



Clean Tech Company
Performance Statistics
March 31, 2018

CAMBRIDGE



ASSOCIATES

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Clean Tech Sector and Subsector Definitions

“Clean Tech” is an umbrella term for a wide range of technologies and services. Cambridge Associates includes companies and projects in the clean tech sector if they (1) develop non-fossil fuel energy sources, (2) promote industrial efficiency by conserving resources and replacing existing processes with less-polluting alternatives, (3) recycle waste effectively and efficiently, or (4) provide a product or service that creates an environmental improvement.

GROUP	SUBSECTOR	DEFINITION
Renewable Power Manufacturing	Solar Power Manufacturing	Technologies and processes that directly convert solar radiation into electricity or hot water
	Wind Power Manufacturing	Technologies and processes that convert kinetic energy from the wind into electricity
	Other Power Generation Manufacturing	Technologies and processes that generate electricity from other renewable inputs, fuel cells, or waste capture
	Biofuels & Biomaterials	Technologies and processes that produce fuels and materials from non-fossil fuel, biomass-based sources
Renewable Power Development	Renewable Power Development	Processes that allow for the financing, installation, management, operation, or ownership of renewable power generation projects
Energy Optimization	Energy Efficiency and Management	Technologies and processes that allow for more control over energy use and reduce energy consumption
	Lighting	Technologies and processes that reduce energy use through more efficient lights and lighting systems
	Smart Grid	Technologies and processes that work to optimize electricity transmission and distribution from the point of origin to the end consumer
	Sustainable Mobility	Technologies that contribute to the increased efficiency and electrification of transport
	Energy Storage	Technologies and processes that increase the efficiency of or reduce the cost, weight, or environmental problems associated with devices that store energy for use at a later time
Resource Solutions	Waste and Recycling	Technologies and processes that repurpose old materials into new products and reduce or eliminate the quantity and impact of undesired material
	Water and Wastewater	Technologies and processes that lead to the more efficient purification, recycling, and management of water and wastewater
	Advanced Materials	Technologies and processes that use biochemicals and substances to improve resource efficiency or serve as substitutes for more polluting materials
	Environmental Services and Agricultural Solutions	Technologies and processes that protect and allow for the restoration of natural ecosystems or contribute to more sustainable agricultural practices and techniques. Also includes companies focused on educating consumers about environmental topics
	Emissions Markets and Controls	Technologies and processes that reduce, measure, or control the release of greenhouse gases into the atmosphere

Description of Performance Measurement Methodology

To monitor the gross company-level returns of clean tech investments made by venture capital and private equity partnerships, Cambridge Associates LLC (CA) screened over 80,000 investments held by the over 7,300 funds in its Private Investments Performance Database to identify clean tech investments. The resulting clean tech sample analyzed in this report includes 1,538 investments in 933 companies across 570 funds as of March 31, 2018. Users of the analysis may find the following descriptions of the data sources and calculation techniques helpful to their interpretation of information presented in the report:

1. All returns included in the clean tech performance statistics are **gross company-level returns and are not net of any fund management or incentive fees that may be incurred by limited partners**. To approximate the difference between net-to-limited partner fund-level IRRs and clean tech gross company-level IRRs, Cambridge Associates compared the gross and net returns of 300 U.S. venture capital funds with a gross company-level return range of 0 to 10% and found the median return spread for these funds to be approximately 4.4% (440 basis points).
2. Partnership financial statements are the primary source of information concerning cash flows and ending residual/net asset values for portfolio company investments.
3. Recognizing the alternative asset community's sensitivity to the distribution of information pertaining to individual fund investments, as a matter of policy CA only releases aggregated figures in its company performance statistics report.
4. Certain exhibits are grouped by years of initial investment. Year of initial investment is defined as the first year in which a company received an investment cash flow as noted in a fund's financial statement. Companies receiving initial investment beginning in 2017 were not included in this analysis, as performance is considered too young to be meaningful.
5. CA uses the internal rate of return (IRR) performance calculation in its statistics reports. The IRR is a since inception calculation that solves for the discount rate that makes the net present value of an investment equal to zero. The calculation is based on cash-on-cash returns over equal periods modified for the residual value of the partnership's equity or portfolio company's net asset value (NAV). The residual value attributed to each respective group being measured is incorporated as its ending value. Transactions are accounted for on a quarterly basis, and annualized values are used for reporting purposes. Please note that all transactions are recorded on the 45th day or midpoint of the quarter.
6. Additional Definitions:
 - a. **Distributed/Paid-In Capital Multiple** divides the total distributed gross proceeds for portfolio company investments by the total invested capital in those investments.
 - b. **Total Value/Paid-In Capital Multiple** sums the total distributed gross proceeds and total ending residual/net asset value for portfolio company investments and then divides this sum by the total invested capital in those investments.
 - c. **Pooled Gross IRR** aggregates all cash flows and ending NAVs in a sample to calculate a dollar-weighted return.
7. These performance statistics attempt to include only those investments generally categorized by the venture and private equity community as clean tech and do not imply that all technologies or services in the sample are equally "clean" or "high-tech." For those seeking a better understanding of the environmental cost-benefit analysis of the technologies included in this report, the National Renewable Energy Laboratory (NREL) has done research in this area (<http://www.nrel.gov/>).

Summary of the Data

1. Peak investment in new clean tech companies occurred in 2008; since then there has been a significant decline in the amount of first-time capital invested in new clean tech companies.
2. Cambridge Associates' company performance statistics include \$37.8 billion invested in private clean tech companies, \$26.5 billion in realized proceeds, and \$20.8 billion in remaining net asset value through March 31, 2018. These numbers create a gross total value/paid-in capital multiple of 1.3x, a gross distributed/paid-in capital multiple of 0.7x, and a gross internal rate of return (IRR) of 5.7%.
3. Investments were drawn from 570 different funds (387 venture capital funds, 169 private equity funds, and 14 infrastructure funds).
4. Across the four major clean tech investment groups, 21.4% of capital has been deployed in renewable power manufacturing investments, 38.2% in renewable power development investments, 18.9% in energy optimization investments, and 21.4% in resource solutions investments. On a total investment basis as of March 31, 2018, three of the four clean tech groups have achieved a positive gross IRR. Energy optimization had the strongest returns in gross IRR terms, returning 10.1%.
5. Geographically, \$23.8 billion (63.1% of capital) in the Cambridge Associates sample was invested in U.S.-based companies. Developed markets outside of the United States received \$9.1 billion of investment (24.1% of total clean tech investment), while emerging markets accounted for \$4.9 billion of investment (12.9% of total clean tech investment). United States-based companies have generated a gross company-level IRR of 3.5%, while companies based outside the United States have generated a gross IRR of 10.4%. A limited sample of emerging markets investments (154) have performed better than United States and developed ex U.S. investments.
6. The clean tech private investment sector remains young, and investors must therefore be cautious about drawing forward-looking conclusions from the data at this time. As the sector evolves and matures, Cambridge Associates will continue to measure company-level performance of clean tech investments across all funds on a quarterly basis.

Questions should be directed to cleantechdata@cambridgeassociates.com.



Clean Tech Company Performance Statistics

Company Analysis: Summary Statistics

Performance Statistics	Number of Investments	Paid-In Capital (\$B)	Distributed / Paid-In Capital Multiple	Total Value / Paid-In Capital Multiple	Pooled Gross IRR (%)
Cambridge Associates Global Clean Tech	1,538	37.8	0.7	1.3	5.7
By Geography					
U.S. Clean Tech	1,119	23.8	0.6	1.2	3.5
Ex U.S. Clean Tech	419	13.9	0.8	1.4	10.4
By Stage					
Early Stage Clean Tech ¹	908	11.1	0.4	1.0	0.9
Late Stage Clean Tech ²	630	26.5	0.8	1.3	9.0
By Subsector					
Renewable Power Manufacturing ³	464	8.1	0.5	0.8	-6.7
Renewable Power Development ⁴	192	14.4	0.7	1.3	9.3
Energy Optimization ⁵	554	7.2	0.9	1.4	10.1
Resource Solutions ⁶	328	8.1	0.7	1.4	7.1

¹ Includes seed, start-up, and early stage investments.

² Includes expansion, growth, and private equity investments.

³ Example investments include solar, wind, biofuel, and fuel cell manufacturing.

⁴ Example investments include the financing, management, operation, and ownership of clean power generation projects.

⁵ Example investments include smart grid, energy efficiency, energy management, lighting, energy storage, and sustainable mobility.

⁶ Example investments include waste & recycling, water & wastewater, advanced materials, environmental services, sustainable agriculture solutions, and emissions controls.

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Performance includes 1,538 investments in 933 companies from 570 funds and reflects gross deal level returns from 2000 to 2016.

Funds are distributed across U.S. venture capital (300 funds), non-U.S. venture capital (87 funds), U.S. private equity (85 funds), non-U.S. private equity (84 funds), and Infrastructure (14 funds).

Company Analysis by Years of Initial Investment

By Geography

Total Paid-In Capital (\$B) of Companies Receiving Initial Investment In:				
	2000 - 2004	2005 - 2009	2010 - 2016	Total (2000 - 2016)
U.S. Clean Tech	1.1	13.6	9.1	23.8
Ex U.S. Clean Tech	0.4	5.8	7.7	14.0
Cambridge Associates Global Clean Tech	1.5	19.4	16.8	37.8
Distributed / Paid-In Capital Multiple of Companies Receiving Initial Investment In:				
	2000 - 2004	2005 - 2009	2010 - 2016	Total (2000 - 2016)
U.S. Clean Tech	1.2	0.7	0.5	0.6
Ex U.S. Clean Tech	4.0	0.9	0.6	0.8
Cambridge Associates Global Clean Tech	1.9	0.7	0.5	0.7
Total Value / Paid-In Capital Multiple of Companies Receiving Initial Investment In:				
	2000 - 2004	2005 - 2009	2010 - 2016	Total (2000 - 2016)
U.S. Clean Tech	1.4	0.9	1.5	1.2
Ex U.S. Clean Tech	4.0	1.2	1.5	1.4
Cambridge Associates Global Clean Tech	2.1	1.0	1.5	1.3
Pooled Gross IRR (%) of Companies Receiving Initial Investment In:				
	2000 - 2004	2005 - 2009	2010 - 2016	Total (2000 - 2016)
U.S. Clean Tech	7.4	-2.8	14.9	3.5
Ex U.S. Clean Tech	71.8	2.7	12.0	10.4
Cambridge Associates Global Clean Tech	30.5	-0.8	13.5	5.7

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Company Analysis by Years of Initial Investment By Stage

Total Paid-In Capital (\$B) of Companies Receiving Initial Investment In:				
	2000 - 2004	2005 - 2009	2010 - 2016	Total (2000 - 2016)
Early Stage Clean Tech ¹	1.0	6.5	3.6	11.1
Late Stage Clean Tech ²	0.5	13.0	13.2	26.7
Cambridge Associates Global Clean Tech	1.5	19.5	16.8	37.8
Distributed / Paid-In Capital Multiple of Companies Receiving Initial Investment In:				
	2000 - 2004	2005 - 2009	2010 - 2016	Total (2000 - 2016)
Early Stage Clean Tech ¹	1.0	0.3	0.6	0.4
Late Stage Clean Tech ²	3.8	1.0	0.5	0.8
Cambridge Associates Global Clean Tech	2.0	0.7	0.5	0.7
Total Value / Paid-In Capital Multiple of Companies Receiving Initial Investment In:				
	2000 - 2004	2005 - 2009	2010 - 2016	Total (2000 - 2016)
Early Stage Clean Tech ¹	1.2	0.6	1.8	1.0
Late Stage Clean Tech ²	3.9	1.1	1.4	1.3
Cambridge Associates Global Clean Tech	2.1	1.0	1.5	1.3
Pooled Gross IRR (%) of Companies Receiving Initial Investment In:				
	2000 - 2004	2005 - 2009	2010 - 2016	Total (2000 - 2016)
Early Stage Clean Tech ¹	3.3	-7.6	15.9	0.9
Late Stage Clean Tech ²	64.8	3.0	12.6	9.0
Cambridge Associates Global Clean Tech	30.5	-0.8	13.5	5.7

¹ Includes seed, start-up, and early stage investments.

² Includes expansion, growth, and private equity investments.

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Company Analysis by Years of Initial Investment

By Subsector Group

Total Paid-In Capital (\$B) of Companies Receiving Initial Investment In:				
	2000 - 2004	2005 - 2009	2010 - 2016	Total (2000 - 2016)
Renewable Power Manufacturing ¹	0.5	5.9	1.8	8.1
Renewable Power Development ²	—	6.3	8.0	14.4
Energy Optimization ³	0.8	3.4	2.9	7.1
Resource Solutions ⁴	—	3.9	4.1	8.1
Cambridge Associates Global Clean Tech	1.5	19.5	16.8	37.8
Distributed / Paid-In Capital Multiple of Companies Receiving Initial Investment In:				
	2000 - 2004	2005 - 2009	2010 - 2016	Total (2000 - 2016)
Renewable Power Manufacturing ¹	1.9	0.4	0.3	0.5
Renewable Power Development ²	—	1.0	0.5	0.7
Energy Optimization ³	2.0	0.7	0.8	0.9
Resource Solutions ⁴	—	0.9	0.5	0.7
Cambridge Associates Global Clean Tech	2.0	0.7	0.5	0.7
Total Value / Paid-In Capital Multiple of Companies Receiving Initial Investment In:				
	2000 - 2004	2005 - 2009	2010 - 2016	Total (2000 - 2016)
Renewable Power Manufacturing ¹	2.5	0.6	0.7	0.8
Renewable Power Development ²	—	1.2	1.5	1.3
Energy Optimization ³	2.1	1.0	1.7	1.4
Resource Solutions ⁴	—	1.1	1.8	1.4
Cambridge Associates Global Clean Tech	2.1	1.0	1.5	1.3
Pooled Gross IRR (%) of Companies Receiving Initial Investment In:				
	2000 - 2004	2005 - 2009	2010 - 2016	Total (2000 - 2016)
Renewable Power Manufacturing ¹	42.1	-8.6	-9.0	-6.7
Renewable Power Development ²	—	3.6	16.8	9.4
Energy Optimization ³	26.2	1.0	16.5	10.1
Resource Solutions ⁴	—	1.1	16.6	7.0
Cambridge Associates Global Clean Tech	30.5	-0.8	13.5	5.7

'—' Indicates Inadequate number of companies in sample. Companies in NA columns will contribute to Total (2000 - 2016).

1 Example investments include solar, wind, biofuel, and fuel cell manufacturing.

2 Example investments include the financing, management, operation, and ownership of clean power generation projects.

3 Example investments include smart grid, energy efficiency, energy management, lighting, energy storage, and sustainable mobility.

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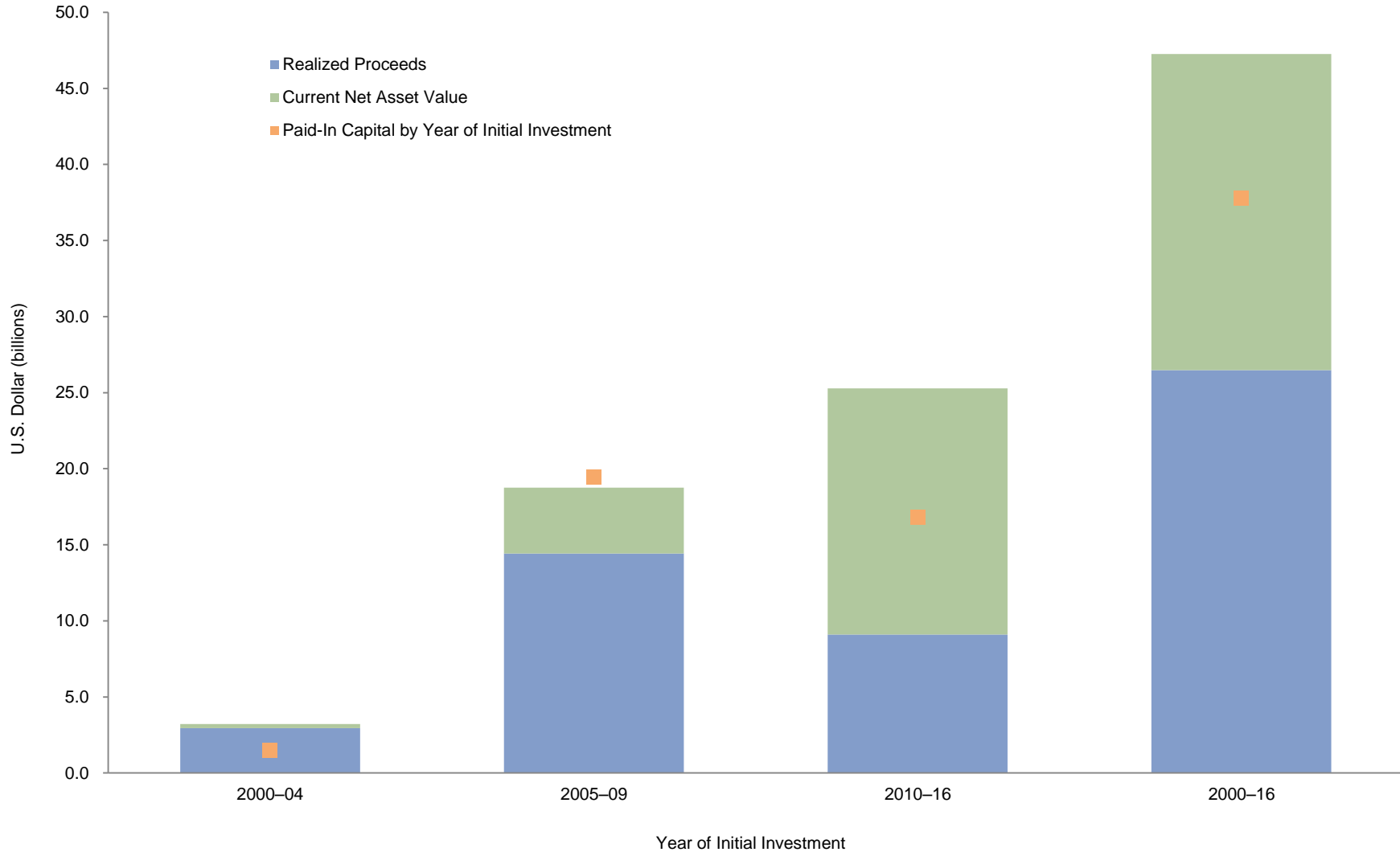
Funds are distributed across U.S. venture capital (300 funds), non-U.S. venture capital (87 funds), U.S. private equity (85 funds), non-U.S. private equity (84 funds), and Infrastructure (14 funds).



Exhibits



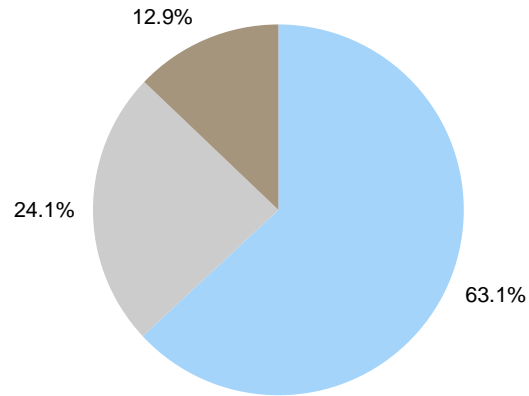
Company Analysis: Performance by Years of Initial Investment



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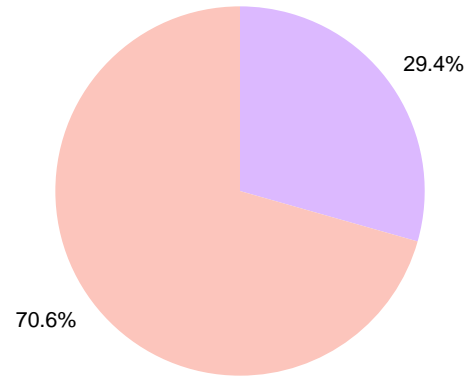
Company Analysis: Allocations by Paid-In Capital

Clean Tech Allocation by Geography



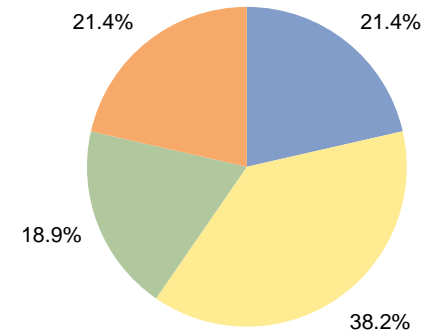
- U.S. Clean Tech
- Global Developed ex U.S. Clean Tech
- Emerging Markets Clean Tech

Clean Tech Allocation by Stage



- Early Stage Clean Tech
- Late Stage Clean Tech

Clean Tech Allocation by Subsector



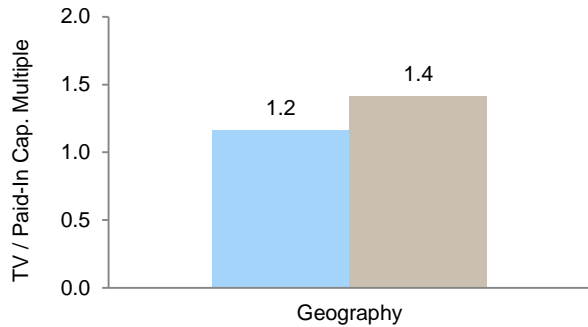
- Renewable Power Manufacturing
- Renewable Power Development
- Energy Optimization
- Resource Solutions

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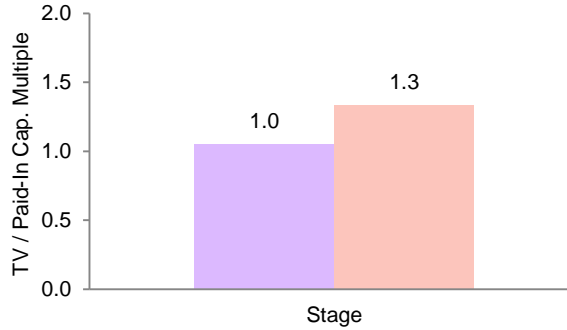
Notes: Developed Ex-U.S. includes Western Europe, Canada, Israel, Australia, New Zealand, and Japan. Emerging markets includes China, India, Taiwan, and other emerging markets countries. Totals may not add exactly to 100% due to rounding. Performance includes 1,538 investments in 933 companies from 570 funds and reflects gross deal level returns from 2000 to 2016. Funds are distributed across U.S. venture capital (300 funds), Ex-U.S. venture capital (87 funds), U.S. private equity (85 funds), Ex-U.S. private equity (84 funds), and infrastructure (14 funds). Ex-U.S. investments include 265 investments in developed markets (\$9.1 billion paid-in capital) and 154 investments in emerging markets (\$4.9 billion paid-in capital). All returns included in the clean tech statistics report are gross company-level returns and are not net of any fund management or incentive fees that may be incurred by limited partners. See the Description of Performance Measurement Methodology on page 4 for more information.

Company Analysis: Performance by Gross Total Value/Paid-In Capital Multiple and Gross IRR (%)

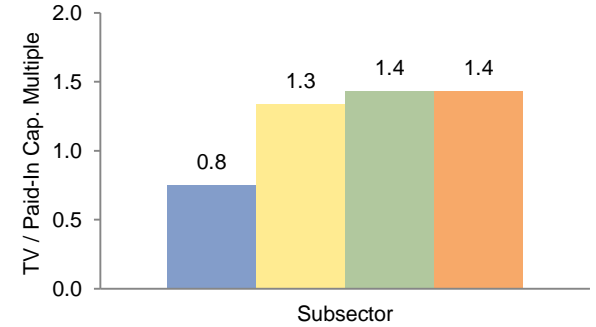
Gross Total Value/Paid-In Capital Multiple by Geography



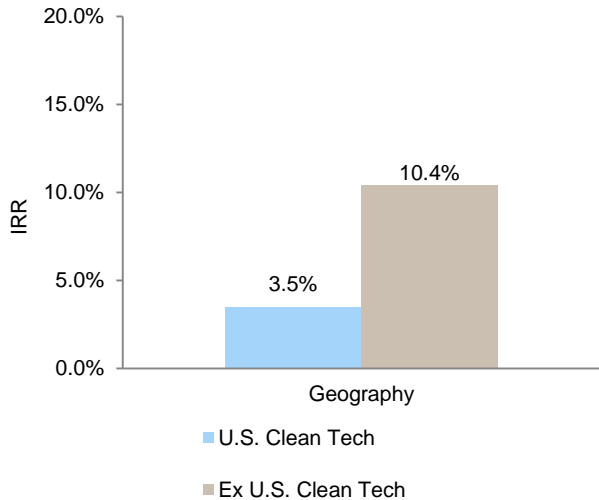
Gross Total Value/Paid-In Capital Multiple by Stage



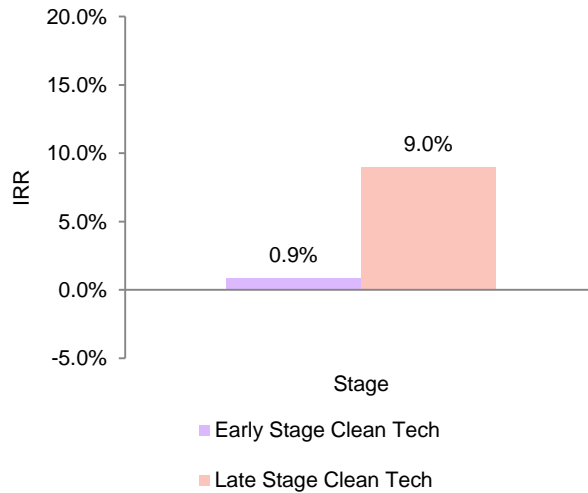
Gross Total Value/Paid-In Capital Multiple by Subsector



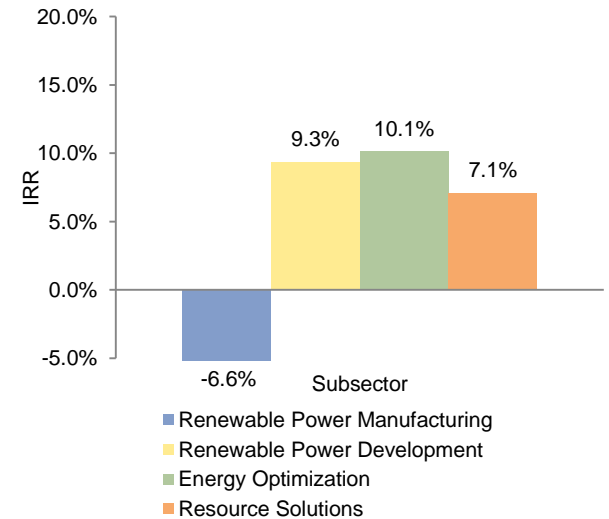
Gross IRR by Geography



Gross IRR by Stage



Gross IRR by Subsector

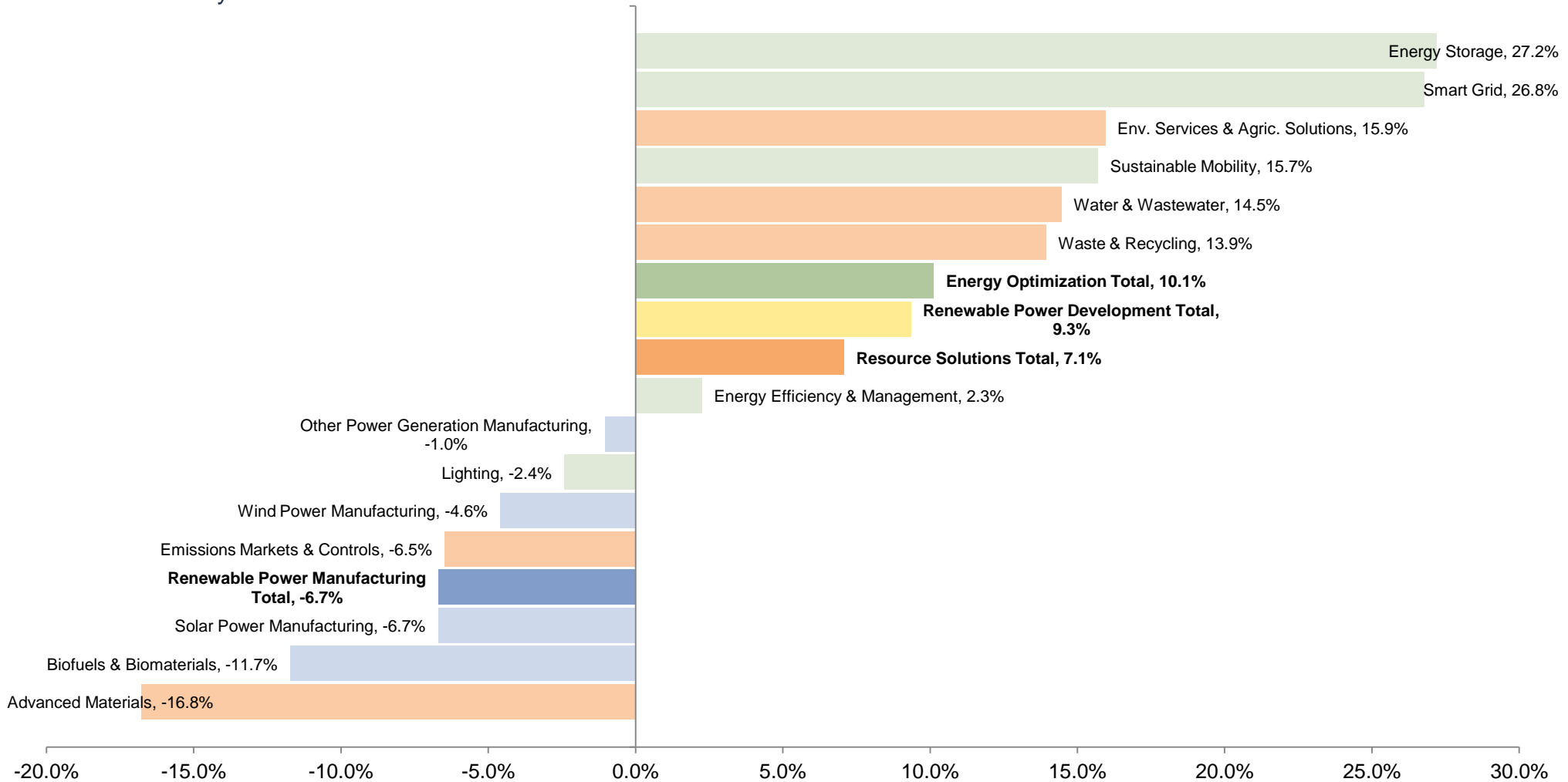


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IRR by Clean Tech Subsector

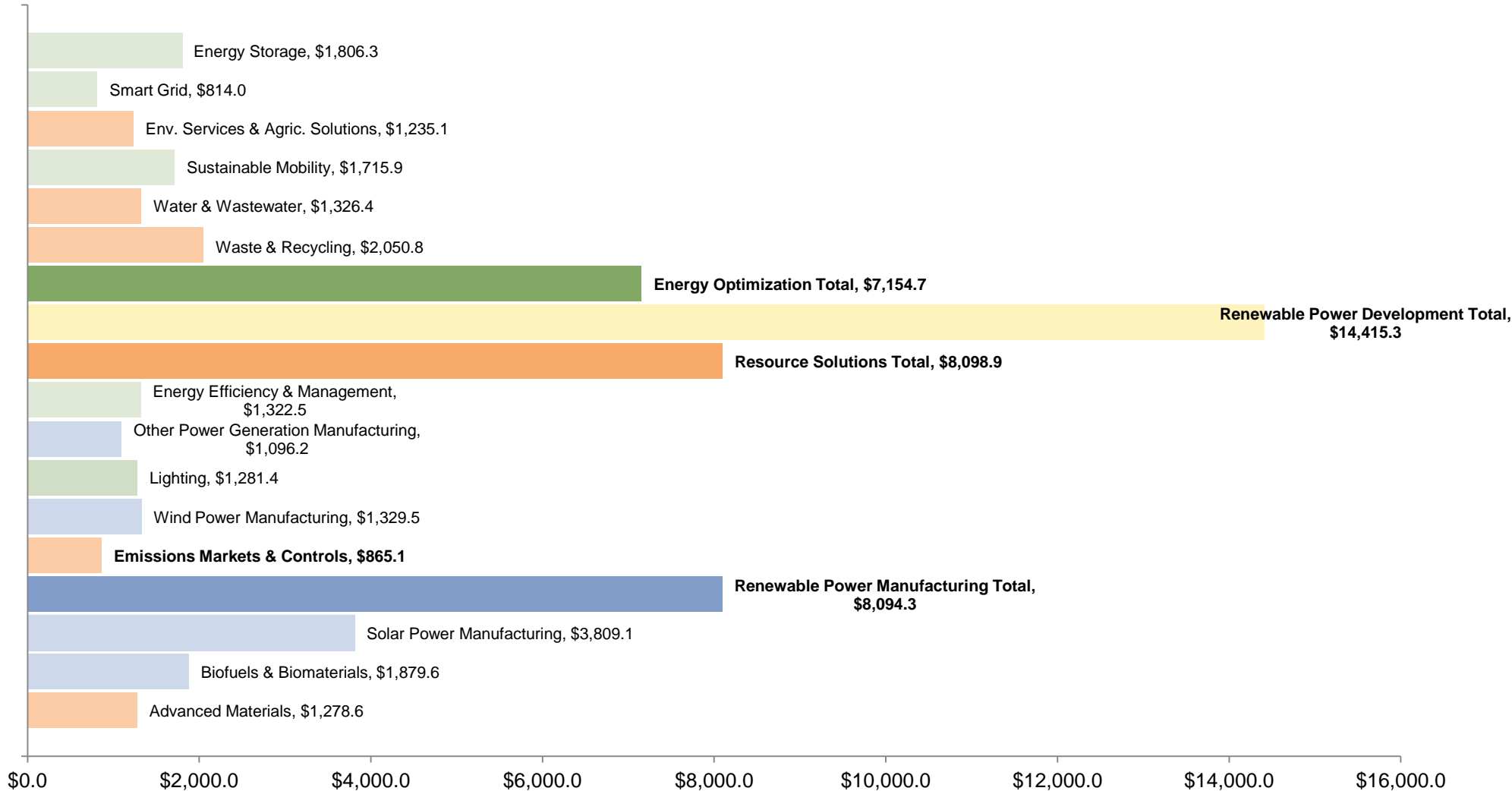


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Invested Capital by Clean Tech Subsector (\$ millions)



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Note on Performance Database Changes

Our goal is to provide you with the most accurate and relevant performance information possible; as a result, Cambridge Associates' private investments performance database will continually reflect changes to the underlying pool of contributing funds and clean technology company investments.

As these changes occur, you may notice quarter to quarter changes in the results of some historical benchmark return analyses.

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