



Frankfurt School
FS-UNEP Collaborating Centre
for Climate & Sustainable Energy Finance



GLOBAL TRENDS IN RENEWABLE ENERGY INVESTMENT 2015



Bloomberg
NEW ENERGY FINANCE

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Figure 1

Global new investment in renewable energy by asset class, 2004-2014
\$bn

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Asset finance*	30	52	84	107	132	118	149	178	160	153	167
Small distributed capacity	9	10	9	14	22	33	62	76	79	55	74
Public markets	0	4	9	21	11	13	11	10	4	11	15
VC/PE	1	2	4	6	10	5	6	5	4	2	3
Government R&D	2	2	2	3	3	5	5	5	4	5	5
Corporate R&D	3	3	3	3	4	4	4	5	5	7	7
Total	45	73	112	154	182	178	237	279	256	232	270
% Growth	-	62%	54%	37%	18%	-2%	33%	18%	-8%	-10%	17%

Footnote: *Asset finance volume adjusts for re-invested equity. Total values include estimates for undisclosed deals

Source: UNEP, Bloomberg New Energy Finance

Figure 2

Global transactions in renewable energy, 2014
\$bn

	2014
VC	1
Corp RD&D	7
Gov R&D	5
PE	2
Public markets new equity	15
Total company investment	30
Re-invested	(4)
Asset finance	171
SDC	74
Total investment	270
M&A/buy-outs etc.	69
Total transactions	339

Footnote: SDC = small distributed capacity. Total values include estimates for undisclosed deals. Figures may not add up exactly to totals, due to rounding.

Source: UNEP, Bloomberg New Energy Finance

Figure 3. Global Trends In Renewable Energy Investment 2014 data table, \$bn

Category	Year Unit	2004 \$bn	2005 \$bn	2006 \$bn	2007 \$bn	2008 \$bn	2009 \$bn	2010 \$bn	2011 \$bn	2012 \$bn	2013 \$bn	2014 \$bn	2013-14 Growth %	2004-14 CAGR %
1 Total Investment														
1.1 New investment		45.1	72.9	112.1	153.9	181.8	178.5	237.2	278.8	256.4	231.8	270.2	17%	20%
1.2 Total transactions		53.9	99.1	148.1	212.5	241.1	242.7	295.7	352.3	324.1	298.6	339.0	13%	20%
2 New Investment by Value Chain														
2.1 Technology development														
2.1.1 Venture capital		0.4	0.6	1.2	2.1	3.2	1.6	2.5	2.5	2.4	0.7	1.0	39%	11%
2.1.2 Government R&D		1.9	2.0	2.2	2.7	2.8	5.3	4.7	4.6	4.5	4.9	5.1	3%	10%
2.1.3 Corporate RD&D		3.2	2.9	3.1	3.5	4.0	4.1	4.2	5.1	5.0	6.6	6.6	1%	7%
2.2 Equipment Manufacturing														
2.2.1 Private equity expansion capital		0.3	1.0	3.0	3.6	6.8	2.9	3.1	2.5	1.7	1.4	1.7	20%	18%
2.2.2 Public markets		0.3	3.7	9.1	20.7	10.9	13.1	11.4	10.1	3.9	10.5	15.1	43%	50%
2.3 Projects														
2.3.1 Asset finance		30.4	52.5	84.7	110.4	135.4	120.0	154.6	181.2	163.2	154.6	170.7	10%	19%
Of which re-invested equity		0.0	0.2	0.7	3.1	3.7	1.9	5.6	3.3	2.9	1.9	3.6	90%	-
2.3.3 Small distributed capacity		8.6	10.3	9.5	14.1	22.3	33.4	62.2	76.1	78.8	54.9	73.5	34%	24%
Total Financial Investment		31.4	57.6	97.3	133.7	152.7	135.6	166.1	192.9	168.1	165.4	185.0	12%	19%
Gov't R&D, corporate RD&D, small projects		13.7	15.3	14.8	20.2	29.1	42.8	71.2	85.9	88.3	66.4	85.2	28%	20%
Total New Investment		45.1	72.9	112.1	153.9	181.8	178.5	237.2	278.8	256.4	231.8	270.2	17%	20%
3 M&A Transactions														
3.1 Private equity buy-outs		0.8	3.7	1.8	3.6	5.4	2.2	2.0	3.1	3.3	0.6	2.5	335%	12%
3.2 Public markets investor exits		0.4	2.4	2.7	4.0	1.0	2.5	4.9	0.2	0.4	1.8	1.9	6%	18%
3.3 Corporate M&A		2.4	7.6	12.3	20.3	17.6	21.8	19.4	30.1	10.1	15.2	9.8	-35%	15%
3.4 Project acquisition & refinancing		5.3	12.5	19.1	30.6	35.4	37.8	32.1	40.1	53.8	49.3	54.5	11%	26%
4 New Investment by Sector														
4.1 Wind		17.9	29.1	39.6	61.6	75.2	81.2	98.9	84.2	84.1	89.3	99.5	11%	19%
4.2 Solar		12.0	16.3	22.1	38.0	60.8	63.7	103.3	155.7	144.3	119.8	149.6	25%	29%
4.3 Biofuels		3.9	9.6	28.4	28.7	19.2	10.2	10.1	10.4	7.0	5.5	5.1	-8%	3%
4.4 Biomass & w-t-e		7.4	9.6	12.1	15.8	16.9	13.9	16.0	17.4	12.4	9.3	8.4	-10%	1%
4.5 Small hydro		2.6	7.2	7.6	7.1	7.8	6.3	5.7	7.2	6.4	5.5	4.5	-17%	6%
4.6 Geothermal		1.2	1.0	1.5	2.0	1.7	2.9	3.0	3.7	1.8	2.2	2.7	23%	9%
4.7 Marine		0.0	0.1	0.9	0.8	0.2	0.3	0.3	0.3	0.3	0.2	0.4	110%	24%
Total		45.1	72.9	112.1	153.9	181.8	178.5	237.2	278.8	256.4	231.8	270.2	17%	20%
5 New Investment by Geography														
5.1 United States		5.4	11.6	29.1	33.0	35.1	24.3	35.1	50.0	38.2	36.0	38.3	7%	22%
5.2 Brazil		0.8	3.1	5.2	11.8	12.1	7.9	7.7	10.1	7.2	3.9	7.6	93%	25%
5.3 AMER (excl. US & Brazil)		1.7	3.3	3.9	5.0	5.8	5.8	12.2	9.2	10.2	12.2	14.8	21%	24%
5.4 Europe		23.6	33.6	46.7	66.4	81.6	81.2	111.1	120.7	89.6	57.3	57.5	0%	9%
5.5 Middle East & Africa		0.6	0.8	1.1	2.4	2.3	1.7	4.2	2.9	10.4	8.7	12.6	46%	36%
5.6 China		3.0	8.2	11.1	16.6	25.7	39.5	38.7	49.1	62.8	62.6	83.3	33%	39%
5.7 India		2.7	3.1	4.9	6.3	5.6	4.3	9.0	12.7	7.4	6.4	7.4	14%	10%
5.8 ASOC (excl. China & India)		7.2	9.2	10.0	12.5	13.6	13.7	19.3	24.1	30.5	44.7	48.7	9%	21%
Total		45.1	72.9	112.1	153.9	181.8	178.5	237.2	278.8	256.4	231.8	270.2	17%	20%

Footnote: New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals.

Source: UNEP, Bloomberg New Energy Finance

Figure 4

Global new investment in renewable energy: developed v developing countries, 2004-2014
\$bn

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Developed	36	53	83	108	121	113	162	190	149	135	139
Developing	9	20	29	46	61	66	75	89	107	97	131
Total	45	73	112	154	182	178	237	279	256	232	270
% Growth	-	62%	54%	37%	18%	-2%	33%	18%	-8%	-10%	17%

Footnote: New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals. Developed volumes are based on OECD countries excluding Mexico, Chile, and Turkey.

Source: UNEP, Bloomberg New Energy Finance

Figure 5

Global new investment in renewable energy by sector, 2014, and growth on 2013
\$bn

	2014	% growth on 2013
Marine	0.4	110%
Geothermal	3	23%
Small hydro	5	-17%
Biofuels	5	-8%
Biomass & w-t-e	8	-10%
Wind	99	11%
Solar	150	25%

Footnote: New investment volume adjusts for re-invested equity. Total values include deals.

Source: UNEP, Bloomberg New Energy Finance

Figure 6

VC/PE new investment in renewable energy by sector, 2014
\$bn

	2014	% growth on 2013
Solar	1.6	225%
Biofuels	0.6	96%
Wind	0.3	-70%
Biomass & w-t-e	0.2	-8%
Marine	0.03	-11%
Small hydro	0.01	-50%
Geothermal	0.00	-100%

Footnote: VC/PE new investment excludes PE buy-outs. Total values include estimates for undisclosed deals.

Source: UNEP, Bloomberg New Energy Finance

Figure 7

Public markets new investment in renewable energy by sector, 2014
\$bn

	2014	% growth on 2013
Solar	8.3	73%
Wind	5.4	120%
Biofuels	0.8	-34%
Small Hydro	0.4	6656%
Biomass & w-t-e	0.1	-79%
Marine	0.05	4332%
Geothermal	0.01	-99%

Footnote:
<none>

Source: UNEP, Bloomberg New Energy Finance

Figure 8

Asset finance of renewable energy assets by sector, 2014
\$bn

	2014	% growth on 2013
Wind	92.4	10%
Solar	62.8	-
Biomass & w-t-e	-	-
Small hydro	3.8	-27%
Geothermal	2.4	587%
Biofuels	1.7	-11%
Marine	0.1	0 in 2013

Footnote: Total values include estimates for undisclosed deals

Source: UNEP, Bloomberg New Energy Finance

Figure 9

Asset finance of renewable energy assets and small distributed capacity by sector, 2014, and growth on 2013
\$bn

	2014	% growth on 2013
Marine	0.1	0 in 2013
Geothermal	2.4	-
Biofuels	-	-
Small hydro	3.8	-27%
Biomass & w-t-e	7.4	-10%
Wind	92.4	10%
Solar	136.3	25%

Footnote: Total values include estimates for undisclosed deals.

Source: UNEP, Bloomberg New Energy Finance

Figure 10

Global average levelised cost of electricity for wind and PV, Q3 2009 to H1 2015, \$ per MWh

	2009		2010				2011				2012				2013		2014		15
	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	H1	H2	H1	H2	H1
PV - thin film	-	-	-	-	-	230	239	231	194	194	179	158	144	148	127	123	149	143	143
PV - c-Si	-	-	-	-	-	249	235	245	201	197	188	164	166	162	135	137	149	143	129
PV - c-Si tracking	291	291	291	275	272	211	219	229	166	163	161	148	135	132	123	124	148	142	139
Onshore wind	96	90	86	86	93	82	84	87	82	75	77	80	82	83	81	78	82	82	85
Offshore wind	151	169	178	176	185	176	184	190	208	219	226	228	220	219	218	213	212	203	176

Footnote: PV-c-Si stands for crystalline silicon photovoltaics

Source: Bloomberg New Energy Finance

Figure 11

Global new investment in renewable energy: developed v developing countries, 2014, and total growth on 2013
\$bn

	Developed		Developing		Total
	2014	% growth on 2013	2014	% growth on 2013	% growth on 2013
Marine	0.4	-	-	-	-
Geothermal	-	-	-	-	-
Small hydro	1	8%	4	-21%	-17%
Biofuels	3	-18%	2	23%	-8%
Biomass & w.t.e	6	-1%	3	-25%	-10%
Wind	41	-2.0%	58	23.3%	11%
Solar	87	9%	63	58%	25%

Footnote: Total values include estimates for undisclosed deals. New investment volume adjusts for re-invested equity. Includes estimates for small distributed capacity, corporate and government R&D. Developed volumes are based on OECD countries excluding Mexico, Chile, and Turkey.

Source: UNEP, Bloomberg New Energy Finance

Figure 12

Global new investment in renewable energy by region, 2004-2014
\$bn

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
United States	5.4	11.6	29.1	33.0	35.1	24.3	35.1	50.0	38.2	36.0	38.3
Brazil	0.8	-	-	-	-	-	7.7	10.1	7.2	3.9	7.6
AMER (excl. US & Brazil)	-	-	-	-	-	-	12.2	9.2	10.2	12.2	14.8
Europe	23.6	33.6	46.7	66.4	81.6	81.2	111.1	120.7	89.6	57.3	57.5
Middle East & Africa	0.6	0.8	1.1	2.4	2.3	1.7	4.2	2.9	10.4	8.7	12.6
China	3.0	8.2	11.1	16.6	25.7	39.5	38.7	49.1	62.8	62.6	83.3
India	2.7	3.1	4.9	6.3	5.6	4.3	9.0	12.7	7.4	6.4	7.4
ASOC (excl. China & India)	7.2	9.2	10.0	12.5	13.6	13.7	19.3	24.1	30.5	44.7	48.7
Total											

Footnote: New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals.

Source: UNEP, Bloomberg New Energy Finance

Figure 13

Global new investment in renewable energy by region, 2014
\$bn

	2014	% growth on 2013
China	83.3	33%
Europe	57.5	-
ASOC (excl. China & India)	-	-
United States	38.3	7%
AMER (excl. US & Brazil)	14.8	21%
Middle East & Africa	12.6	46%
Brazil	7.6	93%
India	7.4	14%

Footnote: New investment volume adjusts for re-invested equity. Total values include estimates for undisclosed deals.

Source: UNEP, Bloomberg New Energy Finance

Figure 14

New investment in renewable energy by country and asset class, 2014, and growth on 2013
\$bn

	Asset finance*	SDC	Public markets	VC/PE	2014 Total	% growth on 2013
South Africa	5.5	0.0	0.0	0.0	5.5	5%
Netherlands	5.6	-	-	-	-	-
India	-	-	-	-	-	-
Brazil	5.7	0.0	1.6	0.2	7.4	97%
Canada	6.4	1.0	0.5	0.1	8.0	31%
Germany	8.1	3.0	0.2	0.1	11.4	4%
United Kingdom	11.9	1.1	0.9	0.0	13.9	1%
Japan	6.2	28.1	0.0	0.0	34.3	11%
United States	14.0	12.9	7.6	1.7	36.3	7%
China	71.8	7.6	1.5	0.0	81.0	34%

Footnote: Top 10 countries. *Asset finance volume adjusts for re-invested equity. Excludes corporate and government R&D

Source: UNEP, Bloomberg New Energy Finance

Asset finance of renewable energy assets by country, 2015, and growth on 2013
\$bn

	2014	% growth on 2013
South Africa	5.5	4%
Netherlands	5.6	-
Brazil	-	-
Japan	6.2	-30%
India	6.3	5%
Canada	6.4	20%
Germany	8.1	28%
United Kingdom	12.0	13%
United States	15.5	-25%
China	73.0	23%

Footnote: Top 10 countries. Total values include estimates for undisclosed deals

Source: UNEP, Bloomberg New Energy Finance

**Small distributed capacity investment by country, 2014, and growth on 2013
\$bn**

	2014	% growth on 2013
Austria	0.8	0%
Canada	1.0	-
Italy	-	-
United Kingdom	1.1	-5%
France	1.9	85%
Australia	2.1	-11%
Germany	3.0	-34%
China	7.6	555%
United States	12.9	66%
Japan	28.1	27%

Footnote: Top 10 countries. Represents investments in solar PV projects v

Source: UNEP, Bloomberg New Energy Finance

Figure 17

VC/PE, public markets, and asset finance investment in renewable energy in the United States by sector, 2014
\$bn

	Asset finance*	Public markets	VC/PE	Total
Solar	7.5	5.9	1.3	14.8
Wind	5.9	-	-	-
Biofuels	-	-	-	-
Geothermal	0.2	-	-	0.2
Biomass & w.t.e	0.04	0.0	0.03	0.1
Small hydro	0.02	-	0.01	0.03
Marine	-	0.01	0.002	0.02
Total	13.7	5.9	1.4	15.1

Footnote: *Asset finance volume adjusts for re-invested equity. Small distributed capacity is not included here

Source: UNEP, Bloomberg New Energy Finance

Figure 18

VC/PE, public markets, and asset finance investment in renewable energy in Europe by sector , 2014
\$bn

	Asset finance*	Public markets	VC/PE	Total
Wind	27.2	1.8	0.01	29.0
Biomass & w-t-e	4.7	-	-	-
Solar	-	-	-	-
Small hydro	0.1	0.1	-	-
Biofuels	0.1	0.1	-	-
Marine	0.1	0.03	0.02	-
Geothermal	0.1	-	-	0.1
Total	32	2	0.0	29

Footnote: *Asset finance volume adjusts for re-invested equity

Source: UNEP, Bloomberg New Energy Finance

Figure 19

VC/PE, public markets, and asset finance investment in renewable energy in China by sector, 2014
\$bn

	Asset finance*	Public markets	VC/PE	Total
Wind	37.9	0.3	-	38.2
Solar	29.7	-	-	-
Small hydro	-	-	-	-
Biomass & w-t-e	1.1	-	-	1.1
Biofuels	0.7	-	-	0.7
Total	69.4	0.3	-	40.1

Footnote: *Asset finance volume adjusts for re-invested equity

Source: UNEP, Bloomberg New Energy Finance

Figure 20

Total VC/PE, public markets, and asset finance investment in renewable energy in Africa by country, 2014
\$bn

	2014
Burkina Faso	0.1
Mauritius	0.1
Tanzania	-
Nigeria*	0.2
Egypt	0.2
Algeria	0.4
Kenya	1.3
South Africa	5.5

Footnote: Omits countries with less than \$0.1bn investment. Investment volume adjusts for re-invested equity
*Includes the Kashimbila small hydro plant whose financing was confirmed after the global investment totals had been compiled

Source: UNEP, Bloomberg New Energy Finance

Figure 21

Total VC/PE, public markets, and asset finance investment in renewable energy in Latin America (excl. Brazil) by country, 2014
\$bn

	2014
Guatemala	0.2
Peru	0.3
Honduras	-
Costa Rica	0.5
Panama	0.6
Uruguay	0.9
Chile	1.4
Mexico	2.0

Footnote: Omits countries with less than \$0.1bn investment. Investment volume adjusts for re-invested equity

Source: UNEP, Bloomberg New Energy Finance

Figure 22

Total VC/PE, public markets, and asset finance investment in renewable energy in non-OECD Asia (excl. China & India) by country, 2014
\$bn

	2014
Nepal	0.1
Singapore	0.1
Taiwan	-
Kazakhstan	0.3
Pakistan	0.3
Thailand	0.4
Sri Lanka	0.4
Philippines	0.5
Myanmar	0.6
Indonesia	1.8

Footnote: Omits countries with less than \$0.1bn investment. Investment volume adjusts for re-invested equity

Source: UNEP, Bloomberg New Energy Finance

Figure 23

Renewable power generation and capacity as a share of global power, 2006-2014, %

	2007	2008	2009	2010	2011	2012	2013	2014
Renewables capacity change as a % of global power capacity	20%	27%	42%	32%	40%	49%	40%	48%
Renewable power as a % of global power capacity	8%	-	-	-	-	-	14%	15%
Renewable power as a % of global power generation	-	-	-	-	-	-	9%	9%

Renewables figure excludes large hydro. Capacity and ge

Source: Bloomberg New Energy Finance

Figure 24

Renewable power investment compared to gross fossil-fuel power investment, 2008-2014, \$bn

	2008	2009	2010	2011	2012	2013	2014
Renewable energy	141	147	210	250	238	208	242
Fossil fuel (gross)	254	293	307	303	309	270	289
Fossil fuel (net)	106	-	-	-	-	-	132
	-	-	-	-	-	-	-

Note: Nominal values. Renewable energy total excludes large hydro, investment

Source: Bloomberg New Energy Finance

Figure 25

Indexed power sector CO2 emissions, 2013-30, million tonnes of CO2

	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Europe	100	97	96	92	89	86	82	76	74	69	65	60	56	53	50	47	45	44
US	100	-	-	-	-	-	98	94	94	94	93	93	95	95	93	91	90	87
China	-	-	-	-	-	-	125	131	135	137	140	143	145	145	145	145	145	143

Source: Bloomberg New Energy Finance

Figure 26

Global new investment in energy-smart technologies by asset class, 2004-2014

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Asset finance*	0.2	0.2	0.2	0.3	3.4	5.8	11.5	14.4	14.4	15.6	16.8
Public markets	0.5	-	-	-	-	-	2.2	1.4	1.0	1.7	3.4
VC/PE	-	-	-	-	-	-	3.3	3.2	2.2	1.9	1.9
Government R&D	2.8	3.2	3.6	3.9	4.3	7.3	6.2	5.6	7.2	7.2	7.3
Corporate R&D	8.7	7.9	7.9	9.0	9.9	9.4	10.2	10.6	10.5	7.5	7.7
Total	12	11	12	13	18	23	33	35	35	34	37
% Growth	-	-7%	3%	13%	34%	28%	48%	5%	1%	-4%	5%

Footnote: *Digital energy and smart grid asset finance only. Total values include estimates for undisclosed deals

Source: UNEP, Bloomberg New Energy Finance

Figure 27

Results of Climatescope questionnaire of policy-makers and investors in developing countries

Does your country have these policies in place to aid off-grid power investment?

	% saying yes
Mini-grids: requirements and licence	89
Cost-reflective tariffs	-
Dedicated regulator	63
Mini-grids: threshold	63
PPAs of sufficient duration	54
Duration of tariffs	50
Tariff deregulation	50
Clear rules on interconnection	48
Purchase obligation	39
Light-handed regulatory framework	37
Quality of service standards	35
Small power plants allowed to deliver financial services	33
Standardised PPAs	28
Dedicate team within utility	24
Clear rules on arrival of main grid	22

PPA = power purchase agreement

Source: Bloomberg New Energy Finance Climatescope 2014

Capital expenditure on renewable energy by major European utilities, \$bn

	2009	2010	2011	2012	2013
SSE	0.82	1.26	1.37	0.61	0.53
Iberdrola	3.11	-	-	-	-
Enel	-	-	-	-	-
E.ON	1.44	1.54	1.55	2.30	1.37
RWE	0.62	0.81	1.15	1.28	1.43
EDP	2.58	1.86	1.15	0.78	0.83
EDF	1.77	1.53	1.68	1.39	1.25

Source: Source: Bloomberg New Energy Finance, annual reports

Figure 29

Clean energy fund price performance, 2013 and 2014 (% change)

	2013	2014	2013	2014	2013	2014	2013	2014
		-	-	-	-	-	-	-
	-	-	-	-	-	-	-	-

Source: Bloomberg New Energy Finance

Figure 30

Clean energy project bonds, 2014

		-	-	-	-	-	
	-	-	-	-	-	-	

Source: Bloomberg New Energy Finance, company filings

Figure 31

Green bond issuance 2007-2014, by type, \$bn

	2007	2008	2009	2010	2011	2012	2013	2014
Supranational, sovereign & agency	0.8	0.4	0.5	2.2	0.9	1.8	8.3	18.9
Labelled corporate	0.0	-	-	-	-	-	2.6	13.7
US municipal	-	-	-	-	-	-	0.4	2.6
Project	0.0	0.0	0.0	1.1	1.8	2.0	3.5	0.6
Asset-backed security	0.0	0.0	0.0	0.0	0.0	0.1	0.2	3.0

Source: Bloomberg New Energy Finance

Figure 32

Institutional investment in European renewable energy projects, 2007-2014, \$bn

	2007	2008	2009	2010	2011	2012	2013	2014
Direct	150	88	585	330	1191	1524	1796	2845
Project bond	605	-	-	-	-	-	112	77
Quoted fund	-	-	-	-	-	-	1518	1456
PE/infrastructure fund	648	977	555	1634	583	2446	589	668

Source: Bloomberg New Energy Finance

Figure 33

Asset financing new investment in renewable energy by type of security, 2004-2013
\$bn

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Balance sheet	26.0	38.9	61.9	78.5	87.6	93.0	103.5	108.8	113.1	112.0	116.3
Project finance	4.4	13.6	22.6	31.8	47.6	27.0	50.5	70.1	49.7	42.0	53.9
Bond/other	0.1	0.0	0.1	0.0	0.3	0.0	0.6	2.4	0.3	0.6	0.5
Disclosed deal count	223	504	687	904	958	823	879	889	782	692	565
Total deal count	1114	1620	2007	2204	2386	2321	2800	2991	2821	3061	2155
	30.4	52.5	84.7	110.4	135.4	120.0	154.6	181.2	163.2	154.6	170.7

Footnote: Total values include estimates for undisclosed deals.

Source: Bloomberg New Energy Finance

Figure 34

Asset financing new investment in renewable energy by region, 2004-2014
\$bn

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Europe	15.6	22.8	32.0	42.7	56.9	51.7	57.5	59.3	40.0	31.4	36.2
China	2.3	7.3	9.4	14.1	23.7	32.7	36.3	41.5	54.6	59.3	73.0
United States	3.9	8.4	23.2	25.2	22.1	13.0	23.3	40.6	26.8	20.6	15.5
ASOC (excl. China & India)	3.3	5.1	5.8	8.2	9.2	5.8	7.8	7.2	9.8	15.1	11.6
AMER (excl. US & Brazil)	1.6	2.9	3.5	3.9	5.4	5.0	11.1	8.0	9.1	11.2	13.0
Brazil	0.8	2.7	5.2	9.5	11.9	7.3	7.2	9.9	6.9	3.3	5.8
India	2.6	2.8	4.7	5.2	5.1	3.9	8.0	12.4	7.1	6.0	6.3
Middle East & Africa	0.4	0.5	0.8	1.6	1.1	0.6	3.4	2.4	8.8	7.6	9.4
Disclosed deal count	223	504	687	904	958	823	879	889	782	692	565
Total deal count	1114	1620	2007	2204	2386	2321	2800	2991	2821	3061	2155

Footnote: Total values include estimates for undisclosed deals.

Source: Bloomberg New Energy Finance, UNEP

Figure 35

Asset financing new investment in renewable energy by sector, 2004-2014

\$bn

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Wind	16.7	27.0	36.8	49.8	69.4	75.2	95.1	79.6	82.0	84.4	92.4
Solar	0.3	1.1	4.5	12.6	25.0	17.7	30.0	68.7	58.7	54.5	62.8
Biomass & w-t-e	6.9	8.8	11.2	13.8	16.2	12.4	14.8	15.8	11.2	8.3	7.4
Biofuels	3.2	7.8	23.2	25.3	16.6	6.7	7.3	7.2	4.0	2.0	1.7
Small hydro	2.4	7.1	7.3	6.9	7.2	5.9	4.8	6.9	6.0	5.1	3.8
Geothermal	0.9	0.8	0.7	1.6	1.1	1.9	2.7	2.9	1.2	0.3	2.4
Marine	0.005	0.03	0.8	0.5	0.02	0.2	0.0	0.1	0.1	-	0.1
Disclosed deal count	223	504	687	904	958	823	879	889	782	692	565
Total deal count	1114	1620	2007	2204	2386	2321	2800	2991	2821	3061	2155

Footnote: Total values include estimates for undisclosed deals.

Source: Bloomberg New Energy Finance, UNEP

Figure 36

Asset finance of wind and solar projects worldwide, by sub-sector, 2001-2014 \$bn

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Offshore wind	0.2	0.4	1.8	2.5	3.6	11.4	12.8	11.9	6.3	7.5	18.6
Onshore wind	16.5	26.5	35.0	47.3	65.9	63.8	82.2	67.7	75.7	76.9	73.8
Solar (PV)	0.3	1.0	3.1	10.7	20.9	12.2	27.6	52.0	53.7	52.2	59.0
Solar thermal		0.0	1.4	1.8	4.1	5.5	2.4	16.7	5.0	2.2	3.7

Source: Bloomberg New Energy Finance

Figure 36

Small distributed capacity investment, 2004-2014
\$bn

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Total	8.6	10.3	9.5	14.1	22.3	33.4	62.2	76.1	78.8	54.9	73.5
% Growth		21%	-8%	49%	58%	50%	86%	22%	4%	-30%	34%

Footnote: Represents investments in solar PV projects with capacities below 1MW

Source: Bloomberg New Energy Finance

Figure 38

Public system price benchmarks, 2008 - Q3 2014 (\$/MWh)

	2008				2009				2010				2011				2012				2013				2014			
	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4	Q1	Q2	Q3	Q4
Germany	6.6	6.9	6.6	6.8	5.3	5.1	4.8	4.4	4.1	3.9	3.8	3.9	3.6	3.7	3.3	3.0	2.7	2.5	2.3	2.3	2.2	2.2	2.3	2.2	-	-	-	-
California	8.0	8.0	8.0	8.1	8.1	7.8	7.4	7.4	7.2	6.9	6.9	7.0	6.9	6.9	6.6	6.3	6.1	5.8	5.3	5.1	5.1	5.0	4.8	4.8	4.6	4.4	4.3	4.5
Australia (SW)	11.9	12.5	11.7	6.9	6.6	7.5	8.3	9.0	6.0	5.8	6.0	5.5	6.6	7.0	4.5	4.3	3.3	3.2	3.3	3.0	2.8	3.7	2.4	2.4	2.4	2.5	2.4	2.2
Japan	-	-	-	-	6.6	6.3	6.6	6.8	6.6	6.6	6.7	6.8	6.6	6.7	6.8	6.7	6.3	6.2	6.0	5.6	4.8	4.4	4.2	4.0	3.9	3.8	3.7	3.2
Chinese multi module	4.1	4.1	3.8	3.4	2.8	2.5	2.0	1.9	1.8	1.9	1.9	1.8	1.8	1.6	1.3	1.0	0.9	0.8	0.8	0.6	0.7	0.8	0.8	0.8	0.8	0.8	0.8	0.7

Source: Bloomberg New Energy Finance

Figure 39

Small distributed capacity investment by country, 2014, and growth on 2013
\$bn

	2014	% growth on 2013
Austria	0.8	0%
Canada	1.0	104%
Italy	1.0	-71%
United Kingdom	1.1	-5%
France	1.9	85%
Australia	2.1	-11%
Germany	3.0	-34%
China	7.6	555%
United States	12.9	66%
Japan	28.1	27%

Footnote: Top 10 countries. Represents investments in solar PV projects with capacities below 1MW

Source: Bloomberg New Energy Finance

Figure 40

Public market new investment in renewable energy by stage, 2004-2014
\$bn

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
IPO	0.2	2.2	5.4	12.2	3.2	3.1	5.4	4.1	1.2	3.9	3.1
Secondary & PIPE	0.1	0.7	2.7	4.7	1.8	6.0	3.4	3.3	1.8	3.7	6.2
Convertible & other		0.2	0.2	2.8	4.3	2.7	2.5	2.2	0.5	2.7	5.8
OTC	0.02	0.6	0.8	1.1	1.6	1.3	0.2	0.46	0.3	0.3	0.0
IPO/Secondary & PIPE/Convertible & Other/OTC deal count	(6/8/0/4)	(23/35/9/7)	(39/55/8/18)	(42/81/19/29)	(16/49/21/20)	(10/85/13/22)	(30/74/22/14)	(21/56/20/16)	(17/56/19/2)	(12/60/18/3)	(15/62/23/7)

Footnote: PIPE = private investment in public equity, OTC = over-the-counter

Source: Bloomberg New Energy Finance, UNEP

Figure 41

NEX vs selected indices

Data

n/a

Footnote:

Index values as of 22 January 2015; Nasdaq and S&P 500 rebased to 100 on 1 January 2003

Source:

Bloomberg New Energy Finance

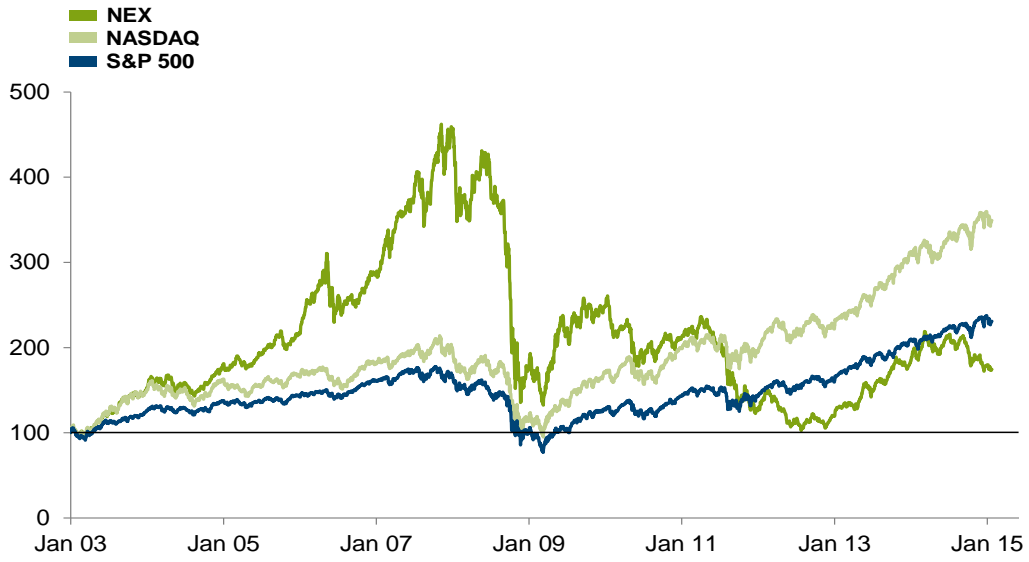


Figure 42

NEX vs selected indices

Data n/a

Footnote: Index values as of 22 January 2014; Nasdaq and S&P 500 rebased to 100 on 1 January 2012

Source: Bloomberg New Energy Finance

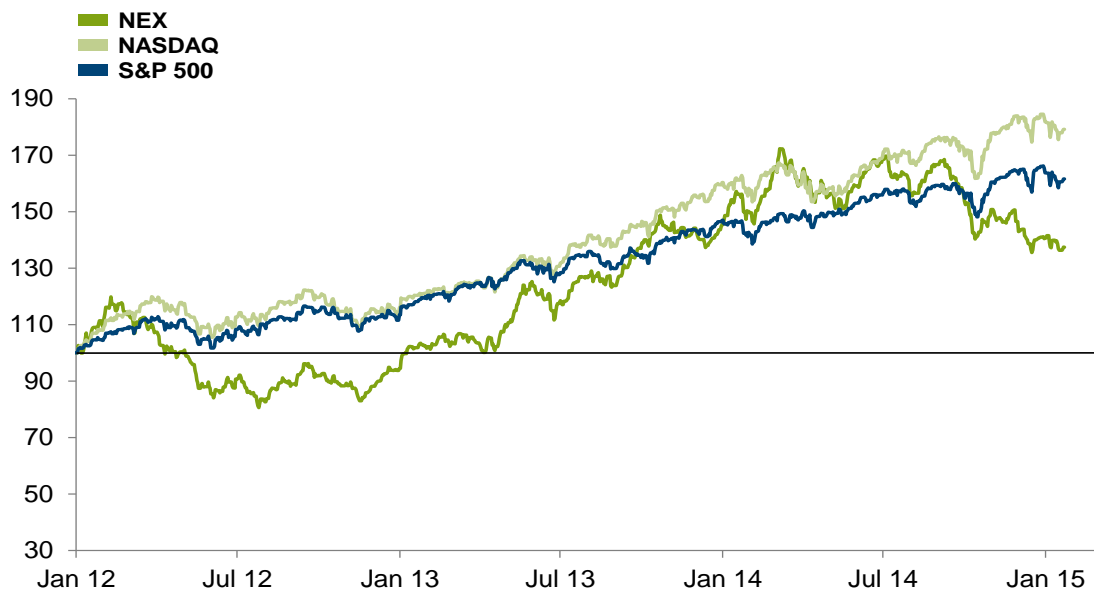


Figure 43

NYSE Bloomberg wind, solar and EST indices

Data n/a

Footnote: Index values as of 12 December 2014; Indices rebased to 1000 on 1 July 2012

Source: Bloomberg New Energy Finance

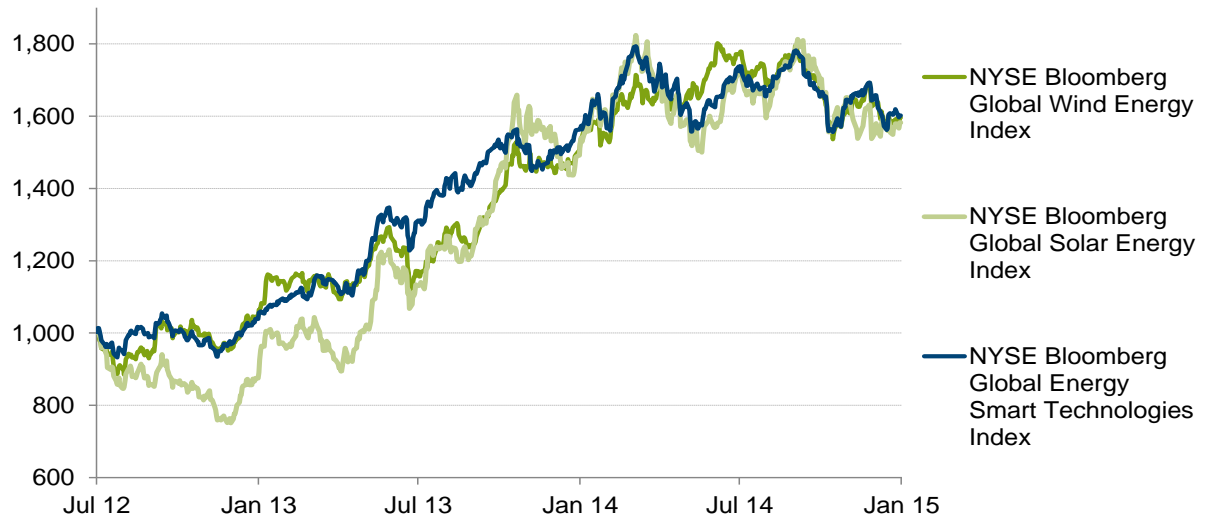


Figure 44

Public market new investment in renewable energy by sector, 2004-2014
\$bn

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Solar	0.1	1.6	3.7	5.8	5.7	7.1	5.5	4.3	2.4	4.8	8.3
Wind	0.0	1.2	1.5	10.8	4.0	4.4	4.8	4.3	0.9	2.5	5.4
Geothermal	0.1	0.0	0.5	0.3	0.4	0.4	0.1	0.4	0.0	1.5	0.0
Biofuels	0.02	0.6	3.3	2.6	0.8	0.2	0.4	0.8	0.3	1.3	0.8
Biomass & w.t.e	0.01	0.2	0.2	1.0	0.1	0.7	0.5	0.2	0.2	0.5	-
Small hydro	0.02	0.01	0.02	0.1		0.2	0.2	0.1	0.09	0.01	0.42
Marine				0.1	0.002	0.01		0.004	0.004	0.001	0.047
Total	0.3	3.7	9.1	20.7	10.9	13.1	11.4	10.1	3.9	10.5	15.0
Total deal count	18	74	120	171	106	130	140	113	94	93	107

Footnote:

<none>

Source:

Bloomberg New Energy Finance, UNEP

Figure 45

Public market new investment in renewable energy by sector, 2014, and growth on 2013
\$bn

	2014	% growth on 2013
Geothermal	0.01	-99%
Marine	0.0	4332%
Biomass & w.t.e	0.1	-79%
Small hydro	0.4	6656%
Biofuels	0.8	-34%
Wind	5.4	120%
Solar	8.3	73%

Footnote:

<none>

Source: Bloomberg New Energy Finance, UNEP

Figure 46

Public market new investment in renewable energy by exchange, 2014, and growth on 2013
\$bn

	2014	% growth on 2013
Madrid Continuous Market	0.3	0 in 2013
Toronto Stock Exchange (TSX)	0.4	80%
National Stock Exchange - India (NSE)	0.6	0 in 2013
Copenhagen Stock Exchange (CSE)	0.7	0 in 2013
Shanghai Stock Exchange	0.7	0 in 2013
Hong Kong Stock Exchange (HKEX)	0.7	-38%
London Stock Exchange	0.9	-50%
São Paulo (BOVESPA)	1.6	790%
New York Stock Exchange (NYSE)	3.3	26%
NASDAQ Global Select Market (GS)	4.0	228%

Footnote: Top 10 exchanges

Source: Bloomberg New Energy Finance

Figure 47

Public market new investment in renewable energy by company nationality, 2014, and growth on 2013
\$bn

	2014	% growth on 2013
Korea (Republic)	0.3	326%
Bermuda	0.3	0 in 2013
Canada	0.4	24%
India	0.6	0 in 2013
Denmark	0.7	0 in 2013
United Kingdom	0.9	-53%
Spain	1.1	0 in 2013
Brazil	1.6	790%
China	2.5	92%
United States	5.5	20%

Footnote: Top 10 countries

Source: Bloomberg New Energy Finance

Figure 48

VC/PE new investment in renewable energy by stage, 2004-2013

\$bn

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
VC early stage	0.2	0.3	0.6	1.3	1.9	0.7	1.0	0.8	0.7	0.2	0.2
VC late stage	0.2	0.3	0.6	0.8	1.4	0.9	1.6	1.7	1.7	0.5	0.8
PE expansion capital	0.3	1.0	3.0	3.6	6.8	2.9	3.1	2.5	1.7	1.4	1.7
Total	0.7	1.6	4.2	5.7	10.0	4.5	5.7	4.9	4.0	2.2	2.8
% Growth	-	130%	171%	35%	75%	-55%	26%	-13%	-18%	-46%	-
Disclosed deal count	55	80	140	214	247	193	259	259	206	144	94
Total deal count	75	101	177	249	290	223	273	283	237	157	102

Footnote: Buy-outs are not included as new investment. Total values include estimates for undisclosed deals

Source: Bloomberg New Energy Finance, UNEP

Figure 49

VC/PE new investment in renewable energy by stage, 2014, and growth on 2013
\$bn

	2014	% growth on 2013	Disclosed deal count	Total deal count
PE buy-out	2.5	335%	10	16
PE expansion capital	1.7	20%	30	32
VC bridge/interim	0.1	-48%	12	13
VC further rounds	0.6	256%	11	11
VC series C	0.1	-41%	5	5
VC series B	0.1	0%	10	11
VC series A	0.1	-18%	23	27
VC seed/spin-off	0.01	-34%	3	3

Footnote: Buy-outs are not included as new investment. Total values include estimates for undisclosed deals

Source: Bloomberg New Energy Finance, UNEP

Figure 50

VC/PE new investment in renewable energy by sector, 2004-2014
\$bn

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Solar	0.2	0.5	1.4	2.6	5.0	1.7	2.3	2.4	1.4	0.5	1.6
Biofuels	0.1	0.5	1.4	1.7	1.7	0.8	0.8	0.8	1.0	0.3	0.6
Wind	0.3	0.2	0.9	0.6	2.0	1.3	1.6	0.5	0.6	1.1	0.3
Biomass & w-t-e	0.1	0.3	0.3	0.5	0.6	0.5	0.4	1.0	0.5	0.2	0.2
Geothermal	0.0	0.1	0.1	0.1	0.2	0.1	0.1	0.2	0.3	0.1	-
Small hydro	0.0	0.0	0.1	0.0	0.4	0.0	0.5	0.1	0.1	0.0	0.0
Marine	0.0	0.0	0.1	0.2	0.1	0.1	0.1	0.0	0.0	0.0	0.0
Total	0.7	1.6	4.2	5.7	10.0	4.5	5.7	4.9	4.0	2.2	2.8

Footnote: Buy-outs are not included as new investment. Total values include estimates for undisclosed deals.

Source: Bloomberg New Energy Finance, UNEP

Figure 51

VC/PE new investment in renewable energy by sector, 2014, and growth on 2013
\$bn

Data:

Units: \$bn	2014	% growth on 2013
Geothermal	0	-100%
Small hydro	0.01	-50%
Marine	0.0	-11%
Biomass & w-t-e	0.2	-8%
Wind	0.3	-70%
Biofuels	0.61	96%
Solar	1.6	225%

2753

Footnote: Buy-outs are not included as new investment. Total values include estimates for undisclosed deals

Source: Bloomberg New Energy Finance, UNEP

Figure 52

VC/PE new investment in renewable energy by region, 2004-2014
\$bn

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
United States	0.1	0.9	1.8	2.4	5.4	2.4	3.4	2.8	2.7	0.9	1.7
Europe	0.5	0.5	1.3	1.4	2.5	1.1	0.9	0.9	0.7	0.5	0.3
Brazil	-	-	-	0.8	0.4	0.5	0.6	0.1	-	0.3	0.2
China	-	0.1	0.7	0.4	0.6	0.1	0.1	0.3	0.0	-	-
India	0.05	-	0.1	0.2	0.5	0.2	0.1	0.3	0.2	0.2	0.1
AMER (excl. US & Brazil)	0.04	0.1	0.2	0.2	0.2	0.1	0.5	0.3	0.1	0.1	0.1
ASOC (excl. China & India)	0.02	0.02	0.1	0.2	0.2	0.1	0.1	0.0	0.3	0.0	0.2
Middle East & Africa	0.01	0.001	0.002	0.04	0.3	0.04	0.1	0.1	0.1	0.2	0.2
	0.7	1.6	4.2	5.7	10.0	4.5	5.7	4.9	4.0	2.2	2.8

Footnote: Buy-outs are not included as new investment. Total values include estimates for undisclosed deals

Source: Bloomberg New Energy Finance, UNEP

Figure 53

VC/PE new investment in renewable energy by region, 2014, and growth on 2013
\$bn

	2014	% growth on 2013
China	0	0 in 2013
India	0.1	-72%
AMER (excl. US & Brazil)	0.1	23%
Brazil	0.2	-41%
Middle East & Africa	0.2	-9%
ASOC (excl. China & India)	0.2	3200%
Europe	0.3	-39%
United States	1.7	93%

Footnote: Buy-outs are not included as new investment. Total values include estimates for undisclosed deals

Source: Bloomberg New Energy Finance, UNEP

Figure 54

R&D investment in renewable energy, 2004-2014
\$bn

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
CorpR&D	3	3	3	3	4	4	4	5	5	7	7
GovR&D	2	2	2	3	3	5	5	5	4	5	5
Total	5.1	4.9	5.3	6.2	6.8	9.4	8.9	9.8	9.4	11.5	11.7
% Growth	-	-4%	8%	15%	10%	38%	-4.8%	9%	-4%	22%	2%

Footnote:
<none>

Source: Bloomberg, Bloomberg New Energy Finance, IEA, IMF, various government agencies

Figure 55

Corporate and government R&D renewable energy investment by technology, 2014, and total growth on 2013
\$bn

	Corporate R&D		Government R&D		Total
	2014	% growth on 2013	2014	% growth on 2013	% growth on 2013
Marine	0.04	132%	0.1	2%	17%
Geothermal	0.1	5%	0.2	3%	3%
Small hydro	0.1	-3%	0.2	6%	3%
Biomass & w-t-e	0.5	31%	0.3	2%	19%
Biofuels	0.8	0%	1.2	1%	1%
Wind	1.4	-5%	0.7	4%	-2%
Solar	3.7	0%	2.3	4%	2%

Footnote:
<none>

Source: Bloomberg, Bloomberg New Energy Finance, IEA, IMF, various government agencies

Figure 56

Corporate and government R&D renewable energy investment by region, 2014, and growth on 2013
\$bn

	Corporate R&D		Government R&D		Total
	2014	% growth on 2013	2014	% growth on 2013	% growth on 2013
Middle East & Africa	0.003	12%	0.0	0%	12%
Brazil	0.02	-4%	0.1	2%	1%
India	0.2	111%	0.1	5%	70%
AMER (excl. US & Brazil)	0.0	-2%	0.2	2%	1%
United States	1.3	1%	0.8	2%	1%
China	0.7	-2%	1.7	7%	4%
ASOC (excl. China & India)	1.5	0%	0.9	1%	0%
Europe	2.9	0%	1.4	1.3%	0%

Footnote:
<none>

Source: Bloomberg, Bloomberg New Energy Finance, IEA, IMF, various government agencies

Figure 57

Acquisition transactions in renewable energy by type, 2004-2014
\$bn

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
PE buy-outs	0.8	3.7	1.8	3.6	5.4	2.2	2.0	3.1	3.3	0.6	2.5
Public market investor exits	0.4	2.4	2.7	4.0	1.0	2.5	4.9	0.2	0.4	1.8	1.9
Corporate M&A	2.4	7.6	12.3	20.3	17.6	21.8	19.4	30.1	10.1	15.2	9.8
Asset acquisitions & refinancing	5.3	12.5	19.1	30.6	35.4	37.8	32.1	40.1	53.8	49.3	54.5
Total	8.8	26.2	36.0	58.5	59.3	64.2	58.4	73.5	67.7	66.8	68.8
Disclosed deal count	44	130	170	275	291	298	289	273	254	254	254
Total deal count	95	264	371	512	544	580	631	709	681	740	589

Footnote: Total values include estimates for undisclosed deals.

Source: Bloomberg New Energy Finance

Figure 58

Acquisition transactions in renewable energy by sector, 2004-2014
\$bn

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Wind	5.3	16.7	22.3	33.3	38.9	34.5	28.9	38.8	36.6	34.8	40.8
Solar	0.7	2.0	4.5	10.7	10.3	15.9	13.3	23.7	22.1	20.7	20.1
Small hydro	1.3	2.0	0.9	1.0	2.0	2.8	1.2	2.2	1.9	3.5	3.2
Marine		0.1	0.0		0.1	0.1	0.2	0.1	0.0	0.2	0.1
Geothermal	0.3	0.9	0.6	6.1	1.1	1.4	1.4	0.4	0.9	0.8	0.5
Biomass & w-t-e	1.0	3.6	1.9	2.2	2.6	2.7	3.3	2.1	3.9	4.1	2.0
Biofuels	0.2	0.9	5.7	5.2	4.2	6.9	10.1	6.2	2.2	2.8	2.1

Footnote: Total values include estimates for undisclosed deals.

Source: Bloomberg New Energy Finance

Figure 59

Acquisition transactions in renewable energy by sector, 2014, and growth on 2013
\$bn

	2014	% growth on 2013
Marine	0.1	-72%
Geothermal	0.5	-41%
Biomass & w-t-e	2.0	-52%
Biofuels	2.1	-26%
Small hydro	3.2	-8%
Solar	20.1	-3%
Wind	40.8	17%

Footnote: Total values include estimates for undisclosed deals.

Source: Bloomberg New Energy Finance