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MAKING SENSE OF CORPORATE ENVIRONMENTALISM

An Environmental Contestation Approach to Analyzing the Causes and Consequences of the Climate Change Policy Split in the Oil Industry

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The threat of climate change has elicited divergent climate policy responses from the world's major oil multinationals, splitting the oil industry into two factions. This article analyzes the causes and consequences of this split in the oil industry. First, it demonstrates that oil companies made divergent assessments of the market risks and opportunities related to climate change based on the scientific networks and policy fields in which they were embedded rather than on rational economic criteria. Second, it documents that although the climate policy split in the oil industry has had few effects on oil company operations, it changes the terms of debate over profitable corporate action on climate change, with significant material consequences for climate regulation and patterns of energy production. This analysis contributes to the debate between treadmill of production and ecological modernization theorists by highlighting the midrange processes of contestation shaping the long-term environmental trajectory of capitalism.

Keywords: *oil industry; climate change; treadmill of production; ecological modernization; new institutionalism; corporate environmental behavior*

When climate change first emerged as an international policy concern in the late 1980s, the oil industry interpreted climate change as a threat to its primary product, gasoline. The burning of gasoline in car engines is a key source of carbon dioxide, a greenhouse gas linked to global climate change. In the face of the business threat embodied by climate change, oil companies from around the globe played an expected, obstructive role. They stood united in their opposition to any international effort to regulate carbon dioxide and other greenhouse gases. Led by the American oil majors Exxon, Mobil, Chevron, and Texaco, the oil industry argued against international action on climate change and questioned the findings of climate scientists. However, in the summer of 1997, the picture shifted. That May, John Browne, the Chief Executive Officer of British Petroleum (BP), made international headlines by announcing that his company was splitting from the rest of the oil industry and would support international greenhouse gas regulation. After BP's announcement, Royal Dutch/Shell

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(Shell) and a few other oil companies also broke ranks and spoke out in support of international action on climate change. To date, there are two factions in the oil industry; those companies that support international and domestic climate regulation and those that oppose it.

The split in the oil industry over climate policy offers a research opportunity to analyze and to contribute to debates over both the causes and consequences of variation in firm environmental behavior. The discussion over causes of variation pits against each other two modes of explanation. Some analysts rely on economic models of the firm and explain variation in firm behavior as a result of the intersection of market forces and firm-specific operational characteristics. More sociological models of firm behavior emphasize that decision makers in firms are embedded in various social networks, which shape their conceptions of profitable action. The debate over the consequences of variation in firm environmental behavior raises questions about the extent of "greenwashing" versus "real change" in firm operations and, more broadly, the possibility of restructuring capitalism to incorporate environmental criteria.

Through a comparative case study analysis of the climate policy decision making and implementation of ExxonMobil,[1] BP, and Royal Dutch/Shell, I contribute to both debates. First, I show that explanations of oil company climate action that focus on operational characteristics and market forces do not explain BP, Shell, and ExxonMobil's divergent climate policy trajectories. Rather, the climate policy split in the oil industry resulted because corporate decision makers in the three oil companies were embedded in different scientific networks and climate policy fields, which led them to make different assessments of profitable corporate action in the face of climate change. Second, I analyze the consequences of the climate policy split in the oil industry. At the level of the firm, I demonstrate that the split did little to change the oil companies' operating profiles. Yet I argue against simple characterizations of BP and Shell as "greenwashers," that is, companies that adopt an environmental rhetoric to cover up ongoing environmentally destructive practices. By splitting from the rest of the oil industry, BP and Shell changed the terms of debate over profitable corporate action in the face of climate change. At stake in the climate policy split in the oil industry is which corporate conception of profitable action in the face of climate change will become globally dominant, with significant material consequences for national and international climate regulation and for patterns of energy production.

Although the focus of this analysis is on explaining firm-level variation in environmental behavior, it also makes a contribution to system-level debates over the economy-environment interface. I present this analysis as a contribution to the debate in environmental sociology between the treadmill of production and ecological modernization perspectives over the possibility of greening capitalism (Foster & York, 2004; Mol & Buttel, 2002; Mol & Spaargaren, 2000; Schnaiberg, Pellow, & Weinberg, 2002; York, Rosa, & Dietz, 2003). As system-level theories, neither the treadmill of production nor ecological modernization seeks to explain variation in firm environmental behavior. Yet I contend that the understanding of variation and its consequences is a necessary and fundamental step toward the eventual understanding of the broader system tendencies predicted by both theories.

I call my approach to analyzing the causes and consequences of variation in firm environmental behavior an *environmental contestation approach* to highlight the contested dynamics of the economy-environment interface. An environmental contestation approach emphasizes the importance of shared understandings of

profitable corporate action in the face of an environmental challenge to both shaping firm environmental strategy and to the consequences of battles between firms over divergent environmental approaches. An environmental contestation approach also aims to integrate theories about the causes and consequences of variation in firm environmental behavior, which are generally considered independently, and to explore the connections between firm, field, and system-level dynamics.

In the following sections, I first review the body of research addressing the causes and the consequences of variation in firm environmental behavior and then present the propositions of an environmental contestation approach. The third section of the article introduces the empirical context for my analysis, presenting an overview of climate regulation and the oil industry. Fourth, I describe the methodology of the study. I then present the findings of my comparative analysis of ExxonMobil, BP, and Shell's climate policy decision making and implementation. The conclusion summarizes the implications of the research for the prospects of engaging firms in the project of environmental protection.

THEORIZING THE CAUSES AND THE CONSEQUENCES OF VARIATION IN FIRM ENVIRONMENTAL BEHAVIOR

As private sector actors move to the center of popular debates over environmental protection, firm environmental behavior has become a key research topic in the subfields of business strategy, organizational behavior, and environmental sociology. Confronted with variation in firm environmental behavior, research has focused on both the causes and consequences of firm greening. In this section, I first review the literature in both areas and then link arguments about causes and consequences into an integrated approach for analyzing of the meaning of firm greening (Gladwin, 1993; Jermier, Forbes, Benn, & Orsato, 2006).

Determinants of Variation in Firm Environmental Behavior

Standard models of firm environmental behavior point to four sources of pressure that cause firms to adopt environmentally friendly policies and practices. They include market pressures and opportunities, current and pending government regulation, and stakeholder pressures (Bansal & Roth, 2000; Levy, 1995; O'Rourke, 2003; Tombs, 1993; Welford & Starkey, 1996). Market pressures and opportunities can take the form of lowering costs of inputs and/or waste disposal, green marketing, and enhancing rent-earning characteristics of firms such as reputation or product quality (Andrews, 1998; Bansal & Roth, 2000; Lovins & Lovins, 1997; Russo & Fouts, 1997). Firms comply with regulation to avoid the fines and penalties associated with noncompliance (Petulla, 1987). Finally, stakeholder pressure, embodied in campaigns by environmental nongovernmental organizations (NGOs), local communities, or shareholder groups, can also drive changes in firm behavior (Kassinis & Vafeas, 2006; O'Rourke, 2003; Schurman, 2004). Transformational leadership (Gladwin, 1993; Weinberg, 1998) is the fourth driver of firm greening, but unlike the other external forms of pressure, its origin is within the firm.

There are two primary ways to explain the mechanism linking external pressure to change in firm environmental behavior. The first models firms as rational actors with fixed interests based on their operational characteristics (Nicholson, 1995; Russo & Fouts, 1997). Within this neoclassical, economic framework, variation in

firm environmental behavior is the result of differences in external pressures, differences in firm operational characteristics, or a combination of the two. For example, authors explain international variation in firm behavior based on the different regulatory environments firms face (Garcia-Johnson, 2000; O'Neill, 2000; Vogel, 1986). Within a single regulatory regime, firm characteristics such as size, ownership structure, operating profile, financial performance, environmental history, product type, and market position may mediate how firms respond to external pressure (Baylis, Connell, & Flynn, 1998a, 1998b; Office of Technology Assessment, 1994; Organization for Economic Development and Cooperation, 1985; Williams, Medhurst, & Drew, 1993).

New institutionalist models of firm behavior reject economic, rational actor models of firms and the idea of fixed interests based on firm characteristics. Rather, they argue that firm interests and drivers of firm action are constituted via a process of shared knowledge creation by a firm and other actors in its organizational field (DiMaggio & Powell, 1991b; Fligstein, 1990, 1996, 2002; Hoffman & Ventresca, 2002; Meyer & Rowan, 1977). A firm's organizational field includes "those organizations that in aggregate constitute a recognized area of institutional life: key suppliers, resources and product customers, regulatory agencies and other organizations that produce similar services or products" (DiMaggio & Powell, 1991a, pp. 64-65). When explaining variation in firm greening, new institutionalists highlight the key role in firms assements of the benefits of ecological responsiveness of perceptions of issue salience (Bansal & Roth, 2000), the values of individual managers (Hoffman, 2001), and the intensity and density of formal and informal network ties between managers and other actors in their organizational fields (Engels, 2006) Thus, firms with similar operations, facing similar market, regulatory, and stakeholder pressures may adopt diverging strategies because of divergent understandings prevalent in the particular economic, political, and socioideological networks in which individual firm managers are embedded.

Consequences of Variation in Firm Environmental Behavior

Research on the consequences of variation in firm environmental behavior grapples with the potential of firms, markets, and even economies to be transformed to take into account ecological considerations. At the firm level, variation in environmental behavior prompts questions about "ethics" versus "self-interest" and "greenwashing" versus "real change." Analysis centers on the extent of change in firm environmental performance and practices (Elkington & Burke, 1987; Petulla, 1987; Weinberg, 1998; Welford, 1997). The end results of these efforts are typologies measuring firm "greenness." For example, Weinberg (1998) identifies three types of firms: "green marketing," "caring capitalism," and "sustainable growth." The three differ in their approach to maintaining a commitment to ecological principles while managing growth. Petulla (1987) distinguishes between "crisis-oriented," "cost-oriented," and "enlightened" environmental management, based on firm compliance and interest in environmental affairs. Welford's (1995) scale ranges from the "resistant firm," which ignores or rejects environmental considerations, to the "transcendent firm," which "makes green criteria paramount in decision-making" and allows no firm activity to "upset ecological relationships" (p. 193).

At the system level, firm greening has sparked debate over the possibility of "green capitalism"—that is a capitalism that "internalize[s] all temporal, spatial, and social externalities of production, and [under which] growth in physical output

could be sharply curtailed in favor of the growth of the value of services and quality of outputs" (Wright, 2004, p. 320). This debate is structured around two competing theories of the economy-environment interface: the treadmill of production model and ecological modernization theory (Buttel, 2000, 2004; Fisher & Freudenberg, 2001; Freudenberg, 2005a, 2005b; Mol & Spaargaren, 2000; Schnaiberg et al., 2002; York, 2004; York & Rosa, 2003).

Schnaiberg (1980) initially proposed the treadmill of production metaphor to describe the workings of the capitalist economy. He, and others who developed the treadmill model, draw on a range of scholarship within a broad, neo-Marxist, political economy tradition, combining elements of ecological Marxism (Foster, 1999; O'Connor, 1989), theories of organized capitalism and the state, and what Buttel (2004) terms an "extra-Marxist political economy."[2] Treadmill of production theorists argue that the dual forces of interfirm competition and unlimited wants lock capitalist societies into a single expansionary economic system. They describe an economy of ever-increasing production and associate it with ever-increasing environmental impacts, in the form of withdrawals (i.e., resource extraction) and additions (i.e., waste and pollution) (Schnaiberg, 1980; Schnaiberg & Gould, 1994; Schnaiberg et al., 2002).

In contrast, ecological modernization theorists have a more optimistic analysis. Ecological modernization and related conceptions of sustainable development and industrial ecology have as their centerpiece the sustainable management of nature within capitalism (Ayres, 1994; Ehrenfeld, 1994; Frosch & Gallopoulos, 1990; Mol, 1995; Spaargaren & Mol, 1992). They envision an industrial restructuring, based on principles of ecology, which will allow for the coexistence of industrial capitalism and environmental protection. In his theory of ecological modernization, Mol argues that whereas in the past ecological concerns were subjugated to an economic rationality—valuing some parts of nature within the economy (arable land) and externalizing others (waste)—in the present and future, an ecological sphere will emerge and stand independently alongside the economic sphere (Spaargaren & Mol, 1992). The "emancipation" of ecological concerns from the economic sphere is the first step toward putting ecological rationality on equal footing with economic rationality. The second step of ecological modernization is "to institutionalize ecology in production and consumption processes, and thus to redirect these basic economic practices into more ecologically sound ones" (Mol, 1995, p. 30).

Integrating Theories on the Causes and Consequences of Firm Greening

I argue that the current literature on firm greening offers three opportunities for further theorizing. First, scholarship tends to focus on explaining either the drivers of variation in firm environmental behavior or its consequences but rarely offers an integrated analysis linking the two. Thus, the connections between models of firm environmental behavior and how consequences are evaluated remains unexplored, as do the feedback effects of firm greening on its drivers. Second, both firm- and system-level analyses focus the debate over greening on either-or propositions: "brown" or "green" firms, the "treadmill of production," or "ecological modernization." Such dichotomies are misleading and hide from view the complexity and contestation over meaning that characterize firm and system greening. Third, there are opportunities for integrating firm-level dynamics into system-level theories.

What might an integrated approach to analyzing the causes and consequences of variation in firm environmental behavior, which explores the links between firm-level variation and system-level dynamics, look like? Treadmill of production and ecological modernization theories offer two starting points for building such integrated theories. As system-level theories, neither has as its explanandum variation in firm environmental behavior. Yet both theories incorporate an implicit model of firm environmental behavior, and both address the empirical fact of variation and variation consequences, as it has contributed to sustaining ongoing debate between the two perspectives (York & Rosa, 2003).

The core contention of treadmill approaches is that "economic criteria remain at the foundation of decision-making about the design, performance, and evaluation of production and consumption" by firms (Schnaiberg et al., 2002, p. 16). The model of the firm behavior underlying this contention is a fixed-interests, rational actor model. Market, regulatory, and stakeholder pressures directly drive firm behavior. The consequences of firm greening, from a treadmill perspective, are measured by changes in a firm's operational practices and ecological footprint. When assessing the implications of firm-level greening for system dynamics, treadmill scholars caution against interpreting examples of firm-level greening as evidence of system-level change. They argue that the firm-level short-term efficiency gains in production are negated by the environmental impacts of long-term increases in production and consumption (Bunker, 1996; Schnaiberg et al., 2002; York & Rosa, 2003). Likewise, they reject claims that government regulation can overcome the logic of the treadmill, because of the state's dependence on the economic benefits of growth (Schnaiberg, 1980; Schnaiberg & Gould, 1994). From a treadmill perspective, firm-level activities cannot change system-level dynamics.

In contrast to treadmill approaches, ecological modernization theorists maintain that "the design, performance, and evaluation of processes of production and consumption are increasingly based on ecological criteria, besides economic criteria" (Mol, 1995, p. 58). They thus emphasize the causal power of an independent ecological rationality. Yet, despite this difference, ecological modernization shares with treadmill approaches a rational actor model of firm environmental behavior. In terms of evaluating the consequences of firm greening, ecological modernization theorists interpret patterns of greening as evidence of the system-level emergence of an independent ecological rationality (Andersen, 2002; Freudenberg, 2005a; Gouldson & Murphy, 1996; Mol, 1995, 1999; Sonnenfeld, 1998). Thus, firm-level variation is an expression of system-level dynamics but does not alter those dynamics.

The drawback of using treadmill and ecological modernization perspectives to frame an analysis of variation in firm environmental behavior is that system-level debates over the greening of capitalism tend to portray capitalism and environmentalism as either compatible or incompatible. Within this context, analyzing variation in firm environmental behavior becomes a process of adjudicating between economic versus ecological drivers, based on the assumption of two distinct rationalities. I argue that a more useful framing builds on new-institutionalist models of firm behavior and focuses on bottom-up processes of interpretation and contestation, which define the intersection between economically profitable and environmentally responsible business practices. In the following section, I describe the three propositions of such an approach, which I

call an *environmental contestation approach*. The goal of this approach is not to offer a system-level analysis, nor is it to refute treadmill of production and ecological modernization theories. Rather, I analyze the dynamics of variation in firm environmental behavior as a necessary step to the eventual understanding broader tendencies of the capitalist system.

An Environmental Contestation Approach

An environmental contestation approach has three central propositions. The first proposition, drawing on new institutionalist models of firm behavior, contends that co-created, shared understandings of market opportunities, likely regulatory outcomes, and consumer behavior are key drivers of firm environmental behavior. Fligstein (1996) terms these shared understandings "conceptions of control," which he defines as "perceptions of how markets work that allow actors to interpret their world and act to control situations" (p. 658). Firms co-create conceptions of control along with other actors in their organizational field. In the environmental arena, a long-held conception of control was that the environment's capacity to absorb pollution could be treated as a free input into the production process (Princen, 1997). In the particular case of climate change, firms have never needed to account for the costs of greenhouse gas pollution.

The second proposition of an environmental contestation approach is that firms compete not only over products and prices but also over the conceptions of control that structure their organizational fields. Conceptions of control create stability in markets and tend to be stable themselves in well-established markets. New conceptions of control emerge in newly forming markets or when an external shock undermines market stability. In the latter situation, challenger firms may try to promote new conceptions of control that challenge incumbent firms (Fligstein, 1996, 2002). The emergence of local and global environmental problems and concerns has acted as an external shock to standard business practice with respect to the environment. Since the 1960s, firms have been reconsidering their environmental practices and evolving new strategies to deal with environmental challenges (Hoffman, 1996; Nash & Ehrenfeld, 1997; Tombs, 1993). In the climate arena, some companies in the energy, transportation, and financial sectors are reevaluating their business practices and promoting new competing conceptions of profitable action in the face of climate change.

The third proposition of an environmental contestation approach is that the results of interfirm conflicts over conceptions of control are central to shaping the long-term environmental trajectory of capitalism. Business actors can leverage their structural position in the economy, financial assets, political connections, and discursive power to shape conceptions of control, which in turn influence technology development and governance efforts, with significant material consequences for the society-environment interface (Levy & Egan, 1998). In other words, competition between firms over conceptions of profitable firm action in the face of an environmental challenge, such as climate change, is a site through which the possibilities and limits of greening capitalism are constituted.

The challenge of climate change to the oil industry provides the empirical terrain that served as a basis for developing the three propositions of the environmental contestation approach. In the following sections, I provide a brief overview of climate policy and its implications for the oil industry. I then discuss, in turn,

the causes of the climate policy split in the oil industry and its consequences, showcasing the centrality to both of oil company conceptions of profitable action in the face of climate change.

THE OIL INDUSTRY AND CLIMATE CHANGE

The international oil industry is dominated by approximately 20 large companies. The major players are 14 state-owned oil companies and 6 publicly traded oil multinationals headquartered in Europe or the United States (see Table 1). Oil companies are concerned about climate change because petroleum products, when combusted in car engines and power plants, produce carbon dioxide and other greenhouse gases linked to global warming. Policy makers at the national and international levels concerned with global warming were and are proposing to regulate emissions of greenhouse gases. From oil companies perspectives, such regulation is considered likely to affect their industry.

Regulating Greenhouse Gases

Attempts to regulate greenhouse gas emissions were pioneered at the international level and date back to the early 1990s. The 2-year period from 1988 to 1990 marked the shift of the global warming issue from primarily scientific arenas to international political forums (Bodansky, 1994; Paterson, 1996). The U.N. General Assembly first addressed the issue of global warming (Resolution #43/53) in 1988, and in 1989, it passed Resolution #44/207 calling for the negotiation of a Framework Convention on Climate Change (FCCC). Concurrently, the governing boards of United Nations Environment Program and the World Meteorological Organization (WMO) established the Intergovernmental Panel on Climate Change (IPCC) as the scientific advisory panel to the international community. The IPCC produced its first Scientific Assessment Report in time for the Second World Climate Conference held in Geneva in November 1990. A month later, the United Nations established the Intergovernmental Negotiating Committee (INC) as the organizational vehicle for international deliberations on climate change (Resolution #45/212) (Mintzer & Leonard, 1994).

The INC negotiations in 1991 and 1992 produced the U.N. FCCC, which was opened for signature at the 1992 U.N. Conference on Environment and Development, better known as the Rio Earth Summit. The overarching principle of the FCCC is to

> [stabilize] greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic (man-made) interference with the climate system. Such a level should be achieved within a timeframe to allow ecosystems to adapt naturally to climate change, to insure that food production is not threatened, and to enable economic development to proceed in a sustainable manner. (FCCC, 1992)

However, the treaty did not mandate binding reductions in greenhouse gas emissions on the part of signatory states. After 1992, the international climate negotiations focused on drafting a protocol to the FCCC that would mandate binding greenhouse gas emissions reductions. Such a treaty, the Kyoto Protocol, was negotiated in December 1997. The protocol commits its industrialized country

Table 1: World's Twenty Largest Oil Companies (Based on 2002 Figures)

Rank	*Company*	*Home Country*	*State-Ownership (%)*
1	Saudi Aramco	Saudi Arabia	100
2	Exxon Mobil	United States	0
3	PDV	Venezuela	100
4	NIOC	Iran	100
5	RD/Shell	United Kingdom and the Netherlands	0
6	British Petroleum	United Kingdom	0
7	Chevron Texaco	United States	0
8	Pemex	Mexico	100
9	Total	France	0
10	Petro China	China	90
11	KPC	Kuwait	100
12	Conoco Phillips	United States	0
13	Pertamina	Indonesia	100
14	Sonatrach	Algeria	100
15	Petrobras	Brazil	33
16	Adnoc	United Arabs Emirate	100
17	Eni	Italy	36
18	Repsol YFP	Spain	0
19	Petronas	Malaysia	100
20	Lukoil	Russia	8

SOURCE: Petroleum Intelligence Weekly (2003).

signatories to reducing their greenhouse gas emissions by an average of 5% below 1990 levels by 2010 (calculated as a 5-year average of emissions from 2008 to 2012) (Oberthuer & Ott, 1999).

Implications of Greenhouse Gas Regulation for the Oil Industry

Understanding the implications of global climate change and greenhouse gas regulation for the oil industry requires an assessment in three timeframes: short term (5 to 10 years), medium term (50 years), and long term (70 to 100 years). Least controversial are the short-term implications of greenhouse gas regulation for the oil industry. In the immediate future, the production and consumption of fossil fuels will continue as usual. The structural dependence of national economies and transportation systems on coal, oil, and natural gas makes unlikely any dramatic changes in supply, demand, and price for fossil fuels during the next 5 to 10 years. Slightly more open to debate are the long-term implications of greenhouse gas regulation. The most plausible long-term scenario is that industrial and industrializing societies will shift away from fossil fuels to an economy based on alternative energy resources, such as renewable or nuclear energy. Under this scenario, global demand for coal, oil, and natural gas will decline. Concurrently, on the supply side, many regional oil reserves will have been exhausted (Pershing, 1999; Selley, 2000). Other, less plausible, visions of the long-term future assume minor changes in the business-as-usual role of fossil fuels in the economy. They predict that as conventional oil supplies decline, synthetic fuel and unconventional sources of liquid fuels, such as tar sands, oil shale, and other hydrocarbons, will augment conventional oil supplies. Moreover, the ecological consequences of climate change will be

addressed through massive engineering and forestry projects to remove carbon dioxide from the atmosphere. Other opinion makers support a "we will adapt to climate change" approach, which takes no preventative action.

Most controversial are the medium-term effects of greenhouse gas regulation on the oil industry. Of greatest concern to oil companies are medium-term demand and price effects. The standard wisdom predicts that Kyoto-type greenhouse gas regulation will cause shifts in fuel demand from coal to oil to natural gas.[3] However, modeling and analysis by the International Energy Agency suggest otherwise. Pershing (1999) argues that "a number of issues may affect whether there will be an impact on any individual fuel, what that impact will be, how that impact will vary across countries" (p. 1). Factors that will influence future fossil fuel demand include changes in regional distribution of reserves in the next 20 years, growth in demand because of economic growth, allocation of demand depending on the marginal cost of production and transport, price sensitivity of demand, and fuel-specific concerns not related to climate change (for example, coal demand may decline because of local air quality concerns rather than global climate regulation). Pershing also argues that it will be difficult to predict the price implications of climate regulation on fossil fuels. During the past 25 years, oil prices have varied by more that $50 per barrel, an order of magnitude larger than the price effects anticipated from regulatory initiatives under consideration in the early 1990s (please see Aaheim, Bartsch, Mabro, & Mueller, 1999, and Pershing, 1999, for more extensive discussions).

Beyond demand and price effects, oil companies are also concerned about medium-term effects on both shareholder value and facility regulations. Environmental costs related to spills, fines, and pollution abatement have long been a component of the profitability of the oil industry in terms of bottom-line operating costs. More recently, overall environmental performance has also been incorporated into assessments of shareholder value. In addition, the fate of the tobacco industry has inspired a set of arguments focusing on oil companies and climate change liability. Environmental advocates contend that oil companies, especially those that deny climate science and oppose climate regulation, are the potential targets of climate change–related litigation. Although the idea of liability for damages caused by changes in climate is purely speculative at this point, the financial burden of those damages could potentially exceed $100 billion (Mansley, 2002, p. 4). Finally, oil companies will also be affected by greenhouse gas regulation in their roles as refiners of petroleum and manufacturers of basic chemicals. These operations are already subject to a range of local and national environmental regulations on air quality, water quality, and hazardous and solid waste. As emitters of carbon dioxide, they will also be subject to regulations restricting greenhouse gas emissions.

The Split in the Oil Industry

Overall then, in the early and mid-1990s, the prospects for and implications of greenhouse gas regulation were uncertain. First, although binding greenhouse gas emissions reductions were under discussion, the prospects for a successful negotiation of a binding international climate treaty remained uncertain up until the final days of the December 1997 Kyoto negotiations. Second, the concrete effects on the oil sector of Kyoto-type greenhouse gas reductions remain uncertain to date. In the face of this uncertainty, oil companies pioneered very different policy

Table 2: Elements of Adversarial vs. Cooperative Oil Company Climate Policies

Adversarial Climate Policy	*Cooperative Climate Policy*
Critical of climate science, particularly of assessment reports issued by the Intergovernmental Panel on Climate Change (IPCC)	Accept findings of IPCC and argue that current state of climate science merits precautionary action
Oppose regulation of greenhouse gas emissions, in particular the 1997 Kyoto Protocol formulated in the U.N.-sponsored international climate change negotiations	Support mandated reductions in greenhouse gas emissions and have taken on company-wide emissions reductions targets; support the Kyoto Protocol
Reject renewable energy technologies as viable alternatives to fossil fuels	Invest significant new funds into renewable energy technologies
Work independently, relying on in-house expertise	Partner with leading environmental NGOs such as Environmental Defense and World Wide Fund for Nature

responses to the climate issue, which I categorize as either adversarial or cooperative (see Table 2).

ExxonMobil best exemplifies an adversarial climate policy. Since the first U.N. meeting on climate change in 1991, representatives from ExxonMobil have consistently questioned global assessments of climate science, describing them as uncertain and of doubtful validity and have argued that a policy approach of mandated reductions in greenhouse gas emissions is premature and likely to cause significant economic upheaval. ExxonMobil has communicated this message in a variety of ways, including direct interventions at meeting of the IPCC (Leggett, 1999), through business lobbying groups like the Global Climate Coalition (GCC, 1990) and International Petroleum Industry Environmental Conservation Association (1988), through advertisements in leading newspapers (Greenpeace, 1998b), and through influence on national politics (Davies & Sawin, 2002). In terms of its long-range strategy, ExxonMobil expects to continue as an oil company and is investing in technologies that complement a fossil fuel economy. They are investing capital in unconventional fossil fuel projects, including oil shale and tar sands, in fuels cells as an alternative to internal combustion engines, and in carbon capture and storage projects. However, the company is not diversifying into solar, wind, and other alternative energy technologies. Within the wider group of major oil companies, support for ExxonMobil's adversarial stance comes from the national oil companies of Saudi Arabia (Saudi Aramco), Venezuela (Petroleos de Venezuela), Iran (National Iranian Oil Corporation), and Indonesia (Pertamina), all members of the Organization of Petroleum Exporting Countries. In addition, PetroChina holds an adversarial position based on the claim that developing countries should not bear the burden of international climate regulation.

In contrast to the adversarial oil companies, BP, Shell, Norway's national oil company Statoil, and Mexico's national oil company Pemex are pursuing cooperative climate policies. They actively support the Kyoto Protocol, the international climate treaty that requires its industrialized country signatories to meet binding

greenhouse gases emissions reduction targets and accept the findings of the IPCC, a collaborative effort among several thousand scientists who advise the U.N. climate change negotiations (Browne, 1997a). In addition, both BP and Shell have committed to precautionary action on climate change, including investment in renewable energy technologies as alternatives to fossil fuels. In May 1997, Shell announced its commitment to invest $500 million in renewable energy DURING the next 5 years, establishing Shell International Renewables as a new core business area (Shell, 2000). Six months later, BP publicly committed to investing $160 million in solar energy (Ibrahim, 1997). BP, Shell, and Pemex have also adopted emissions reduction targets. BP pledged to reduce company-wide greenhouse gas emissions by 10% from 1990 levels by 2010. Shell made a similar pledge but set itself a target date of 2002. Mimicking the international policy process, both companies piloted internal emissions trading systems as the policy tool to meet their targets (Environmental Defense, 2002). In addition, the cooperative companies have enlisted the collaboration of environmental NGOs (ENGOs) in developing their emissions trading systems and their climate policies more broadly. In terms of long-range plans, both BP and Shell have referred to their future transformations from oil companies into energy service providers (see Table 3 for an overview of ExxonMobil, BP, and Shell's climate policies).

RESEARCH DESIGN

The divergence in oil company climate strategies presents a conundrum for theorists of firm environmental behavior. Why did different oil multinationals decide to pursue such different climate policy strategies? And what are the consequences of their decisions? To address both questions, I devised a two-part research strategy. The first research task was to explain the determinants of variation in oil company climate policies. My analytic approach is a comparative analysis, specifically a controlled comparison method of difference approach (Van Evera, 1997). I attempt to explain variation by comparing the climate policy decision-making process of the world's three largest publicly traded oil multinationals: ExxonMobil, BP, and Shell. I selected these three case study companies because there are compelling reasons to expect similar climate policy responses. Yet they have adopted very different climate strategies.

The second research task was to analyze the consequences of the climate policy split in the oil industry. My analytic approach for the second component of the analysis is also a controlled comparison method of difference. However, in the second comparison, variation in climate policy approach is the independent variable, and I assess the effect of variation on each oil multinational's operations and its relationships with other oil companies, industry associations, national regulatory agencies, international governance organizations, and relevant NGOs. BP and Shell serve as case study examples of the implementation of a proactive climate policy. The ExxonMobil case serves as the control case, used to construct the counterfactual of not implementing a proactive climate policy.

For each oil company case study, I compiled a detailed history of the corporation's engagement with the climate issue, documenting its operational practices, marketing strategies, and political activities from the late 1980s until 2004. The case histories are based on a range of primary data including 75 taped interviews, participant observation at five Conferences of the Parties to

Table 3: A Comparison of ExxonMobil, British Petroleum, and Shell's Climate Policies

New Policy	*ExxonMobil*	*British Petroleum 1997*	*Shell 1998*
Policy stance	*Adversarial*	*Cooperative*	*Cooperative*
Climate science	Critical of scientific assessment of Intergovernmental Panel on Climate Change	Current state of climate science merits precautionary action	Current state of climate science merits precautionary action
Kyoto Protocol	Oppose	Support	Support
Emissions target	No target	10% by 2010	10% by 2002
Internal emissions trading system	No	Yes	Yes
Renewable energy investments	No	$15 million to $20 million per year until 2010	$500 million for 5 years
Nongovernmental organization partners	No	Yes	Yes

the U.N. FCCC, and extensive review of corporate publications. During the period from 1998 to 2002, I conducted taped interviews with 23 current and former oil industry executives. I also interviewed representatives of business and industry associations, ENGOs, and government officials at the national and international levels, active in the climate policy arena. The interviews ranged from 30 min to more than 2 hr. The oil company interviews were conducted at BP's headquarters in London, Shell's headquarters in London and The Hague, and at five Conferences of the Parties to the U.N. FCCC in 1998, 2000, 2001, and 2002. In addition to the interviews, I examined a range of corporate publications from BP (annual reports from 1980 to 2003, *The Shield*—an international magazine for BP, and *BP News* and *BP Today: London and International*—both internal newsletters distributed to staff in London), Royal Dutch/Shell (annual reports from 1978 to 2003, *Shell World*—an internal magazine for the Shell group), and ExxonMobil (annual reports from 1980 to 2003, *The Lamp*—an internal magazine for ExxonMobil). I supplemented the primary source material with an array of secondary source material, including government, ENGO and business association reports on oil company climate policies, media coverage of oil industry climate policies, and other academic research.

ANALYZING THE CAUSES OF THE CLIMATE POLICY SPLIT IN THE OIL INDUSTRY

In the wake of the split in the oil industry, explanations for BP, Shell, and ExxonMobil's divergent climate policies focused in two areas. Some analysts tried to assess if underlying operational differences between the companies could explain their different climate policies (Austin & Sauer, 2002; Rowlands, 2000). Their models of firm environmental behavior assume that corporations have fixed interests based on their operating characteristics. Other research focused on different

networks in which BP, Shell, and ExxonMobil managers participated (Levy & Kolk, 2002; Levy & Newell, 2000; Skjaerseth & Skodvin, 2001; van den Hove, Le Menestrel, & de Bettignies, 2002; van der Woerd et al., 2000). They used a socially embedded model of the corporation, recognizing that the economic, political, and socioideological networks in which corporate decision makers are embedded influence perceptions of profitable action in a carbon-constrained world. I demonstrate that explanations assuming fixed interests based on operating characteristics cannot explain the split in the oil industry. Rather, the social embeddedness of corporate executives in particular scientific networks and governmental and societal policy fields best explains BP, Shell, and Exxon's divergent climate strategies.

The Economic Corporation: Fixed Interests Based on Operating Characteristics

Most explanations of industry responses to climate change are based on a straightforward analysis of fixed economic interests. Renewable energy companies are predicted to support global climate regulation because it will increase demand for their products. Likewise, manufacturers of energy-efficient technologies see climate regulation as a business opportunity. Following a parallel logic, fossil fuel companies are predicted to oppose efforts at international climate regulation, as the combustion of fossil fuels is the primary source of increasing greenhouse gas emissions.

This type of simple interest-based analysis focuses on the long-term consequences of climate regulation and seemed satisfactory until the public split in the oil industry in 1997. The split undermined simple explanations of oil company behavior and stimulated more nuanced analyses focusing on differences in oil company operational characteristics. Operational characteristics include a company's position along the fossil fuel commodity chain, the coal, oil, and natural gas mix of a company's fossil fuel portfolio, its regional distribution of assets and sale, and its vulnerability to NGO climate campaigns. In the following paragraphs, I discuss each characteristic as a potential explanation for the split in the oil industry.

Activity in the oil industry is generally categorized as upstream or downstream. Upstream includes exploration, drilling, and shipping. Downstream includes refining and sales of petroleum products, including gasoline, lubricants, and fuel oils. Several oil companies also have a chemicals business because petroleum is the feedstock for the manufacture of many basic chemicals. Different companies occupy different positions along the oil commodity chain. The market strength of state-owned oil companies is their exclusive control over large oil and gas reserves. Based on 2002 summary statistics of the world's 20 largest oil companies, state-owned companies control 89% of oil reserves (Petroleum Intelligence Weekly [PIW], 2003). In contrast, the competitive advantage of the Western oil majors is their technological capability, their global distribution infrastructure, and their control over the major consumption markets. The Western oil majors control 64% of global refining capacity and account for 70% of the sector's sales revenues (PIW, 2003).

A fixed-interests analysis comparing nationally owned and publicly traded oil companies would predict that state-owned companies, with their large oil and gas reserves, would be most concerned with demand and price effects on fossil fuels. In contrast, the large research and development budgets of the Western oil majors

make them less vulnerable to demand and price effects because, at least in theory, they can transition away from the production of fossil fuels toward the provision of energy services. This analysis seems to provide some insight into oil company climate policy. Most state-owned companies oppose international climate regulation, and most publicly traded companies support some action on climate change. However, Pemex and ExxonMobil both do not fit the pattern. Mexico's national oil company supports international climate regulation, whereas ExxonMobil, the world's largest publicly traded oil company, strongly opposes binding reductions of greenhouse gas emissions. Moreover, the upstream/downstream metric is not useful for distinguishing between the Western oil majors. ExxonMobil, BP, and Shell are all vertically integrated companies with comparable upstream and downstream business segments (see Table 4). Austin and Sauer (2002) estimated the value of individual business segments as a percentage of total company assets. Their data show that reserves represent 41%, 52%, and 46%, respectively, of ExxonMobil, BP, and Shell's assets. Refining and marketing represent 20%, 18%, and 21%, respectively. In sum, the three oil companies' divergent climate policies are not an expression of their positions along the oil commodity chain.

A second explanation for the split in the oil industry within a fixed-interests framework focuses on the fossil fuel mix in an oil company's reserves and production portfolios. An interest-based analysis would predict that climate regulation would be a more onerous burden for companies with carbon intensive assets (i.e., coal and oil vs. natural gas). Therefore, they would be more likely to oppose regulation. Rowlands (2000) conducted a detailed analysis of the relative importance of coal, oil, and natural gas in the production and reserves of ExxonMobil and BP. He tested the hypothesis that "companies that have a relatively lower carbon intensive fossil fuel portfolio will adopt more pro-active policies (relatively) on global climate change" (p. 346). Contrary to expectation, Rowlands found that ExxonMobil has larger natural gas operations and reserves than BP and that its fossil fuel production and reserve portfolios are less carbon intensive than BP's (based on 1999 data). He convincingly disproved the hypothesis that the carbon intensity of ExxonMobil and BP's portfolios explains the split in the oil industry. Austin and Sauer's (2002) analysis of the projected financial effects of different climate regulatory scenarios on 16 major oil and gas companies generated similar results. Their model predicts a loss in shareholder value for oil-heavy companies, such as the U.S. companies Enterprise and Occidental and Spain's Repsol, but it shows no differences in shareholder impacts for ExxonMobil, BP, and Shell.

A third fixed-interests explanation for the split in the oil industry would argue that because of different global distributions of assets and reserves, different companies in effect face different regulatory environments and thus would make different assessments of the costs versus benefits of opposing greenhouse gas regulation. Does international climate regulation, either with or without U.S. participation, have a different regulatory effect on BP, Shell, and ExxonMobil? Austin and Sauer (2002, p. 20) tested this hypothesis. They projected that all three companies would be equally affected if climate regulation were implemented globally, or only in Europe and not the United States, which reflects the current pattern of international greenhouse gas regulation. This somewhat counterintuitive result reflects the global distribution of reserves and assets of the three companies. Although the split in the oil industry pits oil companies headquartered in Europe against those headquartered in the United States, the location of national headquarters does not correlate with a

Table 4: Operational Profiles of Case Study Oil Companies

	ExxonMobil	*British Petroleum*	*Royal Dutch/Shell*
Headquarters	Irving, Texas, United States	London, UK	London, UK and The Hague, the Netherlands
Business segments	Upstream—exploration and production Downstream-refining and marketing chemicals technology	Exploration and production Refining and marketing Petrochemicals Gas, power, and renewables	Exploration and production Oil products Chemicals Gas and power Renewables
Scope of operations	190 countries	100 countries	145 countries
Number of employees	92,000	104,000	118,000
2003 revenues	$246 billion	$233 billion	$182 billion
2002 net income	11.4 billion	6.8 billion	9.4 billion
2002 reserves			
Liquid (mill bbl)	12, 623	9,165	10,133
Gas (Bcf)	55,718	48,789	53,438
Refining capacity (1,000 bbl/d)	6,322	3,534	4,533
Product sales (1000bbl/d)	7,757	6,563	7,399

SOURCE: Petroleum Intelligence Weekly (2003), BP (2002), ExxonMobil (2003), and Shell (2000).

concentration of assets. According to Austin and Sauer's data, BP has a larger percentage of its oil and gas reserve assets in the United States than ExxonMobil. Likewise, Shell has a larger percentage of its refining, marketing, and transport assets in the United States than its two competitors (Austin & Sauer, 2002, pp. 8-9). Data from corporate annual reports support Austin and Sauer's analysis. In 2001, BP's replacement cost operating profit totaled $4.5 billion in Europe and $7 billion in the United States (BP, 2002, p. 25). Similarly, in 2002, ExxonMobil's petroleum sales added up to approximately $1.2 billion in Europe and $2.7 billion in the United States (ExxonMobil, 2003). For all three companies, the U.S. business is about twice the size of the European business. Therefore, all three companies are equally vulnerable to regulation in Europe and benefit equally from the lack of regulation in the United States.

A fourth and final fixed-interests explanation for the split in the oil industry might focus on differences in the extent to which different companies were targets of NGO campaigns. Were BP and Shell the targets of social movement activism, and does that explain their climate-friendly policies? An analysis of NGO anti-oil climate campaigns shows that the majority of NGO climate campaigns were initiated after the split in the oil industry, with the exception of two initiatives that had targeted at the oil industry in general (Pulver, 2004). In November 1994 and July 1996, Greenpeace International, the first environmental group to target the oil industry on climate change, launched two reports. The first focused on the long-term financial risk of climate change to the carbon fuel industry (Mansley, 1994) and the second on the links between oil companies and the group of scientists skeptical of climate science (Greenpeace, 1996). Campaigns that distinguished between companies postdated the split in the oil industry. Moreover, of the three

companies, ExxonMobil and Shell should have been most vulnerable to stakeholder pressures. Both had recently been in the news for environmental disasters. In 1989, Exxon was rocked by the disastrous ExxonValdez oil spill (Council of Economic Priorities, 1994). In 1995, Shell had been the focus of two Greenpeace campaigns, the first opposing plans to dispose of the Brent Spar oil drilling platform by sinking it in the North Atlantic (Holzer, 2001)[4] and the second for it human rights and environmental record in Nigeria (Kretzmann & Wright, 1997).[5] In contrast, BP had not been a recent target of NGO environmental activism.

In sum, fixed-interest approaches do not explain the split in the oil industry. At the time of the split in the oil industry, ExxonMobil, BP, and Shell were operationally remarkably similar and their contrasting climate policies cannot be explained by a model assuming rational responses to divergent economic, regulatory, or stakeholder pressures based on firm operation characteristics. Instead, a more compelling explanation of the split in the oil industry draws on new institutionalist theorizing and focuses on the scientific networks and governmental and societal organizational fields in which corporate decision makers were embedded.

The Socially Embedded Corporation

A detailed examination of the process of corporate decision making on climate change showcases that decision makers in ExxonMobil, BP, and Shell tackled the climate issue in a manner consistent with the shared understandings circulating in the different networks in which they were embedded. In all three companies, the key decision makers were senior executives in top management committees and strategic planning departments. Climate policy decision making at ExxonMobil was centered in Corporate Planning, with input from the research and engineering division, both located at the company's headquarters in Irving, Texas. In the words of one ExxonMobil senior executive and research scientist,

> our interactions from the research lab [re climate change] were not with the refineries. It wasn't with the marketers. It was frankly with senior management in corporate planning and people looking at projects that weren't even there but would be major future investments (ExxonMobil executive, personal communication, November 5, 2001).

At BP, managers describe the advent of John Browne to the CEO position in 1995 as a major event in the development of BP's climate policy. Prior to 1995, BP formulated its climate policy position through industry groups, such as the International Petroleum Industry Conservation Association and the Global Climate Coalition, rather than individually. Browne initiated a policy rethink, arguing that BP should make an independent decision regarding its stance on climate change, and turned to the group of Managing Directors, BP's top executives at its global headquarters in London, for input (van der Kolk, 1997; BP executive, personal communication, March 1, 2002). At Shell, executives in the Group Planning and Group Public Affairs in the corporation's global headquarters in London were the primary drivers of Shell climate policy (Guyon & Woods, 1997; Shell executives, personal communication, November 21, 2000 and February 27, 2002). In the time period leading up to the climate policy split in the oil industry, these executives reached divergent assessments of the state of climate change science, the likelihood of government regulation, and the extent of public concern

about climate change based on the distinct scientific networks and regulatory and societal policy fields in which they were embedded.

First, a key organizational difference between ExxonMobil and its European rivals is that the former has a large, in-house scientific research program, whereas BP and Shell outsource most of their scientific research (ExxonMobil executive, personal communication, November 17, 2000).[6] The effect of this difference in expertise led to a pattern of ExxonMobil executives developing the ExxonMobil position on climate change based primarily on in-house expertise, in the company's research and engineering division, whereas BP and Shell relied on external bodies, such as the U.K. Hadley Center for Climate Research and the IPCC, for assessments regarding climate science (IPCC, 1990, 1996, 2001; Levy & Kolk, 2002). Assessments of climate science made by ExxonMobil scientists versus by the Hadley Center and the IPCC differed considerably. ExxonMobil scientists underscored the uncertainties in climate science and argued against the link between fossil fuels and climate change (Leggett, 1999). They promoted this skeptical stance on climate science both in the international policy process (IPCC, 1990; WMO, 1990) and in domestic policy fora (Greenpeace, 1996; Raymond, 1996). In contrast to ExxonMobil, BP and Shell top managers relied on external scientists for their assessments of climate science. For example, when BP began rethinking its climate policy in 1996 and 1997, the company invited several leading climate scientists, including Dr. John Houghton, the chairman of the IPCC science working group and cofounder of the Hadley Center, and Dr. Henry Jacoby, codirector of the Massachusetts Institute of Technology Joint Program on the Science and Policy of Global Change, to brief BP executives on the state of climate science (BP executive, personal communication, March 1, 2002). At that time, both the Hadley Center and the IPCC were calling for global action on climate change based on evidence of a link between human action and climate change. For example, the IPCC Second Assessment issued in 1995 concluded that "the balance of evidence suggests a *discernible* human influence on the global climate" (IPCC, 1996, p. 5).

Key decision makers in ExxonMobil, BP, and Shell also drew on different sources of information when assessing the likelihood of greenhouse gas regulation and the level of concern about climate change among customers and other stakeholders. As described earlier, in the early and mid-1990s, international climate policy was in a state of flux. In 1992, interstate negotiations produced the FCCC, which did not mandate binding by states to reduce their greenhouse gas emissions. The prospects for a binding protocol that would mandate global greenhouse gas emission reductions commitments depended on the negotiating positions of individual states. Although all three companies operate in more than 100 countries, ExxonMobil was attuned to climate policy debates in the United States, whereas BP and Shell most closely followed developments in the United Kingdom, the Netherlands, and the European Union (EU). The focus on "home-country" politics, that is, the country in which a multinational corporation is headquartered, is not exceptional. Although multinational corporations have an international scope by definition, they are constituted by distinct national entities. The institutional context of a multinational's home-country shapes its capabilities and success in international markets (Levy & Kolk, 2002). There is a long research tradition that documents the effects of the home-country context on a multinational's organizational structure, market and nonmarket strategies, and the mindsets of its managers (Garcia-Johnson, 2000; Lin, 2001; Murtha & Lenway, 1994; Murtha, Lenway, &

Bagozzi, 1998; Pauly & Reich, 1997; Sethi & Elango, 1999). In theorizing the effects of home-country national contexts on oil company climate policies, Levy and Kolk (2002) identify the "home-country effect" as consisting of three factors: "the home country's physical and economic resources, national economic and industrial policies, and cultural values and institutional norms" (p. 19). In the climate domain, these factors coincided to produce different levels of "government supply" of climate policy and different levels of "societal demand" for action on climate change (Skjaerseth & Skodvin, 2001).

In terms of "government supply" of climate policy, a snapshot of the 2-year period from 1995 to 1997, preceding the split in the oil industry, showcases the different political contexts in which senior executives at BP, Shell, and Exxon were embedded. During that time, BP and Shell managers were in close contact with bureaucrats in the U.K. Department of Trade and Industry (DTI) and the Department for Environment, Food and Rural Affairs (DEFRA) (DTI and DEFRA bureaucrats, personal communication, January 22, 2003) and with policy makers in the European Commission in Brussels. In the latter organization, the European oil companies participated in various commission working groups via the European business association (Union of Industrial and Employers' Confederations of Europe) and the European oil industry association (European Petroleum Industry Association) (NGO representative, personal communication, November 16, 2000, and BP executive, personal communication, November 22, 2000). During the period from 1995 to 1997, the discussion in the United Kingdom and in Brussels focused on the size of the emissions reductions target that the EU would propose in the context of the international climate negotiations. In March 1997, the EU environmental ministers agreed to a target of 15% below 1990 levels by the year 2010 as their negotiating position at the Kyoto round of the negotiations. In May of that year, Tony Blair was elected as Prime Minister in the United Kingdom on a campaign platform promising a 20% reduction in carbon dioxide emissions by 2010. Another component of Blair's campaign was an aggressive renewable energy policy. He proposed that 10% of electricity generation should come from renewable energy by 2010 (Collier, 1997b). The U.K. renewable energy policies echoed commitments at the EU level. At the EU level, support for renewable energy was a standard element of climate policy, along with the promotion of energy efficiency and the less popular carbon taxes. All three policy instruments had been included in a 1992 communication from the European Commission on "a community strategy to limit carbon dioxide emissions and to improve energy efficiency" (Collier, 1997a; EU Commission, 1992).

During the same 1995 to1997 period, the debate in the United States was quite different. In the United States, with Clinton's inauguration in 1993, the White House became an advocate for international climate regulation. Early in their administration, Clinton and Gore proposed a fuel tax; however, the initiative was defeated in the Senate (Agrawala & Andresen, 1999a). This was a harbinger of battles to come. In November 1996, Clinton and Gore were reelected to the White House but with a Republican House and Senate. Unlike in the Blair election in the United Kingdom, climate change was not a campaign issue in the 1996 U.S. presidential election. However, during the next 4 years, the White House and Senate would face off over the climate issue. The U.S. Administration did not announce its Kyoto negotiating position until October 1997. The proposal stated that the United States would consider stabilization of emissions at 1990 levels by 2010. This was a step forward for the United States in that it signaled a willingness to

discuss short-term binding targets (Agrawala & Andresen, 1999b). However, the White House proposal lacked credibility, because during the summer of 1997, the U.S. Senate had voted 95-0 in favor of the Byrd-Hagel resolution, which indicated that the Senate would not ratify an international climate treaty without "meaningful participation by developing countries" (GCC, 1997). The effect of the Senate resolution was a de facto announcement of the unlikelihood of U.S. ratification of an agreement reached at the Kyoto negotiations, which had as their premise binding targets only for industrialized countries.[7]

The differences in national climate policy discussions in the United States and Europe led to different assessments by ExxonMobil, BP, and Shell executives of the prospects of binding greenhouse gas regulation. ExxonMobil executives were confident that regulation was unlikely and that opposition to regulation was a viable political strategy. In contrast, for BP and Shell managers, regulation was considered a foregone conclusion, and the strategy choice centered on the extent to which the companies would participate in shaping the regulation. These divergent assessments of the likelihood of greenhouse gas regulation were reinforced by divergent assessments of "societal demand" for climate regulation and for climate-friendly energy technologies. For all three companies, relevant stakeholder groups include employees, shareholders, consumers, local communities, and ENGOs. Survey data suggests that in the early to mid-1990s, Europeans were more concerned with climate change than Americans (Kempton, 1993; Kempton & Craig, 1993). This can be attributed to two causes. First, there is some evidence that Europeans are generally more likely to make environmental concerns a political issue. Skjaerseth and Skodvin (2001) point out that in the Netherlands, the environment was considered the most important societal issue until the mid-1990s and is currently among the top three, along with crime and unemployment. In contrast, in the United States, environmental protection is ranked at number 8. Inglehart's (1995) analysis of public support for environmental protection reveals a similar pattern. The core countries in the EU are more likely to support environmental protection than the United States. The political prominence of green parties in Europe and higher memberships in international activist ENGOs such as Greenpeace corroborates this conclusion. This is not to argue that there is not a vibrant environmental movement in the United States. Rather, its strength lies in domestic environmental issues (Skjaerseth & Skodvin, 2001). A second factor explaining differences in "societal demand" for climate policy is the fact that debates on climate change followed different issue trajectories in Europe and the United States (Ungar, 1998). In particular, the scientific challenge to climate change mounted by the small group of skeptical scientists was a phenomenon particular to the United States. McCright and Dunlap (2003) provide convincing evidence of a conservative countermobilization in the United States aimed at preventing action on climate change. They identify a group of prominent think tanks that promoted a skeptical approach to global warming, which was amplified both in terms of media coverage and congressional testimony after the 1994 Republican takeover of Congress. Finally, BP and Shell reasoned that investments in renewable energy had profit potential, based on the preferences of European consumers. In contrast, ExxonMobil executives made pessimistic assessments of consumer demand for solar and other renewable energy technologies, based on the company's negative experience with these products in the American market in the 1970s (Kolk & Levy, 2001).

In conclusion, a close analysis of the causes of the climate policy split in the oil industry reveals that oil companies are not rational actors making strategy decisions

based on fixed interests, dictated by operational characteristics. Rather, strategy was decided based on socially generated assessments of the state of climate science, the likelihood of greenhouse gas regulation, and the level of public interest in the climate issue. Moreover, these assessments reflect the embeddedness of oil company executives in company-specific scientific networks and national policy fields and not a global outlook commensurate with the companies operational reach. The most definitive evidence of the national embeddedness of oil company executives is in BP, Shell, and ExxonMobil headquarters' interactions with their respective U.S. and European subsidiaries from 1995 onward. Initially, the American branches of the European oil companies and the European branches of the American oil companies developed strategies that reflected their national context and not the approach of the corporate headquarters. BP and Shell faced resistance from their American subsidiaries after rejecting the adversarial approach to the climate issue (BP executive, personal communication, March 1, 2002), whereas on the other side of the Atlantic, Esso, the European branch of ExxonMobil, favored a more collaborative approach to climate change (European environmental advocate, personal communication, January 27, 2003).

ANALYZING THE CONSEQUENCES OF THE CLIMATE POLICY SPLIT IN THE OIL INDUSTRY

Public reaction to the split in the oil industry focused mostly on the question of real change versus greenwashing. A 1999 article in the *Economist* put the question succinctly, asking of BP'S CEO, "How green is Browne?" ("How Green is Browne?" 1999). The question focuses attention on operational changes within the oil company, the extent of which can be easily assessed by comparing BP and Shell's operations to those of ExxonMobil. In the following paragraphs, I assess the operational consequences of the split in the oil industry, documenting that BP and Shell's investments in renewable energy and greenhouse gas reductions are minimal compared to their ongoing investments in fossil fuel exploration and production. I then shift the frame of reference to the climate policy contexts in which BP, Shell, and ExxonMobil participate. Shifting the frame of reference undermines simple evaluations of the two breakaway companies' climate policies and highlights the contest between oil companies over diverging visions of profitable oil company action in the face of climate change. Each company is trying to establish its climate strategy as widely accepted, dominant approach, and neither the BP/Shell nor the ExxonMobil strategy is predetermined to succeed.

The False Dichotomies of "Ethics" Versus "Self-Interest" and "Green" Versus "Brown"

When first BP and then Shell announced that they were taking precautionary action on climate change, the companies' new climate policies provoked a mixed response in the climate policy community. On one hand, some policy makers and environmental advocates heralded BP and Shell's split from the rest of the oil industry as a courageous step and an important contribution to international climate policy. A press release issued by the American NGO Environmental Defense described BP as "demonstrating the truest form of leadership. . . . BP is showing the world the way—and the company should be congratulated" (Environmental Defense, 1997, p. 1). On the other hand, BP and Shell's climate policies also came under attack.

NGOs such as Greenpeace and the Natural Resources Defense Council questioned BP's claim of moving "beyond petroleum" and Shell's rhetoric about the compatibility of "profits and principles." They launched campaigns with slogans such as "Greenhouse Gangsters vs. Climate Justice" (Transnational Resource and Action Center, 1999) and "Kingpins of Carbon" (Natural Resources Defense Council, 1999).

The controversy over BP and Shell's overall climate policies was repeated with respect to the individual elements of their climate initiatives. As part of their cooperative approach to climate change, both BP and Shell pledged additional funds to be invested in their renewable energy divisions. BP expects to spend about $20 million per year on renewable energy in the next decade (BP, 1998b). Similarly, in 1997, Shell pledged to invest $500 million in renewable energy during the next 5 years (Shell, 1997b). At the time these announcements were made, both companies were lauded for their significant contributions to the expansion of renewable energy markets and simultaneously criticized because the investments were insufficient.

A 1998 Greenpeace International briefing, titled "Reputation and Reality: Shell's Record on Fossil Fuels and Renewables," details the critical viewpoint. The briefing accuses Shell of changing "its attitude" but not the company's "business trajectory." Drawing on a range of facts and figures, the briefing documents that "Shell's renewable energy investments are miniscule compared to its fossil fuel expenditure" (Greenpeace, 1998a, p. 2). The Greenpeace document cites various figures drawn from corporate annual reports, including the fact that "Shell's new renewable investment of $500 million over five years is only 0.4% of its total annual business turnover of US $123.8 billion" and that "for every $1 Shell plans to spend on renewables, it currently spends $77 per year on oil and gas" (Greenpeace, 1998a, p. 2). Similar statistics can be calculated for BP. For example, in 1998, BP spent more than 50 times its $20 million renewable energy investment on capital expenditures and acquisitions related to oil and gas exploration (BP, 1998a).

The simple conclusion might be that BP and Shell's renewable energy investments are green window dressing. However, a different picture emerges by evaluating the context in which BP and Shell pledged to invest in solar and other renewable energy technologies. Comparing BP and Shell's investments to other sources of funding for solar and other renewable energy technologies reveals that their investments were on par with both government solar research and development budgets and with renewable energy funding by the Global Environment Facility (see Table 5). Average government budget allocations for research and development of photovoltaic technologies between 1974 and 1995 were $87 million per year in the North American region, $58 million per year in the Far East and Oceania, and $91 million per year in Europe. These regional averages, as well as the 1995 photovoltaics research and development budget allocations by several countries ($89 million by the United States, $80.4 million by Japan, and $40.4 million by Germany), are roughly comparable to corporate investment by Shell ($100 million per year). Likewise, BP's investment of $20 million per year rivals that of several smaller countries, including Italy ($22.2 million), Switzerland ($9.81 million), and the Netherlands ($9.41 million) (International Energy Agency, 1997). When viewed from this perspective, BP and Shell's renewable energy investments represent a significant contribution to the development of the renewable technologies.

The pattern of minimal operational change but significant contextual impact of BP and Shell's renewable energy investments are representative of the broader assemblage of practices that constitutes their climate programs. For example, an

Table 5: Funding Sources for Renewable Energy and PV Research and Development and Project Implementation

Organization	*Funding*	*Comments*
British Petroleum	$15 million to $20 million per year	From 1997 to 2010; for PV research and development, manufacturing, sales, and project implementation
Shell	$100 million per year	From 1997 to 2002; for solar electricity, forestry, and biomass production/manufacturing, sales, and project implementation
Government PV research and development budgets		
World	$236 million/year	Average annual allocation in the period from 1974 to 1995
North America	$87 million/year	
Far East and Oceania	$58 million/year	
Europe	$91 million/year	
World	$275 million	Allocation in 1995
United States	$89 million	
Japan	$80.4 million	
Germany	$40.4 million	
Italy	$22.2 million	
Global environmental facility total project budget		
Renewable energy projects	$500 million/year	Average annual allocation for period from 1991 to 1998; targeted at project implementation
PV projects	$30 million/year	

NOTE: PV = photovoltaic.

analysis of the two companies' pledges to reduce their emissions of greenhouse gases generates a similarly mixed picture. BP and Shell pledged to reduce emissions from their facilities by 10% from 1990 levels by 2010 and 2002, respectively. They both piloted emissions trading systems internal to the company as the mechanism to meet their reduction targets.

Environmentalist have criticized the 10% reduction targets because they only include emissions from oil company facilities and not emissions embedded in the gasoline and other energy products that oil companies sell. For BP and Shell, only a small fraction of greenhouse gas emissions comes from operating the companies' various oil refineries and chemical manufacturing plants, and approximately 90% comes from the combustion of fuels by end users (American Petroleum Institute, 1991). Yet when setting emissions reductions targets, both companies only counted emissions from their facilities and not the emissions embedded in their products. On the other hand, the greenhouse gas emissions reductions effected by BP and Shell are not negligible. When BP made its 10% reduction pledge in 1998, its annual greenhouse gas emissions were approximately 83 million tones (BP, 1999), on par with those of medium-sized economies such as Austria, Sweden, and Greece (U.N. Climate Change Secretariat, 2005). Moreover, in its current corporate literature, BP discusses emissions embedded in its fossil fuel products, although the company has not set a new target that includes product emissions (BP, 2005).

Finally, regardless of operational changes, BP and Shell's new climate policies have generated new societal awareness about climate change. For both companies, green marketing is a part of their climate initiative. Browne made climate change the flagship issue in BP's marketing strategy to distinguish itself as an environmental leader within the oil industry. The company was well positioned for this rebranding. Historically, BP operations were concentrated in Alaska and the North Sea. At both sites, BP had been subject to close environmental scrutiny. BP staff contended that they learned from its early years in Alaska that poor environmental performance can lead to costly delays (BP executive, personal communication, January 28, 2002). In 2000, after the mergers with Amoco and then ARCO—the latter was completed in April 2000 (BP, 2000a)—BP created a new brand, which it launched on July 24, 2000. The BP shield was replaced by a new symbol, the helios, described as a "vibrant sunburst of green, white, and yellow" (BP, 2000c). The advertising campaign featuring the helios was based on the slogans "Beyond," "Beyond Petroleum," and "Responsibility Beyond Petroleum." Advertisements were placed in major national and international publications, including the *Wall Street Journal*, *The New York Times*, and the *Economist*. Readers interested in BP climate policy could consult the company's new climate change Web site, launched 4 months earlier (BP, 2000b). Likewise, Shell made climate change a core element of its "Profits and Principles—Does There Have to Be a Choice?" marketing campaign (Shell, 1998a). Though open to criticism for overstating oil company action, these marketing campaigns constituted a significant financial investment to raising awareness about climate change.

In sum, BP and Shell's renewable energy investments, greenhouse gas emissions reductions, and green marketing initiatives defy easy categorization as either greenwash or real change. From an operational perspective, BP and Shell's environmental restructuring is partial and limited to those aspects of their operations that can be turned into business opportunities. However, within the broader arenas of their influence, BP, Shell, and ExxonMobil's divergent climate policies have significant material and discursive consequences.

Competing Conceptions of Profitable Corporate Climate Strategies

I argue that at stake in the battles between BP, Shell, and ExxonMobil is not the status of being a "green" firm but competing conceptions of control regarding profitable corporate action in the face of climate change. Embedded in ExxonMobil, BP, and Shell's diverging climate policies are contradictory assessments of the profit potential of various business strategies. The three companies differ in their estimation of profitable alternatives to conventional fossil fuels, the potential of the carbon market, and the importance of corporate social responsibility.

The three companies differ most fundamentally in their assessments of profitable alternatives to conventional oil. Given the projected decline in global oil reserves, oil companies around the globe have had to consider "the end of oil" (Maass, 2005). ExxonMobil has focused its investments on unconventional fuel sources (such as tar sands and oil shale) (ExxonMobil executive, personal communication, November 5, 2001). The reserves estimates for these unconventional fuels are estimated at 5 times those for conventional petroleum (Selley, 2000). From a greenhouse gas perspective, they are a highly polluting investment, because of the

amount of energy needed to extract the oil. Oil sands have triple the greenhouse gas footprint of conventional oil. Canada's development of oil sands in Alberta is given as one reason why it is one of the countries least likely to meet its greenhouse gas reduction commitments under the Kyoto Protocol. However, oil sands development has been a boon for the Canadian economy as well as for oil companies, such as ExxonMobil and ConocoPhillips, that have invested in this area (Dabrowski, 2006).

As explained previously, BP and Shell have emphasized the potential of renewable technologies as alternatives to fossil fuels. Their corporate literature promotes renewable technologies as an important component of future energy supply. Shell projects that renewable sources, which currently account for a negligible component world primary energy supply, will account between 30% and 50% of world energy supply by 2050 (Shell, 2002). Likewise, BP envisions "solar as a significant long-term business opportunity" (Browne, 1997b, p. 13). To date, the profit potential of investments in renewable energy is uncertain. Historically, renewable energy investments by oil companies did not generate profits. The first wave of investment in the 1970s is viewed as a failure by many industry insiders, particularly in the United States. In a published interview, Mobil's CEO, Lou Noto, stated that

> some of our competitors are in some of the so-called "alternative" energy businesses. We got out of those businesses—like solar—some years ago because it was not economically attractive. Even the companies who talk about this right now are only talking about hypothetical future revenues, not bottom-line contributions. (Mobil, 1998)

Even executives from oil companies aggressively investing in renewable energy technologies recognize the risks involved (Shell executive, personal communication, November 10, 1998). They are developing new technologies and building new markets, whose profitability depend to a great extent on government regulation of greenhouse gas emissions and on consumer behavior.

ExxonMobil, BP, and Shell also diverge in their estimation of being able to profit from the international regulation of greenhouse gases, via the buying and selling of emissions reduction credits allowed under the Kyoto Protocol. Both BP and Shell have taken on corporate greenhouse gas reduction targets and have pioneered internal emissions trading systems (Environmental Defense, 2002). Emissions trading has been a winning strategy for both companies because it has helped them to streamline the efficiency of their production processes. BP estimates that the company has created $650 million in value by reducing its process emissions by 10% (BP, 2004). In addition, the companies are hopeful of making a profit by selling their greenhouse gas reductions in the emerging carbon markets within the EU and among Kyoto countries. Of course, realizing this profit potential depends on the evolution of these markets and the future of the Kyoto Protocol. Finally, emissions trading is a business strategy that suits the business models of both oil multinationals. Shell has a profitable oil and gas trading branch, and carbon trading fits nicely into this niche (Shell executive, personal communication, October 28, 2002). Moreover, Shell is also known within the industry for its loosely integrated management system, a system suitable to trading between business units.

In contrast to BP and Shell, ExxonMobil does not see profit potential in the greenhouse gas emissions reduction market. The company is recognized within the industry as the best, most efficiently run oil multinational. ExxonMobil is the industry's

best performance record for worker health and safety and for toxic releases from its U.S. facilities (Council of Economic Priorities, 1994).[8] Thus, there are few low/no-cost emissions reductions opportunities for ExxonMobil. Second, the company does not have extensive trading expertise. Finally, its hierarchical management style is not suited to an internal emissions trading system (Oil industry analysts, personal communication, November 5-6, 2001). As a result, ExxonMobil executives are promoting a corporate climate profit strategy that rejects Kyoto-mandated emissions reductions targets and emissions trading (Exxon, 1999).

A third element of the companies' competing conceptions of control is their relationship with stakeholders. Business consultants describe two styles of oil company engagement with society. In the language of the Shell scenario team, there exist two cultures: a "tell me" versus a "show me" culture. In the "tell me" culture, corporate statements are accepted without question. Oil companies hold society's trust and act as unchallenged experts. In contrast, the "show me" culture demands proof of corporate claims. The demand for external auditing of corporate environmental performance data epitomizes a "show me" culture. Partnership and dialogue are keys to corporate success in a "show me" world (Drummond, 1997). Only BP and Shell have embraced the discourse of a "show me" world, in which oil companies must adapt to external circumstances. ExxonMobil remains firmly grounded in a "tell me" reality.

Shell has been most vocal in its transition from a "tell me" to a "show me" world. When Shell employees recount the company's history in the areas of social and environmental responsibility, they use a narrative that focuses on two distinct eras, before and after Brent Spar and Nigeria. According to Shell, prior to these events, the company had a reputation as an environmentally and socially responsible corporation. Shell consistently met and even exceeded societal expectations.[9] The Shell narrative attributes the Brent Spar and Nigeria crises to the corporation's failure both to notice the evolution of the external environment from a "tell me" to a "show me" culture and to understand the dynamics of the "show me" culture. Since the events of 1995, Shell has been promoting a new pattern of societal engagement centered on the idea of sustainable development. The Bruntland report's definition of sustainable development—"meeting the needs of the present without compromising the ability of future generations to meet their own needs"—is included in the group's revised "Statement of Business Principles" and its "Health, Safety, and Environment Commitment" (Shell, 1997a). Shell's conception of responsible action in the face of climate change falls within the larger framework of sustainable development.

Like Shell, BP developed its climate policy within a corporate context that emphasized dialogue and partnership. A former BP executive traces the roots of BP's partnership approach to the 1950s, when BP's narrow worldview cost the company its assets in Iran. BP started out as the Anglo-Persian Company in 1909, with operations concentrated in Persia (present-day Iran), and it controlled the Iranian oil industry for more than 40 years. However, in 1951, Iran nationalized its oil assets, and at the end of the nationalization crisis, BP's share in the Iranian oil industry was reduced to a 40% stake in a consortium controlling oil production in Iran (Podolny & Roberts, 1999). In addition, BP has also had its share of environmental disasters. The company experienced directly the Torrey Canyon oil spill in 1967 and was able to learn as a bystander from the Exxon-Valdez spill in 1989 and Brent Spar fiasco in 1995. In the environmental arena, BP's partnership

approach translated into hosting an annual environmental forum and the publication of an annual environmental report. Both programs were initiated in 1992. BP uses the forums to get feedback from the environmental community and other constituencies on its environmental and social performance. When John Browne became CEO of BP in 1995, he reinforced "learning from the outside" as a critical part of "BP's knowledge management framework" (Berzins, Podolny, & Roberts, 1998, p. 8). For example, BP used dialogue with constituencies to develop its climate policy, organizing several environmental forums on climate change (E. A. Lowe & Harris, 1998).

In contrast to both BP and Shell, ExxonMobil does not emphasize partnership and dialogue. The company is seen as still living in the "tell me" world. Levy and Kolk (2002) quote an executive commenting on Exxon's access to environmental regulators. In his mind, there was no question of access, since regulators "cannot ignore us anyway; we are the big elephant at the table" (pp. 21-22). Likewise, another Exxon executive argued against third-party verification of corporate environmental reports. He described it as a waste of time and money and reasoned that accurate reporting is legally required and that third-party verification implies that companies are likely to mislead the public (ExxonMobil executive, personal communication, November 5, 2001). This approach sets ExxonMobil apart from BP and Shell but is in line with Exxon's corporate culture and identity. Like the other two companies, a corporate history of ExxonMobil reveals multiple moments of turmoil. The company has lost and gained assets through antitrust proceedings, economic booms and depressions, nationalization of assets in the Middle East and Latin America, the oil shocks of the 1970s, reorganizations, corporate mergers, and environmental disasters (Yergin, 1992). However, ExxonMobil seems to have avoided a crisis of confidence. Its approach to climate change is one in which ExxonMobil made an assessment of climate science and expected the world to agree with its assessment. According to one executive, ExxonMobil has always approached climate change from a "strategic business investment point of view" rather than "an immediate public policy issue" or "public perception issue" (ExxonMobil executive, personal communication, November 5, 2001). ExxonMobil's policy stance on climate change and lack of engagement with international NGOs may invite the inference that the company is less environmentally responsible than the other oil majors. This is a misleading conclusion. Other metrics of environmental performance indicate that ExxonMobil outperforms its competitors. ExxonMobil's conception of social responsibility focuses on running an efficient operation that minimizes workplace accident and local environmental impacts. According to ExxonMobil executives, the company's focus is on environmentalism at the local level, acting as good neighbors in communities. They see no role for oil corporations to be involved in an international dialogue over sustainable development (ExxonMobil executive, personal communication, November 5, 2001).

The shared characteristic of business practices related to alternatives to conventional oil, greenhouse gas emissions trading, and corporate social responsibility is the uncertainty associated with these profit strategies. Will wind and solar become the leading energy technologies of the future? Will there be global regulation that mandates greenhouse gas emissions reductions, thus placing a value on carbon and rewarding those companies that efficiently reduce their emissions? Will stakeholder engagement and perceptions of transparency influence share prices and consumption decisions at the pump? BP and Shell are

betting yes and have invested some resources in promoting this vision of the future. ExxonMobil argues no and is pursuing a course of action mostly unchanged by climate considerations.[10]

Multiple Environmental Trajectories of Capitalism

Which oil companies' conception of control becomes the dominant perception of how markets work and reward or punish climate-friendly corporate strategies will shape the long-term environmental trajectory of capitalism. If and when conventional oil resources are exhausted, will they be replaced by greenhouse gas–intensive nonconventional fuel sources or by solar, wind, and renewable biomass energy? Will binding global regulation of greenhouse gas emissions be implemented during the next 20 years, or will it be delayed for 50 or more years? Moreover, resolving these questions will not be a simple result of market dynamics but also the consequence of the shared understandings cogenerated in part by oil multinationals. ExxonMobil, BP, and Shell are key actors shaping the conceptions of control girding these divergent futures.

To date, both futures appear equally possible. Both the BP and Shell approach and the ExxonMobil approach are proving themselves as viable corporate climate strategies. The most compelling evidence of the existence of multiple environmental trajectories of capitalism are the two dominant climate policy regimes currently evolving. The first policy community, centered on the 1997 Kyoto Protocol, mandates legally binding greenhouse gas emissions reductions. The second, centered in the United States and many developing countries, promotes a voluntary approach to action on climate change, which incorporates business-as-usual activities.

The heart of the Kyoto Protocol is a policy approach commonly known as "targets and timetables." The protocol proposes to address climate change by establishing greenhouse gas emission reductions targets within specific timeframes. The first commitment period of the Kyoto Protocol ends in 2012. By that year, those countries with Kyoto targets have pledged to reduce their annual greenhouse gas emissions by an average of 5% from 1990 levels. To meet their respective national targets, governments are implementing a portfolio of policies and measures (International Energy Agency, 2002). The EU and Japan are the two Kyoto Protocol signatories most active in implementing policies that will generate the emissions reductions needed to meet their Kyoto targets (Christiansen & Wettestad, 2003; Fisher, 2004). The February 2005 entry-into-force of the Kyoto Protocol is evidence of the strengthening of this policy community (Landler, 2005). In addition, the Kyoto approach is being adopted in a range of other governance settings, including the private sector (Environmental Defense, 2002), city government (Betsill & Bulkeley, 2004), and at the state level in the United States (Rabe, 2004).

The primary challenge to the Kyoto regime is a policy approach that rejects mandated targets and timetables. Rejection ranges from an outright disavowal of climate change to the promotion of voluntary initiatives as an alternative to mandated reduction targets. The primary advocate for this policy approach at the international level has been the United States. The United States is the home to the cluster of scientists and think tanks challenging the scientific basis for action on climate change (McCright & Dunlap, 2003), withdrew from the Kyoto negotiations in 2001, and has been promoting a variety of voluntary initiatives (Environmental

Protection Agency, 2006). The efficacy of a voluntary approach to addressing climate change is debated. Many argue that it simply promotes business-as-usual emissions patterns (Natural Resources Defense Council, 2003). The voluntary approach finds support outside the United States as well. The United States, Australia, Japan, China, and India recently signed a clean energy pact that focuses on technology transfer and nonbinding emissions reductions ("U.S. Agrees Climate Deal With Asia," 2005).

It is too early to assess the long-term consequences of Kyoto compliance on divergent patterns of energy development in countries that ratified the Kyoto Protocol versus in those countries that did not. However, it is generally accepted that the policy community centered on the Kyoto Protocol envisions a different environmental future than that centered on business-as-usual approaches and that the split in the oil industry influenced the evolution of these two competing policy regimes. To clarify, I am not arguing that the split in the oil industry created these two distinct policy communities. The different patterns of climate politics in the United States and Europe are a key cause of the split in the oil industry. However, post-1997, BP, Shell, and ExxonMobil played central roles in the further evolution of both climate policy regimes.

BP and Shell's split from the rest of the oil industry was widely interpreted as a statement of business support for the approach to greenhouse gas regulation embodied in the Kyoto Protocol. Some even credit BP's split from the rest of the oil industry in May 1997 for the agreement reached at Kyoto 6 months later (European ENGO activist, personal communication, November 6, 2001). More generally, during the past 10 years, both companies have been actively involved in supporting and operationalizing the Kyoto regime (BP, 2000b; Browne, 1998, 2003; Shell, 1998a, 1998b). They supported the three Kyoto Protocol mechanisms that allow for the purchase and sale of greenhouse gas emissions reductions and emphasized "learning by doing" through various pilot and demonstration projects, including internal corporate emissions trading systems and investments in clean energy projects in developing countries. As a result, the companies became key informants and participants in the development of guidelines for both the EU emissions trading scheme (Engels, 2006) and the Clean Development Mechanism under the Kyoto Protocol (Shell, 2004). Finally, the two companies were also founding members of several business associations that lobby for action on climate change, including the Pew Center on Global Climate Change, the International Emissions Trading Association, and the World Business Council for Sustainable Development (Pulver, 2002).

On the other hand, continuing U.S. federal-level opposition to international action on climate change has been linked to close ties between the White House and key executives at ExxonMobil (Davies & Sawin, 2002). For example, leaked memos reveal that ExxonMobil executives corresponded with staff at the White House Council on Environmental Quality regarding the reappointment of Dr. Robert Watson, an outspoken advocate for international climate regulation, as the head of the international panel of climate scientists that advises the U.N. climate negotiators (ExxonMobil, 2001; Natural Resources Defense Council, 2002). More generally, Exxon, Mobil, and other American oil multinationals continued to fund the research and lobbying activities of the cluster of U.S. scientists and policy groups challenging climate science (Cushman, 1998) and to predict economic disaster if the United States complied with the Kyoto Protocol ("Climate Change: Pact Could Cost Economy Plenty," 1998; "Regulation & the Environment," 1998).

ExxonMobil communicated similar messages directly to the public. In 2000, the company sponsored a series of advertisements placed on the editorial page of major U.S. newspapers, including the *New York Times* and *Washington Post*. The advertisements were titled "Do No Harm," "Unsettled Science," "The Promise of Technology," and "The Path Forward on Climate Change" (ExxonMobil, 2000).

In sum, BP, Shell, and ExxonMobil have been key players in the promotion of two divergent climate policy regimes. BP and Shell's active engagement in international and national emissions trading regulation, ExxonMobil's influence on the scientific debate in the United States, and all three companies' attempts to shape scientific and public opinion on climate change have contributed to strengthening, respectively, the Kyoto Protocol and the business-as-usual climate policy regimes. Which of the two regimes will dominate is yet to be seen.

CONCLUSION

This article developed an environmental contestation approach to analyzing the causes and consequences of variation in firm environmental behavior, based on a case study of the climate policy split in the international oil industry. The analysis provides three insights into the meaning of firm greening. First, changes in firm environmental behavior are not exclusively dictated by economic interests based on firm operational characteristics but are also motivated by perceptions of profit opportunities generated in the social networks and policy fields in which firm managers are embedded. In this article, I demonstrated that in the climate change case, market signals did not provide oil companies with a predefined, profitable approach to dealing with climate change. The world's three largest publicly traded oil companies—ExxonMobil, BP, and Shell—pioneered different corporate responses to potential greenhouse gas regulation despite their broadly similar global operational structures. In deciding how to address the climate challenge, the three companies did not act as global economic units. Rather, their divergent climate policy approaches are best explained by the different scientific networks and regional and national policy fields in which corporate decision makers in each company were embedded.

The second insight of the analysis is that consequences of firm greening should be evaluated not only at the level of firm operational change but also extend beyond firm boundaries. Firms adopting innovative environmental policies are promoting new conceptions of how to integrate ecological criteria into economic practices and thus can restructure the perception and practice of how markets work. Based purely on operational criteria, BP, Shell, and ExxonMobil are difficult to distinguish. Nine years after the split in the oil industry, the amount of oil and gas extracted and refined by the three companies remains proportionally equivalent, as do their global aggregate greenhouse gas emission. Yet it would be false to conclude that the climate policy split in the oil industry has had no meaningful consequences. BP and Shell have contributed significant new investment to renewable energy, reduced their greenhouse gas emissions, and most important changed perceptions about the scope of actions likely to both generate profit and minimize greenhouse gas pollution. BP and Shell offer a new conception of profitable corporate action in the face of climate change, with significant material consequences for long-term patterns of energy production and greenhouse gas emissions.

Third, the analysis makes a theoretical contribution to the debate in environmental sociology between the treadmill of production and ecological modernization theory. The two system-level theories offer competing versions of the large-scale structural tendencies of the capitalist system. Both theories acknowledge variation in firm environmental behavior but diverge in their assessments of the aggregate impact of variation. Treadmill theorists argue that firm-level improvements are outweighed by the system-level imperative for growth. Ecological modernization theorists argue that capitalism can be restructured to accommodate ecological criteria. My analysis contributes to these theories by highlighting the midlevel processes of contestation between firms that shape the long-term environmental trajectories of capitalism. An environmental contestation approach views variation in firm environmental behavior as a site of struggle between different conceptions of the intersection of profitable and environmentally responsible firm strategies.

Finally, my findings have several implications for the further study of firm behavior in environmental sociology. First, my analysis underscores the relevance of the new institutionalism in organizational sociology, with its emphasis on the social construction of markets, to the study of debates over the greening of capitalism. Perceptions of market opportunities circulating in particular political and social contexts played a central role in defining ExxonMobil, BP, and Shell's perceptions of self-interest with respect to climate change. In turn, further reshaping of perceptions regarding profitable oil company action in the face of climate change was one of the key consequences of the companies' divergent climate policy decisions. Second, the study points to opportunities for future research on firm environmental behavior at the midrange, organizational-field level. Few studies focus on the effects of greening by one firm on other firms and on state and nonstate actors within its organizational field. Yet such field-level dynamics are the mechanisms that widen the impacts of firm greening beyond the boundary of the firm and its ecological footprint. In addition, field-level dynamics deserve further study because they form a link between changes in firm behavior and changes in system processes. Third, as a case study of an unfolding process, the oil industry's response to climate change is an ideal study site to reveal the dynamics of contestation between firms over conceptions of profitable action in the face of climate change. However, the longer term consequences of the climate policy split in the oil industry remain uncertain. Other cases of variation in firm environmental behavior need to be analyzed in order to reveal under what conditions challenger conceptions of profitable environmental action become dominant and widely accepted and with what long-term effects.

NOTES

1. This study tracks oil company climate policy from the late 1980s until 2002. During that time period, specifically in 1999, Exxon merged with Mobil to form ExxonMobil. To avoid confusion, I refer to the company as ExxonMobil throughout the article.

2. See Buttel (2004) for an overview of eco-Marxisms and the position of treadmill of production scholars within that field.

3. In terms of carbon emissions per unit of energy produced, burning oil generates 30% more carbon dioxide than burning natural gas and burning coal generates 60% more carbon dioxide than burning natural gas (Rowlands, 2000).

4. Activism around this campaign was widely reported in European news media and mobilized European publics, especially in Germany and the United Kingdom, to boycott Shell gas stations. The boycott was very successful, causing gasoline sales to drop by 50% at some German filling stations (Guyon & Woods, 1997).

5. In November 1995, Shell was criticized for not intervening to prevent the execution of Ken Saro-Wiwa, author and environmental activist, and eight other members of the Ogoni tribe, who had all campaigned against the environmentally destructive oil extraction activities of Shell and the Nigerian government in the Niger delta.

6. The differences in levels of in-house expertise can be measured via oil company participation in the climate science assessment process. For example, only one oil company representative, Dr. Brian Flannery from the Exxon Research and Engineering Company, is listed among the reviewers of IPCC's first *Scientific Assessment Report* published in 1990, although five oil company representatives were in attendance as observers at the drafting session of the Summary for Policymakers.

7. For a detailed regulatory history of the climate issue in the United States and the EU (as well as the United Kingdom and the Netherlands as the home countries of BP and Shell), the reader is directed to Collier (1997a, 1997b), Thairs (1998), P. Lowe and Ward (1998), Long (1998), Bodansky (1994), Agrawala and Andresen (1999b), and Holzer (2001).

8. A 1991 report by the Council on Economic Priorities compared the pounds of toxic releases per $1,000 in sales for the U.S. operations of 13 oil companies. BP scored the worst at 8 lbs/$1,000 in sales, whereas Exxon and Mobil had the lowest releases (0.2 lbs/$1000 in sales) (Council of Economic Priorities, 1991). A follow-up report in 1994 found that Exxon was still below the industry average in terms of toxic releases and air permit violations (Council of Economic Priorities, 1994).

9. This conflict-free history before the 1990s is of course a fiction. For example, the company came under considerable pressure in the 1980s because of its opposition to divestment from South Africa.

10. There are two areas in which ExxonMobil, BP, and Shell corporate strategies coincide. First, they are both actively promoting and investing in technology to capture and store carbon, by reinjecting it into underground oil and gas wells (National Energy Technology Laboratory, 2000). Second, both companies are developing fuel cell technology (Kolk & Levy, 2001).

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