

Decarbonization of Finance

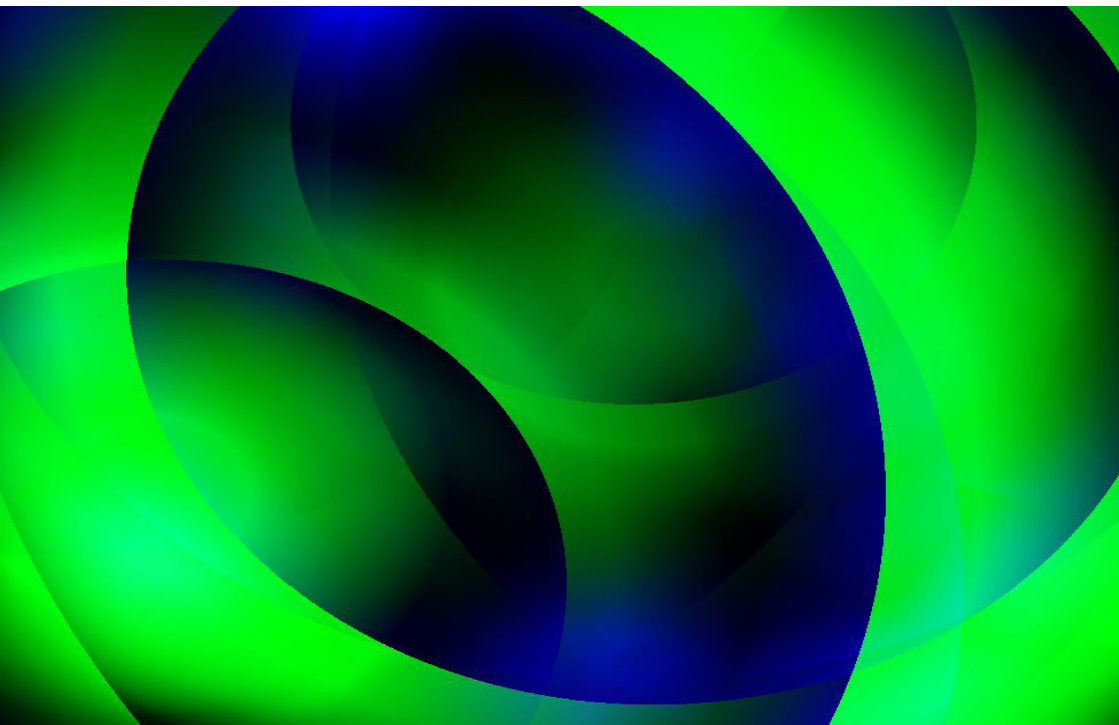


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Introduction

It was an honor to kick off Ecologic Institute's new research area, sustainable finance, with an evening symposium hosted by the Consulate General of Germany in New York City on October 21, 2015, under the banner The Decarbonization of Finance.



For more than a quarter century, cutting-edge professionals in Germany and the United States have laid the foundation for a fundamental transformation of the financial industry. Due to their foresight and creativity, the world economy is poised to transition from a fossil fuel-oriented past to a sustainable, clean energy future.

Several questions, however, still require answers. How can new opportunities be dynamically leveraged? What new risks are involved and how can they be managed? How best can ESG and sustainability indicators be quantified and integrated into the decision making process? And how do we move forward confidently amidst regulatory and policy uncertainty?

Although we were able to convene an exceptional group of experts and a well-informed, engaged audience, we never ex-

pected to answer every question about sustainable finance in one evening. Our goal, however, was to determine what questions we should be asking as we set the stage for further research and dialogue, putting those of us committed to protecting the environment and the expansion of prosperity in position to create a dynamic and sustainable future.

Most of all, I would like to thank our distinguished speakers and the audience for their participation. I hope this is just the beginning of a productive and inspiring journey.

Sincerely,

Max Gruenig
Ecologic Institute

What is sustainable finance?

Public discourse surrounding both the sustainable development movement and the financial industry has reached a fevered pitch in the past few years. Policy makers, advocates, and more than a few self-proclaimed experts gleefully expound solutions to a seemingly unending series of crises: climate change, market volatility, regulatory uncertainty, Euro crisis, overpopulation, peak oil, crisis of confidence. The list goes on and on.

Added to this cacophony are underlying suspicions among some environmentalists and private sector proponents that their objectives are fundamentally incongruous. Is the financial industry motivated singularly by profit without regard to the social and environmental impacts of its actions? Is the destruction of market-based capitalism essential to the environmentalist's utopian dream?

If we take a step back from the caustic rhetoric, we find that creating value (finance) and protecting the valuable (environmentalism) are inherently connected—Fibonacci is instructive to this point. Environ-

mentalism has undergone a legitimate and culturally-attuned evolution over the past few decades, not just a linguistic recalibration as skeptics often claim, resulting in a movement focused on creating 'green growth' or, most recently, sustainable development. Today, the utopian dream of the dominant environmental movement can be described as the desire to constantly develop socially and environmentally responsible regenerative processes that support innovation and growth, that spur new ideas and broaden the base of participation while minimizing or eliminating waste.

Similarly, the financial industry, particularly with its unmatched capacity for objective assessment of risk and externalities and confronted with unprecedented public skepticism following last decade's global financial meltdown, has committed itself to revolutionizing its role and how it interrelates within the global social marketplace.

It's at the intersection of this evolution and revolution that we find sustainable finance.



How is sustainability financed?

Once considered the province of risk-seeking venture capitalists and niche investors, today's 'green' portfolio has changed considerably. Certainly pure plays continue to attract attention, especially for active investors, and offer a high degree of transparency, but traditional financial instruments such as ETFs, mutual funds, and bonds have been successfully integrated, providing an avenue for diversification more appealing to institutional and casual investors. Harmonizing the fiduciary and sustainability objectives of these portfolios, however, has required the development of new metrics, new research, and, perhaps most important, new vocabularies.

Socially responsible investing (SRI), impact investment, screening (positive or negative), corporate governance, minority and female owned or emerging manager (MFOE), best-in-class, along with industry jargon associated with energy, climate, and environmental policies, are now commonplace terms in portfolio analyses, effectuating a holistic evaluation of an enterprise. This new plane of research is most commonly grouped under the umbrella term ESG (environment, social, and corporate governance). ESG research, when complemented by traditional metrics, offers the capacity to generate a transcendent valuation, synergizing financial opportuni-

ties with a progressive sustainability agenda.

The world is on the cusp of the largest intergenerational transfer of wealth in history. The generational change implies a new vision, a new set of priorities. The sheer size of the wealth guarantees that the impact will be significant. And the transfer, the movement of the wealth, will produce an unprecedented pace of change. Sustainability, thus financed, has the potential to serve as the foundation for the creation not just of untold wealth, but of extraordinary value.





Decarbonization of Finance

A movement to purge investments in companies that engage in harmful environmental practices has emerged on university campuses around the world, mirroring efforts from previous generations that focused on South African apartheid. Targeting the lucrative endowments of these institutions, student activists, supported by an international network of environmental organizations, hope to influence schools to divest from corporations with outsized carbon footprints, specifically those in the coal, oil, and gas industries, primarily with moral and ethical appeals. Several municipalities (Cambridge, Massachusetts), philanthropic foundations (Bewegungsstiftung, Germany), religious organizations (Church of England), and universities (Stanford University), have committed to full or partial divestments from carbon-heavy investments. Where divestment is a socio-political movement, decarbonization can be seen as a strategy for sustainable finance.

Decarbonizing finance entails more than a reflexive sell order. Regardless of volatility in commodities and regulatory uncertainty for energy companies, these investments remain attractive, if specious, due most likely to an inadequate pricing of carbon. In order to keep global warming

below the 2°C target, barely 20% of the already known coal, oil, and natural gas reserves can be used. The remaining resources constitute the ‘carbon bubble’, a cache of stranded assets the cost of which could reach \$100 trillion. Additionally, the appropriate inclusion of externalities in pricing the effects of climate change, including adaptation measures, is necessary to properly value carbon.

The intentional nationally determined contributions (INDCs) are being submitted prior to the climate negotiations in Paris. The EU, US, and BRICS are committing to reductions in growth and overall emissions that will demand innovative, low-carbon approaches to growth and development. Adapting to these imminent changes does not require a moral or ethical movement. It does, however, invite a deliberate strategy for decarbonizing.

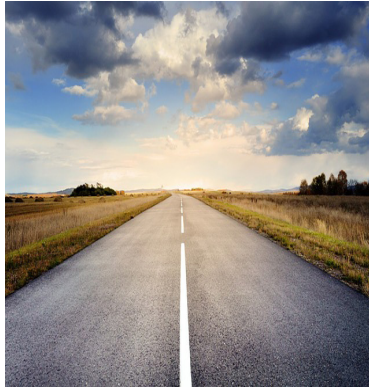


What is sustainable investment?

A US View

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Sustainability is not an industry but rather a characteristic objective to be found within every industry. Although there is neither a universal definition of 'sustainability', nor any single metric to definitively quantify the concept, ESG research and due diligence applied to specific cases can potentially substantiate the emergence of qualified sustainable investments. Moreover, as firms continue to embrace improved transparency, long-term trends will become more clearly ascertainable, allowing for more confident decisions.

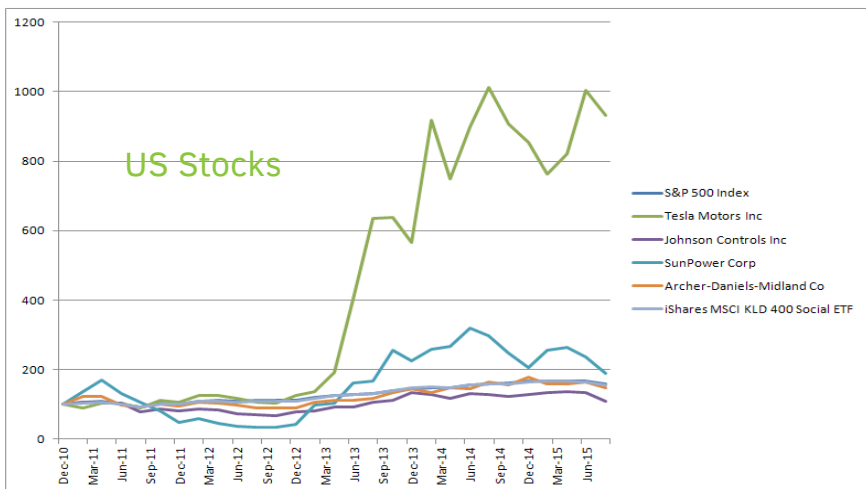


Within the US, 'green' investment was often either pejoratively synonymized with financial sacrifice or considered a high-risk bet. However, the linguistic augmentation of sustainable finance has had the added effect of changing perception, validating the long-term growth potential of low-carbon investments. Whereas green can turn

brown, sustainable is resilient. Sustainable investments are no longer simply seen as start-up capital for an unproven product or service; it is about enterprises of all sizes and capacities engaging in practices on the front end of the transition to a low- or post-carbon future.

Sectors heavily impacted by carbon dependencies can be considered the most ripe for revolutionary change. Where the technologies already exist or processes are highly efficient, such changes are expected rapidly.

Within the broader context of sustainable development, four sectors with strong presence in the US markets appear likely to lead. Energy generation is the number one source of GHG emissions, not just in the US, but across the planet. Renewable energy sourcing will account for nearly 60% of new generation capacity in the next 25 years, according to a report from

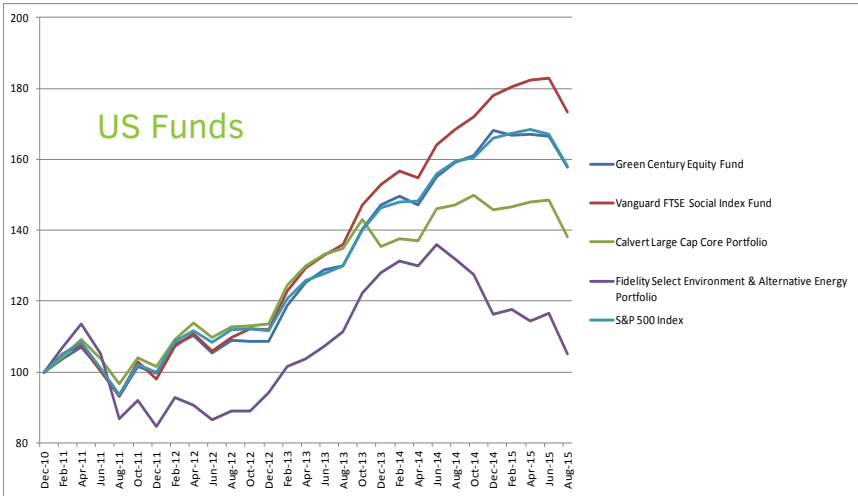


Bloomberg New Energy Finance. That growth is to be split between small-scale and large-scale projects, but small-scale installations will lead initially. Small-scale solar, represented here by Sunpower, is in a strong position to have immediate impact in large economies.

Transport, which is the second-leading GHG emitting sector in both the US and EU, is likewise prepared to offer consumer-level low-carbon options. Represented by US industry-leader Tesla, the electric vehicle market has the potential to also drive innovations in peripheral businesses. By focusing on battery innovations and trading fantasy for ubiquity, Tesla has bought itself, and the EV industry, time to improve product viability while maintaining the cultural iconography of fast cars. As with small-scale solar, passenger vehicles has

the correlative function of increasing public buy-in of sustainability as a lifestyle option, or as is often the case in larger economies, a status symbol.

On the other end of the consumer spectrum is large-scale agriculture. Represented by blue-chip Archer-Daniels-Midland (ADM), big ag might seem a round-peg-square-hole sector for sustainable development, but the opportunities for process improvements, particularly regarding water, waste, and energy usage, will be essential to making climate commitments meaningful. Additionally, global demand for biofuels as alternatives to oil and gas, in Brazil and other countries where EVs are not expected to see an immediate rise in demand for example, will benefit from ADM's international reach.



The UN projects that within 35 years an additional 2.5 billion people will live in urban areas around the world. Urbanization will be the largest migration story of the century, and the pressure placed on existing infrastructure is yet unmeasured. Moreover, even the best case climate scenarios will require costly adaptations. Cities will be the front lines for combatting both the direct and indirect impacts of climate change. Building efficiency and retrofitting, along with comprehensive, large-scale infrastructure and urban planning, will be an in-demand industry, represented here by Johnson Controls, already included on the Dow Jones Sustainability Index and the MSCI 400 Social Index.

Where individual stocks still bear the suspicion of unhedged bets on comprehensive societal change, mutual funds can miti-

gate risk exposure and, in the US market, there exist several variations on sustainability funds that provide the opportunity to apply longer-term performance measures. Criteria to determine the composition of such funds vary demonstrably. Again, as no accreditation process is universally applicable, each fund caters to, or specifically weighs, adherence to a particular investment and sustainability philosophy.

For example, Fidelity's long-standing Select Environmental and Alternative Energy Fund invests primarily in companies "engaged in business operations related to" sustainable development goals, half of which are specifically oriented to energy efficiency. Some of its top holdings, however, could well be regarded as insufficiently 'green'. According to the 2012 Pacific Sustainability Index from the

Roberts Environmental Center at Claremont McKenna College, Deere & Co. scored 14/119 points on environmental reporting and 6/26 on environmental intent, citing the company's "lack of commitment to environmental sustainability" but noting its "strong commitment to social responsibility" (Morhardt, et al 39). ESG research can offer guidance, but objectives must be individually prioritized, and questions need to be raised: should investments be made to reward sustainable results or to further progress? Is a positive or negative screen appropriate?

Green Century's Equity Fund utilizes a more comprehensive negative screening selection process. Prohibited are companies that explore for, process, refine, or distribute coal, oil, or gas. Similarly, equities with significant involvement in alcohol, tobacco, gambling, firearms, nuclear power, or GMOs are not considered. But could a fund with a seemingly absolutist approach be justifiably accused of attempting to

create a separate market, establishing a superficial black-white binary, ignoring the inherent interdependency of the broader economy? Merck, a top holding of the fund, received FDA approval in 2015 for its lung cancer drug Keytruda.

Quantifying ESG research, many aspects of which are natively qualitative, is a constant balancing act. Vanguard's FTSE Social Index Fund does not automatically exclude fossil fuel companies, preferring to add more credence to transparency. Calvert's Large Cap Core specifically assesses company impacts on indigenous peoples, but invests heavily in the world's largest freight airline, FedEx. All of these funds are noted for their commitment to ESG and sustainability principles. Whether they have or will drive societal change remains unanswered. The key, however, is having the methodologies in place to be able to adapt as the world economy's transition to a low-carbon future continues to gain momentum.



What is sustainable investment? A German View

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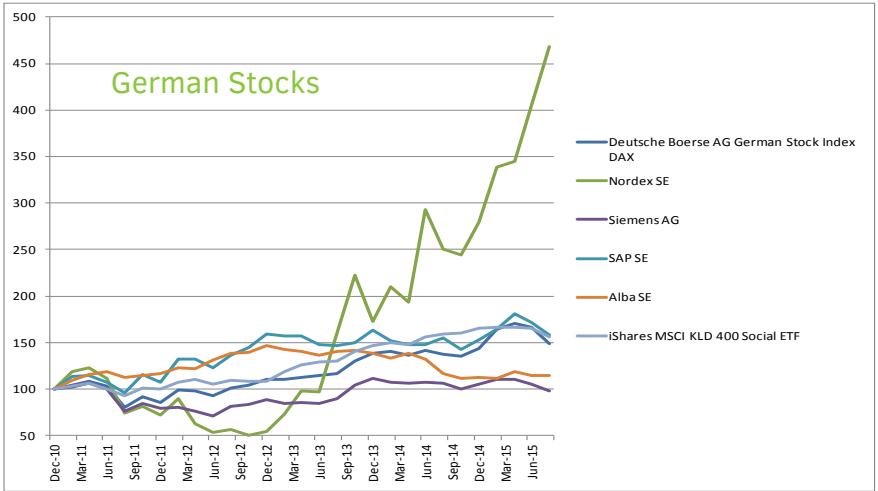
Germany, perhaps more than any other contemporary nation on Earth, is well-versed in the business of large-scale transitioning. The country's industrial core supplied the coal and steel necessary for the postwar reconstruction of Western Europe, setting the foundation, quite literally, for the EU. With the fall of the Berlin Wall, a world capital was built. And with reunification came capital investments and infrastructure developments required to integrate the former GDR into an advanced western capitalist system. These experiences, along with a long-standing commitment to sustainable policies and an economic focus on exports, position the country to play a leading role in the global transition to a low-carbon future. But how will these advantages be exploited by Germany's market sectors?

Like the US, Germany's advanced tech-

nologies in renewable energies originated through domestic demand. Because this demand grew early, relative to other markets, and due to Germany's geographic and climatic characteristics, Germany has been a pioneer in wind energy. At the end of 2014, total installed wind capacity in Germany was more than one-quarter of the EU total, and Germany's share of the EU's newly installed capacity in 2014 was nearly 45%. Germany's specialization in turbine technologies and experience in maintaining wind farms, represented here by Nordex, which recently acquired Acciona Windpower, extending its presence in the Americas, should be of particular benefit to the efforts of emerging markets to reduce emissions.

Siemens, which actually holds a greater global market share of wind turbines than Nordex, and is well-known for its push for





increased efficiencies in manufacturing processes, is included here to represent another integral sector for sustainability: transportation. The looming carbon bubble and the possibility, as some experts have recommended, of the aviation industry collectively establishing a more realistic carbon pricing mechanism which could render low-cost carriers untenable, high-speed rail, already a competitive market in Europe, has a strong opportunity to reestablish itself as a viable, sustainable solution to evolving transportation needs and standards. Like the passenger vehicle in the US, rail transport in Europe benefits from cultural inclination and encourages consumer buy-in.

At the end of 2014, domestic consumer demand surpassed exports as Germany's

main economic driver. Moreover, the institution of a minimum wage compromise means German consumption will continue to play a role in endeavors to stabilize the Eurozone, creating demand for the end-of-cycle realities of consumption. Germany's waste management industry, represented here by Alba Group, is acclaimed for its public education success, as well as its innovations in returning used raw materials to the production cycle, conserving natural resources and aiding in process efficiencies. Secondary raw materials already account for 14% of raw material consumption by German industries. In 2013, Alba paired with a Turkish company to establish a hazardous materials and electronics recycling plant and announced a 2015 joint venture in Hong Kong, demonstrating the worldwide de-

mand for advanced waste management technologies and services.

Germany's high-tech industry, though not as universally renowned as its industrial or financial sectors, is a natural outgrowth of its strong engineering tradition. As international business operations continue to demand improved agility, adaptability, and security, software companies, such as SAP, can provide streamlined solutions that better prepare corporations for the con-

tinued process improvements necessary to compete in a low-carbon economy. SAP itself has implemented a series of sustainable practices, migrating its operations to a 'green cloud' system and mitigating its environmental impact by using 100% renewable energy at its facilities.

businesses or the growth likely to occur in these same sectors outside the country occasions a gap in demand for exports and expertise is an open question.

As is the case in the US, German mutual funds provide an opportunity to balance risk exposure to specific sectors or companies, as well as offer investors a vehicle for rewarding or encouraging socially responsible or sustainable business models.

Germany's sectoral advantages are, somewhat ironically, arguably inflated by the country's leadership on environmental regulations. The Energiewende (energy transition) entered public discourse in 1980, and it has been national policy since at least 2002. Whether this head start continues to be leveraged to support German

Externalities, such as the dumping accusations made against China and Taiwan for their low-cost solar panels made evident, are another variable risk diversified fund investments can, to some extent, ameliorate.

Diversification is not solely a question of sectoral parity. The FairWorldFonds, for example, limits its proportion of equity holdings to 30%, choosing instead debt securities and bonds to more directly impact its sustainability objectives. This portfolio management style is decidedly risk-averse, establishing a longer-term investment objective. Whether such a fund can spur

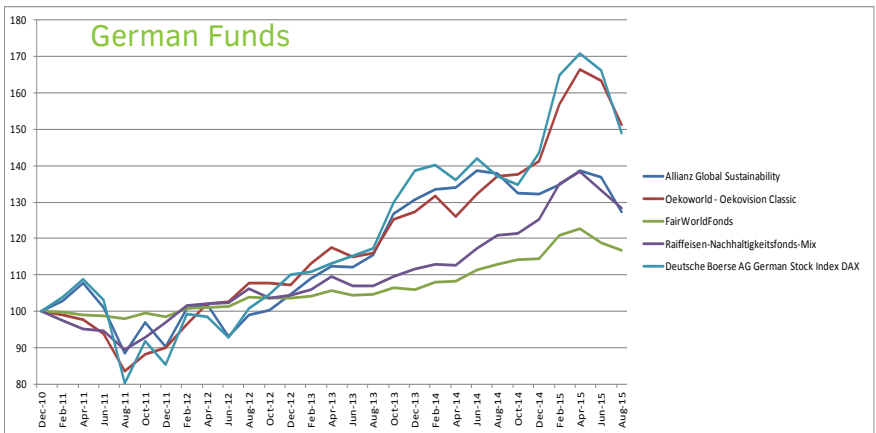


innovation or reinforces the question as to Germany's ability to continue leading the sustainability movement raised above is worth considering. Even in funds with nearly all assets in equities, such as Allianz's Global Sustainability A fund with 98.9%, we find resistance to broad sectoral parity. In this example, over half the fund's holdings are in health care, financial services, and technology stocks.

However, it is essential to remember that traditional observations, like traditional metrics, are not adequate to comprehensively evaluate sustainable investments in mutual funds. An aspect of ESG research that is perhaps more prevalent, or more predominant, in Germany than the US, due simply to a higher percentage of international equities held by funds in Europe, is the social and political situations in foreign countries. This can become difficult

for funds such as the Ökoworld Ökoveision Classic which openly proclaims its scrutiny of companies that do business with China, for example, but does not definitively ban those companies from its fund. Qualitative assessments of transparency and compliance reporting, in such cases, provide the necessary flexibility in meeting both financial and sustainability objectives.

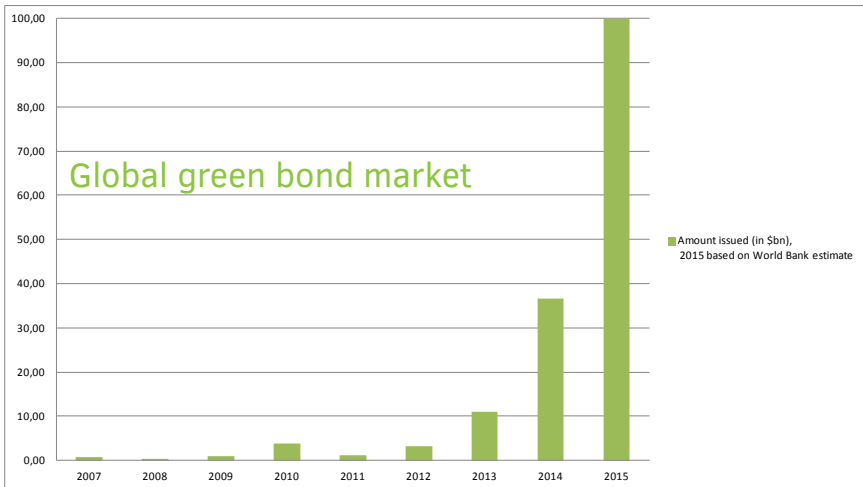
Germany has been able to depend on regulation and government incentives to finance its private sector successes in sustainability. However, the inevitable increased international competition and the growing economic dependence on domestic consumption will challenge this paradigm. Financing sustainability will remain a collective, social obligation in Germany, if the country is to continue leading on environmental issues. That financing, it seems, will also require a new source.



Is the green bond boom sustainable?

In 2007, the European Investment Bank issued the Climate Action Bond, the first “environment-themed” bond, introducing a new vehicle for socially responsible investors to directly impact environmental sustainability initiatives. Sovereign, supra-national, and agency (SSA) issuers continued as the main drivers of green bonds until 2010, when austerity, quantitative easing, and near-zero ECB and Fed interest rates became solidified as the tools for navigating the global economic recovery. Municipal and project green bonds emerged as opportune financing strategies. The volatility and insecurity of energy markets served as motivation for energy reduction and efficiency plans. Surpassing \$5 billion in 2010, the global green bond market surged to \$37 billion in 2014, with an increased diversification of issuers and risk portfolios. Some experts estimate that the global green bond market will hit \$100 billion in 2015.

Even with the most optimistic projections, green bonds represent a tiny fraction of the total global bond market, which has surpassed \$100 trillion. Certainly the serviceability of these debts long term can be a cause for concern, especially if they are considered vehicles for financing projects in fragile economies. Aside from the financial risks, there are environmental issues that need to be addressed. Although most green bonds are subject to a rigorous independent vetting process, measuring a project’s benefit or ‘reduction of harm’ to the environment is plagued with uncertainty. Is there a difference between a Seattle transit company issuing \$900 million in bonds to improve the city’s bus and train services and a Thai oil refinery and retailer issuing \$92 million for a project with very scant reporting? Questioning the sustainability of the green bond boom is not just about maintaining its growth curve, but in assessing the validity of the projects.



Sustainable investing has revolutionized the way potential investments are valued on the front-end, creating methodologies and metrics that merge the sustainability and financial objectives of social responsibility-oriented investors. The same diligent, transparent research and reporting are needed to develop metrics to evaluate the effectiveness of these investments.

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Conclusion: Transition to transitioning

We began by discussing the new realities for environmentalism and the financial industry, describing the former as having undergone not just a semantic but a structural evolution and the latter a sweeping revolution. It is at the intersection of these fundamental transitions that we find sustainable finance. However, this intersection should not be seen as a moment or single opportunity wherein immediate profits will be gained or single issues will be decided. Rather, this intersection is a constant inflection point, inaugurating a continuous process of transitioning.

In order to achieve its desired impacts, the sustainability movement will need to keep pace with the exponential demographic and development growth rates in contemporary society. For the financial industry, reasserting its ability to create value, not just profits, requires a commitment to the stated goals of society, particularly those goals which rely on innovation.

The global transition to a low-carbon economy is happening. The nations of the world are making commitments to reduce dependencies on fossil fuel industries, and companies are attempting to develop the products and services that will lead the way. The velocity of the financial industry, guided by the principles of effective sustainable development, will determine how

quickly we get there.

Developing methodologies and metrics to evaluate the transition process is the next step. ESG research provides substantial insight into the character and motivation of potential investments and makes a significant step forward in evaluating the process. However, the environmental and financial communities need to come together to create comprehensive measurements of the environmental impact of these investments in a manner that inspires a new generation of innovations that will continue to create value while protecting the valuable.



Decarbonization of Finance

October 21, 2015

The idea for our evening symposium began with a simple question: what is sustainable finance? And, to be honest, the questions never stopped. The conversations and debates in the public square regarding environmental conservation and the financial industry often focus on answers without ever stopping to wonder whether we are asking the right questions. To that end, we wanted to bring together leading experts from Germany and the United States, the two countries most at the forefront of sustainable finance, to ask these questions, hopefully allowing all of us to come up with the next solutions.

Consul General Brita Wagener started the event with a warm welcome and insight into Germany's continuing commitment to the Energiewende (energy transition) and climate change mitigation at home and abroad.

Erika Karp and Robert Haßler followed with two keynote addresses providing a look at the differences and similarities in American and German approaches to sustainable finance. The keynote speakers were then joined by Robert Litterman and Gary Hattem for a panel discussion moderated by R. Andreas Kraemer.

An audience question-and-answer session and closing remarks from Mr Kraemer concluded the symposium. All attendees were then invited to the Consulate's 23rd floor, where the conversation continued at a catered reception with live music by violinist Douglas Waterbury-Tieman and outstanding views of New York City's skyline and the East River.



Erika Karp



Erika Karp is the Founder and CEO of Cornerstone Capital Inc. The mission of the firm is to apply the principles of sustainable finance across the capital markets enhancing transparency and collaboration.

Prior to launching Cornerstone, Erika was Managing Director and Head of Global Sector Research at UBS Investment Bank where she Chaired the UBS Global Investment Review Committee and managed a global team of analysts and strategists. Erika served on the UBS Securities Research Executive Committee and the Environmental and Human Rights Committee of the UBS Group Executive Board. While at UBS, Erika created and drove key branded global investment research products including the UBS Q-Series®, the Global I/O®, Global Signals™ and the weekly “UBS Global Portfolio Manager’s Spotlight.”

Robert Haßler



Robert Haßler has been working since 1993 in the fields of Sustainability Rating. He is Chief Executive Officer and co-founder of oekom research AG, the Munich-based Sustainability Rating agency providing research to a wide range of institutional investors and asset managers.

He graduated in business administration at the Ludwig-Maximilian University in Munich after a two year vocational training in an auditing company. He joined oekom publishing house as co-founder and head of environmental research in 1992. One year later he started oekom’s rating activities by winning an international tender. He was managing director of oekom publishing house from 1997 to 1999. Robert is also co-founder of several associations, such as the Corporate Responsibility Interface Center (CRIC e.V.) and Forum Nachhaltige Geldanlagen e.V. (German Social Investment Forum) of which he has been member of the executive board since 2001.

Robert Litterman



Bob Litterman is the Chairman of the Risk Committee and a founding partner of Kepos Capital, a New York City based systematic global macro firm. Prior to joining Kepos Capital in 2010, Bob enjoyed a 23-year career at Goldman, Sachs & Co., where he served in research, risk management, investments and thought leadership roles. Bob was named a partner of Goldman Sachs in 1994 and became head of the firm-wide risk function; prior to that role, he was co-head of the Fixed Income Research and Model Development Group with Fischer Black. He is the co-developer of the Black-Litterman Global Asset Allocation Model, a key tool in investment management, and has co-authored books including *The Practice of Risk Management and Modern Investment Management: An Equilibrium Approach* (Wiley & Co.). Bob earned a Ph.D. in Economics from the University of Minnesota and a B.S. in Human Biology from Stanford University. Bob serves on a number of boards, including Commonfund, where he was elected Chair in 2014, Options Clearing Corporation, Resources For the Future, Robert Wood Johnson Foundation, the Sloan Foundation, and World Wildlife Fund.

Gary Hattem



Gary Hattem serves as Managing Director and Head of the Deutsche Bank Global Social Finance Group and leads the bank's corporate citizenship activities within the Americas region, including all philanthropy, as President of the Deutsche Bank Americas Foundation.

Mr. Hattem established Deutsche Bank's social finance platform in 1990 and currently oversees a portfolio of loans and investments of nearly \$2 billion benefitting distressed communities within the U.S. and social enterprises throughout the developing world. The Group is recognized for its ability to structure and place impact funds that align a variety of capital. All of these efforts are targeted towards the goal of achieving economic benefits for people and places most outside the economic mainstream.

R. Andreas Kraemer



R. Andreas Kraemer is Founder & Director Emeritus of Ecologic Institute in Berlin, Germany and Founding Chairman of Ecologic Institute US in Washington DC. He is currently Senior Fellow at the Institute for Advanced Sustainability Studies (IASS) in Potsdam, Germany, Visiting Scholar at the Massachusetts Institute of Technology (MIT), Center for Energy and Environmental Policy Research (CEEPR), and Visiting Assistant Professor of Political Science and Adjunct Professor of German Studies at Duke University. His research focuses on the role and functions of science-based policy institutes or „think tanks“ in theory and the practice in different political systems, the interactions among policy domains and international relations, and global governance on environment, resources, climate and energy.

Ecologic Institute US

Ecologic Institute US is an independent non-profit think-tank for applied environmental research and policy analysis. Its mission is to promote greater transatlantic understanding of environmental policies, sustainable economic and political development, and environmental protection through research, publications, educational exchanges, and public events. It accomplishes this through dedication to discovering fresh perspectives in sustainable social and environmental development policies.

Founded in 2008, the Washington, DC office of Ecologic Institute US evolved out of the Transatlantic Program of Ecologic Institute, Berlin, and aims to continue to expand international networks in the field of environmental policy.

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