



# AS OF MARCH 31, 2023 **TABLE OF CONTENTS** CLEAN TECH SECTOR AND SUBSECTOR DEFINITIONS 2 DESCRIPTION OF PERFORMANCE MEASUREMENT METHODOLOGY 3 SUMMARY OF THE DATA **CLEAN TECH COMPANY PERFORMANCE STATISTICS** Summary Analysis 6 Analysis by Geography 9 Analysis by Stage Analysis by Subsector Group 17 **EXHIBITS** 19

## **CLEAN TECH SECTOR & SUBSECTOR DEFINITIONS**

AS OF MARCH 31, 2023

"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			
	Solar Power Manufacturing	Technologies and processes that directly convert solar radiation into electricity or hot water			
Renewable Power Manufacturing	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 por generation projects			
	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			
Energy Optimization	Smart Grid	Technologies and processes that work to optimize electricity transmission and distribution from the poin 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			
	Waste and Recycling	Technologies and processes that repurpose old materials into new products and reduce or eliminate the quantity and impact of undesired material			
Resource Solutions	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

AS OF MARCH 31, 2023

Cambridge Associates LLC (CA) has established a database 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 117,400 investments held by the over 9,500 funds in its Private Investments Performance Database to identify clean tech investments. The resulting clean tech sample analyzed in this report includes 1,828 investments in 1,136 companies across 759 funds as of March 31, 2023. 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:

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 371 private equity, venture capital, private equity energy, subordinated capital, and infrastructure funds and found the median return spread for these funds to be approximately 3.2% (320 basis points).

Partnership financial statements and narratives are the primary source of information concerning cash flows and ending residual/ net asset values (NAV) for both partnerships and portfolio company investments.

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.

Year of initial investment is defined as the calendar year in which a fund made its initial investment in a portfolio company.

CA uses the since inception internal rate of return performance calculation in its performance statistics reports. The since inception internal rate of return (SI IRR) is a since inception calculation that solves for the discount rate, which 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 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.

#### Additional Definitions:

**Distributed/Paid-In Capital Multiple** divides the total distributed gross proceeds for portfolio company investments by the total invested capital in those investments.

**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.

**Pooled Gross IRR** aggregates all cash flows and ending NAVs in a sample to calculate a dollar-weighted return.



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**

AS OF MARCH 31, 2023

Cambridge Associates' company performance statistics include \$56.7 billion invested in private clean tech companies, \$56.4 billion in realized proceeds, and \$31.7 billion in remaining net asset value through March 31, 2023. These numbers create a gross total value/paid-in capital multiple of 1.6x, a gross distributed/paid-in capital multiple of 1.6x, and a gross internal rate of return (IRR) of 8.8%.

Investments were drawn from 695 different funds (452 venture capital funds, 168 private equity funds, 48 private equity energy funds, 7 subordinated capital funds, and 20 infrastructure funds).

Across the four major clean tech investment groups, 13.9% of capital has been deployed in renewable power manufacturing investments, 48.5% in renewable power development investments, 16.5% in energy optimization investments, and 21.1% in resource solutions investments. On a total investment basis as of March 31, 2023, three of the four clean tech groups have achieved a positive gross IRR. Renewable Power Development had the strongest returns in gross IRR terms, returning 12.5%.

Geographically, \$34.6 billion (61.1% of capital) in the Cambridge Associates sample was invested in U.S.-based companies. Developed markets outside of the United States received \$14.3 billion of investment (25.3% of total clean tech investment), while emerging markets accounted for \$7.7 billion of investment (13.6% of total clean tech investment). United States-based companies have generated a gross company-level IRR of 7.7%, while companies based outside the United States have generated a gross IRR of 11.3%. A limited sample of emerging markets investments (178) have performed better than United States and developed ex U.S. investments.

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.





AS OF MARCH 31, 2023

#### SINCE INCEPTION SUMMARY STATISTICS

Pooled Gross IRR

PERFORMANCE STATISTICS	POOLED GROSS IRR (%)	PAID-IN CAPITAL (\$B)	DPI	TVPI	NUMBER OF INVESTMENTS
CAMBRIDGE ASSOCIATES GLOBAL CLEAN TECH	8.8	56.7	1.0	1.6	1,720
BY GEOGRAPHY	POOLED GROSS IRR (%)	PAID-IN CAPITAL (\$B)	DPI	TVPI	NUMBER OF INVESTMENTS
US Clean Tech	7.7	34.6	0.9	1.5	1,254
Ex US Clean Tech	11.3	22.1	1.1	1.6	466
BY STAGE	POOLED GROSS IRR (%)	PAID-IN CAPITAL (\$B)	DPI	TVPI	NUMBER OF INVESTMENTS
Early Stage Clean Tech <sup>1</sup>	4.7	13.7	0.8	1.4	985
Late Stage Clean Tech <sup>2</sup>	11.2	42.9	1.1	1.6	735
PERFORMANCE STATISTICS	POOLED GROSS IRR (%)	PAID-IN CAPITAL (\$B)	DPI	TVPI	NUMBER OF INVESTMENTS
Renewable Power Manufacturing <sup>3</sup>	-6.8	7.9	0.6	0.7	439
Renewable Power Development <sup>4</sup>	12.5	27.5	1.1	1.7	230
Energy Optimization <sup>5</sup>	12.3	9.4	1.1	1.8	610
Resource Solutions <sup>6</sup>	8.4	11.9	1.0	1.6	441

Performance includes 1,720 investments in 1,077 companies from 695 funds and reflects gross deal level returns from 2000 to 2021.

Funds are distributed across U.S. venture capital (353 funds), non-U.S. venture capital (99 funds), U.S. private equity (86 funds), non-U.S. private equity (82 funds), Private Equity Energy (48 funds), Subordinated Capital (7 funds) and Infrastructure (20 funds).

<sup>&</sup>lt;sup>1</sup> Includes seed, start-up, and early stage investments.

<sup>&</sup>lt;sup>2</sup> Includes expansion, growth, and private equity investments.
<sup>3</sup> Example investments include solar, wind, biofuel, and fuel cell manufacturing.

<sup>&</sup>lt;sup>4</sup> Example investments include the financing, management, operation, and ownership of clean power generation projects.

<sup>&</sup>lt;sup>5</sup> Example investments include smart grid, energy efficiency, energy management, lighting, energy storage, and sustainable mobility.

<sup>&</sup>lt;sup>6</sup> Example investments include waste & recycling, water & wastewater, advanced materials, environmental services, sustainable agriculture solutions, and emissions controls. Source: ©2023 Cambridge Associates Private Investments Database. Cambridge Associates LLC, all rights reserved.

AS OF MARCH 31, 2023

#### SINCE INCEPTION ANALYSIS BY YEARS OF INITIAL INVESTMENT

By Geography

TOTAL PAID-IN CAPITAL (\$B) OF COMPANIES RECEIVING INITIAL INVESTMENTS IN:							
	2000-2004	2005-2009	2010-2014	2015-2021	TOTAL (2000-2021)		
US Clean Tech	1.0	13.3	5.7	14.6	34.6		
Ex US Clean Tech	0.4	5.5	6.6	9.5	22.1		
CAMBRIDGE ASSOCIATES GLOBAL CLEAN TECH	1.4	18.8	12.4	24.0	56.7		
DISTRIBUTED/PAID-IN CAPITAL MULTIPLE OF COMPANIES RECEIVING I	NITIAL INVESTMENTS IN:						
	2000-2004	2005-2009	2010-2014	2015-2021	TOTAL (2000-2021)		
US Clean Tech	1.6	0.9	1.3	0.8	0.9		
Ex US Clean Tech	4.0	1.0	1.2	1.0	1.1		
CAMBRIDGE ASSOCIATES GLOBAL CLEAN TECH	2.3	0.9	1.2	0.9	1.0		
TOTAL VALUE/PAID-IN CAPITAL MULTIPLE OF COMPANIES RECEIVING INITIAL INVESTMENTS IN:							
	2000-2004	2005-2009	2010-2014	2015-2021	TOTAL (2000-2021)		
US Clean Tech	2000-2004	2005-2009	2010-2014	2015-2021			
US Clean Tech  Ex US Clean Tech					TOTAL (2000-2021) 1.5 1.6		
	1.6	1.0	1.8	1.9	1.5		
Ex US Clean Tech	1.6 4.0	1.0 1.1	1.8	1.9 2.1	1.5 1.6		
Ex US Clean Tech  CAMBRIDGE ASSOCIATES GLOBAL CLEAN TECH	1.6 4.0	1.0 1.1	1.8	1.9 2.1	1.5 1.6 1.6		
Ex US Clean Tech  CAMBRIDGE ASSOCIATES GLOBAL CLEAN TECH	1.6 4.0 <b>2.3</b>	1.0 1.1 1.0	1.8 1.3 1.5	1.9 2.1 1.9	1.5 1.6 1.6 TOTAL (2000-2021)		
Ex US Clean Tech  CAMBRIDGE ASSOCIATES GLOBAL CLEAN TECH  POOLED GROSS IRR (%)	1.6 4.0 2.3	1.0 1.1 1.0	1.8 1.3 1.5	1.9 2.1 1.9	1.5 1.6		

**AS OF MARCH 31, 2023** 

#### SINCE INCEPTION ANALYSIS BY YEARS OF INITIAL INVESTMENT

By Stage

TOTAL PAID-IN CAPITAL (\$B) OF COMPANIES RECEIVING INITIAL INVES	TMENTS IN: 2000-2004	2005-2009	2010-2014	2015-2021	TOTAL /2000 2021
Fords Charac Class Tools 1					TOTAL (2000-2021
Early Stage Clean Tech <sup>1</sup>	0.9	6.3	2.6	4.0	13.
Late Stage Clean Tech <sup>2</sup>	0.5	12.6	9.8	20.1	42.9
CAMBRIDGE ASSOCIATES GLOBAL CLEAN TECH	1.4	18.8	12.4	24.0	56.7
DISTRIBUTED/PAID-IN CAPITAL MULTIPLE OF COMPANIES RECEIVING	INITIAL INVESTMENTS IN:				
	2000-2004	2005-2009	2010-2014	2015-2021	TOTAL (2000-2021)
Early Stage Clean Tech <sup>1</sup>	1.5	0.5	1.3	0.6	3.0
Late Stage Clean Tech <sup>2</sup>	4.1	1.1	1.2	0.9	1.1
CAMBRIDGE ASSOCIATES GLOBAL CLEAN TECH	2.3	0.9	1.2	0.9	1.0
TOTAL VALUE/PAID-IN CAPITAL MULTIPLE OF COMPANIES RECEIVING	INITIAL INVESTMENTS IN:				
	2000-2004	2005-2009	2010-2014	2015-2021	TOTAL (2000-2021)
Early Stage Clean Tech <sup>1</sup>	1.5	0.8	2.4	1.7	1.4
Late Stage Clean Tech <sup>2</sup>	4.1	1.1	1.3	2.0	1.6
CAMBRIDGE ASSOCIATES GLOBAL CLEAN TECH	2.3	1.0	1.5	1.9	1.6
POOLED GROSS IRR (%)					
	2000-2004	2005-2009	2010-2014	2015-2021	TOTAL (2000-2021
Early Stage Clean Tech <sup>1</sup>	5.6	-2.6	13.1	19.4	4.7
				10.0	11.2
Late Stage Clean Tech <sup>2</sup>	69.5	2.6	7.1	19.9	11.2

<sup>&</sup>lt;sup>2</sup> Includes expansion, growth, and private equity investments.



<sup>&</sup>lt;sup>1</sup> Includes seed, start-up, and early stage investments.

**AS OF MARCH 31, 2023** 

#### SINCE INCEPTION ANALYSIS BY YEARS OF INITIAL INVESTMENT

By Subsector Group

TOTAL PAID-IN CAPITAL (\$B) OF COMPANIES RECEIVING INITIAL INVES	TMENTS IN:				
	2000-2004	2005-2009	2010-2014	2015-2021	TOTAL (2000-2021)
Renewable Power Manufacturing <sup>1</sup>	0.5	5.6	1.7	0.2	7.9
Renewable Power Development <sup>2</sup>	NA	6.2	4.8	16.3	27.5
Energy Optimization <sup>3</sup>	0.7	3.4	2.3	2.9	9.4
Resource Solutions <sup>4</sup>	NA	3.7	3.6	4.6	11.9
CAMBRIDGE ASSOCIATES GLOBAL CLEAN TECH	1.4	18.8	12.4	24.0	56.7
DISTRIBUTED/PAID-IN CAPITAL MULTIPLE OF COMPANIES RECEIVING	INITIAL INVESTMENTS IN:				
	2000-2004	2005-2009	2010-2014	2015-2021	TOTAL (2000-2021)
Renewable Power Manufacturing <sup>1</sup>	2.7	0.5	0.3	0.3	0.6
Renewable Power Development <sup>2</sup>	NA	1.2	1.3	1.0	1.1
Energy Optimization <sup>3</sup>	2.2	1.1	1.1	0.8	1.1
Resource Solutions <sup>4</sup>	NA	1.0	1.5	0.6	1.0
CAMBRIDGE ASSOCIATES GLOBAL CLEAN TECH	2.3	0.9	1.2	0.9	1.0
TOTAL VALUE/PAID-IN CAPITAL MULTIPLE OF COMPANIES RECEIVING	INITIAL INVESTMENTS IN:				
	2000-2004	2005-2009	2010-2014	2015-2021	TOTAL (2000-2021)
Renewable Power Manufacturing <sup>1</sup>	2.7	0.6	0.5	1.7	0.7
Renewable Power Development <sup>2</sup>	NA	1.2	1.4	2.0	1.7
Energy Optimization <sup>3</sup>	2.2	1.4	1.8	2.1	1.8
Resource Solutions <sup>4</sup>	NA	1.0	2.1	1.7	1.6
CAMBRIDGE ASSOCIATES GLOBAL CLEAN TECH	2.3	1.0	1.5	1.9	1.6
POOLED GROSS IRR (%)					
	2000-2004	2005-2009	2010-2014	2015-2021	TOTAL (2000-2021)
Renewable Power Manufacturing <sup>1</sup>	45.9	-9.7	-13.8	11.9	-6.8
Renewable Power Development <sup>2</sup>	NA	4.0	10.1	19.6	12.5
Energy Optimization <sup>3</sup>	31.6	5.3	10.9	27.2	12.3
Resource Solutions <sup>4</sup>	NA	-0.1	13.8	17.1	8.4
CAMBRIDGE ASSOCIATES GLOBAL CLEAN TECH	35.6	0.2	9.2	19.9	8.8

NA Indicates inadequate number of companies in sample. Companies in NA columns will contribute to Total (2000 - 2021).

Performance includes 1,720 investments in 1,077 companies from 695 funds and reflects gross deal level returns from 2000 to 2021.

Funds are distributed across U.S. venture capital (353 funds), non-U.S. venture capital (99 funds), U.S. private equity (86 funds), non-U.S. private equity (82 funds), Private Equity Energy (48 funds), Subordinated Capital (7 funds) and Infrastructure (20 funds).

<sup>&</sup>lt;sup>1</sup> Example investments include solar, wind, biofuel, and fuel cell manufacturing.

<sup>&</sup>lt;sup>2</sup> Example investments include the financing, management, operation, and ownership of clean power generation projects.

<sup>&</sup>lt;sup>3</sup> Example investments include smart grid, energy efficiency, energy management, lighting, energy storage, and sustainable mobility.

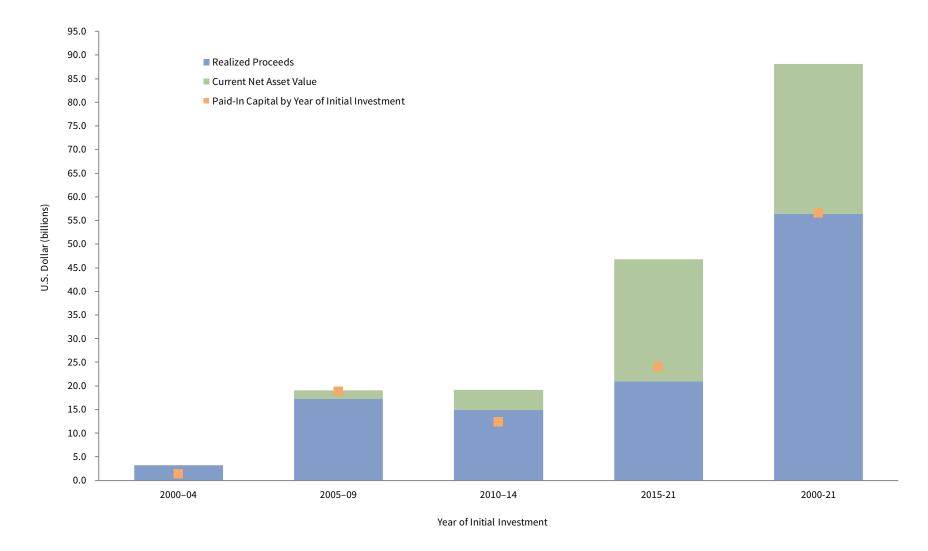
<sup>4</sup> Example investments include waste & recycling, water & wastewater, advanced materials, environmental services, sustainable agriculture solutions, and emissions controls. Source: ©2023 Cambridge Associates Private Investments Database. Cambridge Associates LLC, all rights reserved.

# CLEAN TECH EXHIBITS





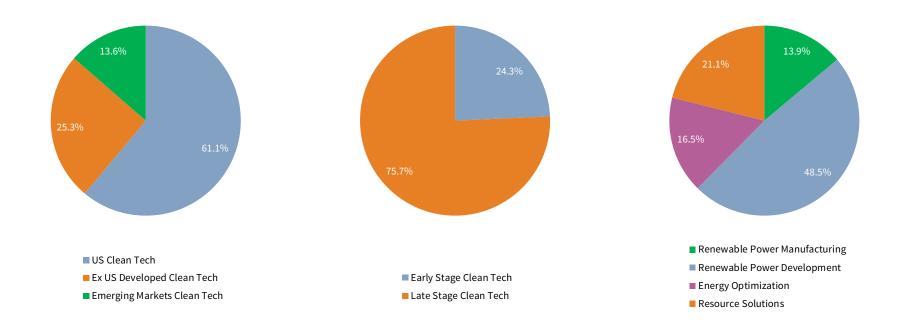
#### SINCE INCEPTION ANALYSIS: PERFORMANCE BY YEARS OF INITIAL INVESTMENT

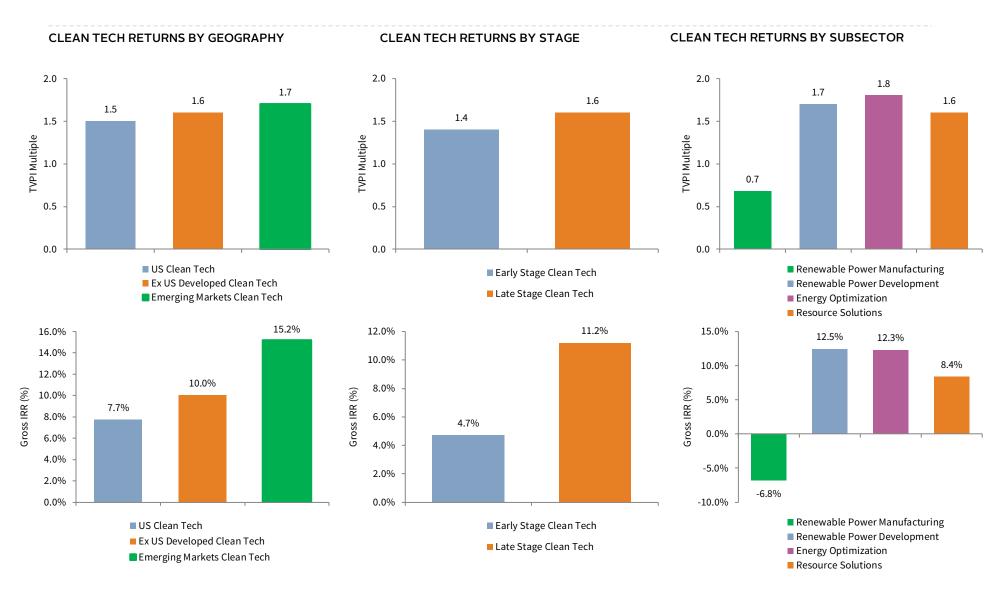


CLEAN TECH INVESTED CAPITAL BY GEOGRAPHY

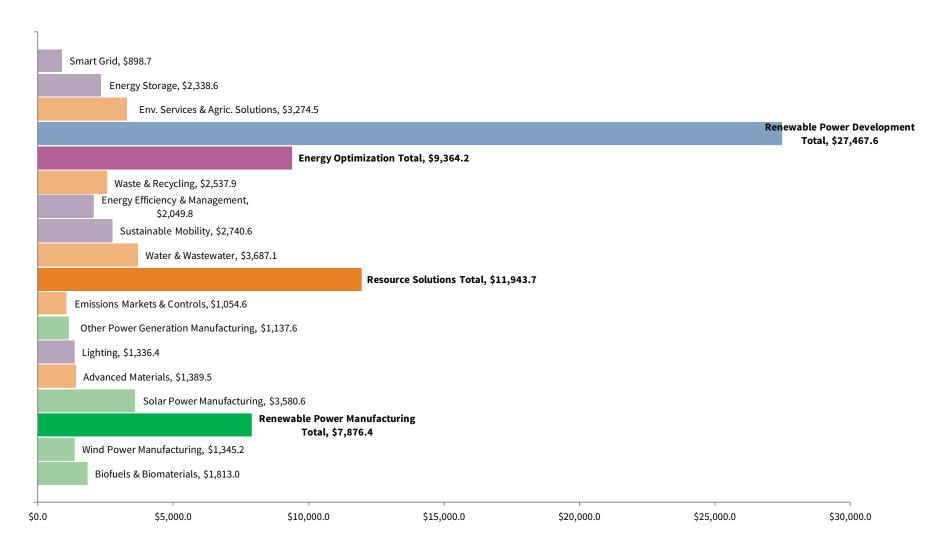
CLEAN TECH INVESTED CAPITAL BY STAGE

**CLEAN TECH INVESTED CAPITAL BY SUBSECTOR** 



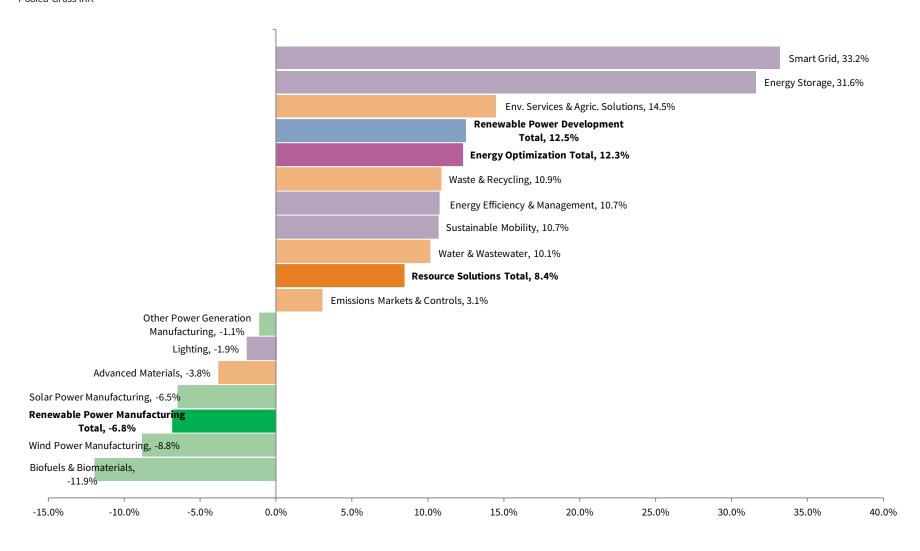


### SINCE INCEPTION INVESTED CAPITAL BY CLEAN TECH SUBSECTOR (\$ MILLIONS)



#### SINCE INCEPTION IRR BY CLEAN TECH SUBSECTOR

Pooled Gross IRR



## NOTE ON PERFORMANCE DATABASE CHANGES

AS OF MARCH 31, 2023

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.



Copyright © 2023 by Cambridge Associates ("CA"). All rights reserved. Confidential.

This report may not be displayed, reproduced, distributed, transmitted, or used to create derivative works in any form, in whole or in portion, by any means, without written permission from CA. Copying of this publication is a violation of US and global copyright laws (e.g., 17 USC. 101 et seq.). Violators of this copyright may be subject to liability for substantial monetary damages. The information and material published in this report are confidential and non-transferable. Therefore, recipients may not disclose any information or material derived from this report to third parties, or use information or material from this report, without prior written authorization. For the avoidance of doubt, this report is not for enterprise use and may not be used to create financial instruments or products. This report is provided for informational purposes only. It is not intended to constitute an offer of securities of any of the issuers that may be described in the report. No part of this report is intended as a recommendation of any firm or any security, unless expressly stated otherwise. Nothing contained in this report should be construed as the provision of any tax or legal advice. Past performance is not indicative of future performance. Any information or opinions provided in this report are provided as-is as of the date of the report, and CA is under no obligation to update the information or communicate that any updates have been made. Information contained herein may have been provided by third parties, including investment firms providing information on returns and assets under management, and CA takes no responsibility for the accuracy thereof. Managers may report returns to CA gross (before the deduction of management fees), net (after the deduction of management fees), or both.

CA includes the following: Cambridge Associates, LLC, a Massachusetts limited liability company with offices in Arlington, VA; Boston, MA; Dallas, TX; Menlo Park, CA; San Francisco, CA; and New York, NY. Cambridge Associates Limited, a limited company in England and Wales (Registration No. 06135829) authorised and regulated by the Financial Conduct Authority in the conduct of Investment Business. Cambridge Associates Limited, LLC, a Massachusetts limited liability company with a branch office in Sydney, Australia (ARBN 109 366 654). Cambridge Associates Asia Pte Ltd, a Singapore corporation (Registration No. 200101063G). Cambridge Associates Investment Consultancy (Beijing) Ltd, a wholly owned subsidiary of Cambridge Associates, LLC registered with the Beijing Administration for Industry and Commerce (Registration No. 110000450174972). Cambridge Associates GmbH, a limited liability company incorporated in the Federal Republic of Germany registered at the commercial register at the local court (Amtsgericht) of Munich under company number HRB 253119.