MOSSADAMS

ENVIRONMENTAL, SOCIAL, AND GOVERNANCE

The Rise of ESG

Private Capital Investment in Environmental Innovation

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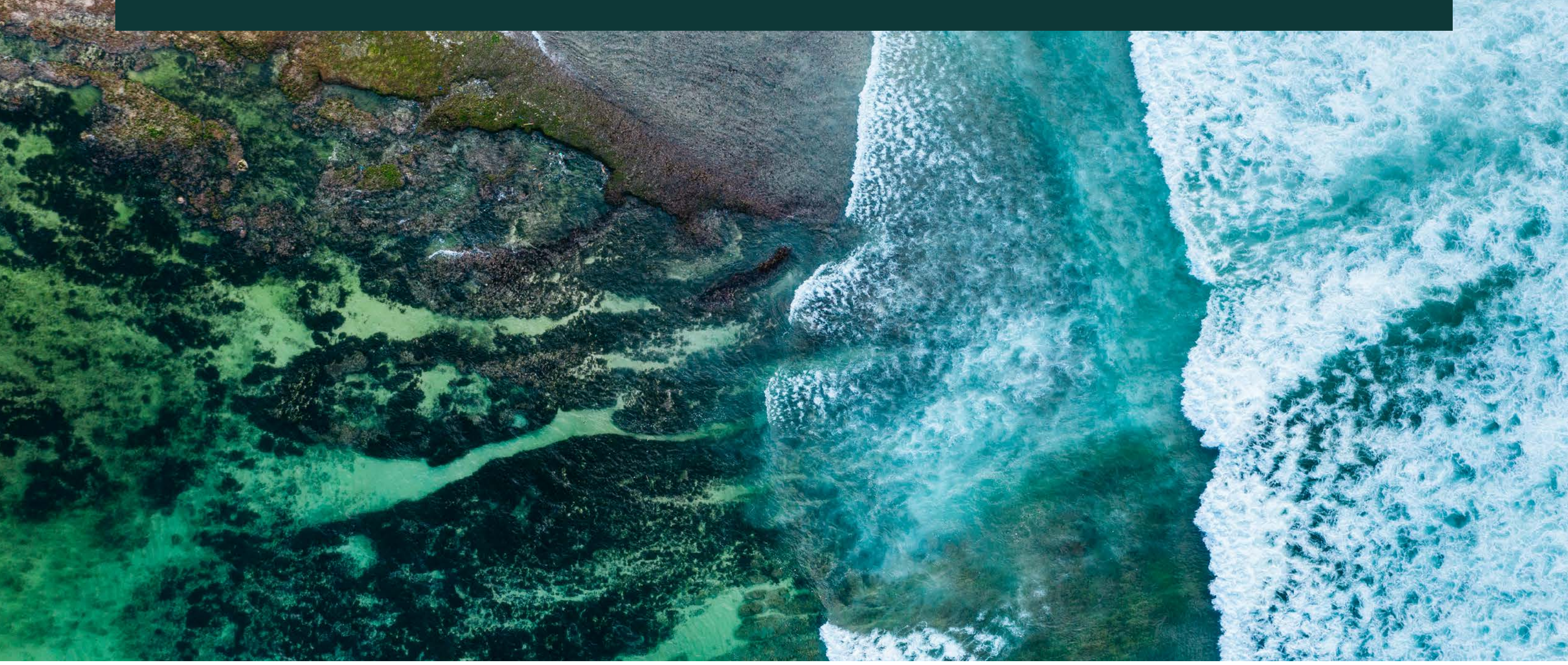


SECTION ONE

Introduction

Since a 2004 United Nations report introduced the term environmental, social, and governance (ESG), interest in ESG disclosures have spread far beyond financial services, and entire industries emerged to meet the needs of an increasingly globalized and populous world.

ESG disclosures are now standard for many organizations as public awareness grows around organizational values and principles.

Companies seeking access to capital from firms that committed to shifting their impact are finding ESG matters to be a worthy investment. In addition to finances, there are opportunities for companies to further innovate and benefit the global society.

Demand from customers, stakeholders, and employees for environmental and social action is on the rise, and investors are heeding the call.

In PitchBook's 2022 Sustainable Investment Survey, 56% of global general partner respondents said their portfolio companies use a standard framework to measure and report financially material ESG risk factors, while 23% said their portfolio companies use a custom methodology.

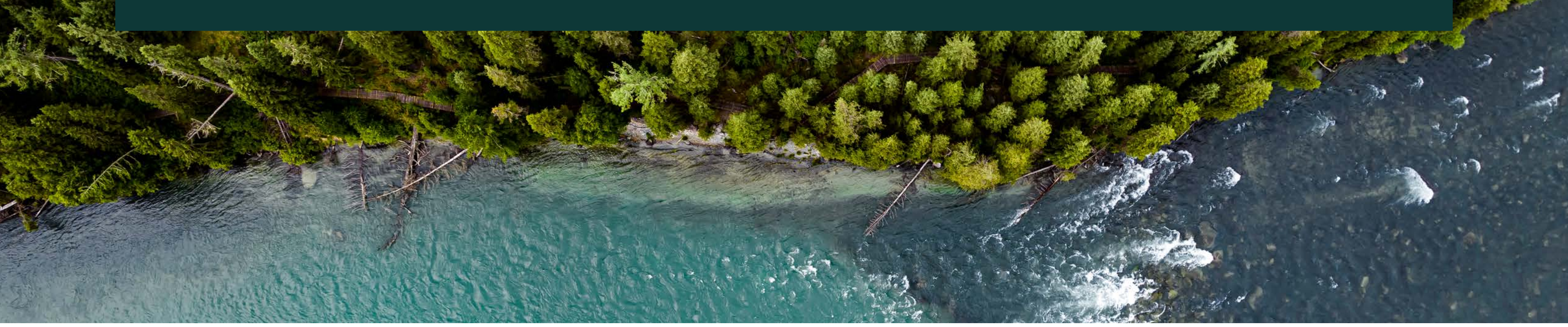
One of the primary challenges regarding ESG is fragmented measurement and reporting methodologies; the most common frameworks are summarized below.

COMMON FRAMEWORK OVERVIEW

	CDP *Carbon Disclosure Project*	**CDSB** *Climate Disclosure Standards Board*	**GRI** *Global Reporting Initiative*	**IIRC** *International Integrated Reporting Council*	**SASB** *Sustainability Accounting Standards Board*	**TCFD** *Task Force on Climate-Related Financial Disclosures*
Scope of Information	Environmental	Environmental	Environmental, social, operational governance, and economic	Environmental, social, economic, for physical- and knowledge-based assets	Environmental, social, and operational governance	Climate
Type of Guidance	De facto standards	Framework	Standards	Framework	Standards	Framework
Industry Agnostic or Industry Specific	Industry agnostic	Industry agnostic	Industry agnostic	Industry agnostic	Industry specific	Industry agnostic
Target Audience	All stakeholders	Providers of capital	All stakeholders	Providers of capital	Providers of capital	Providers of capital
Approach to Materiality	Significant impacts on the economy, environment, and people	Enterprise value creation	Significant impacts on the economy, environment, and people	Enterprise value creation	Enterprise value creation	Enterprise value creation

Of the three segments of ESG, the E, which refers to environmental issues, is the most mature area. Organizations have been reporting on and conducting examinations and reviews of environmental data for decades.

This report offers in-depth analysis of private investment in companies working toward a more environmentally conscious future. Quantifying trends within venture capital (VC), private equity (PE), and M&A markets reveals widespread regard for ESG matters despite recent macroeconomic challenges.



Executive Summary

Investment data throughout this report is focused on environmental sustainability and defined using the following three verticals:

Agricultural technology *(agtech)*

Climate technology *(climate tech)*

Clean technology *(cleantech)*

Verticals are defined as specific elements of a company that aren't accurately captured by its industry focus, meaning a variety of different industries are represented within these datasets.

Total VC deal value across these verticals declined 28.6% between 2021 and 2022, slightly lower than overall US VC activity, which dropped 30.8%, according to PitchBook's Venture Monitor.

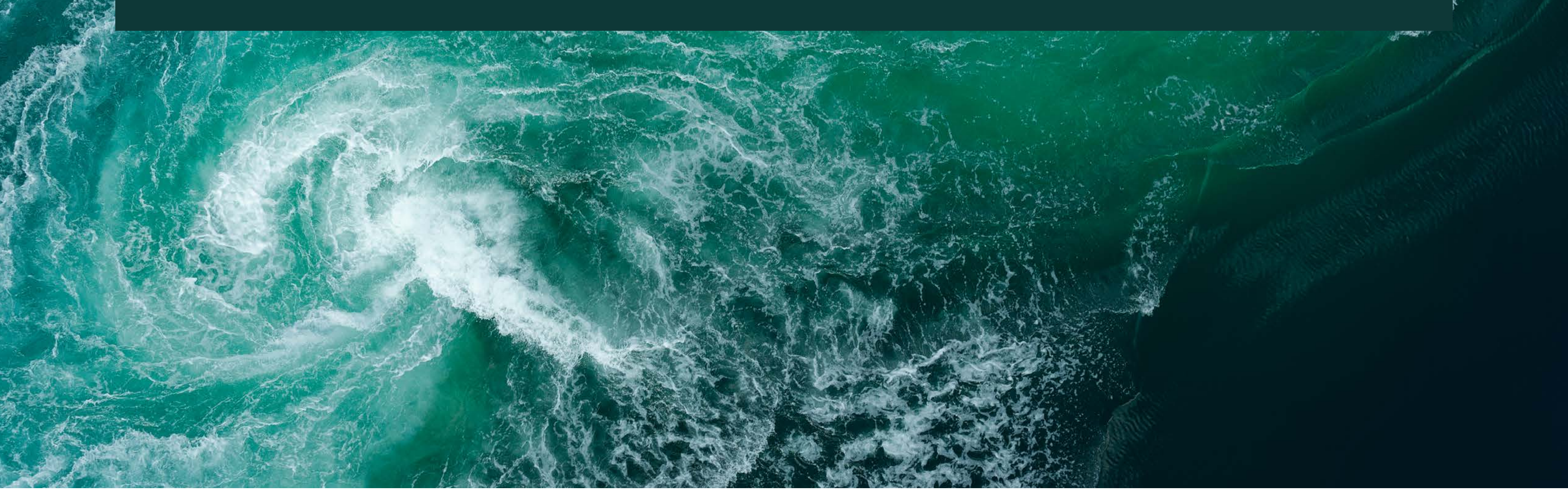
While the surge of broader VC activity in 2021 overshadowed 2022, when market conditions worsened, 2022 marks the second-highest year on record for environmental investments. Median pre-money valuations rose across all company stages, and first-time financing activity proved resilient.

The energy and business products and services (B2B) sectors drove most of the environmental deal value in 2022 across all asset classes, but a variety of other industries increased their involvement in relevant verticals—including the IT sector. Climate tech and cleantech have a broad and growing set of applications, as evidenced by the diversity of sectors investing in them.

PE deal value across environmental verticals declined 21.2% in 2022, in line with broader US PE activity, which dropped approximately 19.5% in the same period, according to PitchBook's US PE Breakdown.

The median PE deal size experienced notable growth, as higher interest rates increased the cost of highly leveraged deals. PE growth and expansion deals, which often involve smaller ownership stakes, took up a far greater share of total PE value in the space.

Environmental M&A deal value dropped by 18.0%, with a more pronounced decline in deal count. Larger deals took up a greater share of M&A deal count because only the most necessary transactions went through, as strategies shifted amid economic uncertainty.

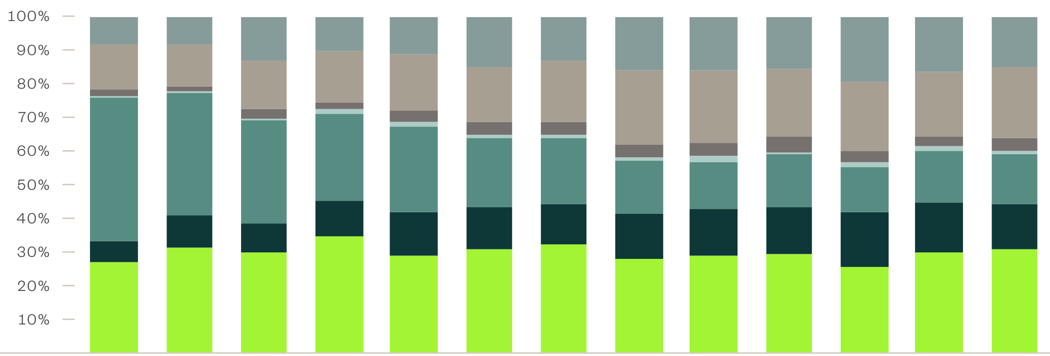


SECTION THREE

Spotlight: Sector Breakdown

FIGURE 1: Share of US VC ESG Deal Count by Sector

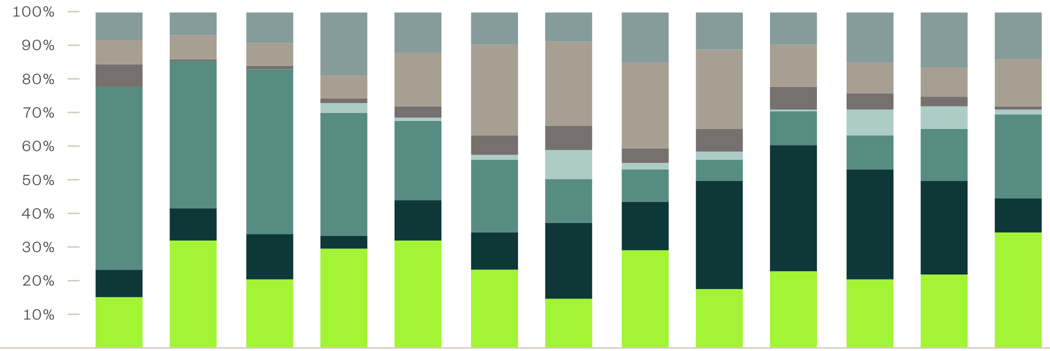
BUSINESS PRODUCTS & SERVICES (B2B)
CONSUMER PRODUCTS & SERVICES (B2C)
ENERGY
FINANCIAL SERVICES
HEALTH CARE
INFORMATION TECHNOLOGY
MATERIALS & RESOURCES



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Business Products & Services (B2B)	120	148	153	186	175	181	195	182	224	234	214	354	366
Consumer Products & Services (B2C)	28	45	45	59	78	73	73	87	106	113	139	181	164
Energy	189	173	155	139	151	122	118	104	109	125	115	181	173
Financial Services	1	4	4	8	10	6	7	7	13	7	10	16	17
Health Care	9	6	13	11	20	21	23	25	29	36	28	39	41
Information Technology	60	60	75	81	99	98	109	144	167	164	176	226	256
Materials & Resources	36	38	66	56	68	87	80	104	124	122	162	196	176

FIGURE 2: Share of US VC ESG Deal Value ($B) by Sector

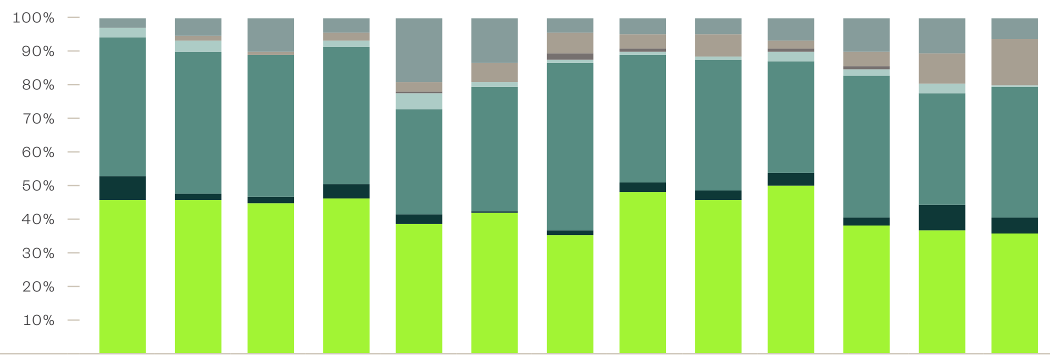
BUSINESS PRODUCTS & SERVICES (B2B) · FINANCIAL SERVICES · MATERIALS & RESOURCES
CONSUMER PRODUCTS & SERVICES (B2C) · HEALTH CARE
ENERGY · INFORMATION TECHNOLOGY



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	$0.7	$1.6	$1.0	$1.3	$1.4	$1.0	$1.0	$1.7	$2.2	$2.2	$3.0	$6.8	$7.7
	$0.4	$0.5	$0.7	$0.2	$0.5	$0.5	$1.5	$0.9	$4.2	$3.8	$4.9	$8.8	$2.2
	$2.7	$2.2	$2.4	$1.6	$1.0	$0.9	$0.9	$0.6	$0.8	$1.0	$1.5	$4.8	$5.6
	$0.0	$0.0	$0.0	$0.1	$0.0	$0.1	$0.6	$0.1	$0.3	$0.0	$1.2	$2.1	$0.3
	$0.3	$0.0	$0.0	$0.1	$0.2	$0.2	$0.5	$0.3	$0.9	$0.7	$0.7	$0.9	$0.3
	$0.4	$0.4	$0.3	$0.3	$0.7	$1.2	$1.7	$1.5	$3.1	$1.2	$1.4	$2.8	$3.1
	$0.4	$0.4	$0.5	$0.8	$0.5	$0.4	$0.6	$0.9	$1.5	$1.0	$2.2	$5.2	$3.1

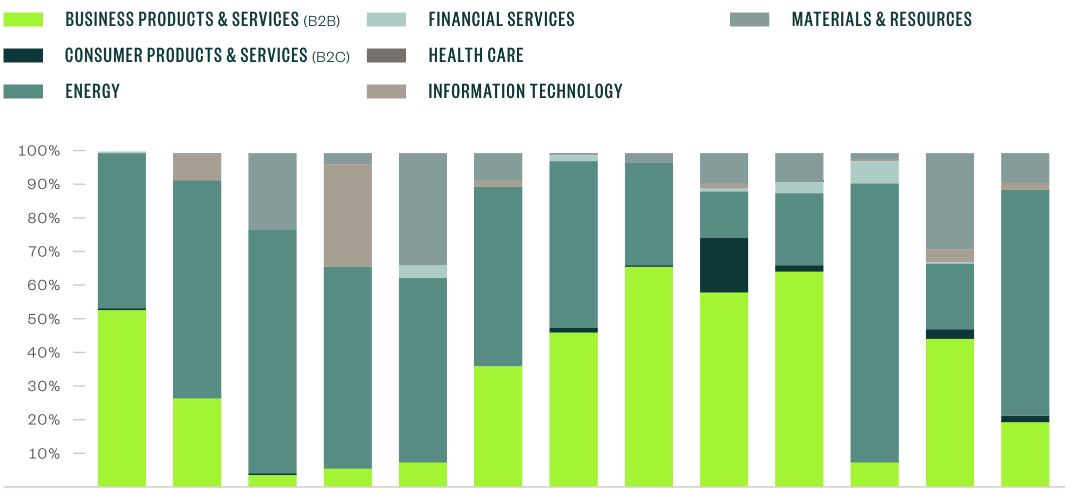
FIGURE 3: Share of US PE ESG Deal Count by Sector

BUSINESS PRODUCTS & SERVICES (B2B) · FINANCIAL SERVICES · MATERIALS & RESOURCES
CONSUMER PRODUCTS & SERVICES (B2C) · HEALTH CARE
ENERGY · INFORMATION TECHNOLOGY



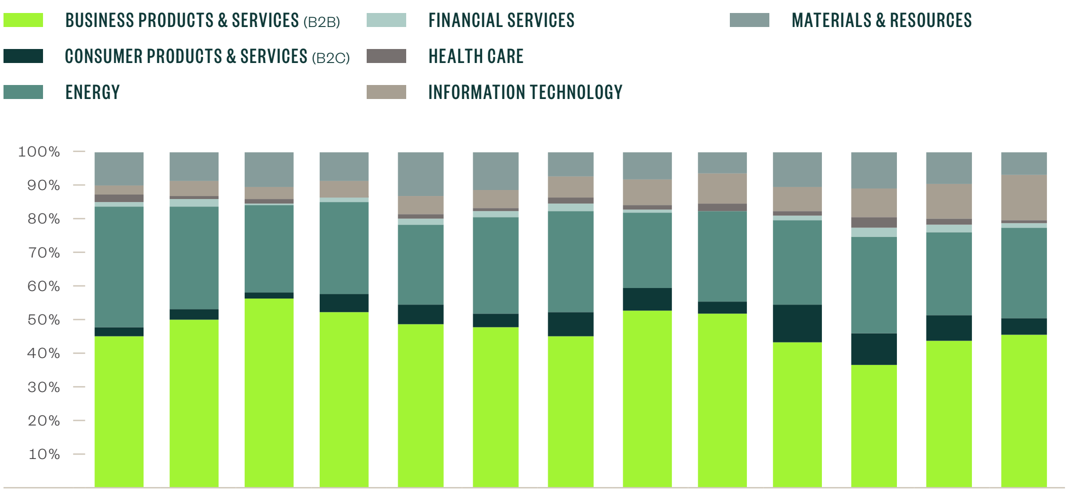
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	33	42	41	42	57	53	43	52	48	54	51	56	45
	5	2	2	4	4	1	2	3	3	4	3	11	6
	30	39	39	37	46	47	61	41	41	36	56	51	49
	2	3	0	2	7	2	1	1	1	3	3	4	1
	0	0	0	0	1	0	2	1	0	1	1	0	0
	0	1	1	2	4	7	8	5	7	3	6	14	17
	2	5	9	4	28	17	5	5	5	7	13	16	8

FIGURE 4: Share of US PE ESG Deal Value ($B) by Sector



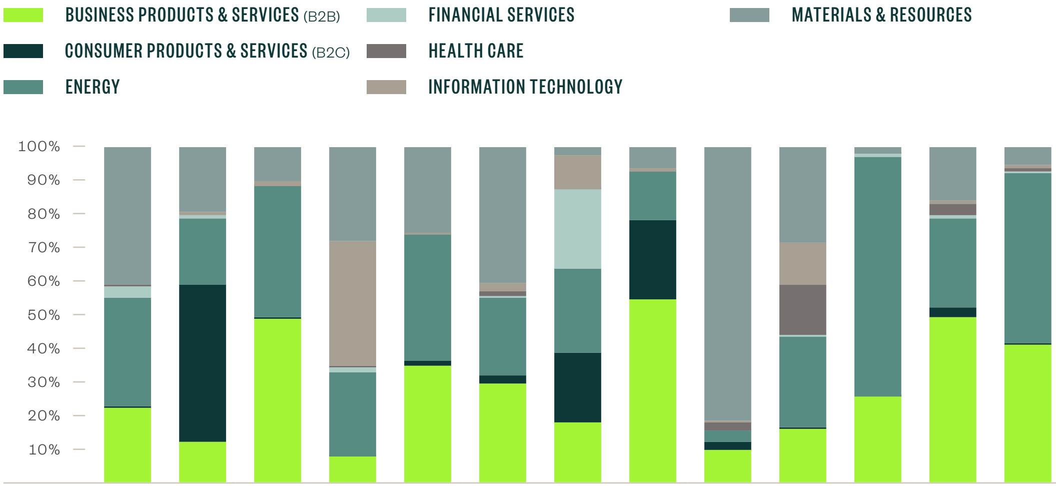
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	$1.3	$0.5	$0.1	$0.2	$0.6	$1.2	$4.4	$11.2	$4.7	$1.3	$0.9	$8.8	$3.1
	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.0	$1.3	$0.0	$0.0	$0.5	$0.4
	$1.1	$1.1	$2.7	$2.6	$4.4	$1.8	$4.8	$5.2	$1.1	$0.4	$10.2	$3.8	$10.8
	$0.0	$0.0	$0.0	$0.0	$0.3	$0.0	$0.2	$0.0	$0.1	$0.1	$0.9	$0.1	$0.0
	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0	$0.0
	$0.0	$0.1	$0.0	$1.4	$0.0	$0.1	$0.0	$0.0	$0.1	$0.0	$0.0	$0.8	$0.3
	$0.0	$0.0	$0.9	$0.1	$2.7	$0.3	$0.0	$0.5	$0.7	$0.2	$0.3	$5.7	$1.4

FIGURE 5: Share of US ESG M&A Deal Count by Sector



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	91	143	146	135	165	154	126	140	136	99	91	151	103
	6	9	4	15	20	12	20	18	10	26	23	26	11
	73	88	68	71	82	93	85	60	70	57	72	86	61
	2	7	1	3	5	6	6	3	1	3	7	7	3
	5	2	3	1	5	3	5	3	5	3	7	6	2
	5	13	10	12	18	17	18	21	24	17	22	36	30
	20	24	26	22	44	36	19	21	16	23	26	32	15

FIGURE 6: Share of US ESG M&A Deal Value ($B) by Sector



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	$2.3	$2.9	$12.6	$1.1	$4.1	$5.4	$6.2	$22.1	$7.8	$2.9	$5.0	$17.4	$13.2
	$0.0	$11.2	$0.1	$0.0	$0.2	$0.5	$7.0	$9.4	$1.9	$0.1	$0.0	$1.0	$0.2
	$3.4	$4.8	$10.1	$3.6	$4.3	$4.3	$8.7	$5.9	$2.6	$4.9	$13.9	$9.3	$16.3
	$0.3	$0.2	$0.0	$0.2	$0.0	$0.1	$8.1	$0.1	$0.1	$0.1	$0.1	$0.3	$0.1
	$0.0	$0.0	$0.0	$0.1	$0.0	$0.3	$0.1	$0.0	$2.1	$2.7	$0.0	$1.1	$0.3
	$0.0	$0.2	$0.4	$5.4	$0.0	$0.5	$3.4	$0.5	$0.2	$2.3	$0.1	$0.4	$0.3
	$4.3	$4.6	$2.5	$4.0	$2.9	$7.4	$0.8	$2.3	$64.9	$5.1	$0.3	$5.5	$1.6

Implementing changes that improve the sustainability of operations is of interest to companies across nearly every industry, and ESG goals are proliferating globally.

Despite the declines in broader VC dealmaking in 2022, several industries closed record levels of deal value involving environmental verticals, including B2B with $7.7 billion, energy with $5.6 billion, and IT with $3.1 billion.

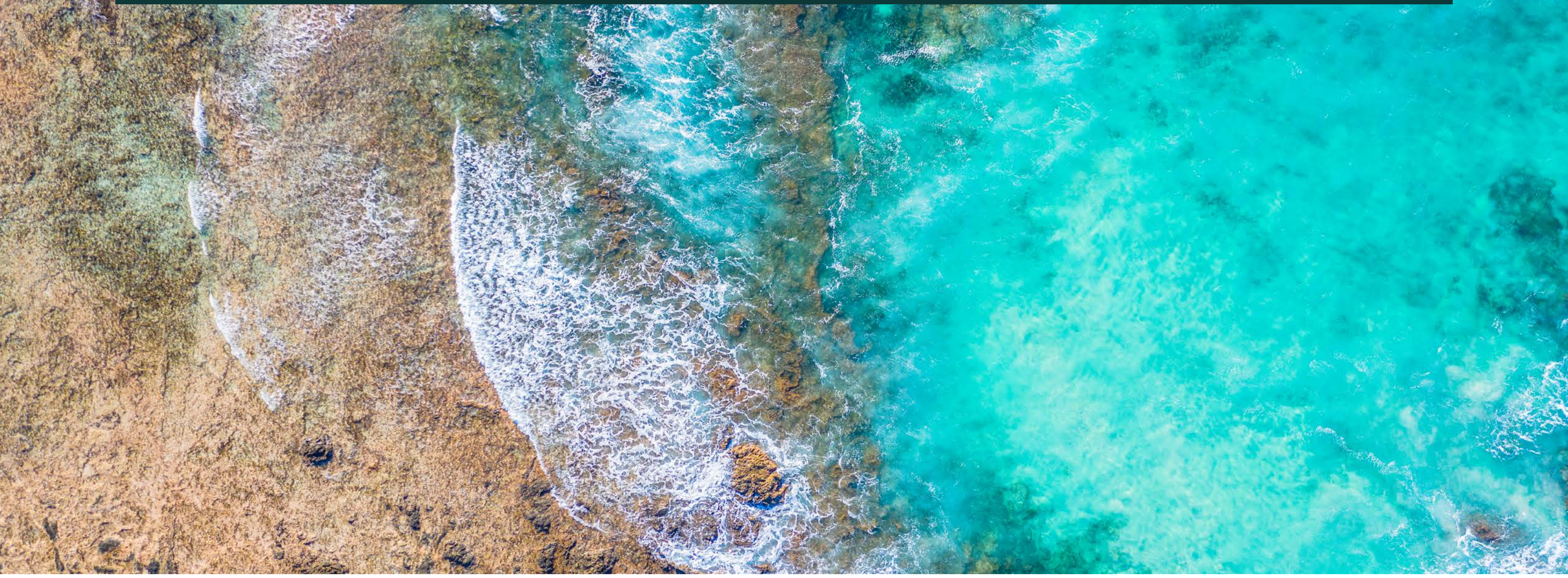
Deal value growth in times of economic uncertainty is a testament to the greater focus placed on sustainable operations and the potential gains their implementation can provide beyond simple brand optics.

The materials and resources industry experienced a marked decline in deal value in 2022 but remains the third-largest industry presence for VC ESG deal value. PE deal value is heavily concentrated in the energy sector, while both energy and B2B sectors dominate environmental M&A deal value.

Commodity-based industries have the most obvious applications for agricultural and climate technologies, as their operations are entrenched in nonrenewable energy use and polluting byproducts. However, many more industries have their own unique environmental impacts and potential to improve operations within the scope of sustainability.

The presence of recycled packaging and vegan ingredients within the consumer space, for example, has expanded rapidly, with increased demand driving adoption of more environmentally conscious practices.

The IT sector completed a record number of environmental deals in 2022, with deal count growing an additional 20% after more than doubling in 2021. The intersection of technology and sustainability grew with the development of new applications, including software that allows companies to track their impact and organize sustainability efforts. Capital-intensive industries produce the largest deals, but deal count is spread further, as interest in environmental sustainability is highly diversified.



"ESG has been a topic of discussion for decades, but we are finally starting to see companies provide information about how they assess and measure their individual impacts on ESG issues."

– Todd Van der Wel, Partner, Manufacturing & Consumer Products Practice

While only a small portion of overall deal activity, the health care space presents unique opportunities for ESG investment. Health care providers generate massive amounts of waste, much of which is hazardous, and this was exacerbated by the treatment of and response to the COVID-19 pandemic, according to a report by the World Health Organization.

The social and governance implications for the health care space are also significant. Disparate outcomes for certain patient demographics, for example, are attracting increased attention from advocates.

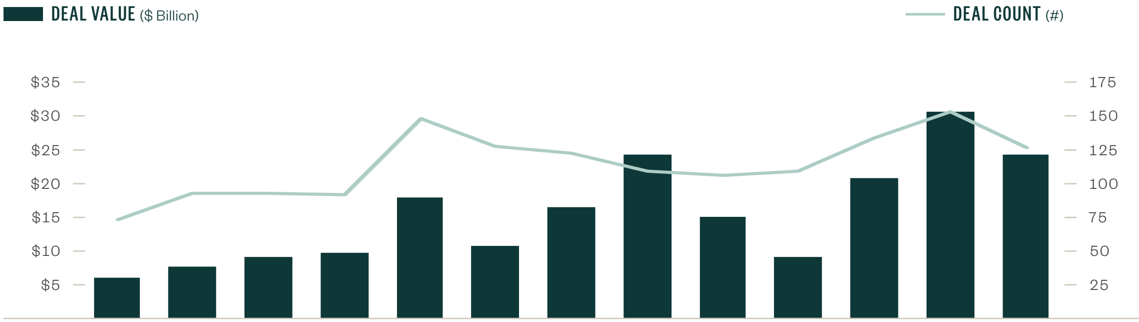
Artificial intelligence and machine learning applications in health care can increase efficiency and accessibility of services but raise issues of patient privacy in the technology age. The operational stress applied to health care systems over the past three years highlighted the need for wide-ranging improvements that could be served by PE capital and expertise.

"Most health care organizations focus on waste. While physical waste, including hazardous materials, is unavoidable, minimizing it is important for both social and financial reasons. The current environment has health care leaders looking for ways to further innovate in all areas to be more socially responsible, and to maximize efficiency."

– Karl Rebay, Partner, Health Care Consulting Practice

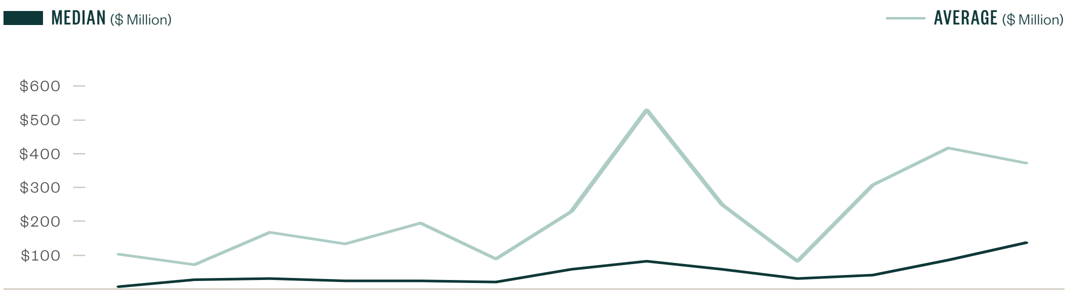
INDUSTRY TRENDS

FIGURE 7: Industry Trends US ESG PE Deal Activity



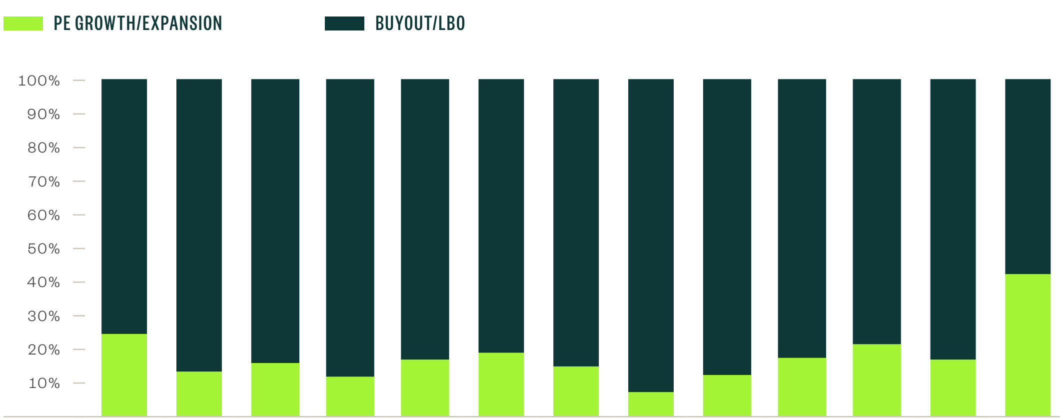
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
VALUE	$5.8	$7.5	$8.9	$9.6	$17.7	$10.7	$16.3	$24.1	$15.0	$8.9	$20.7	$30.5	$24.0
COUNT	72	92	92	91	147	127	122	108	105	108	133	152	126

FIGURE 8: Median and Average US ESG PE Deal Size ($M)



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
MEDIAN	$7.3	$28.5	$30.3	$23.5	$22.5	$20.0	$57.5	$81.0	$57.7	$29.4	$40.5	$85.0	$135.0
AVERAGE	$103.2	$72.5	$167.5	$133.2	$193.4	$87.2	$227.6	$530.4	$249.8	$80.5	$306.1	$418.4	$371.4

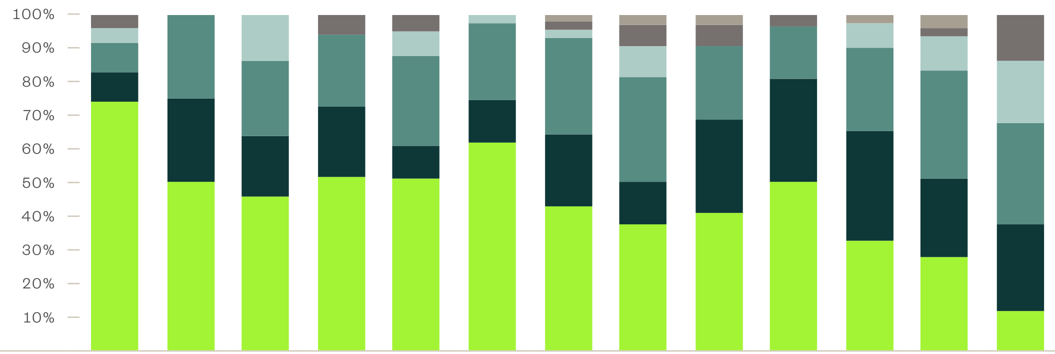
FIGURE 9: Share of US ESG PE Deal Value ($B) by Type



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	$1.4	$1.0	$1.4	$1.1	$3.0	$2.0	$2.4	$1.7	$1.8	$1.5	$4.4	$5.2	$10.1
	$4.4	$6.5	$7.5	$8.5	$14.7	$8.7	$13.9	$22.4	$13.1	$7.4	$16.2	$25.4	$13.9

FIGURE 10: Share of US ESG PE Deal Count by Size

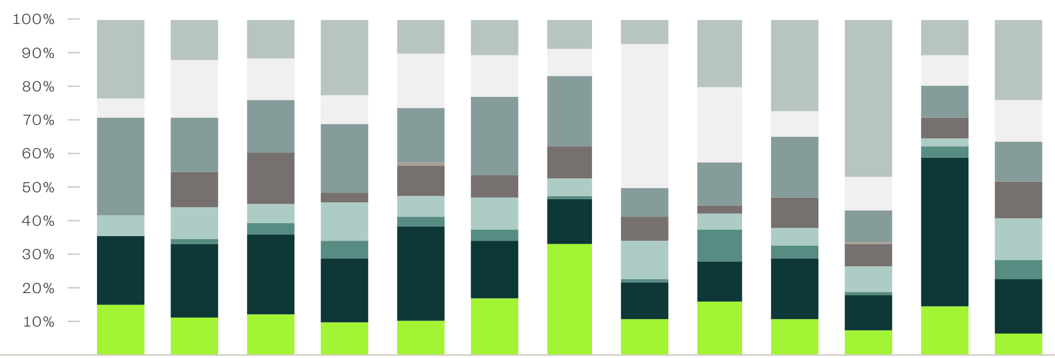
$500M-$1B
$100M-$250M
$250M-$500M
UNDER $100M
$1B-$5B
$5B+



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
$500M-$1B	17	12	10	17	21	24	18	12	13	13	13	13	5
UNDER $100M	2	6	4	7	4	5	9	4	9	8	13	11	11
$100M-$250M	2	6	5	7	11	9	12	10	7	4	10	15	13
$1B-$5B	1	0	3	0	3	1	1	3	0	0	3	5	8
$250M-$500M	1	0	0	2	2	0	1	2	2	1	0	1	6
$5B+	0	0	0	0	0	0	1	1	1	0	1	2	0

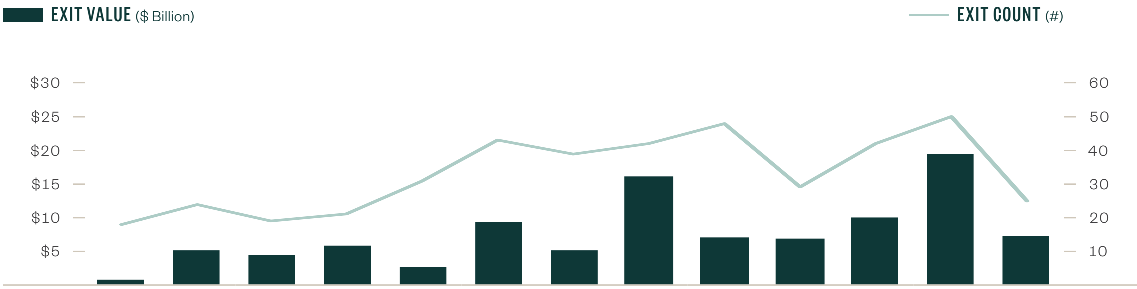
FIGURE 11: Share of US ESG PE Deal Value ($B) by Region

GREAT LAKES
MOUNTAIN
SOUTH
MID-ATLANTIC
NEW ENGLAND
SOUTHEAST
MIDWEST
OTHER TERRITORY
WEST COAST



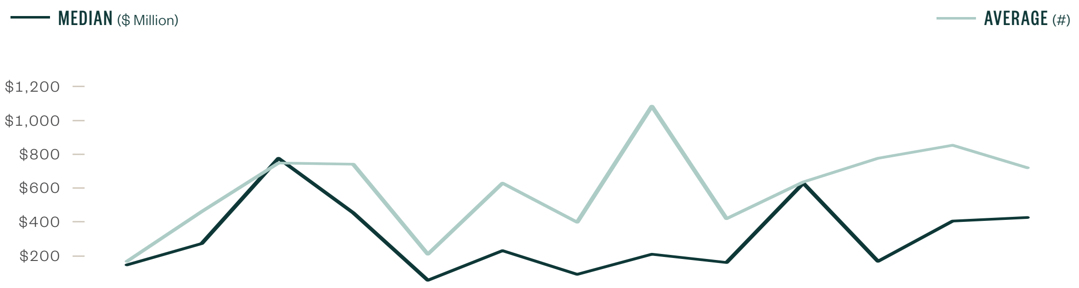
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
GREAT LAKES	$0.9	$0.8	$1.0	$0.9	$1.8	$1.8	$5.3	$2.5	$2.3	$0.9	$1.4	$4.4	$1.4
MID-ATLANTIC	$1.2	$1.7	$2.1	$1.8	$4.9	$1.8	$2.2	$2.7	$1.8	$1.6	$2.1	$13.5	$4.0
MIDWEST	$0.0	$0.1	$0.3	$0.5	$0.5	$0.4	$0.1	$0.2	$1.4	$0.4	$0.2	$1.1	$1.3
MOUNTAIN	$0.3	$0.7	$0.5	$1.1	$1.1	$1.0	$0.9	$2.8	$0.7	$0.4	$1.5	$0.8	$3.0
NEW ENGLAND	$0.0	$0.8	$1.3	$0.3	$1.6	$0.7	$1.5	$1.8	$0.4	$0.8	$1.3	$1.9	$2.7
OTHER TERRITORY	$0.0	$0.0	$0.0	$0.0	$0.1	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.0	$0.0
SOUTH	$1.7	$1.2	$1.4	$2.0	$2.9	$2.5	$3.4	$2.1	$1.9	$1.6	$1.9	$2.9	$2.9
SOUTHEAST	$0.4	$1.3	$1.1	$0.9	$2.8	$1.3	$1.3	$10.4	$3.4	$0.7	$2.0	$2.7	$2.9
WEST COAST	$1.4	$0.9	$1.0	$2.2	$1.8	$1.1	$1.4	$1.7	$3.0	$2.4	$9.5	$3.3	$5.8

FIGURE 12: US PE ESG Exit Activity



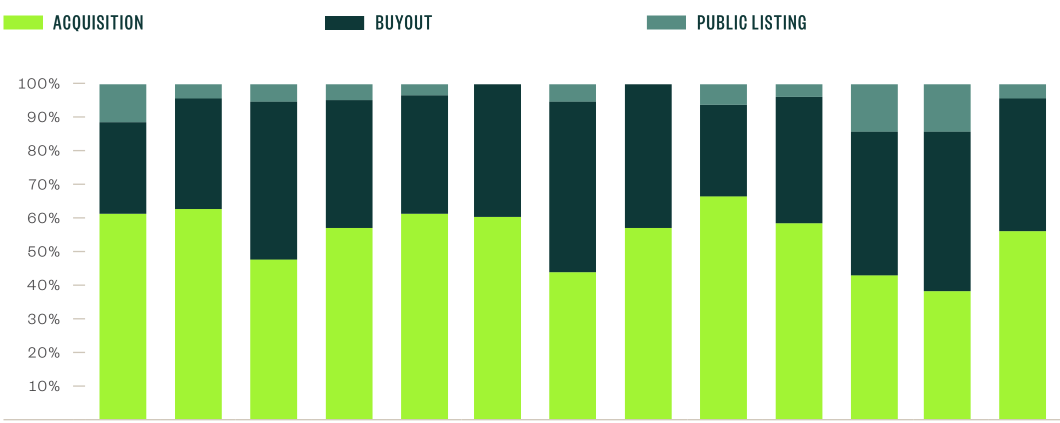
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
VALUE	$0.8	$5.1	$4.5	$5.9	$2.7	$9.4	$5.2	$16.2	$7.1	$6.9	$10.1	$19.5	$7.2
COUNT	18	24	19	21	31	43	39	42	48	29	42	50	25

FIGURE 13: Median and Average US ESG PE Exit Size ($M)



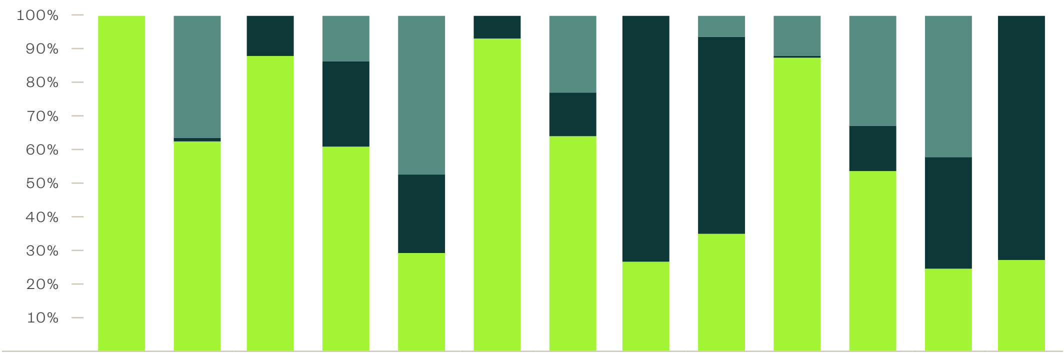
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
MEDIAN	$140.0	$268.0	$773.8	$449.0	$54.0	$225.0	$85.1	$205.0	$155.0	$628.0	$163.7	$400.0	$425.3
AVERAGE	$164.4	$460.2	$744.9	$734.8	$204.6	$626.2	$397.2	$1,079.0	$415.7	$631.8	$773.7	$846.6	$717.7

FIGURE 14: US PE ESG Exit Count by Type



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	11	15	9	12	19	26	17	24	32	17	18	19	14
	5	8	9	8	11	17	20	18	13	11	18	24	10
	2	1	1	1	1	0	2	0	3	1	6	7	1

FIGURE 15: US PE ESG Exit Value ($B) by Type



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	$0.8	$3.2	$3.9	$3.6	$0.8	$8.8	$3.3	$4.3	$2.5	$6.1	$5.4	$4.8	$2.0
	$0.0	$0.1	$0.5	$1.5	$0.6	$0.6	$0.7	$11.9	$4.1	$0.0	$1.4	$6.5	$5.2
	$0.0	$1.8	$0.0	$0.8	$1.2	$0.0	$1.2	$0.0	$0.4	$0.8	$3.3	$8.1	$0.0

PRIVATE EQUITY FIRMS KEEP INVESTING, BUT MANY SCALE BACK OWNERSHIP STAKES

While nascent environmental investments might appear better suited to the venture world, PE firms are also keen on them. The majority ownership structure of PE investments has resulted in more aggregate dollars invested in environmental deals over the past decade by PE firms compared to their VC counterparts—although PE investment in the space experienced several peak and valley years of aggregate deal value.

The period from 2006–2011 is commonly referred to as cleantech 1.0. Investors—primarily VC—ramped up cleantech investments but suffered disappointing returns for those investments in the years following.

A subsequent report from MIT Energy Initiative concluded that many portfolio companies failed to achieve manufacturing scale in time, and the increased diversity of investor types with the ability to write larger checks could boost performance in the future.

PE firms possess the high levels of capital necessary to bring companies forward into maturity and scale.

In 2017, PE deal value revved up again, growing 48.1% to what was at that time a record $24.1 billion. This record wasn't broken until 2021, when PE deal value totaled $30.5 billion. Following similar trends across the private markets, PE deal value declined moderately in 2022 after reaching record highs in 2021. The pullback in PE activity was, however, less severe in 2022 than in previous years of decline.

Sustained PE involvement in times of economic turbulence highlights how the relevance of environmental verticals has spread across the spectrum of company maturity.

INTEREST RATE IMPACTS

Higher interest rates took a more pronounced toll on traditional and leveraged buyouts (LBOs) after several years of inexpensive financing. At the same time, growth and expansion deals, which often involve a smaller ownership stake, rose in popularity.

Deal value for this segment nearly doubled and took up a record share of total PE deal value in 2022, while deal value for buyouts and LBOs declined by almost half. Minority investments can provide exposure to innovative verticals and diversify portfolios with lower risk than traditional buyout structures.

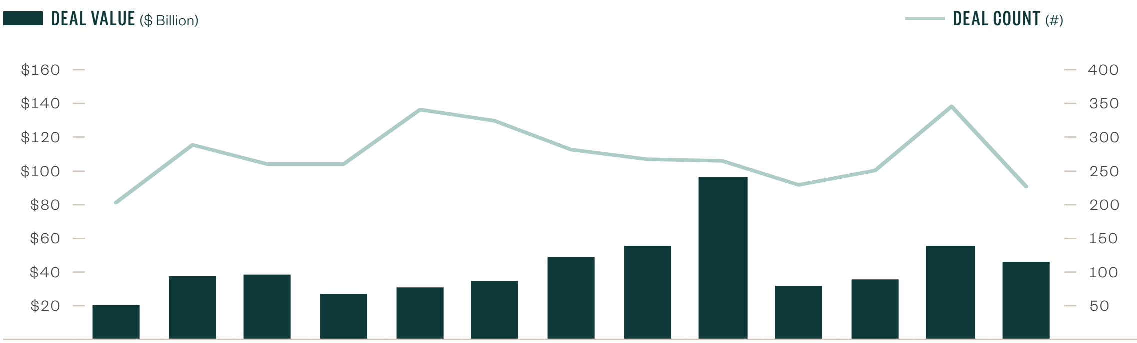
A prudent approach to ESG investing is warranted given ambiguity surrounding definitions and methodologies; therefore, smaller ownership stakes can provide PE firms with alternative ways to engage in ESG initiatives.

> "For banks, ESG is quickly moving from an ethical question to an economic question. Customers, investors, and regulators are increasing their focus on ESG. As a cornerstone of society, banks have significant opportunities that include not only how they do business but with whom they do business. Banks of all sizes should include ESG as a prominent component of their risk appetite assessments."

–Jeff Clair, Partner, Financial Institutions Practice

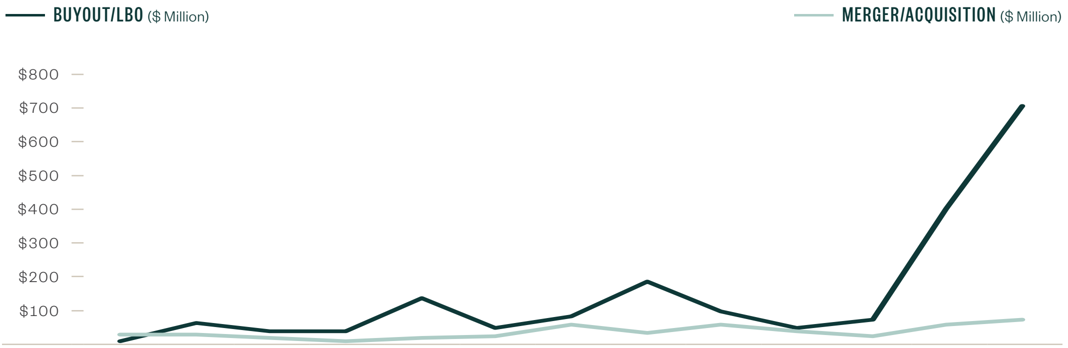
Middle market deals—transactions between $25 million and $1 billion—also took up a larger slice of PE activity in 2022, representing 53.0% of environmental deals compared to 35.8% in 2021. Increased activity in this size bucket reflects changes in the dealmaking environment and variety of opportunity sizes.

FIGURE 16: US ESG M&A Deal Activity



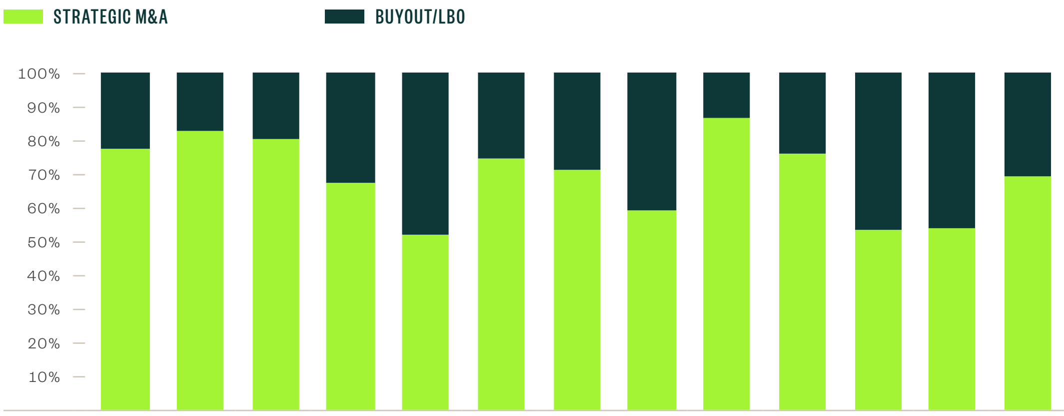
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
VALUE	$19.5	$37.0	$37.4	$26.1	$30.5	$33.8	$48.2	$54.8	$95.7	$30.6	$35.0	$54.9	$45.0
COUNT	202	286	258	259	339	321	279	266	262	228	248	344	225

FIGURE 17: Median US ESG M&A Deal Size ($M) by Type



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
BUYOUT/LBO	$10.0	$62.2	$38.6	$40.7	$137.2	$50.0	$81.0	$187.3	$98.1	$47.3	$75.0	$400.0	$700.0
MERGER/ ACQUSITION	$28.1	$29.2	$17.8	$7.0	$18.3	$22.5	$59.0	$34.2	$57.3	$39.9	$23.0	$57.0	$75.0

FIGURE 18: Share of US ESG M&A Deal Value ($B) by Type



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
STRATEGIC M&A	$15.1	$30.5	$29.9	$17.6	$15.8	$25.2	$34.3	$32.4	$82.5	$23.2	$18.8	$29.5	$31.1
BUYOUT/LBO	$4.4	$6.5	$7.5	$8.5	$14.7	$8.7	$13.9	$22.4	$13.1	$7.4	$16.2	$25.4	$13.9

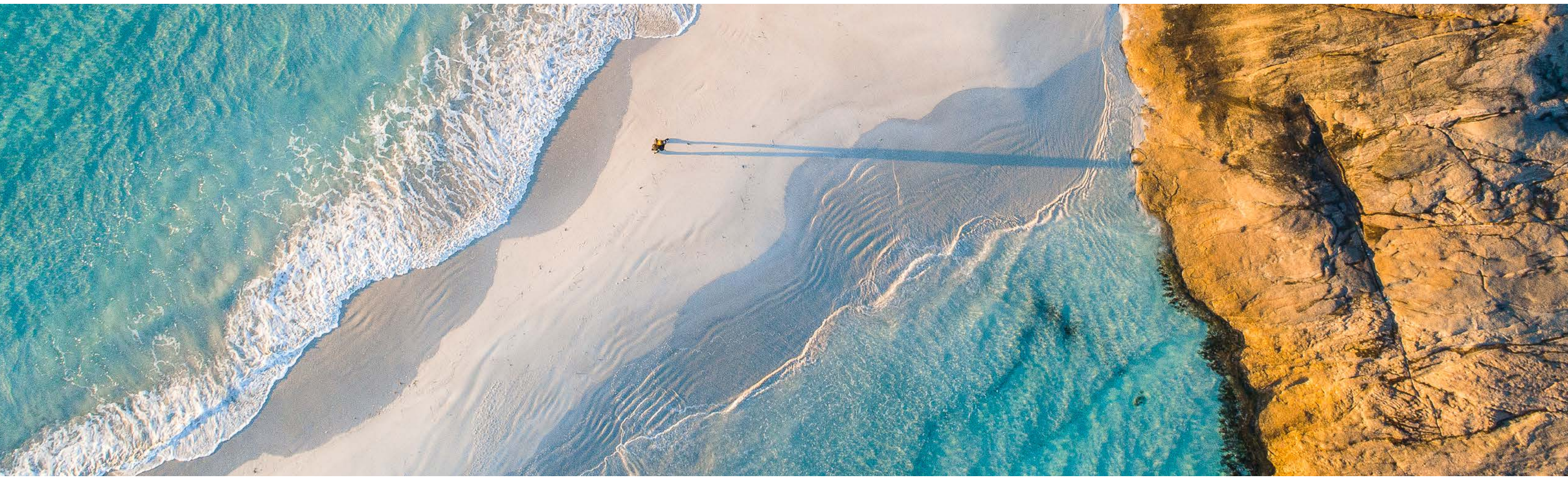
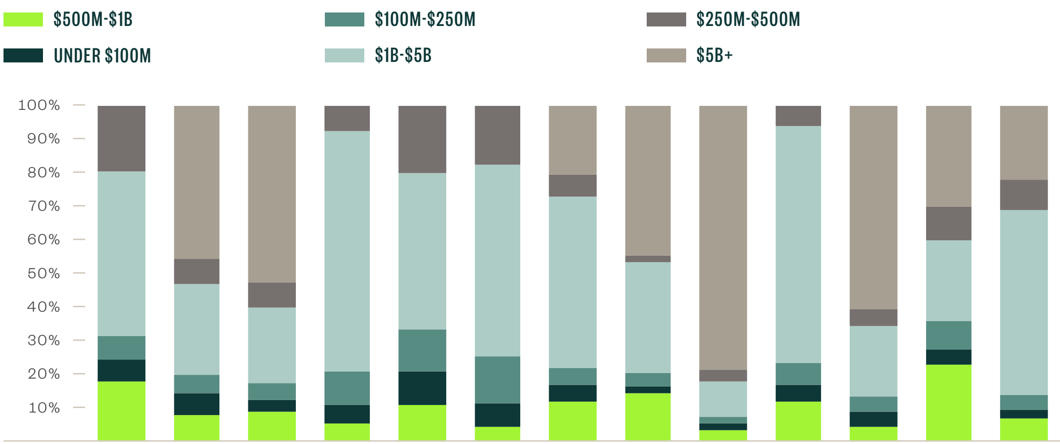
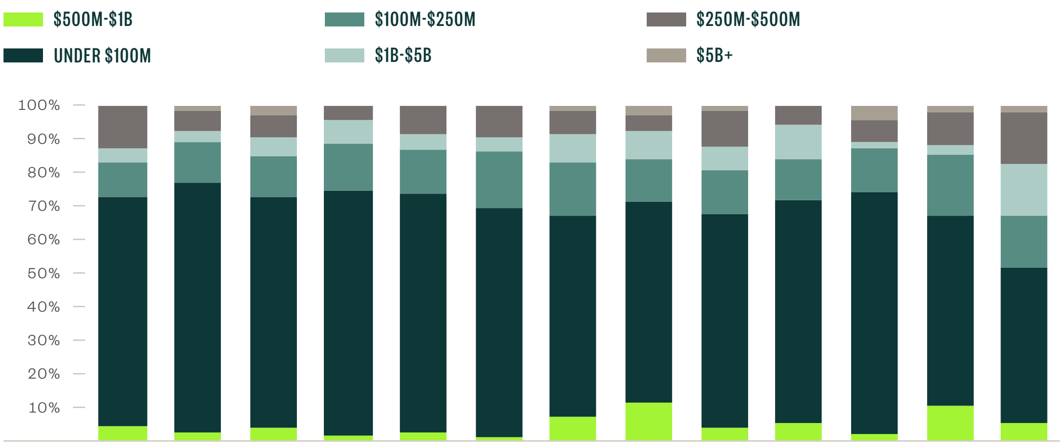


FIGURE 19: Share of US ESG M&A Deal Value ($B) by Size



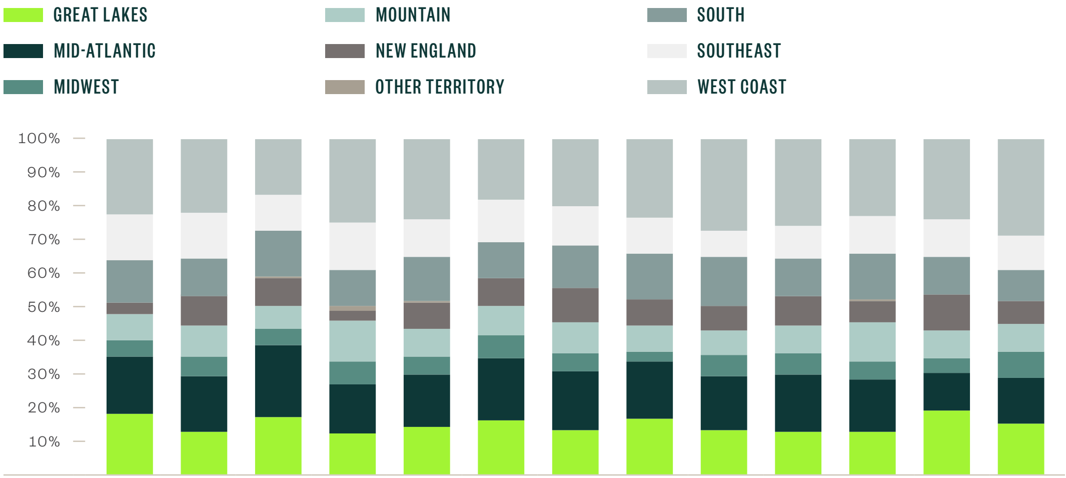
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
$500M-$1B	$1.8	$1.8	$2.1	$0.7	$1.2	$0.7	$4.0	$5.5	$2.5	$2.1	$0.8	$7.9	$2.1
Under $100M	$0.7	$1.5	$0.9	$0.8	$1.1	$1.4	$1.6	$0.9	$1.6	$0.9	$0.9	$1.6	$0.7
$100M-$250M	$0.7	$1.4	$1.3	$1.5	$1.5	$2.6	$1.9	$1.6	$1.3	$1.2	$1.0	$3.1	$1.5
$1B-$5B	$5.1	$6.5	$5.8	$10.4	$5.4	$10.5	$17.6	$13.4	$8.4	$13.0	$4.1	$8.4	$17.6
$250M-$500M	$2.1	$1.8	$2.0	$1.1	$2.3	$3.2	$2.2	$0.9	$2.8	$1.1	$1.0	$3.6	$2.9
$5B+	$0.0	$11.0	$13.6	$0.0	$0.0	$0.0	$7.0	$17.9	$63.0	$0.0	$11.8	$10.6	$7.1

FIGURE 20: Share of US ESG M&A Deal Count by Size



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
$500M-$1B	2	2	3	1	2	1	6	8	3	3	1	11	3
Under $100M	33	62	51	52	60	65	50	42	47	38	34	59	27
$100M-$250M	5	10	9	10	11	16	13	9	10	7	6	19	9
$1B-$5B	2	3	4	5	4	4	7	6	5	6	1	3	9
$250M-$500M	6	5	5	3	7	9	6	3	8	3	3	10	9
$5B+	0	1	2	0	0	0	1	2	1	0	2	2	1

FIGURE 21: Share of US ESG M&A Deal Count by Region



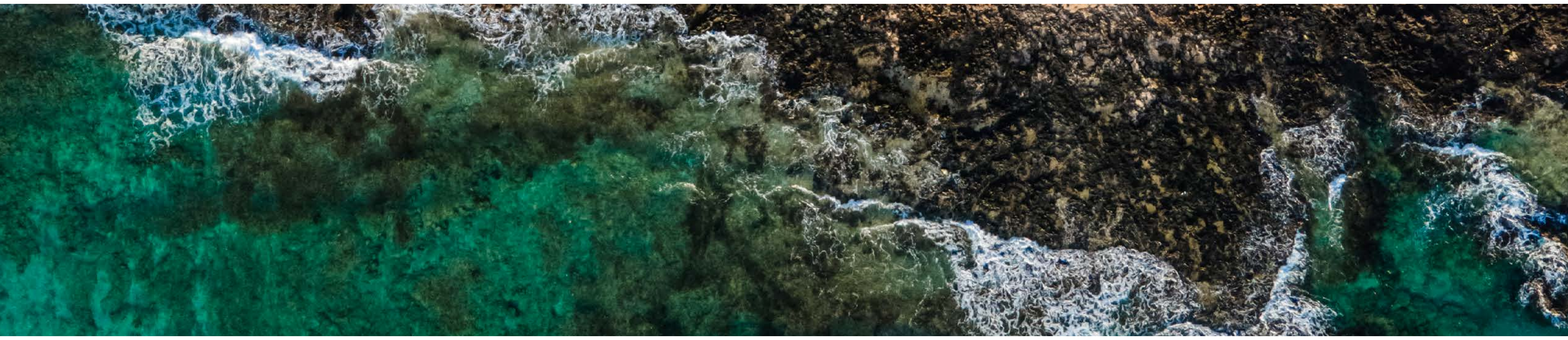
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Great Lakes	35	36	44	31	47	52	37	44	34	29	31	65	34
Mid-Atlantic	34	47	55	38	53	59	48	45	42	38	38	38	31
Midwest	9	17	12	17	17	22	14	8	16	15	14	15	17
Mountain	16	26	18	31	29	27	26	21	19	18	28	28	18
New England	6	25	21	8	25	27	28	20	20	20	16	37	16
Other Territory	0	1	1	4	2	0	0	0	0	0	1	0	0
South	25	32	35	27	44	34	35	36	37	26	33	38	20
Southeast	27	39	27	36	38	40	33	29	21	22	28	37	23
West Coast	44	62	43	64	80	58	55	62	71	58	56	82	65

M&A DEALMAKING DECLINES MODESTLY, BUT LARGER DEALS CONTINUE TO CLOSE

Consolidation signals some maturation of environmental innovations but is subject to broader market challenges. M&A transactions offer synergies and growth opportunities to companies when other paths become less favorable.

The IPO market remains unfavorable, and as company valuations drop, larger players may seize the opportunity to enter new territories or expand market share through M&A transactions.

M&A activity in the space totaled $45.0 billion in 2022, down 18.0% from 2021. Deal count experienced a more pronounced 34.6% drop, meaning that while fewer companies closed M&A deals, the sizes of those deals made up for some of the overall decline.



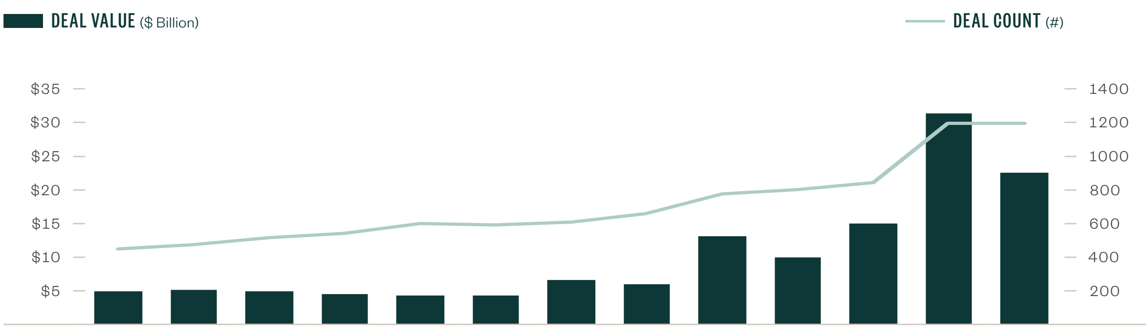
The share of deal count in the smallest category (under $100 million) dropped in 2022, while its share of the second-highest category ($1 billion–$5 billion) tripled. Smaller transactions that are less crucial for a company's development are naturally the first to be sliced from budgets when preparing for an economic downturn.

On the other end of the spectrum, only 12 M&A deals in this space exceeded $5 billion since 2010. The development of effective technologies with broad use cases and large addressable markets will contribute to long-term growth in these larger segments. Inflation and high lending costs will increase individual deal sizes in the short-term future as well.

The decline in aggregate M&A deal value in 2022, however, highlights how many companies are moving into preservation mode, as they're no longer flush with cash and willing to take on the risk of a new acquisition.

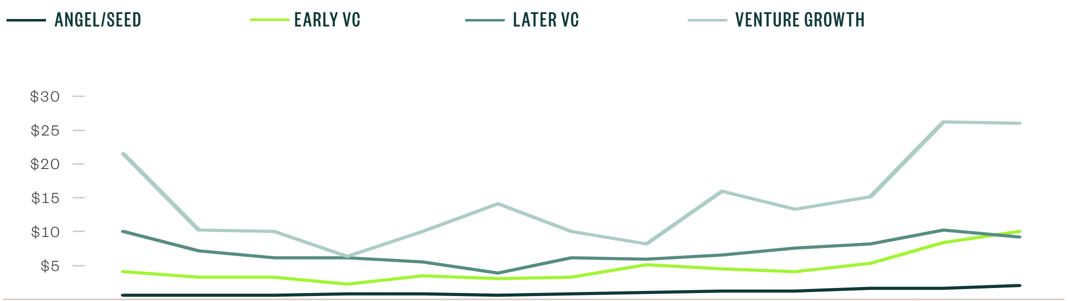
Investors are also likely to balk at any acquisitions that aren't mission critical as recession concerns persist.

FIGURE 22: US ESG VC Deal Activity



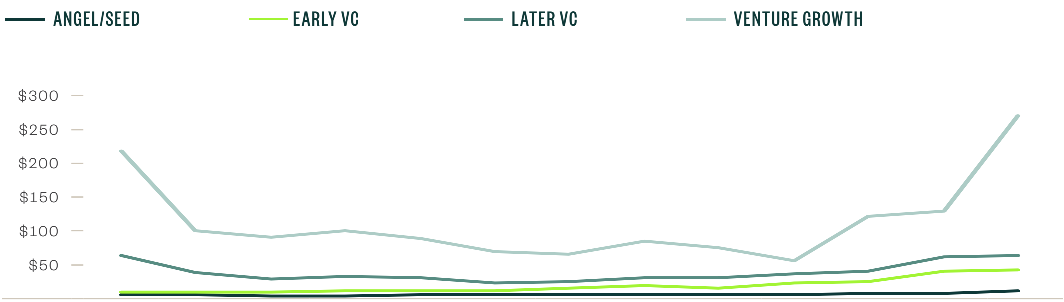
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
VALUE	$4.9	$5.1	$4.9	$4.4	$4.3	$4.2	$6.7	$6.0	$13.1	$9.9	$15.0	$31.4	$22.4
COUNT	443	474	511	540	601	588	605	653	772	801	844	1193	1193

FIGURE 23: Median US ESG VC Deal Size ($M) by Type



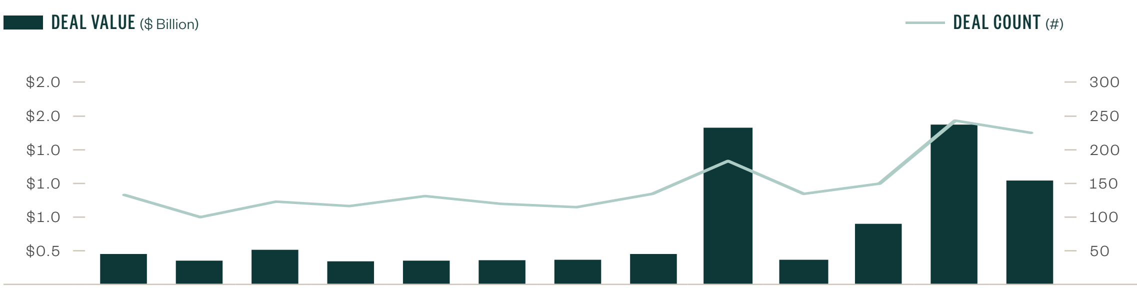
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
ANGEL/SEED	$0.5	$0.4	$0.5	$0.6	$0.8	$0.5	$0.7	$0.8	$1.0	$1.0	$1.4	$1.6	$1.9
EARLY VC	$3.9	$3.1	$3.1	$2.2	$3.3	$2.9	$3.1	$5.0	$4.4	$4.0	$5.2	$8.3	$10.0
LATER VC	$10.0	$7.0	$6.0	$6.0	$5.5	$3.9	$5.9	$5.8	$6.4	$7.5	$8.1	$10.1	$9.1
VENTURE GROWTH	$21.5	$10.2	$10.0	$6.3	$10.0	$14.0	$10.0	$8.0	$16.0	$13.2	$15.0	$26.0	$26.0

FIGURE 24: Median US ESG VC Pre-Money Valuation ($M) by Type



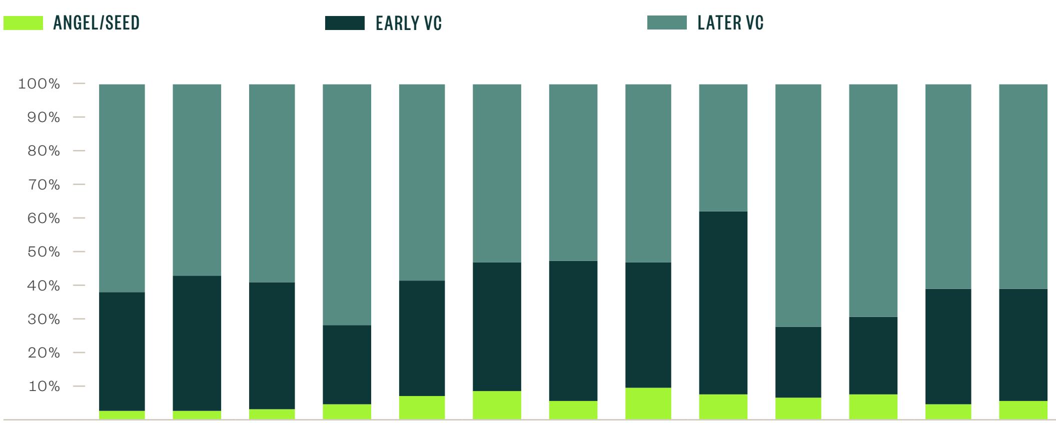
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
ANGEL/SEED	$4.4	$4.4	$3.0	$3.3	$4.0	$5.0	$4.6	$5.0	$5.0	$5.2	$6.8	$7.0	$10.0
EARLY VC	$9.0	$9.1	$8.7	$9.9	$10.9	$10.5	$13.6	$17.5	$15.0	$21.7	$25.0	$39.0	$42.0
LATER VC	$63.0	$38.4	$28.4	$31.7	$30.0	$21.7	$24.0	$30.3	$30.5	$35.4	$40.0	$61.0	$62.7
VENTURE GROWTH	$216.3	$98.9	$89.5	$98.8	$88.6	$69.0	$64.6	$83.2	$74.4	$55.0	$120.0	$128.0	$269.8

FIGURE 25: US ESG VC First-Financing Deal Activity



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
VALUE	$0.4	$0.3	$0.5	$0.3	$0.3	$0.3	$0.3	$0.4	$1.6	$0.3	$0.6	$1.7	$1.1
COUNT	145	114	135	130	144	133	128	147	177	147	150	246	229

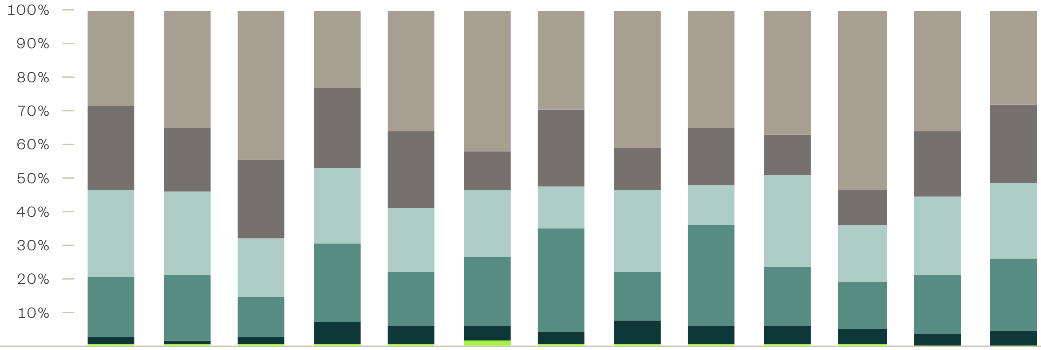
FIGURE 26: Share of US ESG VC Deal Value ($B) by Type



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	$0.1	$0.1	$0.1	$0.2	$0.2	$0.2	$0.3	$0.4	$0.7	$0.5	$0.7	$0.9	$0.9
	$1.5	$1.6	$1.4	$0.9	$1.1	$1.0	$2.1	$1.6	$5.1	$1.8	$2.1	$6.9	$5.4
	$2.6	$2.2	$2.1	$2.9	$1.9	$1.4	$2.6	$2.3	$3.5	$6.1	$6.2	$12.3	$10.0

FIGURE 27: Share of US ESG VC Deal Value ($B) by Series

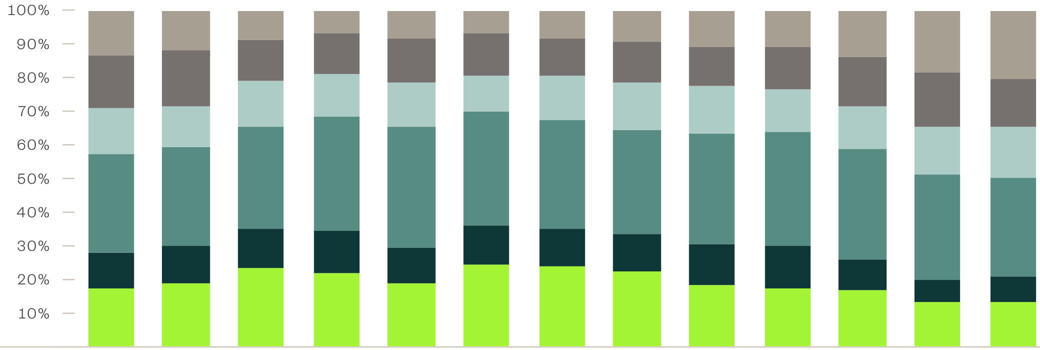
ANGEL | SEED | A | B | C | D+



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
ANGEL	$0.0	$0.0	$0.0	$0.0	$0.0	$0.1	$0.0	$0.0	$0.1	$0.1	$0.1	$0.0	$0.0
SEED	$0.1	$0.1	$0.1	$0.2	$0.2	$0.1	$0.2	$0.3	$0.6	$0.5	$0.5	$0.8	$0.8
A	$0.7	$0.8	$0.4	$0.5	$0.5	$0.7	$1.7	$0.7	$3.1	$1.5	$1.6	$3.8	$4.0
B	$1.0	$1.0	$0.7	$0.5	$0.6	$0.7	$0.7	$1.2	$1.2	$2.4	$2.0	$5.1	$4.1
C	$1.0	$0.8	$0.9	$0.5	$0.7	$0.4	$1.3	$0.6	$1.7	$1.0	$1.2	$4.3	$4.4
D+	$1.1	$1.5	$1.7	$0.5	$1.2	$1.5	$1.7	$2.1	$3.6	$3.2	$6.1	$7.8	$5.1

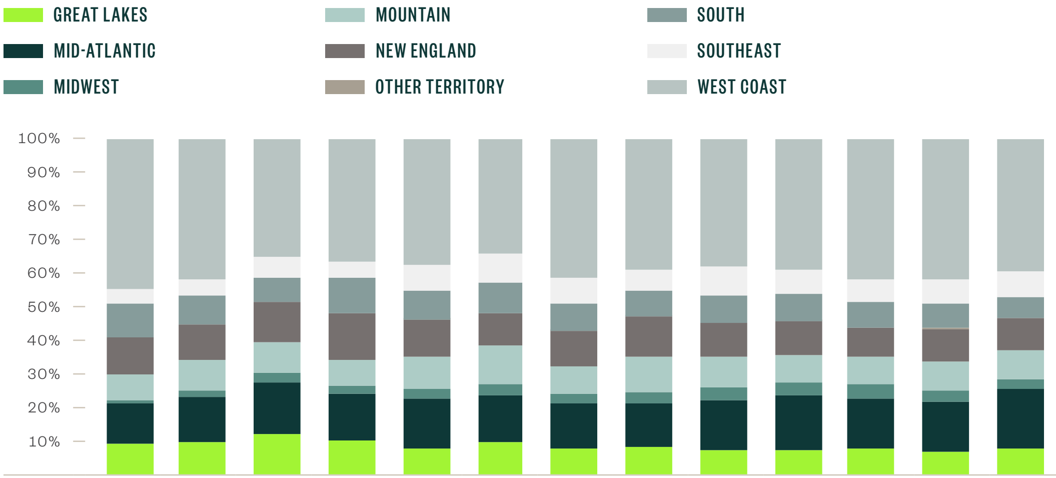
FIGURE 28: Share of US ESG VC Deal Count by Size

UNDER 500K | 500K-1M | 1M-5M | 5M-10M | 10M-25M | 25M+



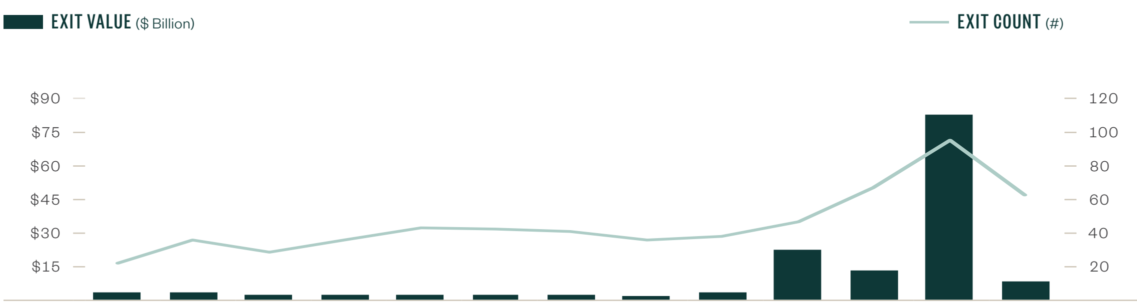
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
UNDER 500K	71	83	108	105	99	127	129	131	124	122	127	133	126
500K-1M	42	49	53	60	58	58	60	65	84	87	69	68	70
1M-5M	118	128	141	163	189	175	174	180	226	237	246	320	277
5M-10M	56	51	63	61	69	55	70	82	95	88	97	141	145
10M-25M	64	73	56	60	71	65	58	73	80	88	111	165	133
25M+	53	52	39	31	42	34	45	53	74	73	103	186	192

FIGURE 29: Share of US ESG VC Deal Count by Region



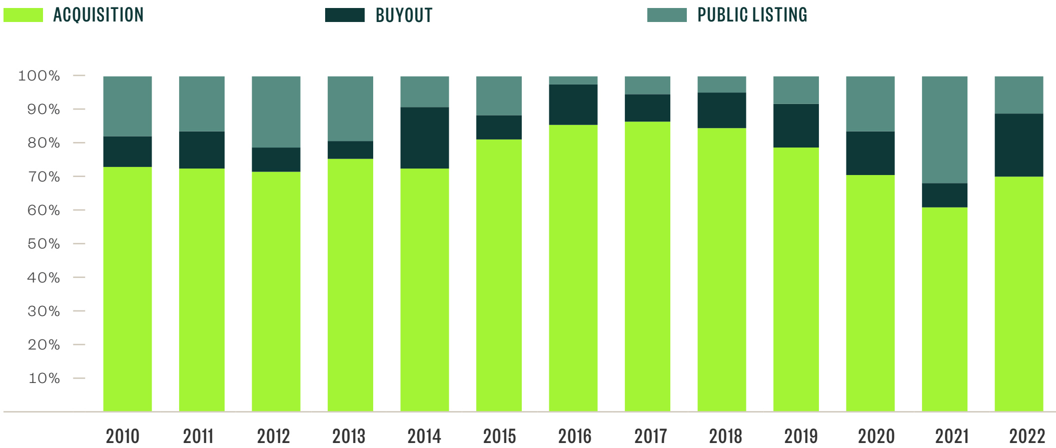
	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Great Lakes	42	46	61	54	47	58	47	53	56	60	64	79	94
Mid-Atlantic	52	63	79	75	88	81	80	86	115	130	129	180	209
Midwest	4	10	15	15	18	21	18	21	31	30	34	41	35
Mountain	35	42	47	42	58	67	50	71	69	66	71	103	107
New England	48	51	61	75	66	56	63	76	77	81	72	116	110
Other Territory	0	0	0	0	1	0	2	2	0	1	0	2	0
South	45	40	36	55	52	53	47	49	63	62	64	85	77
Southeast	19	23	33	28	45	50	47	41	68	59	58	90	90
West Coast	198	199	178	196	225	202	250	254	291	312	352	496	471

FIGURE 30: US ESG VC Exit Activity



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
VALUE	$3.0	$3.0	$2.1	$2.1	$1.9	$2.0	$1.8	$1.7	$3.3	$22.5	$13.0	$83.2	$8.3
COUNT	22	36	28	36	43	42	41	36	38	47	67	96	63

FIGURE 31: Share of US ESG VC Exit Count by Type



	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	16	26	20	27	31	34	35	31	32	37	47	58	44
	2	4	2	2	8	3	5	3	4	6	9	7	12
	4	6	6	7	4	5	1	2	2	4	11	31	7

VENTURE CAPITAL ACTIVITY SLOWED IN 2022, BUT INVESTORS REMAIN COMMITTED

Investment in environmental sustainability isn't new but has grown in response to increased demand and the emergence of ESG funds. Environmental deal value made impressive gains in 2021, as the rising tide of VC activity lifted all boats.

Notably, investment grew each year between 2019 and 2021, demonstrating resilience even during times of COVID-19 disruption. While other spaces experienced a decline in VC investment, the long-term viability of sustainable operations retained investor interest and dollars. Astounding growth occurred in 2021, with deal value more than doubling.

> "As interest in ESG funds continues to grow, stakeholders, including investors, lenders, customers, and employees, are demanding transparency, accuracy, and consistency of ESG reporting and disclosure of the related risks at levels equal to companies' financial reporting. Leading companies aggressively greening their supply chains also raised the bar for thousands of businesses that sell through or provide services to their retail channels."

– Justin Neff, Partner, ESG Assurance Services

In 2022, the market landscape worsened, and VC deal value declined by 28.6% year over year, but this wasn't enough to negate the increase that occurred in 2021. The first quarter of 2022 set the record for the number of deals closed in a single quarter, but deal count dropped moderately over the next two quarters before rebounding slightly in the fourth quarter.

By the end of the year, total VC deal value notched its second-highest annual level—only overshadowed by the year prior. Macroeconomic pressures contributed to some deflation in investment activity across the three verticals, demonstrating that although investors were committed to environmental innovation, they weren't immune to the global VC slowdown.

The recent rise in funding for innovative companies is reflected in deal activity for companies raising their first VC rounds as well. There was a large spike in first-time financing deal value in the space in 2018—due primarily to the exuberant response to electric vehicles. More than half that year's total deal value was attributed to Canoo (NAS: GOEV), which raised $1.0 billion in its first VC round in March 2018.

A second major year-over-year spike (165.0%) in first-time financing activity happened in 2021, alongside a proportionate rise in broader VC dealmaking. In 2022, while first-time financing deal value declined moderately (34.5%), it remained above the significant $1.0 billion threshold surpassed in 2021, indicating more sustained dealmaking for new entrants than in prior years. An influx of new companies investing in ESG verticals will have a delayed effect on overall deal activity and will contribute to competition for environmental innovation.

LOOKING FORWARD

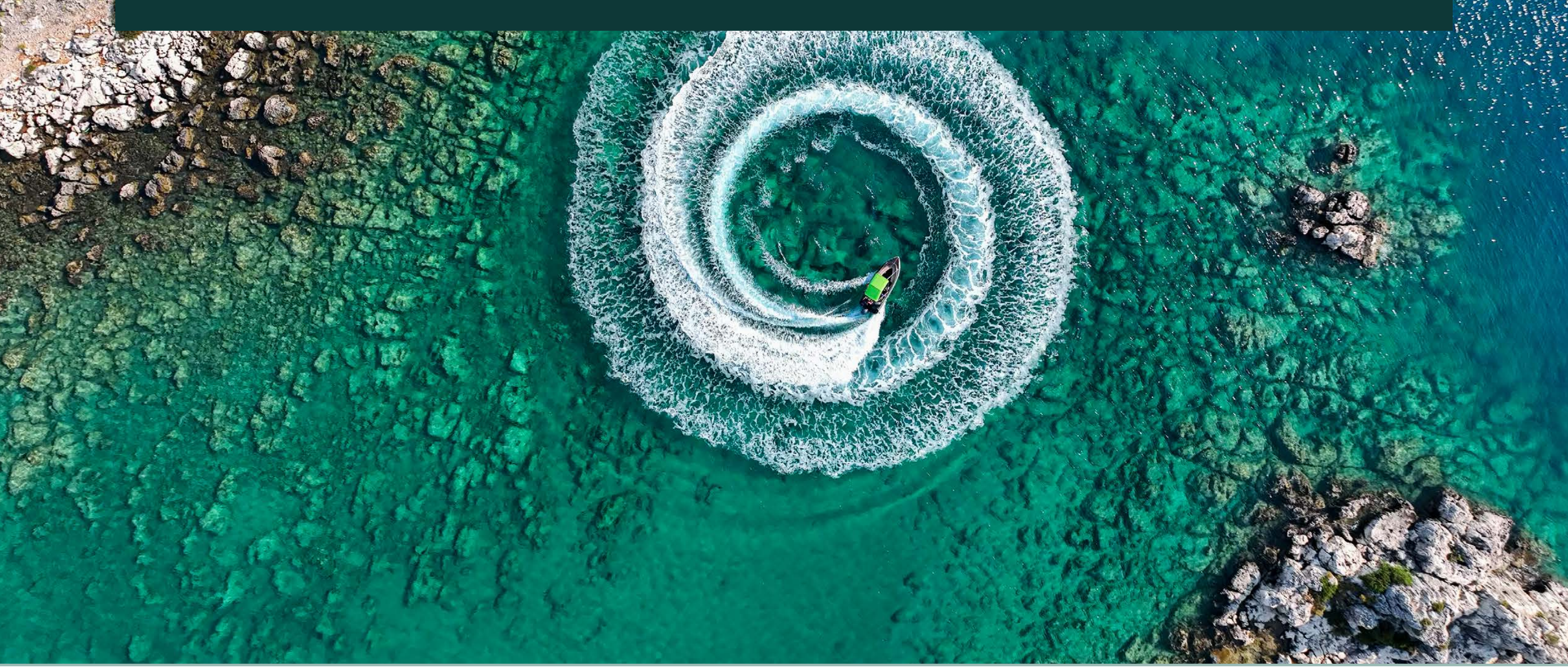
> "As organizations pursue ESG initiatives to support their values and meet the expectations of stakeholders, it's crucial to implement, track, report, and assure standards that accurately define and measure your progress."
>
> – Colleen Rozillis, Partner, ESG Services

Environmental investments solidified their presence in the private markets, generating more than $90 billion in deal value in 2022. VC deal activity in particular sustained a material rise over the past several years despite macroeconomic challenges that contributed to short-term declines.

While PE investment in environmental verticals demonstrated more cyclicality over the past decade, the maturation of certain technologies may solidify increased involvement in the coming years. As market volatility persists, companies with declining valuations should provide opportunities for PE firms, and these conditions may buoy PE interest.

The return on investment for ESG commitments will certainly set the tone for future levels of investment across all investor types, as will standardized ESG ranking systems and frameworks, although these will take time to converge and provide clarity.

The benefits of increasing the sustainability of supply chains, transportation, and food sources for a growing global population are numerous, and private investors and companies alike are working to make them possible.



SECTION FOUR

Methodology

The scope of ESG was defined using relevant PitchBook verticals of agricultural tech (agtech), clean technology (cleantech), and climate technology (climate tech).

M&A deal values were extrapolated. Otherwise, PitchBook's standard methodologies for report datasets covering M&A, PE, and VC were used. Full details can be found here.

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At Moss Adams, we believe in the power of possible. A business and personal advisory firm with more than 100 years of experience and 4,400 professionals across 30+ markets, we work with clients to meet the rising challenges and opportunities of tomorrow. Discover how we can help you go where you want to be next. Upward.

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