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Environmental Investing: Investors and Innovations

Cary Krosinsky

Editor

It is a true honor to join the *Journal of Environmental Investing (JEI)* as Editor alongside Publisher Angelo Calvello and Managing Editor Mary Cavanagh. Following its first appearance in 2010, with the issue entitled “Beyond Copenhagen,” the *JEI* successfully established itself as an interdisciplinary, peer-reviewed, open-access journal that publishes original research in all areas at the intersection of the environment and investing.

This current issue features individuals who are influencing and driving investment dollars and strategies globally in a most essential direction. Leading organizations, such as the International Energy Agency and the World Bank, are calling for an acceleration of the momentum toward environmental investing. To enable a clean energy transition over the coming decade and to avoid the worst ramifications of climate change, trillions of dollars in new investments will be necessary. The *JEI* will be helping to enable this transition by catalyzing global practices. Toward this end, as you will see throughout 2015, we will feature

- a relaunched, interactive website
- expanded original content
- amplified direct engagement with asset owners, fund managers, and other stakeholders, especially students

In addition, the next issues of the *Journal of Environmental Investing* will focus on the following topics:

- The Social Implications of a Global Energy Transition
- Air, Land, and Water: Implications for Investment Strategies
- Case Studies of Climate Bonds and Green Infrastructure
- Further Case Studies of Environmental Investing (including a first-ever global ranking of best strategies)

While an expansion of the new *JEI* website will accommodate and support this broadened sphere of inquiry, we will, however, remain open access because we believe that cost should not be a barrier to accessing critical information on environmental investing. We

are also seeking sponsorships and opportunities to perform co-branded research, and welcome your inquiries and suggestions.

By engaging in practical case studies of concepts and solutions that work and that could potentially be scaled to fit changing scenarios, demographics, and so on, the *JEI* will help point the way toward a future that simultaneously benefits the shareholder and society writ large. The most exciting opportunity we have is to play a role in enabling the energy and environmental transition we require as a society; it is an opportunity that has every chance of becoming an economically positive achievement as well. Even if the *JEI*'s role is a small one in this transition, we will have succeeded—but measurable success will require your participation.

Please feel very free to contact me at any time with your thoughts, your papers, and your own ideas as we head into 2015 and 2016 with a clear need for positive societal change that we can only achieve together.

With best wishes for a happy and successful New Year,

Cary Krosinsky

Environmental Investing: The Most Influential Investors

Michael J. Ahearn, Founder and Partner, True North Venture Partners; Co-Founder, First Solar, USA

According to his official biography, Michael J. Ahearn “founded True North Venture Partners based on a belief that early stage companies in socially disruptive business sectors require a fundamentally unique approach to funding, growth and market expansion.” As an early-stage venture capital company, True North works with entrepreneurs engaged in new types of technologies, particularly energy, water, agriculture, and waste. As a co-founder of First Solar, Mr. Ahearn learned first-hand how to create new approaches to help his team effectively establish a globally transformative business that currently develops, finances, engineers, constructs, and operates photovoltaic power plants. He now applies these innovations to guide other entrepreneurs who want to shape important industries. First Solar’s CEO from 2000 to 2009, Mike now serves as its chairman. After an initial public offering in 2006, First Solar became a publicly traded company on the NASDAQ and later became the first pure play renewable energy company to be listed on the S&P 500.

Jane Ambachtsheer, Partner and Global Head of Responsible Investment, Mercer Investments; Adjunct Professor, University of Toronto, Canada

In 2004, Jane Ambachtsheer established Mercer’s Global Responsible Investment team to advise investors on achieving long-term, sustainable investment outcomes. Her work includes helping investors in North America, Europe, and the Asia Pacific region to integrate environmental, social, and governance (ESG) factors into the investment process. To date, Mercer, a global consulting company in talent, health, retirement and investments, has assigned ESG ratings to 5000+ mainstream investment strategies, built a database of sustainability-oriented investment funds, and advised investors representing more than \$2 trillion in assets on climate change and strategic asset allocation. Jane was also a consultant to the United Nations in the development of the United Nations-backed Principles for Responsible Investment (PRI). She has just been recognized as one of the 2015 Clean50, an annual award given to those who have done the most to advance the cause of sustainability and clean capitalism in Canada. Ms. Ambachtsheer was also selected to join Canada's Clean16, representing the top nominee in the Financial Services category.

Mats Andersson, Chief Executive Officer, Fourth National Swedish Pension Fund (AP4), Sweden

Speaking recently at the World Bank Group, Mats Andersson emphasized that long-term investors must ask companies to put sustainability high on their agenda. Carbon is one of the biggest risks facing long-term investment portfolios, he explained. As stated on its website, the objective of AP4, a Swedish government agency and one of the largest asset funds in Europe, is to “manage Fund capital for the best possible return over time and thus support the stability of the pension system” while taking into account environmental and ethical issues “without compromising the goal of best possible return” (AP4 manages about SEK 276 billion—approximately US\$35.8 billion—in assets).

Cognizant of the ESG factors in their investment choices, fund executives at AP4 have been making decisions that reflect their concerns about the realities of climate change. CEO Andersson is guiding AP4 to take the lead in establishing transparency about ESG policies and asking the companies that they fund to do the same. In September 2014, AP4 was one of a group of leading institutional investors to join forces with the United Nations Environment Programme and its Finance Initiative (UNEP FI) to substantially reduce the carbon footprint of US\$100 billion of institutional investment worldwide. In recognition of his leadership, Mr. Andersson won the Outstanding Industry Contribution award at the 2014 Investment & Pensions Europe (IPE) Awards in Vienna.

Neil Z. Auerbach, Chief Executive Officer and Managing Partner, Hudson Clean Energy, USA

Mr. Auerbach is founder and managing partner of Hudson Clean Energy Partners, a private equity firm that negotiates investments in the high-growth clean energy industry. Global in scope, Hudson is dedicated to investing exclusively in renewable power, alternative fuels, and energy-smart technologies in sectors including wind and solar energy, biofuels, biomass, geothermal energy, and energy efficiency and storage. Since 2007, Hudson has amassed a global clean energy investment portfolio in its flagship fund and, in 2013, established a solar infrastructure program in 2013. In partnership with Astrum, Hudson is committing up to \$100 million through that infrastructure program to support the expansion of the residential solar market across the United States.

Formerly, Mr. Auerbach was a Partner at Goldman Sachs, where he co-founded the U.S. alternative-energy investment business within the Special Situations Group

and led several of Goldman's most successful investments in renewable energy. He is a member of the Leadership Council, American Council on Renewable Energy (ACORE), and serves on the Executive Committee of ACORE's Partnership for Renewable Energy Finance. Mr. Auerbach is also a member of the U.S. Council on Competitiveness, Commissioner on the National Commission on Energy Policy, and serves on the Advisory Council of the Prince of Wales' Rainforest Project.

Dan Balaban, President and Chief Executive Officer, Greengate Power, Canada

Dan Balaban looks at financial obstacles to the development of renewable energy projects as challenges to overcome. He and his team at Greengate Power have developed wind energy projects across Alberta, Canada, by contracting sources of revenue and available transmission capacity. The eight wind energy projects they are developing across Alberta will total 1,450 MW on approximately 165,000 acres of private land. The 300 MW Blackspring Ridge in Western Canada is expected to reduce greenhouse gas emissions by 20,000,000 tonnes over 25 years. It represents nearly \$1 billion of investments in wind energy.

In recognition of his innovative approaches to renewable energy and financing, Dan is a 2015 Clean16 honoree in the category of renewable energy generation. In choosing Dan as an outstanding contributor to clean capitalism, it was noted, "Alberta-based renewable energy developments are particularly difficult to finance, as there are no supporting, government-backed power purchase contracts. Despite this, Dan and team persevered."

Julia Balandina-Jaquier, Member of the Investment Committee and Chairperson of the Audit Committee, Swiss Investment Fund for Emerging Markets (SIFEM), Switzerland

Dr. Julia Balandina-Jaquier is an investment executive with 19 years of experience focused on sustainable private equity and finance. She serves on the Investment Committee and Board, and chairs the Audit Committee of SIFEM (Swiss Development Finance Institution, which manages a US\$500 million-plus impact investment mandate of the Swiss Government).

Dr. Balandina-Jaquier began her career in 1993 at McKinsey & Co. and subsequently held various senior positions at ABB Financial Services and AIG Investments. She has been actively involved in the development of the impact investment market since 2005, when she pioneered one of the first institutional impact investment funds (within AIG) and led it until 2010. As an independent consultant, she has helped design and implement impact investment strategies and funds for a variety of clients, including private foundations, international banks, and the Swiss Government. She has led over US\$1 billion worth of investments in

environmental technologies, renewable and conventional energy, healthy living, and infrastructure in emerging and developed markets and has served on the boards of seven companies.

Dr. Balandina-Jaquier is a frequent speaker at impact investing conferences and a lecturer at the University of St. Gallen MBA program on responsible/impact investing. She is the author of *Guide to Impact Investing for Family Offices and High Net Worth Individuals*. Dr. Balandina-Jaquier holds an MBA (with honors) and PhD in finance from St. Petersburg University of Economics & Finance, and is a CFA charterholder.

***Carter Bales, Chairman, Managing Partner, and Co-Founder, NewWorld Capital Group LLC, USA**

For 35 years, Carter Bales has worked in various capacities in the environmental field. His most recent focus is on environmental economics and how to cost-effectively improve energy efficiency. In 2009, he co-founded NewWorld Capital Group, a private equity firm that provides capital and business assistance to companies in the environmental opportunities sector in the United States and Canada. Mr. Bales also writes and speaks about energy policies, research, and finance, advocating that the United States should develop a long-term approach to energy research and face the challenges of sustainable-energy investment. *Learn more about Mr. Bales's work on page 50.*

Scott Barrington, Managing Director and Chief Executive Officer, North Sky Capital, USA

North Sky Capital, an independent registered investment advisor that was established in 2000, launched a U.S.-based cleantech fund of funds in 2006. Since then, its focus, which included buyout and venture sectors, has expanded to include energy infrastructure and clean growth private equity. The company has built 14 private equity and energy infrastructure funds. It is involved in secondary investments, as well as growth equity, and favors growing companies with proven technology and market penetration, particularly in renewable energy, water, transportation, efficiency, agriculture, building materials, recycling, and waste-to-energy industries. Mr. Barrington is an active participant in the sourcing, analysis, and execution of investment decisions and a member of the firm's investment committee. He also holds a seat on the Prevari Investment Board and worked at Piper Jaffray, where he served on the Merchant Banking Investment Committee. He earned his JD from the University of Michigan Law School and previously practiced law at Dorsey and Whitney LLP.

Jeanett Bergan, Head of Responsible Investments, Kommunal Landspensjonskasse (KLP), Norway

Jeanett Bergan's work is to align KLP's practices with principles of responsible investing by using exclusions, engagement, and investments as means to achieve sustainable development. KLP, Norway's largest life insurance company, provides pensions and financial and insurance services to municipalities and counties, while incorporating social and environmental considerations in its daily operations. In particular, the company engages in sustainable development through its work with Norfund. Together, they co-invest in renewable energy in developing countries in Africa and with the Norwegian Microfinance Initiative. Another responsible investment practice of KLP is to exclude companies for ethical reasons, including being linked to the violation of human rights or "severe environmental degradation."

In reporting to the CDP, the only global environmental disclosure system, Ms. Bergan said, "New technology and innovation is continuously improving business and corporate climate footprint. Still, a lot has to be done and particularly towards end users. Greater climate awareness and the introduction of real costs of goods and services incorporating the environmental impact and emissions costs is one important next step." Recently, KLP has agreed to support the United Nation's maximum two-degree global warming target, according to Ms. Bergan, and is considering cutting fossil-fuel companies from its NOK 7.5 billion investments.

David Blood, Co-Founder, Senior Partner, General Investment Management, LLP, UK

David Blood is Senior Partner of Generation Investment Management, a fund management business launched with former U.S. Vice President Al Gore in 2004. Generation has been dedicated to building a unique investment approach that simultaneously considers indicators of future business success as well as sustainability trends (as analyzed in the Harvard Business School case study on the firm). Successful in achieving a goal to be just one more investment firm that can use sustainability criteria to outperform, Generation has been successful to the point that it is not seeking additional assets under management.

Previously, David was CEO of Goldman Sachs Asset Management. His responsibilities there involved portfolio management, sales and client service, risk management and infrastructure investments. David graduated from Hamilton College and received an MBA from Harvard Business School. He is a member of the Board of Trustees of Hamilton College, Social Finance, New Forests and SHINE and a member of the Investment Committee of the Acumen Fund. He also serves on the Advisory Board of Bridges Ventures.

**Olivier Bonnet, Head of Responsible Investment, L'etablissement de Retraite
Additionnelle de La Fonction Publique (ERAFP), France**

Olivier Bonnet oversees implementation of ERAFP's responsible investment policy across all of its asset classes, including equity, corporate bonds, sovereign bonds, and real estate. A €16 billion (US\$21.8 billion) public pension plan based in Paris, ERAFP applies precise environmental, social, and governance screens to its investment allocations. This year, ERAFP added a decarbonization methodology that it developed with the French asset manager Amundi to significantly reduce "the carbon footprint of a €750 million portfolio managed on ERAFP's behalf under an indexed management mandate." According to ERAFP, this decarbonization methodology will contribute to its "approach of selecting only those companies with the best environmental, social, and governance profiles. It applies an additional filter based on their carbon-intensity data (CO₂e emissions / sales): this excludes from the portfolio the overall 5% most polluting companies and the 20% most polluting companies in each sector." In addition, ERAFP will continue to measure carbon and climate risks by supporting research and development initiatives. While the fund does not practice exclusions, it does ask for reports from its outside asset managers and hires outside analysts to compare the portfolios to ERAFP's rules and policies.

Olivier graduated from Universidad Complutense de Madrid and earned a Master in Management from ESCP Europe. Before joining ERAFP, he was an SRI analyst at Vigeo, a French extra-financial rating agency. He also worked as a methodology and product development coordinator and developed customized research for institutional investors, methodology for sovereign bonds ESG rating, and did research on controversial weapons. He joined ERAFP in 2009.

Else Bos, Chief Executive Officer, PGGM, The Netherlands

Else Bos heads PGGM, a cooperative Dutch pension fund service provider that manages pension assets worth approximately EUR 170 billion for seven pension funds and 2.5 million people. A long-time advocate for ESG public-private policies and cooperation, Ms. Bos joined other leading investors in 2007 calling for a climate treaty and framework by declaring that "greater clarity on international climate policy and ambitious greenhouse gas emission reduction targets for industrialized countries would support us in our efforts to take better account of climate change in our investment decision making and help to safeguard our long-term investments. We believe that a robust policy framework is essential to give investors the confidence to mobilize the capital needed for a low-carbon economy"

Aware that ESG factors can strongly affect their clients' return on investment, Ms. Bos is also aware that the investments, businesses, and projects in which

PGGM invests have a global impact. “I find it increasingly important that the financial sector makes its contribution to the sustainability of society,” Ms. Bos has said. PGGM has a strong incentive for directing funds into green growth areas and lowering investments in carbon-intensive industries: the Netherlands, where 60% of the population lives below sea level, is particularly vulnerable to the effects of climate change. Convinced that taking ESG factors into account contributes to good risk management, PGGM developed its own internal index to screen the companies in which it invests. The company continues to actively analyze the financial relationship between ESG factors and investments.

Ms. Bos is also a board member of Sustainalytics, a company that offers sustainability research and consulting to financial firms, and is a board member of the United Nations Principles for Responsible Investment.

James Cameron, Founder and Non-Executive Chairman, Climate Change Capital (CCC); Chairman of the Board of Directors, Senior Management, Think Tank (CCC), UK

James Cameron has spent much of his legal career working on climate change matters, including negotiating the UNFCCC and Kyoto Protocol as an adviser to the Alliance of Small Island States. As a barrister, he appeared in several of the leading cases in international and environmental law. He founded the 11-year-old CCC, an environmental asset-management and advisory business. The company’s asset-management business develops and manages funds that invest in sustainable companies and projects. Its advisory team advises renewable energy companies, energy-intensive industries, financial institutions, clean technology companies, and governments on mergers and acquisitions, finances, strategies, and policies. In 2006, CCC developed and raised the world’s largest private sector carbon fund at EUR 850 million.

James is also the chairman of the Overseas Development Institute; a member of HM Treasury’s Infrastructure UK advisory council; a member of GE’s ecomagination board; an advisor to the Climate Bonds Initiative; a trustee member of the UK Green Building Council and the Carbon Disclosure Project; and a member of the Advisory Panel for the Independent Commission for Aid Impact’s review of the International Climate Fund. He also served as a member of the Green Investment Bank Commission and the UK Prime Minister’s Business Advisory Group (2010–2012). Before founding CCC, James was Counsel to Baker & McKenzie and the founder and head of their Climate Change and Clean Energy Practice. James has held academic positions in Cambridge, London, Bruges, and Sydney and is currently affiliated with the Yale Centre for Environmental Law and Policy.

Mark Campanale, Founder and Executive Director, Carbon Tracker Initiative, UK

Mark Campanale founded the Carbon Tracker Initiative and conceived the “unburnable carbon” capital markets thesis. He commissioned and was editor of Unburnable Carbon, the Carbon Tracker Initiative’s landmark 2011 report on whether global markets are carrying a “carbon bubble.” The report directly inspired Bill McKibben’s seminal Rolling Stone 2012 article on the subject, “Global Warming’s Terrifying New Math.” At the Carbon Tracker Initiative, Mark is responsible for management strategy, board matters, and developing ongoing capital markets framework analysis.

When he formed Carbon Tracker, Mark brought with him twenty-five years of experience in sustainable financial markets. He is a co-founder of some of the first responsible investment funds at Jupiter Asset Management (1989), NPI, AMP Capital, and Henderson Global Investors. His work at Jupiter included the extant Jupiter Ecology Fund.

Mark served on the World Business Council for Sustainable Development working group on capital markets leading up to the 1992 Earth Summit; was a Member of the Steering Committee of UNEP Financial Sector Initiative (1999-2003), and continues to advise a number of investment funds, including Armstrong Energy. He was a founder-director of the UK Sustainable and Responsible Investment Forum (UKSIF), 1990-2006; is a member of the Advisory Council of the Sustainable Accounting Standards Board (SASB); the ImpactBase.org; and the UNEP-WRI working group on greenhouse gas emissions and the financial sector. He is also a trustee of The Rainforest Foundation UK and Chairman of Emerald BioEnergy. Mark has a BA in Politics & Economic History and an MSc in Agricultural Economics.

***John Chaimanis, Co-Founder and Managing Director, Kendall Sustainable Infrastructure (KSI), USA**

KSI is a private equity firm that invests in low-risk and high-yield clean-energy assets. As a co-founder and managing director of KSI, John Chaimanis is focused on deal execution, investor engagement, and fund management. He began working in the clean energy field in 2005 and employs a strategy that evolved from his many experiences in the energy industry. He regularly advises clean energy startups and consults with investors who are looking to understand the clean energy investment landscape. Mr. Chaimanis holds an MBA from Babson College, a BS in Finance from Villanova University, and has earned certification from US SIF for Sustainable and Responsible Investing (SRI). *Learn more about Mr. Chaimanis’s work on page 55.*

Paul Clements-Hunt, Founding Partner, The Blended Capital Group (TBCG), Switzerland

Paul co-founded TBCG with Neil Philcox to bring a mix of financial, legal, and policy expertise to clients who deploy capital to support strong communities, cleaner industry, and a rejuvenated environment. TBCG provides advisory services for groups raising capital across public and private capital markets; assessments of capital-raising strategies for entrepreneurs, companies, and communities seeking sustainability-focused finance and investment; and advisory work to assist with the communication of investment offerings to mainstream institutional investors as well as to high-net-worth individuals and family offices; and advisory services, including policy advice, for public and private organizations addressing ESG issues for projects across a range of asset classes.

In his 25-year career, Mr. Clements-Hunt has worked across business, investment, international affairs, and the media to promote the case for sustainable finance and responsible investment. Previous to founding TBCG, Paul was the head of the United Nations Environment Programme Finance Initiative (UNEP FI) from November 2000 to March 2012. He was a founding board member and UN representative to the Principles for Responsible Investment (PRI), an initiative supported by more than 1,000 of the world's largest institutional investors representing more than US\$32 trillion in assets. He also covered energy and environment for the International Chamber of Commerce and launched an environmental firm in Southeast Asia. He lectures regularly on finance, investment, and sustainability issues.

***Jeff Cohen, Co-Founder and Senior Vice President, EOS Climate, USA**

For over 30 years, Jeff Cohen has worked in the environmental field and developed a number of public-private partnerships across industry sectors to reduce GHG emissions. EOS Climate leverages carbon markets and innovative financial mechanisms as part of its goal to eliminate greenhouse gas emissions through the destruction of ozone depleting substances. The company won in two categories of *Environmental Finance* publication's 15th Annual Market Rankings (December 2014): Best Offset Originator North American Markets (California) and Best Project Developer, North American Markets (All). *Learn more about Jeff Cohen's work on page 60.*

David Crane, President and Chief Executive Officer, NRG, USA

A leader of NRG's transformation from a regional wholesale generation business to a national, diversified energy company, David Crane is also a leading voice on the need for curbing carbon emissions. He was one of the first U.S. power industry

CEOs to call publicly for mandatory climate change measures. NRG has made it a priority to provide clean energy resources and technologies that are critical to competitive businesses as the world transitions to a sustainable, low carbon society. Among the company's assets are natural gas, wind, oil, coal and solar, including the 250 MW California Valley Solar Ranch (CVSR) photovoltaic (PV) generating facility; the 290 MW Agua Caliente Solar Project in Yuma, Arizona; and its newest operation, built by NRG with a group of investors, the Ivanpah, California, plant, the largest solar thermal project in the world. Completed in early 2014 and located in the Mojave Desert, the Ivanpah Solar Electric Generating System generates nearly 400 MW of electricity, which is nearly double the amount of commercial solar thermal energy now generated in the United States.

Mr. Crane leads NRG's efforts in the transition to a clean energy economy through repowering and retrofitting older coal plants, developing carbon capture technology, selling renewable and smart energy retail solutions, and building the nation's largest privately funded network of electric vehicle fast-charging stations. He previously served as CEO of International Power PLC, a UK-based wholesale power generation company, and held positions at Lehman Brothers and ABB Energy Ventures in Sydney, Hong Kong, and New York. David is a BA graduate of Princeton University's Woodrow Wilson School of Public and International Affairs and received his Juris Doctor degree from Harvard Law School.

Kristina Curtis, President, Green Century Funds; Senior Vice President, Green Century Capital Management; Member of Board of Directors, Green Century Capital Management, USA

Ms. Curtis has overseen the operations, administration, and finances for the Green Century Funds since the organization's founding in 1991. She is also responsible for supervising the Funds' investment managers and service providers. Complementing Green Century's position as an investment firm founded by non-profit environmental advocacy groups, its mission "is to provide people who care about the environment a way to invest for their future." Green Century analyzes a company's financial performance and uses negative and positive screens to evaluate the company's environmental standards. Its inclusionary policies include energy efficiency and renewables; water treatment and/or conservation; air pollution control and/or prevention; environmentally sustainable companies; strong social and governance policies; and the implementation of sustainable practices amongst employees and throughout the supply chain.

In 2009, the Green Century Balanced Fund was the first U.S. mutual fund to report its carbon footprint. In discussing Green Century's 2014 decision to become the third fossil-fuel-free diversified responsible mutual fund in the country, Ms. Curtis said, "We have a long tradition of incorporating information and analysis to

hone our investment strategies as new issues emerge, so that we continue to meet our high standards for sustainable and responsible investments seeking competitive returns.”

Before working at Green Century, Ms. Curtis served as the finance director for several affiliated non-profit consumer and environmental advocacy organizations and as an organizer and program director for community and civil rights organizations in Virginia and North Carolina. She earned her BA at Brown University and her MBA at the Yale University School of Management.

Anna Davydova, CFA, Research Analyst, Fidelity Investments, USA

Anna Davydova is a research analyst for Fidelity Investments. Ms. Davydova assumed her current position within the Equity Research division in May 2008 and covers the environmental services sector, MLPs, and refining for Fidelity’s energy and utility team. Ms. Davydova joined Fidelity in 2005 as an equity research associate following coal, oil tankers, small-cap energy services, and select renewable energy companies. After being promoted to equity research analyst, she assumed the full coverage of the renewable energy space, including solar, wind, and other clean energy stocks. Her initial investment interest in the energy sector was sparked by her origins in Russia, a country with massive natural resources that continue to play an important role in the global energy markets today. However, her experiences while living in India and the United States drew her interest toward the environmental and alternative energy sectors as she recognized the global need for clean and sustainable solutions.

Ms. Davydova received a Bachelor of Arts degree in Mathematics and Economics from Wellesley College and is a CFA charterholder.

Paul Decraemer, Senior Investment Manager and Head of Cleantech Investment Practice, Capricorn Venture Partners, Belgium

In 2006, Paul joined Capricorn Venture Partners, a Belgium-based, independent manager of venture capital and equity funds. He is an expert in venture, expansion, and project equity capital in the sustainable technologies industry. The Capricorn Cleantech Fund invests in European innovative growth companies in a broad range of cleantech areas and under the general themes of fire/energy (including intelligent electrical power network technologies and clean power harvesting and conversion technologies); water (including membrane and affinity technologies); air (including decarbonization and CO₂ storage technologies and the removal of nanoparticles); and earth (such as soil decontamination and biobased chemistry).

Paul serves on the Board of Directors of various European companies active in the fields of solar and thermal energy, photovoltaics, biodegradable packaging, and

other environmentally positive technologies. He gained his initial cleantech experience while employed as the Managing Director at Sustainable Energy Ventures and as the Senior Investment Manager of Flemish Environmental Holding Company (VMH). He holds a Master of Bioscience Engineering degree from the University of Ghent and a Master's degree in Financial Management from Vlerick Management School.

Tim Dixon, Professor of Sustainable Futures in the Built Environment, University of Reading, UK

Tim Dixon has conducted extensive research on urban regeneration and sustainability in the built world, including cooperative projects with the European Investment Bank University Research Sponsorship (EIBURS) program on social sustainability and urban renewal; the Royal Institution of Chartered Surveyors (RICS) Green Gauge project, which examined the low carbon plans and strategies of the top 60 cities in the UK; and the Engineering and Physical Sciences Research Council (EPSRC) program in brownfield research. Since 2001, Professor Dixon has been involved in securing more than £2.5 million for research from industry, the research councils, and other sources. He performs significant work as a consultant in the property sector to determine ways to measure social sustainability in property development and regeneration projects, including building on the work he developed and directed for the Oxford Institute for Sustainable Development and EIB.

He began his career as a valuer and qualified chartered surveyor in the Valuation Office and then returned to academia to teach and earn a PhD in IT Applications in Land Management. Professor Dixon's research and writing encompasses sustainable buildings, communities and cities; sustainable development and professional practice; urban regeneration and property development and investment; retrofitting across scales; and futures studies. He is the principal coauthor of *Urban Regeneration and Social Sustainability* and is a member of the editorial boards of four real estate journals dealing with sustainable property investment and management.

Jerome Dodson, Founder, President, and Portfolio Manager, Parnassus Investments, USA

Mr. Dodson is the lead Portfolio Manager of the Parnassus Fund and the Parnassus Asia Fund, and the sole Portfolio Manager of the Parnassus Endeavor Fund, which had the strongest financial performance of an SRI fund of 2014, up over 17% year to date. Parnassus Investments manages the Parnassus Core Equity Fund, which is now the largest public mutual fund in the United States that is explicitly considering

environmental factors and which has over US\$12 billion in assets under management.

Before founding Parnassus Investments in 1984, Jerome served as president and CEO of Continental Savings of America from 1976 to 1982, where he started the “Solar T-Bill” program to finance solar energy installations. While at Continental, he also developed innovative programs to finance low- and moderate-income housing. He received his bachelor's degree in political science from the University of California, Berkeley, and his master's degree in business administration from Harvard Business School.

Leslie Durschinger, Founder and Managing Director, Terra Global Capital, USA

In 2006, Ms. Durschinger founded Terra Global Capital to promote results-based approaches to community-led forest and land-use emission reductions programs. Her work includes finding innovative ways to align development values and financially viable approaches to sustainable landscape management. Terra focuses on forest and land-use emission reductions program development and GHG analytics and finance. It provides technical expertise and investment capital to its global client base of governments, NGOs, and private companies in a collaborative and participatory manner. In 2014, Terra was one of 47 organizations to win a Conservation Innovation Grant totaling US\$530,420 from the Natural Resources Conservation Service. The Terra project lowers the barriers to adopting low emission rice practices for growers by reducing the data collection and verification costs of creating offsets.

Before founding Terra, Ms. Durschinger, who had over 20 years' experience in the financial services industry, held senior management positions in the areas of derivatives trading, investment advisory, algorithmic trading, risk management, and securities lending. She is a member of the Verified Carbon Standard (VCS) AFOLU Steering Committee; REDD+ Social & Environmental Standards Committee; VCS JNR Permanence Work Group; Coalition on Agricultural Greenhouse (C-AGG) Advisory Committee; and W+ Standard Advisory Council. Among her previous employers are JP Morgan, Merrill Lynch, Barclays Global Investors, and Charles Schwab.

***Shin Furuya, Vice President, Responsible Investment and Engagement Specialist, Domini Social Investments; Lead Research Analyst, Nia Global Solutions, USA**

Shin Furuya has been a member of the research team at Domini Social Investments since 2006, where he is Vice President of Responsible Investment Research and an Engagement Specialist. As the Lead Research Analyst for Nia Global Solutions, he is currently working to identify companies with disruptive technologies. Nia Global

Solutions is a new investment strategy launched in 2013 by Domini Social Investments LLC.

Mr. Furuya is a member of the advisory board of the EIRIS Conflict Risk Network. Before joining Domini, he had extensive environmental, social, and governance research and stakeholder engagement experience. *Learn more about Mr. Furuya's work on page 63.*

Al Gore, Co-Founder, Generation Investment Management; Founder, Alliance for Climate Protection, USA

Former Vice President Al Gore is co-founder and chairman of Generation Investment Management, whose mission is “to deliver superior investment performance by consistently taking a long-term view and fully integrating sustainability research within a rigorous framework of traditional financial analysis.” One goal of the company is to counter the capital markets’ dominant short-term view, which indirectly encourages investors to avoid considering sustainability issues, such as climate change, corporate governance, or human capital management. Thus, a key element of Generation’s research is in understanding global challenges. The company conducts primary research on several global themes that may have material implications for businesses and investments, particularly climate change, pandemics, water, and demographics.

Mr. Gore spends the majority of his time as chairman of The Climate Reality Project, a non-profit devoted to solving the climate crisis. He is also a senior partner at Kleiner Perkins Caufield & Byers, and a member of Apple, Inc.’s board of directors. Gore was elected to the U.S. House of Representatives in 1976, 1978, 1980 and 1982 and the U.S. Senate in 1984 and 1990. He was inaugurated as the forty-fifth Vice President of the United States on January 20, 1993, and served eight years. He is the author of *Earth in the Balance*; *An Inconvenient Truth*; *Our Choice: A Plan to Solve the Climate Crisis*; and most recently, *The Future: Six Drivers of Global Change*. He is the subject of an Oscar-winning documentary and is the co-recipient, with the Intergovernmental Panel on Climate Change, of the 2007 Nobel Peace Prize for “informing the world of the dangers posed by climate change.”

Mark Gudiksen, Principal, TPGBiotech, USA

In 2008, Dr. Gudiksen joined TPG Biotechnology, a team of investors formed to translate discoveries and insights in the biomedical sciences into tangible products. TPGBiotech invests with scientific founders and business entrepreneurs to create novel companies and focuses on helping to drive the growth of its existing portfolio. Dr. Gudiksen’s focus is on healthcare and industrial biotechnology and the environment. Before he joined TPG Biotechnology, he was at McKinsey &

Company, where he worked on a broad spectrum of strategic topics and merger and acquisition opportunities.

Dr. Gudiksen received his PhD in chemical physics from Harvard, and his BS in chemistry from Stanford. His doctoral work in nanotechnology was recognized with several highly cited publications in leading scientific journals, such as *Science* and *Nature*, as well as in general audience publications, such as *Scientific American* and the *Wall Street Journal*. Dr. Gudiksen currently serves on the board of directors of several companies: Alphabet Energy, Inc.; Auxogyn, Inc.; ChemEOR Inc.; and Nodality, Inc. He is also a board observer at DNAnexus, Inc.

Jeffrey Immelt, Chief Executive Officer, GE; leader of the U.S. Climate Action Partnership; member of President's Economic Recovery Advisory Board, USA

In his quest to pursue both efficiency and economics at GE, Mr. Immelt has overseen many of GE's environmental investing innovations. Among these is the new GE Transportation's Evolution® Series Tier 4 Locomotive, which lowers emissions by 70% and meets the U.S. Environmental Protection Agency's (EPA) stringent Tier 4 emission standards without the use of any type of after-treatment. GE expects that the Evolution® Series Tier 4 Locomotive will be the first mainline locomotive on the market to meet such standards. In other areas, GE has collaborated with countries and companies to install solar and wind power systems, and in early 2014, Mr. Immelt announced that GE is spending \$10 billion to renew its "ecoinagination" initiative to invest in clean and efficient energy projects.

Mr. Immelt has been the chairman of GE since 2001. He has held several global leadership positions since coming to GE in 1982, including roles in GE's plastics, appliances, and healthcare businesses. In 1989, he became an officer of GE and joined the GE Capital Board in 1997. He earned a BA degree in applied mathematics from Dartmouth College in 1978 and an MBA from Harvard University in 1982.

***Garvin Jabusch, Co-Founder and Chief Investment Officer, Green Alpha®Advisors, LLC, USA**

In addition to being a co-founder and the chief investment officer of Green AlphaAdvisors, LLC, Garvin is co-manager of the Shelton Green Alpha Fund (NEXTX), the Green Alpha Next Economy Index, and the Sierra Club Green Alpha Portfolio. An asset-management firm, Green Alpha Advisors was founded in 2007 with a focus on investments in companies that follow environmental stewardship as part of doing business. Its "Next Economy" investment approach identifies companies and innovations based on sustainable principles and potential for eco-efficient growth. Garvin previously managed the Sierra Club Stock Fund and the

Sierra Club Equity-Income Fund at Forward Management, LLC. He also served as Vice President of Strategic Services at Morgan Stanley, where he contributed to various global projects. *Learn more about Mr. Jabusch's work on page 68.*

Bruce Jenkyn-Jones, Head of Listed Equities and Managing Director, Impax, UK

As the Managing Director of the Listed Equity team, Mr. Jenkyn-Jones oversees Impax's long-only investment strategies and is responsible for the development of the investment process, research, and team development. He also has an active role in the day-to-day management of all Impax-listed equity portfolios. When Bruce joined Impax in 1999, he worked initially on venture capital investments before developing the listed equity business.

Impax Asset Management manages about US\$4.6 billion (£2.9 billion) for institutional and high-net-worth investors globally. The listed equity funds seek those companies they consider to be mispriced and set to benefit from the long-term trends of changing demographics, urbanization, rising consumption, and the resultant increases in resource scarcity. The company focuses its investment on a small number of researched global-equity strategies across markets related to alternative energy, energy efficiency, water, waste, food and agriculture. Impax received a 2014 Queen's Award for Enterprise: Sustainable Development

Before joining Impax, Bruce worked as a utilities analyst at Bankers Trust and as an environmental consultant for Environmental Resources Management (ERM). He has an MBA from IESE (Barcelona), an MSc in Environmental Technology from Imperial College, and a degree in Chemistry from Oxford.

Ma Jun, Chief Economist, Research Bureau, People's Bank of China, China

At a recent Green Finance Roundtable in China, Ma Jun spoke about green finance measures that China needs to embark upon: expanding carbon markets; initiating green bonds with lower financing costs and greater support from the government; establishing green banks and green insurance; providing green education for consumers; ensuring environmental risk disclosure; and initiating a green investors network. His proposals counter an over-abundance of financing for infrastructure projects that don't account for environmental effects and instead cause pollution and resource damage. However, China is moving toward renewable projects, setting a goal of tripling the generation of solar energy. Ma also spoke in favor of longer-dated green bonds to mitigate the risk of having average loan durations of about three years, while possibly requiring more than 10 years to service. The longer terms could help local governments manage the financing.

From 1988 to 1990, Ma Jun was with the Development Research Center of China's State Council. He was an economist and senior economist at the IMF and

World Bank from 1992 to 2000. In 2000, he joined Deutsche Bank. He was voted the number one economist in Asia and the number one China analyst in *Institutional Investors'* polls during the period of 2009–2012. Ma has a master's degree from Fudan University in Shanghai and a PhD in economics from Georgetown University.

Thomas Kabisch, Chief Executive Officer and Chairman of the Board, MEAG Munich ERGO Asset Management GmbH, Germany

Dr. Kabisch was chosen to set up and run MEAG as its CEO in April 1999. He is responsible for the mandate, management, and central functions of the fund for sustainable and entrepreneurial action at MEAG. To fulfill its mandate, the company engages in research on climate change and sustainability in its investments and evaluates them accordingly. MEAG sees its investment funds as demonstrating that economic, ecological, and social requirements need not be a contradiction in terms.

The equity fund MEAG Nachhaltigkeit, which was set up on October 1, 2003, invests primarily in companies that conduct business in a responsible manner throughout the world. The fund selects companies that are known for their environmentally friendly and socially responsible behavior as well as for their financial success. This means the fund supplements leading equities with forward-looking niche providers. Most of the company's external clients are institutional investors, such as pension funds, corporations, and other insurance firms, although it also manages mutual funds for private investors. MEAG manages approximately EUR 190 billion in assets on behalf of customers in Europe, Asia, and the United States.

Dr. Kabisch's previous experience includes his election in 1992 to the executive board of ALBINGIA-Versicherungsgruppe. There, he shared responsibility for the investments, finance, and internal-audit divisions until 1999. Before that, he served in the securities and funds division at Vereinsbund Westbank. He served or serves on the boards of various institutions abroad and in Germany. Dr. Kabisch studied business administration and economics in Germany and in the United States.

***Bruce Kahn, Portfolio Manager, Sustainable Insight Capital Management (SICM), USA**

Bruce has over 25 years of experience in environmental and investment research and management. Currently, he serves as a portfolio manager at Sustainable Insight Capital Management (SICM), a global investment management firm that combines a disciplined alpha-generating process with sustainable investing principles. Previously, Bruce was a director in Deutsche Bank's Asset Management division,

where he acted as an investment strategist and conducted analytical research on sustainable investing. Bruce also managed a sustainable investment portfolio at Citi Smith Barney across a broad mix of sectors, including sustainability leaders, agribusiness, cleantech, and renewable energy companies. Bruce is also an adjunct professor at Columbia University's Earth Institute in the Sustainability Management Program and holds a PhD in Land Resources from the University of Wisconsin–Madison. *Learn more about Mr. Kahn's work on page 73.*

Abyd Karmali, Managing Director, Climate Finance at Bank of America Merrill Lynch, UK

Since March 2014, Abyd Karmali has been the managing director of Climate Finance at Bank of America Merrill Lynch. From 2007, he had served as Lynch's managing director and global head of Carbon Markets. Mr. Karmali is widely considered one of the world's foremost experts in climate finance and its mechanisms, having provided senior strategic advice to governments, UN agencies, and scores of European, American, and Asian companies. He acts as Special Board Advisor to the Climate Markets and Investment Association (CMIA), having been its President from 2008 to 2013. He is also one of two inaugural private sector representatives to the new UN Green Climate Fund, whose mandate is to scale up low-carbon finance to emerging markets. In 2008, his team at Merrill Lynch won *Environmental Finance* magazine's Carbon Finance Transaction of the Year and *The Banker* Award for Most Innovative in Sustainability. For two decades, Mr. Karmali has worked on climate change and financial markets, often with a goal to mobilize climate finance to scale.

Abyd's additional appointments have included service as a board member of the International Emissions Trading Association (IETA); a member of Her Majesty's Treasury Carbon Market Expert Group; a member of the World Economic Forum (Davos) Steering Committee for Advancing Low-Carbon Finance; an advisor to the Carbon Disclosure Project; and an advisor to the Commission to establish Britain's first Green Investment Bank. He was previously employed with ICF International in Washington (DC), Toronto, and London. In 1996 and 1997, he was a Climate Change Officer at the United Nations Environment Programme's Industry Office in Paris, and he participated in the Kyoto Protocol negotiations. Abyd is frequently called upon by the media; has been interviewed for TV and radio by BBC, CNN, NPR, and CNBC; and has been cited in print media, including the *Financial Times*, the *New York Times*, the *Australian*, *Financial Post*, and the *Economist*.

Abyd's voluntary sector activity has included serving as chairman of Just Energy, a not-for-profit social enterprise recently set up by Oxfam to work with low-income communities in developing countries. The program works with the communities to maximize revenues from medium-sized renewable energy

businesses and to increase the supply of clean energy. Mr. Karmali holds an MS in Technology and Policy from the Massachusetts Institute of Technology.

Vinod Khosla, Founder, Khosla Ventures, USA

The entrepreneur, investor, and technologist Vinod Khosla founded the firm Khosla Ventures to help entrepreneurs build pioneering energy and technology companies. The company raises funds to invest in green-tech, sustainable start-up firms, with a particular interest in the development of biofuels and other alternative energy sources. Through the Khosla Seed fund, he targets and invests in high-risk scientific and technological projects that would be denied funding elsewhere. Vinod formed Khosla Ventures to focus on both for-profit and social-impact investments.

Before founding Khosla Ventures, Vinod established several other companies, some of which failed. One success he had in 1982 was with the standards-based Sun Microsystems, which builds workstations for software developers. As the founding CEO of Sun, Vinod pioneered open systems and commercial RISC processors. He is also currently a charter member of The Indus Entrepreneurs (TiE), a non-profit global network of entrepreneurs and professionals that was founded in 1992 and has more than 40 chapters in nine countries today.

Vinod earned a bachelor's degree in electrical engineering from the Indian Institute of Technology (IIT) in New Delhi, a master's degree in biomedical engineering from Carnegie Mellon University, and a master's degree in business administration from the Stanford University Graduate School of Business.

Sean Kidney, Co-Founder and Chief Executive Officer, Climate Bonds Initiative, UK

The Climate Bonds Initiative is an investor-focused not-for-profit based in London. It works internationally to mobilize debt-capital markets to fund a rapid, global transition to a low-carbon and climate-resilient economy.

The Initiative advises development banks, investors, governments, and NGOs about structuring programs to maximize the advantage of public-sector resources. These programs include building green investment banks, green securitization, and sustainable financial solutions for large-scale energy-efficiency schemes. Projects include developing proposals for the European Commission's Directorate-General of Climate Action on Europe's role in mobilizing private-sector capital for climate solutions; helping to organize a green bonds workstream for the UN Secretary-General's Climate Summit; and working with the Chinese Government's State Council on growing green bonds in China.

The Climate Bonds Initiative also runs an International Standards and Certification Scheme for climate bonds. Investor groups representing assets of

US\$22 trillion sit on its board, and some 50 organizations are involved in its development and governance structure.

An experienced international speaker, Sean has, over the past year, spoken at conferences and seminars in Toronto, New York, Boston, Washington DC, Paris, Frankfurt, Utrecht, London, Casablanca, Doha, Beijing, Hong Kong, and Sydney.

Sean is a member of the German International Aid Ministry's TRANSfer Expert Group on "Using Climate Financing to Leverage Sustainable Transport," a director of the Network for Sustainable Financial Markets, and a director of the Be Earth inter-governmental organization. He served as a member of the Commonwealth Secretariat's Expert Committee on Climate Finance, is a social marketer and publisher, and was previously an award-winning marketing advisor to a number of the largest Australian pension funds.

***Matthew Kiernan, Founder and Chief Executive, Inflection Point Capital Management (IPCM); UK**

Inflection Point Capital Management (IPCM) was founded in 2009 and has roughly \$1 billion under advisement. The firm will be launching new, environmentally driven investment strategies in both listed real estate and climate finance in early 2015. Its strategies are built around combining traditional fundamental and quantitative financial analysis with IPCM's proprietary research on forward-looking, "non-traditional" drivers of risk and return. Before founding IPCM, Dr. Kiernan had been the founder and Chief Executive of Innovest Strategic Value Advisors, an investment research and advisory boutique that was rated as first in the world in the sustainable-investment space by institutional investors. He also had served as director of the World Business Council for Sustainable Development in Geneva and as a senior advisor to the Secretary General of the UN Earth Summit in Rio de Janeiro in 1992. *Learn more about Mr. Kiernan's work on page 77.*

Nanno Kleiterp, Chief Executive Officer and Chairman of the Management Board, Entrepreneurial Development Bank (FMO); The Netherlands

Nanno Kleiterp was appointed as CEO and chairman of the Management Board of FMO in 2008. Before that, from 2000 to 2008, he was responsible for FMO's risk-bearing profile as Chief Investment Officer. From 1987–2000, he held a number of positions within FMO, including manager of small- and medium-sized enterprises, regional manager of Latin America, and chief finance officer.

FMO, the Dutch development bank, operates under the belief that entrepreneurship is key to creating sustainable economic growth and improving people's quality of life. Because of this conviction, the bank finances businesses, projects, and financial institutions in developing and emerging markets, with the

aim of supporting sustainable private-sector development. The bank's investments are focused in the sectors where its contribution can have the largest long-term impact: financial institutions; energy; and agribusiness (food and water).

Nanno gained extensive experience in private-sector development while working in Nicaragua, Mexico, and Peru. He joined the board of IUCN NL in April 2013. He is a member of Worldconnectors and of the Amsterdam Institute of Finance Advisory Council. He sits on the Advisory Board of the International Institute of Social Studies (ISS), serves on the board of the Natural Capital Coalition, and serves as the CEO of the Association of European Development Finance Institutions.

Zoe Knight, Head, Climate Change Centre of Excellence, HSBC, UK

Zoe Knight joined HSBC in 2010 as a Director of Climate Change Strategy in Global Research and was appointed head of the Climate Change Centre of Excellence in early 2014. She has been an investment analyst at global financial institutions since 1997, initially focusing on Pan European small-cap equity strategy and subsequently moving into socially responsible investing, covering climate change issues. She is a regular speaker at events such as the UN Investor Network on Climate Risk, the UN Principles for Responsible Investment, and at the House of Commons for the All Parliamentary Group on Water and Sanitation in the Third World. Throughout her career, she has been ranked in Extel and II. She holds a BSc (Hons) in Economics from the University of Bath.

Zoe previously worked for Absolute Strategy Research, Cheviot Asset Management, Merrill Lynch, and UBS. While at Merrill Lynch, she originated the sustainable and socially responsible research effort, which included thematic research on climate change issues; working with sector analysts to integrate ESG issues in stock recommendations; and working with companies and investors on effective disclosure of CSR issues. Zoe also speaks at conferences around the world and has contributed a chapter on energy efficiency to the book, *Investment Strategies for a Low Carbon World*.

Shawn Kravetz, Founder and Fund Manager, Esplanade Capital, USA

Esplanade Capital Electron Partners LP, one of two funds managed by Shawn Kravetz, was one of the first pure-play solar sector funds. It is a private investment fund dedicated to public securities in solar energy and those sectors affected by its emergence. Shawn founded Esplanade Capital to manage capital for a small number of families, private investors, and institutions. Its other private investment partnership is Esplanade Capital Partners I LLC. The company focuses on a variety

of sectors: retail, consumer products, casino gaming, business services, education, and solar power.

Shawn earned an undergraduate degree in economics at Harvard University and an MBA with high distinction from Harvard Business School, where he was named a Baker Scholar. His previous experience was as a principal at the Parthenon Group, a leading strategy consulting firm. Before that, he was director of Strategic Planning and Corporate Development for CML Group, a New York Stock Exchange company. In addition, Shawn worked at Monitor Company and the Sara Lee Corporation. The proprietary Esplanade Capital investment strategy grew from his wide-ranging business and market experience.

Andrew Lackner, GE Ventures: Senior Director, Energy Ventures, USA

Mr. Lackner leads investments in the power, water, and energy management markets. He has managed GE's investment in over 40 companies that are developing promising energy technologies and disruptive business models. In 2007, Andrew joined the GE energy-focused venture-capital team, then a part of GE Energy Financial Services. He managed the US\$100 million investment program of the ecomagination Innovation Challenge, GE's first open innovation program, and focused on finding promising partners in the renewables, electrical grid automation, and smart buildings markets.

His previous experience includes working as an investment professional at Columbia Capital; as a strategy consultant for early stage companies and corporate venture capital programs at Fletcher Spaght; and in product management at MicroStrategy. Andrew received his Master of Engineering Management, Bachelor of Engineering, and Bachelor of Arts in Engineering Sciences from the Thayer School of Engineering at Dartmouth College.

Tony Lent, Senior Managing Director, Wolfensohn Fund Management, LP; USA

Tony Lent is a managing director of Wolfensohn Fund Management with oversight for clean energy. He has 19 years of private equity investment and financial advisory experience focused on low-carbon energy and natural resources. He serves on the Investment Committee and has board roles in a joint venture with GE Energy in wind development in Eastern Europe and in OPX, a renewable chemicals company.

From 2003 to 2009, he was a co-founder, managing director, and president of US Renewables Group, a US\$750 million private equity group focused on proven renewable energy and scaling promising energy technologies. He assembled the founding management team, shaped the firm's investment strategy, and led or participated in fourteen deals spanning solar, wind, geothermal, biomass, first- and

second-generation biofuels, and energy storage. From 1994 to 2002, he co-founded EA Capital and was a managing director of the financial advisory firm, focused on cleantech commercialization and the development of funds in renewables, carbon, and sustainable forestry. From 2005 to 2010, Mr. Lent served on the Investment Committee of the Sea Change Fund, an impact venture fund focused on sustainable fisheries-linked investments. He received an MBA from UC Berkeley, and a BS in biology from Tufts University.

Mark Lewis, Senior Analyst for Energy and Climate Research, Kepler Cheuvreux, France

Kepler Cheuvreux is a leading independent European financial services company specializing in advisory services and intermediation to the investment management industry. It is considered a truly entrepreneurial business because its employees and management own 38.3% of the equity. Mr. Lewis is a part of the sustainability research team at the Kepler Cheuvreux, Research Division. In a 2014 Kepler Cheuvreux report *Stranded Assets, Fossilised Revenues*, Mr. Lewis wrote that “Under a global climate deal consistent with a 2°C world, Kepler Cheuvreux estimates that the fossil-fuel industry would stand to lose US\$28trn (in constant 2012 US dollars) of gross revenues over the next two decades, compared with business as usual. . . . The report concludes that there is an opportunity for the oil industry to engage in a transparent dialogue with investors on the carbon risks it faces and thus provide a transparent stress test of its business model against potential future climate-policy scenarios.” Mr. Lewis’s research on power, gas, and emissions markets has been ranked Number 1 by the benchmark Energy Risk survey of global commodities investors in 2011, 2010, 2009, and 2008.

Mr. Lewis previously served as a managing director of Commodities Research and head of Energy Research at Deutsche Bank AG, Research Division. The markets he covered included European Union natural gas, power, and carbon allowances. He has 14 years of experience as a financial analyst of European energy markets, and worked before that as an academic at London University. He is a member of the advisory board at the Carbon Tracker Initiative. Mr. Lewis holds an MPhil from Cambridge University, an MA from London University, and a BA in modern languages and economics from Sheffield University.

Susan MacArthur, Managing Partner, Greensoil Investments, Canada

Greensoil Investments is an investment house with a portfolio of venture-capital and private-equity funds. It focuses on investing in companies that create value by offering products and services that enable smart and efficient utilization of resources such as time, energy, electricity, water, people, and land. Designated a

2015 Clean50 winner in the category “Angels: Investors & Eco System Support,” Susan McArthur was recognized for the Building Innovation Fund, a growth-equity fund investing in companies that provide products, services, or technologies that make real estate assets more efficient. It will leverage its network of building owners and developers for the benefit of its portfolio companies. The award noted the significance of the fund, given that the real estate industry is “the largest single user of natural resources.”

Susan worked previously as a senior investment banker at Jacobs Securities, advising on a wide range of renewable energy transactions, including the financing of offshore wind in the North Sea and North America’s only lithium mine. She has advised clients on transactions, including acquisitions and divestitures, public and private equity and debt financing, capital restructuring, and other strategic initiatives. She also worked at Rothschild Canada Limited in Toronto; Lazard Freres & Co in New York and Paris; and The First Boston Corporation in New York; and will remain a special advisor to Jacob Securities. She is a graduate of the University of Western Ontario.

Donald MacDonald, Chairman, International Investors Group on Climate Change (IGCC); Trustee Director, BT Pension Scheme, UK

Mr. MacDonald serves as the chairman of the Institutional Investors Group on Climate Change (IIGCC), an investor forum for collaboration on climate change. Its purpose is to encourage public policies, investment practices, and corporate behavior that address long-term risks and opportunities associated with climate change. There are currently 85 members, including some of the largest pension funds and asset managers in Europe, representing around €7.5trillion of funds under management.

Mr. MacDonald is also a trustee at BT Pension Scheme (BTPS), which has about 340,000 members, of whom over half are presently pensioners. It is the UK’s largest corporate pension scheme. It is a defined benefit (final salary) scheme that was closed to new members some years ago. BTPS appointed Hermes Equity Ownership Services (EOS) to assist with its responsibilities as a long-term shareholder. Through EOS, BTPS believes it receives the highest standard of stewardship for its shareholdings, carried out by a team that brings about corporate change through a focused and value-oriented approach. In particular, social, ethical, environmental, and governance issues are key areas of corporate and policy engagement for BTPS and they are present in all of EOS’s engagement analysis, which is itself based on the Hermes Principles.

Mr. MacDonald previously served as the chair of Principles for Responsible Investment and as the telecom-organizing officer for the Communication Workers Union (in the UK), 1999–2004. He is currently a member of the Marathon Club,

whose goal is to stimulate pension funds, endowments, and other institutional investors and their agents to take greater account of the long-term in their thinking and actions.

Karen Meidlinger, Founder and Managing Partner, Meidlinger Partners, USA

Meidlinger Partners invests in, grows, and develops water technology and product and service companies that have scalable solutions for addressing the world's water problems. These solutions include cleaning and treating water and wastewater in an energy-efficient manner that also meets governmental standards. The company provides late-stage venture and growth equity to private lower market companies in the United States and Western Europe. It looks for significant minority and control stakes in profitable and near-profitable companies in the water industry with annual revenues primarily in the US\$2 to US\$20 million range.

A trained scientist, Dr. Meidlinger earned her BSc in marine biology from the University of Liverpool and her PhD in marine ecology from the University of Southampton in the United Kingdom. Her scientific field and postgraduate work took her to such places as Antarctica and Mozambique before she decided to pursue an MBA at the University of Cape Town, which led to her interest in entrepreneurship. She then applied her ecological systems training to developing business strategies for start-up companies.

She has served as the associate director of the Wharton Small Business Development Center and as a project director at Wharton Entrepreneurial Programs. She joined the University City Science Center in 2000, and Johnson & Johnson in 2005. At J&J, she spent 4 years leading various innovation management projects and identifying new technologies that would drive future business growth for the corporation.

**Andrew W. Mitchell, Founder and Director, Global Canopy Programme;
Co-Founder and Director, The Natural Capital Declaration, UK**

Andrew W. Mitchell is a leading authority on forest canopies and related climate change issues. His extensive field experience in Asia, Africa, and Latin America combines with a thirty-year career spanning research, journalism, broadcasting, policy, and global project management. In 2001, he founded the Global Canopy Programme (GCP), an international network linking 38 leading scientific institutions in 19 countries engaged in research, conservation, and education for investigating the impact of climate change on biodiversity and ecosystem services

in forest canopies. In his capacity as founder and director, Andrew has coordinated the growth of GCP into an influential alliance, using networks developed within the international science community to offer a global perspective on science, policy, and finance for forests.

The Natural Capital Declaration, co-founded by Andrew, is a finance sector initiative, endorsed at the CEO level, to integrate natural capital considerations into loans, equity, fixed income and insurance products, as well as in accounting, disclosure, and reporting frameworks.

Andrew is also a co-founder of the UK Corporate Environment Responsibility Group, which now incorporates over 30 blue-chip companies. He has advised on environmental policy and marketing strategy for companies including McDonalds, Barclays, and British Airways, and has actively lobbied governments throughout the world, as well as at the United Nations Conventions on Biological Diversity and Climate Change, on climate mitigation and adaptation policy.

He is a former Research Associate of the Zoology Department, University of Oxford, and was the former Rufford Research Fellow in Environmental Understanding, at Green College. He is the author of seven books, including *The Enchanted Canopy*, and many articles for newspapers and magazines. His work has been translated into six languages.

Tom Murley, Head of Renewable Energy Team, HgCapital, UK

Tom Murley leads the renewable energy team at HgCapital and is responsible for HgCapital Renewable Power Partners' funds. He joined HgCapital in 2004 and has more than 15 years of experience in providing equity finance to the conventional- and renewable-power sectors in the United States and Europe. HgCapital established its dedicated renewable-energy investment team in 2004 and raised its first dedicated fund in 2006, following two years of sector research. In 2011, it closed its second dedicated renewable-energy fund. The team invests in utility-scale renewable-energy projects in Western Europe via proven technologies, such as onshore wind and small hydro, and by using an infrastructure-fund-investment approach.

Tom formerly co-headed the Allianz Private Equity's renewable energy team, and was previously with the EIF Group. He is the chairman of the British Venture Capital and Private Equity Associations Board on Sustainable Energy, Environment, and Technologies. He also sits on the economics and markets committees of the British and Swedish Wind Energy Association. Tom has degrees from Northwestern University and Fordham University School of Law.

Amy Muska O'Brien, Managing Director and Head of the Responsible Investment Team, TIAA-CREF Asset Management, USA

Amy Muska O'Brien joined TIAA-CREF in 2005. As the managing director and Head of TIAA-CREF's Responsible Investment Team, she currently leads the implementation of the company's responsible investment policies and its ESG work, which includes ESG-focused funds, integration frameworks and its community and impact investing portfolios for the asset management division. Previously, Ms. O'Brien served as director of corporate social responsibility at the Pension Boards of the United Church of Christ, where she developed and implemented socially responsible investment strategies and served as the research manager at the Council on Economic Priorities, the non-profit research firm that led the way in the field of corporate social and environmental responsibility ratings for investors and consumers.

Ms. O'Brien earned a BS in biology from Boston College and an MS in environmental management and policy from Rensselaer Polytechnic Institute. In the past, she has served on several boards, including the Board of Directors of the Social Investment Forum (SIF), a national nonprofit membership association dedicated to advancing investment practices that consider environmental, social, and corporate governance criteria. In 2014, she was named to the Principles for Responsible Investment (PRI) Initiative's Reporting and Assessment Steering Committee.

Mary O'Malley, Vice President, Environment and Sustainability, Corporate Governance, Prudential Financial, Inc., USA

Ms. O'Malley oversees the strategy for, and the coordination of, sustainability initiatives across Prudential's businesses and corporate functions that promote the company's long-term vitality and value creation. Prudential's commitment is to foster clean and renewable energy and energy efficiency, in its own operations and in its investments by reducing its operational footprint, investing sustainably, and engaging internal and external stakeholders.

Additional responsibilities of Ms. O'Malley include performance measurement and reporting on those initiatives to external stakeholders, as well as to Prudential's Board of Directors. She is also the founding chair of Prudential's Environmental Task Force.

Ms. O'Malley has been with Prudential for more than 35 years and has held various positions in the departments of corporate social responsibility, corporate communications, issues management, and human resources. Previously, she served as vice president, local initiatives in the community resources department. In that position, Ms. O'Malley was responsible for directing and managing Prudential's

public involvement efforts worldwide. She currently serves as a member of the Global Advisory Council of Cornerstone Capital, as a participant in the Aspen Institute's Business and Society Leaders Forum, and as a trustee of the nonprofit Citizens Campaign. She is a graduate of the University of Massachusetts.

Harold J. Örneberg, Founder, the Forest Company Ltd; Founder and Chief Executive Officer, Timber Capital Ltd; Co-Founder, Director, and Chief Executive Officer of the Investment Manager, Channel Islands

The Forest Company invests in sustainable forest plantations in South America. The company's CEO, J. Harald Örneberg, has also been a principal and shareholder of The Investment Manager since co-founding the firm in June 2007. The Investment Manager is responsible for sourcing, evaluating, negotiating, completing and monitoring investments for the Forest Company. The Forest Company Limited is a closed-ended investment company that was founded in 2007 in order to take advantage of investment opportunities in trees, timberland, and timber-related assets. It focuses on forest plantations in areas with high biological growth rates, such as Brazil and Colombia. The Forest Company has raised US\$300 million in equity capital through private placements to institutional investors, family offices, and management. Thus far, the company has committed capital to five projects, which include both greenfield and standing plantations located in Brazil and Colombia. The Forest Company's vision is to become one of the leading investors in sustainably managed forest assets and to provide competitive real investment returns for the company's shareholders. In keeping with its vision, the Forest Company seeks to invest in forestry projects that are or will be certified by a reputable forest-management certification scheme. The company does not acquire native forest for harvesting.

Before forming the Investment Manager, Mr. Örneberg was the founder and CEO of ORN Capital. From 1999 to 2005 Mr. Örneberg was manager of the ORN Event Fund and from 2002-2007 the manager of the ORN Multi-Strategy Fund. Before founding ORN, he served as vice president in the merger arbitrage group of Salomon Smith Barney; was an investment manager at Industri Kapital (originally Enskilda Ventures, a division of SEB); worked in the mergers and acquisitions group of Enskilda Securities, also a division of SEB; and was a financial analyst in the investment banking division at Salomon Brothers. Mr. Örneberg received an MBA from The Amos Tuck School of Business at Dartmouth College in 1990 and a BSc in monetary economics from the London School of Economics in 1986. He has extensive experience in the Swedish forest industry, where he has managed forestry assets for the past 20 years.

William H. Page, Senior Vice President, Essex Investment Management Company, LLC, USA

Bill is a Portfolio Manager on the Essex Global Environmental Opportunities Strategy (GEOS) and directs environmental investment policy and research for Essex. Before joining Essex in 2009, he spent eleven years at State Street Global Advisors (SSgA); worked in product management for Wellington Management Company, LLC; and worked for Fidelity Investments in asset allocation. During business school, Bill worked on socially responsible investment research at KLD Research & Analytics. He earned a bachelor's degree in economics from Boston University and an MBA from the F.W. Olin School of Business at Babson College. *Learn more about Mr. Page's work on page 81.*

Kyung-Ah Park, Head of the Environmental Markets Group, Goldman Sachs, USA

Kyung-Ah Park is head of the Environmental Markets Group for Goldman Sachs, which oversees and supports its global environmental initiatives. She manages the Center for Environmental Markets, which partners with corporations, NGOs, and academic institutions to advance market-based solutions to environmental challenges. Thus far, Goldman Sachs has helped finance over US\$20 billion in renewable energy, having previously committed to investing over US\$40 billion during this decade.

Ms. Park also serves on the firm's Physical Commodity Review Committee. Previously, she was a vice president in the Industrials Group within their Investment Banking Division and an executive director of Goldman Sachs Asia LLC, where she worked in an advisory capacity with regional clients. She joined Goldman Sachs's mergers and acquisitions department in New York in 1998 and was named managing director in 2010. She previously worked as a management consultant for McKinsey in Korea and South Africa and received her MBA from Harvard Business School.

***Kevin Parker, Chief Executive Officer, Sustainable Insight Capital Management (SICM); Board of Directors of the Sustainability Accounting Standards Board, USA**

Mr. Parker has over 33 years of experience on Wall Street and over 17 years of experience in entrepreneurial ventures in impact investment, organic farming, and e-commerce. As the CEO of Sustainable Insight Capital Management (SICM), he oversees this New York-based global asset-management firm, launched in 2013. SICM combines a disciplined, alpha-generating process with sustainable environmental, social, and governance (ESG) principles. It is backed by Capricorn

Investment Group and the Kresge Foundation. Previously, Mr. Parker served as a member of the Group Executive Committee of Deutsche Bank from its inception in 2001. He also served as the global head of Asset Management, where he was responsible for managing a broad range of assets, including equities, fixed income, real estate, infrastructure, private equity, hedge funds, sustainable investments, and other businesses. *Learn more about Mr. Parker's work on page 85.*

Howard Pearce, Founder and Executive Director HowESG, UK

HowESG is an independent consultancy that provides specialist technical advice and develops innovative and implementable solutions in a range of areas, including strategy development, business planning, and project management; corporate social (environmental) responsibility (CSR) and governance; sustainable (environmentally) responsible investment (SRI) and reporting; and environmental, social, and governance (ESG) issues and strategies. HowESG was established in 2013 and incorporated as a limited company in 2014.

Howard has over 35 years of senior management experience in the water, sports, leisure, environmental, and financial sectors at local, regional, national, and international levels. As the head of Environmental Finance and Pension Fund Management for the UK Environment Agency (March 2002 to May 2013), Howard was responsible for the pensions of 22,000 members and the investment of £2.1 billion, including 0.25 million allocated to real assets. Under his leadership, the EAPF won numerous United Kingdom, European Union, and global awards for its financially and environmentally responsible investment strategy. The Environment Agency Pension Fund (EAPF) was the first UK fund to have an “environmental overlay strategy,” to sign up to the UN PRI, and to produce a Responsible Investment Review.

Howard is also non-executive trustee of Above and Beyond, an NHS hospital charity, and a board member of Cowes Harbour Commission. He was previously a Member of the Environment Agency's pensions committee and a director of a local environmental trust funded by Landfill Tax.

Rebecca Pearce, Director, Sustainability, CBRE, Australia

CBRE is a worldwide, full-service real estate services company. As the director of CBRE's sustainability agenda in the Pacific region, Rebecca Pearce leads sustainability strategy development and implementation for the Australia and New Zealand division. Her leadership focuses on regionally appropriate initiatives that are in line with CBRE's global corporate commitments. In addition to overseeing the management and reduction of CBRE's corporate environmental footprint, Rebecca works to raise internal company awareness of sustainability opportunities

and innovations. She also works with the senior management of U.S. and Asia sustainability teams to promote the company's global best practices. Ms. Pearce was instrumental in the achievement of CBRE's carbon neutrality and certification under Australia's National Carbon Offset Standard.

Rebecca's responsibilities also include assisting CBRE leaders and clients by identifying sustainability risks and opportunities and drafting responses to changing legislation and market trends. She works across the CBRE team to create practical sustainability strategies for clients to add value to their portfolio and their business.

Rebecca has considerable international experience in the construction and property sector. She joined CBRE after 2 years in the Middle East working with the Sustainability Advisory Group, advising organizations on business strategy, performance, and governance in relation to their social, environmental, and economic sustainability. Previous roles include co-leadership of Westpac's Sustainability Strategy, leadership roles in Westpac's Property division, and senior architectural positions in the United Kingdom and Australia.

***Torben Möger Pedersen, Chief Executive Officer, PensionDanmark, Denmark**

Mr. Möger Pedersen leads PensionDanmark, a labor market pension fund established in 1993 that offers defined contribution pension, insurance, and health care products on the basis of collective agreements covering 660,000 individuals employed in 25,000 companies within the private and public sector. Its total assets are 170 billion DKK, and are growing rapidly. In 2014, Mr. Möger Pedersen was appointed to the UN Green Climate Fund's Private Sector Advisory Group. He is also a newly appointed member of the World Economic Forum network Global Agenda Council on Climate Change. In 2013, the British magazine *Environmental Finance* named him the "Environmental Finance Personality of 2013" in recognition of his active contribution to the UN's work with climate investment and in recognition of PensionDanmark's role as an international leader among pension funds that are making direct investment in large sustainable energy projects. *Learn more about Mr. Möger Pedersen's work on page 90.*

Nancy Pfund, Founder and Managing Partner, Double Bottom Line (DBL) Venture Capital, USA

DBL Investors is a venture capital firm whose goal is to combine top-tier financial returns with meaningful social, economic, and environmental returns in the regions and sectors in which it invests. As a proponent of impact investing, DBL has helped to reveal the power of venture capital to promote social change and environmental improvement.

Ms. Pfund currently sponsors or sits on the board of directors of several companies, including SolarCity (on the audit and compensation committees), Bright-Source Energy, Primus Power, Ecologic Brands, EcoScraps, OPX Biotechnologies, PowerGenix, and, before their public offerings, Tesla Motors and Pandora Media. Before founding DBL, Ms. Pfund was a managing director in Venture Capital at JPMorgan, and began her investment career at Hambrecht & Quist in 1984. She has also taught and worked with universities, and in 1988, she was appointed by President Bush to be a charter member of the National Advisory Council for Environmental Policy and Technology. In 1999, Ms. Pfund was appointed by President Clinton to serve on the Congressional Web-based Education Commission.

Ms Pfund writes and speaks on impact investing topics and is the coauthor with Benjamin Healey of the report on the history of U.S. energy subsidies, “What Would Jefferson Do? The Historical Role of Federal Subsidies in Shaping America’s Energy Future”; coauthor with Michael Lazar of “Red, White & Green: The True Colors of America’s Clean Tech Jobs”; and coauthor with Noah Walker of “Ask Saint Onofrio: Find-ing What Has Been Lost in A Tale of Two Energy Sources.” Ms. Pfund received her BA and MA degrees in anthropology from Stanford University, and her MBA from the Yale School of Management.

Alex Rau, Principal and Founding Partner, Climate Wedge, Ltd, USA

Alex brings nearly a decade of experience in carbon finance, emissions trading, and environmental commodities to his work at Climate Wedge Ltd, an independent carbon management and investment advisory firm. The team at Climate Wedge pursues principal investments and GHG reduction project development in the carbon markets, and provides carbon finance and emissions-trading related advisory and asset management services to corporations, financial institutions, and low-carbon technology providers around the world. Together with its partners, Climate Wedge develops, structures financing, and transacts a pipeline of proprietary CDM- and renewable-energy projects, which offer buyers of compliance credits a solid stream of high-quality emissions reductions. The company is exclusively focused on developing, financing, and maximizing the financial value of carbon assets.

Alex was previously part of the Climate Change Services team in PricewaterhouseCoopers's Energy Corporate Finance practice in London, where they worked at developing and structuring portfolios of carbon assets during the early stages of the Clean Development Mechanism market as well as designing Kyoto response strategies for multinational corporations. He has worked on carbon-related issues with numerous clients, including Cheyne Capital, McKinsey &

Company, Rio Tinto, News Corporation, Electricite de France, the California Public Employees Retirement System (CalPERS), and CSIRO.

Alex is also a coauthor of the original version of the Voluntary Carbon Standard, the most widely accepted trading standard for non-Kyoto carbon assets, and has published in journals ranging from Science to the Harvard Business Review. He has a PhD in physics from Oxford University, a BA from Cornell University, and is a CFA charterholder.

Nick Robins, Co-Director, Inquiry into the Design of a Sustainable Financial System, UNEP, UK

Nick Robins, who has over 20 years of experience in the policy and investment areas of sustainable development, is now playing a lead role within the United Nations regarding the design of financial systems. He was previously the head of HSBC's Climate Change Centre of Excellence, where his research included coverage of climate bonds, evaluation of the potential risks of stranded assets from carbon constraints, estimates of the growth prospects of the global low-carbon economy, and analyses of country-level "green stimulus" following the financial crisis of 2008. Nick won numerous Thomson Extel awards for his analysis work during this period.

Before his work at HSBC, Nick was head of SRI funds at Henderson Global Investors, where he led a team in deploying SRI as anticipatory research, combining engagement with action. For example, Henderson anticipated problems ahead of time with then-public company Railtrack, first engaging with it, and then selling out before the Hatfield disaster and before the company's nationalization. Henderson also identified systemic safety failings at BP ahead of the Texas City incident and sold its stock before the Gulf of Mexico crisis. Nick launched the concept of investor climate accountability, having performed the world's first climate audit of an investment fund at Henderson in 2005, an idea now evolving into what is known as the UNEP Portfolio Decarbonization Coalition, which seeks commitments of portfolios to "decarbonize" US\$100B or 20% of their portfolio holdings before the 2015 COP 21 meetings in Paris. Nick also helped launch the Henderson Industries of the Future fund.

Nick and Simon Zadek are currently co-directors of the UNEP Inquiry into the Design of a Sustainable Financial System, which seeks to catalyze actions necessary to enable the financial system to support a transition toward an inclusive green economy. To achieve its aim, the Inquiry has mapped current best practice and is drawing together principles and frameworks, while advancing new thinking and laying out options for advancing a sustainable financial system. The Inquiry is also contributing to related initiatives across the UN system in the lead-up to COP 21. Nick is the author of several books, including *The Corporation that*

Changed the World: How the East India Company Shaped the Modern Multinational (2006), and co-editor with Cary Krosinsky of *Sustainable Investing: The Art of Long-Term Performance* (2008).

Walter Schindler, Managing Partner and Founder, SAIL Capital Partners, USA

Mr. Schindler co-manages all aspects of SAIL's operations and investments. His primary responsibilities include capital, finance, operations, exits, and communications. SAIL pursues a proprietary venture-capital strategy, investing in leading sustainable-innovation companies. It looks for companies that focus on solving critical global natural-resource challenges by using pioneering technology and excellent management, such as in energy and water technology.

Under Walter's leadership, SAIL has been selected by the World Economic Forum as a member of its Community of Global Growth Companies. In addition, the United States Department of Commerce has chosen SAIL Capital to co-lead with Deutsche Bank the U.S. Trade Mission on Clean Energy to Germany and to participate in the first Impact and Sustainable Trade Mission to Europe with investor meetings in Zurich, Amsterdam, and London.

Recently, Walter was elected to the Board of Directors of Fulbright Canada. He also serves on the board of directors of CNS Response Inc.; the North American advisory board of The Cleantech Group; the advisory board of US Bank; and is a member of the Chief Executive Roundtable of the University of California at Irvine.

Walter's previous experience included serving as the partner in charge of Gibson, Dunn & Crutcher's Orange County, California, office, where his 19-year career involved advising clients on IPOs and mergers. He earned his BA, MA, and PhD from Yale University and his JD with honors from Harvard Law School.

Jigar Shah, President and Co-Founder, Generate Capital, USA

Jigar Shah recently co-founded Generate Capital, a specialty finance company that builds, owns, operates, and finances infrastructure assets involving the world's critical resources: energy, water, agriculture, and basic materials. He previously founded and served as CEO of SunEdison (NASDAQ: SUNE), where he pioneered "no-money-down-solar" and unlocked a multibillion-dollar solar market, creating the largest solar-services company worldwide.

After SunEdison, Jigar served as the CEO of the Carbon War Room, a global non-profit founded by Sir Richard Branson and Virgin Unite to help entrepreneurs address climate change. Generate Capital, the Carbon War Room, and SunEdison all follow from Jigar's vision that business-model innovation will have an outsized impact on bringing about the next productivity revolution—resource efficiency. He is committed to helping both entrepreneurs and large companies implement

resource-efficiency solutions by using “no-money-down” project-finance models. Jigar, the author of *Creating Climate Wealth: Unlocking the Impact Economy*, earned his MBA from the University of Maryland and a BS in mechanical engineering from the University of Illinois, Champaign-Urbana.

Pascal Siegwart, Partner, Aster Capital, France

Aster Capital invests in startup companies within the fields of energy, resources, and connectivity. Pascal joined Aster Capital in 2011 and leads investments in the areas of advanced and bio-based materials, CO₂, and energy. He is responsible for managing the company’s investment in Avantium and FibeRio.

Before joining Aster, Pascal was CO₂ operations director at Rhodia and Orbeo and energy purchasing director at Rhodia Energy. He was in charge of developing worldwide CO₂ offset projects in the Kyoto protocol frame for Rhodia and Orbeo. Orbeo is a pure-carbon joint venture between Rhodia and Société Générale, formed to develop market solutions to fight climate change. Pascal acquired over 10 years of industrial experience within the Rhodia group, where he held several positions in France and Italy, including as a corporate strategy project manager, plant manager, and quality manager.

An engineer, Pascal graduated from the Ecole Polytechnique of Paris and holds a master’s ASc in biotechnology from the Ecole Polytechnique of Montreal in Canada.

Masayoshi Son, Founder, Chairman, and Chief Executive Officer of Softbank, Japan

Mr. Son founded SoftBank in 1981. In recent years, Mr. Son has consolidated several arms under the central SoftBank brand. He graduated from the University of California at Berkeley with a BA in economics and is one of the richest men in Japan. He was just named, once again, CEO of the year in a survey of Japanese small-business leaders by the Sanno Institute of Management.

Following the Fukushima nuclear disaster, Mr. Son became increasingly involved in clean and efficient energy technologies, particularly in fostering Japan’s switch to renewable energy. In 2011–2012, SoftBank began working with Mitsui on a 39.5 megawatt solar-power facility in Japan, just one element of a planned investment in a nationwide solar-power network. In 2014, Japanese telecom giant SoftBank invested \$7 million in startup Altaeros Energies, which has developed helium-filled, high-altitude wind turbines that generate clean energy. Despite some roadblocks to the development of renewable energy in Japan, SoftBank continues toward its goal and has built or is planning 20 solar- and wind-power facilities in Japan. It is also working on wind generation in the Gobi desert, confident that the

deregulation and decentralization of electricity will speed the development of wind, solar, and geothermal energy.

Mr. Son has served or is currently serving on many boards, including those of Sprint and Alibaba.

**Tom Soto, Managing Director and Investment Committee Member,
TCW/Craton, USA**

A recognized expert on the economics of climate change and the prosperity tied to reducing greenhouse gases, Tom Soto was recently named by *Poder 360 Magazine* as one of the Nation's Top 100 Latino Green Leaders and was one of *Hispanic Business Magazine's* 100 Most Influential Latinos of 2010.

In September 2013, TCW purchased Craton Equity Partners II, a private equity firm focused on growth investments in technology and service companies that promote sustainability and/or social responsibility. TCW|Craton seeks strong returns for its investors by investing in high-growth companies that will enhance the environment and society, including companies that enable class mobility by providing services to underserved communities.

Before working at Craton Equity Partners II and TCW/Craton, Tom's business experience included Cabrillo Fuels, where he was the largest minority producer of ethanol fuel in Southern California, and PS Enterprises, his own consulting firm, where he worked with fortune 500 companies, such as American Airlines and Verizon, and the government, including the White House, in insuring compliance with new and stricter environmental regulations. He was appointed by President Bill Clinton to the State Department's Border Environmental Cooperation Commission and more recently co-led the Executive Office of the President Barack Obama's transition team for the White House Council on Environmental Quality from November 2008 to January 2009. Tom also serves on the Board of Liquid Environmental Solutions, a leading provider of non-hazardous liquid waste services. He has a BA in Political Science from the University of California, Los Angeles (UCLA.)

Lee Stein, Creator and Chairman, Prize Capital, USA

In 2006, Lee Stein formed Prize Capital, LLC to support the X Prize Foundation and to fund global competitions aimed at discovering innovative solutions in the areas of energy and the environment. Prize Capital's mission is to implement innovative financing techniques to facilitate radical breakthroughs, particularly in the fields of energy and the environment. Its proprietary financing mechanism combines inducement prize competitions with companion investment funds to

create a platform that mitigates early stage investment risk to investors and facilitates the greater flow of capital to early-stage innovators.

Since its inception, Prize Capital has broadened its focus to include other for-profit opportunities that recognize the value of natural capital. The world's ecosystem services and natural capital are estimated to average \$33 trillion per year, most of which is outside the market. Prize Capital envisions using Venture Philanthropy to create sustainable financing instruments that will value healthy ecosystems, and the benefits they provide, as an asset in both developed and developing nations.

Lee brings many years of experience as a business executive and entrepreneur to his current activities as a business-minded environmentalist. He is credited as a co-inventor of e-mail messaging payment systems, and in 1994, he co-patented what has been described as the world's first Internet-banking (payment) system. EBay subsequently acquired the issued patents. In 2000, he formed Virtual Group, LLC, a private holding company focused on early-stage technologies. Lee has a BS from Syracuse University and a JD from Villanova.

***Erik-Jan Stork, Senior Sustainability Specialist, APG Asset Management, The Netherlands**

The pension provider and asset manager APG has a nine-person sustainability and governance team that is responsible for providing advice on responsible investment policy and supporting the investment teams in implementing this policy across all asset classes. As the senior sustainability analyst at APG, Erik-Jan is also APG's principal climate expert. He leads the measurement and interpretation of the carbon footprint of APG's listed equity investments, which APG communicated in its Responsible Investment Report for the first time in 2013. His responsibilities include advancing the integration of environmental and social factors in the investment process for listed equities and corporate bonds. As a climate specialist, he is a member of the board of the Institutional Investor Group on Climate Change and actively engages in dialogue with policy-makers on climate policy. He previously worked for KPMG and Shell. *Learn more about Mr. Stork's work on page 93.*

John Streur, Chief Executive Officer, Calvert Investments, Inc., USA

John Streur is the new CEO of Calvert Investments as of January 1, 2015, replacing Barbara Krumsiek, who is stepping down from her role as president and CEO after 17 years of leading Calvert Investments. Ms. Krumsiek will remain on the Board of Calvert Investments, Inc., and will be launching a new research institute, the Calvert Institute, focused on advancing the field of sustainable and responsible

investing. Meanwhile, Mr. Streur, most recently the president, director, and principal of Portfolio 21, will be building on Calvert's engagement with ESG factors as institutional and private investors continue to see the value of sustainable investing.

John has been engaged in global investment management for over 25 years. Before working at Portfolio 21 (a management firm specializing in global environmental investing), he was the CEO of Managers Investment Group, LLC, which he co-founded, and President and Trustee of the Managers Funds. He has also been an organic cattle rancher.

John has a BS from the University of Wisconsin College of Agriculture and Life Sciences. He is a competitive athlete in the sport of rowing and sculling and won the gold medal at the FISA World Masters Rowing Championships in 2013.

Dawn Turner, Head of Pension Fund Management for the Environment Agency Pension Fund (EAPF), UK

Dawn Turner is a CIMA qualified accountant. She was appointed head of the Pension Fund Management following senior roles in finance within the Environment Agency. The fund has about 42,000 members and £2.4 billion assets. It was 90% funded at its triennial valuation on 31 March 2013. The EAPF was the first local government pension scheme (LGPS) fund to be a signatory to the United Nations Principles for Responsible Investment (UN PRI) in July 2006 and is ranked number one in the Asset Owners Disclosure Project for management of climate change. Dawn is responsible for the South West frameworks for legal advice, actuarial benefits, and investment consultancy.

Dawn joined the Environment Agency in 1999 and has led high-profile workforce planning and restructuring initiatives as well as assumed senior-level financial responsibilities. In addition, she has public- and private-sector experience, including experience with project management, mergers, and outsourcing involving liaison across government departments and private-sector providers. Dawn's considerable commercial experience in the private sector started early with a key role in the flotation of the fashion and household company Laura Ashley and the merger of the brewing and retail company Courage.

Roger Urwin, Global Head of Investment Content at Towers Watson, UK; Advisory Director, MSCI Barra, USA

Mr. Urwin joined Watson Wyatt in 1989 to start the firm's investment consulting practice. Under his leadership, the practice grew to a global team of 500. At Towers Watson (formerly Watson Wyatt), Roger served as global head of investment

consulting from 1995 to 2008, before becoming the global head of investment content. He also currently leads the firm's change consulting to asset owners.

For MSCI Barra, Roger advises on key projects relating to the international asset-owner community on a part-time basis. As an author of papers on asset-allocation policy, manager selection, and governance, Roger also speaks, writes, and consults on sustainable-investing practice for best long-term investing. Over the years, he has focused on the area of best-in-class investment governance, which is still a major topic of his research and writing.

Before joining Watson Wyatt in 1989, Roger headed the Mercer investment practice and led the business development and quantitative investment functions at Gartmore Investment Management. He serves on the Board of the CFA Institute and INQUIRE (the Institute for Quantitative Investment Research). Roger has been a member of the MSCI Editorial Advisory Board since its inception in 1998. He has a degree in mathematics from Oxford University and a master's in applied statistics, also from Oxford. He qualified as a Fellow of the Institute of Actuaries in 1983.

***Tony Van Bommel, Senior Managing Partner of the Industrial, Clean, and Energy (ICE) Technology Venture Fund, BDC Capital, Canada**

A champion of the cleantech sector for 14 years, Tony shapes BDC Capital's investment direction. He oversees the C\$152 million ICE Fund; since 2012 alone, ICE has invested or reserved over C\$70 million in 18 transactions across 14 technology companies. These companies employ over 700 people and generate revenues of C\$100 million. Before joining BDC, Tony spent four years at InNOVAcorp, a General Partner for the Nova Scotia First Fund, an early-stage, knowledge-based venture fund. While there, he helped implement a venture capital program and provided assistance to emerging technology companies. Tony earned the Dalhousie Governor General's Gold Medal for the top graduate student chosen from all faculties at Dalhousie University and the gold medal from the Dalhousie University MBA program. He received his Bachelor of Laws (LLB) from the University of Western Ontario. *Learn more about Mr. Van Bommel's work on page 97.*

Anne Mieke van der Werf, Director, Energy and Climate, Triodos Investment Management, The Netherlands

As the director of energy and climate, Anne Mieke van der Werf is responsible for managing and developing new and existing investment activities in the renewable energy sector. She is a CFA certified economist with considerable experience in business development, corporate and project financing, and institutional investments.

Triodos Investment Management has over 20 years of experience in renewable energy investing. As part of its mission to make money work for positive social and environmental change, Triodos has funded hundreds of sustainable-energy projects across Europe. The company has three energy funds: Triodos Groenfonds (EUR 650 million), which finances renewable energy, organic farming, sustainable real estate, and nature-conservation projects; Triodos Renewables Europe Fund (EUR 58 million), which offers complimentary risk capital through equity or subordinated loans, supporting small- and medium-sized developers of renewable energy; and Triodos Renewables (GBP 67 million), which finances, develops, owns, and operates projects that generate clean, green electricity from renewable sources.

Before joining Triodos Investment Management in 2012, Anne Mieke worked on renewable-energy project evaluations, the divestment of several companies, and financial and resource planning for both corporations and non-profit organizations. Anne Mieke started her career at ING Investment Management and holds a master's degree in macroeconomics and monetary theory from Maastricht University.

Wal Van Lierup, Co-Founder and Chief Executive Officer, Chrysalix Energy Venture Capital, Canada

Since co-founding Chrysalix EVC in 2001, Wal has sourced, invested in, and advised numerous early-stage cleantech startups that are building innovative solutions for the new-energy economy. He is directly responsible for helping to raise more than \$1 billion for early-stage technology ventures. The firm is actively invested in 15 portfolio companies, including GlassPoint, MineSense, General Fusion, GaN Systems, InvenTys Thermal Technologies, and Axine Water Technologies.

Before founding Chrysalix EVC, Wal spent several years as the vice president of strategic planning at Westcoast Energy, which he helped sell to Duke Energy. He also advised energy, chemicals, and financial services blue-chip companies on innovation and change management while working as a management consultant with McKinsey & Company. Wal has founded several new ventures and clean-energy organizations including New Ventures BC. He is a member of the Cleantech Group's Advisory Board and has written several books and scientific articles.

Before officially joining the corporate world, Wal worked for almost a decade as an associate professor at the Vrije Universiteit Amsterdam, doing research in economics and econometrics, and consulting with businesses, governments, and major international institutions. He also has an extensive teaching background in venture capital and entrepreneurial finance, both in North American and Europe. Wal holds a PhD in economics from the Vrije Universiteit in Amsterdam.

Phillip Vernon, Managing Director, Australian Ethical Investment, Australia

Phillip Vernon has 25 years of experience in financial services, covering funds management, superannuation, and capital markets. He was a member of the Executive Committee of Perpetual Limited, heading up its Corporate Trust division and also has extensive experience in corporate governance and industry regulation, including a long involvement with the Australian Securitization Forum, Australia's peak body representing the securitization industry in Australia. Phillip has a long involvement in sustainability and corporate social responsibility and is a director of Planet Ark, a not-for-profit environmental organization.

Australian Ethical Investment is a superannuation and investment fund manager with over 20,000 members who have invested more than AU\$800 million. The firm invests in companies it deems "highly ethical" through positive screening, a process that it emphasizes over negative screening (however, it does exclude companies on several grounds, including those involved in uranium mining). It is particularly interested in companies involved in the sectors of renewable and clean energy, healthcare, efficient transport, biotechnology, recycling, waste management, and natural food production. (However, it does exclude companies on several grounds, including those involved in uranium mining.)

Stephen Viederman, Vice Chair, Network for Sustainable Financial Markets; Chair, Finance Committee of the Christopher Reynolds Foundation; Former President, Jesse Smith Noyes Foundation; shareholder advocate; author; speaker, USA

Among the range of topics that Stephen Viederman currently tackles are sustainable investing and fiduciary duty; philanthropy and democracy; higher education and public policy; the limits of corporate responsibility; and economic and environmental justice and community governance. His main focus is to develop a holistic understanding of fiduciary responsibility consonant with not-for profit organizations' obligations to serve the public benefit. As an active shareholder, both personally and as a representative of the Christopher Reynolds Foundation, he is leading discussions with ExxonMobil and Chevron on the financial risks of climate change. Mr. Viederman retired in 2000 from the presidency of the Jessie Smith Noyes Foundation where, in the early 1990s, he developed and guided the effort to harmonize the foundation's asset management with its grant making, including some of the first impact investments in responsible growth companies. *Learn more about Mr. Viederman's work on page 101.*

***Daniel Wild, Head of Sustainability Investing R&D and Executive Committee Member, RobecoSAM, Switzerland**

In his position, Dr. Wild oversees the organization, strategy, methodology, and investment process of Research and Product Development at RobecoSAM. He is responsible for the identification and integration of financially material ESG factors into the investment strategies of RobecoSAM as well as those of its parent company, Robeco. Founded in 1995, RobecoSAM has 20 years of experience promoting environmental investing to institutional asset owners and financial intermediaries. As of June 2014, Robeco managed EUR 111.5 billion in ESG-integrated assets, which is 50% of the group's EUR 223 billion in total assets under management. In 2009, Daniel introduced the water-related risks criteria to the CSA, which not only ensured that participating companies became aware of such arising risks, but also demonstrated best-practice examples and encouraged firms to use water resources more efficiently.

Daniel holds a Masters in Chemical Engineering from ETH Zurich (1987–1993) and a PhD in Environmental Engineering from the Swiss Federal Institute of Aquatic Science and Technology (EAWAG) (1993–1997). He pursued postdoctoral research studies at Stanford University between 1997 and 1999. *Learn more about Mr. Wild's work on page 105.*

Philippe Zaouati, Chief Executive Officer, Mirova (subsidiary of Natixis Asset Management), France

In order to accelerate the development of its responsible investment activities, Natixis Asset Management created the management company Mirova in 2013. It is Mirova's ambition to become an international leader in responsible investment within the next five years. To achieve Mirova's goals, Philippe and his team are working on fine-tuning a more stringent group of ESG criteria than those in the Principles for Responsible Investment (PRI). "We want to strengthen our position as a committed and innovative player in the vanguard of responsible investment, theme-driven investment management, and infrastructure projects on an international scale," he explains.

As of 2014, Mirova's assets under management total approximately EUR 4 billion across asset classes, including equities, bonds, impact investing, and infrastructure. In 2014, Mirova launched Mirova Eurofideme 3, a fund focused on renewable energy infrastructure projects, mainly in the wind and photovoltaic space. The fund, which targets professional investors only, aims to raise 200 million



euros and generate a net TRI of 10% to 11%. Mirova's renewable energy team has invested in 66 projects (including 31 wind farms) and has supported the construction of production facilities generating 700 megawatts of clean energy.

Formerly the deputy chief executive officer of Natixis Asset Management (one of the asset management companies of the BPCE Group with EUR 294 billion assets under management), Philippe was responsible for business development and responsible investments. Previously, he held different roles (quantitative portfolio manager, financial engineer, product marketer, executive director) at Banque Internationale de Placement, Sogeposte, CDC Group, La Banque Postale, and Credit Agricole. He graduated from Ecole Nationale de la Statistique et de l'Administration Economique (ENSAE) and from Institut des Actuaire français (IAF).

**Carter Bales, Chairman, Managing Partner, and Co-Founder,
NewWorld Capital Group LLC**

United States



Where do you see opportunities for powerful, effective investing today?

Mr. Bales: A number of powerful macro-forces centered on rising and increasingly volatile commodity costs and existing inefficient resource-management practices, along with certain special attributes of environmental markets, create strong investment opportunities in environmental sectors. Environmental markets are already large, are growing rapidly, and offer a significant opportunity for the specialist investor, specifically

in asset-light-oriented investing in the middle and lower middle market of five industrial segments: energy efficiency, clean energy, water resources and reclamation, waste-to-value, and environmental services.

Recent successes in the environmental products and services industry are showing the way, and investors have begun to pay attention. In the middle and lower middle markets, there is substantial opportunity in rapidly growing companies in the environmental business sector, specifically in companies that have already been validated by a market response and have sustainably differentiated products and business systems together with reasonable sales records—and are working to achieve full competitive scale. Growth investing is more to be recommended than venture (early stage) investing, and most investors are working to avoid the uncertainty of technology risk. Owing to the inefficiency of resource management in North America, we believe that extra-normal returns should be available to the investor.

Investing in environmental markets should yield broader beneficial outcomes in addition to attractive economic returns, since the societal co-benefits of such investments are usually quite material. Pollution of the air, water, and land is increasingly perceived as a major socioeconomic problem by governments at all levels, the public at large, and a growing number of business leaders, as are dwindling supplies of freshwater and resultant water stress and the growing costs and environmental burden of waste management. Improved resource management should thus lead to many benefits for society, such as cleaner air and water and reduced waste and pollution. Such societal co-benefits help make environmental markets attractive destinations to invest not only for profit but also for impact—without the need to trade-off on either objective.

What sector has had the most significant impact on the renewable energy landscape thus far? Why?

Mr. Bales: In the aftermath of the cleantech bubble, the recent rise of residential solar in the United States offers a powerful example of how environmental macro-forces can converge to create market opportunity in quick order within the larger North American environmental-opportunities industry. After an influx of venture capital and government support beginning in the mid-2000s, the cleantech bubble burst in the midst of a confluence of factors, such as insufficient investment, cheap natural gas, volatile silicon and other component prices, the global financial crisis, the rise of international competition, and more.

But what heralded the end of the cleantech bubble proved a powerful driver of residential solar today. Chinese manufacturing commoditized solar PV and helped lower the cost for all, thus helping to scale the market. Although the developments that facilitated today's

solar PV market caused some investors to lose money, grid-competitive solar PV has now created a sustainable market opportunity for higher margin, customer-facing businesses and distributed-generation projects in North America. While residential solar was non-economic ten years ago, today it compares favorably on a cost basis to retail electricity rates for a majority of the U.S. population. In the United States, PV module prices fell nearly 80% from 2008 to 2012, and balance of system (BOS) costs fell as well in 2013, continuing into 2014.

The U.S. residential solar industry evolved to focus on its comparative advantages in the service and customer-facing ends of the supply chain, becoming “survivors.” For many customer-facing businesses and distributed-generation projects in North America, these positive developments in residential solar are poised to continue, as high electricity prices, financing mechanisms allowing installation without up-front cost to homeowners (the third party model), net metering agreements, and a favorable Investment Tax Credit (ITC) make residential and commercial solar installations financially attractive in most U.S. states. In particular, financing models that help consumers overcome the first cost-bias in purchasing decisions have played a major role.

The residential solar market segment has experienced healthy and sustained growth in recent years. New residential PV installations increased more than a third (year-over-year) in 2013, to roughly 770MW, which accounts for 20% of total U.S. PV capacity installed that year. Customer-sited PV capacity growth is expected to exceed utility-scale solar growth between 2013 and 2015 (which is projected to double over that period). There is room for further development of the solar residential market, particularly given rising electricity prices, low costs of solar PV, available financing, and increasing consumer interest. In particular, decreases in residential solar PV costs in the U.S. are expected to be further driven by efficiency gains in installation and Balance-of-System (BOS) costs rather than reduced panel costs. The future of solar in North America appears bright.

Debates about environmental issues and solutions are common among the public and governments. What role do you think investors could play in establishing active working relationships with all stakeholders to effectively address environmental challenges?

Mr. Bales: Environmental challenges are complex and require close understanding. Markets are where environmental challenges, as well as solutions, play out. Capital is often the difference between progress and platitudes. Investors can thus play an important role in communicating their understanding and working knowledge of environmental markets to other stakeholders, who may not be as familiar with or may not understand often-complex market dynamics and the environmental landscape from an investment

perspective. Investors can also serve an important role in drawing awareness to and highlighting market-specific challenges or barriers that inhibit progress to those at the policy and public level, providing an essential bridge between multiple parties. Money talks.

BIOGRAPHY

Carter F. Bales, Chairman & Managing Partner, co-founded NewWorld Capital Group, LLC, in June 2009. NewWorld is a private equity firm that invests in selected segments of the environmental opportunities sector with special focus on energy efficiency, clean energy, water resources and reclamation, waste-to-value, and environmental services (www.newworldcapital.net).

Before NewWorld Capital Group, Mr. Bales was Managing Partner Emeritus at The Wicks Group of Companies, LLC, a private equity firm focused on the information industries in the United States. He co-founded Wicks in 1989 and was a managing partner until assuming the Emeritus title in August 2006.

From 1978 to 1998, Mr. Bales was a director of McKinsey & Company, where he held senior leadership positions, including founding the consultancy's practices in environmental management, information industries, and state and local government, and leading the information technology practice. He was a member of McKinsey's Board of Directors for seven years and, early in that period, led a project to redefine the firm's strategy. Mr. Bales left McKinsey in 1998 but he continues to serve as an emeritus director and senior advisor to McKinsey on environmental matters.

Early in his career, Mr. Bales served as Assistant Budget Director (Acting) for The City of New York, where he led the development of New York City's air pollution, solid waste management, and water supply programs, in addition to developing the city's program planning and budgeting (PPBS) system.

Mr. Bales has extensive experience in helping businesses strengthen competitive strategies, grow sales, improve profitability, and improve and scale operations. His career has focused heavily on strengthening business operations and helping companies build value for stakeholders.

Mr. Bales has been active in environmental matters for more than 35 years. In recent years, he has focused on environmental economics and how energy efficiency improvements can be achieved in cost-effective ways. In 2007, Mr. Bales worked with

McKinsey to prepare the report entitled, *Reducing U.S. Greenhouse Gas Emissions: How Much at What Cost?* In 2008 and 2009, he worked with Project Catalyst and other initiatives in framing the economics of environmental improvement strategies in the United States and elsewhere.

Mr. Bales is a recognized expert in the environmental field; in addition to publishing a number of relevant articles, he is frequently an invited speaker on the topic. His article, "Containing Climate Change" (co-authored with Rick Duke), appeared in *Foreign Affairs* (September-October 2008). He serves on the boards of a number of leading environmental organizations, including The Center for Market Innovation at the Natural Resources Defense Council, the Advisory Council to Resources for the Future, and The Nature Conservancy. Mr. Bales is a member of the Council on Foreign Relations.

Mr. Bales is a director of Coolerado Corporation, a NewWorld portfolio company.

Carter Bales graduated from Princeton University with a BA in economics and he holds an MBA from Harvard Business School. He received an Honorary Doctorate in Humane Letters from Skidmore College for his environmental leadership.

**John Chaimanis,
Co-Founder and Managing Director, Kendall Sustainable Infrastructure
(KSI)**

United States



Where do you see opportunities for powerful, effective investing today?

Mr. Chaimanis: Energy. Clean, renewable energy, which does not have a commodity input.

Producing energy from the free inputs of the sun and the kinetic energies of water and wind are profoundly simple and elegant business models. Last year approximately US\$250 billion was invested into profitable renewable energy projects. In order to meet the total global growth in demand for power, that number reasonably could be US\$1 trillion every year for the next thirty (which is Cere's number for combating climate change).

An investor's objectives should be to maximize returns while minimizing risk of loss. When you invest in a fossil energy business, you face a substantial risk of loss—for example through supply constraints, commodity input price volatility, risk of fines and lawsuits due to contaminants causing disease to local populations or contaminating the environment. When you own a piece of a solar project that has zero commodity input and zero emissions but generates that same exact electron that comes from a risky fossil plant (like coal), you have a low-risk, high-return value proposition that will last for 20+ years without all of the negative externalities.

This isn't just an environmental game changer; it is a huge wealth creator. Wind, solar, and hydro-power are all cheaper than "clean coal," new nuclear, and in many regions, natural gas power generation. The era of renewables being more expensive than fossil fuel has passed.

There are a number of points in the value chain at which to invest with varying risk/reward profiles, such as owning stock of a manufacturing company or private venture placements into a development company. I generally prefer direct ownership of infrastructure through a private vehicle for three reasons: it is tangible and has an underlying real value, it is not correlated to public markets, and the impact is direct and quantifiable. When the investment in a project is timed properly, and the project is properly underwritten, the returns last for decades in a proven low-risk investment. From that point forward, an investor can be confident that every kilowatt-hour of energy sold from the renewable project is a kilowatt-hour not sold from a fossil plant.

In addition to infrastructure, I believe that product delivery innovations have promise, albeit with higher risk. Generally, investing in energy does not have the same exponential return expectation associated with the Internet; rather, progress is incremental, and often built on decades of improvement and refinement. Renewable energy investments should be based on fundamental analysis as opposed to, say, the hypothetical value of page views per day. As an energy investor, I am generally skeptical of "financing innovations" and public securities seeking to tap into cheaper costs of capital, largely because they seem to lack accountability and blur the true value proposition of owning real assets directly.

What sector has had the most significant impact on the renewable energy landscape thus far? Why?

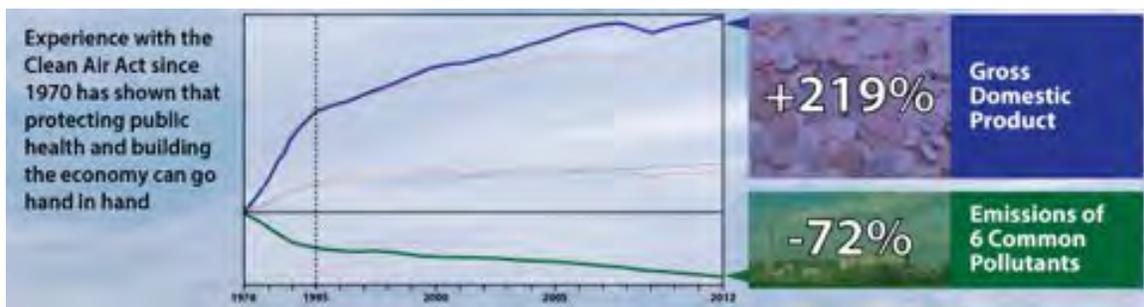
Mr. Chaimanis: The banking industry has had the most significant impact on the renewable energy landscape. For over 25 years, for-profit banks have been financing modern profitable renewable energy projects. Banks represent the bellwether of a

commercially attractive opportunity. Generally, banks represent one of the most risk-averse investors, and they conduct some of the most thorough underwriting of technology, risk mitigation, and the ability to sell power profitability, with a certainty of return of principle.

Adoption of new infrastructure technology has never been instantaneous; whether in the form of transportation, mass communication, or energy. As a sector, government deserves recognition for early identification of key technological advances and for bringing a vision to their greater potential commercial value. This is not intended to detract from the amazing improvements in manufacturing, such as pushing the theoretical energy limits of wind energy or cutting the cost of manufacturing silicon used in solar PV (whose price has dropped over 400% in less than five years). Rather, this is to say that government has successfully created a framework for the renewable industry to thrive within, just as it did with the oil industry nearly a century ago.

To understand renewable energy, you have to understand the history of the power business. Utilities were legislatively created and granted monopolies over territories in order to protect the long-term investment required to recover the large upfront capital cost. The oil industry was granted incentives, tax breaks, and subsidies to allow it to mature as an industry (the vast majority of these subsidies and tax credits still exist today). Federal tax credits and state mandates (also called Renewable Portfolio Standards) have fostered the adoption of renewables. As long as the fossil fuel industry receives special treatment through tax incentives and subsidies, the renewable industry should be afforded the same treatment to maintain on par.

The most meaningful action for renewables and for our environment was the Clean Air Act of 1970, which established a framework to hold polluters accountable. Today, coal plants in the US are being shut down because of upgrade requirements or actions against them, all with ties back to the Clean Air Act. This is not a subsidy, but a legal framework that creates a market valuation of externalities like air pollution.



Energy Consumption +47%, Population Growth +53%, Vehicle Miles Traveled +165%

Debates about environmental issues and solutions are common among the public and governments. What role do you think investors could play in establishing active working relationships with all stakeholders to effectively address environmental challenges?

Mr. Chaimanis: There is no debate that making a smart investment involves limiting risk and maximizing return. Warren Buffet, Goldman Sachs, Wells Fargo, TIAA CREF, and Met Life have independently shared their opinion by making well over \$15 billion dollars of investments into renewables. These investments aren't public relations moves; rather these investments represent their position that investing in renewables produces attractive returns.

Money and special interest groups, not science or prudent investing, fuel the debates. The fact is that renewables displace fossil fuels as an energy source, and that means lost revenues. This is not an overnight transition, but it is well underway and this incumbent isn't interested in losing any market share.

On the surface, the value proposition of renewable energy is profoundly simple. In practice, it is a complex industry and experts in the space should be involved in guiding the ultimate investment decision.

Institutional investors have the ability to develop internal expertise. Individual investors should educate themselves about the real cost of renewable power versus fossil power by considering the real risks of input supply, commodity price risk, and environmental impacts. They should have an open dialogue with their advisors and trusted investment professionals about their concerns with the risks and costs to the bottom line associated with fossil investments contrasted with the benefits of renewables. This will create awareness, generate demand, and ultimately increase the deployment of capital in the space, thus improving our environment.

BIOGRAPHY

Mr. Chaimanis is the co-founder and managing director of Kendall Sustainable Infrastructure (KSI), a private equity firm that invests in low risk and high-yield clean-energy assets by using a strategy that evolved from his many experiences in the energy industry. At KSI, Mr. Chaimanis is focused on deal execution, investor engagement, and fund management. He works closely with family offices and institutions to meet their return and impact objectives through investments in contracted solar energy, wind energy, and hydro-power projects.

In 2005, Mr. Chaimanis began working in clean energy finance since it formed the perfect

match with his business interests and his passion for making a positive impact. After working with regional project developers in the New England area, he joined a subsidiary of Edison International in California, where he acquired and developed 250MW of wind energy projects, investing over US\$500 million dollars. He was part of a core team that transformed this traditional power company into a renewable energy leader.

Mr. Chaimanis regularly advises clean energy startups, and consults with investors looking to understand the clean energy investment landscape. Mr. Chaimanis is published in the *Family Office Review*, is the author of an energy-investment business case at Babson College, and has lectured at Colby College and California State Polytechnic University.

Always passionate about making an impact, in his career prior to working in energy investing, Mr. Chaimanis founded a charter school.

Mr. Chaimanis holds an MBA from Babson College and a BS in finance from Villanova University. He has also earned certification from US SIF for Sustainable and Responsible Investing (SRI).

Jeff Cohen, Co-Founder and Senior Vice President, EOS Climate

United States



Where do you see opportunities for powerful, effective investing today?

Mr. Cohen: To me, a powerful investment is one that has not only strong financial returns but also will have a lasting, positive impact, especially in accelerating the transition to a low-carbon, circular economy. In many cases, transformative technologies are here but there are cost and infrastructure (and regulatory) barriers to deployment at scale. Some examples are integrated systems for energy storage and grid modernization, utility-scale solar, next-gen nuclear reactors (e.g., using spent and low-grade uranium), and generating and delivering energy—including hydrogen—from municipal and industrial waste. Investments that can mobilize government and philanthropic capital to a targeted set of opportunities have great potential for sustained success.

What sector has had the most significant impact on the renewable energy landscape thus far? Why?

Mr. Cohen: Prices for both wind and solar have fallen sharply. In a number of states, utilities are signing long-term contracts for large-scale wind and solar power at prices comparable to conventional energy generation, even without subsidies. Rooftop and other distributed solar installations are now affordable for residential and commercial customers because of leasing programs and reduced material costs. Wind power is now generating more than 4% of U.S. electricity, and solar around 1%. Continuing expansion can be expected especially as energy storage and grid integration improves.

The biggest impact however has come from the largest and cheapest source of renewable energy, which is simply reduced demand. Everything from increased efficiency standards for cars and appliances, fluorescent and LED lighting, window and insulation retrofits, smarter building design and materials, and many other straightforward solutions is displacing the need for new power generation. Even greater improvements can be unlocked through additional policy changes coupled with government and private sector investments; for example, broadening utility rate decoupling, planning for more compact communities, reducing energy lost in transmission and distribution, and modernizing mass transit infrastructure.

Debates about environmental issues and solutions are common among the public and governments. What role do you think investors could play in establishing active working relationships with all stakeholders to effectively address environmental challenges?

Mr. Cohen: When technology innovations are created with a financial return, investors provide concrete case studies to support broader policy changes and large-scale outcomes, which can cut through a lot of policy inertia.

A broad range of investors is mobilizing around climate change action. Hundreds of institutional investors representing US\$92 trillion in assets are tracking the greenhouse gas emissions, water usage, and climate strategies that thousands of companies are now reporting via the Carbon Disclosure Project. In many cases, companies with lower carbon footprints are finding advantages in attracting new financing. A number of large companies have incorporated internal carbon pricing for their investment decisions. And individual and large investors, ranging from philanthropies, religious organizations, universities, and governments, are part of a rapidly expanding divestment campaign wherein assets in fossil fuel companies are being transferred to clean energy investments.

These efforts are shifting the debate from abstract projections to what we are doing today to ensure our kids and their kids have a healthy, prosperous future.

BIOGRAPHY

Jeff Cohen is co-founder and senior VP of EOS Climate. Based in San Francisco, EOS is the leader in leveraging carbon markets and innovative financial mechanisms to ensure the complete life-cycle management of refrigerants. EOS has partnerships with Fortune 500 companies and projects in the United States and around the world that are preventing emissions of powerful greenhouse gases while accelerating the transition to cutting edge, sustainable refrigeration and air technologies across multiple industrial, commercial, and consumer sectors.

Jeff brings over 30 years of national and international experience in developing and implementing policies designed to protect the environment. He developed a number of national regulations on air and drinking water quality. Between 1997 and 2007, as senior manager for the U.S. EPA's Office of Atmospheric Programs, Jeff was responsible for Agency initiatives addressing both ozone protection and climate change. He oversaw the U.S. implementation of the Montreal Protocol and developed a number of government-private partnerships across industry sectors to reduce GHG emissions. He wrote the protocol for destruction of ozone depleting substances in conformance with ISO 14064-2 that was eventually adopted by the California Air Resources Board. A contributing author on the IPCC Special Working Group on Ozone Protection and Greenhouse Gases, Jeff was part of the 2008 Nobel Peace Prize honorees and is listed in the Montreal Protocol Who's Who. In 2004, Jeff served on the White House Energy Task Force to help coordinate permitting and financing of both conventional and new energy projects. Jeff is a member of the U.S. Commerce Department's Environmental Technologies Trade Advisory Committee.

He has an MS in public health from the University of North Carolina, a BS in biology from the State University of New York, and an MBA in sustainable management from the Presidio School of Management in San Francisco.

Shin Furuya, Vice President, Responsible Investment and Engagement Specialist, Domini Social Investments; Lead Research Analyst, Nia Global Solutions

United States



Where do you see opportunities for powerful, effective investing today?

Mr. Furuya: I see tremendous opportunities in renewable energy and energy efficiency, particularly in three areas where significant challenges exist. First is the recycling of materials used in renewable energy or energy efficient products such as PV panels, LEDs and wind turbines. The second is transformative renewable energy technologies in the areas of material processing such as cement making and steel making. The third is creative deployment of renewable energy and energy efficiency products.

It is essential for the renewable-energy and energy-efficient-product sectors to establish comprehensive materials-recycling programs to ensure stable supplies of raw materials, including rare-earth elements. There is also an opportunity for breakthrough innovations that can develop these technologies without use of rare earth elements. These could reduce life-cycle environmental footprints while helping to manage risks from the price volatility and procurement uncertainty of these raw materials. Assumptions of unlimited growth without understanding how to close materials recycling loops would be unsustainable.

The second area is the utilization of renewables energy during materials processing and recycling. Most industrial materials processing and recycling, such as steel making, paper milling, and cement or industrial gas (e.g., hydrogen) production, still require substantial amounts of fossil fuels, with massive climatic impact. We have started to see signs of breakthrough technologies that will transform these material production processes through the use of renewable energy sources such as solar and wind power.

The third area is the extensive and creative deployment of these technologies in innovative products such as PV-based charging stations for electric vehicles; solar-paneling built into bike lanes; building integrated photovoltaic materials, parking lots; and airborne or micro-wind power devices. These technologies will help bridge the gaps between renewable energy and other sectors such as transportation and telecommunication.

It is important that these deployments be achieved with climate disaster-risk assessments in mind in order to ensure that these infrastructures can withstand coming disasters or climatic shifts. Aging infrastructure that requires renovation or renewal combined with growing concerns regarding the physical impacts of climate change are creating a perfect storm that will facilitate the integration of sustainable technologies into resilient communities.

What sector has had the most significant impact on the renewable energy landscape thus far? Why?

Mr. Furuya: Many sectors have had major impacts, both in terms of opportunities as well as risks, but individual sector's impacts vary significantly, depending on their specific geographic location and their policy and regulatory environments.

Without a doubt, the financial sector has played a significant role by (re-)directing vast amounts of investments into renewable energy using various asset classes. Venture capital in recent years has made substantial contribution to the emergence of innovative renewable technologies and businesses. Likewise, a rapid growth of equity investments in renewable energy companies and structured products for renewable energy projects has enabled the scaling-up of the renewable energy sector. The surge of interest in green

bonds, although not entirely free of criticism, has raised awareness regarding the importance of renewable energy as well as the risks of climate change, thereby encouraging mainstream demand and the creation of a new market.

At the same time, it is also true that the renewable energy sector's abilities to achieve rapid technological advancement and operational efficiency have resulted in continued cost reductions and offer promising competitive returns to investors. Furthermore, examples such as the recent successful expansion of the residential solar market in multiple countries has contributed to convincing more investors that the investment in solar is a viable long-term investment option, which as well signals a fundamental shift in the renewable market.

The effects of public policy and utility sector responses have been mixed. Various tax incentives or subsidies as well as quotas for electric utilities' fuel generation mix have provided financial support, and bought some time, for the renewable sector.

Conversely, the fear of ending such incentives, imposition of tariffs by foreign governments, and larger incentives for the fossil fuel industry have likewise played a critical role in making the renewable energy sector more resilient through innovation and creativity. Strong resistance to change from utilities in some countries has played an important role in triggering a sense of urgency within the renewable energy industry. This sense of urgency is for the development of rapid technological innovation as well as the development of techniques to bypass the electric utilities entirely by using distributed grid systems with creative financing schemes—combined with residential solar.

No one doubts that there is an underlying issue of increased material risks of climate change, and therefore, for the fossil fuel industry. Mounting scientific evidence compiled over decades by scientists and journalists has contributed to shape and shift perception of the risks surrounding climate change. Shifts toward policy making supportive of renewable energy and increased investments in renewable energy are as much risks for management as are identifying opportunities. These scientific findings became the basis for powerful social movements led by civil society organizations such as 350.org. By engaging individual and institutional investors and reinvigorating the debates over divestment of fossil fuels and reinvestment in cleaner energy sources, both the science and the organizations have thus facilitated the creation of stronger demand for renewable energy markets.

Debates about environmental issues and solutions are common among the public and governments. What role do you think investors could play in establishing active working relationships with all stakeholders to effectively address environmental challenges?

Mr. Furuya: Investors have been playing an active role in a wide range of issues and solutions among themselves as well as all other stakeholders for several decades, including debate over climate change. However, it is also true that many investors are still taking a very narrow approach by limiting concerns to portfolio-level risks, hence not fully acknowledging the physical, social, and environmental impacts of their investments. These narrow perspectives have resulted in investors' tendency to engage disproportionately with companies, but not enough with other stakeholders, especially those most negatively affected.

By integrating broader perspectives regarding their social and environmental impact (e.g., assessing the possibility of specific corporate actions contaminating local drinking water sources, in addition to how much impact water contamination has on stock price), investors could further enhance their due diligence processes regarding risk management and better understand the extent of such impacts on other stakeholders, which would be helped by having a longer-term view. The only way to address enormous environmental challenges is through collective action. The confluence of portfolio risk and physical, environmental, and social risks allows deeper engagement that fully utilizes investors' expertise and leverage with other stakeholders as a part of a larger community.

BIOGRAPHY

Shin Furuya is the vice president, Responsible Investment Research & Engagement specialist at Domini Social Investments LLC, a leading responsible and sustainable investment firm, based in NYC. He is currently focusing on identifying companies with disruptive technologies for Nia Global Solutions, a new investment strategy launched in 2013. He is also a voting member of Nia's Portfolio Review Committee. Prior to his work on Nia, Shin was the lead research analyst for Domini's funds. He continues to contribute to the training of analysts, oversees research processes, and redefines research framework and KPIs while still serving on the investment committee for equity funds as a voting member. In addition, he actively engages with companies, civil society groups, and governments on thematic as well as sector-specific issues as an engagement specialist.

Before joining Domini in 2006, Mr. Furuya was a research analyst for custom research projects for the Investor Responsibility Research Center and Institutional Shareholder Services, and lead researcher for governance advisory firms. Before that, he was the

national coordinator for the Economic Relations and Human Rights Program and the Refugee Program at Amnesty International Japan, where he managed both national programs.

Mr. Furuya is a member of the advisory board of the EIRIS Conflict Risk Network and also consults and reports on ESG integration and research strategies. He holds a BA in political science and international studies from the University of Oregon, an MA in international relations with a focus on global markets and politics, and a certificate of advanced studies in environmental dispute resolution from the Maxwell School of Citizenship & Public Affairs, Syracuse University.

For more information, please see his LinkedIn profile.

Garvin Jabusch, Co-Founder and Chief Investment Officer, Green Alpha®Advisors, LLC

United States



Where do you see opportunities for powerful, effective investing today?

Mr. Jabusch: You know, the economy of the 19th and 20th centuries got us a long way, propelling us to where we are today. But it is equally true that that legacy economy is fraught with systemic risks, not the least of which are the worst effects of climate change and global resource scarcity. Particularly now that there are 7.3 billion of us, with many enjoying rising affluence and standards of living, our economic activities, for the first time in human history, can and do have real impact. So unless we want our own self-caused biggest threats to come home to roost, it is time or even past time to change the way the economy works. And we at Green Alpha Advisors think the best place to start that process is to change where capital is deployed. Because where money is invested in this world is where everything happens. And as long as we remain invested in the fossil-fuels based legacy economy, we're going to get increasingly strong storms, rising seas, diminishing biodiversity, and all the other risks of an increasingly warm planet.

So, where do we see opportunity? Well, at its heart, our approach to investment management is deceptively simple: don't invest in the causes of our primary systemic

risks, notably fossil fuels, and do invest in the solutions to those risks. For every function provided by the legacy economy, we believe there already is or soon will be a sustainable economy equivalent, often far better than its legacy economy predecessor. So we strive to build a portfolio of next economy analogs for legacy economy functions. In addition to hopefully serving and advancing the cause of sustainability, this also turns out to be an effective equity growth strategy because it means investing in disruptive innovation and also in rapidly advancing economic efficiency, meaning getting more and more dollars out of less and less inputs. Which is important, because that, in turn, allows us to have less and less impact on our underlying ecosystems, all while generating wealth. This approach to economics and investing can become a sustainable, virtuous cycle. We believe we live in a time of nonlinear change, and the innovations emerging now will allow us to have great standards of living, while also giving our underlying ecosystems a chance to begin recovering. This is what we envision when we use the term “Next Economy.”

What sector has had the most significant impact on the renewable energy landscape thus far? Why?

Mr. Jabusch: Solar, mainly solar photovoltaic (PV). People often ask us, “When will solar or other renewables reach grid price parity?” Well, the fact is that solar electricity is at least as cheap as other sources in 79 countries (depending on how you measure “grid parity”), and in many U.S. states. We’re seeing a burst of PV research leading to constant innovation driving up efficiencies in an effect some are calling “solar Moore’s law.” And unlike fossil fuels, solar will only continue to get cheaper and cheaper as scale and improving technologies continue to advance. Cheap solar panels combined with cheap storage will spark what Barclay’s has called a grid “defection spiral” that will pry away utilities’ grip on power monopolies to the extent that Barclay’s has downgraded the entire US electric utility sector. Meanwhile, the IEA has guessed that ditching fossil fuels for renewables would allow US\$115 trillion in fuel savings in just a couple of decades. We can’t overstate how emancipatory this is for world economies, and for growth with far fewer consequences.

Honestly, the very comparison between fossil fuels and solar will seem quaint before long, even with the recent—and no doubt temporary—declines in the price of oil

Debates about environmental issues and solutions are common among the public and governments. What role do you think investors could play in establishing active working relationships with all stakeholders to effectively address environmental challenges?

Mr. Jabusch: To advance to an economy that will allow us to maintain and improve our standards of living while simultaneously reducing our planetary impact to the point where our underlying ecosystems can begin to recover will be an enormous transition

from where we are now. The way forward is to drive economic efficiencies so far that we can get more and more economic output from fewer and fewer material inputs, to the point that our economic activities have a negligible footprint on Earth's ecology. This will rest on our ability to accomplish two key things: power ourselves entirely with truly renewable energy and perfect waste-to-value economics.

First, power. The economic output of any economic or natural system is directly governed by the amount of energy available to that system. In ecology, it is an axiom that systems with greater access to energy will grow the fastest, become the most productive, and generally thrive the most—until they reach a growth point where they begin to deplete the resources they depend on. So we know that to thrive in economic terms over a very long period will require access to massive quantities of energy, but from sources that don't result in disruptive threats or that are limited in quantity. Today, this means solar. Other renewable sources will be important, too, but solar is the clear favorite in terms of cost, deployability, and effectiveness. The amount of energy that reaches Earth from the Sun is sufficient to power any scale economy and is inexhaustible in terms of the span of a civilization.

Next, waste-to-value economics. Believe it or not, even in 2014, most of the materiel we as a global economy use ends its lifecycle un-repurposed, in landfills, derelict in situ, or worse, in the oceans. This, in turn, requires us to go back to primary geological sources when we need to make something new, meaning we impact Earth afresh when there is ample materiel already extracted that can be repurposed over and over, theoretically indefinitely. So when we talk about a waste-to-value economy, what we mean is almost-perfect recycling—extremely efficient use of resources already in the economy, and more and better repurposing of those. Crucially, this will require an infrastructure upgrade to allow for identification and recapture of nearly everything in a municipal or other kind of waste stream. Further, reclamation processes will have to be automatic and passive, and not rely on individual peoples' behavior. This is because human intermediation in these processes is slow, time intensive and inefficient, and because, no matter how well intentioned most folks are, there will always be those who choose not to participate, or if they do, who will do it wrong (be inefficient).

Additionally, we note that renewable energies and waste-to-value are not mutually exclusive topics. Fossil fuels, for example, are the ultimate non-renewable resource both as energy and materiel since they are consumed entirely upon their first use and can, by definition, never be repurposed. By contrast, resources extracted from earth or repurposed from existing items used to make solar PV modules will generate energy for 20 years or more before needing to be recycled into new modules. Thus, solar is dramatically more efficient than fossil fuels in terms of both duration of use and total amount of energy derived per unit of resource, and also in terms of end-of-life repurposing.

A key limitation on the path to a sustainable economy has been the intransigence of the legacy economy (an economic and environmental system that depletes scarce resources and does not allow us to live and thrive on the planet indefinitely) and its influence on policy. As long as our issues are framed, as they have been up to today, in terms of what is politically feasible (as opposed to what science prescribes as necessary), then the proposed solutions will always be incommensurate with our primary problems. That is, things will probably have to get worse before they get better; necessity again becoming the mother of invention, hopefully before a major irreversible tipping point for civilization. As the magnitude of our problems accelerates, and awareness of this worsening becomes more popularly recognized, the political tide will turn and the products, services, operations, and approaches offered and practiced by our portfolio constituent companies will come under increasing demand.

I suggest that direct policy action, stuck as it mostly is in traditional, retrospective-oriented thinking, in the short term will provide only a very small, and on its own insufficient, contribution towards solving inequality and our other primary systemic risks. On this basis, I believe that investors can not only contribute to a meaningful dialog with all stakeholders, but can lead it. In providing both conduits of capital to issue-solving ideas and in giving individuals and institutions alternatives to legacy portfolios, sustainability-focused asset management can be first to demonstrate the viability and success of sustainable economics.

BIOGRAPHY

Garvin Jabusch is cofounder and chief investment officer of [Green Alpha[®] Advisors, LLC](#). He is co-manager of the [Shelton Green Alpha Fund \(NEXTX\)](#), of the [Green Alpha Next Economy Index](#), and of the [Sierra Club Green Alpha Portfolio](#). He also authors the Sierra Club's green economics blog, "[Green Alpha's Next Economy](#)."

Prior to co-founding Green Alpha Advisors, Garvin's duties involved responsibility for all aspects of the management of the Sierra Club Stock Fund and the Sierra Club Equity-Income Fund at Forward Management, LLC. This included portfolio management, manager performance evaluation, research, marketing, sales, operations, and relationship management. In addition, Garvin also directly co-managed the Sierra Club Stock Fund (SCFSX).

Garvin previously served as vice president, strategic services, at Morgan Stanley, where he contributed to various global projects such as the integration of the bank's European acquisitions and the spin-off of Morgan Stanley Online. Garvin also served as a product

manager at Morgan Stanley, managing the launches of wireless trading and after-hours trading for the firm's clients. After-hours trading on MarketXT marked the first time retail investors in the United States had the opportunity to trade in the after-closing markets. His other experience includes trading, mutual fund sales, and research and analysis.

Garvin studied at the PhD program in physical anthropology and archaeology for five years at the University of Utah. During the course of this work, he wrote and contributed to many environmental impact studies, the largest of which was an assessment of a natural gas pipeline extending from western Wyoming to southern California. Garvin was also a field director for the American Expedition to Petra, Jordan, for two excavation seasons. Many artifacts discovered by the expedition can now be seen in the Jordanian National Museum. Previously, Garvin worked variously as a white-water rafting guide at Grand Canyon, Arizona, and as an EMT.

Garvin holds an MBA in international management and finance from the American Graduate School of International Management (Thunderbird). He has appeared numerous times on CNBC, Bloomberg, the Wall Street Journal, Forbes.com and other media outlets and publications, commenting on sustainability-oriented and cleantech investing.

Bruce Kahn, Portfolio Manager, Sustainable Insight Capital Management (SICM)

United States



Opportunity

Some say that certain agriculture investments can address environmental and social challenges. Others may go further and say the investment theme of agriculture as a whole has a sustainability orientation. We tend to agree with the latter because we understand that agribusiness across the value chain (from seed inputs to processing to distribution) must recognize the need for increased production in the context of key sustainability issues: demographic trends, climate change, and resource scarcity.

Food production, manufacturing, and distribution that is socially just and environmentally sustainable leverages new technologies and new business models. This co-evolved system borrows from the agro-industrial complex and from the “locavore/sustainable/organic”

movement. It uses advanced best management practices to boost agricultural productivity and efficiency to meet the growing demand for food, feed, fuel, and fiber.

Geospatial analysis helps optimize agronomic conditions, land pricing, and input availability with labor and capital inputs allowing for economic efficiency. The production system also uses Geographic Information Systems (GIS) to allow precise application and placement of important inputs such as fertilizers and advanced seeds that not only increase yield and productivity but also improve nutrition.

Advanced machinery, such as variable rate application of inputs, reduces tillage of the land while allowing for the precise amount of chemical inputs to avoid excess nutrient application. These tools allow us to more effectively use inputs while conserving and optimizing water use.

And finally, biological agents that are region-specific allow us to control and manage pests with minimum exposure to harmful chemicals. “Smart” agriculture couples advanced materials with highly efficient management of inputs. “Climate Smart” agriculture adapts this system to rapidly changing temperature and precipitation regimes to allow maximum resilience of our agricultural production system.

How Does an Investor Access Agriculture?

Accessing the growth of the agricultural industry requires exposure to multiple asset classes, each with its own risk-return profile. First, owning farmland can provide capital appreciation and current yield while protecting against inflation and currency movements and may provide uncorrelated returns with other markets. Of course, one needs to hire operators and control for input price volatility as well as be prepared for long-term illiquidity (up to 30 years). And some farmland investments in developing countries are contested for their impact on local communities, thereby adding reputational risk to the investor.

Second, agricultural commodities themselves, such as futures contracts in the grain markets or livestock markets, are poor vehicles for gaining direct exposure to the growth of the agribusiness theme. Passive strategies do not work well without significant backwardation to generate roll return, and active strategies are highly volatile and have limited appeal, so they may have a limited place in an overall portfolio. These markets are mostly used for natural hedgers.

Third, the private equity (PE) asset class holds some promise as agriculture is a large and fragmented sector with extraordinary growth potential, but requires significant capital and management and, typically, deal sizes are much smaller than the regular appetite for

private equity investors. Further, there have been a limited number of successful exits in the sector, thus thwarting significant attention from the large PE shops. Given that, there is a potential early-mover advantage to generate strong returns as more PE funds enter the markets.

And finally, the public equity asset class offers access to growth in agriculture since there is a broad investible universe which is focused on the core agricultural value chain and the companies are well covered by the capital markets and therefore have efficient access to growth capital. Public equities will not have the same degree of uncorrelated returns as the other asset classes, thereby requiring a skillful manager that will produce returns from company-specific attributes rather than common factor movements of the public markets.

Role of Investors

Sustainable agriculture ensures that production keeps up with both demographic changes and resource scarcity while providing economic development and investment portfolio growth. And agricultural production is big business, encompassing land, equipment, crop inputs (chemicals and seeds), expert production (farmers maximizing crop yields), value-added processing, and sales and distribution. Agricultural sustainability depends on a number of factors, including agriculture practices, governmental policies, population trends, management of key resources, crop yields, and customer demand (such as for meat or other resource-intensive products).

Agriculture investors can effectively work with multiple stakeholders to address environmental and social challenges. The convergence of the agro-industrial complex with the sustainable agriculture movement produces an advanced agriculture that simultaneously enhances production in developed and developing countries, reduces agricultural waste, and provides meaningful jobs. These trends are improving the lives of the subsistence, emerging-economy farming community by providing education and training—building out agri-infrastructure and providing access to capital and to markets and to growing the use of technology deployed at scale.

In agriculture, specific issues are paramount for the operations of any firm along the value chain. Water use, toxic emissions, impact on biodiversity and carbon emissions are key environmental factors that affect the sustainability of operating companies along the value chain. Social issues include labor conditions, safeguards against negative livelihood impacts, and impact on community dynamics, such as helping subsistence farmers benefit from global agricultural supply chains by engaging through out-grower schemes.

When considering these factors in conjunction with other market factors, skillful investors will seek to optimize risk exposure to the degree of risk management of these issues and

determine the changes of the portfolio's risk profile, such as exposure to beta, style, country, and expected returns, etc. Of course, this type of management requires proper assignment of the portfolio's benchmark in order to measure manager skill, rather than theme selection.

BIOGRAPHY

Bruce has over 25 years of experience in environmental and investment research and management. Currently, he serves as a Portfolio Manager at Sustainable Insight Capital Management (SICM), a global investment management firm that combines a disciplined alpha-generating process with sustainable investing principles. Previously, Bruce was a director in Deutsche Bank's Asset Management division, where he acted as an investment strategist conducting research on sustainable investing, including clean tech, water, and agriculture as well as ESG/SRI strategies across several asset classes. Prior to that, he managed assets at Citi Smith Barney in sustainable investments, including agri-business and cleantech for foundation/endowment, HNWI and institutional clients.

Bruce is a Trustee and Chair of the Finance Committee of the Robert and Patricia Switzer Foundation and previously served as Trustee of the Jesse Smith Noyes Foundation. He also serves as a member of the Board of Visitors for the Gaylord Nelson Institute of Environmental Studies at the University of Wisconsin–Madison and is on the Technical Review Panel of National Renewable Energy Laboratory. He also serves on the Advisory Council of the Sustainability Accounting Standards Board and Mercer Investment Consulting's Sustainable Opportunities Fund.

He holds a BA in Ecology & Evolutionary Biology from the University of Connecticut, an MS in Fisheries and Allied Aquacultures from Auburn University and PhD in Land Resources from University of Wisconsin–Madison. He is a recipient of both a J. William Fulbright Scholarship and a National Science Foundation Fellowship in ecological economics and is an Adjunct Professor at Columbia University's Earth Institute in the Sustainability Management Program, where he teaches Sustainable Finance, Statistics for Sustainability Management and Sustainable Agriculture.

Matthew Kiernan, Founder and Chief Executive of Inflection Point Capital Management (IPCM)

United Kingdom



Where do you see opportunities for powerful, effective investing today?

Dr. Kiernan: Our mission at Inflection Point Capital (as it was previously at Innovest) is to try to help harness and begin to redirect the trajectory of the capital markets and investment patterns, in ways that promote rather than undermine environmental and social progress. Importantly, this means sending strong signals to investee corporations about the priorities that we believe should inform their strategies, decisions, and practices. It's well accepted that corporate boards and executives are heavily influenced in setting their own priorities by what they perceive their *investors'* to be. Investors need to be clear: we *are* paying attention, and increasingly view companies' handling of environmental issues as a robust, forward-looking proxy for their overall management quality.

With specific regard to “environmental “ investment, I believe that the biggest single opportunity involves integrating the systematic consideration of environmental risks and opportunities across the *entire* capital markets spectrum, *not* simply confining it to the

relatively narrow vertical of “pure-play” environmental investing. In my view, environmental factors will prove just as important to the financial and competitive prospects of, say, Royal Dutch/Shell as they will for pure-play environmental companies such as Vestas. To the extent that initiatives such as the UN PRI can help accelerate that process, we can begin to dream about harnessing 100% of the power of the capital markets, and not just 2% or less.

What sector has had the most significant impact on the renewable energy landscape thus far? Why?

Dr. Kiernan: If I had to choose one, it would actually be the electric utilities sector. Why? Because in my view, the single greatest driver of the growth of renewables has become popular, political, and investor concern over climate change. And arguably the single largest contributor to the CO₂ emissions problem has been the electric utilities sector. At least six of the ten largest emitters in the world are from that sector: companies such as Huaneng Power, KEPCO Korea Electric Power, Datang International Power, China Resources Power, and others are, at least indirectly, creating stronger demand for renewables.

And the impact has been bi-directional; the growth of renewables has had devastating effects on the traditional utilities, especially in Europe. Companies such as RWE have already taken multibillion dollar write-downs and mothballed even modern plants, unable to compete effectively with renewables (public subsidies for renewables have, of course, played a big role in this process).

Debates about environmental issues and solutions are common among the public and governments. What role do you think investors could play in establishing active working relationships with all stakeholders to effectively address environmental challenges?

Dr. Kiernan: My answer would be very similar to that for the first question. Initiatives such as the UN PRI, with all of its challenges, have both driven and reflected a growing appreciation by investors of the importance of environmental and other “non-traditional” risk factors and opportunities. As I said earlier, this awareness must extend across all asset classes: equities, fixed-income, real estate, infrastructure, private equity, and so-called “real assets.” It cannot be confined to the environmental equities pure-play space; this will not mobilize enough capital to drive the necessary global industrial restructuring and meta-transition to a lower-carbon energy economy.

In general, I’d say investors are getting better and better at engaging with stakeholders, but one key group remains under-acknowledged: government. After all, it is governments that generally set the policy and regulatory frameworks within which both corporates and

investors must operate. For investors, energy and resources devoted to engaging with governments will arguably be more effective in driving real change at scale than the more familiar engagements with investee corporations and NGOs. The recent call to governments for a carbon price by 350 global investors representing some \$24 trillion in assets is a perfect example.

BIOGRAPHY

Dr. Kiernan is founder and chief executive of Inflection Point Capital Management (IPCM), a specialist, research-driven investment management boutique headquartered in London, with offices in New York, Paris, and Melbourne. IPCM was founded in 2009, and has roughly \$1 billion under advisement. The firm will be launching new, environmentally driven investment strategies in both listed real estate and climate finance in early 2015.

Inflection Point Capital's strategies are built around combining traditional fundamental and quantitative financial analysis with IPCM's proprietary research on forward-looking, "non-traditional" drivers of risk and return. These include companies' innovation capacity, adaptability, environmental sustainability, and strategic management capabilities, including their ability to harness emerging global megatrends.

Before the creation of the firm in 2009, Matthew had been founder and chief executive of Innovest Strategic Value Advisors, an investment research and advisory boutique which was rated as number one in the world in the sustainable investment space by institutional investors. At Innovest, Dr. Kiernan was instrumental in the creation of a number of innovative, sustainability-enhanced investment strategies, including the world's first "climate risk-adjusted" bond index, developed with J.P. Morgan. In total, Innovest had roughly \$1.5 billion in sub-advisory mandates, for clients including CalPERS and APG, the largest pension fund in Europe. APG became Innovest's largest external equity investor. The firm was sold to MSCI in 2009.

Prior to that, Dr. Kiernan served as director of the World Business Council for Sustainable Development (WBCSD) in Geneva and, in 1992, as a senior advisor to the Secretary General of the U.N. Earth Summit in Rio de Janeiro. His work at the WBCSD focused on the potential role of the global capital markets to drive systematic social, environmental, and economic change. Previous to that role, Dr. Kiernan had been a senior partner in the strategy consultancy of KPMG in North America. He had also served as a senior executive in a C\$100 million, tri-governmental urban revitalization project in Canada.

Dr. Kiernan has lectured on sustainable investment and finance in executive programs at the Wharton School, Columbia Business School, Oxford University, Stanford, the London

Business School, and HEC Paris, among others. He also served on the guest faculty of Cambridge University's Executive Program for Sustainability Leadership, founded by HRH The Prince of Wales. He holds advanced degrees in political science and environmental studies, as well as a doctorate in strategic management from the University of London.

Dr. Kiernan has published dozens of articles and book chapters on sustainable finance, and his most recent book is *Investing in a Sustainable World*. He is a frequent speaker at international investment conferences, and has addressed the World Economic Forum in Davos, Switzerland on a number of occasions. He received an award from the UN Environmental Program's Finance Initiative for "innovations in carbon finance" in 2007.

William H. Page, Senior Vice President, Essex Investment Management Company, LLC

United States



Where do you see opportunities for powerful, effective investing today?

Mr. Page: I have dedicated my career to clean technology investing in listed equities because there are multiple and related near- and long-term catalysts. I believe asset owners have tremendous opportunity investing in clean technology. With the Essex Global Environmental Opportunities Strategy (GEOS) the themes, industries, and companies represented by GEOS offer strong, long-term growth. The multiple, related, and converging challenges, such as non-OECD economic growth and global climate change, have created the greatest social challenges of our time. These challenges are social and economic, and thus have direct implications for investors. These risks are, and will continue to be, reflected in investment portfolios. GEOS is an opportunistic solution, for these risks are countered by varied clean technologies that enable resource efficiency and distributed energy. GEOS is the nexus of environment and finance: my co-portfolio manager Rob Uek and I blend environmental technologies with companies exhibiting strong financial footing while having great social impact. As we have frequently

expressed, it takes energy to power an economy, and the more flexible we can make our energy sources, the better. We must now do more with less—that is our definition of clean technology. Clean tech will provide long-term growth for investors, as we see clean technologies such as LED, solar, and smart grid technology growth extending for over 15 years.

What sector has had the most significant impact on the renewable energy landscape thus far? Why?

Mr. Page: Solar energy has been experiencing a “Clean Tech 2.0 tipping point.” Solar energy, as both a centralized and distributed form of power, is experiencing strong adoption rates from companies seeking to lessen their business risks by investing in and implementing distributed energy programs. These tipping points are due purely to strong economics in the form of high return on invested capital (ROIC). GEOS exercises the same investment philosophy—seeking strong returns on capital in companies developing commercially-viable technologies.

Companies are adopting clean technologies because they make economic sense. When GEOS was launched five years ago, solar module prices were around \$3.50 per watt while today modules are below \$0.60 per watt. In many locations and in many applications, solar energy makes economic sense and adds to business flexibility given its distributed nature—the energy is owned, and the costs are fixed with very few input costs for at least 20 years. Solar power allows energy migration from baseload to distributed form, where it becomes a flexible asset, lessening exposure to oil prices and the vagaries of utility power pricing. Since energy is a significant variable cost for manufacturing and services industries, owning distributed energy sources such as solar power provides competitive advantage. Many multinational companies are aggressively scaling solar power, led by retailers such as Kohl’s, Whole Foods, Wal-Mart, and Staples, with their retail locations and distribution centers providing ample roof-top real estate for solar panel installation and use (source: EPA National Top 100, April 2014).

Debates about environmental issues and solutions are common among the public and governments. What role do you think investors could play in establishing active working relationships with all stakeholders to effectively address environmental challenges?

Mr. Page: I believe investors should harness the equity markets, and move. The global equity markets provide access to a multitude of investment opportunities that are directly tied to solving environmental and social issues. For the most part, there are many established, liquid companies that offer solutions to all our grave, global environmental issues.

BIOGRAPHY

Bill is a portfolio manager on the Essex Global Environmental Opportunities Strategy (GEOS). He directs environmental investment policy and research for Essex and is on the Investment and Proxy Voting Committees. Before joining Essex in 2009, he spent eleven years at State Street Global Advisors (SSgA), most recently as the lead portfolio manager for GEOS and head of the Environmental, Social, and Governance (ESG) investment team. Bill developed GEOS over a four-year period at SSgA, and was a member of the Global Fundamental Strategies group. Before SSgA, Bill worked in product management for Wellington Management Company, LLC, and before then, for Fidelity Investments in asset allocation. Bill has lectured extensively on environmental investing at global investment conferences and academic institutions. During business school, Bill worked on socially responsible investment research at KLD Research & Analytics. Bill is on the Advisory Board of the *Journal of Environmental Investing*, a peer-reviewed, open-access journal that publishes original research at the intersection of the environment and investing. He earned a bachelor's degree in economics from Boston University and an MBA from the F.W. Olin School of Business at Babson College.

Essex Investment Management Company, LLC, was founded in 1976. The firm is a boutique growth-equity manager with 20 employees, 10 of whom are investment professionals. Essex serves institutional as well as individual clients and offers five distinct growth-oriented investment strategies as well as two hedge funds. In October of 2012, Essex bought back the majority interest held by the Affiliated Managers Group (AMG) for 14 years to restore the firm to a 100% employee-owned entity. The firm has since optimized both staff and strategy to focus on our key strengths and product offerings, specifically including the Essex Global Environmental Opportunities Strategy (GEOS) and the investment team of Bill Page and Rob Uek.

The Essex GEOS capitalizes on the global need to do more with less. We are at the tipping point in the adoption of many of the resource optimization solutions offered by companies in the GEOS portfolio. Some examples include LED lighting, natural-gas-powered engines, desalination, and solar power. These technologies are being adopted today not only because it is the right thing to do, but also because these solutions make economic sense. The bulk of our companies are not dependent on government subsidies and they are profitable enterprises.

The Essex GEOS is benchmarked to the MSCI World Index Total Return (MSCI World), and more narrowly to the Wilderhill Clean Energy Index (ECO). The primary benchmark is MSCI World, yet ECO is considered to compare GEOS to the relevant clean technology/new energy sector. GEOS is an all-cap, global, listed-equity strategy, investing across nine environmental technology themes in long-only fashion.

The GEOS investment philosophy—*companies that recognize the opportunities and costs associated with clean technology and resource scarcity will deliver greater shareholder returns over time*—allows for a broader investment opportunity and greater diversification than narrowly defined sustainability or renewable energy investments. The GEOS investment process leverages climate change mitigation and adaptation opportunities across nine environmental themes: agricultural productivity and clean fuels; clean technology and efficiency; efficient transport; environmental finance; power merchants and generation; power technology; renewable energy; low carbon commerce; and water.

Kevin Parker, Chief Executive Officer, Sustainable Insight Capital Management (SICM); Board of Directors, Sustainability Accounting Standards Board

United States



ESG is Inevitable

ESG issues are moving from the moral to the financially material. Some of the key themes emerging from sustainability analyses including water scarcity, food and agricultural trends, and energy considerations, are now irrefutable investment considerations. However, our ongoing research suggests that markets are inefficient and are not accurately pricing securities to reflect these macro trends.

ESG investing presents an opportunity because it takes into account additional risk factors that may have material financial consequences heretofore not explicitly reported or understood and therefore not priced efficiently. While this began as an approach to managing assets based on our ESG investment philosophy, it has quickly morphed into a hard-nosed investment process that has finally received the attention of mainstream institutional investors. For example, signatories to the United Nations Principles for Responsible Investment (PRI) and the Carbon Disclosure Project (CDP) have a 27%¹ and

¹ UNPRI.org. Retrieved on August 21, 2014. SICM Analysis.

32%² compound annual growth rate, respectively, over the last decade. As the ESG data universe continues to evolve and expand, managers, consultants, and investors will increasingly take environmental, social and governance factors into consideration to augment traditional financial analysis.

We see six emerging trends that make this inevitable. First, government action is driving corporate attention to these issues. Approximately 6,000 EU companies will be required to disclose non-financial information³ and there are now 160 signatories to Japan's Stewardship Code.⁴

Second, standards-setting is the hallmark of the institutionalization of management practices. Currently, US\$21 trillion assets under management and US\$9.5 trillion market capital have informed the development of SASB standards,⁵ while 73% of total market cap has been addressed by SASB standards.⁶ CDP represents \$92 trillion in AUM that supports disclosure of carbon risk.⁷

And note that high-profile leaders in financial markets, such as Michael Bloomberg, former mayor of New York City, and Mary Shapiro, the former chairperson of the SEC, have joined SASB as co-chairs. SICM is on the Advisory Council, the Standards Council subcommittee, and Kevin Parker was recently appointed to the board of directors in 2011, 2013, and 2014, respectively.

Third, additional listing requirements are raising the bar for public companies. Sixteen exchanges representing a market cap of over US\$35 trillion have become partner exchanges to the Sustainable Stock Exchanges Initiative.⁸

Fourth, shareholder activism continues to raise issues to corporate management. In 2013, just under 40% of shareholder proposals addressed environmental and social issues,⁹ 53% of all disclosed engagements resulted in companies taking action,¹⁰ and this year over

² Directly from CDP. Received on August 21, 2014. SICM Analysis.

³ http://ec.europa.eu/internal_market/accounting/non-financial_reporting/index_en.htm

⁴ <https://www.responsible-investor.com/article/nibs3/>

⁵ <http://www.prnewswire.com/news-releases/kevin-parker-appointed-to-sasbs-board-of-directors-275997971.html>

⁶ Directly from SASB, as of December 18, 2014

⁷ <https://www.cdp.net/en-US/Programmes/Pages/climate-change-programs.aspx>

⁸ <http://www.sseinitiative.org/>

Market capitalization as of December 31, 2013 unless otherwise noted. Can be accessed here:

<http://www.sseinitiative.org/fact-sheets-support/>

⁹ EY. (2013). *Taking Flight: Environmental sustainability proposals gain more attention*, page 3. Can be accessed here:

[http://www.ey.com/Publication/vwLUAssets/Environmental_sustainability_proposals_gain_more_attention/\\$FILE/EnvironmentalSustainabilityGainAttention.pdf](http://www.ey.com/Publication/vwLUAssets/Environmental_sustainability_proposals_gain_more_attention/$FILE/EnvironmentalSustainabilityGainAttention.pdf)

¹⁰ EY. (2014). *Let's talk governance: 2014 proxy season review*, page 4. Can be accessed here:

<http://www.ey.com/Publication/vwLUAssets/ey-proxy-season-review/%24FILE/ey-proxy-season-review.pdf>

US\$90 billion of capital at risk in high cost oil projects could be returned to shareholders (stranded costs?).¹¹

Fifth, asset owners, the ultimate fiduciaries, are taking action. For example, Norges (US\$860 billion¹²), GPIF (US\$1.7 trillion¹³), Amundi (US\$1.06 trillion¹⁴) all consider sustainability in their investments.¹⁵ Over two-thirds of institutional investors surveyed believe that “pension schemes will reject a growing number of investment opportunities over the next five years if they involved ESG risks.”¹⁶ AODP annually assesses the world’s 1,000 largest asset owners on management of climate change risks and opportunities.¹⁷

And finally, corporate actions¹⁸ on sustainability are sharing center stage with conventional financial issues. Corporate leaders estimate that the value at stake from sustainability issues can be as high as 25 to 70 percent of EBIDTA.¹⁹ Forty-six percent of CEOs agree resource scarcity and climate change will transform their businesses, and S&P 500 respondents to a CDP report committed investments of US\$50 billion on a range of emissions reduction activities and energy-savings processes.²⁰

We all understand that investment owners and managers, institutions, academics, and other sustainability professionals share a collective responsibility to advance a sustainable economy through sustainable investing. And we believe that today’s most forward-thinking companies are responding to the challenges and opportunities created by population growth, natural resource scarcity, climate change, urbanization, and globalization. Our research suggests that the leaders who respond to these trends and manage these sustainability risks have historically demonstrated superior performance, produced more stable cash flows, and delivered higher dividend growth over time.

¹¹ <http://www.carbontracker.org/report/oil-gas-majors-fact-sheets/>

¹² Norges: <http://www.ft.com/cms/s/0/52cc338e-633f-11e4-9a79-00144feabdc0.html?siteedition=intl#axzz3Ih4syjVv>

¹³ GPIF: <http://www.reuters.com/article/2014/05/19/us-japan-publicfund-reform-idUSBREA4I00S20140519>

http://www.gpif.go.jp/en/fund/pdf/e_ukeirehyoumei.pdf

¹⁴ Amundi: http://www.amundi.com/svn/home_prop_grou

<http://www.un.org/climatechange/summit/2014/09/investors-commit-decarbonize-100-billion-investments/>

¹⁶ <http://www.hermes-investment.com/News/DisplayFullPost/tabid/548/PostID/596/language/en-GB/Default.aspx>

¹⁷ <http://aodproject.net/about/about-us.html>

¹⁸ CDP (2013). *Investment, transformation and leadership: CDP S&P 500 Climate Change Report 2013*. Can be accessed here:

<https://www.cdp.net/CDPResults/CDP-SP500-climate-report-2013.pdf>

¹⁹ McKinsey (2014). *McKinsey on Sustainability & Resource Productivity*.

²⁰ PWC (2014). *17th Annual Global CEO Survey: Capitalising on Global Trends*. Can be accessed here: <http://read.pwc.com/i/243985>

BIOGRAPHY

Kevin Parker's business career has been marked by entrepreneurial value creation both inside and outside of large financial institutions. Mr. Parker has over 33 years of Wall Street experience and over 17 years of entrepreneurial ventures in impact investment, organic farming, and e-commerce.

Mr. Parker also has more than 33 years of experience in the financial industry—he is the chief executive officer of Sustainable Insight Capital Management (SICM), a New York-based, global asset-management firm that launched in 2013. SICM combines a disciplined alpha-generating process with sustainable environmental, social, and governance (ESG) principles. SICM is backed by Capricorn Investment Group and the Kresge Foundation.

Previous to SICM, Mr. Parker served as a member of the Group Executive Committee of Deutsche Bank since its inception in 2001. He also served as the Global Head of Asset Management from 2004 where he was responsible for managing a broad range of assets including Equities, Fixed Income, Real Estate, Infrastructure, Private Equity, Hedge Funds, Sustainable Investments, and other businesses. Deutsche Asset Management was successfully restructured under Mr. Parker's leadership, leading to dramatic improvements in profitability, market position, and client ratings and retention. In the year before Mr. Parker's departure, Deutsche Asset Management won more than 30 industry awards for service quality and investment performance.

Kingsbridge National Ice Center (KNIC)—Mr. Parker's entrepreneurial efforts are significant outside of the investment-banking world. In 2009, Mr. Parker founded KNIC LLC, the group developing Kingsbridge National Ice Center, a US\$350 million dollar redevelopment project that will become the largest ice sports center in the world. KNIC will house nine rinks in an iconic and awe inspiring national landmark in the Bronx, New York City. CEO Mark Messier, NHL Legend and 6-time Stanley Cup Champion, along with Sarah Hughes, 2002 Olympic Gold Medalist, will lead this project that will serve all ice sports and ice sports participants from New York City and around the world.

Chateau Maris—Mr. Parker is the owner and founder of Chateau Maris, an award winning winery in the Cru La Liviniere, France, which he converted to organic and biodynamic farming methods in 1997. The vineyards are certified by the leading organic and biodynamic organizations in both the US and Europe for nearly a decade. Chateau Maris has been a pioneer in developing and instituting biodynamic practices in viticulture and vinification. Chateau Maris recently opened the world's first sustainable carbon negative winery made entirely of hemp and lime. Chateau Maris has won numerous medals and critical acclaim, including Wine Spectator's Critics' Choice Award for one of the world's greatest wines.

Next Jump—Mr. Parker is also a founding investor and board member of Nextjump, the leading provider of internet-based next-generation Rewards and Loyalty programs to over 100,000 corporations and institutions worldwide including 70% of the Fortune 1000. Nextjump is located in New York City.

Outside of business activities, Kevin actively participates in various philanthropic activities around the city and sits on the board of notable organizations.

New York Police & Fire Widows' and Children's Benefit Fund—An honorary Fire Chief of the New York City Fire Department, Mr. Parker serves as President of Answer The Call, the New York Police & Fire Widows' and Children's Benefit Fund and he also serves on the charity's investment committee. Since its inception 30 years ago, the charity has distributed over US\$150 million dollars to families of first responders who were killed in the line of duty.

The Metropolitan Opera—Mr. Parker is a member of the Investment Committee of the Metropolitan Opera overseeing an endowment of over \$300 million.

Sustainable Accounting Standards Board (SASB) —In 2014, Mr. Parker was appointed as a board member of SASB, an independent 501(c) 3 organization that develops industry-specific standards for use in disclosing material sustainability information in mandatory filings to the Securities and Exchange Commission. Michael R. Bloomberg and Mary Schapiro, former SEC chairperson, serve as chair and vice chair of SASB's Board of Directors. More than 1,890 individuals representing US\$21 trillion assets under management and US\$9.5 trillion market capital have participated in multi-stakeholder industry working groups informing standards development to date.

Mr. Parker has also received numerous awards and accolades for his benevolent activities. In 2002, Mayor Michael Bloomberg presented him with the keys to the city for his contributions following the tragic events of 9/11. The Fulbright Foundation, in recognition of Mr. Parker's role in furthering international cooperation and investment across cultures, presented him with the Fulbright Award for Business Diplomacy. In 2011, the New York League of Conservation Voters honored him for his advocacy for action on climate change, and by the New York Hall of Science for supporting the launch of a groundbreaking climate-change education program reaching over 100 schools and 25,000 students in New York City.

Torben Möger Pedersen, Chief Executive Officer, PensionDanmark

Denmark



Where do you see opportunities for powerful, effective investing today?

Mr. Möger Pedersen: PensionDanmark's answer to the challenge of low bond yields has been a change in the asset allocation implemented in 2009/2010 away from government and mortgage bonds. Instead, we identify asset classes and assets such as infrastructure that have a stable cash flow with very little correlation to the overall business cycle.

Currently, we have approximately 10% of total assets (170 billion DKK) invested in renewables and infrastructure related assets. Our investments in energy-related infrastructure include wind farms, biomass power plants, and grid connections. Geographically, our focus is on Northwestern Europe and North America, where we feel the regulatory systems and the political culture are pro-investor.

What we like about renewable infrastructure is that the regulatory environment provides us with relatively stable top-line cash flows via long-term power purchase agreements (PPAs), feed-in tariffs, or similar elements of state guarantees for power production prices.

The opportunities for these types of investments have come about due to (energy) companies wanting to reduce balance sheets in combination with increasingly stringent

capital requirements for long dated loans. Pension funds need to seize these new opportunities in the best possible way.

What sector has had the most significant impact on the renewable energy landscape thus far? Why?

Mr. Möger Pedersen: I think there are two important trends that have had significant impact on the renewable energy landscape. First of all, the continued increase in the interest and number of (European) institutional investors wanting to invest directly in renewables, including wind. Second, the continued decrease in costs of wind and how it's able to compete with traditional power generation.

Debates about environmental issues and solutions are common among the public and governments. What role do you think investors could play in establishing active working relationships with all stakeholders to effectively address environmental challenges?

Mr. Möger Pedersen: I think investors' are already doing a lot of things to address these issues. Whether it's investments in renewables and more energy efficient real estate or being active owners and talking to portfolio companies on how they can become more energy/resource-efficient.

Furthermore, a lot of investors, including PensionDanmark, were very active in the preparation for the UN Secretary General's September Summit on climate, and in that process, liaised with governments, NGOs, and other parties. PensionDanmark's innovative investment strategy and our active role in developing climate finance instruments were the main reasons for IPE's Award in November 2014 as Best European Pension Fund at the IPE Awards in Vienna.

BIOGRAPHY

Torben Möger Pedersen is CEO of PensionDanmark, a labor market pension fund established in 1993. It offers defined contribution pension, insurance, and health care products based on collective agreements covering 660,000 individuals employed in 25,000 companies within the private and public sector. Total assets are 170 billion DKK and growing rapidly.

PensionDanmark has made a number of direct investments in offshore and onshore wind farms, biomass power plants, and gas and power transmission facilities as well as investments in solar parks, energy storage facilities, and other infrastructure assets through funds. Assets under management were at US\$30 billion as of mid-2014.

Mr. Möger Pedersen holds a number of board and investment committee memberships, including Paradigm Change Capital Partners, Copenhagen Infrastructure Fund I & II, and the newly established Danish Climate Investment Fund, which mobilizes private climate investments in emerging markets via an innovative private-public partnership structure.

Furthermore, in February 2014, Mr. Möger Pedersen was appointed to the Private Sector Advisory Group of the UN's Green Climate Fund, and is also a newly appointed member of the World Economic Forum network Global Agenda Council on Climate Change. Previously, he was a member of the Danish Government's Climate and Energy Growth Team and was named "Environmental Finance Personality of 2013" by *Environmental Finance*.

Torben Möger Pedersen holds an MSc in Economics from the University of Copenhagen (1984) and furthered his executive education at Insead Fontainebleau, Insead Singapore, Babson College, and Wharton Business School.

Erik-Jan Stork, Senior Sustainability Specialist, APG Asset Management

The Netherlands



Where do you see opportunities for powerful, effective investing today?

Mr. Stork: We see the best opportunities to invest in renewables in our Infrastructure portfolio where we seek—and have invested in—direct exposure to large renewable projects and related power transmission lines. In this asset class, we seek long-term stable returns that renewable projects can provide when they are situated in constituencies where stable policy frameworks are in place or where we can get long-term Power Purchase Agreements. Our infrastructure portfolio already contains large renewable energy investments, including, for example, onshore wind parks, hydro, solar, and waste-to-energy.

In total, APG has invested over EUR 1 billion in renewables and we intend to double this amount in three years' time. This shows that the acceleration in renewable energy capacity that is needed to stay on track to meet climate goals is possible. We made a good step this year by committing EUR 250 million to investments in hydropower assets.

In real estate, we also see good opportunities to invest in energy efficient buildings. Buildings are responsible for a large part of the global energy consumption and, therefore, they can play an important role in reducing energy demand. Six years ago, there were no

tools available to measure the environmental performance of our real estate investments. To tackle this problem, APG co-founded the Global Real Estate Sustainability Benchmark (GRESB) and today we have such data on 55,000 buildings worldwide. The instrument has been a driver of performance improvement, and today we invest EUR 11 billion in so called GreenStars—real estate of the most sustainable category—a double compared to only a few years ago.

Another area of rapid growth is Green Bonds. In the first nine months of 2014, APG has invested EUR 279 million in green bonds. APG thus increased the value of green bonds in its portfolio sixfold compared to early this year.

These developments leave us optimistic about the future. We expressed this at the Climate Summit that took place in late September in New York, where the CEO of APG Asset Management announced the company's intention to double its investments in renewable energy in the next three years.

What sector has had the most significant impact on the renewable energy landscape thus far? Why?

Mr. Stork: There are two areas of silent and ongoing change in power markets that start to significantly challenge the traditional business model of large-scale, centralized power generation. These are energy efficiency and solar energy, and both result in reduced demand for power from large utility companies. Those companies will have to change their business models and look for growth in other areas. A recent report calculated that an additional 6%-9% of demand could be met by solar energy in 2020 in major markets.

In the meantime, every time that light bulbs and electronic equipment are changed, ones that are more efficient will replace them, leading to additional savings. Over the long term, the combination of the two trends could halve the size of the market for conventional electricity generation.

Going forward, we expect that further reductions in power storage will be a disruptive change in energy markets for both power and transport fuels. The cost of batteries for mobile phones has declined 10% annually and will further decline as carmakers start to exploit economies of scale. Carmaker Tesla, for example, expects to reduce its battery cost by 30% in 2017, which would enable it to launch a mid-sized electric vehicle at competitive prices.

Debates about environmental issues and solutions are common among the public and governments. What role do you think investors could play in establishing active working relationships with all stakeholders to effectively address environmental challenges?

Mr. Stork: There is indeed a lot of talk about financing more renewables, and there are many initiatives aiming to develop new funding instruments. We feel that the scope of these initiatives is often too narrow and not building enough upon existing instruments. People tend to overlook the fact that new types of investment instruments take a long time to get widespread approval of markets. For example, last year we saw a significant growth in green bonds and an enthusiastic response by markets (most green bonds were overwritten), but it took 4–5 years for this instrument to reach this maturity and recognition, and green bonds are actually based on well-known instruments.

We believe that the solutions should not be sought in new investment instruments but in stable energy and climate policies and continued technological progress. The cost reductions in renewable energy have been fantastic. In eight years' time the costs to install solar in Germany have declined by 70%. Further cost reductions in renewable energy in combination with cheaper power storage will drive disruptive changes in power markets going forward.

In the shorter term, despite declining costs, renewables—and investments therein—still require some kind of policy support, whether in the form of tax relief, feed-in tariffs, or CO₂ penalties on fossil fuels. It is therefore crucial that stable policy frameworks are in place to support the energy transition. This requires in-depth dialogue with policy makers, something we cannot do alone. We therefore are an active member in the IIGCC, which, on behalf of 90 European institutional investors, represents the investor voice on climate solutions in Brussels and at the International Climate negotiations. We are urging European policy makers to rapidly reform the European Trading Scheme and to adopt ambitious targets for 2030, with a strong focus on strengthening a single European energy market to take maximum advantage of supply imbalances across Europe.

BIOGRAPHY

As the senior sustainability analyst at APG, Erik-Jan is also APG's principal climate expert. In this capacity, he leads the measurement and interpretation of the carbon footprint of APG's listed equity investments, which APG communicated in its Responsible Investment Report for the first time in 2013.

He is also responsible for monitoring APG's High Sustainability Investments, which include investments in solutions to climate change, such as investments in renewable energy, and in clean technologies. In order to ensure consistency across all asset classes, Erik-Jan developed definitions and reporting protocols that have increased the reliability and comparability of the data. In 2013, APG invested EUR 15 billion in these High Sustainability Investments; a breakdown per asset class is included in APG's Responsible Investment report, which also includes some recent examples of investments. In 2014, Erik-Jan led an asset-class-wide project to assess the potential impact of energy and climate policy and technological breakthroughs on energy markets and APG's energy investments.

Erik-Jan represents APG on the board of the Institutional Investor Group on Climate Change (IIGCC), is an active participant in their Policy and Corporate Working Group, and has met with representatives of the European Commission and Parliament in Brussels on various occasions. In September 2014, he acted as the aide to Angelien Kemna (member of the Executive Board of APG) when she addressed the UN Climate Summit in the General Assembly Hall of the UN headquarters in New York. Erik-Jan was previously a sustainability adviser at KPMG Sustainability, and before that was responsible at Shell for the first company-wide inventory of greenhouse gases.

Tony Van Bommel, Senior Managing Partner of the Industrial, Clean, and Energy (ICE) Technology Venture Fund, BDC Capital

Canada



Where do you see opportunities for powerful, effective investing today?

Mr. Van Bommel: The opportunity for powerful, effective investing is really dependent on the size and stage of your fund. Our Fund, currently C\$152M, focuses on industrial, clean, and energy (ICE) technologies that are highly scalable and capital efficient. In that focus, there is a heavy emphasis on technology. That means the fund focuses on software, electronics like semiconductors, novel materials and, to a lesser extent, hardware. As these are traditional areas for investment by venture capitalists, I believe the opportunity is to apply technology to the identified sectors. For example, Business-to-Business software and Semiconductors are the first and third largest area of value creation in the IT sector. Both apply to ICE technologies—this coupled with massive underlying fundamental business drivers such as growing energy and water demand coupled with resource scarcity, increasing regulatory oversight, and emissions awareness, aging and expanding utility infrastructure, energy security, technical innovation and increasing corporate and consumer market pull. It is my belief that tremendous advances in efficiency and productivity will present large opportunities for

value creation that will be captured by the innovative entrepreneurs and investors. Investments in energy efficiency, smart grid, automation, the internet of things, big data, and similar areas are key areas of focus.

Larger and later stage funds have more options for investment. Over the last 10 years, many venture capitalists have invested in much larger infrastructure opportunities with mixed results. Building distributed energy projects like solar, wind, or biomass has matured and now these projects are well recognized with investment returns that have moderated as the technology risk has been all but eliminated. Other large infrastructure investments in new biofuel, green chemical, or waste-to-energy projects have been met with limited returns and many failed projects. These investments require a tremendous amount of capital but could present very large returns if they are successful. Large funds, strategic investors, and governments will all have to work together to see major breakthrough in these areas.

What sector has had the most significant impact on the renewable energy landscape thus far? Why?

Mr. Van Bommel: Solar has had the most impact to the renewable energy landscape in the last ten years. Once solar reached the tipping point—the achievement of grid parity—it resulted in a substantial rush of investment and innovation. As the innovation continues, the reduction of the capital cost of solar allows for greater adoption in developed markets and increases penetration in areas where the grid did not previously reach. Solar was a major contributor to the significant reduction in the building of traditional electricity generation facilities in the developed world, while at the same time creating significant challenges for utility operators.

The adoption of solar and the advances in the technology has been well-documented elsewhere and will not be repeated here. It is of note to mention, however that from an investment perspective, that there were many winners and losers along the way. I would now consider solar a mature industry where much of the technical risk has been eliminated. There is still much investment opportunity in the sector as there is a race to maximize adoption and to increase the usefulness of the resource. Some examples of areas of opportunity and investment are as follows: Novel business models to finance and install capacity; the development of electricity storage methods; continuing reduction in the cost of the hardware required for solar energy generation and conversion; and, investment in the innovation of improving the efficiency of generation and conversion methods.

Debates about environmental issues and solutions are common among the public and governments. What role do you think investors could play in establishing active working relationships with all stakeholders to effectively address environmental challenges?

Mr. Van Bommel: Venture Capital investors are generally at the forefront of identifying innovation that will positively address environmental challenges. When considering an investment, the regulatory environment is a key area of due diligence and discussion for the Venture Capitalist. Often a change in the status quo in that regulatory environment can create both winners and losers, resulting in often-difficult issues and negotiations to be addressed. So, in the Venture Capitalist's mind, if the financial rewards of backing the positive innovation are greater than the regulatory risk, then capital will flow to that positive innovation. As a result, the Venture Capitalist is generally a party actively involved in pushing the boundaries of the regulation and advocating change to take advantage of the opportunity. They act as an advocate, they enlist highly qualified management, they bring their due diligence skills to bear in identifying the risks and rewards, and they bring financial capacity to reduce the risk in exploring the issues and solutions.

BIOGRAPHY

Tony Van Bommel is the Senior Managing Partner of the Industrial, Clean, and Energy (ICE) Technology Venture Fund for BDC Capital, investing exclusively in Canadian companies. A champion of the cleantech sector for 14 years, Tony shapes BDC Capital's investment direction. He oversees the C\$152 million ICE Fund. Since 2012 alone, ICE has invested or reserved over C\$70 million in 18 transactions across 14 technology companies. These companies employ over 700 people and generate revenues of C\$100 million. Currently located in the Toronto, Ontario, office, Tony has been with BDC Capital since 2001 and held positions in the BDC Halifax, Nova Scotia, and Vancouver, British Columbia, offices. He holds or has held numerous board of directors seats and currently is working with Axine, Regen, CarbonCure, Nexterra and Vizimax, all emerging Canadian cleantech companies. Tony was also recognized as one of Canada's top CLEAN50 nominees for 2015.

Before joining BDC, Tony spent four years at InNOVAcorp, a General Partner for the Nova Scotia First Fund, an early-stage, knowledge-based venture fund, where he helped implement a venture capital program and provided assistance to emerging technology companies. While at InNOVAcorp, he completed two secondments to Ocean Nutrition—completing a market map and market strategy; and to Dalhousie University—teaching courses in business strategy, building innovative companies, and market strategy. For 10

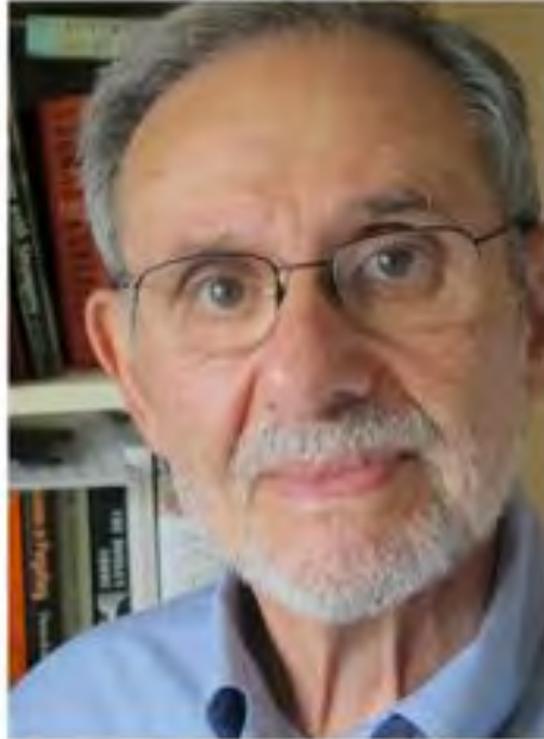
years prior to this, he worked as a lawyer and partner in the business law firm, Little & Wright in London, Ontario. Tony has held multiple directorships in both public and private emerging growth companies across Canada and holds the CVCA “VC Deal of the Year award” for the funds exit in the sale Q1 Labs to IBM in 2012. He was also instrumental in bringing Radian6 to BDC Capital, the CVCA “VC Deal of the Year Award” winner in 2011 for the sale to Salesforce.com.

Tony earned the Dalhousie Governor General’s Gold Medal for the top graduate student chosen from all faculties at Dalhousie University and the gold medal from the Dalhousie University MBA program. He received his Bachelor of Laws (LLB) from the University of Western Ontario, where he won the Pitney Bowes Award for the top graduating law student in Ontario who combined academics, athletics, and service to the community. He is a past chairman of Junior Achievement of Nova Scotia and Volunteer of the Year for that organization.

BDC Capital is one of the most active industrial, clean, and energy technology investors solely focused on investing in Canadian companies. The BDC ICE Fund tailors its investments toward capital-efficient and scalable businesses with the potential to reach and operate across a global market. With C\$152 million under management, BDC ICE invests in early- and development-stage companies and uses its professional experience in materials, electronics, and ICT to build global companies to be commercial successes. Active in the industry since 2001, BDC has successfully strengthened its expertise in smart-grid, energy-storage, green-IT, building-energy management, energy-efficient lighting, the internet-of-things, big-data, and water-treatment technology sectors. Some of our successful exits in ICE are Miranda, Xantrex, Satlantic, Pyrophotonics, Welaptega Marine, Ballard Power, and Cellex.

Stephen Viederman, Vice Chair, Network for Sustainable Financial Markets; Chair, Finance Committee of the Christopher Reynolds Foundation; Former President, Jesse Smith Noyes Foundation; Shareholder Advocate; Author; Speaker

United States



Where do you see opportunities for powerful, effective investing today?

Mr. Viederman: Opportunities will grow when we stop using adjectives—responsible, impact, social, sustainable, even ESG-- and start by identifying ourselves, simply, we are “investors!” We seek competitive returns. We are future-oriented, risk-adjusted, and opportunity-directed in our investing. We consider macro-and micro- issues that the market does not now take into account. This is our fiduciary duty. Between the conventional wisdom of the market and reality, we choose reality.

Opportunities will arise also when we begin better to understand and create processes to change the systemic and psychosocial barriers that can breakthrough market orthodoxies.

Basically, our community of investors, spawned by socially responsible and its various children, is insular. There is a tendency to believe our own reports. Witness the US SIF report on of November 20, 2014, suggesting that in the US 1 of every 6 dollars under

professional management is invested sustainable, responsible and impact investing, up from 1 of nine dollars in 2012.

Presently we are locked in the past. At an Opal Conference recently the opening speaker, Gary Schilling, rated as a top financial economist by Forbes and others, said that you couldn't predict the future. Reality, said he, was the last twelve months. Over the course of three days at this foundation and endowment investment meeting, I heard "climate" mentioned twice, by me in a session on Sustainability and Fiduciary Duty, and in another panel specifically on Impact Investing. I heard "environment" mentioned once, related to the financial environment.

We have a future both for investing and for corporate engagement we need to clarify who we are and where we are going.

Debates about environmental issues and solutions are common among the public and governments. What role do you think investors could play in establishing active working relationships with all stakeholders to effectively address environmental challenges?

Mr. Viederman: Investors can and should, play a very important role, but they seem to be loath to act for a variety of reasons.

Many are discouraged from investing 'sustainably' by their investment consultants. In too many intuitional settings board members and finance committees prefer business as usual. Change is difficult.

Consider, for example, shareowner activity and voting. Some members of the "sustainable" community actively pursue companies on important issues of climate, water, and other assaults to the environment through dialog and filing shareowner resolutions. Votes in the 20th, 30th, and sometimes 40th percentiles are described by the press as being defeated. But given the holdings of the companies—the large mutual funds, and Wall Street—anywhere from 20 to 40 percent of the voters side with the company's recommendation to vote against the resolution. Problematically, the supporters of resolutions almost always vote for board members who almost always receive votes in the high 90s. By voting for the board members, activists seeking environmental change diminish the impact of their engagement.

Investors do not reach out to affected communities and workers for information and support. In fact, investors are often seen as a problem. Witness the divestment of coal discussions where the displacement of jobs and communities are rarely, if ever, mentioned by the divestors. Coal mining is a lousy job, but it is a job.

Mutual fund investors, including institutions, do not exert pressure to get the funds to vote their proxies on environmental issues.

The list can go on.

What we who care need to do is develop a better, fuller understanding of barriers to change. More data, better research on performance, etc. are all good. But the deeper understanding of psycho-social-organizational barriers is still a virgin territory.

BIOGRAPHY

My vocation is Grandparenting, doing what I can to leave options open for my grandchildren and all children.

I am involved in advocacy, writing, speaking, and consulting on a wide range of issues. These include: sustainable investing and fiduciary duty; philanthropy and democracy; higher education and public policy; the limits of corporate responsibility; and economic and environmental justice and community governance.

My primary focus now is to develop a holistic understanding of fiduciary responsibility consonant with not-for profit organizations' obligations to serve the public benefit.

Current affiliations include:

- *Vice-Chair (US)*, Network for Sustainable Financial Markets
- *Chair, Finance Committee*, Christopher Reynolds Foundation
- *Advisory Council*, Sustainable Accounting Standards Board (SASBE)
- *Advisory Committee*, Inflection Point Capital Management
- *Advisory Board*, Strategic Philanthropy
- *Fellow*, Governance and Accountability Institute
- *Advisory Board*, Ethical Marketplace
- *Leadership Advisory Committee*, Mission Investors Exchange

Recent published papers include “The Philanthropic Fiduciary” (with Keith Johnson) (2014), “Fiduciary Duty” (2008), “After the Credit Crisis—The Future of Sustainable Investing” (with Nick Robins and Cary Krosinsky) (2009), “Philanthropy’s Bermuda Triangle” (2011), “Barriers [to sustainable Investing]” in *Evolutions of Sustainable Investing* (Wiley 2012), and “Investing as if the Future Matters” (2012).

I am an active shareowner, both personally and as a representative of the Christopher Reynolds Foundation, leading discussions with ExxonMobil and Chevron on the financial risks of climate change, and with Pfizer and Accenture on transparency of political contributions.

I retired in 2000 from the presidency of the Jessie Smith Noyes Foundation where, in the early 1990s, I developed and guided the effort to harmonize our asset management with our grant making, including some of the first “impact investments” in “responsible-growth companies.” I also served as a board and finance committee member of the Needmor Fund.

My wife and I, native New Yorkers, did our undergraduate and graduate degrees at Columbia. We have two children and four grandchildren, ages 11 to 20.

**Daniel Wild, Daniel Wild, PhD, Head of Sustainability Investing R&D,
and Executive Committee Member, RobecoSAM, Switzerland**

Switzerland



Where do you see opportunities for powerful, effective investing today?

Mr. Wild: Despite entering an era of unparalleled resource pressure, resource efficiency is undoubtedly becoming an increasingly attractive investment theme. I believe that human ingenuity and innovation will enable the global economy to maximize our global resource productivity and that companies that pioneer innovative ways to use resources more efficiently—and facilitate the substitution of supply-constrained resources with intelligent alternatives—will gain long-term competitive advantage. The challenge is knowing who these game changing companies are and to invest in the resource efficiency solutions that deliver the best return, for investors and society as a whole.

Resource depletion requires large-scale changes in how businesses and markets operate. But a wide range of successful and creative solutions already exist.

- **Process innovation:** One of the benefits of a competitive marketplace is that businesses cannot afford to stand still. Though our overall consumption of resources continues to grow, we are becoming much more efficient in how we use them thanks to the application of process innovations such as laser cutting technologies and

industrial automation used in manufacturing. Efficiency, substitution, and process innovation have led to the fact that despite increasing demand over the last 80 years, resource prices have actually decreased in real terms.

- **Resource Efficiency (i.e. micro irrigation):** Modern micro-irrigation systems could cut water consumption by as much as 30 to 70 percent. The positive side effects of this technology include the prevention of soil salinization and the decreased use of pesticides. While these new irrigation technologies are economically viable, the speed at which they actually establish themselves ultimately depends to a large extent on the available financing. One of the decisive factors is still the price that farmers have to pay for the water and the extent to which the authorities are prepared to clamp down on illegal water extraction. One interesting point worth noting in this context is that in 2010, the amount invested globally in irrigation systems amounted to about USD 10 billion, which is a surprisingly low figure given the importance of the agricultural sector for water consumption.
- **Substituting for efficiency:** Over the past decades aviation has been at the forefront of using lightweight materials. Improved manufacturing processes and new composites have helped drive down the cost of lightweight materials such as carbon fibers and titanium and aluminum alloys. These are ubiquitous in aviation today. Thanks to continuous improvements and regulation, the substantially larger automotive industry is also expected to increase the adoption of lightweight materials such as high strength steel, aluminum, and carbon fibers significantly.

Currently, steel is the single most important material in cars, and the automotive industry accounts for 6 % of global steel usage. However, demand for steel has been declining due to the use of high strength steel, which effectively reduces the amount of steel required to achieve similar strength. Penetration rates for lightweight materials in the automotive industry are expected to approach 67 % over the next decades, mainly at the expense of standard steel. In relative terms, automotive manufacturing uses around 1,000 times the amount of resources of aviation. These shifts should have significant ramifications for the traditional basic resources industry, which could lose 40 % of volume according to IHS. McKinsey puts the lightweight materials market at EUR 300 billion² by 2030, growing at 8 % annually.

As a result, substituting traditional materials such as steel and aluminum with advanced materials such as carbon fibers can significantly improve the performance and reduce costs of certain applications. In what was initially a very small market, the cost of carbon fibers has declined from USD 350 per kg in the 1970's to approximately USD 20 per kg today, as carbon fibers have steadily penetrated new

applications including aerospace, construction, sports equipment, blades for wind turbines, industrial machinery, and more recently, the automotive sector.

- **Recycle/ life cycle/ value chain management:** We also now better understand the life cycle potential of many materials – how a resource can be managed more efficiently, from extraction, transport, transformation and consumption, to the disposal of its waste, if any!

Companies developing resource efficiency solutions that increase productivity or lower input costs will benefit from reduced risks associated with price fluctuations, environmental liabilities and regulations, and an enhanced reputation, boosting their competitiveness. Investors who identify these game changers can benefit from superior risk adjusted returns. And that is what we are focused on doing at RobecoSAM. Through our thematic public equity and private equity strategies we translate resource-related challenges into specialized investment portfolios containing future-oriented companies that are already providing innovative solutions to resource scarcity in the area of water, energy, agribusiness, materials, and healthy living.

What sector has had the most significant impact on the renewable energy landscape thus far? Why?

Mr. Wild: In my opinion, wind energy has had the most significant impact on the renewable energy landscape thus far for two simple reasons:

The first is that it was the first renewable energy source to become truly mainstream (excluding biomass, since that has already been around for thousands of years). Wind power began its journey toward the mainstream during the 90s in the Netherlands and Denmark with the emergence of a handful of small independent players. During this initial phase, the industry experienced relatively slow growth, which allowed developers to establish efficient supply chains and put in place robust quality controls. These measures resulted in significant widespread political support for this “new” technology beyond the borders of the Netherlands and Denmark.

This in turn paved the way for wind power’s second phase, a period during which it grew from being a fringe industry to being a fully-fledged business with significant earnings and a solid workforce of its own. The 2008 financial crisis drew the sector even further toward becoming a mainstream industry as utilization rates declined drastically, and competition became a real issue forcing industry leaders to reconsider their positions. During this period, many wind energy companies fell into crisis mode bringing significant changes in management, which saw leaders from other sectors join these companies bringing new perspectives and areas of expertise with them.

It was during this latter phase that my second reason for nominating wind energy was formed: the industry became (and has remained) competitively priced versus conventionally generated electricity. Although other renewable energy sources have also made significant progress, most still remain far more expensive than wind. Now said to be in its third phase, the wind energy sector is very similar to its industrial peers in terms of having a sound economic basis and established industry best practices but with a higher innovation rate. Certainly, if it remains on track, the industry will continue to have a significant impact on the renewable energy landscape.

Debates about environmental issues and solutions are common among the public and governments. What role do you think investors could play in establishing active working relationships with all stakeholders to effectively address environmental challenges?

Mr. Wild: Investors are interested in furthering a better understanding of risks and returns of investment strategies. With that in mind, one of the main roles investors should play in establishing active working relationships with all stakeholders to effectively address environmental challenges is that of the educator.

By facilitating stakeholder dialogues and knowledge sharing, investors could further a better understanding of environmental issues and environmentally linked investment strategies. A natural byproduct of this is that stakeholders are made aware of the critical link that exists between environmental factors and business relevance, or in other words financial materiality.

Furthermore, investors are also in a position where they can point out instances where external environmental costs have not yet been fully internalized and are therefore driving financial asset allocation in the wrong direction. Raising awareness for such situations would create public pressure and political momentum that eventually change the rules of the game, for example: climate policy and CO2 costs.

Finally, I see an opportunity for investors to work with environmental project initiators at an early stage (or even at university level). This would help ensure a greater number of projects that aim to provide solutions to environmental challenges are financially viable and brought to fruition.

BIOGRAPHY

Daniel Wild is the Head of Sustainability Investing R&D and a Member of the Executive Committee at RobecoSAM, the investment manager exclusively focused on Sustainability Investing. Founded in 1995, RobecoSAM has 20 years' experience in promoting environmental investing to institutional asset owners and financial intermediaries. Over

the course of his career, Daniel transitioned from environmental research in academia, to working and financing infrastructure projects, to steering investors' money toward the solution providers of resource scarcity challenges.

In his position, Daniel oversees the organization, strategy, methodology, and investment process of Research and Product Development at RobecoSAM. As such, Daniel is responsible for the identification and integration of financially material environmental, social and governance (ESG) factors into the investment strategies of RobecoSAM as well as those of its parent company, Robeco. As per June 2014, Robeco managed EUR 111.5 billion in ESG-integrated assets, that is 50% of the group's EUR 223 billion in total assets under management.

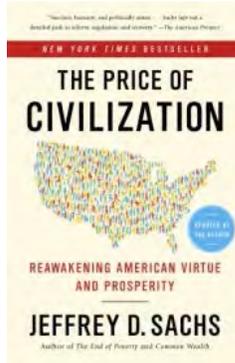
Additionally, Daniel is responsible for the development of the RobecoSAM Corporate Sustainability Assessment (CSA) methodology, an internationally renowned standard for ESG analysis. Its application on 2800 large caps forms the basis of the Dow Jones Sustainability Indices (DJSI), a globally recognized sustainable index family launched by RobecoSAM and S&P Dow Jones Indices, in 1999. In 2009, Daniel introduced the water related risks criteria to the CSA which not only ensured that participating companies became aware of such arising risks, but also demonstrated best practice examples and encouraged firms to use water resources more efficiently. Based on its CSA, RobecoSAM has compiled one of the world's most comprehensive databases of financially material sustainability information, which RobecoSAM uses to provide sustainability benchmarking services for corporate companies. Daniel joined RobecoSAM in 2006 as senior financial analyst and coordinator for the RobecoSAM Sustainable Water Strategy, covered water-related industries and led RobecoSAM's industrial sector research, before heading Sustainability Investing R&D and joining the Executive Committee in 2011.

Prior to joining RobecoSAM, Daniel led infrastructure financing programs in Southeastern Europe and Asia for the Swiss State Secretariat for Economic Affairs (seco). While at seco (2004–2006), he was responsible for a project portfolio of CHF 80–100 million that covered water and wastewater, energy, hazardous waste, waste incineration, railways and smart tariff systems. From 1999 to 2004, Daniel headed the Environmental Technology Department at Ernst Basler and Partners, a Swiss engineering and consulting firm.

Daniel holds a Masters in Chemical Engineering from ETH Zurich (1987–1993) and a PhD in Environmental Engineering from the Swiss Federal Institute of Aquatic Science and Technology (EAWAG) (1993–1997). He pursued postdoctoral research studies at Stanford University between 1997 and 1999, where he focused on groundwater enrichment and the effects of pollutants in Orange County, California.

He was awarded the Pergamon Press Publication Gold Medal in 1996 by the International Water Association (IWA) for outstanding paper contribution and is the author of numerous academic articles published in peer-reviewed journals. Daniel is a Board Member of Swiss Sustainable Finance, and formerly a member of the GRI Sector Research Steering Committee and UNEP FI Workstream Water Advisory Board. Throughout his career, Daniel has regularly participated in industry conferences as a speaker or panelist, and is a sought after expert on sustainability investing.

Book Review



The Price of Civilization: Reawakening American Virtue and Prosperity, by Jeffrey D. Sachs; New York: Random House, 2012, 352 pp., \$18 (paperback) and \$40 (audiobook).

Reviewed by R. Paul Herman, CEO, [HIP](#) (Human Impact + Profit) Investor Inc.

“I like to pay taxes,” said Supreme Court Justice Oliver Wendell Holmes, Jr., more than 50 years ago. “With them, I like to buy civilization.” Yes, today’s civilization does require more than just our common commitment to being civilized to each other. The infrastructure of a civilized society also requires funding. “A billion here, a billion there, and pretty soon, you are talking real money” is attributed to Illinois Senator Everett Dirksen (who claims he was misquoted by the media, but the quote was too memorable to have corrected). Today’s crises include a debate on how to adjust the rate of public spending, which is not adequately covered by tax revenues, thus forcing debates on whether to cut services or increase taxes in order to balance budgets and stimulate growth.

Yet the challenges to rekindling prosperity and global stability involve not only rejuvenating economic engines and financial policy but also aspiring to true personal virtue and encouraging community appreciation in pursuit of well-being. *The Price of Civilization* comprehensively details many of the contributing root causes of global malaise and offers Dr. Jeffrey Sachs’s innovative ideas and detailed prescriptions for curing many of those ills.

This is a book every investment analyst and portfolio strategist should read as a comprehensive analysis of a spectrum of core issues faced by society. It is illuminated by numerical evidence of trends and explanations that would delight my former McKinsey managers and mentors. Thoughtful strategies and visions for building a better world fill half the book—which inspires the reader to think big and bold and overcome the petty politics and typical apathy we seem to live with today. As with environmental investing and environmental, social, and government-themed (or ESG) investing, the book has frameworks, metrics, and tools to consider for your own investment analyses and strategies.

The Price of Civilization outlines how to invest in the core foundation of society—our human capital. Investing in education and teachers can stir more innovations and efficiencies and build both competitive and comparative advantages. Unleashing creativity and entrepreneurship is essential to the free-market economics that benefit civilizations with well-formed rules. But sometimes these rules need to be instituted by governments to ensure a more level playing field.

This is where society has broken down, according to Dr. Sachs, who describes this process with a focus on how politics has eroded the core belief many citizens have held since World War II that government helps more than it hurts. Due to the policies of Reaganomics, and now tea party libertarians, society has become less effective as governments are increasingly starved of funding. Investing in common services and infrastructure that benefit us all—which was the debate in the 2012 U.S. presidential election—is something we citizens should be delighted to support.

Dr. Sachs calls out the lack of trust in institutions early in the book. A Pew 2010 report cited in the book shows that at least half of Americans believe the following groups have a negative effect on the country: banks, Congress, the federal government, large corporations, the news media, and labor unions. On the positive side, the majority of Americans see institutions such as small businesses, technology firms, churches and religious groups, and colleges and universities as bettering our society and ourselves.

Surprisingly, Dr. Sachs delves more deeply into religion, specifically the Buddhist approach of “mindfulness,” in both the physical and metaphysical center of the book. He springs into a discussion of eight dimensions of mindfulness (“*of self, work, knowledge, others, nature, the future, politics and the world*”) that each of us—and society as a whole—should pursue to bring more well-being into our lives. Surprisingly, the nature section, at only one page—a very light touch, given the tremendous climate solutions we must invent—lacks the depth or thoughtfulness that we expect from this award-winning economist.

A civilization’s return on investment (ROI) must include tactical goals and mileposts, not just strategies and macroeconomic policies. Dr. Sachs’s track record of advising stressed countries, from Latin America to Poland as well as other Organization for Economic Co-operation and Development (OECD) countries, is documented in his other books. Page 186 of this book lays out eight strategic goals (fuller employment, stronger education, reduced poverty, avoidance of eco-catastrophe, budget balancing, good governance, enhanced national security, and increased life satisfaction) for America to pursue with two to four specific, quantitative goals each—which makes the reader wish for the implementation plan for these aspirations. As readers and analysts, we deserve solutions and experiments that we can test, not just the strategies and possible metrics.

From the environmental-focused and ESG-related perspectives, the three eco-goals are a positive step forward, but will these three goals get America to an eco-balanced world? Goal 1 is to have five million electric cars on the road by 2020 (while this is only six years away, the aim here is similar to that of the moon-shot called for by President John F. Kennedy in the 1960s). This goal would support growth of companies like Tesla and the conversion of traditional automakers, but it would not overcome the annual increases in driving mileage by daily commuters and long-haul trucks. Goal 2 is to have low-carbon energy supplies of 30% by 2020 and 40% by 2030. Achieving this goal is already underway if natural gas is counted as a lower-carbon source that displaces coal baseload power for utilities and oil peak turbines—yet it ignores the potential pollution to the water supply. With natural gas, we risk becoming water-dependent in order to be energy-independent. A more aggressive approach would be to scale up the replication of renewable power standards (RPS) from a policy and regulatory compact perspective. This approach was taken in California with its 33% goal and in the northeastern United States through carbon trading by the Regional Greenhouse Gas Initiative (RGGI). The third goal of achieving 17% reductions in greenhouse gases (GHGs) by 2020 (from 2005 standards) seems quite specific (rounded up from one-sixth?) and to be the best type of goal—one that is outcome-specific and that allows for maximum innovation and entrepreneurship by adapting a cleaner fuel mix or even possibly removing fossil-fuel energy production units (as the allies of 350.org are advocating). Yet, these GHG improvements need to be much more aggressive since we have exceeded 400 parts-per-million—past the point of “no return” according to many scientists.

So how does *The Price of Civilization* inform environmental investing? Well, one challenge is that while Dr. Sachs grafts in themes about natural resource scarcity, fuel-price volatility, and potential carbon-tax implementation, these necessary ideas and possible solutions pop up only every 50 pages or so in a 250-page work (the first time in detail on page 60). The eco-themes make up paragraphs, and sometimes pages, but are not well integrated or detailed. While these ideas are certainly not an afterthought, the environmental investor is left wanting for something more like the “eco-wedges” of carbon reduction or estimates of investment like the Copenhagen Consensus calculations, in which scores of initiatives are valued for their total cost in billions, along with their resulting possible benefits. That future book could be called *The Return on Investment of Civilization*. For investors and society, this ROI theme seems to be emerging along with the “green bonds” in France and now the USA, and muni bonds rated for impact, as well as with social-impact bonds that can include an ecological outcome, like SNW Asset Management’s fixed income impact-rated portfolios.

Another element that relates to environmental investing is deciding what we subsidize and what we tax. Current debates about free-market pricing typically ignore the benefits gained from multiple types of subsidies to and tax treatments of coal, oil, and gas

producers and utilities. Some estimates of these subsidies cumulate to an annual US\$450–US\$550 billion worldwide. At the same time, government programs to benefit renewable energy are shifting markets. This has already occurred in China, helping to drop the cost of solar energy globally, and in Germany, which has authorized new regulatory schemes that allow decentralized users to go independent. In the United States, battles over renewable firms result in political critique rather than an enhancement of renewable-energy leadership. Dr. Sachs highlights data showing that current federal subsidies of renewable energy are one-fourth of those during President Jimmy Carter’s push for energy independence in the late 1970s. Unfortunately for environmental investors, energy innovation has been relegated to the private sector since 1980. And in 2010, the top 10 publicly listed companies in energy production allocated more than 95% of future capital spending toward fossil-fuel expansion; less than 5% of future CapEx is currently dedicated to renewable-power-source development for the 10 largest firms.

Dr. Sachs does not analyze the energy efficiency of countries’ gross domestic product (GDP). His interventions in Latin America and Poland and other OECD countries, to date, have sought to restart the factors of production in labor, land, and capital. Yet a core macroeconomic factor is how natural resource intensity—both on inputs as well as outputs—ripples through the future economy. Hedge fund managers today focus on natural resource scarcity and systematically trade on expectations in fuel prices. Only ESG and eco-focused investors appear to be embedding carbon intensity and resource efficiency into estimates of current shareholder value and future changes in pricing. At least one hedge fund’s investment strategy is focused entirely on trading weather futures based on climate models, which increasingly predict a highly volatile world as climate change accelerates.

The growth in revenue from products solving environmental solutions is never recognized in Dr. Sachs’s book. While double-digit revenue gains are realized in markets for renewable energy, hybrid and electric cars, and eco-efficient industrial solutions, a macroeconomic view can’t see the shifting trends until they have already become dominant factors. Analyses of monthly jobs reports indicate that during the years 2002–2011, the segments of the economy associated with positive-impact environmental solutions and products contributed greater and more consistent job growth than did those segments stuck in the old economy (which happens to be destroying jobs frequently).

Dr. Sachs does advocate for taxing fossil-fuel pollutants while also creating tax credits for renewable power. “Tax the bad, and credit the good” is a role that government can choose to play effectively, but entrenched interests who are corrupting Congress have held the government back, says Dr. Sachs. Achieving a carbon-tax, cap-and-trade, or other regulatory compact will take some revolutionary political pressure. Who is the leading force of this shock wave?

The millennial generation will spur society to recognize this opportunity, Dr. Sachs says, and he ends the book with a chapter on this younger generation. As a professor at Columbia University, Dr. Sachs finds that his students' optimism gives him cause for optimism. I find the same in my MBA lectures around the world. Certainly, the millennials are driving awareness of environmental issues like climate change, natural gas fracking, Keystone pipeline risks, and ocean acidification. Millennials, as children of the baby boomers, will gain in power as their parents bequeath their inheritances, which can total up to \$41 trillion of intergenerational wealth in the coming decades. But Dr. Sachs lets the rest of us off the hook by focusing on only the next generation. While looking forward to the future, we need to act today as consumers in what we buy (there's no mention of consumers' buying behavior in the book and how that can cause a CEO to quickly pay heed), how we work, and of course how we invest. Dr. Sachs sees economic policy, tax policy, and markets as levers to pull, but pays less attention to understanding the levers inherent in behavioral economics.

Going forward, as all of us in the ESG field recognize, the forces of nature will increasingly determine winners and losers worldwide. Capital markets will respond, and astute environmental investors will have positioned themselves for many of these volatilities by isolating their portfolios (especially ESG portfolios) from knowable-yet-ignored risks—like greenhouse gas intensity and energy mix as well as natural resource scarcity—and acknowledging the potential rewards from companies that take action to create a more sustainable world.

Dr. Sachs's wide-ranging analyses – which build upon the earlier works of Herman Daly, E.F. Schumacher, Bob Costanza, Amory Lovins and Hunter Lovins – give us deeper insight into the macro-forces at work. His goals and metrics for the future help to lay a vision of what is possible. But it's up to us to start acting our way into that future, as millennials and boomers as well as those of the gen X and gen Y generations. The "price" of civilization is higher than we can afford right now. But the price of not having a civilization is even higher. Estimates of the sacrifice, economically, still total less than 5% of GDP to make smart investments in the future to protect against climate change, while 20% of GDP, globally, may suffer if we make no changes. Back in 1989, a group of global scientists calculated that for every one dollar of economically counted GDP, we received another two dollars of uncounted and unpaid-for services from nature's ecosystems. Since nature doesn't collect user fees, governments must do so, particularly if societies suffer from the "tragedies of the commons" by using up or destroying the requirements for life.

As the late Ray Anderson has said, "What is the business case for maintaining life on earth?" We need to think more in terms of the ROI of our next decisions, where *R* (return) includes quantitative measurable improvements of our living ecosystems, and *I*

(investment) is put in the long-term context of having a civilization to write about in future history books.

R. Paul Herman is CEO and founder of investment adviser, portfolio manager, and ratings provider [HIP Investor](#), which quantifies and rates the sustainability, risks, and intangibles—and how they link to profit and shareholder value—of all types of investments for investors, advisers, fund managers, retirement plans, and fiduciaries. Herman is the author of *The HIP Investor: Make Bigger Profits by Building a Better World* (John Wiley & Sons, 2010), which is integrated into 21 MBA programs and university curricula around the world.

A Millennial's View: Born Outside the USA

Srdana Pokrajac, MIB, BSci

During one of my high school history lectures in Croatia—a little more than a decade ago—I was a bit bored and I had scribbled on a piece of paper, among other random thoughts and drawings, “Who can be the president of the world?”

When the history teacher walked by me and saw my question, he gave me a hopeless and worried look saying, “Nobody—it's impossible.” I have to admit, I was not fully aware of what I meant. I was only 14 at the time and quite clueless about politics. However, all I saw from the media and around me was a lot of suffering, and, after all, in a history class the story that the teacher is telling usually involves some sort of war or conflict that seems to be repeating over the centuries.

Well, it might be impossible that one single person could be a global leader, but what I meant with my question was “Can we have a united world, ruled by peace, with no hate and wars, and with sound global leadership that has as its first interest the well-being and security of civilization as a whole?” (I was also partially getting my education from old music records from the 1960s).

The ongoing and periodically intensifying conflict in the Middle East—ironically (or not) when I was 14 in that history class we were just discussing the Israeli-Palestinian conflict—and the current tensions between Russia and Ukraine are really worrisome. Even though so many years have passed since that history class, I still can't figure out what it is deep in human nature that perpetuates such violence and hatred.

Peace and democracy have become the most important values of our modern (or post-modern, if you will) society. Even though in the Western world we have managed to keep peaceful relationships among “democratic” states, how good of an example are we to the rest of the world? I ask, and I am sure many of you do, “Is it in the interest of current leadership and politicians to actually have worldwide peace, or are people in conflict much easier to manipulate and control?”

In the *Price of Civilization*, Jeffrey Sachs calls on the United States and explains how Americans can regain their economic strength and most importantly, faith in the leadership of the country. This is important not only from the perspective of having a strong economic power and for the safety of its citizens alone, it is also important because of such a strong influence that the United States has in the rest of the world. Is the United States losing its thought leadership and how can restoring faith in their leadership in-house also influence its reputation in the rest of the world?

Globally we are so interconnected—information technology has helped bring down many borders, at least mentally—and it has helped bring people together in such a way that physical borders between countries seem, in fact, trivial. Sadly, we still act as enemies to each other, and we are scared of each other. How can we have peace if we don't have trust?

Sachs is calling for sustainability and long-term thinking, and for an environmentally aware and mindful society. However, who is ready for this type of thinking at the moment? The United States and other developed countries might be—and some of them are doing a great job already (think Scandinavian and some European countries). But again, do people touched by conflict in the Middle East, for example, now care about environmentalism? Would they, if their political and economic situation was more stable and safe? How can we get everybody on the same level of readiness and care for humanity?

The Buddhist mindfulness Sachs elaborates on is certainly deep—but God (pun intended) knows what it takes for people to become more mindful and aware of others. Just think of the goal for ISIS (seeking an Islamic State of Iraq and Syria). Sachs's focus is on the Western world and maybe issues and solutions are a little oversimplified—the United States is after all a bubble of its own kind, where the standard of living is among the highest. It takes a lot of effort to change humans, and I wish Sachs's book could be a starting point of reflection on a wider scale. The future of the world really depends on every single one of us.

Srdana Pokrajac, born in Croatia, currently lives in San Francisco and is a candidate for an MPA in Sustainable Management at the Presidio Graduate School. She has earned a Masters in International Business from the Hult International Business School, and a Bachelor of Science from the Zagreb School of Economics, and is an advisor to HIP Investor.