

THE GREEN POTENTIAL FOR PRIVATE EQUITY:
HOW AND WHY PRIVATE EQUITY FIRMS SHOULD MANAGE
ENVIRONMENTAL RISKS AND OPPORTUNITIES

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ABSTRACT

Private equity firms have recently become a target for both social and environmental activists, who see financial engineering and cost cutting in companies purchased by these firms as detrimental to the companies and society as a whole. However, the private equity space holds a tremendous amount of potential to improve particularly the environmental performance of a large number of companies while focusing on the smaller number of firms who hold them. In 2007, the environmental non-profit Environmental Defense Fund (EDF) began a partnership with the private equity firm Kohlberg Kravis and Roberts (KKR) surrounding the improvement of environmental performance at several of the firm's portfolio companies. This paper focuses on that partnership, and on how private equity firms can derive value, increase investment, and enhance their public images through the measuring and improvement of their environmental performance in five key areas: greenhouse gas emissions, water use, waste, forest resource use, and toxic chemical use. The paper also walks through the steps private equity firms can take to begin these improvements in two key areas of their work, due diligence and current portfolio enhancement. It offers resources to guide them through the creation of baselines and ways to measure improvement in areas that may be unfamiliar to them.

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EXECUTIVE SUMMARY**Objective**

Through analyzing the private equity industry along side of Environmental Defense Fund's (EDF) partnership with Kohlberg Kravitz and Roberts (KKR), this paper seeks to explain why private equity firms should measure and manage environmental performance, as well as where and how the environment can play a role in the private equity investment process. Finally, the project identifies key areas and methods that EDF should employ in order to convince private equity firms to adapt similar processes to the ones KKR has established through their partnership with EDF.

Method

In order to understand the industry, a literature review was done and interviews were conducted with a number of private equity professionals. Additionally, a survey was conducted on the due diligence process, with a specific focus on the environment. Finally, substantial time was spent with the EDF staff to analyze their partnership with KKR and to understand their learnings from the partnership.

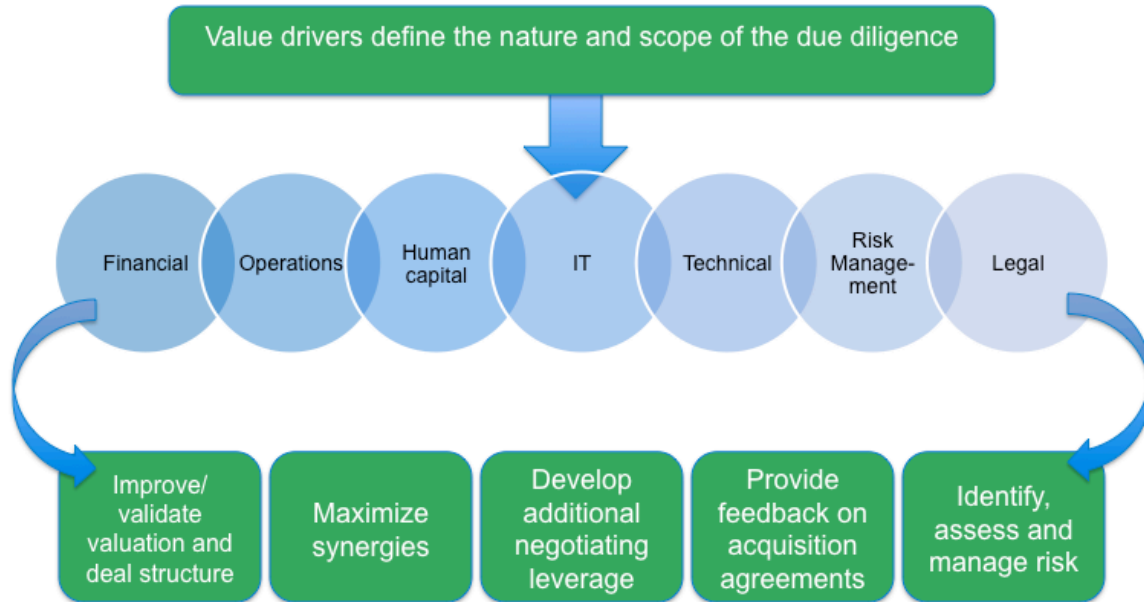
Conclusions

The most prominent conclusion from the research conducted for this paper is that environmental performance ranks very low on the list of concerns for traditional private equity professionals, whether it is during the pre-acquisition period or post-acquisition period. Furthermore, both investors and managers in private equity are concerned almost entirely with returns. Nevertheless, EDF's work with KKR as well as current trends in business and the environment show that returns and environmental performance are linked. The EDF-KKR partnership began with minor environmental improvements that saved KKR a combined \$16 million in well under a year; KKR is now focused on making further improvements that will save them even greater

sums going forward and add to the sale value of their portfolio companies. As private equity struggles to make returns given the fledging financial markets, environmental performance management can be a way to create value and efficiency which in turn leads to higher exits.

There are two ways in which private equity firms can implement an environmental performance strategy, one is during the due diligence or pre-acquisition phase and the second is during the investment or holding period. Figure A below illustrates the value drivers assessed during due diligence which can impact the purchase price of the target company. Environmental risk is one of these drivers, albeit not necessarily an important one. Currently, firms typically only pay attention to environmental impact where there are regulations (such as soil and water contamination), which may be a liability or cost in the future. By broadening the scope of environmental due diligence to include anticipated environmental market risk, such as increased energy costs or the financial implications of water shortages, and/or by targeting companies with sustainable technologies and products, private equity firms will not only mitigate further risk, but can identify opportunities for added value.

FIGURE A: Value drivers for due diligence



During the investment phase, when the private equity firm has substantial influence over the company it has invested in, the firm can implement techniques to measure and manage material environmental issues. The EDF-KKR partnership identified five key performance areas (KEPAs) – greenhouse gases, water, waste, forest products, and priority chemicals/toxics which can be measured using the metrics in Figure B. Using such a tool, as the EDF and KKR partnership has shown, can improve efficiency and create savings that go right to the bottom line, thereby increasing the investment value at exit.

FIGURE B: The EDF-KKR Environmental Performance Tool

KEPAs	Core metrics (absolute)	Management metrics ¹ (productivity)
Greenhouse gas (GHG) emissions	<ul style="list-style-type: none"> •Energy use (BTUs) •Energy costs (\$) •GHG emissions (tons) 	<ul style="list-style-type: none"> •Energy intensity (BTUs/\$ revenue or unit) •GHG intensity (GHG/\$ revenue or unit)
Waste	<ul style="list-style-type: none"> •Solid & haz waste produced (tons) •Solid & haz waste management costs (\$) 	<ul style="list-style-type: none"> •Waste intensity (tons/\$ revenue or unit)
Water	<ul style="list-style-type: none"> •Water use (gallons) •Water costs (\$) 	<ul style="list-style-type: none"> •Water intensity (gallons/\$ revenue or unit)
Forest products	<ul style="list-style-type: none"> •Paper, packaging &/or wood (tons) •Paper, packaging &/or wood costs (\$) 	<ul style="list-style-type: none"> •Forest resource intensity (tons/\$ revenue or unit)
Priority chemicals	<ul style="list-style-type: none"> •Inventory & management process (y/n) •Priority chemical use (tons) •Priority chemical management costs (\$) 	<ul style="list-style-type: none"> •Chemical intensity (tons/\$ revenue or unit)

Beyond value, there are several reasons why a private equity firm would want to implement an environmental strategy. The first is investors; investors care first and foremost about financial returns, but with great competition for their capital, environmental and social returns that also deliver strong financial performance can help lure those investors who have policies or preferences surrounding environmental or social metrics. Second is regulation, the private equity industry is increasingly under scrutiny from government regulators, and showing strides in environmental sustainability can add to the perceived societal benefit of the industry.

Implementing an environmental strategy can be a daunting task for a company, much less a private equity firm that owns a number of companies. However, the process can be simplified into five steps, outlined below and detailed further throughout this paper.

1. **Understand the key performance areas (KEPAs).** The five KEPAs (water, waste, greenhouse gasses, forest products, and toxins) as identified by EDF and that are described

in the environment and business section of this paper are the building blocks to any environmental strategy.

2. **Decide where in your investment process the environment will play a role.** While KKR has thus far focused on the environmental performance of existing portfolio companies, there are other areas where the environment can play a role, mainly the due diligence process.
3. **Develop a strategy** with processes and procedures that can be implemented across the portfolio.
4. **Communicate to staff and existing portfolio companies.** Engaging employees in an environmental strategy is absolutely essential and can be very rewarding.
5. **Implement - measure and manage.** Whether the firm's strategy is to look for "green" investments, to better vet the environmental risks and opportunities of potential acquisitions, to measure and manage existing portfolio companies or to do all three, the real value will come from impeccable execution.
6. **Communicate to investors.** After the implementation has started, and the forward strategy is determined, PE firms should communicate these changes to current investors and use it to attract new investors.

The private equity industry has massive amounts of capital deployed all over the world and in every industry. What's more, private equity capital is deployed for long time horizons (4-7 years), which allows corporate managers to focus on a longer-term future and not just quarterly earnings. Because of this, private equity managers have a tremendous opportunity to invest in sustainable businesses and to help unsustainable business reduce their environmental impact, all while increasing the value of their portfolio. It is a win-win for investors, managers, the environment and society.

INTRODUCTION

In 2007, The Environmental Defense Fund (EDF), a non-profit organization focused on environmental issues, entered into a partnership with Kohlberg Kravitz and Roberts (KKR), one of the world's largest private equity firms. The partnership, entitled "The Green Portfolio Project", was created with the goal for EDF and KKR to co-create a tool for measuring and managing the environmental performance of KKR's portfolio companies. This paper is in conjunction with the EDF Green Portfolio Project; the purpose is to inform the work that EDF started with KKR, specifically in regards to private equity due diligence and to the replication and dissemination of the green portfolio tool to other firms in the private equity industry.

Background on The Green Portfolio Project

The Environmental Defense Fund is a non-profit organization that works to bring about environmental gains via partnership with businesses, governments, and local communities. The organization's Corporate Partnerships program, established in 1990, works across a number of sectors, from fisheries to transportation to finance and banking, and is responsible for environmental and business win-win scenarios. For example, EDF worked with McDonalds to convert its packaging from styrofoam to paper, reducing waste by more than 70% (by volume) and saving the company millions of dollars. In another project, EDF worked with FedEx to convert part of the company's delivery truck fleet to hybrids, reducing harmful particulate emissions by 96% and improving fuel efficiency by more than 50%, all while performing as well as standard diesel trucks and saving the company in fuel costs.ⁱ

EDF's partnership with KKR began when EDF was part of a coalition of environmental groups fighting the creation of eleven new coal-fired power plants that were slated to be built by TXU, the largest electric utility in Texas. As the coalition was fighting TXU, KKR and Texas

Pacific Group (TPG) announced that they would together purchase TXU for a record \$45 billion. Prior to announcing or sealing the deal, TPG approached Fred Krupp, the head of EDF, with a request that the environmental group participate in the negotiations with TXU surrounding a buy out price and conditions for the buy out.ⁱⁱ The private equity firms were likely concerned about the potential for climate change legislation impacting the value of their purchase as well as the reputational risk they faced in purchasing a company with a great amount of negative publicity surrounding it. Following the negotiations, eight of the eleven coal fired power plants were removed from the permitting process, carbon capture and storage was considered for the remaining plants, and TXU focused on new ways to provide Texas with power, including promotion of energy efficiency initiatives.ⁱⁱⁱ

Both the environmental groups and the private equity firms involved regarded this acquisition as historic in terms of environmental sustainability, and following the buyout, KKR entered into a publicized partnership with EDF with the intent to improve the environmental performance of a number of KKR's portfolio companies. The relationship, termed the "Green Portfolio Project" aims to design and prove the financial materiality of a set of simple tools that any private equity firm can use to create operational changes that improve both financial and environmental performance.

Although the partnership may seem somewhat accidental, the private equity industry holds a lot of potential for EDF in terms of environmental improvements. It holds this potential, first, because of its sheer size: private equity comprises billions of dollars of investment in companies; hundreds of billions of dollars have been committed each year for the past several years and assets under management total \$2.5 trillion globally.^{iv} Second, it is an area that has not focused on environmental performance to the same extent that some of the larger public

companies have because private equity funds a large number of small and medium sized firms that do not always garner the attention of environmentalists or the public. These smaller companies can at times be environmental laggards due to this lack of public attention, and bringing them to the table by working with their large financiers and owners will bring about environmental benefits that may not otherwise be possible. Finally, working with the private equity industry is a way to work within numerous industries at one time. Private equity invests in companies across every sector, so through this one partnership, EDF can demonstrate profitable environmental improvements in industries as diverse as retail and heavy manufacturing.

Project Overview

This project is divided into several parts, the first of which will provide background information on the private equity industry as well as recent trends in “green business”, in order to inform the rest of the paper. Secondly, there is an analysis of the due diligence process, through which firms vet potential investments, and recommendations on how to increase the role the environment plays in this process. Next, there is an explanation of the tool developed by KKR and EDF for the measuring and managing of environmental performance, and finally, a discussion of how and why this tool should be adopted.

The background and recommendations outlined in this paper are the result of 18 months of research. The methods used over this period include a literature review, a survey of PE professionals, and conversations with EDF staff, KKR staff, consulting professionals, and a number of PE firms.

This paper is meant for several audiences: private equity professionals, people interested in green business, investors concerned about the sustainable performance of their portfolio, and for our partners at EDF. Because of the diverse audience, there is background information that

will be more useful to some readers than others. For instance, private equity professionals will find the section on green business a helpful overview of a topic they may not be familiar with, while those in academics may find the information on the private equity industry a useful background. Thus the paper can be read in sections, the reader skipping those that they are familiar with and focusing on topics less known to them.

What is important for every reader to take away from this project is that the private equity industry has enormous untapped potential to improve the valuations and exits of their investments by improving the environmental performance of the companies they manage. At the same time, the industry holds the possibility of becoming an instrumental catalyst for a new “green” economy. The Green Portfolio Project saved KKR \$16M in the first year by improving environmental efficiencies; these were not complicated improvements, but rather were fairly simple best practices for which there are significant public resources. For example, EDF is working with mattress manufacturer Sealy to improve the company’s manufacturing process to reduce the amount of excess material used in manufacturing. These savings go directly to the bottom line of KKR’s portfolio companies, increasing their valuations prior to exit. What’s more, managing environmental performance decreases risks associated with regulatory issues such as climate change regulation and environmental risks such as water shortages. For the most part, managing environmental performance is an easy win for the firm, the portfolio companies, and ultimately for the investor. At the same time, by including environmental metrics in the risk and opportunity evaluation of the due diligence process, private equity firms will be able to more accurately price investments and will direct funds to more sustainable companies and more sustainable technologies, ultimately helping to grow these green technologies and companies.

PRIVATE EQUITY INDUSTRY OVERVIEW

Private equity (PE) is equity capital that is deployed outside of the public markets, in other words, equity that is not traded on a public exchange. As of the end of 2008, total assets under management worldwide by PE firms were estimated to be upwards of \$2.5 Trillion. 2008 was the height of investments by PE firms, as the cheap debt market made acquisitions easy and profitable. Since then, the number and size of deals have shrunk dramatically, but the basic structure of the industry remains intact.

PE firms are composed of a group of General Partners (GPs) who raise money from Limited Partners (LPs) in order to invest in private companies or to take a public company private. LPs range from wealthy individuals to pension funds, endowments, and other institutional investors. PE funds range in size from small (less than \$100M) to large (\$10B plus) and invest in companies in all industries and in all parts of the world.

Typically, a PE firm raises a tranche of capital from investors to form a fund; the fund is then deployed by investigating target companies, usually with a stated industry or strategic focus. PE firms' strategic focus can be growth equity, leveraged buyout, distressed, or secondary private equity. PE firms usually hold investments, called portfolio companies, for four to seven years and then look to exit the investment. During the holding period, growth equity firms work with the management to improve the operations of the portfolio company, grow its business, sell off non-core assets, as well as other strategic or financial moves that will make the company more attractive and more valuable at exit. Other strategies, such as distressed debt or leveraged buyouts are typically focused on more mature companies, these strategies focus somewhat on the operations of the company, but more so the value comes from leveraging up the target and through financial and operational restructuring. Exits for PE firms are done by bringing the portfolio

company public via an initial public offering, selling the company to a parent company in the form of a merger, or by recapitalizing the company in order to relinquish the PE firms' portion of the equity. For the purposes of this project, private equity refers to equity invested in companies outside of their venture rounds (i.e. later staged companies).

Industry trends

The PE industry, like the rest of the financial world, has been rocked by the recent recession and has had to undergo a major shift from mega buyouts to smaller acquisitions with less debt. The reason for this is two-fold. First, companies bought by PE firms and levered to levels as high as 80-90% have failed in record numbers, unable to meet financial covenants and pay interest. Second, the tightening of the credit market has made large leveraged buyouts a thing of the past – current deals are more equity heavy and targets are much smaller than a few years ago. These changes have also served to change the strategic focus of PE firms; rather than trying to financially engineer profits (almost an impossible feat in the current environment) PE firms are focused on improving operations and efficiency in order to realize profits. In February 2009, at the height of the downturn, KKR Co-Founder Henry Kravis told a conference, “KKR, like other big buyout groups, will be forced to do smaller deals, use less debt and diversify into other areas, such as infrastructure and corporate lending”.^v Prior to the shift, KKR participated in what were known as “mega buyouts” such as the \$45B acquisition of TXU. Finally, we have also entered an era where “cash is king” and therefore investors (LPs) who hold the cash are even more coveted by PE firms.

These shifts, while limiting the PE market in general, have several positive implications for environmental performance. First, environmental efficiencies are a great way to save money and improve operations. As will be discussed later in this paper, KKR saved over \$16M in less

than one year by implementing environmental performance policies at just three portfolio companies. These savings go right to the bottom line and can add significant value to a portfolio company at exit. Also, the focus on courting new and existing LPs can give the LPs greater leverage to push the PE firms to change. Institutional investors are concerned not only with the bottom line, but the social and environmental risks of their portfolio. For example, there are over 700 signatories to the UN's Principles for Responsible Investing (PRI), including the NY Employee Retirement Fund, CalPERS and CalSTRS.¹ The Principles primarily serve as guidance for investors, and among other things, encourage signatories to take into account environmental and social considerations when making investment decisions. CalPERS has over \$46B in its alternative investment fund which focuses on PE;^{vi} in early 2010 PE and other alternative investments were 12.5% of CalPERS' assets under management. Pension and retirement funds make up the majority of large investors that are invested in PE, and with the shortage of cash, it makes their capital all the more valuable and gives them more leverage to ask and even require PE firms to look at environmental impacts and risks. The PE industry already sees this, and the PE Council, which is a lobbying body and think tank comprised of 13 of the largest PE firms in the world, has also signed onto the UN's PRI in 2009.

The role of consultants in private equity

A major aspect to the PE industry, which is essential to the discussion of environmental performance, is the role that consultants play in the industry. The core of PE professionals are made up of General Partners (GPs), analysts, and lawyers; these professionals make up the deal teams that structure the financial and legal aspects of the acquisitions and subsequent sales. Depending on the firm, this core group will also monitor the portfolio company through the

¹ UNPRI <http://www.unpri.org/signatories/>

holding period and help facilitate any operational or management changes. At the same time, there are typically a host of consultants during the due diligence and post-closing phases who assist and advise the deal team.

During the due diligence phase, when a PE firm is assessing the value and viability of a company, they may employ consultants to perform any number of tasks, including financial and environmental due diligence. Some firms that are more lean on personnel will actually hire a consultancy to run the due diligence process. Other firms outsource specific portions of due diligence, most notably environmental due diligence, when purchasing a manufacturing company or real estate. According to our survey 87% of respondents never do environmental due diligence in house, and 72% of respondents always hire an environmental consultant (complete survey results are contained in the Appendix).

Once the purchase is complete, consultants are often used to improve operations or to help restructure the portfolio company. Some PE firms employ a group of people that serve as internal consultants and work on every portfolio company, such as KKR's Capstone Group, but internal consultancies are rare and many of even the largest PE firms do not have the capability in house. Instead, PE professionals often have close relationships with one or several consulting companies who they call on to advise them during the holding period. This is particularly relevant to measuring and managing the environmental performance of portfolio companies because if the PE firm is hiring a consultant to look at the operations of the company, then the consulting company would ultimately need to understand how to measure and manage environmental performance in order to meet the PE firm's goals. For these reasons, consultants play a large role in the recommendations as well as proscribed strategies for PE firms and will be discussed in more detail in subsequent portions of this paper.

In conclusion, the PE industry is in the midst of a dramatic shift, one that will likely make it more necessary and prudent for PE firms to look at their environmental strategy. This, along with the increasingly relevant role that the environment is playing for business in general, makes a compelling case for PE firms to take significant action on this front.

BUSINESS AND THE ENVIRONMENT

Environmental strategy has gained prominence among business leaders over the past few years. Well known examples of business leaders embracing environmental sustainability include Wal-Mart's former CEO, H. Lee Scott, who began that company's drive to reduce company waste and force suppliers to improve their own environmental performance. In addition, GE's CEO, Jeffrey Immelt often speaks about green technology innovation as key to his company's success. These successful businessmen know that strong environmental performance can lead to strong business performance. The same concepts can be applied to privately held companies, as has been demonstrated by the EDF and KKR partnership. The partners have seen great success from both an environmental and a financial value perspective: within less than one year, they prevented the emission of 25,000 tons of greenhouse gas emissions and identified \$16 million in savings within three portfolio companies.^{vii}

Five key performance areas to measure

The EDF-KKR partnership and this research focused on five key environmental performance areas (KEPAs) that showcase the intersection of financial and environmental returns:

Greenhouse gas emissions: Greenhouse gases, such as carbon dioxide, nitrous oxide, or methane, are known to trap heat in the atmosphere. These gases occur naturally in the Earth's

atmosphere, but are also produced by human processes, such as the burning of fossil fuels or the decomposition of waste in landfills. Scientists largely agree that, through these processes, humans have increased heat trapping gases over the past century and this increase has led to an increase in the Earth's temperature, a phenomenon known commonly as climate change. Climate change is expected to produce natural disasters such as sea level rise, drought, or flooding.² Currently, the European Union has legislation governing the emission of these gases. This set of regulations caps the amount of overall emissions that can be produced and requires companies to purchase credits to cover any excess emissions beyond their allotment, whereas companies that emit fewer gases than their allotment are allowed to sell their additional credits. The United States is considering similar legislation; the House of Representatives passed a bill in the summer of 2009 that would create a similar trading mechanism whereby companies buy or sell emission credits depending on whether they are under or over their emission allotment.^{viii} Should Congress fail to agree on a bill surrounding greenhouse gas emission reductions, the Environmental Protection Agency (EPA) was, in 2007, given authority by the Supreme Court to regulate these gases as a pollutant under the Clean Air Act.^{ix}

In anticipation of legislation creating a market for greenhouse gas emissions or EPA regulation, many U.S. companies have taken steps to track and reduce their greenhouse gas emissions. The Carbon Disclosure Project is an international organization that houses a database of self reported data on greenhouse gas emissions. Thousands of companies from all over the world disclose their directly produced (Scope 1), purchased (Scope 2), and value chain (Scope 3) emissions as well as the associated financial liability through the organization's website,

² For more information on the science surrounding greenhouse gases and climate change, please visit the United Nations' Intergovernmental Panel on Climate Change at http://www.ipcc.ch/publications_and_data/ar4/syr/en/spm.html.

allowing investors, regulators, and the general public access to this data.^x Outside of this international, voluntary forum, the U.S. Securities and Exchange Commission recently voted to require public companies to disclose material impacts related to greenhouse gases and climate change. These impacts include a number of top and bottom line items, such as the direct cost of emissions should greenhouse gases be traded or taxed, the potential costs associated with increased insurance in coastal areas to hedge against sea level rise or increased hurricanes, and the revenue reductions from reduced sale of products that emit greenhouse gases.^{xi} In light of the SEC's recent move and the Supreme Court ruling that the EPA has not only the right, but the obligation to regulate greenhouse gases, all companies should be tracking their emissions and understand the potential financial liabilities associated with them.

Water use: Along with climate change, water scarcity, and its potential impacts on businesses and whole economic sectors, has begun to gain attention in recent years. The United Nations predicts that, by 2025, more than half of all countries in the world will face water shortages.^{xii} This has implications not just for impoverished individuals in developing countries, but also for businesses operating in dry climates such as northern China, India, or the western United States. Energy and agriculture are the two sectors that will be the most impacted, with approximately 40% of U.S. water withdrawals going to power plant cooling activities and another 40% going to irrigation.^{xiii} Some companies have already been impacted: for example, during a drought in 2007, the Tennessee Valley Authority was forced to reduce its hydropower output by a third, costing the company nearly \$300 million in energy revenue.^{xiv} Similarly, Coca-Cola and Pepsi were both forced to close bottling operations in 2004 in India following a clash with local agriculture interests over the use of scarce water resources in that country.^{xv}

As with climate change and greenhouse gases, there is both risk and opportunity for companies in the area of water use. On the risk side, companies operating in certain parts of the world could face increasing water prices or even plant closures should water become scarce. Chile, for example, has a very strict water rights allocation policy, and now monitors industrial use of water very carefully. Though the state technically ‘owns’ the water throughout the country, it grants private rights for use. In many parts of the country, these water rights are free, but in areas where water is scarce or if there are disputes over existing rights, water rights are auctioned to the highest bidder.^{xvi} Costs for water will rise as more areas of the country are considered water scarce or as more disputes between municipalities and industry occur. Additionally, outside of the water price, companies could face forced water efficiency improvements, as in the case of Xstrata mining corporation, which must reduce its water use by more than half by the end of 2010. The company is considering installation of a desalination operation to supplement its new allowance, a move that will certainly increase its cost of operations.^{xvii} Other geographies with developing water markets and increasing water prices include Australia and the western United States, where in Colorado, water rights in some areas have traded for as much as \$20,000/acre foot^{xviii} (the amount of water that could be contained in an acre at one foot of depth).

However, water use constraints also present opportunities. Companies like IBM are developing ways for other companies to track water use and generate efficiency improvement recommendations, and some oil companies are repurposing their drilling technology to be used for water mining purposes^{xix}, and an increasing number of companies, including Nestle, Ford, and SABMiller, are carrying out ‘water footprinting,’ a practice that involves measuring the amount of water used in company operations and supply chains as well as developing strategies

to reduce that water use in cost efficient ways.^{xx} Recently, the Carbon Disclosure Project (mentioned above) added a database for self disclosed information about company water use, and a number of asset managers and insurance companies, including HSBC Holdings and the California State Treasurer have signed on as interested in this water use disclosure. A survey about water use was sent in April to 300 of the largest companies around the world who are exposed to water risks or have significant opportunities in the area, and findings will be published by the end of 2010.^{xxi} Until now, many companies have taken free or cheap and abundant water for granted. However, given the growing scarcity of water, it is essential that companies consider the availability and price of water in future business decisions.

Toxic substances and releases: Soil and water contamination due to toxic releases are areas with which many private equity firms purchasing industrial or manufacturing operations have familiarity and concern. Purchasing land or assets that are contaminated in some way can lead to a huge financial and legal liability, damaging a fund's return and a firm's reputation. Because of this, private equity firms often engage environmental consultants to perform tests on land and to investigate the background related to contaminants on the site prior to purchase. However, the area of toxic substances and toxic releases encompasses far more than avoidance of potential Superfund (legally required toxic cleanup) sites. Recently there has been much public conversation over several toxic or potentially toxic substances in everyday consumer materials: BPA in plastic water bottles, PVC in children's toys, and various carcinogens in our shampoos and household cleaning products. The legislative landscape and several private initiatives surrounding the production and inclusion of these chemicals in consumer products is just beginning to take shape, and companies will undoubtedly be affected by the outcomes.

Europe, in 2006, greatly increased their monitoring of and restrictions surrounding toxic substances with the passage of REACH (Registration, Evaluation, Authorization and restriction of CHemicals) legislation. Various parts of the legislation will phase in over the next several years, but in its final form, REACH will require all companies manufacturing or importing more than one ton per year of any of 30,000 chemical substances (even those imbedded in other materials or objects) to register that chemical with the European Chemicals Agency. Approximately 1,500 chemicals, those considered the most hazardous to human health, will likely be entirely banned. The legislation is expected to cost European industry between \$2 and \$6 billion, and the effects of the legislation will certainly reach outside of Europe due to global trade.^{xxii}

In addition to the cost of REACH in Europe, companies who produce or use toxic substances will likely also face increased regulation from the U.S. government. The EPA recently announced that it would like to see the legislation governing chemicals currently, the 1976 Toxic Substances Control Act, reformed, and has also announced that prior to new legislation, it will enhance the current chemicals management process. The Agency has created a list of chemicals it considers hazardous enough to warrant enhanced management, and is developing a plan for these chemicals, which include such items as phthalates (used in PVC), perfluorinated chemicals (used in many industrial processes), and chlorinated paraffins (a coolant and flame retardant). These substances may ultimately be banned, forcing producers and users to find substitutes.^{xxiii}

Again, this environmental performance area can be looked at from a lens of opportunity or risk. Certain actors in the corporate space have already taken action, including Wal-Mart, which designed its own list of “Chemicals of Concern” in 2006 as both a branding move and a

way to avoid the risk of lawsuits or reputation harm due to the sale of products ultimately deemed hazardous. Three chemicals, propoxur and permethrin, both used in household insect control products, and nonyl phenol ethoxylates (NPE), an ingredient in some cleaning products, are currently being eliminated from products sold at the discount retailer, and further chemicals may also be removed from shelves, based on a screening tool the company has created.^{xxiv} Similarly, players within the chemical industry have worked to stay ahead of costly regulation. Dow Chemical, for example, has made publicly available safety assessments of all of the chemicals it produces so as to most easily comply with REACH and similar U.S. legislation which requires this disclosure. Any company that manages, uses, or produces toxic substances or waste has huge liability risk. It is especially important that companies are aware of substances that are not currently regulated but may be in the near future. Working to eliminate highly toxic substances from any business activity has the potential to save companies huge sums of money.

Waste generation: Garbage, or waste, is a cost for anyone who produces it, so while this environmental area has not received the attention that energy and climate change or water use has received recently, it is nonetheless an important area for businesses to consider when looking at ways to improve environmental performance and cut costs.

Waste reduction savings can come in the form of reduced fees associated with removing waste, including standard hauling and tipping fees as well as any employee time devoted to waste handling. Additionally, savings can also come in the form of reduced material costs, particularly in manufacturing operations, where reducing the amount of waste created often means more efficient use of raw materials in creation of the final product. For example, as part of EDF's work with KKR, the portfolio company Sealy, a bedding manufacturer, eliminated 650

tons of solid waste, equivalent to 46 garbage trucks full of waste, in the first year of partnership. This reduction in waste saved Sealy roughly \$4 million in reduced material costs, as well as tipping, hauling and waste handling fees.^{xxv} Consulting services, such as Waste Management's "Upstream" division offer companies supply management teams that specialize in finding cost effective ways to reduce waste – the division has saved its clients more than \$50 million.^{xxvi}

In addition to these direct cost savings from waste reduction, this environmental performance area also offers companies opportunities for additional revenue generation, as companies that can design products with less packaging, producing less waste for customers, will have increased sales in the future. Wal-Mart is leading the charge, by demanding that its suppliers reduce the packaging of products sold in its store. The company's near term goal is to reduce overall packaging in its supply chain by 5% by 2013^{xxvii}, and to do this, it has offered incentives to suppliers, such as additional shelf space to concentrated laundry detergent, which reduces the amount of packaging per load of laundry.^{xxviii} In addition to offering incentives, Wal-Mart has also pushed suppliers to reduce packaging by pushing them toward collaboration with NGOs, as in the case of 20th Century Fox, which Wal-Mart asked to engage with EDF on reducing DVD packaging.^{xxix}

In order to reduce waste, companies can also recycle waste internally or create a new revenue stream by recycling commodity products such as plastics or metals. Whether a company recycles or reduces waste through improved processes or packaging, waste reduction is often a fairly simple way to reduce costs and increase company value.

Forest resource use: In some sectors such as retail or financial services, the use of paper or cardboard packaging is one of the largest environmental impacts a company can have. It is also a

major cost within these companies. For example, the use of office paper has been demonstrated to have significant additional costs outside of the actual cost of the paper, including storage, disposal, and other associated products like staples or paper clips. One study estimates that if a ream of paper costs approximately \$2, the associated costs range between \$24 and \$60.^{xxx} Similarly, in the construction or furniture industries, timber can have both environmental and cost implications. In this area, use of sustainably sourced timber or paper products can present companies with opportunities to cut costs and appeal to consumers. Entities such as the Forest Stewardship Council (FSC) have arisen to certify timber as sustainably grown and managed, and offer a well respected logo to companies willing to source their wood and paper products from these certified producers.

On the cost reduction side, Citigroup is a strong example. The bank partnered with Environmental Defense in 2004 to reduce its office paper usage. At the beginning of the partnership, EDF calculated the bank's cost savings based on the lowest possible total cost for paper purchase and handling (\$26/ream.) The group's report stated, "If every Citigroup employee used double-sided copying to conserve just one sheet of paper each week, Citigroup would save an estimated \$700,000 each year." In fact, the company saved \$98,800 in one duplexing five week test period.^{xxxii}

On the opportunity side, those involved in forest production, processing, or wood product sales could capture either or both of increased market access and a fairly significant market premium through certified sustainable forestry. On the market premium side, one study demonstrated that forest management firms in Asia were receiving up to a 37% price premium over non-certified managers. While not as significant, premiums in North America and Europe have also been noted.^{xxxiii} Increased market access has also been demonstrated. Walmart, for

example, was recently recognized for purchasing 71-99% of their outdoor furniture from FSC certified sustainable firms. Companies failing to certify their chains of custody may lose opportunities as retailers of these products look to appeal to consumers increasingly interested in purchasing environmentally and socially friendly goods.

Conclusion: As a group, these environmental issues were chosen for the partnership between EDF and KKR and our work on the private equity sector for several reasons. First, as demonstrated in the synopses above, the financial risks and opportunities tied to these areas are not small or simply publicity related. These areas and their links to revenue, cost, or risk are quantifiable and can be demonstrated to be material to portfolio companies. For example, adequate due diligence surrounding toxic soil and water contamination can save the purchaser of a fairly illiquid asset, such as a manufacturing site, money in the form of avoided legal and cleanup costs, as well as help them to receive the price they deserve upon resale of the asset. Similarly, investments in water saving technology once the company is held by the private equity firm, could lead to avoided costs as water prices in certain areas increase. Second, at least some subset of the above areas could apply to any private equity firm's portfolio, regardless of industry focus. Whether a firm focuses on manufacturing or retail investments, for example, reductions in energy use (and therefore greenhouse gases), paper use, or waste will result in cost savings. Also, improvements in these areas represent a firm's interest in going beyond compliance with government regulation. Reduction of pollutants such as NO_x and SO_x, compliance with development guidelines surrounding endangered species, and other regulated actions will not be dealt with as they do not present a significant opportunity for companies to gain a competitive advantage, but rather merely showcase expected compliance with existing

laws. Finally, these areas fit nicely with established reporting initiatives, such as the Global Reporting Initiative, which helps companies create sustainability reports that are comprehensive and useful to investors. Should a private equity firm or portfolio company choose to create a sustainability report to attract new or appeal to current investors, improvements in these five key environmental areas will comprise the core of that report.

Other models for ‘green’ investment

The five key performance areas are corporate environmental issues. However, taking into consideration private equity specifically, it is also important to consider other models of environmental policy related to the financial sector. Outlined below are several of these models.

Commercial/Investment Banks: Many U.S. and European-based commercial and investment banks have, over the past several years, created policies that serve as environmental screens for project, or potentially entire company, financing. Two of the most prominent industry-wide screens are the Equator Principles and the Carbon Principles. The Equator Principles, based on guidelines used by the World Bank’s International Finance Corporation, were created in 2002 by a group of nine banks involved in international project finance. The principles guide banks on classification of developing country located projects based on levels of environmental and social risk and then offer additional guidance on how to work with companies responsible for the riskiest projects on mitigation and monitoring strategies.^{xxxiii} If companies ultimately cannot mitigate the worst environmental or social damage, the banks who have signed the principles (more than 70% of banks worldwide) agree to refrain from financing them. In 2008, Citibank reviewed 39 projects under the Equator Principles and ultimately funded only 10 (though not all were rejected for environmental and social reasons and some may still be in negotiation).^{xxxiv}

Additionally, many U.S. and European-based banks are now working with the Chinese financial sector to adopt these or similar principles surrounding project lending in the developing world.^{xxxv}

The Carbon Principles, developed in 2008 by a smaller number of commercial and investment banks along with several U.S. utilities, apply a similar screen to U.S. based projects that emit a significant amount of greenhouse gases. Projects classified as the worst emitters are subjected to a lengthier and more intense diligence process, including a risk analysis that considers scenarios such as carbon taxes or costs for greenhouse gas emissions. The project's financial feasibility and the decision regarding the loan terms are then considered in light of these scenarios.^{xxxvi}

While these screens are important to consider as models of environmental due diligence and environmental performance monitoring, there are some very important distinctions between the relationship banks have with the projects and clients they finance and that between private equity firms and the companies they hold in their portfolio. The loans and investments that banks hold are far more liquid than private equity assets, and so any environmental screen or performance improvement that private equity undertakes will need to be that much more rigorous in order to protect against enhanced risks and capitalize on the opportunities associated with the reduced liquidity of the asset class.

Green private equity and clean tech: Another model private equity firms could consider when looking at how to improve the performance of their portfolios is that employed by the large number of venture capital and private equity firms currently focused on the clean technology space. While this project focuses on improving traditional private equity firms with portfolios

focused on everything from general industrials and manufacturing to retail and financial services, some in the private equity industry is paying attention to the environment via a clean technologies investment theme. Clean technology, or “cleantech”, investment is defined by the Cleantech Group as “any knowledge-based product or service that improves operational performance, productivity or efficiency; while reducing costs, inputs, energy consumption, waste or pollution.”^{xxxvii} Cleantech investments span the areas of energy, water, building materials, high tech, and electronic control devices. According to the 2009 Prequin Private Equity Cleantech Review, there are currently 78 funds focusing exclusively on clean technology investments, as well as 380 firms with some cleantech focused investments.^{xxxviii} This is a popular, profitable, and growing field, however, these focused investments are excluded from this project for the most part, as it instead concentrates on making the business case for improving the environmental performance of companies not currently focused on the cleantech theme.

Executing Environmental Performance Improvement

There are a number of ways that private equity firms can go about improving the environmental performance of their portfolio companies. One way is through the addition of personnel with sustainability knowledge either at the portfolio company level or at the private equity firm, in an investment or operations role. Since beginning its work with EDF, KKR has hired a sustainability expert at the firm level. In addition, KKR has appointed a sustainability director at at least one of its portfolio companies. The creation of a director level position focused on sustainability initiatives across a particular company can help identify opportunities or risks across functions (sourcing, manufacturing, etc) while the creation of this position at the firm level can facilitate adoption of best practices and easy cost reductions throughout the portfolio.

However, proper execution of an environmental performance strategy will require integration into all company functions so as to prevent creation of a ‘sustainability silo’ or tension between functions. Should a firm prefer not to create these positions within the companies or the firm as a whole, it can also consider the use of sustainability consultants. The sustainability consulting industry is currently experiencing high growth, with traditional strategic management-focused firms such as McKinsey and Deloitte creating sustainability practices. These outside experts can help firms develop an overall strategy or can focus on executing specific material opportunities for a particular portfolio company. The use of these consultants will be discussed at greater length with reference to the use of EDF’s environmental performance tool below.

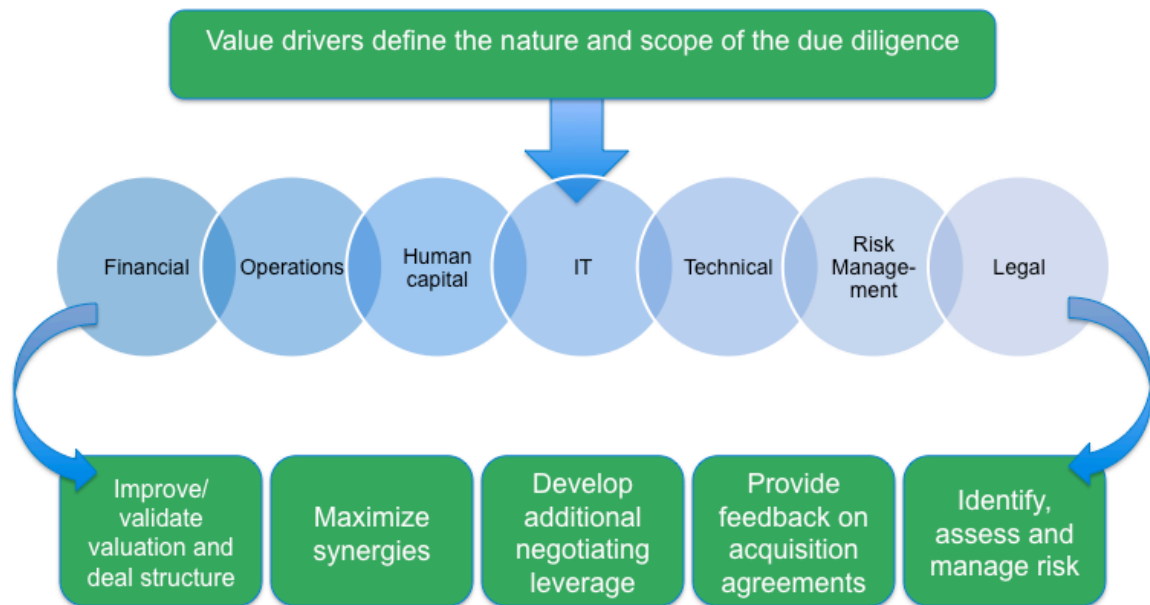
THE ENVIRONMENT AND PRIVATE EQUITY DUE DILIGENCE

What is due diligence

Due diligence is the process that PE firms use to vet potential investments; the due diligence “phase” extends from once a target is identified until the purchase is complete. The process involves the PE firm collecting information on the target to determine and/or certify the value (price) of the target and to identify any undisclosed risks or opportunities. Due diligence varies across PE firms, but typically each firm has their own “checklist” of documents to collect, interviews to conduct, as well as legal and financial verifications. The checklist itself and the focus of the due diligence process can vary depending on the industry of the target and the nature of the transaction. For example, environmental due diligence will be a much more prevalent part of the process when the target is a manufacturing company than it will be if the target is a financial services company. Figure 1 shows the typical due diligence categories that are covered for each acquisition (financial, operations, etc.). These categories are the value drivers for the business (financial history and projections, operations, human capital, etc.) and ultimately the PE

firm is looking to validate the valuation, manage risk, and identify areas where they may be able to create value post-acquisition.

FIGURE 1: An Overview of the Due Diligence Process



While the scope of due diligence is similar from PE firm to PE firm, the quality of due diligence often varies. In “The Secrets of Great Due Diligence,” Cullinan et. al. note that due diligence is often used to validate the target’s valuation as well as to validate the proposed deal structure rather than do a more in depth analysis from scratch. In other words, once a senior manager at a PE firm has his or her eyes set on a deal, it is difficult to steer off course, hence the due diligence process becomes a validation process.^{xxxix} What’s more, a recent study from Bain shows that firms who do conduct a more in depth due diligence process and who are actively involved in the target company post-acquisition have returns 3.6 times the original investment, which is significantly more than the average of 1.4 times.^{xl} This makes sense since a more in-depth due diligence may result in increased negotiating leverage and a lower valuation/price for

the target it also may serve to weed out companies that are not good targets at all, but would still be acquired without an extensive due diligence process.

Current role of the environment in due diligence

The categories of due diligence rank differently in importance depending on the PE firm and depending on the type of target company. For example, a target in the financial services industry might need more in depth human resources due diligence whereas one in the chemical industry would need an extensive environmental due diligence. Nevertheless, from our survey of 22 PE firms, it is clear that overall the financial analysis, human resources, and market analysis are most important, and that environmental due diligence is significantly less important relative to other categories.³ What's more, the environment is one area of due diligence where PE firms typically do the minimum required investigation but where a more detailed analysis could prove to identify and quantify many more risks and opportunities.

Currently, environmental due diligence is done only in cases where there is a potential environmental liability – that is, any target company which has a manufacturing or industrial facility, commercial property, energy generation facility, or which operates a facility that uses hazardous material or produces hazardous waste. In terms of actually performing environmental due diligence, our survey showed that the vast majority (86.6%) always hire an environmental consulting firm when environmental due diligence is necessary. In these cases, the environmental consulting firm initially would perform a Phase I EIA (Environmental Impact Assessment). This initial assessment would highlight any potential for an environmental liability within the target company and would identify areas where further investigation is necessary. After Phase I, any areas identified would move into Phase II, where soil/water samples would be taken and tested to

³ For complete survey questions and results, see Appendix C.

identify any leakage and/or possible remediation costs. When problems are identified in Phase II, there is typically a cost associated with remediation and as well as increased environmental risk. Some PE firms have a very low tolerance for such discoveries and will cancel any deal where environmental risk is identified. Other firms will price the risk/remediation into the valuation of the target and use it as leverage to get a lower price.^{xli}

In conversations with PE professionals and environmental consultants, the key word for environmental due diligence is regulation. Any substance, pollutant, etc. that is regulated is looked at closely and any regulatory violation or potential violation is priced into the valuation of the target company or will cause the PE firm to cancel the deal. While some firms do look at potential future regulation, because the holding period for target companies is just 5-7 years, only imminent regulation would factor into due diligence. For example, 80% of survey respondents stated soil and water contamination (which is already highly regulated) as “high risk” from a financial standpoint, as opposed to 5% for greenhouse gasses (which has the potential for regulation). The conclusion from the survey and conversations with professionals is that regulation is the largest, and typically only, driver for environmental due diligence.

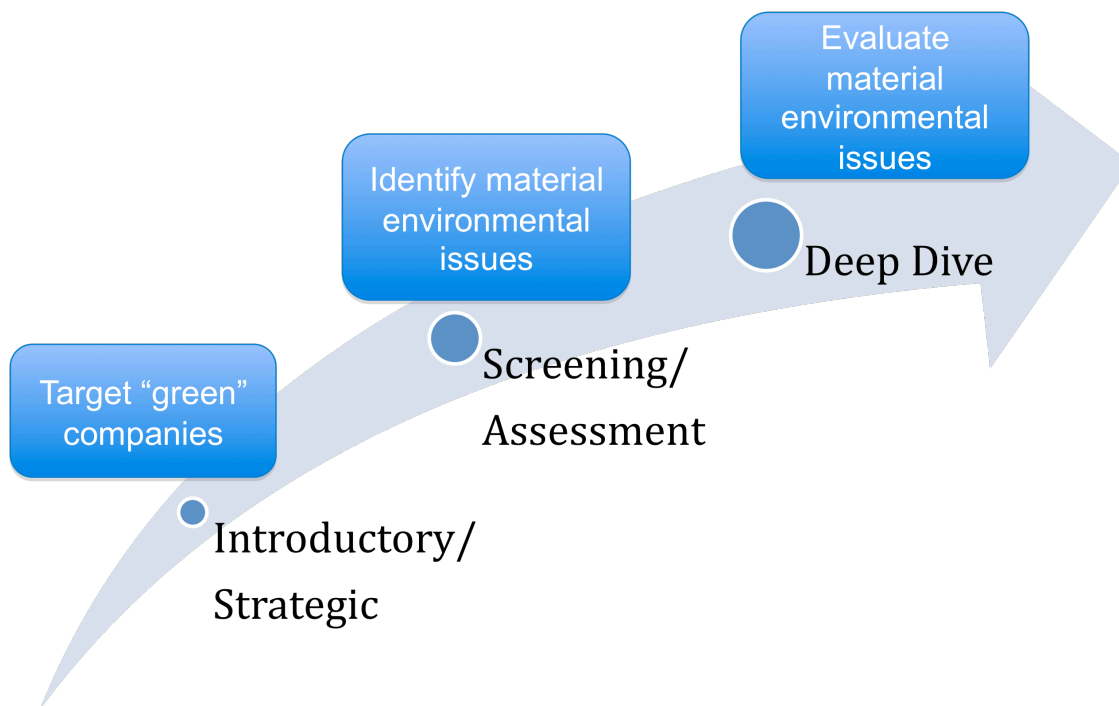
Going beyond regulation, a new role for the environment

PE firms are not only ignoring material risks but also are missing out on identifying opportunities for value creation by only using an EPA standard environmental impact assessments, which focus solely on regulated impacts. Additionally, firms are selectively performing environmental due diligence based on industry and perceived risk, but by doing so are ignoring industries with non-regulated environmental costs and opportunities. A broader, more thorough pre-acquisition environmental analysis would allow PE firms greater negotiating

leverage (lower prices) as well as help them to identify areas for improvement that could increase value during their ownership period, increasing their return upon exit.

There are several opportunities during the screening process where environmental risk and opportunity could play a larger role. Figure 2 below shows the three primary phases of due diligence and indicates how the PE firms can leverage environmental performance during each one.

FIGURE 2: Phases of due diligence



The initial phase is when a PE firm seeks or is introduced to a potential investment. During the search process, PE firms can choose to target “green” companies. There are several PE firms that have a clean tech focus and more and more firms are creating clean tech funds or at least bringing in expertise in order to complete clean tech deals. Equilibrium Capital (www.eq-

cap.com) is an example of a firm that is seeking out companies with sustainable businesses that have a positive social impact. Firms like Equilibrium attract investors that would like environmental and social returns as well as financial returns. These firms also seek to quantify the environmental and social benefits during the due diligence phase, which helps prove the long-term sustainability of the investment and demonstrates to investors the non-financial returns they will get.

Once a firm decides to pursue a target, they will perform an initial screening, this can be done either with publicly available information or by signing a non-disclosure agreement with the target and getting information from the company directly. During this phase, the PE firm can identify material environmental issues from a high level by understanding the industry and the risk and opportunity drivers for the target. For example, a retail company's environmental materiality would mainly be in its energy usage, transportation, and impact of its supply chain. Identifying risks and opportunities from a high level is as simple as going through the five key environmental performance areas (KEPAs) to see how each area fits into the target's business model. This KEPA analysis will be discussed more in depth in the section on the EDF tool.

Once the initial screening is complete and the firm has decided to move forward with the acquisition, they will execute a non-disclosure agreement with the target and perform an in depth due diligence. This is the stage where, if there is potential for an environmental liability, PE firms hire an environmental consultant. An extended environmental due diligence includes evaluating and assessing all potential material environmental risks and opportunities rather than the status quo of simply looking at liability risk. For example, think back to the biofuel "boom" when plenty of firms were investing in corn ethanol. The biofuel companies advertised that their technology reduced carbon emissions, but within a few years research showed that the net

benefit was negligible because of the petroleum used in the production of corn. If the investors in ethanol had taken a closer look at the supply chain issues with the product, they may have been able to identify the issues with ethanol. This systems approach is what needs to happen during the deep due diligence – if firms can think about the KEPAs in terms of the target’s business model, including the target’s supply chain, transportation, product use and disposal, they will be able to identify key risks and opportunities that have the potential to create (or destroy) substantial value during the holding period and beyond.

IMPROVING PORTFOLIO COMPANY ENVIRONMENTAL PERFORMANCE: THE EDF TOOL

Following the due diligence stage, there are a number of ways that private equity firms can work with their existing portfolio companies to improve environmental performance. As mentioned above, Environmental Defense has worked extensively with KKR to develop a tool to measure and improve portfolio company performance.

The EDF-KKR Tool: Measuring and Improving Environmental Performance

The tool focuses on the five key environmental performance areas (KEPAs) outlined above⁴ and defines metrics that can be used to measure each both on an absolute basis and on an efficiency (per dollar of revenue) basis. These metrics are shown in Figure 3 below.

⁴ Greenhouse gas emissions, waste, water, forest products, toxic chemicals

FIGURE 3: The EDF-KKR Environmental Performance Tool

KEPAs	Core metrics (absolute)	Management metrics ¹ (productivity)
Greenhouse gas (GHG) emissions	<ul style="list-style-type: none"> •Energy use (BTUs) •Energy costs (\$) •GHG emissions (tons) 	<ul style="list-style-type: none"> •Energy intensity (BTUs/\$ revenue or unit) •GHG intensity (GHG/\$ revenue or unit)
Waste	<ul style="list-style-type: none"> •Solid & haz waste produced (tons) •Solid & haz waste management costs (\$) 	<ul style="list-style-type: none"> •Waste intensity (tons/\$ revenue or unit)
Water	<ul style="list-style-type: none"> •Water use (gallons) •Water costs (\$) 	<ul style="list-style-type: none"> •Water intensity (gallons/\$ revenue or unit)
Forest products	<ul style="list-style-type: none"> •Paper, packaging &/or wood (tons) •Paper, packaging &/or wood costs (\$) 	<ul style="list-style-type: none"> •Forest resource intensity (tons/\$ revenue or unit)
Priority chemicals	<ul style="list-style-type: none"> •Inventory & management process (y/n) •Priority chemical use (tons) •Priority chemical management costs (\$) 	<ul style="list-style-type: none"> •Chemical intensity (tons/\$ revenue or unit)

Companies begin to use the tool by establishing baseline performance in each of these areas. This is done by monitoring company data across several areas depending on the environmental area and the sector in which the business falls. The company should measure environmental performance for all businesses in which it has a controlling financial or operational interest.

As discussed previously in the section on business and the environment, for greenhouse gases, a company can measure Scope 1 (direct), Scope 2 (purchased electricity) and Scope 3 (upstream and downstream) emissions. Scope 1 emissions are important to measure and reduce, as they will cost the company directly under current and anticipated regulation schemes, whereas Scope 2 and Scope 3 emissions will represent an important cost to a company via the conference by the direct emitter of a portion of the cost associated with its emissions to its customers. The way the measurement of these emissions is carried out will vary greatly depending on the

company's line of business.⁵ An automotive manufacturer, for example, would measure Scope 1 emissions if it generates electricity to power its manufacturing equipment on site or if it directly emits any of the other main greenhouse gases⁶ in its production process. The auto-maker would measure Scope 2 emissions through tracking of its electricity and fuel purchases and conversion of overall BTUs or kWhs into carbon dioxide equivalents based on the area in which the company is located or a national average and the fuel mix common to that area (for more information, please see Appendix A). Scope 3 emissions are often not measured by companies, but for an automotive manufacturer, these would include (among a variety of other things) a measure of the fuel efficiency of their product.

Waste creation can also be measured directly or indirectly. Direct measurement could include monitoring the percentage of raw materials that go to the waste stream. For example, an electronics manufacturer could monitor the portion of cable or wiring that is not used in its products and instead becomes waste. Alternatively, any company could consult with its waste services provider to determine overall tonnage of waste and use this as the baseline.

A baseline for water use can be established via consultation of a water bill. Additionally, for a more complete picture companies can monitor how much water is actually consumed in any process, how much is recycled into further processes, and how much is returned to the water system as waste water. Companies should also look at the relationship between the amount of water they use and the area in which they are operating in order to determine a baseline relative to the water scarcity in the area. Water calculators such as that found at

⁵ This simplified example is not intended to fully explain the nuances of ghg measurement. For more direction and calculation tools to help monitor and measure greenhouse gases, please visit the Greenhouse Gas Protocol website at <http://www.ghgprotocol.org/> or the Carbon Disclosure Project at <https://www.cdproject.net/en-US/Pages/HomePage.aspx>.

⁶ Methane, nitrous oxide, ozone, fluorinated gases

<http://www.gemi.org/waterplanner/intro.htm> can assist companies both with the flow diagram determining water use and waste water in particular processes and with the water scarcity of the areas in which operations are located.

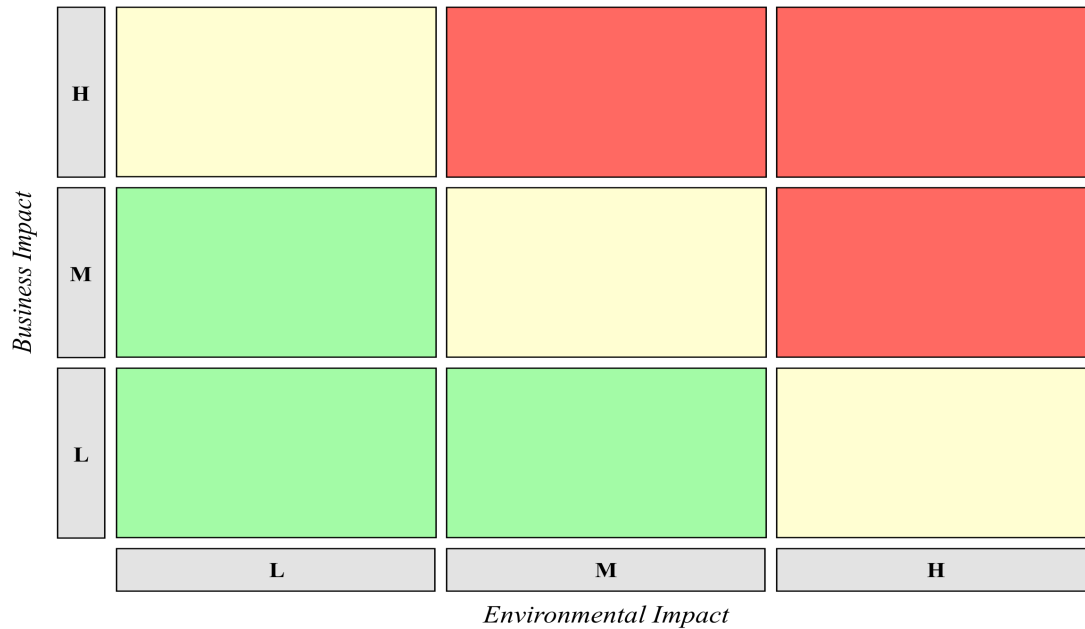
Forest product use will again vary greatly depending on the type of business. For most companies, paper use is the majority of forest product consumption and can be measured via tracking of paper purchasing across departments. Amount of paper purchased and source should both be noted. Additionally, cardboard packaging of purchased products is often forest product use that is not included in this tracking. This may be monitored via weighing recycled paper if a company is looking to reduce packaging use. Finally, those who use other forest products such as timber in building or furniture should track waste and forest scraps as well as source from which the timber originates.

Finally, to determine a baseline for hazardous chemical use, companies could consider using some of the tools developed as a result of the REACH legislation in Europe. These tools will help companies identify which chemicals are of concern and in what they are commonly present. Companies can then get an idea of the toxicity of their products and the set of regulations that will most likely impact them.

For more information on how to measure any of these environmental performance areas, additional resources are located in Appendix A. However, measuring these performance areas is a task that often requires specific expertise. KKR, for example, trained an entire team of people in measuring, improving, and monitoring the KEPAs in order to carry out the improvements it achieved with EDF. For companies or PE firms without this internal expertise, hiring a sustainability consultant with this expertise is the best way to achieve environmental performance measurements and improvements.

Following the determination of this baseline, a company or PE firm must decide which of the five KEPAs are the most material (based on their likely financial implications for the company) and which are responsible for the majority of the company's environmental impact. For example, as mentioned above, Citigroup determined that paper use was both a major source of cost to the company and was a major way in which the bank was directly impacting the environment. This task is not easy and requires an understanding of current and pending regulation, forecasts for commodity pricing, and knowledge of environmental impacts, so again, the help of consultants or trained staff may be necessary. However, looking at impact standardized across revenue or units of production can give decision-makers a basic idea of which areas are most impactful. A matrix like the one (designed by EDF) in Figure 4 below can help companies decide on which environmental areas they are to focus. The matrix, which classifies business and environmental impacts into low (L), medium (M), and high (H), allows companies to see visually which areas carry the most risk for them financially and which are the most harmful to the environment. Portfolio companies (or controlling PE firms) should focus first on those areas in red, which cause the most environmental harm and impact the business to the greatest extent.

FIGURE 4: Business and Environmental Impact Matrix



The above section and the matrix below focus largely on risk and negative environmental impacts, but a mirror image matrix capturing and classifying opportunities into those that could have the most positive impact on the business and the environment may also be useful for companies planning to focus on capturing market opportunities presented by environment-related regulation or consumer trends.

Finally, a company should make improvements in the areas it identifies for focus. These areas can be tracked quarterly and improvements should be reported in both financial and environmental terms to investors and other stakeholders.

KKR Case Studies

KKR and EDF used this tool to improve the environmental performance of three KKR portfolio companies, U.S. Foodservice, Inc., PRIMEDIA, Inc., and Sealy Corporation, beginning in May 2008. U.S. Foodservice, a food distribution company, focused on environmental performance improvements related to the company’s fleet of vehicles, an area that clearly dovetailed costs and

environmental impact. Assisted by KKR's Capstone Group, U.S. Foodservice implemented a driver training program and installed fuel economy improving technologies on the vehicles. The company improved fuel economy by more than 4% and intends to continue to focus on driver training as a way to further reduce fuel consumption. PRIMEDIA, a housing brochure producer, focused on its forest resource impact, as the company produces a large number of print materials each year. To reduce its paper use, the company focused more on online housing ads and made its print materials smaller, easily reducing costs and forest resource use. PRIMEDIA reduced paper use by more than 20% compared with the previous year. Finally, Sealy identified both waste reduction and fleet efficiency as areas in which to make environmental improvements that were material to the company. In addition to implementing the driver and fleet enhancements U.S. Foodservice carried out, Sealy worked to recycle bedding waste and prevented 650 tons of solid waste from reaching landfills. The company will now focus on improving manufacturing processes to further reduce waste and will continue to improve fleet efficiency as well. Over the course of the first six months alone, use of the EDF tool and the environmental improvements each portfolio carried out saved the firm \$16.4 million. Following its initial success with these pilot companies, KKR is now turning its attention to four additional portfolio companies, Accellent, Biomet, Dollar General and HCA.^{xliii}

The KKR consulting arm Capstone was an integral part of the process and worked to identify the most material areas for improvement. In the following section, this paper will discuss why and how to go through a process similar to EDF and KKR's work and will touch on the resources, aside from the EDF tool, that are required to carry out the environmental improvements.

HOW AND WHY PRIVATE EQUITY FIRMS SHOULD GO GREEN

Why

The KKR and EDF partnership as well as the examples of public companies lowering costs or increasing revenue due to an environmental strategy demonstrate that focusing on environmental performance improvements deliver value at the company level and the overall portfolio level. This value creation is the most important reason why PE firms should consider these improvements. However, there are two additional reasons why consideration of the environment will prove beneficial for PE: 1) pending regulation and government relations and 2) marketing to investors.

Government Regulation

As mentioned above, governments in both the U.S. and Europe have recently turned their attention to several environmental areas that could be relevant to private equity portfolio companies; two of particular importance are toxics and greenhouse gases. Demonstrating that a firm is focused on making improvements in these areas across its portfolio ahead of legislation could lead to favorable relations with government lawmakers and regulating agencies. This positive image could then provide a way for the firm to help shape legislation surrounding these areas such that it receives incentives or benefits or gains an advantage over its competitors.

Additionally, the private equity industry has in the past benefited greatly from favorable government regulations. However, recently the public has begun to view the PE industry somewhat negatively and in some instances, certain populist government or public figures have called for additional oversight surrounding private capital. Actions that create a positive relationship with governmental institutions and bring good will from the public will ensure that the industry can secure capital from investors and return it to these investors with reasonably low

transaction costs. For these reasons, PE firms should work to go beyond government expectations in environmental areas, creating a positive perception in both the government and the public's eye such that penalties or additional regulation are not necessary.

Investor Relations

Ease in securing capital to make investments in portfolio companies is incredibly important to private equity's continuation. Institutional investors, PE's primary capital source, are increasingly interested in the environmental and social impact of the money they invest. The nation's largest public retirement funds, California's Public Employees' Retirement System and State Teachers' Retirement System (CalPERS and CalSTRS), have worked to target their PE investments to achieve environmental returns as well as financial returns. CalPERS recently allocated \$500 million for investment in clean technologies as part of their Green Wave initiative.^{xliii} Additionally, as mentioned above, the creation of the United Nations' Principles for Responsible Investment, a set of environmental and social guidelines for investors, signed onto by institutional investors worldwide representing more than \$9 trillion in capital, demonstrates this move toward investment that delivers a triple bottom line return, benefiting (or at least not harming) the environment and people as well as profits.^{xliv} While it is not likely that investors will pull capital from otherwise profitable PE investments based solely on minor environmental concerns, environmental performance improvements that deliver both financial returns and environmental returns could certainly be used to entice these investors to increase their allocations to a particular firm or fund.

How

Creating an environmental strategy can be a daunting task for any company, but for a PE firm the task can seem even greater, as it involves creating a strategy to encompass a portfolio of companies. On the other hand, as has been shown, the opportunity for value creation across the diverse portfolios of a PE firm is great. By following the six steps outlined below, PE firms will be able to simplify the process of determining and implementing an environmental strategy.

1. Understand the key performance areas (KEPAs). The five KEPAs (water, waste, greenhouse gasses, forest products, and toxins) as identified by EDF and that are described in the environment and business section of this paper are the building blocks to any environmental strategy. These areas encompass the primary costs, risks, and opportunities for companies when it comes to environmental impact. It is important that prior to embarking on an environmental strategy, the firms' management understands these KEPAs and how they can and may impact different industries/companies, especially those industries in which the firm invests.

Understanding the KEPAs is not as time consuming as one might think. A general understanding can be garnered by reviewing the environment and business section of this paper as well as by referring to the websites outlined in the EDF Tool section of this paper. In addition, there are several books that give readers a general understanding of corporate environmental policy, such as Andy Hoffman's *Corporate Environmental Strategy* and *Green to Gold* by Daniel C. Esty and Andrew S. Winston.

2. Decide where in your investment process the environment will play a role. While KKR has thus far focused on the environmental performance of existing portfolio companies, there are other areas where the environment can play a role, mainly the due diligence process. While it would be ideal if every PE firm decided to implement environmental considerations throughout the investment process, it may not be possible or necessary. For example, a firm may decide to

focus on making strategic investments in sustainable technologies such as renewable energy, and then the management of impacts may be less going forward. Or a firm may decide, like KKR, to tackle existing portfolio companies first and then to move into looking at companies during the due diligence phase.

3. Develop a strategy with processes and procedures that can be implemented across the portfolio. Developing an environmental management strategy will likely be the most involved process. For KKR, this meant working with EDF to develop a tool and then piloting the tool at several portfolio companies. Now that the tool is complete, KKR's strategy is to go on measuring and managing each portfolio company, including new investments. In addition, the firm will most likely implement some strategy at the due diligence level.

KKR also has the advantage of having an internal consulting arm, which was trained by EDF staff on how to use the tool. For PE firms that don't have internal operations experts or consultants, developing a strategy may involve working with their existing consultants or hiring new consultants with more expertise in sustainability. The more detailed the strategy, the easier it will be for firm employees and portfolio company employees to implement the strategy. For example, if the strategy says to measure greenhouse gas emissions it may be difficult for an operations manager to understand what this means, whereas if it outlines that greenhouse gasses should be measured according to the GHG Protocol and leads managers to the protocol tools, the strategy will likely be more effective.

4. Communicate to staff and existing portfolio companies. Engaging employees in an environmental strategy is absolutely essential and can be very rewarding. Often employees are motivated to work for a company that shows active interest in the environment and/or social causes; "green" programs can improve productivity and retention. At the same time, measuring

and managing environmental impacts can add to people's workloads. From a portfolio company perspective, the PE firm may already be implementing massive change, and adding to that change could face resistance. It is therefore important to communicate the reason for the environmental strategy and to involve both firm employees and portfolio company employees and to acknowledge that they will be doing the implementation.

5. Implement – measure and manage. Whether the firm's strategy is to look for "green" investments, to better vet the environmental risks and opportunities of potential acquisitions, to measure and manage existing portfolio companies or to do all three, the real value will come from impeccable execution. Potential methods and resources for execution have been identified throughout this paper, however, it has by no means been exhaustive. Another great resource for innovative environmental management is the EDF Innovation Exchange (innovation.edf.org) which gives case studies and best practices for numerous industries. Some firms may find it necessary to outsource the implementation of an environmental strategy – some mainstream consulting companies have sustainability practices, and there are several top-notch boutique consulting firms focusing solely on corporate sustainability. Finally, with an increasing number of professionals who are well versed in this area, some firms may want to hire an internal expert to develop and implement their strategy, which is what KKR has done.

6. Communicate to investors. After the implementation has started, and the forward strategy is determined, PE firms should communicate these changes to current investors and use it to attract new investors. It has been shown that environmental management can enhance value while reducing impact. This is doubly advantageous from an investor perspective because while they ultimately care about return, most institutional investors also like to tout environmental performance.

CONCLUSION

With \$2.5 Trillion in assets under management, if even just a fraction of the PE industry improved the environmental performance of their portfolios, it could have a tremendous impact on our planet and could start to catapult sustainable companies and technologies into the mainstream. What's more, with the help of the partnership between EDF and KKR, we have seen that these improvements not only reduce environmental impact but also add value to a PE firms' portfolio. The question then becomes, how does EDF use its current findings to start a sea change in the industry? The answer is simple, communication and education, but the execution will prove to be more challenging.

EDF faces a challenge in that the PE industry is highly fragmented, with relatively little sharing of best practices. In fact, many large PE firms choose not to follow one another but prefer to chart their own path. This means that some of KKR's key competitors may be less likely to follow the EDF tool and suggestions if they believe that it "belongs" to KKR. Therefore, EDF must strike a careful balance between advertising KKR's successes, but distancing KKR's name from the tool and any communicated best practices. EDF has three main allies in their quest to educate PE firms on the importance and value of environmental performance. The first ally is investors, if EDF can educate investors on the improved returns and improved environmental impacts that would come with a fund's adoption of the EDF tool, investors can then pressure fund managers to use it. Secondly, EDF should use consultants as an ally by teaching them how to use the tool and encouraging them to sell this service to PE firms with whom they already have a relationship. Since PE firms use consulting firms substantially during both the pre and post-acquisition periods, it is important that they are able to help PE firms implement an environmental strategy. Finally, there is the PE Council. The Council has

already signed onto the Principles for Responsible Investing, but now needs to work to educate its members on how to implement the Principles and what steps to take to measure and manage environmental performance. A partnership with the Council will allow EDF to take great strides in communicating the importance of these issues with the largest PE firms in the world.

Private equity is an asset class, a capital deployment mechanism, and important financial institution, and thus, the industry is focused on making good financial decisions and on money for investors. What the industry needs to realize then, is that good environmental decisions will mean better returns now and into the future. With so much capital deployed through private equity, where managers don't have to manage just to meet quarterly targets, firms have a chance to become agents for change; they have the opportunity to show the rest of the financial and business world just how much sustainable value can be found and had.

APPENDIX A**Common conversion factors to determine GHG emissions****Air travel¹**Short haul (<281 miles): 0.2897 kg CO₂/passenger mileMedium haul (281-994 miles): 0.2028 kg CO₂/passenger mileLong haul (>994 miles): 0.1770 kg CO₂/passenger mile**disregard class of service***Rail²**Intercity rail (Amtrak) 0.1909 kg CO₂/ passenger mile**Purchased electricity³**EPA region-specific factors <http://cfpub.epa.gov/egridweb/ghg.cfm>**On-site combustion⁴**Natural gas (pipeline): 12.693 lbs CO₂/ccfPropane: 12.669 lbs CO₂/gallonFuel oil No. 1, 2, 4: 22.384 lbs CO₂/gallon**Transportation fuels⁵**Gasoline: 19.564 lbs CO₂/gallonDiesel: 22.384 lbs CO₂/gallonJet Fuel: 1.095 lbs CO₂/gallon

APPENDIX B

Resources to measure key environmental performance areas (KEPA)

EDF's Innovation Exchange (<http://innovation.edf.org/home.cfm>)

The Innovation Exchange is a dynamic online resource of tools and best practices aimed at helping companies make green business the new business as usual. In addition to giving businesses access to proven best practices that increase environmental performance and reduce costs, the site serves as a venue for information sharing where business leaders can exchange ideas and build on the power of collective innovation.

GHG Protocol (<http://www.ghgprotocol.org>)

The GHG Protocol serves as the foundation for most GHG standards and programs worldwide and is an international accounting tool to help businesses and governments understand, quantify, and manage greenhouse gas emissions. For standards and guidance preparing a GHG inventory, refer to GHG Protocol's Corporate Standard. GHG Protocol's site also provides a list of cross-sector and sector-specific calculation tools for registered users.

Water Planner (<http://www.gemi.org/waterplanner>)

GEMI's *Collecting the Drops: A Water Sustainability Planner* is a planning process to help users identify a facility's relationship to water, challenges and opportunities, and other considerations related to water use. The planner takes users through three modules: facility water use and impacts; water management risk assessment; case examples and links for further examination.

Paper Calculator (<http://www.edf.org/papercalculator>)

EDF's Paper Calculator is an online tool that helps companies and consumers make better paper and packaging choices. Based on research that examines the environmental impact of paper through its lifecycle, the calculator provides data on wood use, energy, GHG, wastewater, etc. based on quantity and post-consumer recycled content for selected papers.

EPA WasteWise (<http://www.epa.gov/epawaste/partnerships/wastewise/index.htm>)

Waste reduction program aimed at reducing municipal waste using prevention and recycling techniques that result in cost savings for participating entities. The WasteWise Endorser Program provides an educational component by engaging endorsers to educate members about the benefits of solid waste reduction and recruit new WasteWise partners.

REACH Navigator (http://guidance.echa.europa.eu/guidance_en.htm)

This set of online tools helps companies determine which chemicals are tracked and registered under REACH and in which products they are most commonly present.

APPENDIX C

Complete survey results

Environmental Due Diligence

1. What is the size of your firm (assets under management)?			
		Response Percent	Response Count
Less than 100 Million		19.0%	4
100MM - 500MM		38.1%	8
500MM - 1 Billion		33.3%	7
2-10 Billion		4.8%	1
10+ Billion		4.8%	1
answered question			21
skipped question			1

2. What is your title?		Response Count
		20
answered question		20
skipped question		2

3. Please select your firm's classification (select all that apply).			
		Response Percent	Response Count
Early Stage Venture		0.0%	0
Growth Equity		21.1%	4
Leverage Buyout		73.7%	14
Distressed Debt		5.3%	1
Mezzanine Capital		10.5%	2
Secondaries		5.3%	1
Other (please specify)			1
answered question			19
skipped question			3

4. What are the primary industries on which your firm focuses (choose all that apply)?			
		Response Percent	Response Count
Energy/Oil and Gas		30.0%	6
Telecom and Media		30.0%	6
Healthcare		55.0%	11
Consumer Products		60.0%	12
Retail		25.0%	5
Real Estate		0.0%	0
Financial Services		40.0%	8
Industrials		95.0%	19
Infrastructure		50.0%	10
Aerospace and Defense		50.0%	10
Automotive/Transportation		30.0%	6
Other		50.0%	10
<i>answered question</i>			20
<i>skipped question</i>			2

5. Does your firm consider environmental impacts and risks (e.g. soil/water contamination and air pollution) during due diligence?			
		Response Percent	Response Count
Yes		85.0%	17
No		15.0%	3
If no, please explain.			2
<i>answered question</i>			20
<i>skipped question</i>			2

6. If you answered yes to number 1 above, do you quantify environmental risks?			
		Response Percent	Response Count
Yes, assign dollar value to all risks		25.0%	4
Sometimes, depends on industry/size of impact		68.8%	11
No, use a qualitative assessment		6.3%	1
<i>answered question</i>			16
<i>skipped question</i>			6

7. Please rate the following areas of due diligence according to importance (1 = least important, 5 = most important).

	1	2	3	4	5	Response Count
Market, Customers, & Competitors	15.0% (3)	0.0% (0)	10.0% (2)	15.0% (3)	60.0% (12)	20
Technology	5.0% (1)	25.0% (5)	30.0% (6)	40.0% (8)	0.0% (0)	20
Environmental	20.0% (4)	25.0% (5)	25.0% (5)	25.0% (5)	5.0% (1)	20
Financial	20.0% (4)	0.0% (0)	5.0% (1)	20.0% (4)	55.0% (11)	20
HR & Management Team	10.0% (2)	10.0% (2)	15.0% (3)	15.0% (3)	50.0% (10)	20
	<i>answered question</i>					20
	<i>skipped question</i>					2

8. From your perspective, please rate the following environmental impacts from a financial risk standpoint (1= low risk, 5 = high risk).

	1	2	3	4	5	Response Count
Soil and Water Contamination	5.3% (1)	10.5% (2)	0.0% (0)	5.3% (1)	78.9% (15)	19
Operational Inefficiency	0.0% (0)	52.9% (9)	29.4% (5)	11.8% (2)	5.9% (1)	17
Water Scarcity	16.7% (3)	44.4% (8)	22.2% (4)	11.1% (2)	5.6% (1)	18
Energy Use	11.1% (2)	22.2% (4)	50.0% (9)	16.7% (3)	5.6% (1)	18
Greenhouse Gas Emissions	26.3% (5)	42.1% (8)	15.8% (3)	10.5% (2)	5.3% (1)	19
Waste	5.3% (1)	36.8% (7)	36.8% (7)	10.5% (2)	10.5% (2)	19
Employee Safety	5.3% (1)	10.5% (2)	21.1% (4)	31.6% (6)	31.6% (6)	19
Product Environmental Liability	5.6% (1)	11.1% (2)	5.6% (1)	27.8% (5)	50.0% (9)	18
Paper Use	52.6% (10)	31.6% (6)	0.0% (0)	15.8% (3)	0.0% (0)	19
Use of Hazardous Materials	5.3% (1)	10.5% (2)	36.8% (7)	26.3% (5)	21.1% (4)	19
Supply Chain Impacts	11.1% (2)	38.9% (7)	38.9% (7)	5.6% (1)	5.6% (1)	18
	<i>answered question</i>					19
	<i>skipped question</i>					3


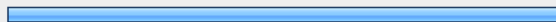
9. Considering environmental due diligence to include the categories listed above, has the amount of time and/or money your firm spends on environmental due diligence changed or do you anticipate it to change?

	Decreasing	Increasing	No Change	N/A	Response Count
Last 5 years	0.0% (0)	31.6% (6)	57.9% (11)	10.5% (2)	19
Next 5 years	0.0% (0)	36.8% (7)	52.6% (10)	10.5% (2)	19
	<i>answered question</i>				19
	<i>skipped question</i>				3

10. Please rank your firm's drivers for performing environmental due diligence.

	Not a driver	Low	Medium	High	Response Count
Regulation	5.0% (1)	15.0% (3)	45.0% (9)	35.0% (7)	20
Potential litigation	0.0% (0)	0.0% (0)	25.0% (5)	75.0% (15)	20
Financial materiality	0.0% (0)	5.0% (1)	15.0% (3)	80.0% (16)	20
Operational assessment	5.0% (1)	35.0% (7)	50.0% (10)	10.0% (2)	20
Firm/company reputation	0.0% (0)	50.0% (10)	40.0% (8)	10.0% (2)	20
Pressure from LPs	42.1% (8)	52.6% (10)	5.3% (1)	0.0% (0)	19
	<i>answered question</i>				20
	<i>skipped question</i>				2


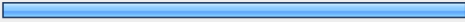

11. Does your firm have additional drivers for doing environmental due diligence that are not mentioned above?

	Response Percent	Response Count
Yes 	10.5%	2
No 	89.5%	17
If yes, please indicate additional drivers		2
	<i>answered question</i>	
	<i>skipped question</i>	


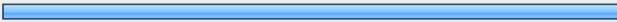
12. Please indicate who performs your environmental due diligence.

	Never	Sometimes	Always	Response Count
In house	86.7% (13)	13.3% (2)	0.0% (0)	15
Hire an environmental consultant	5.6% (1)	22.2% (4)	72.2% (13)	18
Hire a general consultant	71.4% (10)	28.6% (4)	0.0% (0)	14
Legal team	13.3% (2)	60.0% (9)	26.7% (4)	15
	<i>answered question</i>			
	<i>skipped question</i>			

13. Would you be interested in a tool that provides analytical and qualitative information on identifying and valuing environmental risks during due diligence? Please indicate your level of interest.

		Response Percent	Response Count
Not interested		15.0%	3
Somewhat interested		75.0%	15
Very interested		10.0%	2
Please comment on your level of interest indicated.			5
<i>answered question</i>			20
<i>skipped question</i>			2

14. If you would be willing to spend 10-15 minutes discussing this subject further with us, please input your name and e-mail below (note that your contact information will not be used with your responses to the survey above).

		Response Percent	Response Count
Name		100.0%	8
E-mail		100.0%	8
<i>answered question</i>			8
<i>skipped question</i>			14

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