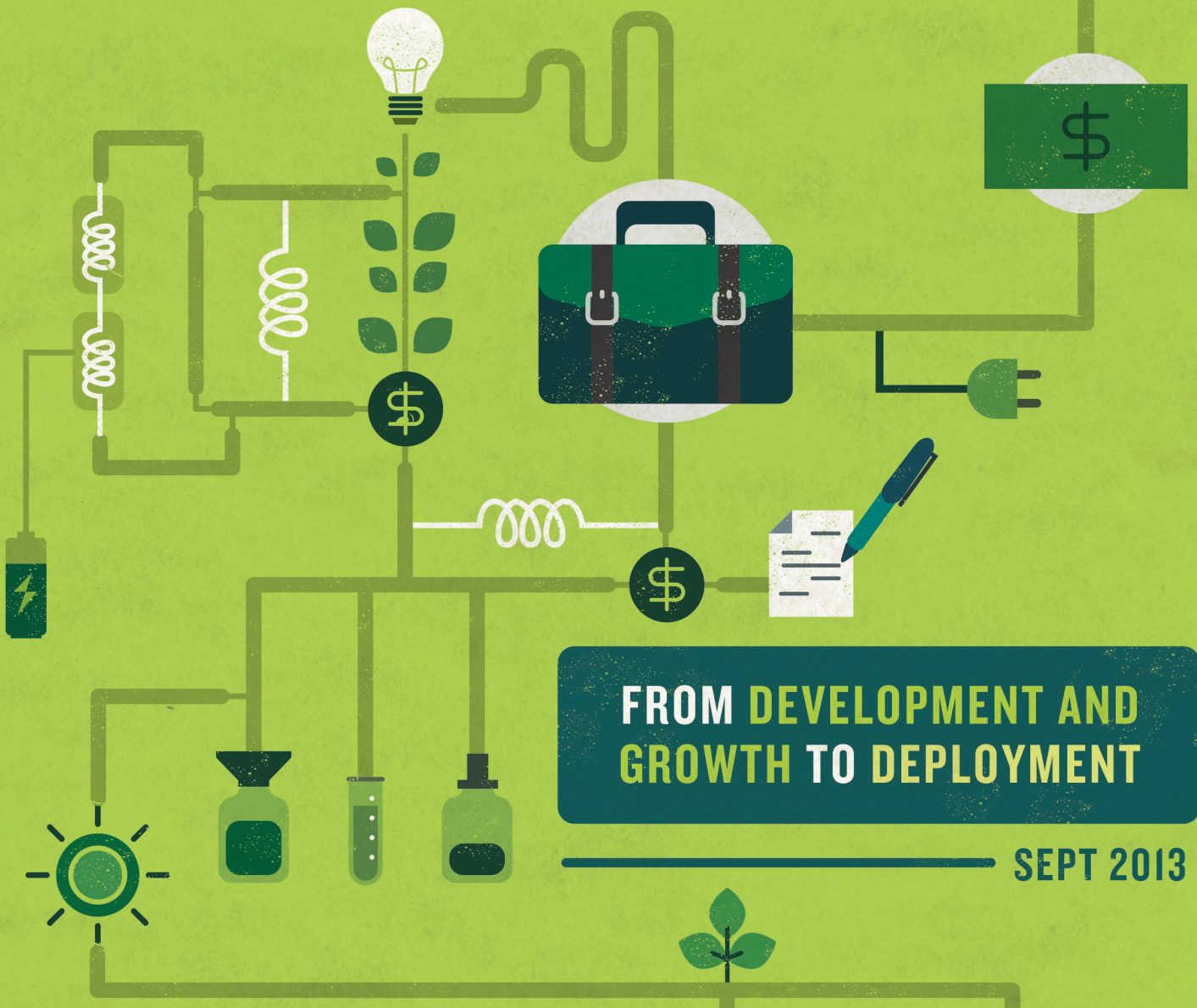
NEXT 10

CLEANTECH INVESTMENT:

A DECADE OF CALIFORNIA'S EVOLVING PORTFOLIO



FROM DEVELOPMENT AND GROWTH TO DEPLOYMENT

SEPT 2013

NEXT 10 IS AN INDEPENDENT NONPARTISAN ORGANIZATION THAT EDUCATES, ENGAGES AND EMPOWERS CALIFORNIANS TO IMPROVE THE STATE'S FUTURE.

NEXT 10 IS FOCUSED ON INNOVATION AND THE INTERSECTION BETWEEN THE ECONOMY, THE ENVIRONMENT, AND QUALITY OF LIFE ISSUES FOR ALL CALIFORNIANS. WE PROVIDE CRITICAL DATA TO HELP INFORM THE STATE'S EFFORTS TO GROW THE ECONOMY AND REDUCE GLOBAL WARMING EMISSIONS. NEXT 10 WAS FOUNDED IN 2003 BY BUSINESSMAN AND PHILANTHROPIST F. NOEL PERRY.

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PRODUCED BY NEXT 10

F. Noel Perry
Sarah Henry
Marcia E. Perry

PREPARED BY COLLABORATIVE ECONOMICS

Doug Henton
John Melville
Renae Steichen
Janine Kaiser
Jessie Oettinger

DESIGNED BY CHEN DESIGN ASSOCIATES

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SUMMARY

The clean technology (cleantech) sector is a vital part of the economy, generating new jobs and businesses while making California's transition toward a cleaner and more efficient economy possible. Through the creation of products and services that assist this shift towards clean, low-carbon-based products and processes, cleantech companies are changing the economic and global landscape.

Investment fuels cleantech innovation. In the last few years, funding for cleantech companies has evolved as early technologies, like solar and wind power, have taken hold and new technologies, such as advanced biofuels and more efficient batteries, continue to emerge. A decade's worth of data provides a holistic view of how the cleantech sector is maturing, with investments in companies ranging from early stage angel funding to late stage project finance. Recent trends show that while early stage venture capital (VC) ebbed after a surge in experimentation, later stage investments have increased in the last five years.

Additionally, as companies grow and clean technologies become mainstream, different types of investors are participating in the market in a more substantial way. Corporations are playing an increasingly prominent investment role as they identify strategic growth prospects and establish valuable partnerships to deploy cleantech products and services. Though down from peak levels, VC investors are still actively engaging with cleantech companies. In addition, institutional and public investors have increasing opportunities to invest in technology implementation and publicly-traded cleantech companies. This report illustrates the emerging trends in California's cleantech investment portfolio and shows that financing for development, growth, and deployment of cleantech products has grown over the past ten years while new investors have become involved.

Key findings in this report include:

- While many focus on VC investment as an indicator of growth in the sector, it is important to expand that view as cleantech products and services move toward deployment.
- Development & Growth investment contributed to the expansion of the cleantech sector over the last decade. This direct investment into California startup companies is more than three times higher in the first half of 2013 compared to the first half of 2003. More recently, investment in Development & Growth in California slid about 44 percent from the second half of 2012 to the first half of 2013 (from about $1.5 billion to $870 million). Venture capital specifically decreased less than Development & Growth overall, down about 22 percent in the same period (from $870 million to $680 million).
- Project financing for the deployment of cleantech products was more than three times higher in 2012 than in 2007. California's estimated share of project finance investment in the United States rose above 40 percent in the first half of 2013, though investment levels were down from the spike in the second half of 2011 and down about three percent from the second half of 2012.
- Despite the drop-off since the peak of investment in 2010 and 2011, there are twice as many VC and corporate investors involved in the cleantech sector today than in the first half of 2003, when the industry was just taking off.
- Corporations play a pivotal role as strategic investors in cleantech companies. Over the last ten years, the number of VC deals with corporate involvement has increased and at least 24 percent of cleantech VC deals had corporation participation over the last three years. In the last decade, the average VC deal amount has been an average of 48 percent higher if corporations were involved in the round.

CALIFORNIA'S CLEANTECH INVESTMENT PORTFOLIO

Known for being at the forefront of innovation, California is spurring change in industries of all shapes and sizes; the cleantech sector is no exception. This report explores a decade of cleantech investment in California, detailing an evolving portfolio at different stages in the life of a company, ranging from research and development of a new product, to company expansion, to product release or installation.

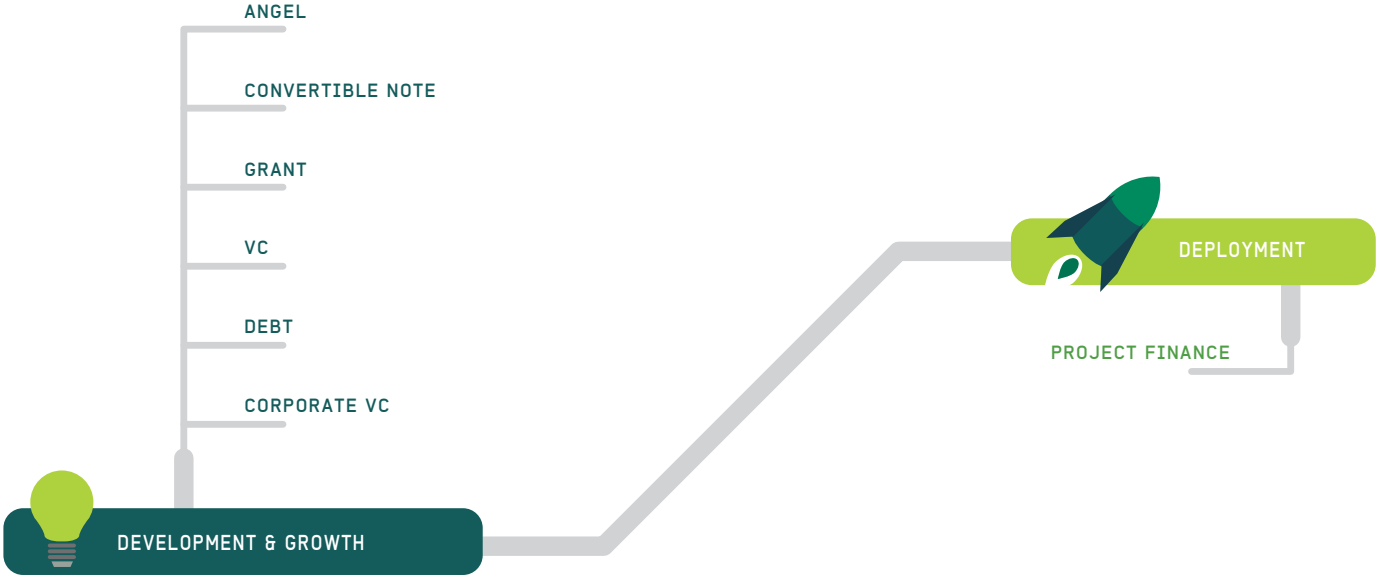
Cleantech companies utilize different types of investments, depending on the activities and stage of the company. While many focus on VC investment as an indicator of growth in the sector, it is important to broaden that view as cleantech products and services move toward deployment. Cleantech companies have made tremendous progress developing new technologies in the last ten years. Different types of investment have gained prominence as companies prove that the developing technologies are viable, reliable and profitable in California's economic and policy context.

California's cleantech investment portfolio can be grouped into two main categories of company activities: Development & Growth and Deployment (Figure 1).[1] The Development & Growth category includes investments into startup companies, such as government grants or angel investment to fund research and development of a product, as well as VC or debt financing to help scale company capacity or commercialize a product. The Deployment category focuses on implementing technologies and includes investments such as project financing to fund installations of cleantech products. Although the two categories represent a simplification of the wide range of investments and stages in cleantech companies' paths, they are helpful to illustrate the general roles and diversity of cleantech investment in California.

There is extensive variation within the cleantech sector regarding the types and amounts of investment required in commercialization and implementation. Some cleantech products are capital intensive to develop and grow to commercial scale. For example, researching and manufacturing a new type of window or alternative vehicle engine may require more Development & Growth capital or rounds of investment than an online energy efficiency software product. Deployment investment also varies with technology cost, demand, risk and public policies.

FIGURE 1. CLEANTECH INVESTMENT PORTFOLIO

EXAMPLE INVESTMENT TYPES BY COMPANY ACTIVITY



Considering the decade as a whole, total cleantech investment in California has increased substantially from its early market years. Figure 2 illustrates that investment activity was more concentrated in Development & Growth in the early part of the decade, while the cleantech sector was emerging, to research and create new products. The Development & Growth stage includes investments such as those new thin-film solar technologies. While this early capital is still critical for new companies and technologies, financing allocated to Deployment is increasingly important to the expansion of the sector. The Deployment stage includes investments such as funding to develop new utility scale solar or wind projects. The portfolio of investments within each category has also shifted; as installations of cleantech products and services pay off for investors, early stage financing such as debt and corporate VC, and Deployment investment such as project financing, have grown to help fund cleantech activities. The remainder of this report explores these two categories in more depth and highlights that while financing for Development & Growth and been declining, financing for Deployment has been growing, indicating a maturing of the cleantech sector.

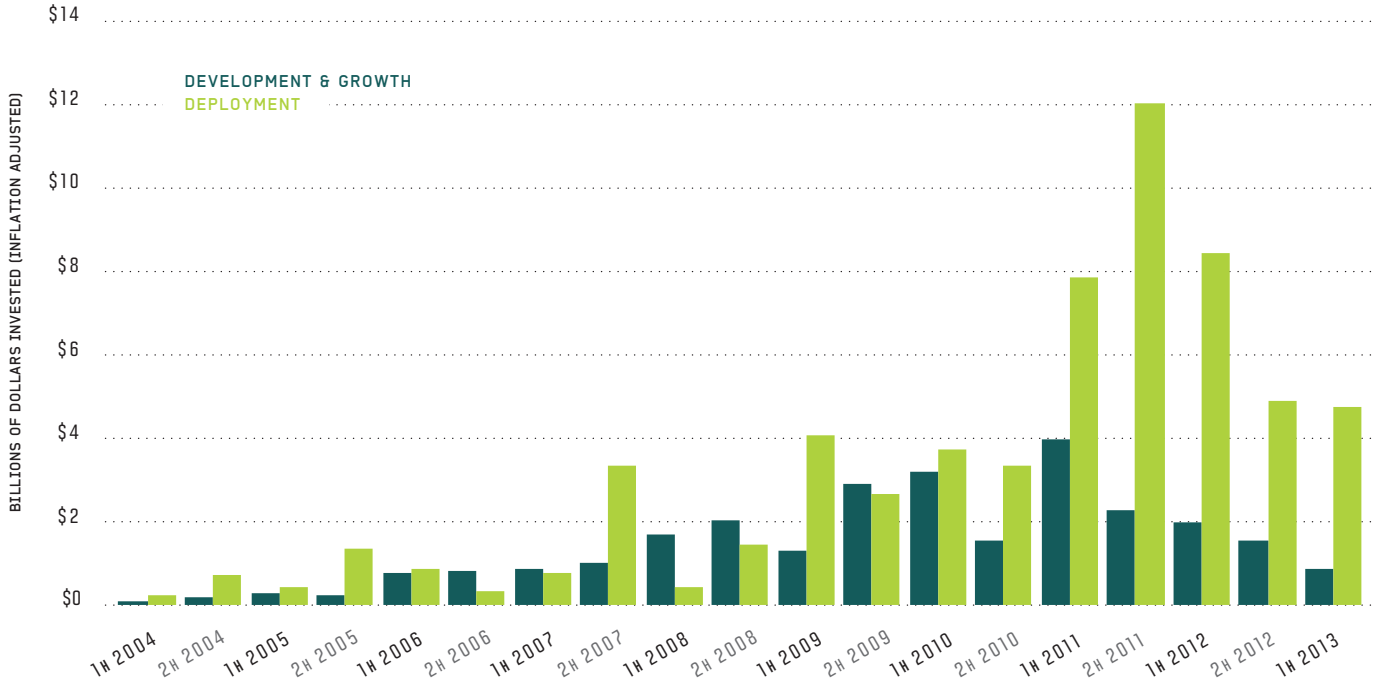
CLEANTECH DEVELOPMENT AND GROWTH INVESTMENTS

Investment in Development & Growth activities help cleantech companies research, refine, commercialize, and scale new products and services. This section explores the changing types of investment and investors, the increasing importance of corporate strategic investors, and the value of cleantech company exit activity.

The Types of Investment in Cleantech Companies are Diversifying

Overall cleantech investment in private companies has fluctuated over the past few years, though the types of investment have become more diverse in the last decade. New capital sources for Development & Growth are emerging as more investors gain understanding of the technologies and value proposition of the cleantech sector. Investment levels were down about 44 percent from the second half of 2012 to about $900 million in the first half of 2013, though investment is more than three times higher than the first half of 2003 (Figure 3).

FIGURE 2. CLEANTECH INVESTMENT BY COMPANY ACTIVITY
CALIFORNIA



Note: Development & Growth investment data includes all direct investment in private companies (e.g. VC, debt), Deployment investment data includes all asset finance data (new build, refinance, acquisition) for clean energy projects. Data Source: CB Insights, Bloomberg New Energy Finance. Analysis: Collaborative Economics.

Financing in the early 2000s was dominated by traditional VC firms, who are generally more willing to move first in a sector and accept higher risk investments. In recent years, these firms have remained an important source of funding, but other types of investment such as debt financing from banks and involvement from the VC arms of large corporations have become more prominent. To illustrate this, Figure 4 shows that while total public and private cleantech investment amounts were roughly the same in 2012 and 2008, traditional VC was by far the primary investment type in 2008, while in 2012 corporations were involved in more VC deals and debt financing served as an important source of funding. Investment in cleantech is dominated by the private sector, though the government played a noticeable role during the recession; loan guarantees from the American Recovery and Reinvestment Act boosted debt financing in the second half of 2009 and first half of 2011.

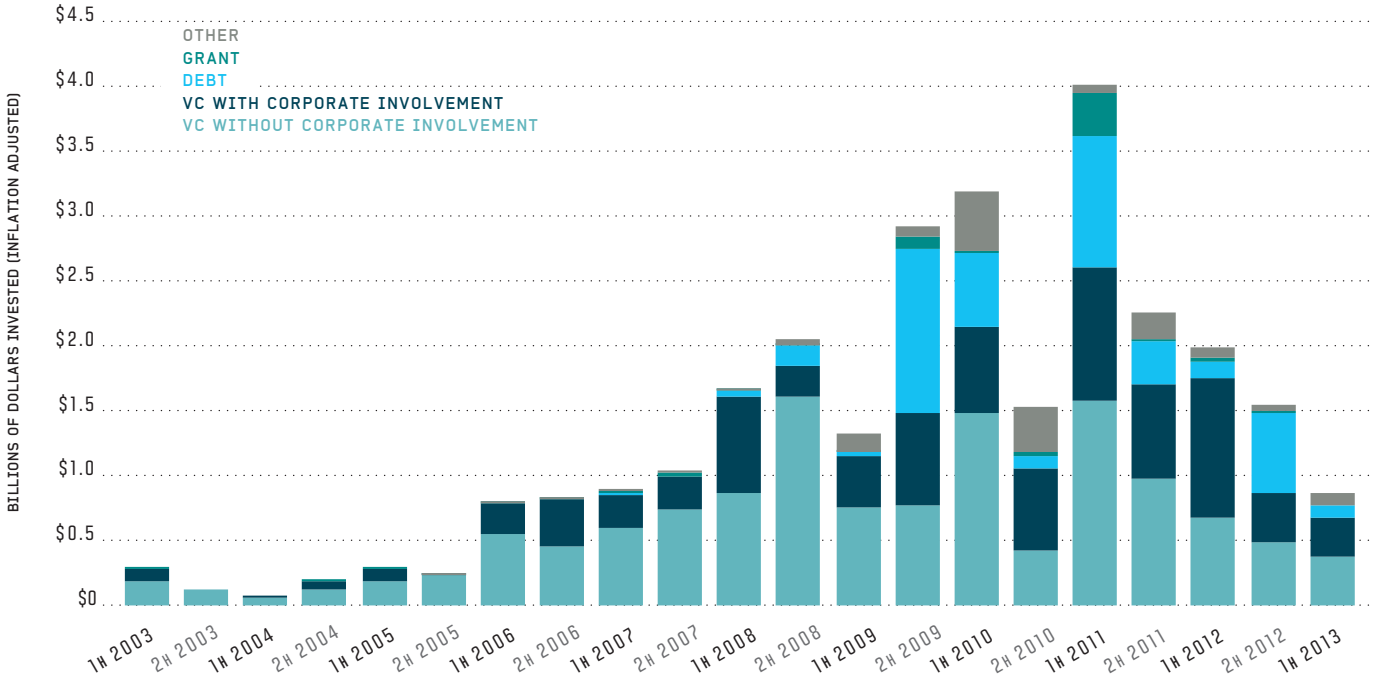
Despite the drop-off since the peak of investment in 2010 and 2011, there are still twice as many VC and corporate investors involved in the cleantech sector today in California than in the first half of 2003, when the industry was just taking off (Table 1). Since the first half of 2011, the number of corporate investors is down 44 percent, while the number of venture capital investors dropped 51 percent. Corporate investors have remained relatively steady in the sector in the recent year and are still up from the first half of 2009, while venture capitalists have continued to withdraw.

TABLE 1. INVESTORS IN CLEANTECH COMPANIES
NUMBER OF UNIQUE INVESTORS, CALIFORNIA

	VENTURE CAPITAL INVESTORS	CORPORATE INVESTORS	ALL OTHER INVESTORS
1H 2003	26	8	35
1H 2005	51	9	13
1H 2007	114	18	75
1H 2009	84	14	36
1H 2011	122	36	59
1H 2013	60	20	26

Data Source: CB Insights. Analysis: Collaborative Economics.

FIGURE 3. DIVERSITY OF DEVELOPMENT AND GROWTH CLEANTECH INVESTMENT
CALIFORNIA



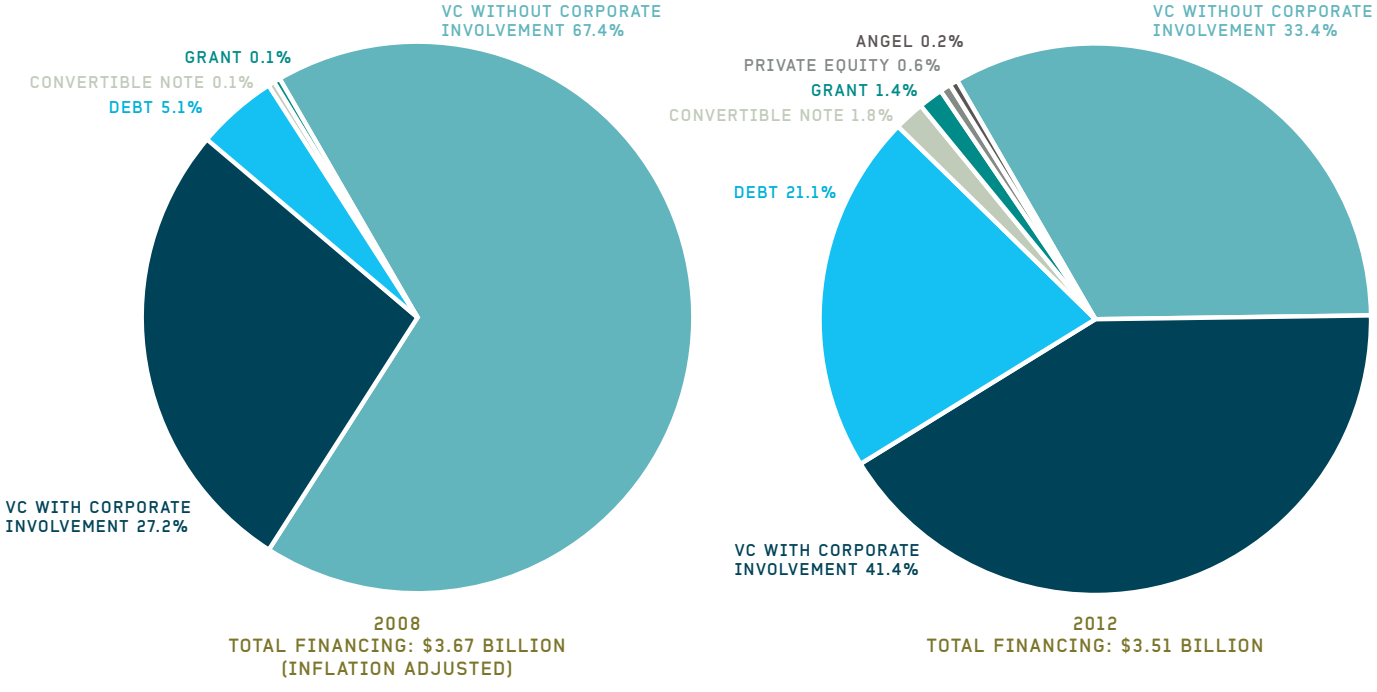
Note: "Other" type of investment includes PIPE, private equity, angel, convertible notes, corporate minority, unattributed, other, and partnership. Data Source: CB Insights. Analysis: Collaborative Economics.

Venture Capitalists Still Play a Key Role in Cleantech Companies

Venture capital is one of the primary avenues for startup companies to secure the capital needed to create new, innovative products and services. While other types of investors are also important to help grow and expand the cleantech market, venture capitalists play a unique role because of their tolerance for early stage, high-risk investments and management expertise. Though overall venture capital investment has declined in the past year, there are still many venture capital firms that continue to invest and see strong prospects in the cleantech market. In addition to the investors profiled below, venture firms such as Kleiner Perkins Caufield & Byers, Khosla Ventures, VantagePoint Capital Partners, and Draper Fisher Jurvetson continue to be active players in cleantech with multiple investments in the first half of 2013. Other venture firms continue to raise new cleantech funds, such as Silver Lake's $653 million for its Kraftwerk Cleantech fund announced in August 2013.[2]

Enthusiasm for clean technologies drove a climb in venture capital investment between 2008 and 2011. During that period, many non-specialized investors, in anticipation of being part of the cleantech sector, sought new cleantech companies for their portfolios. The market surged with this influx of cleantech companies and investors, and subsequently struggled, as a portion of the emerging companies did not perform to expectations. This surge represents a normal bunching effect; when too many investors enter an emerging industry it is followed by a shake out as there is limited market opportunity. This contributed to some investors moving away from the industry or reorganizing their strategies toward cleantech.[3] The fluctuation in cleantech follows the natural "hype cycle" of a new industry.[4] Internet sector jobs in the mid to late 1990s illustrate the effect of this type of hype cycle. The commercial development of the internet in 1993 helped software jobs grow by more than 150 percent and jobs in computer networking double between 1992 and 1998. However, the employment growth created during the internet bubble was not sustainable and led to a dramatic loss of employment in the early 2000s.[5] Despite this downturn, the internet sector continues to create new jobs and technologies.

FIGURE 4. DIVERSE SOURCES OF CLEANTECH INVESTMENT CALIFORNIA



*Excludes Project Finance and Unattributed investments. Data Source: CB Insights. Analysis: Collaborative Economics.

VENTURE CAPITALISTS REMAIN IN CLEANTECH

DBL INVESTORS, THE WESTLY GROUP AND CALCEF are three Bay Area-based venture investors that are excited about the opportunities in the cleantech market and the potential for economic growth in the sector. Interviews with leaders at those firms yielded the following perspectives.

STEVE WESTLY, founder and managing partner of cleantech-oriented venture firm The Westly Group, sees strong underlying fundamentals for the cleantech market, with a large energy market ripe for renewable energy technologies, declining technology prices, and increased consumer and business interest. The Westly Group has had a busy start to 2013, making more than seven investments in the first half of the year and raising a $160 million cleantech fund. Corporations are increasingly involved in their investments and in providing strategic business guidance to companies. For example, SK Group, the third largest company in South Korea, and E.ON, one of the world's largest utilities based in Europe, participated in The Westly Group's latest fund and are actively involved, recognizing that these startups are pursuing products that are integral to their long term success.

NANCY PFUND, founder and managing partner of DBL Investors, has been in venture capital since the late 1980s and specifically in cleantech for over a decade, long before DBL spun out of JP Morgan in 2008. DBL Investors has a double bottom line strategy, investing in companies that can deliver top-tier venture capital returns and enable social, environmental and economic benefits. Pfund continues to see cleantech as an integral part of DBL's portfolio. She has observed the cleantech industry maturing over the last decade, as companies are attracting new types of investors and financing. The recent decline in VC participation can be an opportunity for forward-looking and cleantech-savvy firms to cultivate promising businesses.

DAN ADLER is a managing director of CalEF and president of CalCEF Ventures, a nonprofit focused on cleantech that uses a fund-of-funds model rather than directly investing in companies. Adler has seen exciting movement in the cleantech market and financing, with new project finance models emerging and increasing participation of strategic corporate investors that can help shorten development timeframes and provide an exit strategy for companies. CalCEF Ventures created an Angel Fund for seed and early stage capital, and partners with other venture firms such as VantagePoint Capital and Nth Power.

As the cleantech industry matures, VC firms move to invest more strategically and many remain optimistic about the cleantech sector's prospects. Specifically, these firms are investing in the cleantech companies at the forefront of market trends such as the demand for energy storage to support the increase in renewable energy, interest in consumer facing products, the increasing demand for electric vehicles, and the move towards smart buildings and energy management.

Corporate Strategic Investors Play a Pivotal Role in the Cleantech Sector

Corporations play a pivotal role as strategic investors in cleantech companies. These corporate investors include venture capital branches of multinational corporations, energy firms, and utilities. Top corporate investors in California cleantech companies include Google Ventures, Intel Capital, General Electric, Siemens Venture Capital, and Aster Capital. Over the last ten years, the number of VC deals with corporate involvement has increased and at least 24 percent of cleantech VC deals had corporation participation over the last three years (Figure 5). California is leading the nation in receiving corporate funds, with the rest of the U.S. averaging only 16 percent of cleantech VC deals with corporate participation in the last three years. Corporations have even higher involvement in some segments of the cleantech sector compared to others. For example, corporate strategic investors participated in 50 percent of the VC deals in California energy efficiency companies in the first half of 2013.

> **"We think investing in cleantech companies is good business, good public policy and good for the planet."**
>
> **STEVE WESTLY**
>
> FOUNDER AND MANAGING PARTNER OF THE WESTLY GROUP

> **"There is always lumpiness in VC and there are always investors that stay. Sometimes the best opportunities are when the field is flushed out a bit."**
>
> **NANCY PFUND**
> MANAGING PARTNER OF DBL INVESTORS

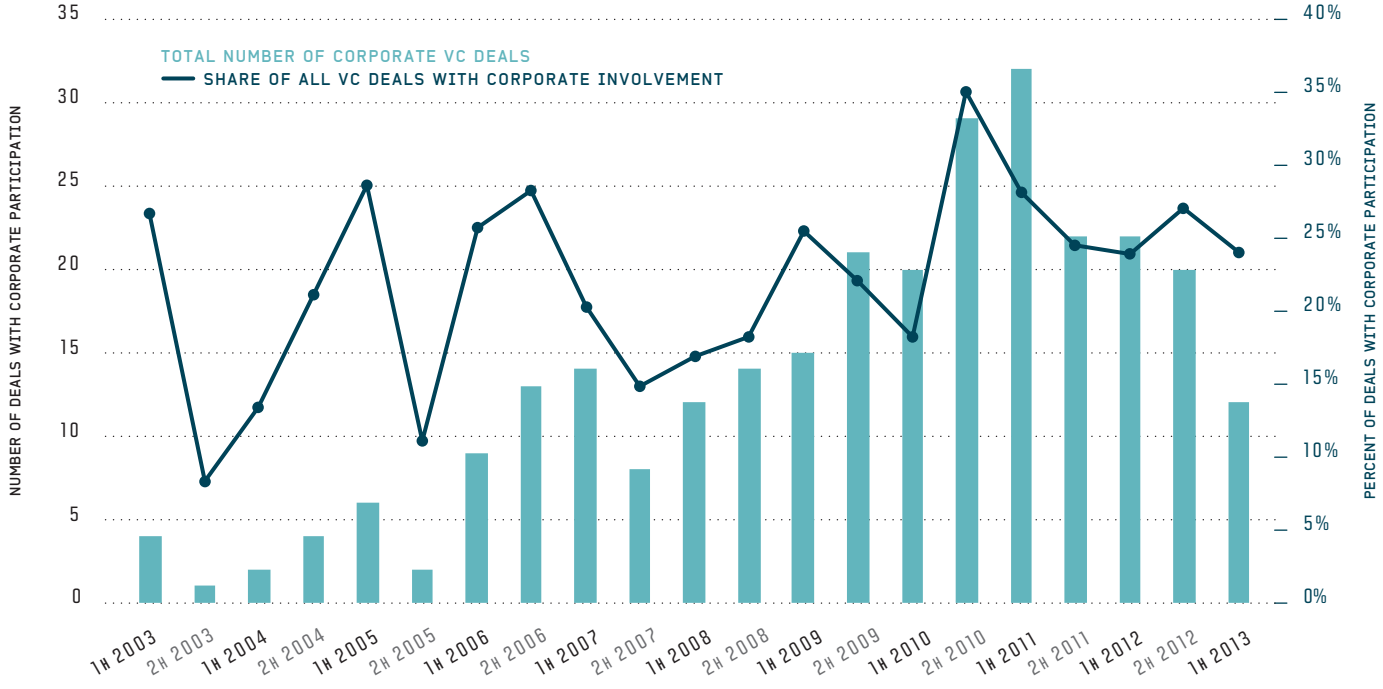
Corporations are well suited for the cleantech sector, providing strategic market power, longer-term investment horizons, and critical investment capital. Many cleantech startups are trying to penetrate existing, well established markets, such as building infrastructure or energy production.

Corporate investors can help these companies by providing direct access to customers in these existing markets and operational know-how of the industry, in addition to funding. In turn, corporations gain access to new and innovative technologies to provide their customers. Corporations generally have a longer time horizon for payoffs compared to traditional VCs and enter into investment deals as a partnership opportunity. Cleantech companies may be wary of strategic investors because of the risk of their company interests being subsumed by corporate direction, but with careful management, the potential rewards and access to an exit strategy (e.g. merger or acquisition) can outweigh the risks.

Corporate venture also provides important investment leadership in the cleantech field. Of the $2.6 billion of cleantech VC investment in 2012 in California, $1.45 billion included corporate investors. In the last decade, the average VC deal amount has been an average of 48 percent higher if corporations were involved in the round (Figure 6). Corporate VCs are also taking the initiative to lead investment rounds, such as Corning leading a $60 million Series E round in 2013 for View Inc., a dynamic glass maker, in addition to a strategic development agreement between the two

FIGURE 5. CORPORATE INVOLVEMENT IN CLEANTECH VC DEALS

CALIFORNIA



Data Source: CB Insights. Analysis: Collaborative Economics.

companies to advance View's glass technology.[6] The cleantech sector is in line with a larger trend in growing corporate venture funding, with corporations increasingly active in sectors ranging from the internet to healthcare across the country.[7]

Cleantech Company Exits are Creating Value

Cleantech company exits from the private market are another type of activity that can help a company develop and return value to investors. These exits can include a merger or acquisition (M&A) (of the whole company, unit, or workers only) or an Initial Public Offering (IPO) to become a publicly traded company. Exits can also include companies that are dead or had asset sales.

Cleantech companies in California have had a number of exits in recent years. Of the companies that have publicly disclosed investments, the cleantech sector has had 13 IPOs and 87 M&As since 2010. Over the same time, the database includes five legally dead companies and four asset sales (Figure 7). Despite the high profile failures of companies such as Solyndra, a legally dead company, the data show these are a small fraction of overall official exits. In addition, cleantech company exits follow a similar trend to company exits in all industries in California (Table 2), with an average of 89 percent of cleantech companies that have publicly disclosed investments achieving an M&A or IPO.

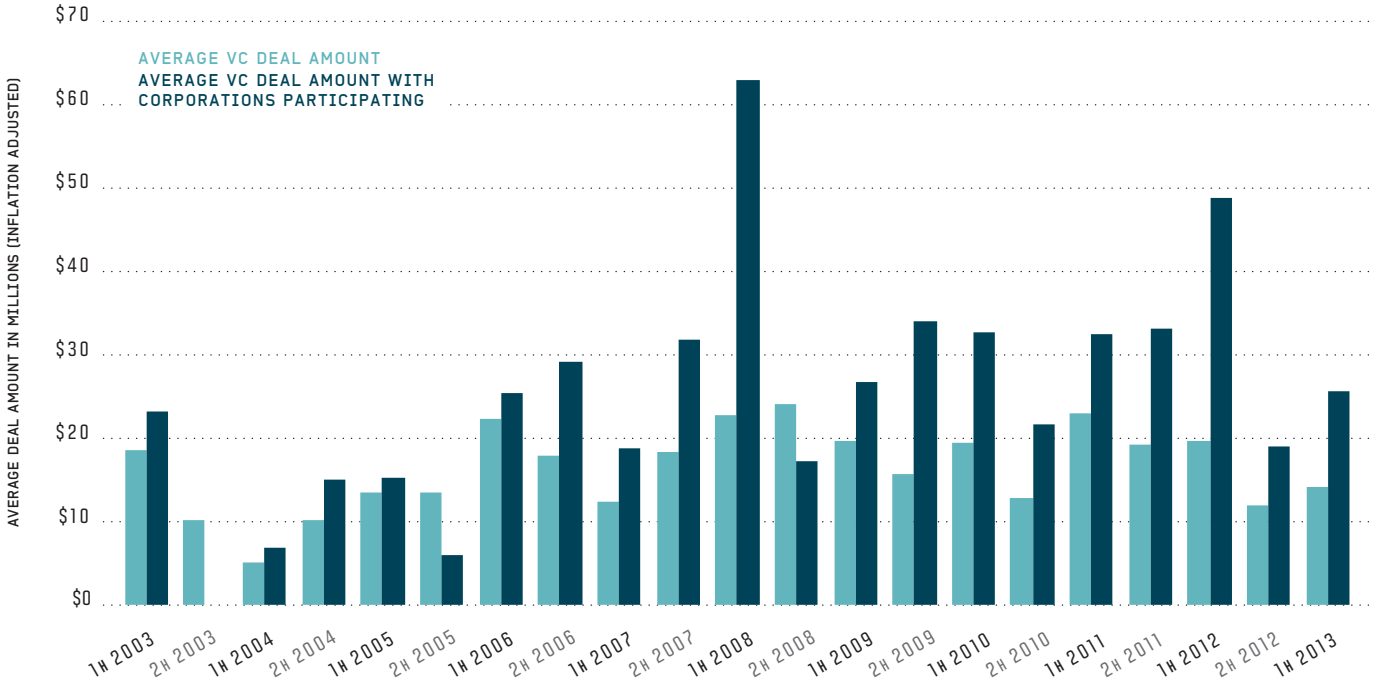
TABLE 2. EXIT ACTIVITY IN ALL COMPANIES
CALIFORNIA

2008-2012 AVERAGE

	LEGALLY DEAD	M&A	ASSET SALE	IPO
ALL COMPANIES IN CALIFORNIA	6%	88%	3%	4%
CLEANTECH COMPANIES IN CALIFORNIA	8%	79%	3%	10%

Companies identified as "Dead" in the database are labeled as "Legally Dead" in the chart. "Legally Dead" includes companies that have publicly disclosed investment data and have officially changed their status to inactive or closed the company. This dead category does not include "walking dead" companies, which includes companies that have not disclosed investments (and are therefore not in the database) or have not officially changed their status to inactive or stopped all operations. Comprehensive data on "walking dead" companies is unavailable. While this will under

FIGURE 6. CLEANTECH AVERAGE VC DEAL AMOUNT
CALIFORNIA



Data Source: CB Insights. Analysis: Collaborative Economics.

BUILDING CORPORATE STRATEGIC PARTNERSHIPS

CHARGEPOINT is an electric vehicle (EV) charging solutions company, providing products and services for both EV drivers and EV charge station owners, ranging from charging station hardware to software to locate and use a public charging station and centrally manage charging operations. Their mission is to build an engaged and connected global EV community through its energy and operations management cloud software.

ChargePoint has received both pure venture capital from firms like Kleiner Perkins Caufield & Byers and Voyager Capital, as well as venture capital from energy and automobile corporations. Siemens Venture Capital has participated as an investor since 2009, with involvement in ChargePoint's $14 million Series B and $15 million Series C round. As ChargePoint's product matured and started to take hold in the market, EV makers and energy groups gained interest. In its most recent $47.5 million Series D round in 2012, automobile companies BMW i Ventures, Toyota Tshoshu Corporation (a member of the Toyota Group), and the energy focused venture capital group Braemar Energy Ventures also invested in ChargePoint.

ChargePoint pursued corporate investment to build strategic business relationships with the companies and gain access to decision makers, in addition to receiving funds. Siemens, for example, sells ChargePoint products and provides them strategic access to the European market, while Toyota is helping them enter the Japanese and Chinese markets. ChargePoint is also working on new business opportunities with BMW. Corporations are looking for new and innovative EV charging solutions and want to be a part of the change in the industry, all of which ChargePoint is planning to deliver.

BUILDINGIQ is an energy management software company whose products optimize HVAC systems throughout the day in commercial buildings, saving their customers an average of 10-30 percent in HVAC energy costs. With a mission to "redefine the way energy is managed in commercial buildings," BuildingIQ now offers a suite of software offerings for commercial building operators to manage energy costs, consumption, and peak loads while improving building operator productivity.

When BuildingIQ began fundraising in 2012, many of the firms investing with regularity were those that had strategic interests in the sector, such as those looking for research and development or where businesses were aligned. The smart grid industry is fairly established, making it difficult for new players to enter the market. Large corporate partners would help BuildingIQ gain a foothold, and with this in mind, they raised $9 million in a Series A round in January 2013 from Siemens Venture Capital, Aster Capital, and Paladin Capital Group. Aster capital is a fund sponsored by three global energy and industrial firms, Alstom, Schneider Electric, and Rhodia. While Schneider Electric and Siemens are direct competitors, they saw the benefit of partnering through BuildingIQ to work across the industry to create tools and services that add value to many different players.

By leveraging the multi-national sales force, market power, and distribution chains of their investors, BuildingIQ is able to be efficient with the cash capital their investors provided and rapidly expand its access to building and customers. For example, Schneider Electric is rolling out BuildingIQ's product as if it's their own to the company's existing and new customer base. BuildingIQ has had a positive experience with these corporate investments and credits the investor's strategic goal alignment, favorable investment timeframes, and return criteria as a few reasons why this was a good investment fit.

> **"Having access to and alignment with industry partners has been an important part of making BuildingIQ successful."**
>
> **MIKE ZIMMERMAN**
> CEO OF BUILDINGIQ

THE VENTURE CAPITAL UNIT OF SIEMENS FINANCIAL SERVICES (SFS VC) is the venture investment arm of the multinational company Siemens AG. Since being founded in 1999, SFS VC has invested about €800 million (about $1.05 billion USD) in more than 170 companies aligned with Siemens' four main sectors: energy, industry, healthcare, and infrastructure & cities. SFS VC identifies and funds startup companies and provides growth capital to established companies. They use a variety of financing tools, including early or later stage venture capital and growth equity. Siemens Financial Services is also able to offer a wide variety of further financial services, such as project financing for capital intensive projects.

SFS VC recognizes that investing in new companies is an important way for Siemens to support current and future business partners in their early phases. Cleantech companies touch a variety of Siemens' sectors of focus, and SFS VC has been active in investing in the cleantech market. In addition to BuildingIQ and ChargePoint (profiled separately in this report), SFS VC has recently participated in a $6.5 million Series A round for the solar robotics company QBotix, and a $15 million growth equity round for the energy efficiency and demand management company Tendril Networks. Startup companies such as these have the potential to add valuable complimentary products to Siemens' portfolio.

Siemens is active and established in the market, with a customer base that is interested in new innovative products. Siemens can integrate these new products into its portfolio, creating a more complete solution for the customer. In turn, the startup company gets access to Siemens' market knowledge and geographic range.

WASTE MANAGEMENT (WM) is a corporation that serves 20 million people across the country. WM not only collects waste, they also own landfills and recycling centers, and operate more than 100 renewable landfill-gas-to-energy projects. Dealing with that much waste on a daily basis, they understand the need to reduce its impact and increase its value. WM recognizes that the waste industry is changing and that emerging technologies are driving much of this change.

To tap into these innovative technologies and processes, WM has invested in companies directly and through partnerships to help develop and scale selected early stage products. In 2012, WM launched the Organic Growth Group, a dedicated venture capital arm, to invest in emerging companies that can help maximize the value of what WM puts in the landfill and/or minimize the amount and impact of the waste stream. The companies in which they have invested help WM provide new solutions to customers, ranging from processing the waste to create compost and natural fertilizers, converting waste to synthetic oil or cellulosic ethanol, to creating an intermediate product from the waste.

For example, in 2010 WM launched a partnership with Genomatica, a California-based sustainable chemical company, to develop syngas from waste that can be converted into higher value chemicals. WM has also participated in Genomatica's $45 million Series C-1 and $41.5 million Series D venture capital rounds. These types of new technologies will help WM continue to manage waste in an increasingly sustainable manner while creating value to the company.

EXPANDING DEPLOYMENT INVESTMENT TYPES

SUNRUN is a third party residential solar service provider and financier that was founded in 2007 and "believes that everyone has the right to take control of their electric bill." Sunrun offers residential consumers the opportunity to take advantage of solar without significant upfront investment by serving as the third party installation "owner" and allowing customers to lease the solar panels. Leasing allows the average consumer to install renewable energy systems while the complex financial, installation, and maintenance issues associated with them are navigated by another party (in this case, Sunrun). Over the last six years, Sunrun has financed over $1 billion in solar systems, using credit from investors such as PG&E, U.S. Bancorp, and Credit Suisse. Other companies such as SolarCity and Sungevity are providing similar solar leasing options, helping create more opportunities for innovative project finance and bringing new consumers into the cleantech sector.

> **"We see our VC activity as creating a win-win situation, the startup company can get access to our customers and market, and we get the latest products or features to provide a more complete solution to our customers."**
>
> **DR. RALF SCHNELL**
> CEO OF SIEMENS FINANCIAL SERVICES VC

MOSAIC is a solar finance company that is pioneering a new way of investing in solar projects. They are tapping into the pool of public investors by giving average people the opportunity to participate in the growing renewable energy market through their online marketplace, which connects investors to high-quality solar projects that need financing. Mosaic members can invest as little as $25 in a solar project and get paid back with interest (generally 4-6 percent) as the project earns revenue. Under Mosaic's model, any resident of California or New York or retail investors meeting certain criteria throughout the rest of the United States are able to lend money to municipal and commercial solar projects. Previously, small-scale investors in renewables had limited options, such as directly purchasing or leasing distributed generation systems. Mosaic is opening up the renewable energy financing market to average consumers, offering investment opportunities in this market for smaller monetary commitments.

While investments may be small compared to those from large corporations or banks, Mosaic leverages the investments from the general public to make an impact. Mosaic combines funds from their investors to purchase all or part of already-functioning solar projects, which increases the deployment of mid-sized solar projects. Buying out the original project developers or investors frees up capital for these original groups to construct new solar systems. At the same time, Mosaic's investors have the opportunity to earn returns on the solar system that can produce electricity for thirty years or more. As of July 2013, nearly 2,000 people had invested in solar through Mosaic's marketplace, financing 14 solar projects with a total of $3 million invested. Mosaic has an additional 22,000 people on their waiting list who want to invest.

represent the number of dead companies, the classification of "legally dead" for all industries in California is the same and therefore the comparison in Table 2 is for the same types of exits.

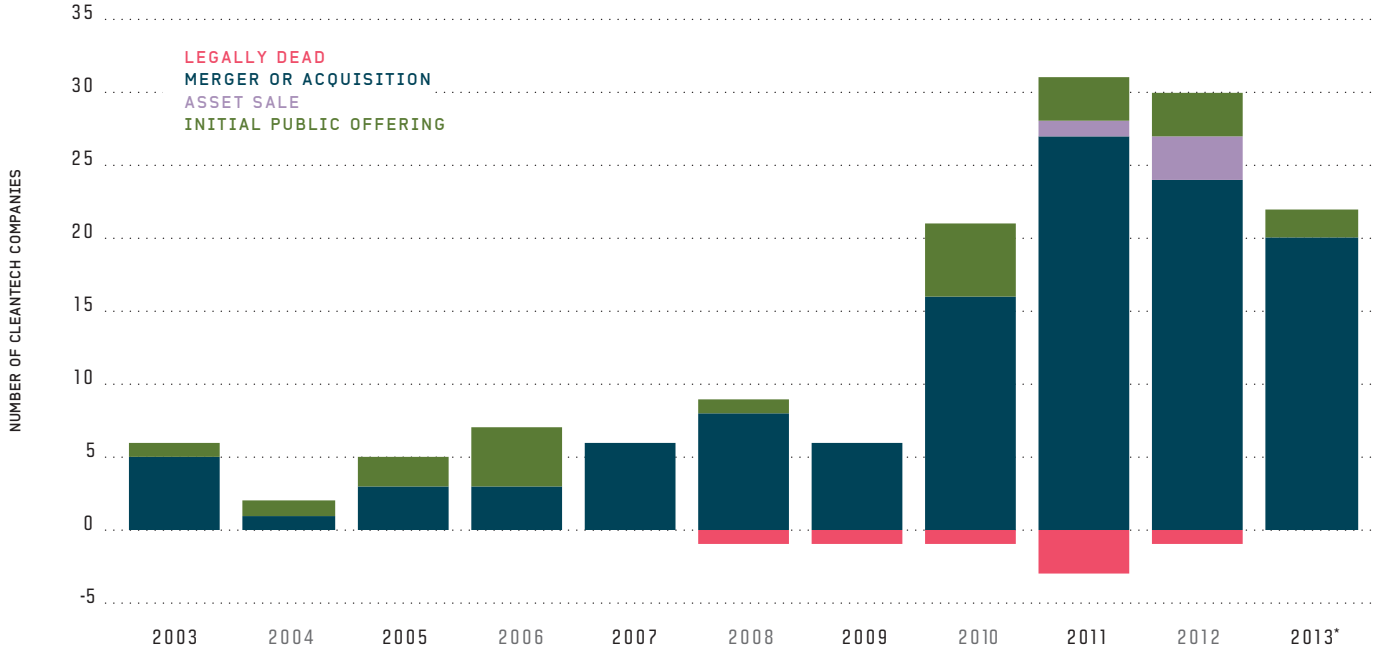
The monetary value and return to investors on these exits is unavailable, but analyses of other cleantech investments have shown that returns can vary widely depending on the company. For companies that had an IPO, for example, the NEX Clean Energy Index of public companies dropped 30 percent between January 2011 and July 2013,[8] though there have also been big successes such as electric vehicle maker Tesla, which reached a $20 billion value in August 2013.[9] Within the global cleantech sector, there are also sub-sectors that have returns comparable to the overall venture capital industry.[10] Cambridge Associates analyzed investments made by venture capital and private equity partnerships in more than 600 cleantech companies and found that the internal rate of return (IRR) depended on the category, with companies in the category of Renewable Power Development reaching 7 percent net IRR and Energy Optimization achieving 4.5 percent net IRR, while Renewable Power Manufacturing had 0.2 percent net IRR.[11]

CLEANTECH DEPLOYMENT INVESTMENTS

Investment in the Deployment of clean technologies has increased considerably in California in recent years, adding an important source of capital to the cleantech investment portfolio. Public policies such as California's Renewable Portfolio Standard or Low Carbon Fuel Standard have helped drive demand for projects such as solar and wind energy installations, biofuel production facilities or electric vehicle infrastructure. Project financing is a key piece of implementing those projects and enabling companies, governments, and individuals to bridge the upfront cost of deploying clean technology. Investors are compensated as the project generates revenue over the life of the project. As technology costs decrease and economic returns become more certain, investors and lenders have become more comfortable with cleantech and the amount of capital allocated to Deployment has increased.

Deployment investment affects company growth through higher sales, differing from direct growth investment in individual companies such as VC or loans/debt. Development & Growth investments fund company expansion such as hiring staff and procuring equipment, while Deployment

FIGURE 7. EXIT ACTIVITY IN CLEANTECH
CALIFORNIA



*2013 data as of August 2, 2013. Data Source: CB Insights. Analysis: Collaborative Economics.

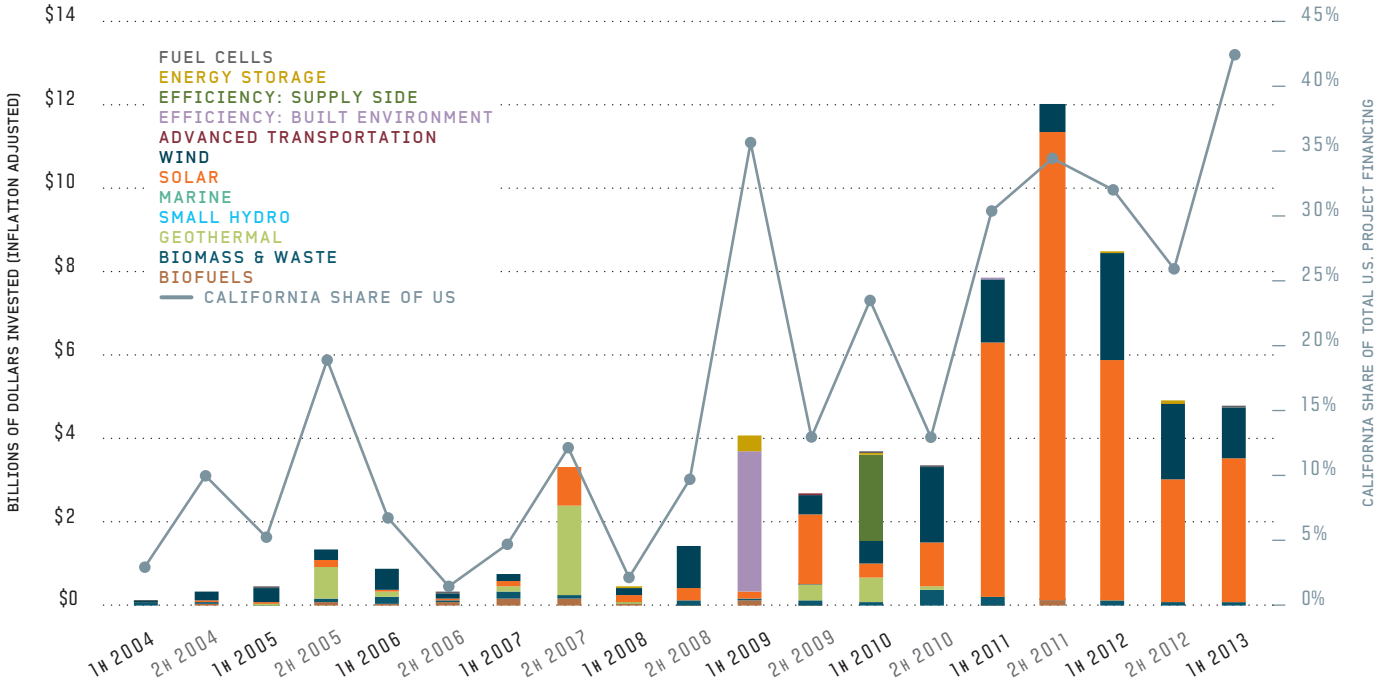
investments involve purchasing companies' products to implement them in the field. As new technologies are deployed, companies benefit from higher revenues, economies of scale in production, and access to cheaper capital as risk falls. Although project finance is not the only enabler of clean technology sales, it is an important tool for cleantech deployment, especially for large-scale projects.

Growing Deployment investment is apparent in California, where project financing was more than three times higher in 2012 than in 2007. Although the first half of 2013 at $4.8 billion was lower than the peak levels of 2011-2012, it far surpasses the rest of the decade. In addition, California's estimated share of project finance investment in the United States rose above 40 percent in the first half of 2013 (Figure 8). These numbers reflect gross investment in cleantech deployment, but likely understate total project financing because data is unavailable for unreported private and public Deployment investments, small scale distributed generation projects that do not involve large tax equity funds, and investments that cannot be attributed purely to cleantech.

A range of investors are already participating in Deployment activities, such as investment banks, development groups and corporations. Public policies have played an important role in drawing these investors into Deployment finance. For example, investors in renewable energy deployment have the opportunity to earn a stream of income from power purchase agreements for projects to meet California's Renewable Portfolio Standard. The federal investment tax credit, production tax credit, and accelerated depreciation benefits incentivize companies with substantial tax burdens such as financial institutions, utilities, and large corporations to invest in renewable installations to earn returns and offset their taxes. Tax equity investors, such as Bank of America, Pacific Gas and Electric Company, and Google,[12] are a particularly important source of project financing, especially for renewable energy.[13] Cleantech companies may also invest directly in their technologies' deployment. For example, Siemens Financial Services has served as a key equity and development partner on projects such as offshore wind installations of Siemens turbines.[14] Although these investors have driven strong cleantech project financing growth in

FIGURE 8. CLEANTECH PROJECT FINANCING

CALIFORNIA



Note: Data includes projects receiving asset finance in New Build, Acquisition, and Refinancing. Data Source: Bloomberg New Energy Finance. Analysis: Collaborative Economics and Bloomberg New Energy Finance.

California to date, significant amounts of additional capital will be needed to meet the state's targets for low carbon fuel composition, zero emission vehicle penetration, and renewable electricity generation.

Institutional and public investors are learning that cleantech infrastructure deployment is a stable investment with real payoffs, and are seeking new avenues to participate, though are still at a limited level to date. The growing demand for both Deployment capital and investment opportunities, is leading to new financial mechanisms to fund cleantech implementation in California and other states. For example, pension funds and other institutional investors are increasingly investing in project financing through green bonds, which surged in the first half of 2013 and are on track to surpass 2010's peak level of $7.5 billion, according to Bloomberg New Energy Finance projections. Warren Buffett's MidAmerican Energy Holdings was a significant driver of the 2013 increase in capital for green bonds.[15]

Governments have also issued green bonds, helping to attract more risk-averse private investment in cleantech. Hawaii's Green Infrastructure Authority and New York's Energy Efficiency Financing Bonds[16] use public bonds to accelerate deployment of small-scale energy efficiency and solar projects. Master Limited Partnerships (MLPs) and Real Estate Investment Trusts (REITs) are other examples of financing mechanisms that are under development to be applied for cleantech deployment.[17] MLPs and REITs would broaden the pool of investors by allowing cleantech projects to access financial markets and offer more liquidity, as well as special tax status. Companies are also emerging that allow the general public to directly invest in cleantech, such as community solar projects with Mosaic or leasing solar panels through third parties like Sunrun or SolarCity. All of these financial developments will help to expand the availability of Deployment capital for cleantech, and ultimately decrease the cost of project finance.

CONCLUSION

The cleantech sector has experienced dynamic change over the last decade, but it also created an opportunity for investment that can generate economic and environmental benefits. California's cleantech investment portfolio is increasingly diversified, with new types of investment growing and an increasing focus on later stage Deployment financing as the sector matures. These trends are apparent when viewing them over the last decade, rather than focusing on recent declines in investments like early stage venture capital.

This is an exciting time for the cleantech sector, as new investors and investment models continue to emerge. Corporations are playing an important role as strategic investors in cleantech companies, helping companies fill funding rounds, penetrate established markets, and providing access to corporate customers and industry knowledge. More individual and institutional investors are involved in cleantech and are realizing returns on investments in private and public companies and cleantech projects, such as energy efficiency upgrades and renewable energy installations. New Deployment financing types are emerging and growing, such as bonds and REITs. As public and private institutions work through regulatory and market hurdles to open access to these financial mechanisms and reduce risk to investors, the cleantech sector will have more opportunities to grow. These changes to California's investment portfolio, in both Development & Growth and Deployment activities, will further advance California's cleantech sector.

APPENDIX

Development & Growth Investment Data

Development & Growth investment data are provided by CB Insights (www.cbinsights.com) and includes disclosed investment deals in more than 80,000 private companies. Cleantech investment and exit data is identified by searching a list of nearly 900 California companies that are active, dead, acquired, merged, or have gone public and are identified by Collaborative Economics as providing or developing cleantech products or services. All figures have been adjusted for inflation using the U.S. city average consumer price index of all urban consumers, published by the Bureau of Labor Statistics.

The Development & Growth investment data in Figure 2 includes venture capital, corporate venture capital, angel, grants, debt, convertible notes, private equity, partnership, private investment in public equity (PIPE), and unattributed private investment, but excludes project financing because that is explored more fully in the Deployment data. The investment amounts in Figure 2 are from two different data sources, as CB Insights specializes in venture capital and other direct investment in private companies, whereas Bloomberg New Energy Finance has more comprehensive project financing data through their tracking of cleantech projects. The data shown in Figure 2 are only investments in California companies and projects. Some California companies may develop and sell products outside of the state or country and that data is not included in this report.

In Figure 3, "Other" investment includes PIPE, private equity, angel, convertible notes, minority interest by corporation, unattributed, other, and partnership. Venture capital data includes seed, series A-E+, growth equity, bridge, and incubator series types. Debt includes loan guarantees from the federal government, as well as credit and loans from private investors such as banks, investment funds, and financial services groups. Grants include grants from federal and state government agencies. Corporate VC investment data includes cleantech VC deals with investor types listed as Corporate Venture or Corporation. Other non-VC corporate investments such as partnerships are not included in Corporate VC data.

Investment data does not include financing data for other types of Development & Growth activities, such as initial public offerings and other public market data, or mergers, acquisitions, and sales of a company. Totals may not be the same across charts because of the different investment types included. Unattributed series and project financing is not included in the Diverse Types of Investment pie charts.

Investor type data is categorized by CB Insights. Investors are listed for each cleantech deal, and were flagged by type, listing each investor only once per time period regardless of the number of investments. All Other Investors includes Government, Academia, Angels, Asset Managers, Banks, and Incubators.

Company exit data is also provided by CB Insights by investment stages M&A, IPO, and Dead. Deals were summarized for the M&A category, with asset sale deals distinguished from that broader category because they are deals such as succumbing to a sale of remaining assets by a bank or another party, and are therefore considered less valuable exits.

Deployment Data

Deployment investment data are provided by Bloomberg New Energy Finance (www.bnef.com), which maintains a database of more than 40,000 renewable energy, energy storage, smart grid, fuel cell, advanced transportation, and energy efficiency projects.

All figures have been adjusted for inflation using the U.S. city average consumer price index of all urban consumers, published by the Bureau of Labor Statistics. The Bloomberg New Energy Finance asset finance database tracks deals financing acquisition, new build, and refinancing for utility-scale renewable energy, energy efficiency, energy storage, fuel cells, and advanced transportation projects. Bloomberg made estimates for those deals with undisclosed values as well as for untracked deals aiming to close the gaps in coverage caused by timelags in deal discovery. Where portfolios have been financed across multiple states, equal proportions of the financing have been assigned to each state.

The Deployment data does not include other types of financing for implementation such as direct purchases by customers, property assessed clean energy (PACE) financing, energy service contracts, or revolving loans.

ENDNOTES

1 See the appendix for an explanation of the types of investment included in Development & Growth and Deployment categories and why the data come from two different data sources. The types of investment included in Development & Growth and Deployment categories are not an exhaustive list of all types of financing possible, but are included based on data availability and to illustrate the differences in investment types and the market potential of these activities.

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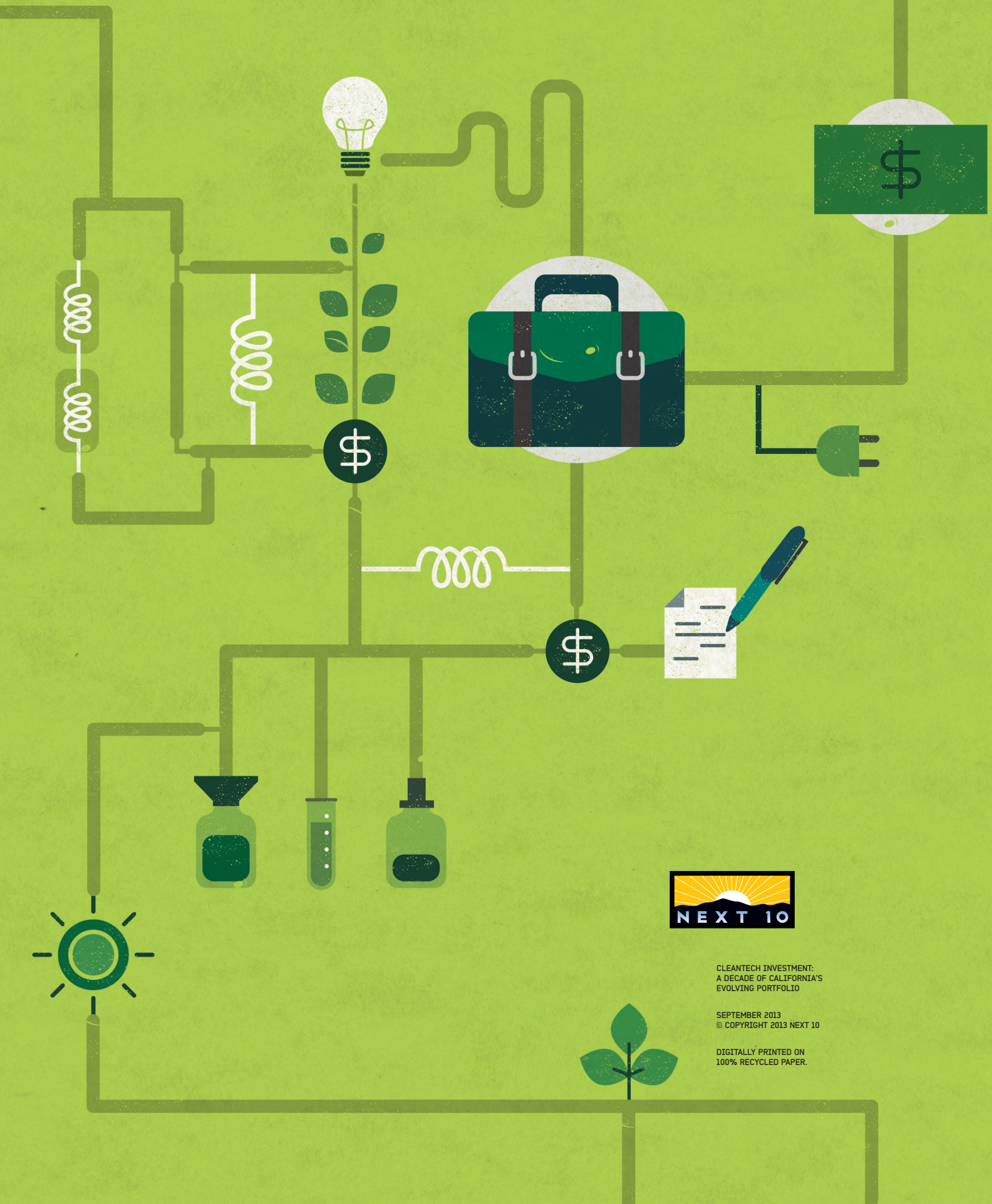

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