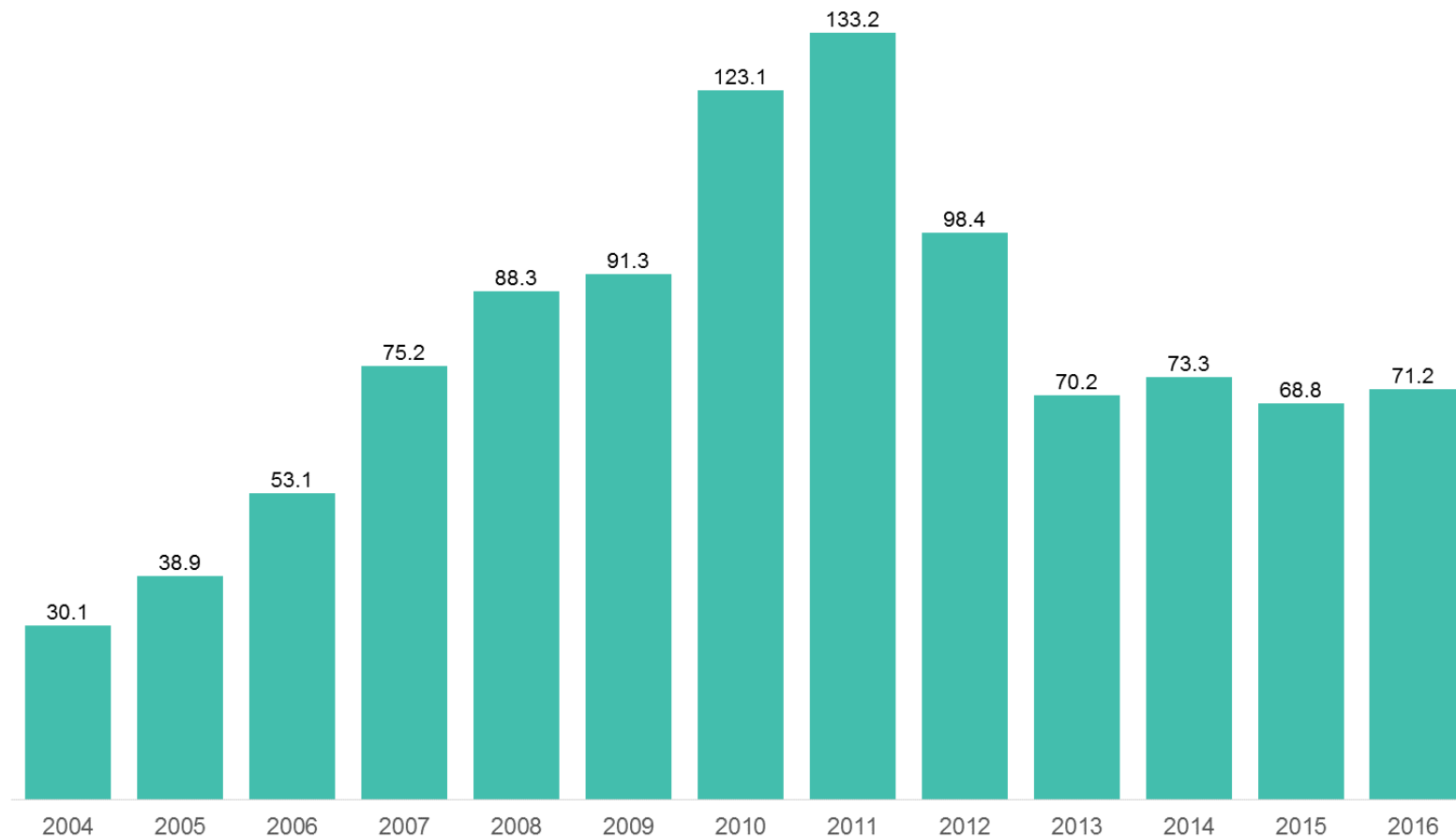
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Bloomberg New Energy Finance

New Investment in Clean Energy Europe

2004 – 2016

\$bn



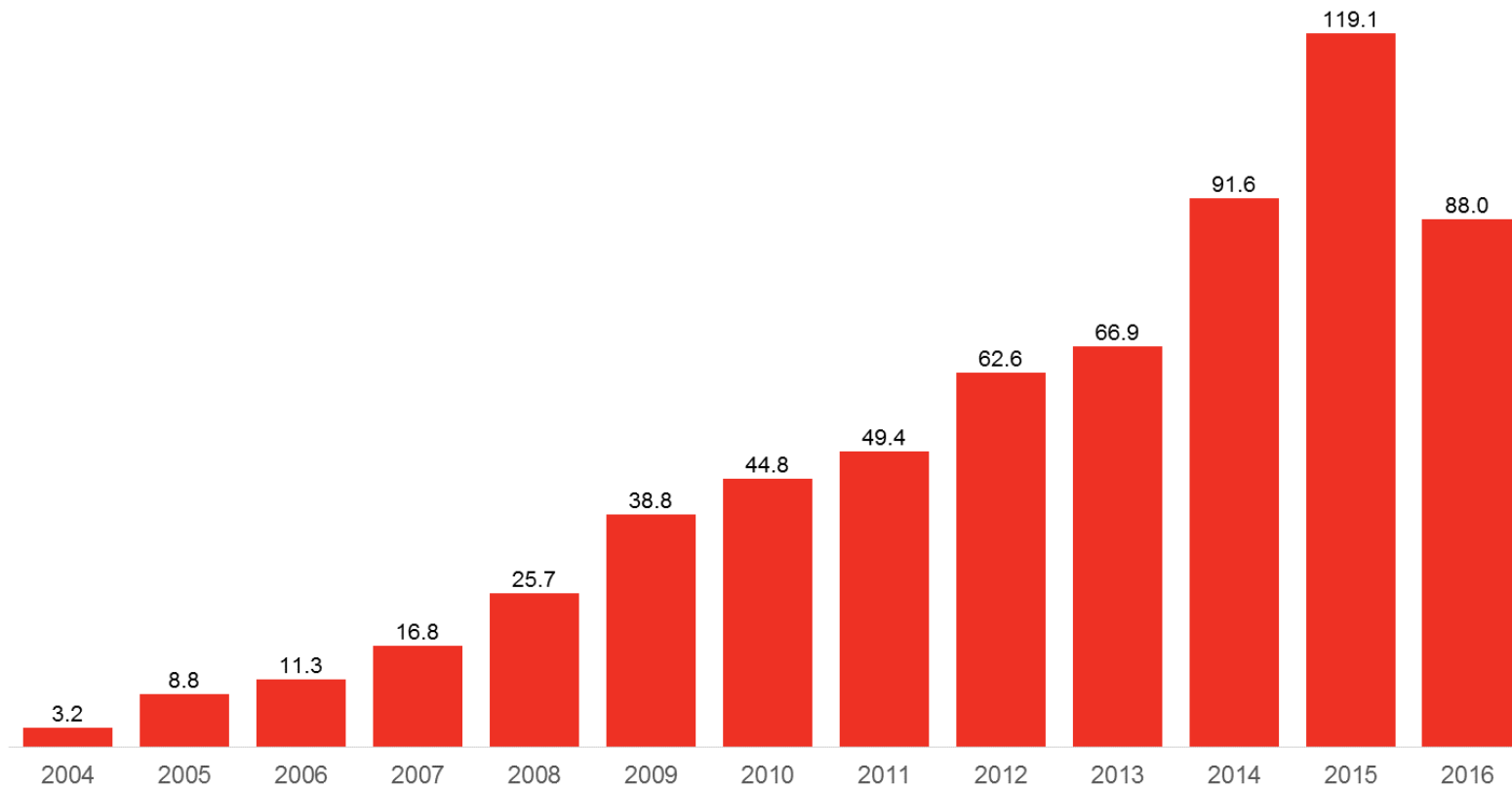
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Source:
Bloomberg New Energy Finance

New Investment in Clean Energy China

2004 – 2016

\$bn



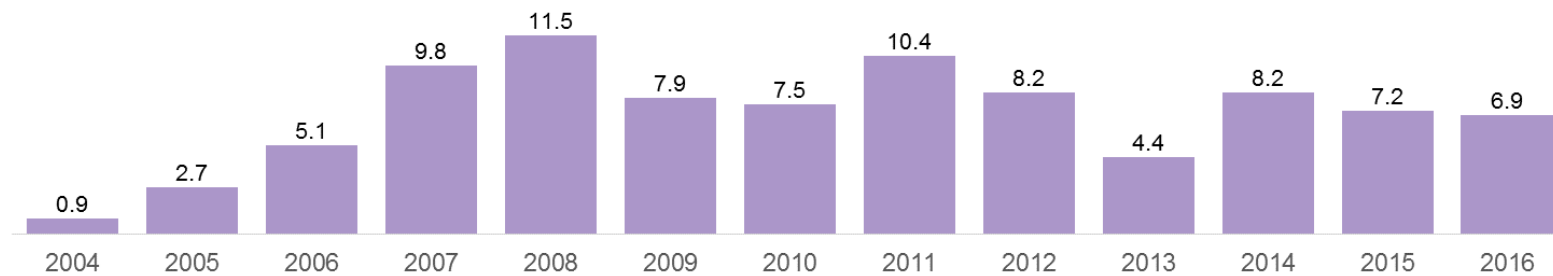
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Source:
Bloomberg New Energy Finance

New Investment in Clean Energy Brazil

2004 – 2016

\$bn



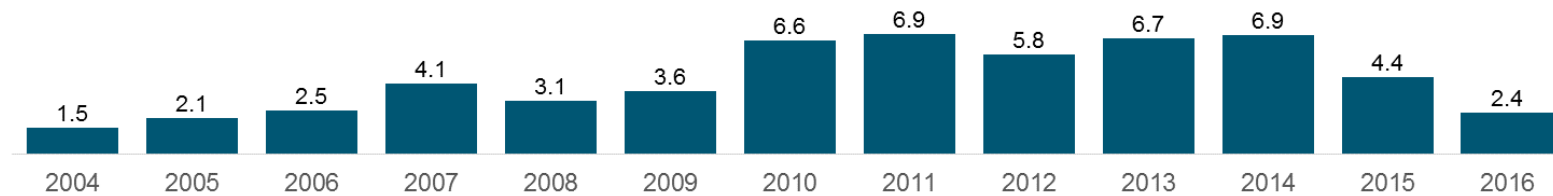
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Source:
Bloomberg New Energy Finance

New Investment in Clean Energy Canada

2004 – 2016

\$bn



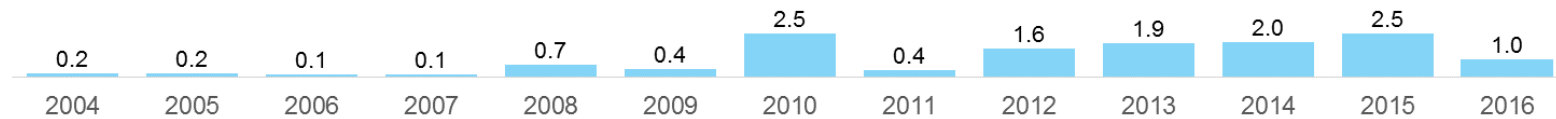
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Bloomberg New Energy Finance

New Investment in Clean Energy Mexico

2004 – 2016

\$bn



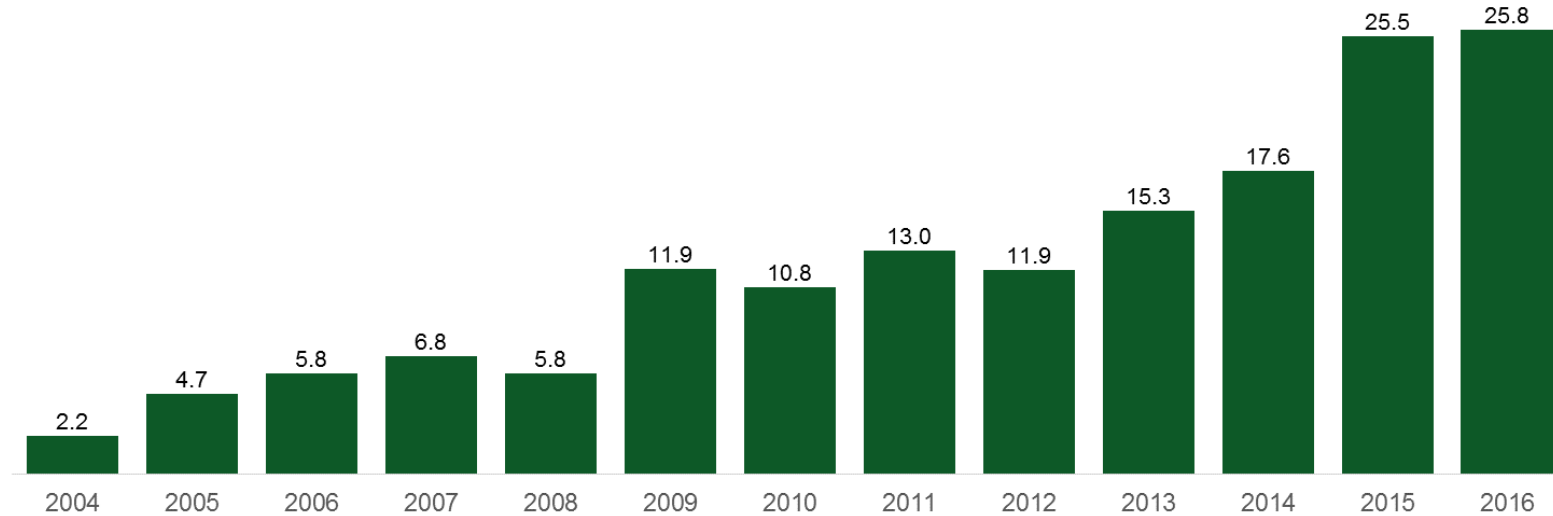
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Source:
Bloomberg New Energy Finance

New Investment in Clean Energy United Kingdom

2004 – 2016

\$bn



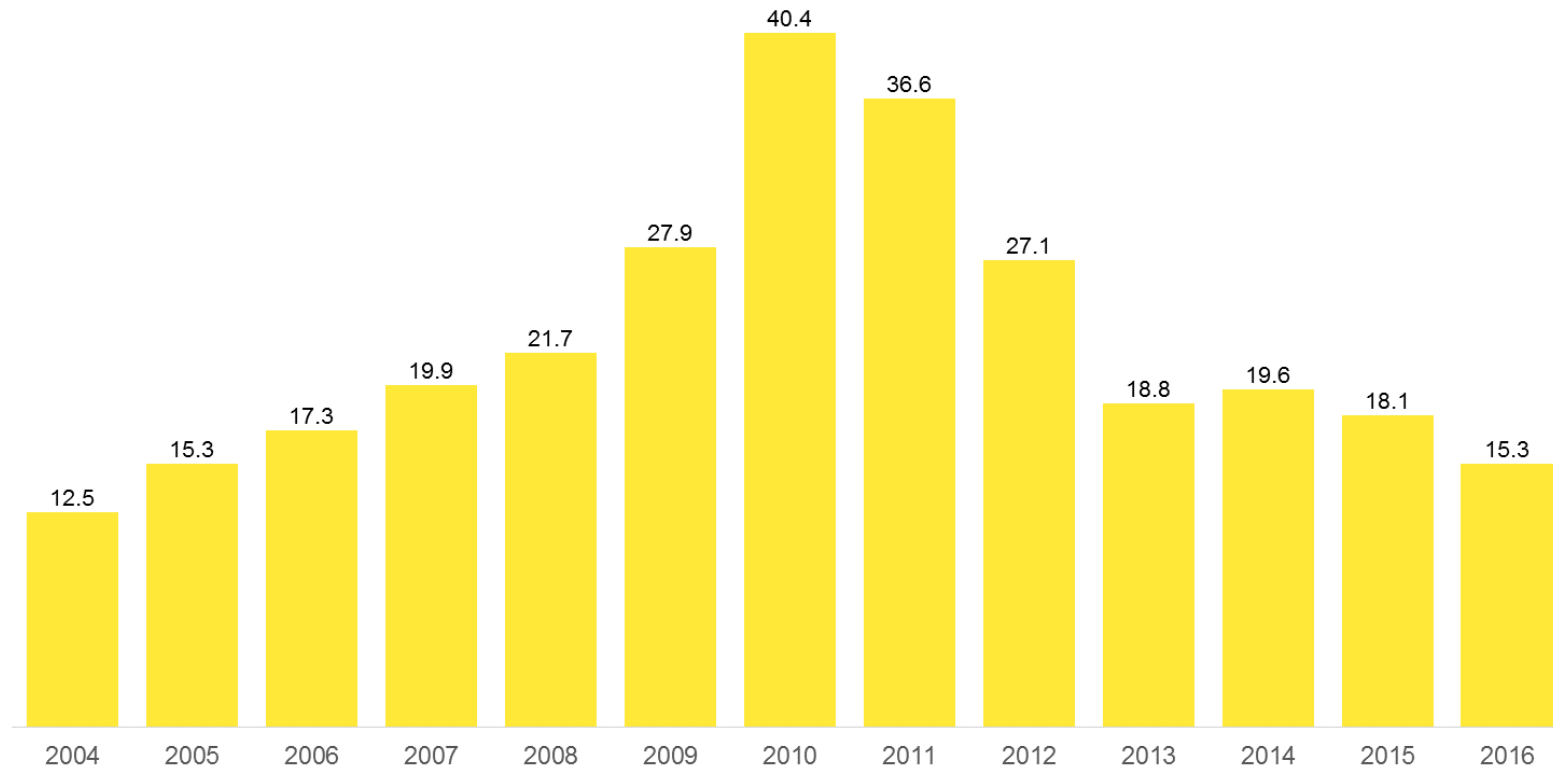
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New Investment in Clean Energy Germany

2004 – 2016

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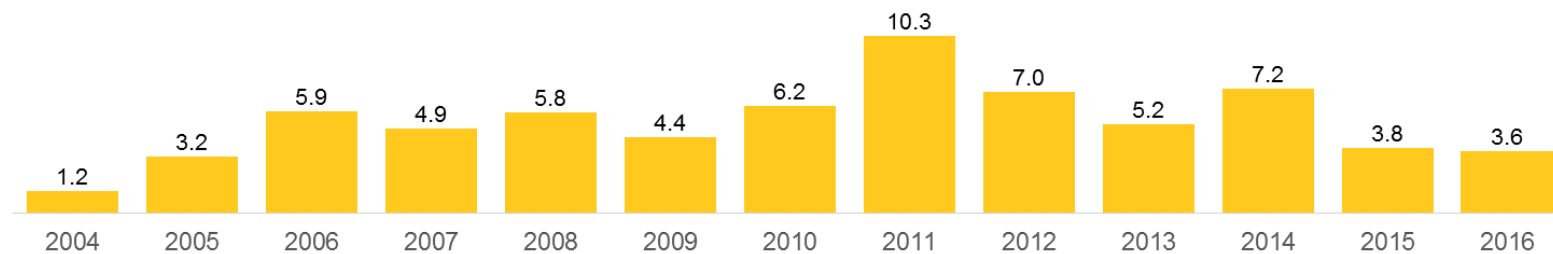
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Bloomberg New Energy Finance

New Investment in Clean Energy France

2004 – 2016

\$bn



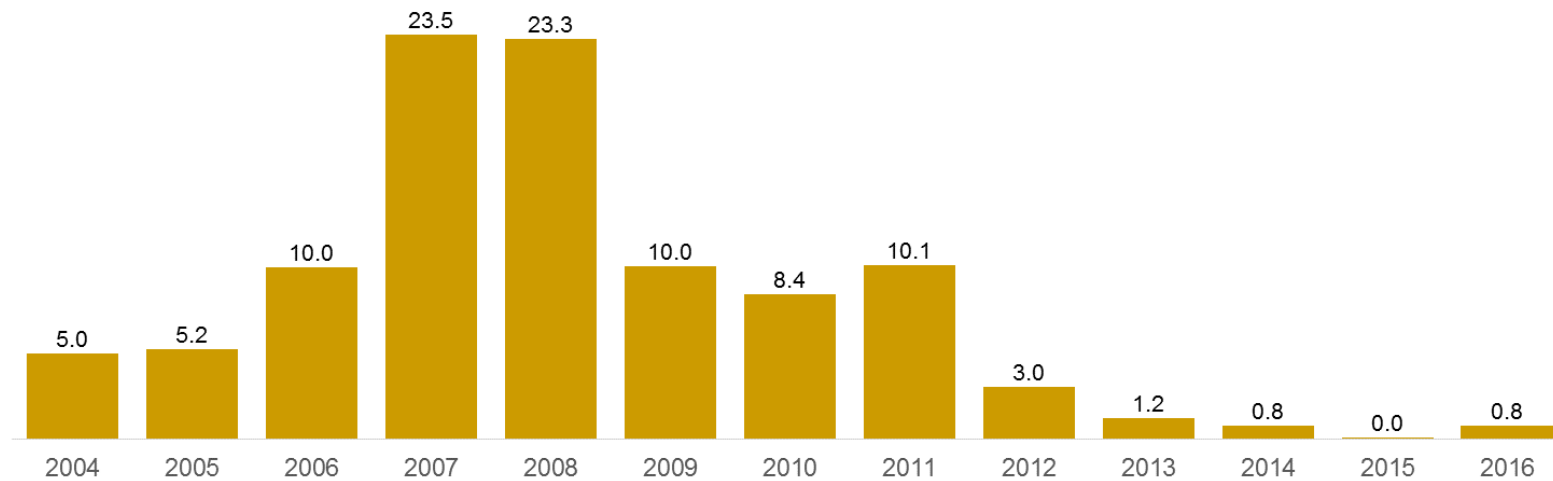
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Bloomberg New Energy Finance

New Investment in Clean Energy Spain

2004 – 2016

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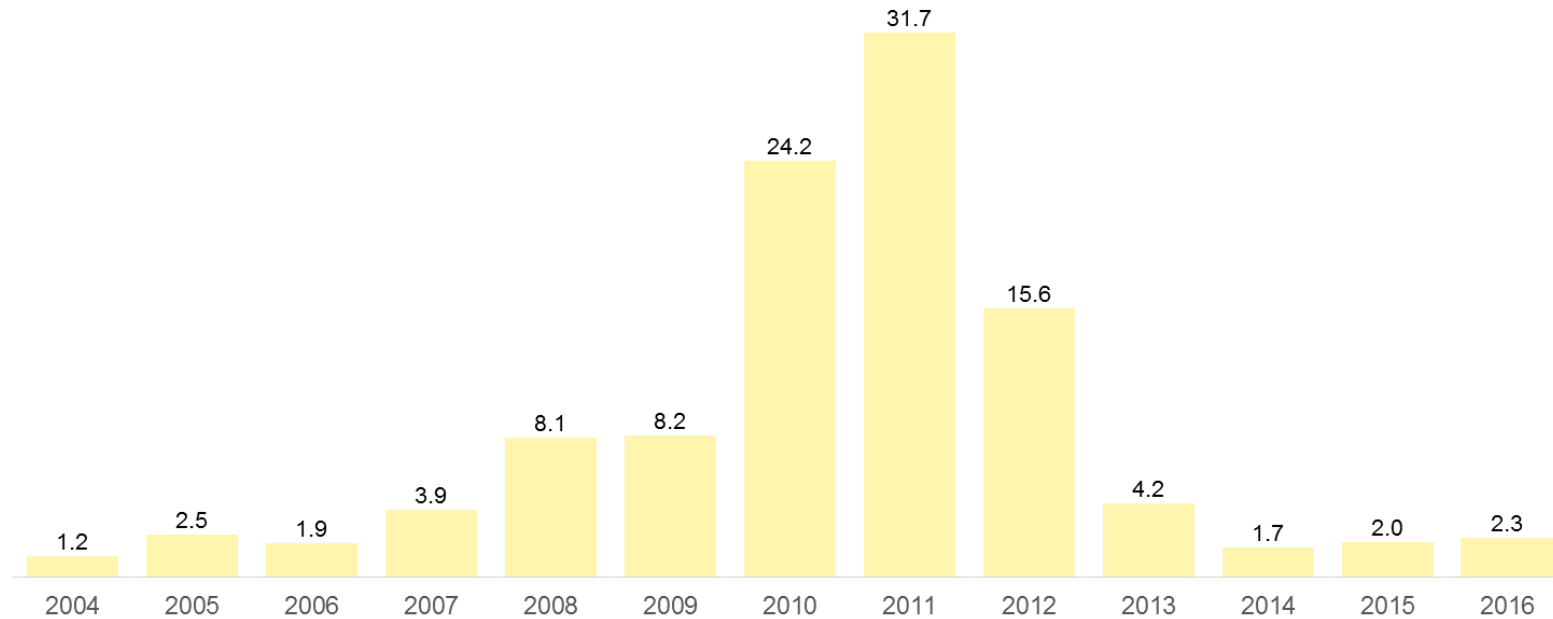
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New Investment in Clean Energy Italy

2004 – 2016

\$bn



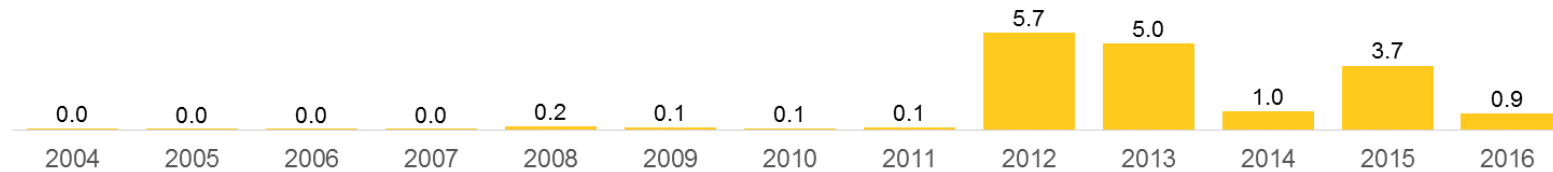
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New Investment in Clean Energy South Africa

2004 – 2016

\$bn



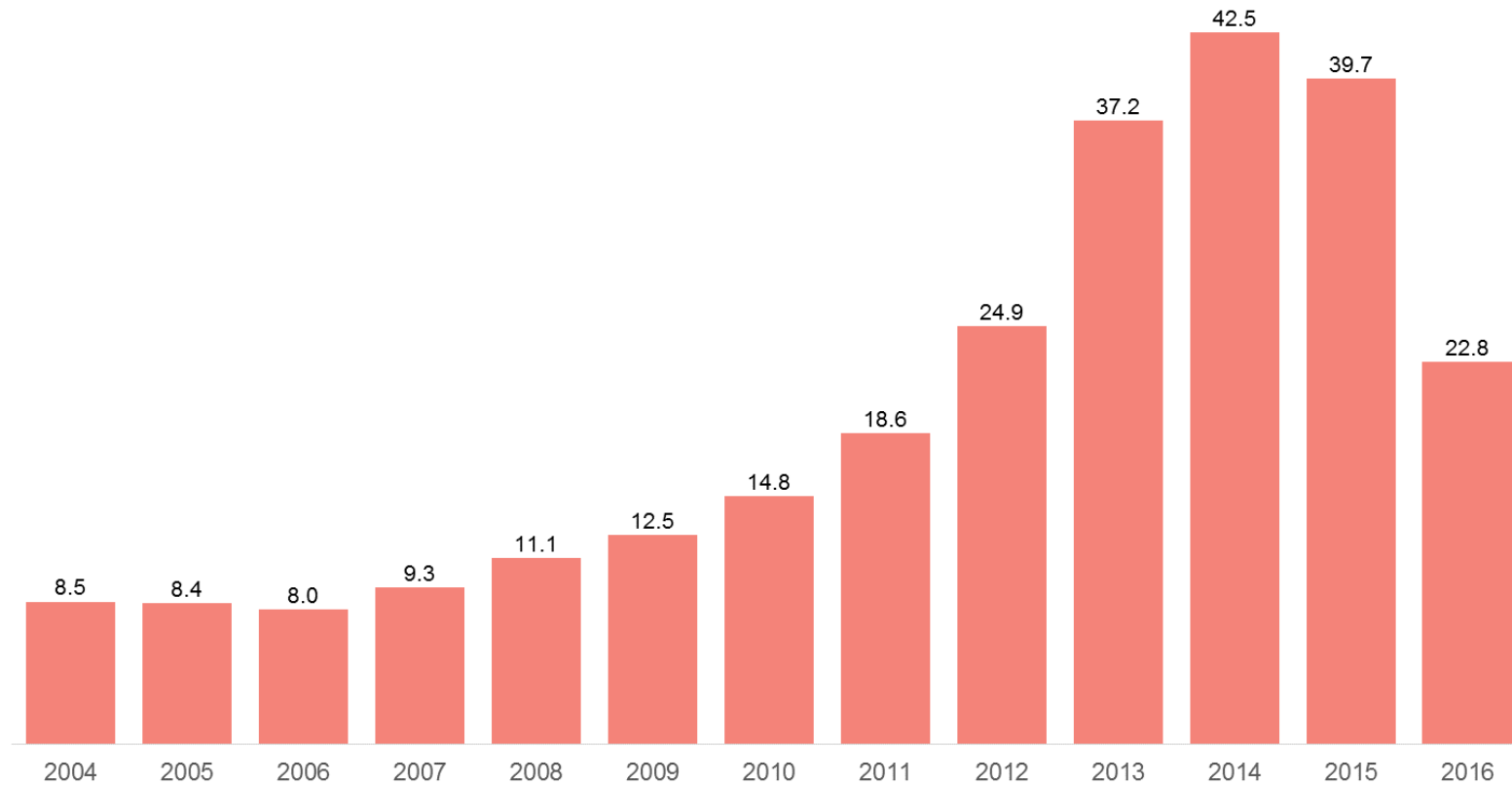
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New Investment in Clean Energy Japan

2004 – 2016

\$bn



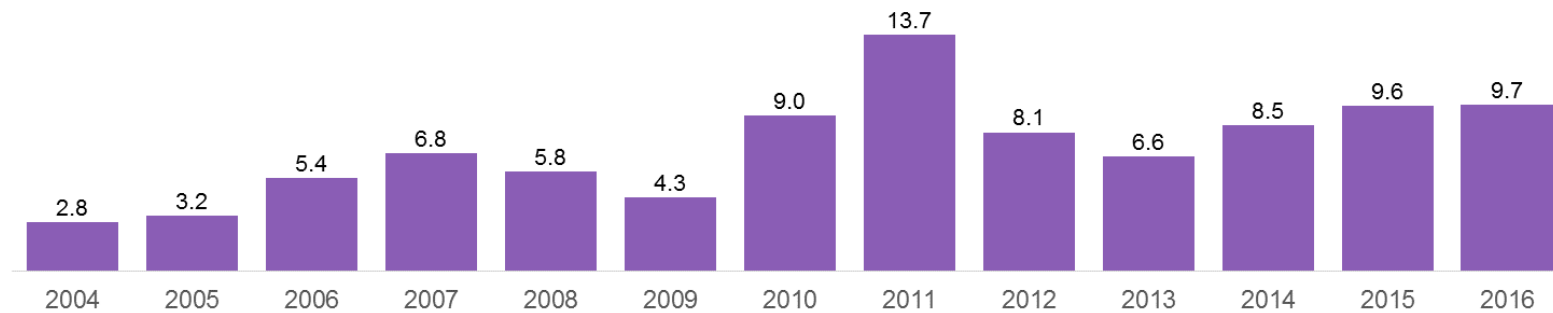
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New Investment in Clean Energy India

2004 – 2016

\$bn



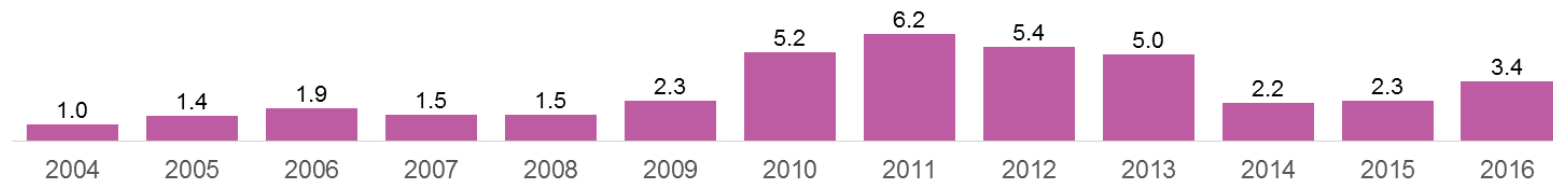
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Source:
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New Investment in Clean Energy Australia

2004 – 2016

\$bn



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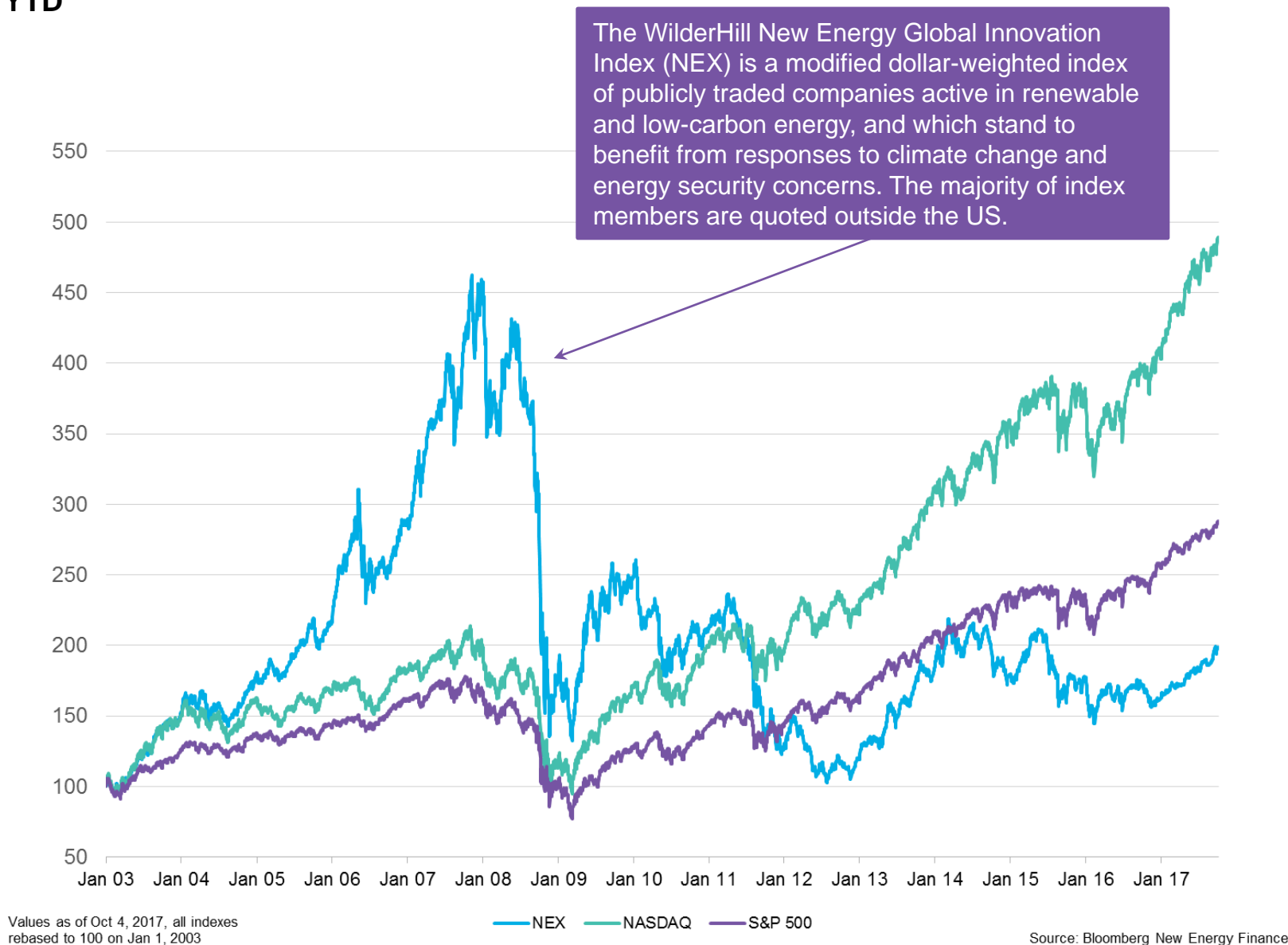
Source:
Bloomberg New Energy Finance

Clean Energy Stock Performance

Clean energy and the stock market

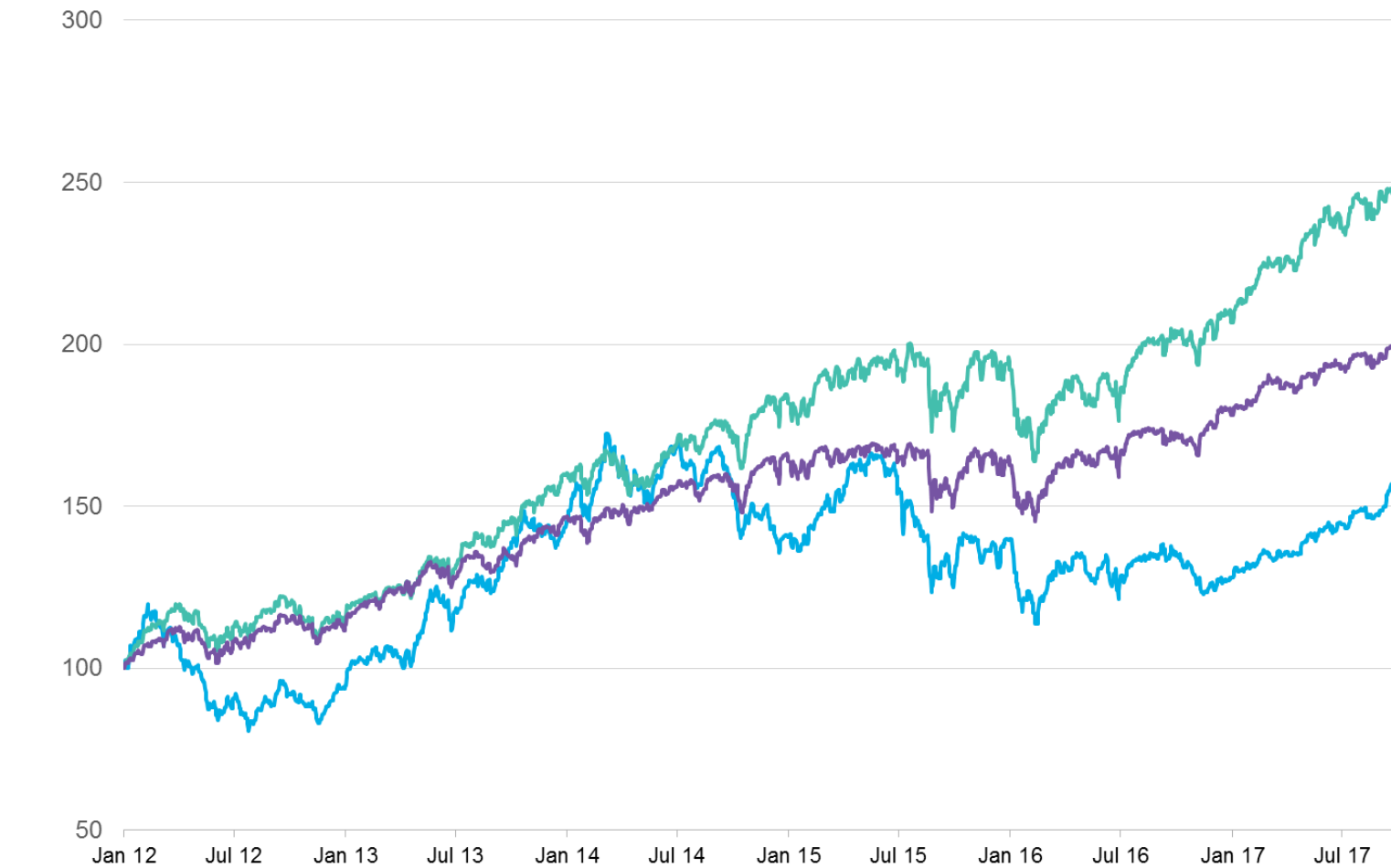
NEX vs NASDAQ & S&P 500

2004 – 2017 YTD



NEX vs NASDAQ & S&P 500

2012 – 2017 YTD



Values as of Oct 4, 2017, all indexes
rebased to 100 on Jan 1, 2012

— NEX — NASDAQ — S&P 500

Source: Bloomberg New Energy Finance

NEX vs NASDAQ & S&P 500

2015 – 2017 YTD



Values as of Oct 4, 2017, all indexes rebased to 100 on Jan 1, 2015

— NEX — NASDAQ — S&P 500

Source: Bloomberg New Energy Finance

Definitions and FAQs

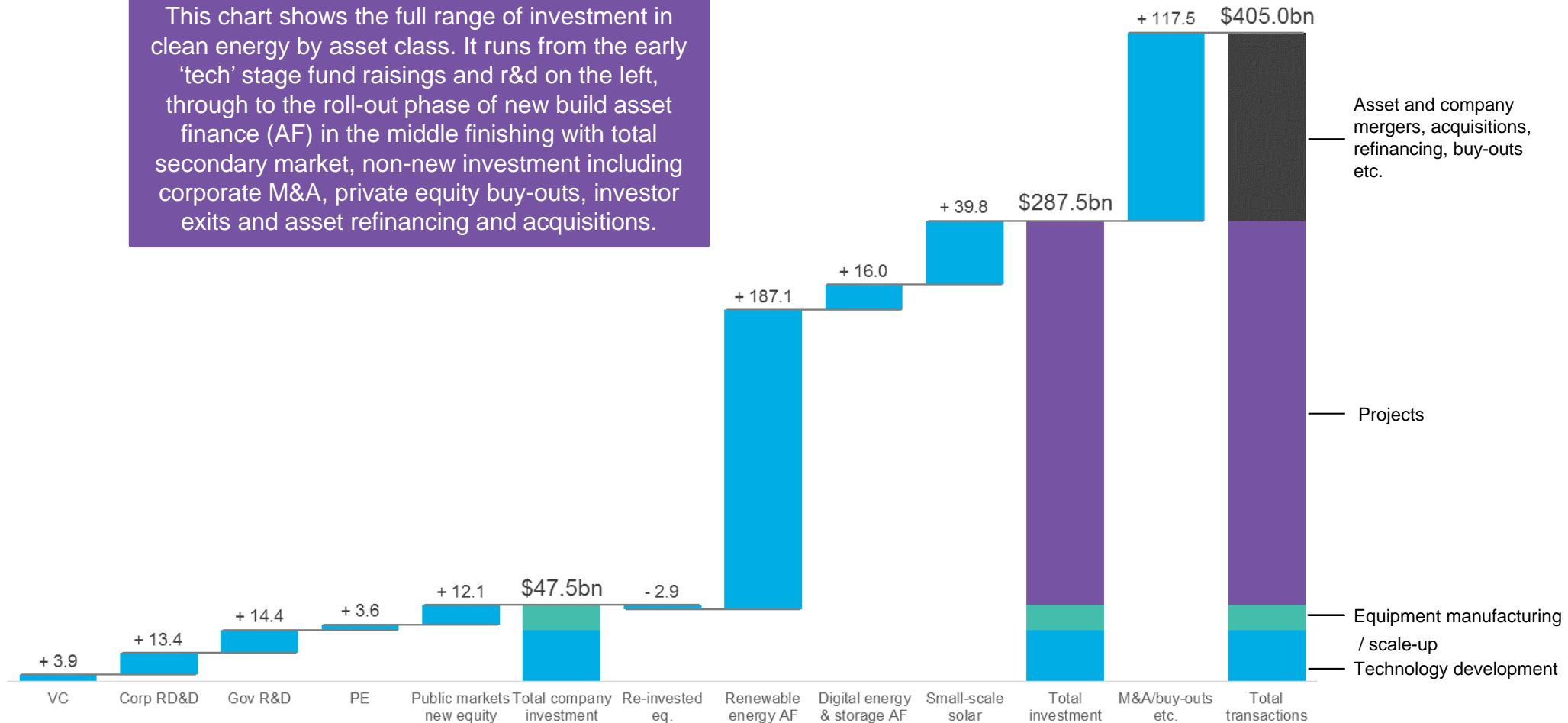
How Bloomberg New Energy Finance
defines clean energy

Definitions

2016 Clean Energy Investment Types and Flows

\$bn

This chart shows the full range of investment in clean energy by asset class. It runs from the early 'tech' stage fund raisings and r&d on the left, through to the roll-out phase of new build asset finance (AF) in the middle finishing with total secondary market, non-new investment including corporate M&A, private equity buy-outs, investor exits and asset refinancing and acquisitions.



Version WF17.07
All values nominal

Source:
Bloomberg New Energy Finance

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, BNEF'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

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.

Definitions

Sectors

Other low carbon tech / services

This sector covers clean energy service companies such as consultants, government agencies and policy makers, NGOs, financial service providers, investors, and clean energy information providers (such as ourselves). It also covers the corporate activity of organizations across the carbon market value chains.

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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sales.bnef@bloomberg.net

about.bnef.com

@BloombergNEF

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