Brown-Watson Case 15-04

Royal Dutch Shell

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0. Overview:

Firm: Royal Dutch Shell

Field of CSR concern: Environment

Standard or social practice of concern: Carbon risk disclosure

Stakeholders at risk: Investors

Monitor: U.S. Securities and Exchange Commission (SEC)

Point of view: Reduce materiality risk to investors through transparent and complete reporting practices of carbon asset risk.

Tools: Legislation

Response of the firm: Increases reporting to investors on carbon risk, therefore provoking pressure from investors to limit carbon risk by including climate change projections and carbon pricing into internal management decisions.

System at work (interaction between the two): SEC identifies risk to investors, passes legislation to affect actions of corporation investors have material grounding to provoke action from corporation.

I. Introduction:

Global climate change poses a great risk to carbon-intensive industries.[i] To protect shareholder value and the public commons of the atmosphere, understanding oil majors' perspective on climate legislation and physical carbon asset risk is paramount.

This proposal seeks to lay the groundwork for researching the question: What organizational body and what actions can best hold carbon-intensive corporations accountable for minimizing the carbon asset risk they pass on to investors?

II. Corporate practice of concern:

a. Description:

i. Climate change:

Science shows with 95% certainty[ii] that the 20th century's unprecedented warming is due to "dangerous anthropogenic interference with the climate system".[2] If average global temperature continues on its current trajectory and rises 2°C above 1990 levels,[iii] the atmosphere will reach a tipping point beyond which the world's best scientists predict catastrophic outcomes

for ecosystems, the market, and humans alike.[3] In order to "hold the increase in global temperature below two degrees Celsius"[iv] as agreed upon by the 167 ratifying countries of the Copenhagen Accord, carbon dioxide, the primary greenhouse gas emitted through human activity[v], must be limited.

Recent research from the Climate Accountability Institute reveals that 63% of historical global carbon emissions since 1854 can be traced back to the 90 biggest oil, gas and coal producers and cement manufacturers.[vi] Of that, the top five 'oil majors,' ChevronTexaco, ExxonMobil, BP, Shell, and ConocoPhillips account for a total of 12.5% of total carbon emitted to the atmosphere with half of the emissions occurring since 1986.[6] This research is factual in its reporting of oil majors' significant contribution to the current atmospheric carbon problem.

ii. Carbon bubble:

Complementary research from the International Energy Association (IEA) projects that current fossil fuel reserves if produced and emitted in the future will far exceed the 2 degree Copenhagen limit. In fact, the IEA posits that in order to avoid catastrophic climate impacts, no more than one-third of current fossil fuel reserves can be burned.[vii] This future projection of a potential necessary limitation on fossil fuel reserve production has dire implication for the oil industry.

In 2011, the Carbon Tracker Initiative (CTI) picked up on this impending challenge with its report, "Unburnable Carbon: Are the world's financial markets carrying a carbon bubble?".[viii] CTI pioneered the idea of a 'carbon bubble' based on the Intergovernmental Panel on Climate Change's projection of a 'carbon budget,' the amount of carbon dioxide emissions permissible to emit into the atmosphere while still having a reasonable chance of meeting the 2 degree Copenhagen limit.[3] CTI argues that if the world must abide by the 2 degree limit, which scientists agree equates to a carbon budget of 886GtCO_2 (without widespread carbon capture and storage abatement technologies), then already by 2011 the world had burned through over a third of its available atmospheric carbon emissions allocation. This left a potential for 565GtCO_2 of further emissions. Complicating the picture more is the fact that all of the proven reserves of fossil fuels total an equivalent of 2,795 GtCO_2, vastly overshooting the global carbon budget. The top 100 listed coal and oil and gas companies alone represent total emissions of 745GtCO_2. The simple math which Bill McKibben calculated in his widely popular *Rolling Stone* article, "Global Warming's Terrifying New Math: Three simple numbers that add up to a global

catastrophe – and that make clear who the real enemy is," concludes that only 20% of valued reserves can be burned unabated, leaving up to 80% of assets technically unburnable.[ix]

It is this final word – unburnable – that has since driven much of the international conversation around the supposed carbon bubble. Coined 'unburnable carbon,'[x] these reserves of fossil fuels that cannot be burned in a 2 degree world pose serious economic risks.[xi] Companies in the coal, oil and gas sectors continue to seek to develop further unburnable resources each year; in 2012, such companies spent $674B to find and develop new fossil fuel resources.[10] However, there is growing concern in the financial sector that these assets might never make it to market.[xii] Impending climate legislation, decreasing coal and oil demand, increasing production costs, and renewable energy sources reaching price parity all pose serious risks to business as usual carbon-intensive companies.[xiii]

iii. Carbon asset risk:

The Carbon Tracker Initiative in conjunction with Ceres coined this potential economic catastrophe of unburnable carbon reserves precipitously losing their value 'carbon asset risk' (CAR).[xiv]

b. Justification for action:

i. Current need for action:

Under the International Energy Agency's 2 degree scenario, over 1,541GtCO_2 would have to be left underground, undeveloped.[xv] Economists have translated the value of those current assets that would never be brought to market at $6 trillion.[xvi] Complicating the situation further is the fact that those reserves have already been incorporated into the valuation of companies.[16] That means that unburnable carbon is currently being traded in stock markets around the world and has a direct, and potentially devastating effect, on shareholders.[xvii]

Markets fail when the full social costs of negative externalities are not accounted for in pricing mechanisms; carbon emissions are negative externalities that are currently not priced into the market.[xviii] This means that carbon-intensive products such as fossil fuels are incorrectly priced far below their actual cost to society.[xix] As carbon emissions increase globally with far-reaching devastating effects, it is paramount that a price is placed on carbon.[xx]

ii. Current action:

Investors lack adequate information to price carbon asset risk.[xxi] Current U.S. Securities and Exchange Commission (SEC), the primary agency responsible for enforcing and regulating

the nation's stock and options exchanges, lacks sufficient guidance on climate disclosure because the SEC neither requires quantitative reporting of emissions nor management of physical and legislative climate risks.[xxii] Similarly, the SEC insufficiently enforces responsible reporting; out of the 45,000 comment letters that the SEC sent to registrants since February 2010, only 23 addressed climate disclosure.[14] Without the realistic threat of SEC audits, the fossil fuel industry has no incentive to accurately report CAR estimates.[xxiii]

As a result, the market systematically overvalues the carbon-intensive assets of the fossil fuel industry.[xxiv] This information asymmetry generates two problems. First, the market faces the possibility of a carbon bubble by clearing at an inaccurately inflated price. Second, the environment suffers from an overconsumption of fossil fuels.

iii. Effects of current action:

Yet oil companies continue to invest billions of dollars each year in developing high-carbon, high-cost reserves that will not come on to the market for at least ten years. These projects' positive return on investment is premised on a high oil barrel price.[xxv] If a national or international price on carbon increases the cost of their production severely enough, the internalization of the carbon negative externality is likely to make numerous current and future low-return projects unprofitable, effectively 'stranding' these oil assets.[xxvi]

Such translation of carbon asset risk into stranded assets has only recently begun to be mentioned in traditional financial circles. Of the academic studies published on this subject, most have tried to evaluate oil companies' levels to stranded assets by focusing on company strategy related to extraction, production and refining site location; market-share; profitability; company nationality; and threats of entering parties.

III. Corporate case study proposal:

Royal Dutch Shell makes an excellent case study because it is among the larger fossil fuel companies and has created a department explicitly dedicated to managing the risk of climate and carbon. Royal Dutch Shell produces rigorous energy outlook reports, invests heavily in renewables, and recently opened one of the world's first economically-feasible carbon capture and storage (CCS) plants. But there remains much opportunity to improve Shell's carbon disclosure practices especially as they relate to financial reporting.

IV. Proposed action:

a. Description:

As of the February 2010 *Commission Guidance Regarding Disclosure Related to Climate Change*, the Securities and Exchange Commission requires that publicly traded companies disclose climate-related risks in their 10-K filings. Such risks include the physical impact of climate change and related legislative and regulatory developments. The *Guidance* does not require any new reporting of information but rather specifies that climate risks are indeed material and therefore must be incorporated in filings.

This proposal recommends that additional specification over disclosure requirements be included in a more stringent and enforceable SEC ruling on climate disclosure. Explicitly, carbon-intensive industries, including the energy industry to which Royal Dutch Shell would be included, should be mandated to disclose on capital expenditures and related risks so that investors can integrate climate risks into their investment strategies. Furthermore, the SEC should clarify what counts as material by specifying that carbon costs and understanding of systemic risks to industry from climate change are included in companies' assessments.

i. Justification

Regulation is the most effective mechanism for reducing investors' systemic climate risk through disclosure. Disclosure is the least obtrusive and most organic method for pricing climate risk into the market by information revelation. Since laggards will be incentivized to hide their underperformance, regulation enforced by the government will maintain an equal playing field that allows investors to allocate funding appropriately.

b. Actors:

The Securities and Exchange Commission Chair, Mary Jo White, should lead the charge.

i. Justification:

The SEC should champion climate risk reporting because their charter is to be responsible for enforcing, proposing, and regulating securities rules. The SEC has a three-part mission: to protect investors, manage markets, and facilitate capital growth. As the Chair of the SEC, Mary Jo White's job is to protect investors. Climate risk, proven as an unregulated material risk to investors, falls explicitly within the realm of her job description.

However, before hearing or acting on climate risk reporting, Mary Jo White would need support to counteract the pushback from players who would be acutely disadvantaged from any change from the status quo. Essentially White, as is the reality for any politically appointed official, requires a positive outcome from the cost-benefit analysis of expending political capital on this issue. Her job could be made easier and she would be more likely to act given the mobilization of support in favor of increased climate risk disclosure. This political environment is described below.

ii. Political environment:

Mary Jo White and the SEC are likely to act on increasing climate risk disclosure given a favorable political environment that minimizes legal or public relations pushback. Such an environment can be fostered by broadcast support from parties that would be affected by the regulation. This support has already begun to be mobilized through sign-on letters such as the "Inadequate Carbon Asset Risk Disclosure by Oil and Gas Companies" letter from Ceres Investor Network on Climate Risk to Mary Jo White. Institutional investors managing over $1.9 trillion signed on to the letter in agreement in April 2015. Clearly, the support from investors for increased disclosure has already been amassed. As for support from those players who would be most detrimentally affected by a change from the status quo towards increased disclosure, they too have demonstrated support, albeit for different reasoning. Carbon intensive industries like energy and utilities have begun to call for stable standards for reporting and carbon pricing. Their perspective is that carbon pricing is inevitable and climate change poses physical risk to assets, two challenges which leading energy and utilities companies already account for internally. These leaders hope to gain a competitive advantage by differentiating themselves from their lesser-prepared competitors through first mover advantage. Mary Jo White would be inclined to increase climate risk reporting requirements if she knew that the strongest historical opponents were actually in favor of the regulation. For that reason, standardized reporting on climate risk is sought by the strange pairing of investors who benefit from increased data on materiality and carbon intensive corporates who benefit from predictability. Such a political environment in favor of increased regulation from both affected parties lowers the barriers for the SEC to take action.

c. Implementation:

The SEC should amend the "Commission Guidance Regarding Disclosure Related to Climate Change" to require disclosure of quantified greenhouse gas emissions and reduction targets, discussion of climate governance and strategy, and companies' internal carbon price. The Commission has the authority to do so already; Securities Act Rule 408 requires that public companies disclose to the SEC ''such further material information, if any, as may be necessary.''[xxvii] Moreover, the SEC has explicit authority to strengthen existing disclosure requirements as they apply to climate change matters[6] without requiring a Congressional vote.

Further, the SEC should hire 2 full-time equivalent staff[xxviii] trained in climate finance[xxix] to generate approximately 3,000 comment letters per year enforcing adequate climate disclosure.

d. Immediate challenges

1. Hiring 2 FTEs trained in climate finance will increase the SEC's budget by $200,000/year.[xxx]
2. Increasing disclosure requirements will require all public companies to allocate more resources towards reporting.
3. Vulnerable companies with special interests[xxxi] will lobby against increased reporting requirements, likely citing proprietary information constraints. Conversely, investors representing over $34 trillion in assets under management support improved corporate climate disclosure.[xxxii]

V. Projected challenges:

a. Obstacle 1: Company participation

Disclosure is only effective if companies participate. Three years after the SEC required that companies inform investors of the risks that climate change poses to their business, almost 75 percent of the nation's publicly traded companies are ignoring the ruling. According to research by Lawrence Taylor and the Sustainability Accounting Standards Board, an analysis of annual reports of 3,895 U.S. public companies listed on major stock exchanges determined that only 27 percent mentioned "climate change" or "global warming" in their 2013 filing.

This simple keyword search surfaces a major challenge to the SEC's call for disclosure. Namely, companies are not taking seriously the requirement to include climate in material risk disclosure. Therefore companies are not participating. Without participation by companies,

investors are no better off than before the ruling and cannot incorporate climate risks into their investment decision-making process or engagements with company management.

b. Obstacle 2: Intentional and unintentional greenwashing

Even companies that adhere to the SEC requirements to incorporate material climate risk in reporting do not necessarily leave investors better informed. This is due to two reasons: intentional misreporting or lack of capacity.

First, the SEC climate risk disclosure requirements incentivize intentional misreporting or "greenwashing," deceptive marketing used to promote an unfounded perception of an organization's environmental friendliness. Company disclosure is used much like a report card at school to signal performance to investors. Stronger reported performance leads to higher valuation which favors managers who profit from increases in share price. Naturally managers are incentivized to paint an overly optimistic and green picture of companies' environmental risk management. Usually, reporting is kept in check by outside analysts and the SEC itself that maintains accuracy. Fines are levied against companies that misreport and shareholder confidence in the legitimacy of the rest of the firms' reporting plummets leading to sell offs and declining share price. Clearly inaccurate reporting and regulation violations have strong negative consequences which is why most companies understand that it is better not to cheat (note the recent Volkswagen scandal and near 50 percent decline in stock price.) However, when regulators do not enforce reporting and when external analysts cannot prove inaccuracy, the incentive for companies to not conflate performance is reduced. This is the current situation with SEC climate disclosure requirements. The SEC itself has not enforced reporting and external analysts have not succeeded in muckraking a proven example of misreporting. This is partly due to the fact that reporting is based off of new metrics that the industry has yet to fully develop a shared language around and also because the metrics are not completely quantitative or comparable.

Second, overly positive and non-material disclosure is apt to occur from the SEC mandate because companies, even with the right intentions, do not have the capacity or knowledge to include pertinent information in their filings. Many companies do not have the resources to hire or train an employee with environmental risk reporting expertise, a system for gathering data and internal reporting, or a sense of what is material to share with investors. In short, climate risk reporting is new and unknown. As a result, many companies tell stories or

share mission statements about their environmental practices which are hard to verify and even harder to disprove. The information that is disclosed to investors ends up being insignificant and fluffy, not pertinent to actual decision making and often seen as a waste of time.

c. Obstacle 3: SEC politicization slippery slope

As the slippery slope logical argument goes, one small step in a certain direction can lead to a much more significant chain of related events. The slippery slope argument could be used by opponents as a fear-mongering tactic to dissuade action by the SEC. Opponents would argue that if the SEC increased reporting requirements for climate risk, it would not have standing to deny increased regulation over other risks raised by concerned parties in the future.

This obstacle could be avoided by the important distinguishing fact that climate risk has been repeatedly proven to be a material risk. The SEC is duty-bound to protect investors through disclosure of material risks. By using research on materiality, the SEC can distinguish between legitimate and illegitimate requests for increased regulation.

At the same time, the SEC should be cautious about setting precedent for being battered by competing political groups. Motivated interests could turn on the SEC as the new battlefield for lobbyists seeking beneficial regulation or lack thereof. To avoid this risk, the SEC should make it clear that it does not create legislation but rather enforces as an independent regulatory agency with its head serving independently from Presidential appointments.

e. Obstacle 4: Lack of enforcement

A final obstacle to the success of SEC climate risk reporting standards is lack of enforceability or prosecution. The real strength of disclosure becomes evident when all parties must participate. Currently, voluntary disclosure is utilized by outperforming companies who seek to differentiate themselves through their superior performance. However, voluntary measures by definition do not mandate participation and thus underperforming companies are incentivized to not disclose their risks. When all parties participate, those seeking information can draw conclusions about leaders and laggards given performance in aggregate. Just as George Akerlof's paper "The Market for Lemons: Quality Uncertainty and the Market Mechanism" examined how information asymmetry between buyers and sellers led to adverse selection and eventually market collapse, information asymmetry (or perceived information asymmetry) between investors and public companies leads to misevaluation. Such systemic incorrect

valuation cannot be prevented by individual companies alone, hence why the SEC must mandate that all affected parties participate in accurate disclosure.

The first enforcement obstacle refers to the SEC's ability to administer compliance from all affected parties. The SEC can mandate that materially affected companies report on climate risk but this requirement will be ignored by disaffected parties unless there is an enforcement mechanism that tilts the cost-benefit analysis of compliance towards reporting. An example of such an enforcement tool is financial penalties or legal citations for reporting avoidance. Such enforcement mechanisms require staff time but could actually generate revenue through fines.

The second enforcement obstacle is a result of the first challenge. Some participating companies will be incentivized to inaccurately or incompletely report their actual climate risk. Given no penalty for inaccuracy, companies will become complacent and the information available to investors will be useless or worse, detrimental. This obstacle can be overcome by the SEC's verification of the accuracy of companies' reports. SEC staff trained in the subject matter could either spot check or respond to investors' requests for verification of company reporting accuracy. The SEC has authority to do so given its charter and responsibilities to protect investors and maintain the functionality of stock exchanges. As it does with enforcing participation, the SEC will need teeth to enforce accuracy of reporting. In this case, mere exposure of inaccuracy by the SEC should pose a financial incentive to companies since investors will pay a lower price for stocks with a damaged reputation that have been exposed as apt to misreport.

VI. Alternative actions:

a. Alternative 1: Department of Labor

Beyond mandating disclosure standards, an additional method for decreasing portfolio's climate risk is to require that government fiduciaries consider environmental, social, and governance factors in their pension fund investment decisions. This alternative route to reduced climate risk leverages demand as opposed to regulation to drive increased disclosure. By increasing the demand for high performing ESG stocks, pension funds can incentivize companies to report on ESG factors through a consumer-oriented approach. Pension funds are the strongest candidate for creating enough, or withholding enough, demand to change corporate reporting

behavior because of their enormous assets under management and government-influenced investment theses.

In fact this approach has recently been piloted. On October 22, 2015 the Department of Labor announced that pension fund fiduciaries should consider ESG factors in their investment decisions. In response to the new guidance issued for retirement plans covered by the Employee Retirement Income Security Act, Secretary of Labor Thomas E. Perez went one step further and explicitly stated that, "investing in the best interests of a retirement plan and in the growth of a community can go hand in hand." Through this action the Department of Labor influenced the allocation of $24.5 trillion in retirement and pension assets. However, demand-side, consumer-oriented initiatives often lack high standards of monitoring. Therefore, it could be expected that the Department of Labor's increased demand for ESG abiding firms results in greenwashing or low compliance.

b. Alternative 2: Attorney General

Enforcement for transparent climate risk disclosure could alternatively come from the U.S. Justice Department. Currently, Exxon Mobil is under investigation to determine whether the energy company properly informed its investors of the profit risks that might arise due to decreased demand for fossil fuels. In response to the New York Attorney General Eric Schneiderman's case against them, Exxon stated publically on its website that it "has included information about the business risk of climate change for many years in [its] 10-K, Corporate Citizenship Report and in other reports to shareholders." The case is to determine whether Exxon disclosed all material information to shareholders as soon as it understood them, especially during recent years.

The ramifications of this case echo far. If the Justice Department, the U.S.'s arbiter of the law, is taking on Exxon, the second largest public corporation in America, over climate disclosure, it is safe to say that climate disclosure is significant. It is also safe to say that competitors are taking note. However, improving disclosure through fear of investigation is only effective depending on how credible a threat companies deem public precedent-setting investigations.

c. Alternative 3: Voluntary disclosure

The initial initiative behind climate risk disclosure coalesced around organizations promoting voluntary disclosure. The leader of such initiative is CDP, formerly the Carbon

Disclosure Project, which seeks to augment the SEC's 10K reporting standard specific to climate risk. Using the same template as a 10K, CDP prompts public companies to respond to questions about direct and indirect quantified emissions, consideration of environmental policies, and carbon pricing among others. Although the number of participating companies has grown to over 2,000, voluntary disclosures will only remain appealing to leaders. Unless the voluntary disclosure movement grows to be so large that it looks egregiously suspicious to not participate, laggards will opt out. However, voluntary disclosure plays an instrumental role in standard setting and iterating on disclosure methodology. Another leading organization, The Sustainability Accounting Standards Board (SASB), seeks to do just that. SASB's mission is to develop and disseminate accounting standards for sustainability issues to help public corporations disclose material information to investors. Voluntary disclosure is an essential building block towards mandatory disclosure.

d. Alternative 4: Exchanges

Yet another link in the disclosure chain is exchanges. At a unique nexus between issuers and investors, stock exchanges play a unique role in shaping the sustainability of capital markets. Stock exchanges set the standards for the depth, consistency and comparability of corporate disclosure and some have begun to set minimal standards for sustainability disclosure as a prerequisite for companies to list. For example, The World Federation of Exchanges in November issued 34 material ESG metrics to include in disclosure guidance. Actions like this are significant because they set consistent and comparable standards across markets.

VII. Endnotes:

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[vi] Richard Heede, "Tracing anthropogenic carbon dioxide and methane emissions to fossil fuel and cement producers, 1854-2010," Journal of Climatic Change, V 122

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[xi] Oliver Tietjen and Michael Pahle, "Analyzing Investment Risks in Conventional and Renewable Energy Dominated Electricity Markets," *International Association for Energy Economics,* December 10, 2014

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[xiii] Ralph Cavanagh, Ashok Gupta, Dan Lashof, Marika Tatsutani, "Utilities and CO2 emissions: Who bears the risks of future regulation?," The Electricity Journal, Volume 6, Issue 2, March 1993

[xiv] "Cool Response: The SEC and Corporate Climate Change Reporting—SEC Climate Guidance & S&P 500 Reporting: 2010-2013," Ceres, February 2014, http://www.ceres.org/resources/reports/cool-response-the-sec-corporate-climate-change-reporting

[xv] Carbon Tracker Initiative, "Oil & Gas Majors: Fact Sheets," August 2014, http://www.carbontracker.org/wp-content/uploads/2014/09/CTI-Oil-Gas-Majors-Company-Factsheets-August-2014-EXEC-SUMMARY.pdf

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[xvi] Bloomberg Carbon Risk Valuation Tool, Bloomberg Professional, November 2013

[xvii] Bokenkamp, Karl, et al. "Hedging carbon risk: Protecting customers and shareholders from the financial risk associated with carbon dioxide emissions." *The Electricity Journal* 18.6 (2005): 11-24.

[xviii] Sheila Bonini and Steven Swartz, "Profits with purpose: How organizing for sustainability can benefit the bottom line," McKinsey & Company, 2014
and "Sustainable Capitalism," Generation Investment Management, February 2012

[xix] Skjaerseth and Skodvin, "Climate change and the oil industry: common problems, different strategies," Global Environmental Politics, Vol 1, 2001

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[xxi] Timo Busch and Volker Hoffmann, "Emerging carbon constraints for corporate risk management," Ecological Economics, Volume 62, May 15, 2007

[xxii] 17 C.F.R. § 211, 231, and 241 (2010 effective Feb. 8)

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[xxiv] Ben Caldecott and Jeremy McDaniels, "Financial Dynamics of the Environment: Risk, Impacts, and Barriers to Resilience," Working Paper for UNEP Inquiry into the Design of a Sustainable Financial System, July 14, 2014

[xxv] Levy and Kolk, "Strategic responses to global climate change: conflicting pressures on multinationals in the oil industry," Business Politics, 2002

[xxvi] Ben Caldecott and James Tilbury, "Stranded Assets and Scenarios," Christian Carey Discussion Paper, January 28, 2014

[xxvii] 17 C.F.R. § 230.408

[xxviii] Given that 73% of 3,895 U.S. public companies listed on major stock exchanges did not mentioned "climate change" or "global warming" in their 2013 filings. (According to "Most U.S. Companies Ignoring SEC Rule to Disclose Climate Risks," Hirji, InsiderClimate News, September 19, 2013, http://insideclimatenews.org/news/20130919/most-us-companies-ignoring-sec-rule-disclose-climate-risks?utm_source=feedburner&utm_medium=feed&utm_campaign=Feed%3A%20solvecli mate%2Fblog%20%28InsideClimate%20News%29&utm_content=Netvibes) at least 2,843 companies are in violation of withstanding SEC climate disclosure standards. Accounting

for .5 hour per comment letter and 1,680 annual hours per FTE, to generate at least 2,843 comment letters the SEC should hire 1 FTE. However, to engage laggardly companies through further responses, the SEC should hire an additional 1 FTE who will spend approximately 1 hour per comment letter conversation for roughly 1,420 companies.

[xxix] Most current SEC staff are not trained in climate risk nor do they have the capacity to keep up-to-date with the burgeoning field.

[xxx] Assuming that an individual trained in climate finance would be hired as a "highly trained accountant" at SK-13 with approximate annual salary of $100,000, hiring two climate finance employees full-time will cost $200,000 annually. (According to "Opportunities for Accountants with SEC," SEC, http://www.sec.gov/jobs/jobs_accountants.shtml)

[xxxi] Special interest industries include electric power generation, oil & gas, mining, transportation, real estate, manufacturing, insurance, agriculture, and apparel.

[xxxii] Principles for Responsible Investment (PRI) Initiative, Principle 6 number of signatories as of April 2013, http://www.unpri.org/about-pri/about-pri/