

Oil Companies and Sustainability: More than Just an Image?

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Abstract

This paper analyzes whether the three largest oil companies (BP, ExxonMobil, and Royal Dutch Shell) are backing up their increasingly “green” rhetoric by moving their businesses in a direction that promotes sustainability. Word count analysis from company annual reports, operational data, lobbying expenditures, and public company statements are used to explain what each company is saying and doing. The analysis suggests that despite minor differences in what each company says and does, which may be a result of different historical origins and the necessity to create different brands in a competitive industry, each company appears remarkably similar. To understand how oil companies can come to resemble one another, I consider external pressures such as government regulations, media coverage, advocacy campaigns, participation in trade associations, and uncertainty surrounding the role of new technologies. Particular attention is paid to how a singular disaster in one company can impact the entire industry. The conclusions address whether the observed behavior of the companies will result in more sustainable oil companies in the future, and whether we should expect them to act more green given the nature of their operations and constraints of the industry.

Introduction

Words and phrases like *green*, *sustainable*, *renewable*, and *environmentally conscious* may have clear meanings in certain contexts, but in others, their meanings and implications are complex. Companies in the oil industry have been including this type of language more frequently in their vision statements, descriptions of their operations, and marketing materials. Does this use of “green” buzzwords mean the companies are becoming more sustainable?

It seems like a paradox to try to describe a company that relies on the extraction of nonrenewable resources as green. Although oil companies have become interested in newer alternative sources of energy, oil and natural gas remain the foundation of most large, international oil companies. The finite availability of crude oil has long been recognized (although exact estimates of how finite these reserves are vary greatly), but the growing focus on sustainability and greenness in the oil industry is a fairly recent trend (USGS, 2000). As we will see, it is not always clear what “sustainable” and “green” mean for the business of an oil company.

The concept of sustainability has been defined as “meeting the needs of the present without compromising the ability of the future generations to meet their needs” (World Commission on Environment and Development, 1987). Oil companies do not often distinguish between their use of the phrases green, sustainable, environmentally conscious in a uniform way, but I will set forth distinctions here. For oil companies, the concept of sustainability as defined above is most appropriately used when evaluating their business strategy. For the purposes of this paper, *sustainability of a business*

concerns the degree to which they not only reduce negative impacts on the natural environment through their operations, but also invest in business practices that promote policies to make wide-reaching progress toward sustainable development. The operations of oil companies will also be examined for their impact on the surrounding environment. To distinguish from the above definition of sustainability, I will refer to environmentally conscious operations as *green operations*. Green operations are not necessarily sustainable in the long run, but minimizing the negative impact of operational processes is still environmentally conscious.

The Questions

My main question is what are oil companies (specifically BP, ExxonMobil, and Royal Dutch Shell) *saying* about sustainability issues and what are they *doing* in terms of sustainable business decisions? The main question of what oil companies say and do divides further into two parts. For this part we must compare the operations and products within each company and between companies. Company operations deal with energy usage necessary for operating refineries, emissions, and waste. The other subdivision is concerned with the sustainability of the products, which are oil, natural gas, and possible alternatives to fossil fuels. While the operations of oil companies may be green (minimizing emissions and waste), the companies are not necessarily sustainable in their product and business decisions, as they are asserting. Response to environmental disasters also relates to the sustainability of a business. I will examine the three largest private sector, international oil companies; each is publicly traded so much information is available. I chose these oil companies because their immense size and scope are of great consequence worldwide.

The Messages

Companies shape what they say about themselves and create a public image in marketing campaigns. With choice language, they frame a message to be received by consumers. These images and language may or may not reflect what the companies actually do. Separating what they say from what they do requires analysis of data that reflect company actions. Their public statements are also a reflection of what they do and a close read is necessary to discern what is encompassed in the message. Recent campaigns by oil companies have focused on the aspects of their business that are not oil extraction and refining, such as research and development, renewable energy products, and community involvement. Many oil companies, including the three examined here, have been accused of “greenwashing” in their marketing campaigns (Pulver, 2007). Jay Westerveld, a New York environmentalist, coined greenwashing in a 1986 essay, referring to deceptive use of marketing where companies disingenuously spin their products and policies as environmentally friendly (Sullivan, 2009). In order to counter negative perceptions of Big Oil, these companies are focusing more and more on the environmentally conscious aspects of their strategies. I will examine whether the companies’ investments and behavior are signaling a real shift in the business or whether they are merely paying lip service to a general emerging awareness of sustainability issues.

Oil companies and renewable energy sources

Part of oil companies’ strategies to make their business more sustainable is to invest in renewable energy sources. Renewable energy is energy generated from natural

sources such as sunlight, wind, rain, tides, and geothermal heat, which are naturally replenished (Renewable Energy Policy Network Global Status Report, 2009). While the production and use of these energy sources minimize adverse impacts on the environment, significant barriers exist to oil companies becoming serious players in renewable energy. Currently, renewable energy sources could not provide enough energy for even a small fraction of the energy demand (Renewable Energy Policy Network Global Status Report, 2009). Additionally, oil companies' investments in these sources would not prove profitable in the short or medium term because of large sunk costs in current methods of operation. Overall, oil companies have been making increasing investments, both in amount of money and diversity of portfolio, in renewable energy sources. However, the implications of these investments are unclear.

Overview of the oil industry

We need to understand the essential structure of the oil business to understand what oil companies are saying and doing. The oil industry is divided broadly into three parts: upstream, midstream, and downstream. The upstream comprises exploration and production. The midstream is the distribution system, consisting of tankers and pipelines that carry crude oil to refineries. The downstream includes refining, marketing, and retail distribution, through gasoline stations and convenience stores. Companies that operate upstream and downstream activities, such as the companies examined in this paper, are considered integrated (Yergin, 2008). Although state-controlled national oil and gas companies account for around three-quarters of the world's oil production, private sector companies rank in the top 10 among the world's oil companies, and rank in the top 10 of all corporations (Yergin, 2008).

Companies with different historical roots

In seeking to understand what the oil companies are saying and doing, we cannot generalize from one company's data to the entire industry. Even though the fundamental business of each oil company is essentially the same, their perspectives on sustainability issues may in part be shaped by their different historical origins. Each company originated in a different country and has a long history of mergers, acquisitions, and other transformations. These differences likely shape the corporate structure, values, and sustainability strategies of each company. For example, although the company that is now referred to as ExxonMobil has undergone many transformations in the past 100 years, most recently a merger between Exxon and Mobil in 1999, it is a direct descendant of John D. Rockefeller's Standard Oil company, founded in 1870 (Yergin, 2008). ExxonMobil is the only supermajor oil company in the world whose historical roots trace back to the United States of America (Yergin, 2008). BP has also undergone many transformations in the past century, beginning with historical roots in the United Kingdom, where its global headquarters still reside in the City of Westminster, London, UK (Yergin, 2008). The BP we know today is the result of a 2000 merger of British Petroleum, Amoco and Arco. Royal Dutch Shell's historical roots trace back to companies originating in Great Britain and the Netherlands: the Royal Dutch Petroleum Company (founded in 1890 in the Netherlands), and "Shell" Trading and Transport Company (founded in Great Britain in 1897) (Yergin, 2008). Currently, Royal Dutch Shell headquarters are in The Hague, the Netherlands.

Materials and Methods

Data Collection

I am exploring the question of what are oil companies *saying* versus *doing* regarding issues of sustainability and greenness. The data for this analysis came from the companies' annual reports and from other public data, cited below as they arise. To answer the question of what oil companies are *saying* I gathered quantitative data from summary annual reports and sustainability reports. I analyzed the sustainability-related words the companies used in the text of what they said about themselves. For this purpose, I defined categories of sustainability-related words and calculated the rate at which each word-group occurred in the companies' annual reports from 2000-2008 (See Appendix 3). The definition of these word categories is described below. I did the word analysis by copying text and pasting it into a Microsoft Word document, used the Microsoft Word word-count feature, and tabulated the data with Microsoft Excel. The underlying assumption of this analysis is that the relative frequency of the sustainability-related words that the companies use to describe themselves reflects the importance they attach to the concepts embodied in the words. The important point of comparison was the relative frequency of words within each company's reports, not the comparison of word rates across companies. I stripped the reports of prepositions, articles, and connecting words to get a better read of the prevalence of sustainability-related words in relation to the rest of the substance of the reports. Some adjustments were needed to make sure the studied words were used in a relevant context to answer the question. For example, "responsibility" has many meanings so the word was only counted in contexts where it referred to environmental responsibility. I selected word categories that were

representative of sustainability issues. The words were relevant to oil companies, but rates for the same words could also be analyzed to measure sustainability in another industry. See appendix 1 for the breakdown of word categories measured. Data were also collected from the companies' marketing literature as a measure of what they are saying, under the assumption that what they say to the public is a reflection of their core corporate message.

To answer the question of what are the companies *doing*, I determined different metrics to measure the greenness of operations versus the sustainability of the business. The metrics for which I gathered data on greenness of operations include emissions of carbon dioxide (CO₂), sulfur dioxide (SO₂), and various oxides of nitrogen (NO_x). In recognition that the absolute amount of emissions is directly related to the size of the company, data were normalized to account for differences in company size. For example, millions of tons of CO₂ emissions were divided by the total barrels of oil equivalent produced (BOE) for each year.

I used annual reports and publicly available literature to gather data to measure what the companies are doing with respect to a sustainable product. I gathered information on how much money each company has been investing in the alternative energy sector of their business and what type of renewable energy they are investing in. Oil companies do not report these expenditures in a standardized way, so data are presented as they are reported. I also gathered information on how much each company spent on lobbying expenditures over time as a measure of their efforts to affect policy decisions. I gathered these data on expenditures under the assumption that where corporations invest their earnings is a reflection of their present and future business

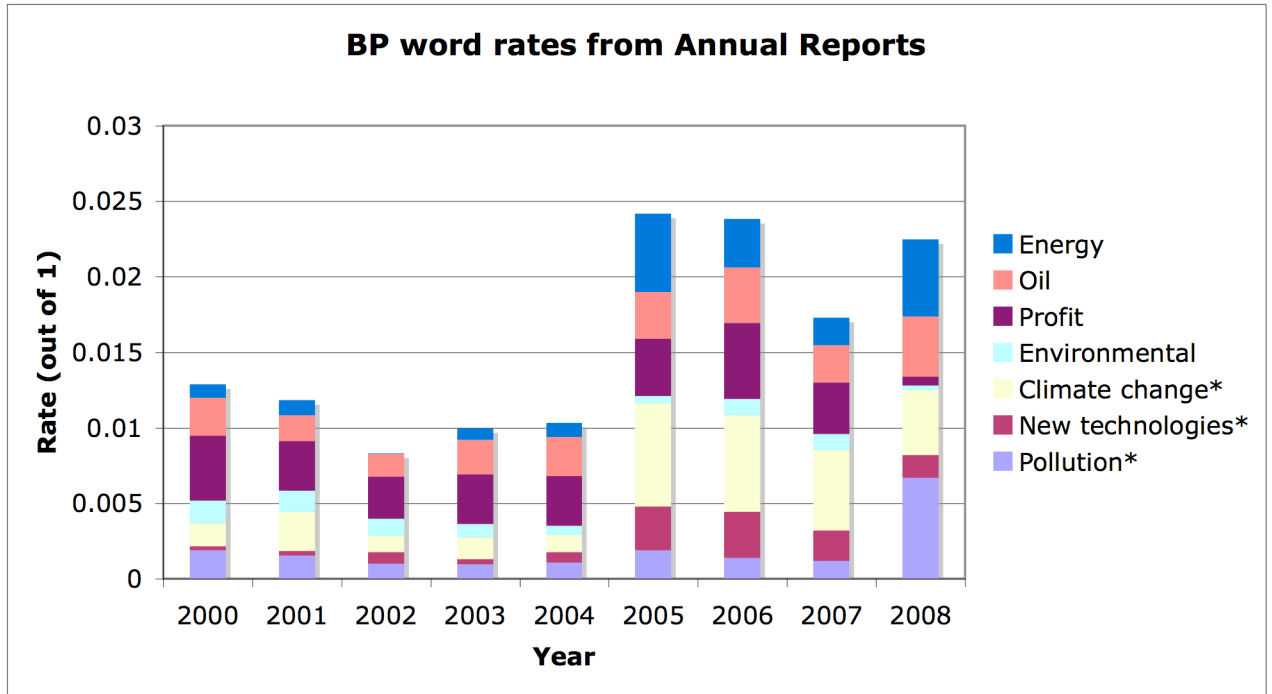
strategy. I also gathered qualitative data on ExxonMobil's response to an environmental accident, the Exxon Valdez oil spill. These results are presented for ExxonMobil as a representation of the impact that an environmental accident, and most importantly a company's response, can have on the entire oil industry. Other oil companies have experienced accidents and have responded in their own way, although these disasters and responses are not examined here. All of these accidents have impacted public perception of the oil industry.

Results

The results are presented graphically below. The first set of results focus on the question of what each company is saying. These data are captured in word frequencies, meaning the rate at which each word occurs as a proportion of the total words counted in the annual report. The vertical axis for each of the environmental language graphs represents this rate as a proportion of the whole report. Following data on what each company is saying I present data on what each company has actually done.

What each company has been saying with respect to green operations and sustainability of product

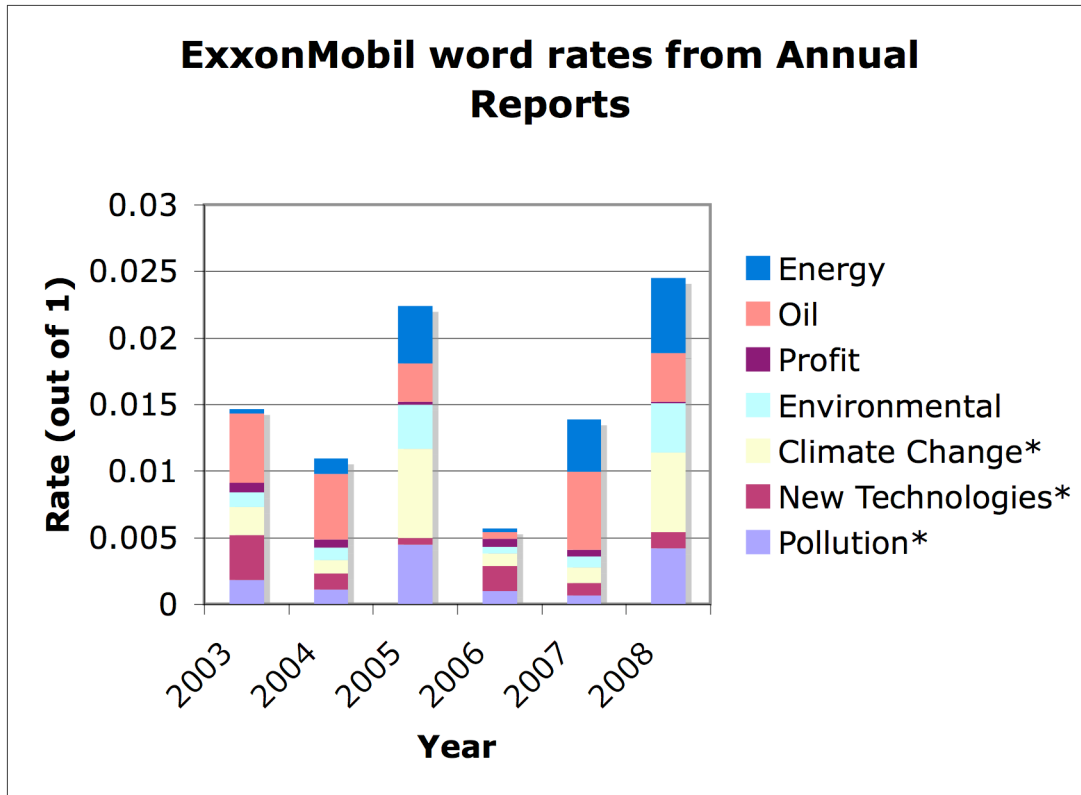
Environmental language in Annual Reports



(Data from entire BP annual reports, 2000-2008)

Figure 1.1

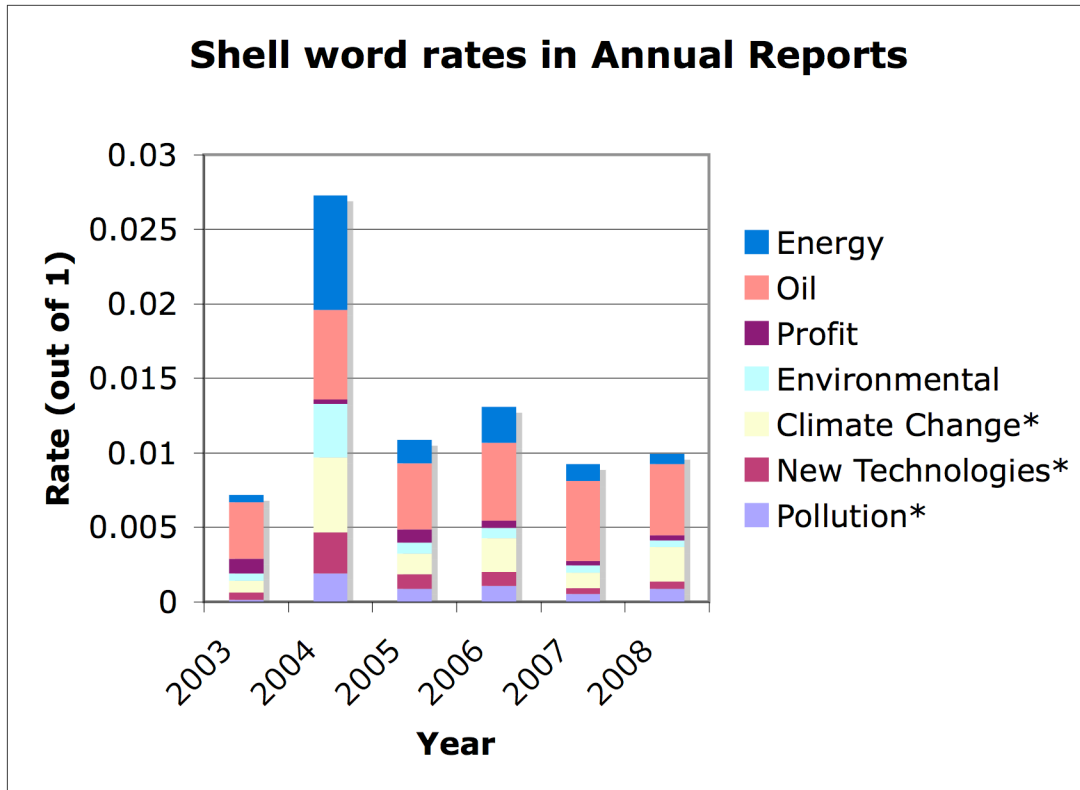
Stacking the rates gives a sense for the overall presence over time of these eight word groups together. The trend of selected word presence for BP is relatively flat from 2000-2004. In 2005, the cumulative presence of selected words increases, and again maintains a fairly consistent level through 2008. Prior to 2005, BP talks about “oil” more than “energy” and in 2005, energy and oil occur with about the same frequency. The most visible change over time is the increase in the presence of words directly relating to climate change beginning in 2005. This change corresponds with an increase in words relating to new technologies and pollution, which remain prominent to the present. It is interesting to note that the single word “profit” occurs at a much greater frequency than almost any groups of words until 2008, when the word profit almost disappears. In 2008, “pollution” outnumbers all other selected words.



(Data from entire ExxonMobil annual reports, 2003-2008)

Figure 1.2

The trends in the presence of selected language for ExxonMobil are not consistent over time. The most noticeable trend for ExxonMobil from 2003-2008 is the infrequency of the word “profit” as compared to sustainability-related words. The word “oil” is mentioned at least double that of other select words, except in 2006 and 2008. In 2006, the presence of all of the sustainability-related words dropped dramatically. “Energy” is scarcely mentioned until 2005, when its presence becomes relatively equal to that of the word “oil.” The frequency of climate change related words increases sharply in 2005 and 2008; this departure from the usual trend requires explanation. The word groups referring to “new technologies” and “pollution” alternate in their prevalence from year to year, which is notable.



(Data from entire Royal Dutch Shell annual reports, 2003-2008)

Figure 1.3

Figure 1.3 demonstrates a relatively constant trend in selected word rates from Royal Dutch Shell’s annual reports each year, except for the year 2004. The sharp increase in the percentage of sustainability-related words in 2004 coincided with the publication of Shell’s first sustainability report. In 2004, the mention of “energy” exceeded the mention of “oil” for the only time in the six years. Each year, Royal Dutch Shell mentions the single word “oil” as much, if not more, than all of the sustainability-related words combined. Shell mentions the word “profit” much less from year to year than most of the other words. “Pollution,” “new technologies,” and “climate change” are present at fairly constant rates from year to year.

Alternative energy strategies

Here I present information from company websites and publications regarding their commitments to renewable energy investment. This information is not readily presented in a quantitative way, but the statements capture the companies' positions.

BP recently released a statement highlighting the company's commitment to growing a focused portfolio of low-carbon businesses comprised of US onshore wind power, biofuels, solar power and carbon capture and sequestration ("Strategy Presentation," 2010). Their reasoning for investing in alternative energy sources is as follows: "Our diverse energy portfolio reflects the world's need to source energy from many different substances, regions and technologies and is underpinned by our resource base, which is biased to conventional hydrocarbons" ("Strategy Presentation," 2010). BP comments on the role of public policy in the future of alternative energy: "Investments in energy are long-term in nature. We believe that if policy-makers provide appropriate frameworks and businesses make the necessary investments, our industry will be able to provide the diverse and affordable energy needed by consumers in the future" ("Strategy Presentation," 2010).

ExxonMobil takes a different approach to describing their non-oil business, mainly focusing on breakthrough technologies that will "make more energy supplies available to keep pace with a rapidly rising global energy demand, while also reducing the environmental footprint of energy development" ("Climate Change," 2010). They emphasize how technology is important both for managing greenhouse gas emissions and gathering oil and gas resources located in challenging environments. ExxonMobil

projects that oil, gas, and coal will meet close to 80% of global energy demand through 2030 (“The Outlook for Energy,” 2010). The same projections have wind, solar and biofuels growing at the fastest rate for all fuel sources, at an annual rate of 9.3%. These projections are at the heart of their communications strategy to “reduce greenhouse gas emissions in our operations and support research into technology breakthroughs.” (“The Outlook for Energy,” 2010).

Royal Dutch Shell’s approach to discussing alternative energy focuses on the need for a combination of non-fossil fuel sources to supplement fossil fuels, and the importance of collaboration to develop and implement technologies. Their website states:

“Fossil fuels are likely to remain the world’s main energy source for many decades to come. At the same time a diverse energy mix is needed to meet growing demand. We are using technology to help create viable and sustainable alternatives for fuel and power in areas including wind, biomass and hydrogen. We partner with other companies to benefit from shared know-how” (“Alternative Energy – Innovation,” 2010).

Fairly equal attention is paid to renewables (specifically solar, wind and biofuels), nuclear, coal, and oil and natural gas from difficult-to-reach locations or unconventional sources like oil sands. Descriptions of Royal Dutch Shell’s investments in alternative energy sources relate directly to their commitment to meet the “energy challenge,” rather than explicitly discussing the reduction of carbon emissions. While many of their projects seek to reduce emissions of CO₂, they are also involved in carbon capture and storage demonstration projects to research, develop, and test the technologies to process and capture CO₂ and store it in a safe way underground (“Alternative Energy – Innovation,” 2010).

What each company has been doing

I now present data that show what the companies are actually doing with respect to green operations and sustainability of product and business. I have selected two metrics for measuring greenness of operations: production and emissions. Data for all operational data come from the following sources unless otherwise noted: “Air Emissions” – Exxon, “Environmental HSE Charting Tools” – BP, “Interactive Environmental Data Charts” – Shell Global. The metrics for sustainability of product and business are investment in renewable energy sources and spending on lobbying. Sources for those data will be cited as they arise.

Greenness of Operations

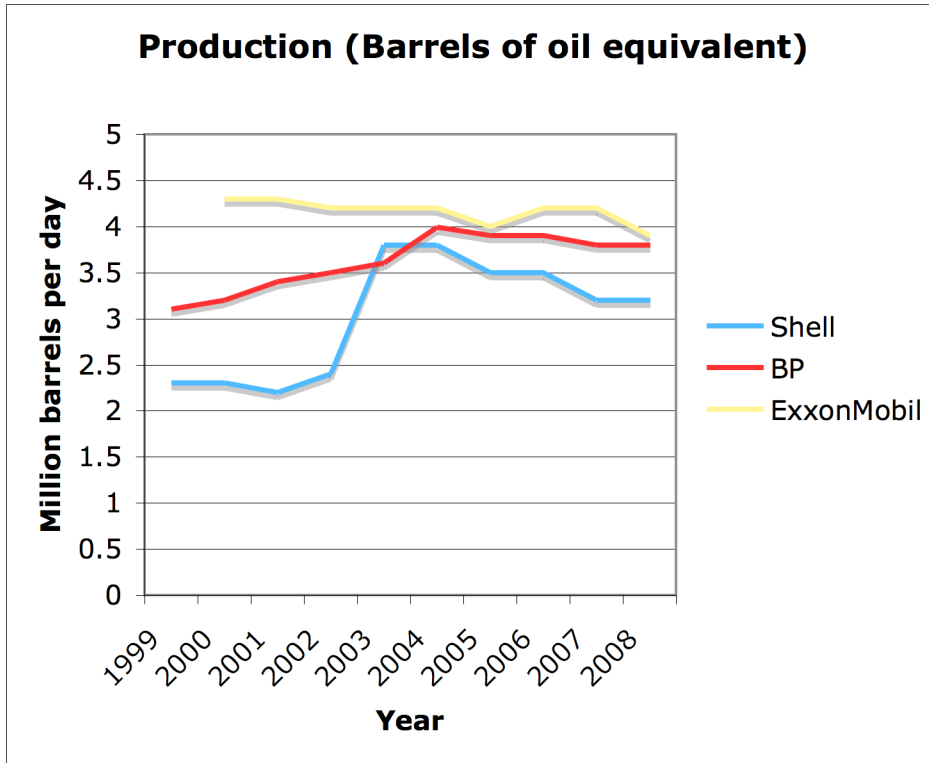


Figure 2.1

Barrels of oil equivalent (BOE) is the measure used by all of the oil companies as the official measure of their yearly production. BOE is a unit of energy based on the approximate energy released by burning one barrel (42 US gallons) of crude oil (USGS, 2000). The value is approximate because various grades of oil have slightly different heating values (USGS, 2000). BOE production per day is used to report business growth, especially of interest to investors. Greater production in BOE indicates overall growth in the company. BP has grown slowly and steadily for the past 10 years, while ExxonMobil has maintained a relatively constant size, with a slight drop in BOE in the past couple of years. Shell's total production remained largely constant until a dramatic increase in 2003, and has since decreased slightly in its total production.

Figure 2.2 and 2.3 are for data that all three companies report and that have relatively standard measures.

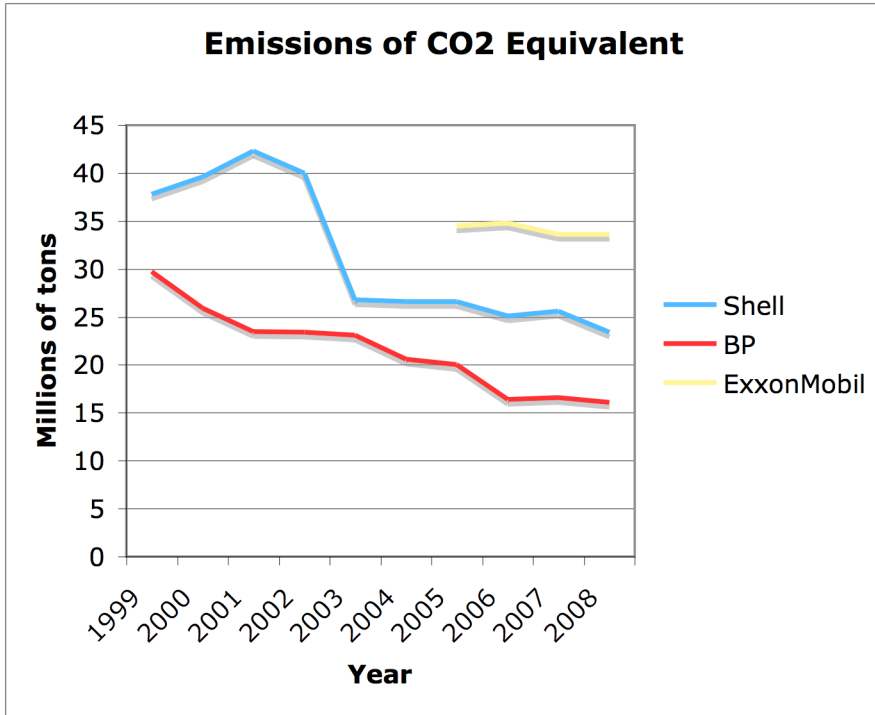


Figure 2.2

The emissions represented in this figure come from company operations. The majority of company operations relevant to reporting include the running of distillation operations and other aspects of the refining process. We see that each company has taken measures to reduce CO2 equivalent emissions each year. Data preceding 2005 were not available for ExxonMobil, but the graph shows that in the past 4 years, ExxonMobil's emissions have been significantly greater than Shell or BP. The trend for Royal Dutch Shell is the most unusual, and calls for an explanation.

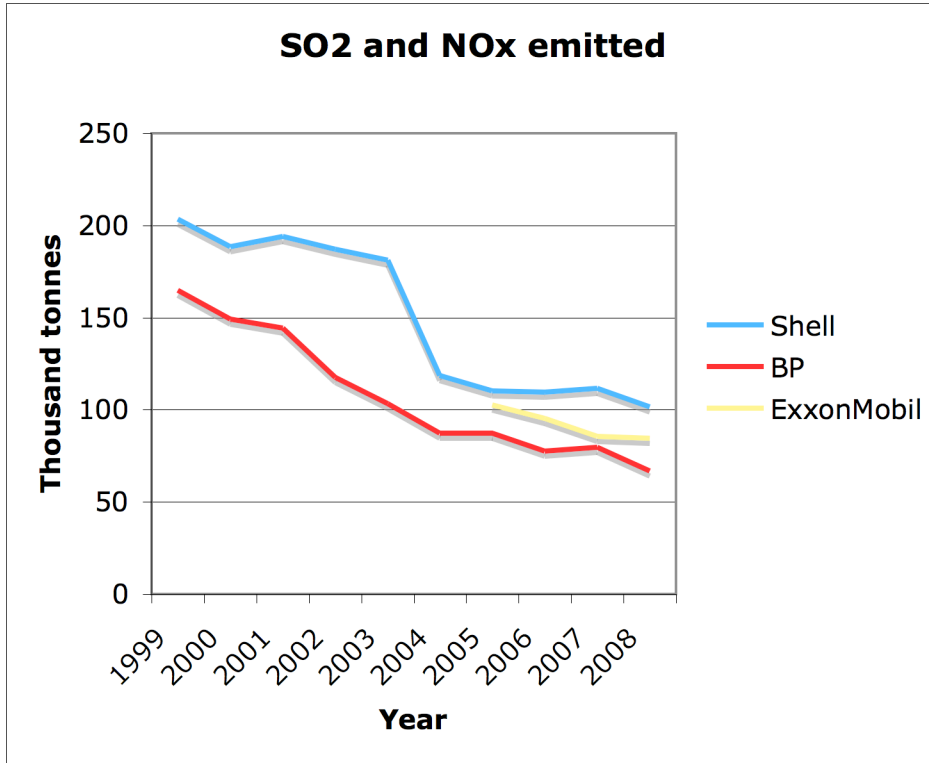


Figure 2.3

The emissions for SO₂ and NO_x gases have decreased consistently for each company over time. NO_x emissions come from the combustion of natural gas, and SO₂ emissions reported here most likely come from trace amounts of sulfur in natural gas used to fire distillation equipment. Data were not available for ExxonMobil before 2005, but their reduction in emissions since that time follows the same trend as the other companies. Royal Dutch Shell's trend in emissions is the most unusual. Data are adjusted for differences in company size, so the different levels of emissions beg an explanation.

Sustainability of business and product

I now present data on what each company is actually doing to make a more sustainable product and business.

Investments in Renewable Energy

The data on how companies are investing in renewable energy sources are not reported in a uniform way for each company. I present both qualitative and quantitative data to capture how each company is investing to make a more sustainable business. While expenditures are not reported in an easily comparable way, they nonetheless paint an important picture of the new investments by these oil companies. I also include data on oil companies' earnings in relation to other industries. These data are relevant when considering the scale at which the companies are investing in technologies that are not a part of their core, profitable business.

BP:

BP invested \$1.3 billion in their portfolio of low-carbon businesses in 2008, with a cumulative total of more than \$4 billion in investment since 2006. BP does not describe how much of the investments are for research and implementation of new technologies, versus the purchase of already existing companies that may or may not be making successful investments in renewable energy sources. (Data from BP annual report, 2009)

ExxonMobil:

ExxonMobil reported that in 2008, their worldwide environmental expenditures totaled about \$5.2 billion. This included \$2.5 billion in capital expenditure and about \$2.7 billion in operating expense. Fines and settlements paid in 2008 represented about one-quarter of one percent of their total environmental expenditures. The company is also investing more than \$100 million in a test facility to develop carbon capture and storage technology. (Data from: "Regulatory and Compliance Expenditures," 2010)

Royal Dutch Shell:

Shell’s scenarios for a “New Energy Future” highlight the need for many renewable energy sources. They report investing in wind projects and biofuels. They are working on advanced biofuels from sources such as straw and algae. They are also investing in testing technologies to capture CO2 and store it underground. Shell’s available financial data is labeled as “research and development expenditures.” Following is a chart of Royal Dutch Shell’s research and development expenditures from 2004-2008. (Data from Royal Dutch Shell annual report, 2008).

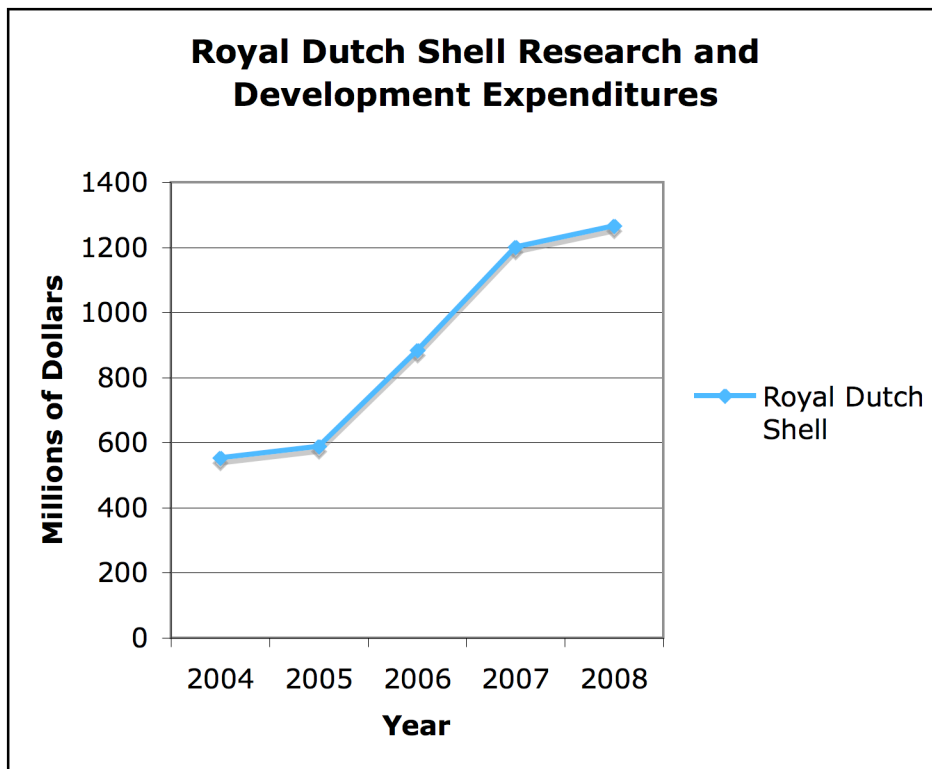


Figure 3.1

This chart demonstrates Royal Dutch Shell’s increasing investments in research and development, which is not defined more specifically in the report.



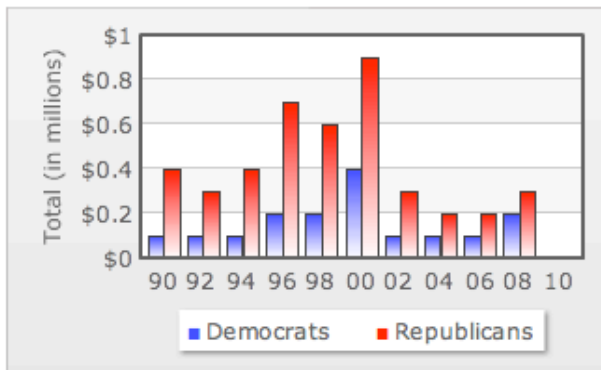
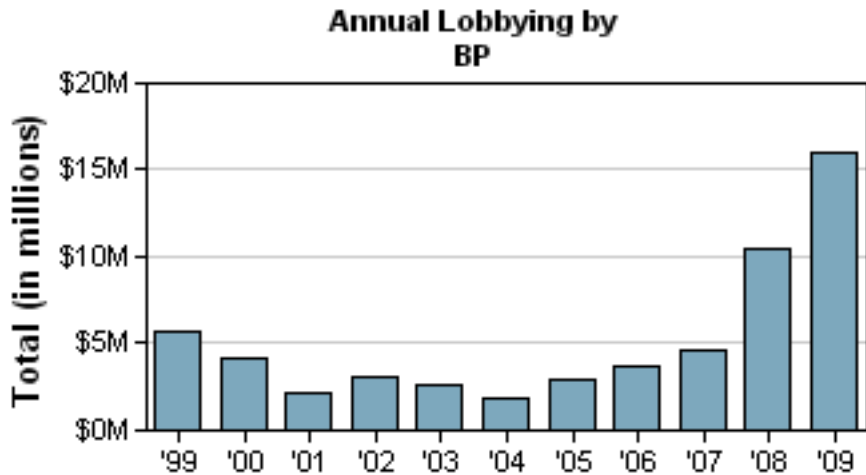
Figure 3.2

This chart demonstrates how the oil and natural gas industry reported less earnings in 2009 than the average of all manufacturing industries (“Industry Earnings,” 2010). Compared to other industries, the percentage profit of oil companies is not outrageous. They generate a lot of money from a large amount of sales, but they also have high costs that off-set earnings.

Lobbying Efforts of Each Company

Companies in the oil and gas industry comprise the sixth highest industry in terms of money spent on lobbying in the United States each year, ranking below the pharmaceutical, insurance, electric utilities, computers, and business associations industries (“Lobbying Top Spenders,” 2010). While each of the companies examined in

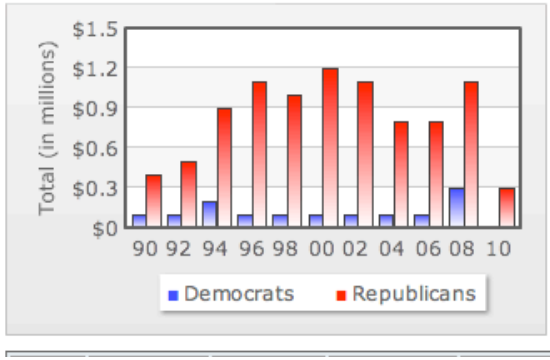
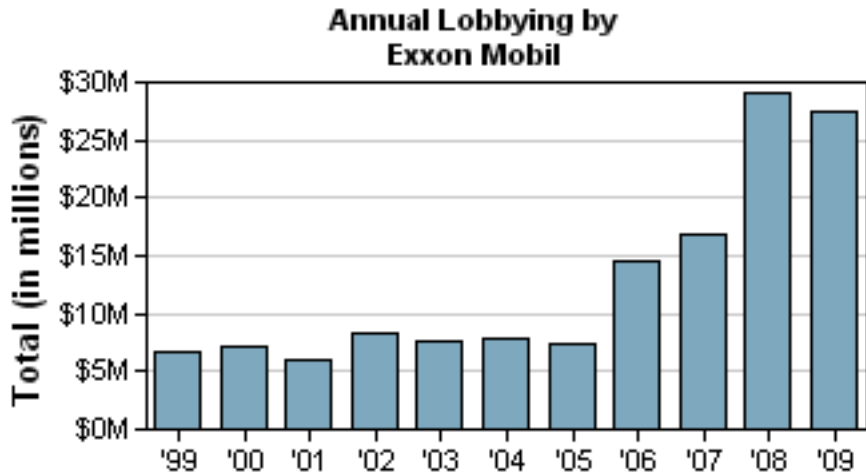
this paper has spent tens of millions of lobbying dollars in the past 10 years, ExxonMobil is the ninth highest spender in the United States in the past 10 years (“Lobbying Spending Database-Exxon Mobil,” 2009). Other top 10 highest spenders include the US Chamber of Commerce, American Medical Association, and General Electric (“Lobbying Top Spenders,” 2010). Royal Dutch Shell has spent significantly less than BP and ExxonMobil in the past 10 years, with each company spending an increasing amount of money since 2006. BP and ExxonMobil also tend to contribute significantly more to Republicans than to Democrats (data not available for Royal Dutch Shell). I offer possible implications of these spending patterns in the discussion.



Data from “Lobbying Spending Database – BP,” 2010.

Figure 4.1

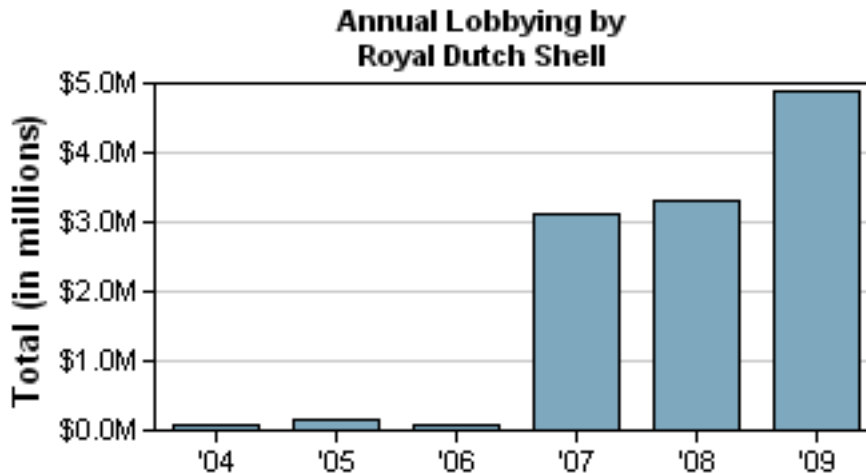
Since 1999, BP’s annual lobbying spending remained steady until increasing dramatically in 2008. Over the past 20 years, BP has consistently contributed more money to Republicans than Democrats. The disparity was largest from 1996-2000. Overall contributions to Democrats and Republicans spiked in that period, which is an interesting trend. After that time, contributions to Democrats and Republicans were lesser overall.



Data from “Lobbying Spending Database – Exxon Mobil,” 2010.

Figure 4.2

ExxonMobil has consistently spent more money on annual lobbying than both BP and Royal Dutch Shell. From 1999-2005, ExxonMobil’s trend in lobbying expenditures was relatively flat. Spending increased greatly in 2006, and the trend has continued to increase. In 2008 and 2009, ExxonMobil’s spending spiked, which is noteworthy. The gap between ExxonMobil’s expenditures to Republicans over Democrats is consistently large. ExxonMobil has never paid more money to Democrats than Republicans.



Data from “Lobbying Spending Database – Royal Dutch Shell,” 2010.

Figure 4.3

Royal Dutch Shell’s lobbying expenditures were almost non-existent from 2004-2006. They increased dramatically in 2007, and continued to increase. Data were not available for pre-2004 expenditures or for spending to Republicans and Democrats.

Discussion

What each company is saying with respect to greenness of operations and sustainability of business

I will begin with a discussion of the word analysis from the annual reports. The importance of what each company is saying is in the trends rather than the absolute values. The relative word frequencies in annual reports must be analyzed delicately. While this analysis operates under the assumption that the relative frequency of word prevalence is directly related to the importance that companies place in the concepts behind the words, I recognize that some anomalies may have resulted from a repetitive

writing style of different authors in certain years, and there is no direct way to correct for this.

Analysis of word rates in annual reports for each company

BP

While selected words amounted to a small overall presence as a proportion of annual reports for each company, important trends point to the similarities and differences among companies' marketing language. John Browne, former CEO of BP, announced in 1997 that BP would support international greenhouse gas regulation before any other supermajor followed suit (Pulver, 2007). Since the 1990s, BP has also built an increasingly diverse energy portfolio, which corresponds to their high mention of "energy" compared to "oil" (www.bp.com). While BP demonstrated leadership in publicly acknowledging sustainability and climate change-related issues, this does not prove that they have been moving their entire business in a more environmentally friendly direction. The presence of words explicitly referencing climate change and pollution further demonstrates BP's awareness of the emerging issues, but not necessarily their adopting a course of action. However, the presence of the words does not tell us whether they are concerned with the environmental problems associated with the words or aware that they should be mentioning them to paint a green image. BP's consistently high mention of "profit" demonstrates that while sustainability issues may seem increasingly important to BP, the importance of their financial accountability to shareholders drives business. BP was the first of the three companies to publish an Environmental Report in

1998. It is unclear whether this had a measurable effect on the content of the summary annual reports, but the long time publication of a document dedicated to environmental and sustainability issues reflects the value BP has consistently placed on making this type of information publicly available.

Royal Dutch Shell

Royal Dutch Shell made minimal mention of sustainability-related language in its annual reports until 2004. The increase in words relating to climate change, new technology, and pollution coincided with the first publication of their Sustainability Report. This dramatic increase in focus on sustainability and environmental issues indicates an intentional shift in the company's marketing strategy. In 2005, both BP and ExxonMobil demonstrated sharp rises in the presence of sustainability-related language, perhaps in response to the preceding shift by Royal Dutch Shell. Explanations for these shifts in the mid-2000s are beyond the scope of this paper, but may correspond to market pressures or opportunities, pending government regulation, stakeholder pressure, or change in company leadership. The steady presence of "pollution," "new technologies," and "climate change" related words in Royal Dutch Shell annual reports corresponds with their relatively unchanging stance on environmental issues in the past 10 years. Their consistent mention of "oil" over "energy" also reflects their commitment to focus the majority of their business on oil and natural gas, while still investing in alternative sources of energy.

ExxonMobil

The core of ExxonMobil's message regarding greenness and sustainable business on its website and other materials centers on technology investment. The low mention of

“new technologies” in annual reports does not reflect this focus. ExxonMobil has also been subject to intense criticism about its past stands refuting science supporting climate change and resisting investments in renewable energy sources (Greenpeace/”ExxonSecrets”). Comparing its word rate trends to those of BP and Royal Dutch Shell, the different stance ExxonMobil took on climate change is not evident. ExxonMobil mentions “energy” at comparable frequency to “oil” after 2004. This trend in language is similar to that of the other companies, and may represent a shift in rhetoric priorities. ExxonMobil mentions “profit” at consistently low rates, which would indicate that they take for granted, without explicitly saying so, that earnings drive the business.

Despite minor differences in language trends in annual reports, we do not see as much overall difference between companies as we might expect. These three companies are competitors in the same industry, yet they shape their annual report language much in the same way, and perhaps in response to one another. In order to determine how closely related what companies say is to what they do, we will now turn to the website as a source of marketing. Companies use their websites to describe their alternative energy strategies, which were presented as a measure of what they are saying.

While each company explains its specific investments in alternatives to fossil fuel sources, their own perspectives on the emerging role of sustainability have distinct tones. The content of each of their self-described sustainability strategies is remarkably similar, and the difference in tone contributes to the distinct brand of each company. While each company operates in over 100 countries, one of their larger markets is the United States, and federal and state policy and regulations are accordingly important to business strategy. Each company makes public statements regarding the role of policy in the

future of alternative energy, and each places great importance on the role of future policy. This is not surprising considering the active lobbying efforts of each company each year. While their language is vague when discussing specific aspects of issues, publicly available information detailing monetary investments is a more powerful indicator of true interests than public statements.

What each company has been doing

Greenness of Operations

I focus next on what each company is doing. I do not attempt to analyze the absolute values of the operational data, or describe the global climate change implications of a certain amount of CO₂ emissions. Rather, the trends for each company are important for drawing conclusions within the scope of this paper. We see from the figures that each of the three companies exhibits trends in decreasing emissions while increasing production. Yet another class of data, not presented here, are measures that the companies determine themselves and do not fully define, potentially in an attempt to produce environmentally friendly-looking figures. Examples include “external perception of environmental performance” and “environmental expenditures” (ExxonMobil and Royal Dutch Shell sustainability reports, 2008).

While the majority of CO₂ emissions from oil result from the burning of fuel in motor vehicles, each company does not report the emissions from their consumers’ behaviors. Providing means for consumers to reduce their carbon footprint fall under the scope of sustainable business, and oil companies choose instead to report CO₂ emissions from their operations. Laws require them to report operational emissions, while they are

not required to encourage customers to use less fuel or more fuel-efficient vehicles (“Greenhouse Gas,” 2010). Although Royal Dutch Shell’s trend is not as consistent as BP and ExxonMobil’s, each company reduces their emissions of CO₂, NO_x, and SO₂ over time. While this is beneficial to the environment, improving the efficiency of their operations is not only advantageous to the company’s image, but also benefits them financially. Improving each stage of the production process will benefit the company financially and ensure adherence to present and possibly even future regulations.

Sustainability of product and business

I focus next on what each company is doing with respect to investing in a sustainable product and business strategy. Data are hard to compare, but I will examine what I have presented. A question that arises is whether oil companies are investing in renewable sources of energy on a large enough scale to ensure sustainable development. This is difficult to answer because oil companies’ investments in alternative energy sources may seem a drop in the bucket compared to their overall business, but they may be significant enough to spur growth in the relatively new renewable energy industry. An additional question is whether it is reasonable for the oil companies to increase these investments when this strategy may disrupt their current business model. The oil companies’ increasing BOE production is a pattern we would expect to see for a company operating to produce a profit and stay in business. The profit of big oil companies is often discussed as a way to assert the “obscene” or “irresponsible” operation of Big Oil (Mouawad, 2010). However, profits of big oil companies do not appear far out of the normal range for manufacturing industries when compared to return on sales, as presented in the results section. The oil industry operates on a massive scale,

leading not only to high revenue, but also high costs for the companies. The oil companies may need to make significantly higher investments in renewable energy sources to truly make their businesses more sustainable, but that does not mean their current investments are entirely irresponsible.

The implications of lobbying expenditures presented earlier are difficult to determine. It is notable that the amount of spending of each company differs significantly from one another over time. This may be related to the different sizes of each company, different policy interests, or other factors. The different historical origins of each company may also contribute to different overall spending behavior and interest in policy decisions. European-based companies may have a different philosophy for lobbying in the United States government than do US-based companies. Overall, each company consistently contributed more to Republicans than Democrats. This could indicate that their business interests are more aligned with Republican candidates, and they want to help them elections. However, these funds could be used for different purposes than campaign fundraisings, so definite conclusions regarding the implications of lobbying expenditures are beyond the scope of this paper.

This discussion has focused on what the companies are saying and doing, and the associated implications for sustainability issues. I now turn to a discussion of external factors that may acutely impact what companies say and do.

Organizational theory: an institutional framework

In the analysis of the original question, what are oil companies saying and doing, I expected to discover differences to help understand the place of oil-producers in the

energy economy. Instead, each company looks remarkably similar. Why is this, and should this be surprising? An established body of organizational theory offers a framework to understand this observation and to suggest that these similarities may not be so surprising. The fundamental resemblance of the companies' core business contributes to similarities in operational data, marketing materials, and annual reports. Results that demonstrate a gap between what each company says and does also reveal a surprising similarity among the companies. To frame the analysis of the questions, I will draw on literature on institutional theory and learning organizations, which is a subset of a larger topic of organizational theory. Powell and DiMaggio defined a theory of "new institutionalism," focusing on cognitive, social and organizational phenomena to explain how organizations come to resemble one another (DiMaggio and Powell, 1983). This institutional theory describes three processes by which organizations become increasingly similar: coercive, mimetic, and normative isomorphism. (DiMaggio and Powell, 1983). Organizational theory serves as a working observational framework that describes similarities among oil companies, rather than serving as a means to prove causal links.

Company behavior and coercive pressures

Coercive isomorphism shapes oil companies to become more similar, resulting from formal and informal pressures by other organizations (DiMaggio and Powell, 1983). Examples of coercive pressures include media channels, government regulations, and non-profit or advocacy campaigns. A picture of the media landscape that surrounds oil companies reveals fairly uniform coverage for each oil company (see Appendix 2). The tone of the media toward oil companies is most often negative, or skeptical at best. For example, Anne Mulhern published a piece in the New York Times titled "Oil Companies'

Message is They're Not Just About Oil.” In it she explores how oil companies have expanded their brand, but includes quotes that argue the presence of a disconnect between green messages in marketing and the actual plans of oil companies to invest significantly in renewables (Mulkern, 2009). As we have seen from the data, the specific language used to craft an image will be different between companies – distinct brands require carefully crafted language – but the overall message has the same ring. Companies do not make a strong effort to stand out from the group in the media, because drawing less attention may have the greatest benefit.

Advocacy campaigns also represent a coercive pressure. They address issues in a direct and visible way. If successful, they force a company to reconsider its priorities on an issue, or at the very least provoke some response from the company. The most aggressive campaigns have attacked ExxonMobil for both its response to the Valdez oil spill in Alaska, and its statements in the early 2000s regarding climate change (Greenpeace/ExxonSecrets, 2010). In both cases, Greenpeace and other groups singled ExxonMobil out for actions that were unique to the company. The existence of websites such as www.exxonsecrets.org and www.exxposeexxon.com have singled ExxonMobil out from others, including BP and Royal Dutch Shell, and may have led to their change in approach to speaking about climate change issues. Many media channels, including non-profit funded sources, publish environmental or corporate responsibility rankings each year. While each ranking is based on different measures, the presence of a company on these lists may improve its reputation and inspire trust in the brand. The presence of one competitor on a list especially increases the pressure on other companies to gain recognition (“Our Performance Data,” Royal Dutch Shell). While we may not expect to

see oil companies high on an external ranking of the world's most environmentally responsible companies, their increasingly similar behaviors may be part of an effort to gain positive recognition for what they are saying and doing.

Company behaviors and normative pressures

Normative isomorphism explains how the existence of professional and trade associations define normative rules for an industry and shape companies within the industry (DiMaggio and Powell, 1983). The organizational similarities of ExxonMobil, Royal Dutch Shell, and BP facilitate participation in trade groups, namely the American Petroleum Institute (API). This participation facilitates information sharing, and creates a convergence of an industry perspective on sustainability-related topics. Each of these companies attends API conferences, draws language from API reports, and engages in similar lobbying efforts (API Reports, 2010). In exchange, each company benefits from shared information and a certain buffering that comes with membership in a powerful trade organization. While each company's distinct historical roots accounts for subtle differences in governance, the hierarchical structure of each company has converged more and more over time. Davis, Yoo, and Baker examined the interconnectedness of boards, finding that the corporate elite is a small world, and highly resilient over time. The interconnectedness of corporate boards within an industry affects information flow, and has important consequences for strategies adopted by organizations (Davis et al, 2003). These organizational patterns do not necessarily cause similarities among oil companies, but they provide a context for the circumstances under which similarities develop.

Company behaviors and mimetic pressures

Organizations tend to imitate other successful organizations when they are faced with uncertainty or ambiguity (DiMaggio, Powell, 1983). Climate change and issues of sustainability present great uncertainty for oil companies. They are still trying to understand emerging technologies and determine their strategies in a rapidly changing world. In order to move their company in a green direction, in the face of a great paradox, they may turn to other company's strategies in shaping their own. Peter Voser, CEO of Royal Dutch Shell commented recently: "one thing is certain in the race for a cleaner energy system: nothing is going to be certain for quite a long time" (Ball, 2010). The data have shown that despite differences in the amount and type of investments in alternative energy sources by oil companies, each company's strategy is much more similar now than it was even a few years ago. Although each competes for a profitable space in the market, in part by shaping a unique brand, the overall attitude towards sustainability for each company is remarkably similar.

How do organizations learn from singular events?

In an industry where three large companies look and act increasingly similar, one critical incident could have a great impact not only on one company, but also on others in the industry. I will now examine one such incident from decades ago that still has implications worldwide. Isolated, special incidents may play a significant role in shaping the direction of a company (Levitt and March, 1988). The operations of oil companies involve a substantial amount of risk, to environmental and personal safety, as well as to the business. While taking risk is unavoidable, a certain level of risk assessment and mitigation is essential for the long-term success of an oil company. A certain level of error in managing risk is unavoidable, and may be accepted in the industry and by the

public. However, when an accident or disaster occurs, the company's response, both public and private, is arguably as important or more important than the preemptive measures taken to avoid the blunder. March, et al defined a subset of organizational learning literature to explain how organizations learn from examples of one or fewer. In the piece "Learning from samples of one or fewer", March et al explain how strongly positive or negative experiences can produce lasting change in an organization. Organizations focus intensively on critical incidents, which are all critical because of their place in the course of history, place in the development of belief, and metaphorical power (March et al, 1991).

The most critical incident in ExxonMobil's recent history was the 1989 Exxon Valdez oil spill in Prince William Sound, Alaska. The Exxon Valdez vessel spilled 10.8 million gallons of Prudhoe Bay crude oil into the sea, with the oil eventually covering 1,300 square miles of ocean (US NOAA, 1992). For context, big spills account for 37 million gallons of oil put into the oceans each year, while dumping of oil down drains by people accounts for a staggering 363 million gallons per year (Mukasa, 2010). Although the spill ranks low in terms of volume of oil spilled, it is considered one of the most devastating human-caused environmental disasters to occur at sea (Schmitt, 1989). For example, a 1989 article in the New York Times quoted a Judge who compared the damage caused by the Valdez oil spill to the damage caused by the dropping of the atomic bomb in Hiroshima, Japan (Schmitt, 1989). The region was a habitat for salmon, sea otters, seals, seabirds. Present and future generations of these animals were harmed, as was the local economy. The tarnish on ExxonMobil's reputation from the Valdez spill is arguably still present today. Hundreds if not thousands of lawsuits have been filed in

response to the spill, and cases have been drawn out over many years. The Federal Oil Pollution Act of 1990 was enacted in response to the spill, and other oil companies have directly and indirectly addressed in the incident to set themselves apart (BP and Royal Dutch Shell sustainability reports). The incident is studied in schools, and written about by academics and professionals, who comment on the scope of the disaster not only for the natural environment and local population, but also for the company. Exxon's response is more remembered and criticized than the incident itself.

What did Exxon say about the spill?

Media coverage ignited immediately following the spill, covering all aspects of the environmental, social, and economic damage. Initially, Exxon's CEO was skeptical of the media, refusing to be interviewed (Dionne, 1989). This has been interpreted as a haughty disregard for public concern, and only the start to Exxon's public relations disaster (Baker, 2010). After two weeks of ignoring questions about when clean up efforts would start, Exxon publicly blamed state and federal officials for the delays in containing the spill. When asked how Exxon intended to pay the massive cleanup costs, one Exxon executive responded by saying it would raise gas prices to pay for the incident (Dionne, 1989). These attempts to evade responsibility and defer blame angered consumers. An Exxon executive agreed to an interview more than two weeks after the spill, but was unprepared to answer questions about clean up efforts, defensive, and made the company's approach to handling the cleanup seem insincere and inadequate (Baker, 2010).

Over time, ExxonMobil's tone has changed when publicly addressing the Valdez oil spill. In 2004, ExxonMobil Vice President for Public Affairs Kenneth Cohen said:

“ExxonMobil has been a good corporate citizen in Alaska for more than 30 years. We have been a major contributor to Alaska's economy, to community programs, to education, and the arts. ExxonMobil employees in Alaska, as individuals, have volunteered and worked hard to make their Alaskan communities better places in which to live” (Cohen, 2004).

While this statement does not resemble an apology that many believe to still be owed, the tone of ExxonMobil surrounding more recent and smaller incidents is milder than the defensive reaction to Valdez. The harm ExxonMobil's reputation suffered from the spill also impacted other oil companies. Legislation and other social and political repercussions have most likely influenced every oil company's strategy. The Valdez oil spill has been used to support arguments to restrict drilling in Alaska and other environmentally sensitive areas (Dionne, 1989). ExxonMobil's strategy to change its perspective on renewable energy investment in response to public criticism may be related to lessons it learned following the Valdez incident. While other companies have accidents in their histories, and have responded in their own ways, I chose to focus solely on the Valdez incident to demonstrate how the entire industry is affected by one incident.

Conclusion

To accuse these companies of greenwashing based on the data presented would be an oversimplification. However, the oil companies do portray images about their business that are not entirely representative of what the companies do. Oil companies have crafted marketing materials to persuade the public that they are more than petroleum businesses. The extent of their investments in renewable energy sources and policies promoting sustainable development suggest otherwise. While the companies are by no

means identical, I group them together in these conclusions because of the demonstrated similarities among these three oil companies in what they say and do. The convergence of the messages that the companies send to industry, government, consumers, and the general public make the messages even more powerful.

We can assume that oil companies will continue to spend vast sums of money on lobbying, likely not in support of policies that would require that they change their core business in the short term. These corporations must continue to produce growth and profit, neither of which is likely attained by increasing investment in renewable energy beyond their current rate. However, all hope for a greener energy future is not lost. The rhetorical capital spent promoting renewable energy investment may in fact encourage green consumer behavior and spur outside investment in renewable energy technologies. The adoption of new legislation could impact the long-term behaviors and investments of oil companies, although specific suggestions for legislations are beyond the scope of this paper. Inertia should be expected for large corporations in such a complex industry, but we may yet see sustainable future change in the long term.

Author's Note

In seeking to answer the questions posed in this paper, many more have arisen, which is a testament to the complexity of this industry and its related issues. I have come to understand that many factors are at play when considering the behavior of a company, more than can be explored within the scope of this paper. While I have limited my analysis to the aspects that I think are most relevant, I hope that the thought-provoking nature of these questions results in further research.

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Appendices

Appendix 1: Breakdown of words measured in annual report word counts:

“**Pollution**” category includes the following words:

- Greenhouse
- Emissions
- Clean
- Conserve

“**New technologies**” includes:

- Renewable
- Research
- Alternative

“**Climate change**” includes:

- Safety
- Responsibility
- Global Warming
- Climate Change
- Accountability
- Sustainability

Each in their own category:

“**Environmental**” – demonstrates companies’ attention paid to very broad environmental topics

“**Oil vs. Energy**” – what they see their business as, do they use “oil” less because it is a potentially harmful word?

“Profit” – they are each corporations that must report to their shareholders and earn profits – how much of a focus do they put on these profits?

Appendix 2: Media Coverage

Select sources criticizing entire oil industry:

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Appendix 3

(BP)

	2000	2001	2002	2003	2004	2005	2006	2007	2008
Pollution*	0.0019	0.00155	0.00099	0.00095	0.0011	0.0019	0.0014	0.0012	0.0067
New technologies*	0.00025	0.0003	0.00078	0.00038	0.0007	0.0029	0.00304	0.002	0.0015
Climate change*	0.00154	0.0026	0.0011	0.0014	0.0011	0.0068	0.0064	0.0053	0.0043
Environmental	0.0015	0.0014	0.0011	0.0009	0.00062	0.00051	0.0011	0.0011	0.0003
Profit	0.0043	0.0033	0.0028	0.0033	0.0033	0.0038	0.005	0.0034	0.0006
Oil	0.0025	0.0017	0.0015	0.0023	0.0026	0.0031	0.0037	0.0025	0.004
Energy	0.0009	0.001	0.00004	0.00075	0.00091	0.0052	0.0032	0.0018	0.0051

(EXXONMOBIL)

	2003	2004	2005	2006	2007	2008
Pollution*	0.0018	0.0011	0.0045	0.001	0.00069	0.0042
New Technologies*	0.0034	0.0012	0.0005	0.0019	0.0009	0.0012
Climate Change*	0.0021	0.001	0.0067	0.00093	0.0012	0.006
Environmental	0.0011	0.00098	0.0033	0.00046	0.0008	0.0037
Profit	0.00076	0.0006	0.00022	0.00064	0.00049	0.0001
Oil	0.0052	0.0049	0.0029	0.00051	0.0059	0.0037
Energy	0.0003	0.0012	0.0043	0.00025	0.0039	0.0056

(ROYAL DUTCH
SHELL)

	2003	2004	2005	2006	2007	2008
Pollution*	0.000172	0.0019	0.00087	0.0011	0.00056	0.0009
New Technologies*	0.00049	0.0028	0.001	0.0009	0.0004	0.00047
Climate Change*	0.00078	0.005	0.0014	0.0023	0.001	0.0023
Environmental	0.00049	0.0036	0.00071	0.0007	0.00048	0.00046
Profit	0.00099	0.0003	0.00091	0.00048	0.00031	0.00034
Oil	0.0038	0.006	0.0044	0.0052	0.0054	0.0048
Energy	0.00049	0.0077	0.0016	0.0024	0.0011	0.0007