Cleantech comes of age*

Findings from the MoneyTree™ Report

A quarterly survey produced by PricewaterhouseCoopers and the National Venture Capital Association based on data provided by Thomson Reuters

*connectedthinking

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Cleantech has arrived with a bang. Can the momentum persist?

The race is on to make renewable energy and alternative fuels an economically viable alternative to fossil-based energy sources—a race played from Wall Street to Iowa's cornfields to Silicon Valley. In 2007, venture capitalists poured $2.2 billion into US cleantech companies. This marked a 45% jump from 2006, according to the *MoneyTree™ Report*, a quarterly study of venture capital investment activity in the United States, produced by PricewaterhouseCoopers and the National Venture Capital Association (NVCA) based on data provided by Thomson Reuters.[1] The adoption of clean energy has taken root too. Installation of solar energy systems in the US rose 125% in 2007 over 2006, wind turbine installations leapt 45%, and bioethanol production lifted 32%.

Despite signs of a weakening economy, the credit squeeze, and volatile public markets, investment in the sector is expected to persist, priming significant exit activity by 2009 and throughout 2010, then accelerating as more companies graduate through a well-fed pipeline. Investment in 2008 will likely continue to flow into wind and solar and channel out to an increasingly diverse range of sub-sectors, including next-generation biofuels and energy storage technologies.

Looking ahead, more activist federal energy policies—such as a cap-and-trade system for carbon-based emissions, expanded renewable energy mandates, or even a federal carbon tax—would further drive the sector. For the first time, leading US presidential candidates of both parties favor national carbon management programs.[2] Already, carbon-reduction legislation in California and several other states requires utility companies to meet renewable energy standards within specified time limits. (Though how utilities will procure the renewable resources to meet these goals—and, more importantly, who will foot the multi-billion-dollar bill—are still open questions.)

These factors will likely help narrow the price differential between clean and traditional energy sources—especially if fossil fuel prices remain at record levels and companies and consumers continue to invest in, and adopt, clean technologies.

The sector's fast-paced innovation and accelerated investment flows will inevitably produce winners and losers. But, as the broad cleantech sector matures, investors will also have more room to specialize within its niches and refine their strategies. Venture capitalists, for example, will increasingly build portfolios around specific cleantech themes, gravitating to areas where they can leverage their existing expertise. Corporate investors will be drawn to invest in or acquire cleantech companies that fit neatly into their value chains. Investors capable of focusing on technologies that play to their strengths and experience will be best positioned to benefit.

[1] PricewaterhouseCoopers and the National Venture Capital Association, *MoneyTree™ Report* (2008), www.pwcmoneytree.com.
[2] *The New York Times*, Election Guide 2008 (February 4, 2008).

An in-depth discussion

Cleantech investment surged in 2007.

In 2007, the US cleantech sector attracted $2.2 billion in venture-backed capital, up 45% from 2006, according to the PwC/NVCA *MoneyTree™ Report*.

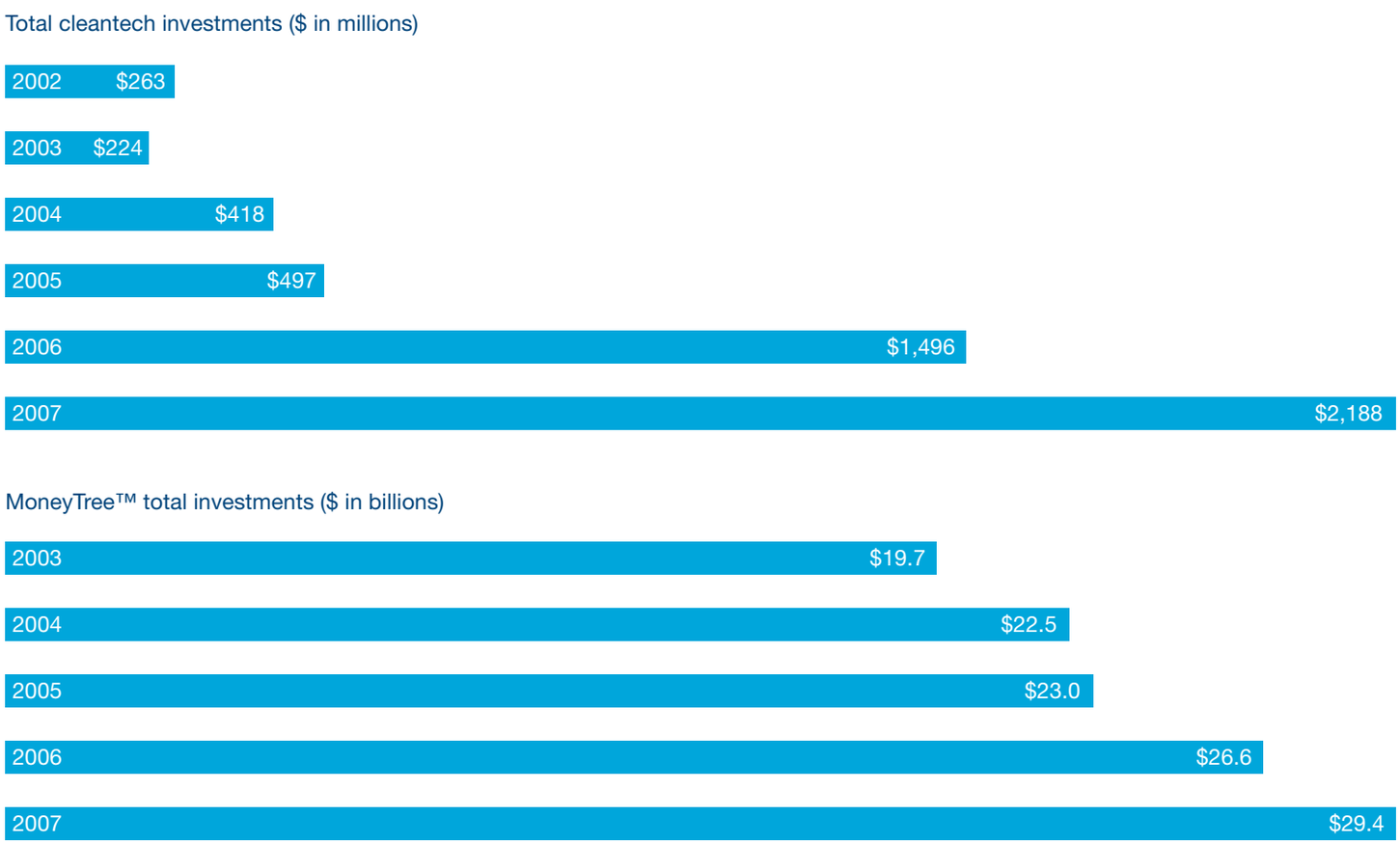
Over the last few years, cleantech has grown from a niche to a distinct asset class, so much so that cleantech investment was largely responsible for boosting the industrial/energy sector to fourth place among all industry sectors tracked in *MoneyTree*™ (behind software, biotechnology, and medical devices and equipment). In 2004, cleantech investment accounted for 1.9% of total venture investment; by 2007, it had captured 7.4%.

What does this 2007 momentum augur for cleantech investment in 2008? Venture capitalists seem bullish. Of the 170 venture capitalists responding to the National Venture Capital Association's 2008 Predictions Survey, 80% said they believe the sector will continue to grow.[3]

> "It feels like a steady wave that's just beginning. Not a bubble that's about to burst."
>
> Erik Straser
> Cleantech investment team leader
> Mohr Davidow Ventures

[3] National Venture Capital Association, "Venture Capitalists Predict 2008 Trends" (December 17, 2007).

Figure 1. Cleantech: The fastest-growing VC investment sector



Source: PricewaterhouseCoopers/National Venture Capital Association *MoneyTree™ Report* (data: Thomson Reuters)

Solar and wind installations, biofuels consumption all on steep curve

Cleantech industry growth rates have steeled the confidence of investors. According to the Solar Energy Industry Association, 2007 saw 314 megawatts of new solar energy systems installed in the US, up by 125% from the previous year.[4] American Wind Energy Association figures show that wind power installations in the US added 5,244 megawatts in 2007, a 45% jump over 2006.[5] Bioethanol production increased to an estimated 6.5 billion gallons in 2007, up 33% from 4.9 billion gallons in 2006, according to the Renewable Fuels Association.[6] The number of bio-refineries in the US climbed to 139 in 2007 from 110 in 2006.[7]

[4] Solar Energy Industry Association, "Solar Energy Is Economic Engine for U.S. Economy" (January 23, 2008).
[5] American Wind Energy Association Market Report, "Installed U.S. Wind Power Capacity Surged 45% in 2007" (January 2008).
[6] Renewable Fuels Association, *Changing the Climate: Ethanol Industry Outlook 2008* (February 2008).
[7] Ibid.

Cleantech: A sector or an idea?

The cleantech sector is not one tidy group, but rather an array of distinct sub-sectors:

- Solar, wind, and geothermal energy generation
- Biofuels
- Energy storage (power supplies such as batteries and uninterruptible power supplies, or UPS)
- Nuclear
- New pollution-abatement, recycling, clean coal, and water technologies

The common thread is that all of these sub-sectors represent technologies, services, or products aimed at reducing greenhouse gas emissions and other pollutants and promoting energy efficiency and the conservation of natural resources.

Competition among technologies will inevitably yield winners and losers. Already, challenges in some areas (e.g., price increases in both polysilicon for photovoltaic makers and feedstock for biofuels producers) have spawned next-generation technologies, many of which have attracted the interest—and capital—of investors. For example, pond scum (algae) is being used to produce synthetic petroleum. Waste-stream (i.e., non-feedstock) biomass products, such as wood scraps and even cow manure, are being transformed into a new generation of biofuels. Other promising innovations include higher-density energy storage, efficiency technologies, and more effective clean-water technology.

Sub-sector trends

Solar on the rise

Solar energy generation attracted the largest share of cleantech investment, with nearly $600 million committed in 39 deals. Four of the top ten cleantech deals in 2007 involved solar companies, including HelioVolt Corporation ($101 million), a maker of next-generation thin-film photovoltaic coatings; Advent Solar, Inc. ($76 million), a producer of photovoltaic cells; and SolFocus, Inc. ($64 million), which develops solar concentrator photovoltaic systems.

Wind investment up tenfold

Investment in wind energy generation companies grew to $115 million in nine deals in 2007—a relatively modest sum, but a significant increase from $10 million and three deals in 2006 and just $780,000 and a single deal in 2005. Everpower Renewables Corporation, which develops utility-grade wind energy projects, was the highest-funded wind energy company in 2007, receiving $55 million.

Power supplies climbs steadily

Power supplies—a sub-sector that includes batteries, fuel cells, and uninterruptible power supplies (UPS)—drew investments of $281 million in 2007, up from $234 million the previous year. A123Systems, Inc., a maker of next-generation lithium-ion batteries, received $64 million, the most of any energy storage company.

Biofuels stall

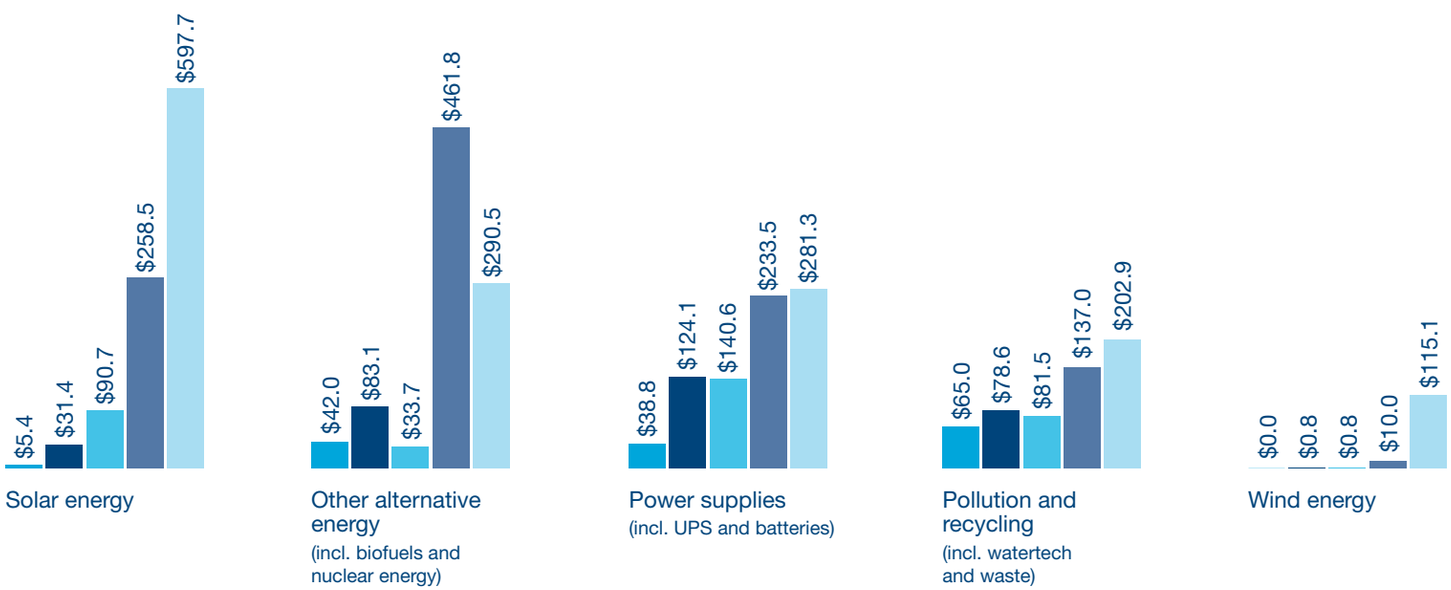
Investment in alternative fuels, including biofuels and nuclear energy, sputtered to $291 million in 2007, but that follows a surge of $462 million in 2006, when the sub-sector was the highest funded in cleantech. Despite this dip in investment, the sub-sector's deal number rose to 34 against 22 the previous year. Spiking corn and other feedstock prices have eroded bioethanol producers' profit margins and pricing power.

Pollution, recycling, watertech gain traction

The pollution and recycling sector (which includes water and waste technologies) emerged as a promising growth area, attracting 29 deals totalling $203 million in 2007, up from $137 million in 2006 and $82 million in 2005. As water shortage pressures intensify, watertech companies, particularly those focused on purification and filtration technologies, have increasingly attracted the attention of venture capitalists.

Figure 2. Solar is prime mover of cleantech growth

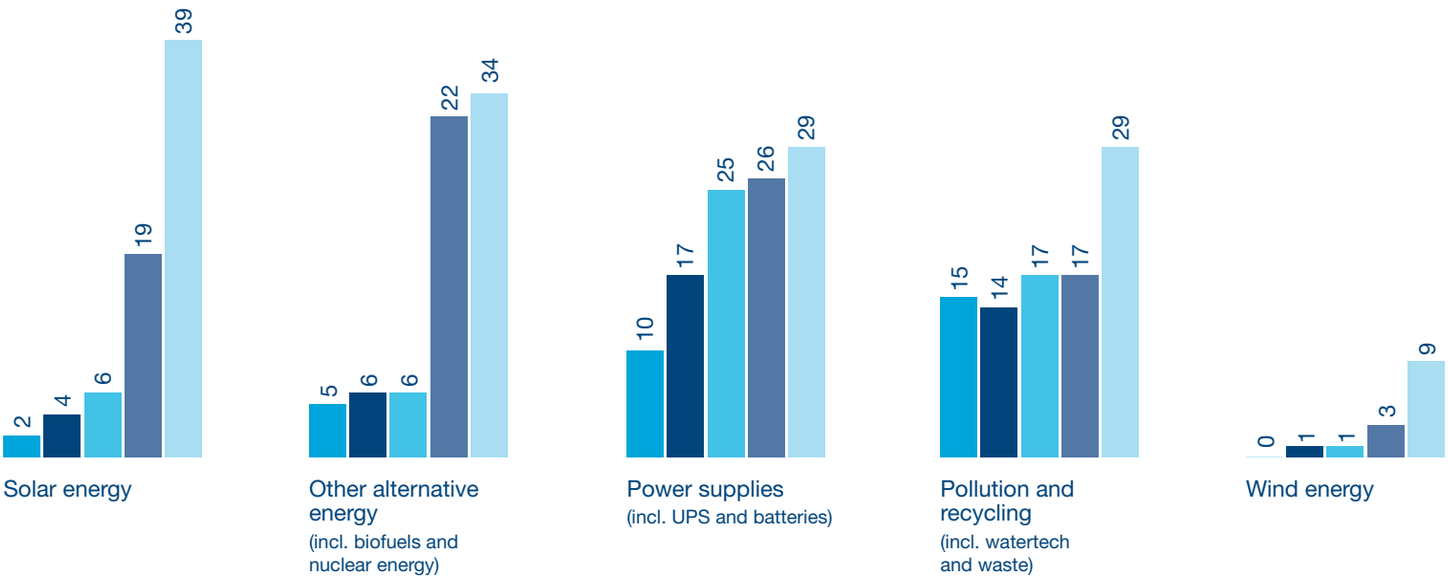
Top cleantech sub-sector investments ($ in millions)



Source: PricewaterhouseCoopers/National Venture Capital Association *MoneyTree™ Report* (data: Thomson Reuters)

Figure 3. Number of cleantech deals lifts sector-wide in 2007

Top cleantech sub-sectors deals (number of deals)



2003 2004 2005 2006 2007

Source: PricewaterhouseCoopers/National Venture Capital Association *MoneyTree™ Report* (data: Thomson Reuters)

Figure 4. Top cleantech deals in 2007

Amount invested	$115 million	$101 million
Company	GreatPoint Energy	HelioVolt Corporation
Business description	Natural resources company	Developer of technology for depositing thin-film photovoltaic coatings
Stage	Later stage	Later stage
Investors	Advanced Technology Ventures The Dow Chemical Company Draper Fisher Jurvetson Khosla Ventures Kleiner Perkins Caufield & Byers	Morgan Stanley Private Equity New Enterprise Associates Paladin Capital Group Yellowstone Capital, Inc.

$76 million

Advent Solar, Inc.

Photovoltaic
cell producer

Later stage

Battery Ventures
EPIC Ventures
EnerTech Capital
Fort Washington Capital Partners Group
Globespan Capital Partners
@Ventures

$70 million

Imperium Renewables, Inc.

Renewable
fuels producer

Later stage

Attractor Investment Management
BlackRock Private Equity Partners
Capricorn Management, LLC
Nth Power
Robeco Private Equity
Silver Point Capital, L.P.

$64 million

A123Systems, Inc.

Lithium-ion
battery producer

Later stage

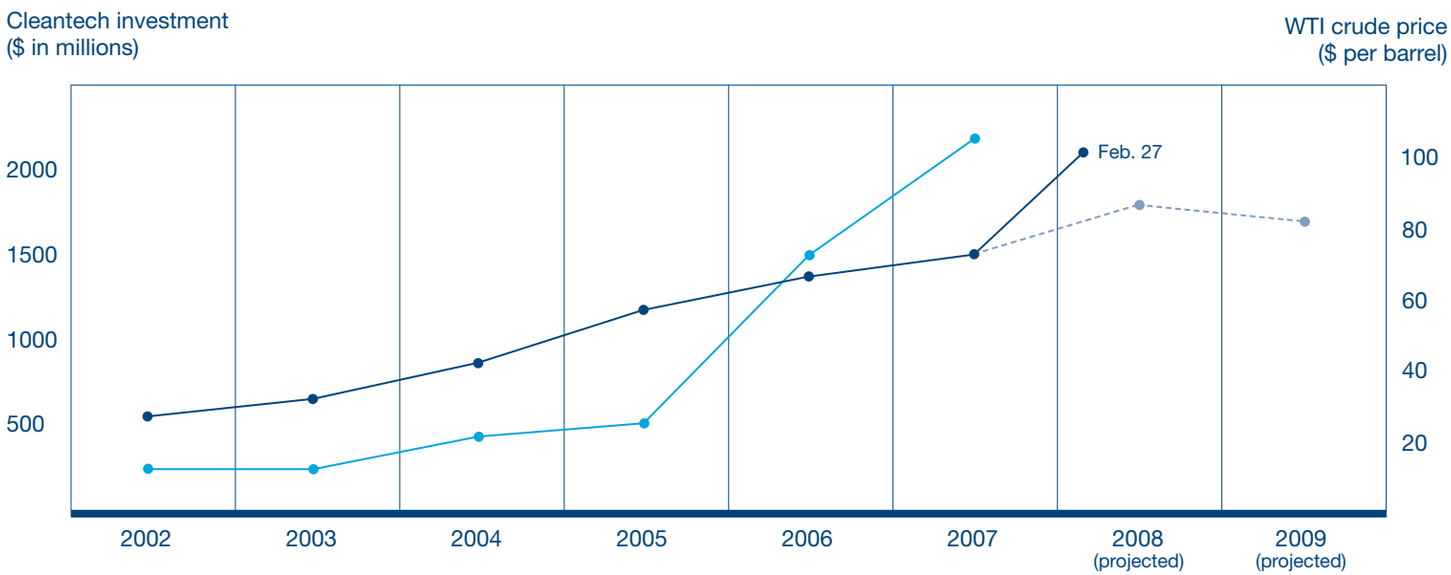
Alliance Capital Partners
CMEA Ventures
FA Technology Ventures
GE Equity
Massachusetts Institute of Technology
Motorola Ventures
North Bridge Venture Partners
OnPoint Technologies
Procter & Gamble Co.

Based on data from Thomson Reuters

Energy costs and security driving cleantech

Oil prices and cleantech investment have risen on nearly parallel tracks. Increasing global energy needs, unpredictable geopolitical forces, and the rising costs of oil exploration, extraction, and processing have coalesced to lift oil prices. Forecasts predict oil prices will remain high over the next two years. In February 2008, the US Energy Information Administration (EIA) forecast that the price of West Texas Intermediate (WTI) crude would settle within the $80 to $90 band through 2009; shortly after that announcement, oil futures pierced the $100-a-barrel mark.

Figure 5. Climbing in lockstep: Oil prices and cleantech investment



Cleantech investment ($ in millions)
WTI crude price ($ per barrel)

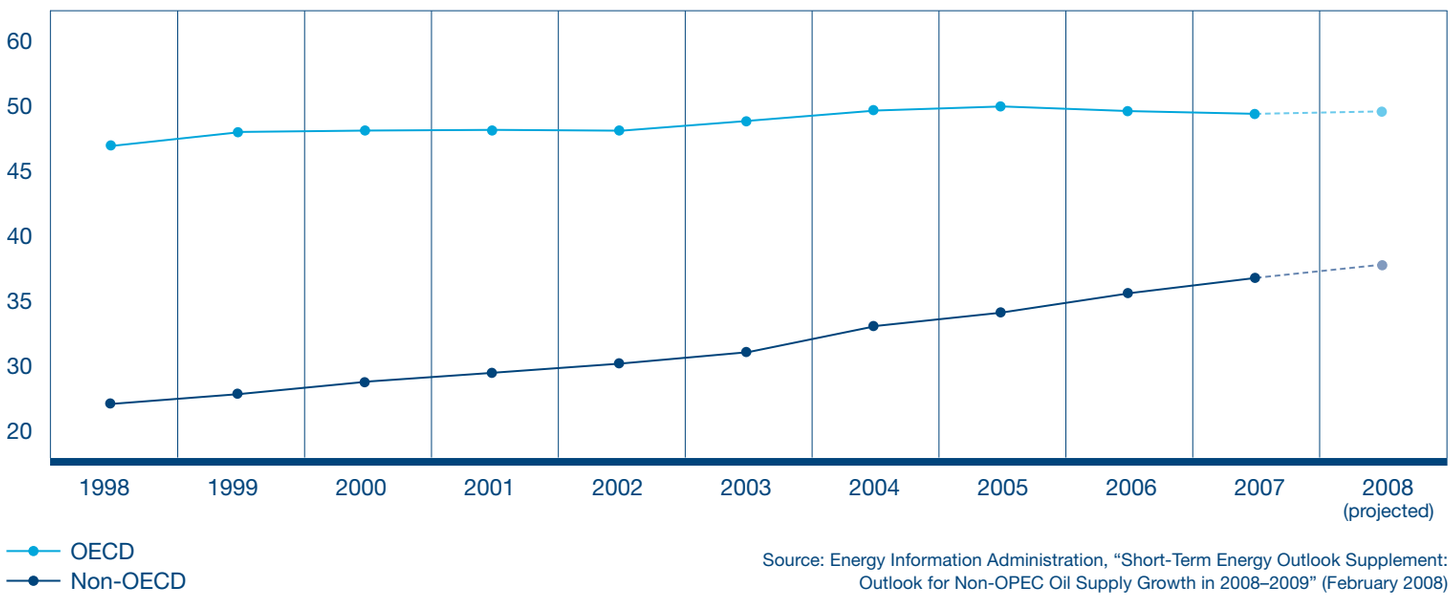
Sources: PricewaterhouseCoopers/National Venture Capital Association *MoneyTree™ Report* (data: Thomson Reuters); historical and projected oil prices from Energy Information Administration (published February 12, 2008)

Energy demand in emerging markets, especially China and India, is a key dynamic. According to the EIA, petroleum consumption in developing countries (those that are not members of the Organisation for Economic Co-operation and Development, or OECD) rose 27% between 2000 and 2007, compared to a 3% rise in OECD countries.

Concerns over energy security and costs are heating to uncomfortable levels both at the gas pumps and in boardrooms. Climate change worries persist globally, framing more stringent energy policies favoring cleantech development and adoption.

Figure 6. Appetite for oil: Growing in emerging economies, flat in developed economies

International petroleum consumption, OECD vs. non-OECD (million barrels/day)



Source: Energy Information Administration, "Short-Term Energy Outlook Supplement: Outlook for Non-OPEC Oil Supply Growth in 2008–2009" (February 2008)

Corporate and consumer attitudes shift regarding climate change

Corporate and consumer attitudes are tipping toward energy efficiency and the creation of a low-carbon economy. In a 2007 global survey of 1,200 senior executives carried out by the Economist Intelligence Unit (in association with PricewaterhouseCoopers), 40% of those surveyed stated that reducing greenhouse gas emissions and/or waste and pollutants over the next five years is a leading or important priority within their company; 26% agreed that they had performed outstandingly or very strongly in this area in the previous five years.[8]

Separately, PwC's *11th Annual Global CEO Survey* (also conducted in 2007) found that 64% of CEOs are concerned about rising energy costs and 39% are concerned about increased carbon emission regulations. In that same survey, 45% expressed concern about the potential of energy security issues to threaten their businesses' growth prospects.[9]

Climate change is also becoming more important in the popular consciousness, with 33% of those surveyed in a 2007 *Washington Post*–ABC News poll ranking it as the "single biggest environmental problem the world faces," up from 16% in 2006.[10]

[8] Economist Intelligence Unit, sponsored by PricewaterhouseCoopers, *Doing Good: Business and the Sustainability Challenge* (February 2008).
[9] PricewaterhouseCoopers, *11th Annual Global CEO Survey* (February 2008).
[10] "*Washington Post*–ABC News Poll: Environment Trends," *The Washington Post* (April 20, 2007).

Autogas LPG	0.709
E85 bio.power verbio	0.989
BioDiesel verbio	1.229
Diesel	1.259
Benzin	1.359

Exit outlook:
Priming the pump for IPO and M&A activity

2009–2010 may yield new class of venture-backed IPOs

To date, activity in venture-backed exits in cleantech has been limited. Since 2005, only five initial public offerings have been listed on NASDAQ by cleantech companies funded by venture capital groups.[11] The average amount raised by these IPOs was $77 million, with post-IPO value for these companies averaging $245 million.

Jittery financial markets have conspired to dampen hopes for a favorable IPO market going into 2008—not just for cleantech, but across all industries. In early January 2008, Imperium Renewables, a venture-backed biodiesel producer that operates the largest biodiesel plant in the US, shelved IPO plans to raise as much as $345 million, citing "current market conditions."[12] Soaring prices for soy and corn—commodities used to make biodiesel—have added margin pressures to biodiesel producers. Renewable Energy Group, Inc., an Iowa producer of soy-based biofuels, filed for an IPO in July 2007 and is still working toward the process of an offering.[13] GT Solar, a solar wafer producer based in Merrimack, New Hampshire, filed to go public in April 2007 and has reported that an IPO may happen in summer 2008, depending on market conditions.[14]

[11] PricewaterhouseCoopers and the National Venture Capital Association, *MoneyTree™ Report* (2008), based on data provided by Thomson Reuters.
[12] "Biodiesel Maker Imperium Withdraws IPO Plans," Reuters (January 3, 2008).
[13] Jerry W. Kram, "Biodiesel Firms Plan IPOs," *Biodiesel Magazine* (September 2007).
[14] Steve Gelsi, "GT Solar names new CFO, Eyes IPO," Marketwatch.com (February 14, 2008).

As cleantech companies graduate to IPO-ready levels, they may face greater scrutiny by public markets and acquirers than other established industries, and perhaps be held to higher standards. “It’s my perspective that it’ll take at least five years after creating a new company [before] one can expect significant exits,” said John Steuart, managing director of Oakland, California, VC firm Claremont Creek Ventures and a veteran of building and investing in technology companies. “The capital markets will be more receptive to cleantech companies but currently it’s more challenging to do an IPO with a cleantech company than, for example, with a biotech or medical devices company, which seems to have a better chance to go public with lower revenues. This is because cleantech is a newcomer.”

The pipeline of venture-backed cleantech companies continues to be filled at a healthy clip. According to the *MoneyTree™ Report*, 2007 saw an upswing with 97 start-up and early-stage venture-backed fundings—or about 25% of all investment in 2007. In 2006, there were only 52 deals, representing 18% of total investment.

Is cleantech primed for M&A activity?

More attractive valuations will likely attract more M&A interest in cleantech companies. Today, there is a general consensus among venture capitalists that current valuations are difficult to justify. Of the 171 respondents to the National Venture Capital Association's 2008 Predictions Survey (conducted during the sector's heady rise in 2007), 61% agreed that the cleantech sector is overvalued—but 55% of the respondents also predicted that deal volume in the sector will rise.

The strong 2007 run-up in cleantech stock prices corrected in early 2008, a development that may moderate equity valuations of privately held cleantech companies, making them more attractive acquisition candidates to companies looking to diversify into sustainability-driven technologies.

So far, M&A activity around venture-backed cleantech companies has been thin. From 2002 to 2007, there were 21 M&A deals made by venture-backed cleantech companies, according to Thomson Reuters data (using the SIC codes applied to the *MoneyTree™ Report*). Among this group, the average amount of financing received was $19 million, and the average deal size was $33 million.

"The market is still a couple years off before any significant M&A activity in venture-backed cleantech companies," said Erik Straser of Mohr Davidow Ventures. Straser, who has led investment in 12 cleantech companies at Mohr Davidow over the past five years, said that he expects more corporate investors, hedge funds, and private equity groups will buy stakes in cleantech companies—specifically in areas such as coal gasification, batteries, water technology, transportation (e.g., companies that develop electric or hydrogen-powered cars), and efficiency technologies (e.g., companies that monitor and control industrial energy use). "In 2009 and 2010 we'll see lots of acquisitions from large companies that want to diversify into cleantech," said Straser. "And we'll see more IPOs at that time, as well. These companies are large corporate investors and they can afford to wait."

If worsening market conditions and an economic downturn create an inhospitable IPO climate in 2008, stronger companies will still be prime M&A targets, said Patricia Glaza, executive director and CEO of the Clean Technology and Sustainable Industries Organization. “Companies that were looking to raise capital in the public markets to finance operations will need bridge funding or additional rounds to get them through a general [IPO] down-cycle in 2008. These companies could become attractive M&A targets if their investment syndicates grow impatient or unwilling to fill this gap.”

Semiconductor maker Applied Materials Inc., for example, has purchased its way into the solar energy business, building its Solar Business Group through acquisitions that include Italian microelectronics maker Baccini (for $334 million in early 2008); Switzerland-based HCT Shaping Systems SA, a producer of thin-film silicon wafer technology (for $438 million in 2007); and Applied Films Corp., a Colorado-based producer of thin-film technology (for $464 million in 2006).[15]

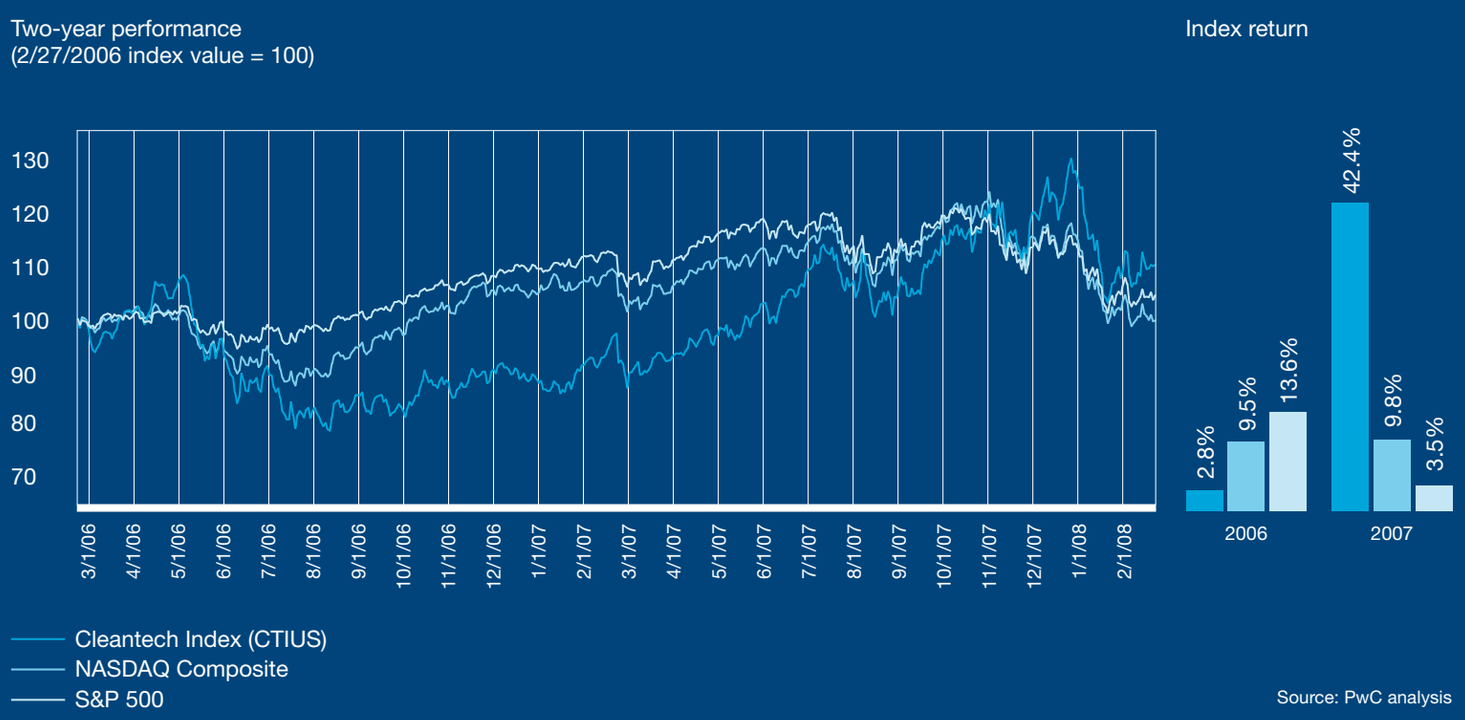
As cleantech matures, acquisitions by cleantech companies are expected to drive consolidation and vertical integration. In 2007, SunPower Corp., a Silicon Valley producer of solar panels and cells, acquired large-scale solar power systems provider PowerLight Corp., of Berkeley, California.[16]

[15] Jennifer L. Schenker, “Fueling the Solar Energy Boom,” *BusinessWeek* (February 1, 2008).
[16] SunPower Corp. press release, “SunPower Closes PowerLight Acquisition” (January 11, 2007).

Cleantech corrects

Publicly listed cleantech companies surged in 2007, outperforming the broad indicators. The Cleantech Index (an index tracking publicly listed cleantech companies, compiled by The Cleantech Group LLC) rose by 42.4% for the year, compared to the NASDAQ Composite's 9.8% gain and the S&P 500's 3.5%. In early 2008, however, cleantech indices experienced a relatively sharper downturn than that of the broader markets.

Figure 7. Publicly traded cleantech companies make big run in 2007, stumble in early 2008



Source: PwC analysis

Corporate investment

Corporate investment has gained momentum as companies look to diversify.[17] "One model is for these cleantech companies to make strategic alliances with the Fortune 100 companies," said John Steuart of Claremont Creek Ventures. "For example, they can trade sales and marketing rights for a capital investment. Or they can sell the licensing rights for a product in exchange for an investment."

In 2007, for instance, Chevron Texaco Technology Ventures invested in three cleantech companies: BrightSource Energy Inc., a developer of utility-scale solar plants; Konarka Technologies, Inc., a developer of photovoltaic materials; and Southwest Windpower, a producer of small wind turbines.[18] Also in 2007, GE Equity invested in A123Systems, a lithium-ion battery maker that attracted a total of $64 million in venture funding for the year.[19]

[17] PricewaterhouseCoopers, *The Global Deals Marketplace: Peak, Plateau or Paradigm Shift?* (February 2008).
[18] PricewaterhouseCoopers and the National Venture Capital Association, *MoneyTree™ Report* (2008), www.pwcmoneytree.com.
[18] Ibid.

The legislation front: Tipping in cleantech's favor

Production tax credit limbo could slow solar, wind installations…

Federal tax incentives have helped drive cleantech's growth considerably in the last two years. Looking ahead into 2008 and beyond, however, uncertainty stills hangs over continued federal support of renewable energy industries—particularly the wind and solar segments. In December 2007, a $21.5 billion package of renewable energy tax incentives that included corporate production tax credits (PTCs)[20] was dropped from the Energy Independence and Security Act of 2007.

PTCs currently in place are expected to cost the government about $3 billion over ten years, but a provision to extend these credits for one year beyond their December 21, 2008, expiration was pulled from the economic stimulus package passed in early 2008.

Most industry observers believe the PTCs will be extended sometime in 2008. Yet pushing the extension so close to the expiry date may lead to the shelving of some renewable energy projects, such as installation of wind turbines and large-scale solar systems, which typically take well over one year to complete. "I believe the PTCs will be extended sometime in 2008, but the delay may put companies [with plans to install renewable energy systems] in a holding pattern, with financing of new projects put on hold," said Patricia Glaza of the Clean Technology and Sustainable Industries Organization.

[20] PTCs offer tax breaks based on the number of kilowatt hours of electricity produced. Those cut from the Energy Independence and Security Act of 2007 covered wind, solar, geothermal, and biomass electricity generation.

…but is not expected to slow private investment in solar, wind

Some investors don't see the PTC issue impeding capital flows into wind and solar companies. "Most of the renewable energy companies that are getting funded won't live or die by the PTCs. It's important, but not critical," said Mohr Davidow's Straser. Instead, he said, it raises a larger issue around the lack of an aggressive national alternative energy policy. "The US government has not been a leader in stimulating cleantech growth…It has been a laggard. We're at risk of giving away the greatest strategic industry of the 21st century." The European Union, in contrast, has targeted 20% of its energy to be derived from renewable resources by 2020.

New federal mandates: Biofuels boost?

Though it did little to help solar and wind, the Energy Independence and Security Act of 2007 was a boost to the biofuels industry, mandating a renewable fuel standard, requiring fuel producers to use at least 36 billion gallons of biofuels by 2020, and setting a new national fuel economy standard of 35 miles per gallon by 2020. It also calls for one billion gallons of biodiesel and biomass-based diesel to be blended into diesel stocks by 2010.[21] These mandates come, however, at a time when the biofuels industry is beset by commodity squeezes and pressures from spiking feedstock prices, especially for corn and soybeans.

[21] White House News, Office of the Press Secretary, "Fact Sheet: Energy Independence and Security Act of 2007" (December 19, 2007).

The effects of the Energy Independence and Security Act's mandates for renewable fuels are expected to further lift cereal prices and, ultimately, the cost of biofuels—by 17% in the next year on wholesale prices of corn-based ethanol and by 37% for soy-based biodiesel, according to a January 2008 University of Missouri study. The study also predicts that production of ethanol would need to rise by 24% and soy-based diesel by 89% to meet the Act's mandated levels.[22]

However, development and scaling of next-generation biofuels may lead to commercially viable biofuels that are not wholly dependent on food crops. Production of cellulosic ethanol, for instance—a fuel made from non-food products such as non-seed crop waste, wood, corncobs, switchgrass, leaves, and stalks—is an existing technology, but commercial activity around its production is in its infancy. In November 2007, Range Fuels Inc. broke ground on the first commercial cellulosic ethanol bio-refinery in the US, located in Soperton, Georgia, and utilizing wood scraps from the timber industry as biomass. Biofuel activity in the US is definitely on the upswing overall, with total biofuel patents in the US numbering 2,800 over the 2006–2007 period, compared to 555 for solar and 282 for wind.[23]

[22] Duane Dailey, "Biofuel Mandates Increase Demand for Corn, Soy Oil," *Delta Farm Press* (January 18, 2008).
[23] Ronald Kamis and Mandar Joshi, "Biofuel Patents Are Booming," Cleantech.com (January 23, 2008).

Election cycle pause

Consideration of significant federal policy on renewable and alternative energy is not expected until a new presidential administration arrives in 2009. However, the fact that the leading presidential candidates among both Republicans and Democrats support a mandatory cap-and-trade system to cut carbon emissions could spur further investment in, and adoption of, cleantech technologies. Additionally, longer, multi-year expiry terms of PTCs targeted to renewable energy sources would increase companies' ability to plan longer-lead, multi-year energy projects, such as the installation of wind energy systems.

State-level cleantech support, led by California

Introduced at the state level, and varying state by state, renewable portfolio standards (RPS) are targets that require utilities to produce a certain percentage of electricity from renewable resources by a specific date. So far, 26 states have adopted RPS, and more are in the process of doing so.[24] Renewable energy sources that meet the standard include electricity created from geothermal, bio-gas, solar, wind, and landfill gas.

California continues to be at the vanguard in mandates supporting renewable energy. In 2006, Governor Arnold Schwarzenegger signed a bill requiring the state's three biggest utilities—Pacific Gas & Electric, Southern California Edison, and San Diego Gas & Electric—to produce at least 20% of their electricity from renewable energy sources by 2010. Additionally, in January 2008 the California Public Utilities Commission approved a "feed-in" tariff that requires utilities to purchase energy produced by their own customers' renewable energy systems.[25]

[24] "States with Renewable Portfolio Standards," The Pew Center on Global Climate Change, www.pewclimate.org (August, 2007).
[25] US Department of Energy, "California Approves Feed-in Tariffs, Rewards Energy Efficiency," Energy Efficiency and Renewable Energy (EERE) News (February 6, 2008).

Cleantech's implications for investors—and businesses.

Over the past several years, an alignment of political, environmental, and economic developments has fueled the cleantech sector. The concurrent surge in private investment suggests the sector has gained critical mass as a distinct—albeit relatively small—asset class. Over the next two years, the sector is positioned to maintain its momentum in attracting investment, building strong exit potential, and bringing new technologies to market.

This increased investment signals growing expectations for wider adoption of clean technologies—and, naturally, their potential for investment returns. Existing and developing technologies within the cleantech sector will benefit only to the extent to which companies commit—voluntarily and otherwise—to improving energy efficiency, reducing carbon emissions, and adopting technologies that help sustain clean and affordable water supplies.

The cleantech sector is generating excitement amidst—and, in large part, as a product of—increasing concerns about the environment, energy costs, and security. Yet, it is inevitable that some technologies will endure while others will falter. Growing most cleantech companies is a long-lead-time, capital-intensive venture. The race to fund technologies that can break from the pack and become widely adopted is turning out to be more a marathon than a sprint. The most astute investors appreciate that cleantech holds enormous potential, but opening that potential will require both patience and specialization in specific sub-sectors—as well as the continued perfect alignment of the factors that brought cleantech into investors' crosshairs in the first place.

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