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PRIVATE ENERGY INDUSTRY & CLIMATE CHANGE  
MITIGATION:

A NEO-GRAMSCIAN ANALYSIS OF EXXONMOBIL AND  
SHELL ENERGY SCENARIOS

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***DANIEL A. ABREU MEJIA***

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Members of the examining committee:

Rosalba Icaza (supervisor)

Sunil Tankha (reader)

The Hague, The Netherlands  
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***Inquiries:***

Postal address:           Institute of Social Studies  
                                  P.O. Box 29776  
                                  2502 LT The Hague  
                                  The Netherlands

Location:                 Kortenaerkade 12  
                                  2518 AX The Hague  
                                  The Netherlands

Telephone:               +31 70 426 0460

Fax:                       +31 70 426 0799

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## List of Acronyms

BAU	Business as usual
CCS	carbon dioxide capture and storage
CDA	Critical Discourse Analysis
CO <sub>2</sub>	carbon dioxide
COP-3	Kyoto Protocol Climate Conference of Parties III
EiT	Economy in Transition
G8	Group of Eight Industrialized Countries
GCC	Global Climate Coalition
GDP	Gross Domestic Product
GEC	Global Environmental Change
GEF	Global Environment Facility
GHG	greenhouse gas
IEA	International Energy Agency
IMF	International Monetary Fund
IGCC	Integrated Gasification Combined Cycle
IPCC	Intergovernmental Panel on Climate Change
IPCC A4	IPCC Fourth Assessment Report
IPCC TAR	IPCC Third Assessment Report
IR	International Relations
MNC	Multi National Corporation
NGO	Non governmental organization
OPEC	Organization of the Petroleum Exporting Countries
PDF	Probability density function
ppm	parts per million
UN	United Nations
UNDP	United Nations Development Programme
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
UK	United Kingdom
US	United States

## **Abstract**

This research presents an insight of the problematic relation between the leading oil private industry and climate change mitigation. An analysis of these private firms' energy forecasts is carried in reference with the internationally agreed knowledge-based criteria for preventing the consequences of climate change, and with alternative scenarios elaborated by one international agency and a major NGO.

At its core this paper argues that energy and climate change scenarios from the leading private energy firms are more than technical forecasting exercises. They also have a political dimension that aims at influencing the public debate to support in the foreseeable future an energy system dependent on fossil fuels, in spite of potential negative environmental consequences.

This argument will be approached through a political economy perspective on global environmental governance. And a neo-Gramscian analytical framework will be applied, privileging the discursive level dimension in the analysis of the climate change mitigation position of the leading private firms in the energy sector.

## **Relevance to Development Studies**

Projected climate changes can exacerbate poverty and undermine sustainable development, especially in least developed countries (Stern, 2008), and in some places it is already undermining the international community's efforts to reduce extreme poverty (UNDP, 2007). Mainstreaming climate change mitigation is thus an integral part of sustainable development (IPCC, 2007c).

Therefore it is of relevance from a Development Studies perspective to analyze the discursive positions of the leading private actors of the energy sector, which is the industry that bears the highest responsibility in the warming of the climate system (IEA, 2008). Such analysis can contribute to a better understanding of the prospects and challenges to achieve the mitigation of climate change in the decades to come.

## **Keywords**

Climate change mitigation, energy scenarios, neo-Gramscian perspective, Critical Discourse Analysis



# 1. Introduction

## 1.1 Justification: climate change as an energy issue or an issue for energy?

Climate change and the political and economic challenges that underlie it, simultaneously provide the most relevant and complex environmental problem facing the international community today and possibly for decades to come. It's relevant because of the serious socioeconomic and environmental implications that it poses, and complex because of the way in which climate change is part of, and interacts with, crucial issues on the international agenda such as energy security, deforestation, international aid and a series of North-South relationships (Newell, 2000).

Climate change is exceptional in a number of senses compared with other environmental problems the international community has faced. More than other environmental issues, climate change goes to the heart of the modern industrial economy. Energy, particularly reserves of relatively easy available fossil fuel such as coal, oil and gas, drives economic growth in the contemporary global economy. Most problematically, the largest and most powerful actors in the global economy (the US, EU, and China) are sustained by the spendthrift use of relatively available reserves of these resources, even though they are becoming more difficult and expensive to obtain (Shell, 2008). In this sense Newell and Paterson (1998) has concluded that “when the centrality of fossil fuels in producing global warming is combined with the centrality of fossil energy in industrial economies, it becomes clear that the fundamental interests of major sectors of those economies are threatened by proposals to limit greenhouse gas emissions” (Levy, 2005:73).

Thus, unlike the issue of ozone depletion, climate change relates to basic patterns of consumption, and potentially their transformation (Rowlands, 1995). Hence the response to climate change poses a challenge to the international community of an unprecedented scale in the interdependence of the issues, required level of political coordination, economic investment and time frame of implementation.

Despite this formidable challenge and the resistance it has faced mainly from big emitting countries and industries like oil and gas, transportation and chemicals; international efforts to address global warming have met with some, albeit limited, success. Under the Framework Convention on Climate Change (FCCC), more than 180 nations committed to a long-term goal of stabilizing greenhouse gas concentrations “at a level that would prevent dangerous anthropogenic interference with the climate system” (UNFCCC, 1995). At the third conference of parties to the FCCC (COP-3) in 1997, agreement was reached on the Kyoto Protocol through which industrialized countries committed to reducing their collective emissions to 5% below 1990 levels by the period 2008 to 2012. Although the United States, which contributes approximately one quarter of global greenhouse gas emissions, withdrew from the treaty in 2001, it was ratified by a sufficient number of other countries to take effect in 2005 (Harrison and Sundstrom, 2007:2).

Given the threat that climate change poses to the conventional operation of industrial economies and the inadequate governmental response to these challenges, an analysis of non-governmental actors becomes pertinent as a means of locating the potential sources of change or barriers to government action. Under this rationale this paper examines key discourses of business in the climate change debate, specifically the leading private fossil fuel industry.

The role of the fossil fuel energy industry in climate change is increasingly becoming more critical as the issue of security of supply remains at the highest priority in the energy policy agenda. This is spurred by recent large increases in the price of oil (New York Times, 2008). In this context big oil multinational corporations has been setting profit records, ExxonMobil and Shell in particular have become the most profitable private companies of the world irrespective of industry (Fortune Magazine, 2008).

ExxonMobil and Shell represent polarised corporate public positions around the issue of climate change mitigation. ExxonMobil was until very recently, the epitome of corporate denial of global warming through their actions to avert a preventive US climate policy being well documented. In particular with the case of the Kyoto Protocol (Sæverud and Skjærseth, 2007:43), making ExxonMobil possibly the single most influential corporation on climate change policy (Newell, 2005). Shell on the other hand was one of the first corporations to publicly validate climate change as an issue and to discursively support preventive climate action. However it will be argued in this research that the current leading private firms in the fossil fuel industry, regardless of apparent discursive differences are in fact converged in a position of maintaining the primacy of fossil fuels in the energy system for the foreseeable future, despite concerns of irreversible climate change.

## 1.2 Aim and methodology

This research was performed to provide insight on the problematic relation between the fossil fuel energy industry and the climate change mitigation issue. More specifically, this research aims at understanding the climate change mitigation position and perspectives of the leading private firms in the energy industry. The firms selected for the case study are ExxonMobil and Shell, since both are the leading corporations in the private energy industry in terms of market capitalization, revenues, profits and technology investment (Fortune Magazine, 2008). This analysis is performed on the basis of publicly available information on these companies in comparison with widely referenced documentation on climate change prevention and alternative energy forecasts.

The 'IPPC Fourth Assessment Report on Climate Change' (2007) will be used to provide a general overview of the main problematic aspects associated with the prevention of climate change, with a privileged focus on the contribution, responsibilities and challenges of the energy industry. This reference constitutes the main background of this research, as it is currently the most visible and referenced source on climate change (Stern, 2008:45).

Another aspect of the climate change analysis of both corporations will focus on the alternative energy scenarios provided by the International Energy Agency publications and the Greenpeace Energy [R]evolution Report. The justification of including these references lies on the fact that the ExxonMobil and Shell energy outlooks are mainly scenario building exercises.

In order to perform this analysis I selected a theoretical framework based on the Political Economy of Global Environmental Governance, because it offers a flexible approach to understanding the contested and contingent nature of business power in global environmental politics (Newell, 2005). More specifically the neo-Gramscian approach to business developed by Peter Newell and David Levy (2005) will be utilized as the analytical framework to analyze the climate change mitigation position of both Shell and ExxonMobil. Therefore, my analysis will be carried out at three levels that follow the neo-Gramscian perspective: material, organizational and discursive. In this sense the Critical Discourse Analysis (CDA) perspective with the Argumentation Analysis<sup>1</sup> tool will be used to complement the discursive level of my analysis.

The use of a neo-Gramscian theoretical framework and a CDA perspective implies, as other post-positivist approaches, the explicit aim of seeking to reveal how language is used and abused in the exercise of power. Teun van Dijk (2001) recognizes this as doing discourse analysis 'with an attitude'. A limitation of this framework is its tendency to impose significance on texts for which the researcher is predisposed to find (Widdowson, 2004). However, to some extent the same could be argued against any other methodology chosen (Opie, 2004).

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<sup>1</sup>Argumentation analysis involves the assessment of policy arguments in which ideas about values/objectives/priorities are combined with claims about facts and cause-effect linkages, to produce valuations about possible future actions by agents operating in the public arena (Des Gasper, 2007).

In sum, it is expected that this analysis will contribute in two main directions. First, a modest methodological contribution anticipated is to widen the scope of both the neo-Gramscian IPE framework and the Critical Discourse Analysis approach, by combining them in the discursive analysis of private firms. Secondly, to increase the understanding of climate change mitigation perspectives by means of critically examining the discursive and material positions of key actors in the energy system.

### **1.3 The climate change mitigation issue background**

Climate change is a very complex phenomenon. Despite a degree of uncertainty regarding its future developments, there is evidence-based awareness that the phenomenon of climate change caused by global warming induced by anthropogenic activities, may lead to catastrophic consequences on a global scale if a stringent stabilization level of greenhouse gases in the atmosphere is not reached before 2050 (IPCC, 2007b).

Warming of the climate system is unequivocal, as is now evident from observations of increases in global average air and ocean temperatures. Eleven of the last twelve years (1995-2006) rank among the warmest years in the instrumental record of global surface temperature (since 1850). Changes in land cover and atmospheric concentrations of greenhouse gases (GHGs) alter the energy balance of the climate system. On this matter carbon dioxide (CO<sub>2</sub>) is the most important anthropogenic GHG, increasing its annual emissions by 80% between 1970 and 2004. Global increases in CO<sub>2</sub> concentrations are due primarily to fossil fuel use (IPCC, 2007a).

According to the Fourth Report of the Intergovernmental Panel on Climate Change (IPCC), "most of the observed increase in globally averaged temperatures since the mid-twentieth century is very likely due to the observed increase in anthropogenic (man-made) greenhouse gas concentrations". Despite an initial resistance of the international scientific community, in recent years these conclusions have been endorsed by at least thirty scientific societies and academies of science (Joint Statement of Science Academies, 2001). This includes all of the national academies of science of the major industrialized countries. While individual scientists have voiced disagreement with some findings of the IPCC like the Oregon Petition (2001) promoted by Arthur Robinson, the overwhelming majority of scientists working on climate change agree with the IPCC's main conclusions.

#### ***1.3.1 Mitigating climate change: criteria and scenarios***

Without policy changes climate model projections summarized by the IPCC (2007a) indicate that the average global surface temperature will likely rise a further 1.1 to 6.4 °C during the twenty-first century. Confidence has increased that just a 1 to 2°C increase in global mean temperature above 1990 levels (about 1.5 to 2.5°C above pre-industrial) poses significant risks to many unique and threatened systems including biodiversity hotspots. This also increases the probability of extreme weather events, conditions that pose high risks for severe social and economic disruptions in many parts of the world, particularly in developing countries (Stern, 2008:11).

The IPCC (2001, 2007) has developed a series of scenarios with various levels of climate change mitigation potential. Stabilization at the lower of the assessed levels (490 to 540ppm CO<sub>2</sub>-eq) requires early investments and substantially more rapid diffusion and commercialization of advanced low-emission technologies over the next decades (2000-2030) and higher contributions across abatement options in the long term (2000-2100). There is *high agreement* and *much evidence* that all stabilization levels assessed can be achieved by the deployment of a portfolio of technologies. These are either currently available or expected to be commercialized in coming decades, assuming appropriate and effective incentives are in place for development, deployment and diffusion of technologies and barriers are addressed (IPCC, 2007c).

In order to analyze the viability of alternative energy scenarios that are less dependent on fossil fuels, institutions such as the International Energy Agency provide climate change mitigation scenarios together with necessary policy pathways to realize this ambitious, but technologically achievable objective (IEA, 2008). In this line Greenpeace International also produced the report *Energy [R]evolution*, in which a focus on renewable technologies highlights how current renewable technological potential could provide a global energy supply of 50% by 2050. These two reports provide a clear understanding of the challenges associated with the transition from a fossil fuel to a sustainable energy system on a global scale.

### ***1.3.2 The fossil-fuel based energy industry and climate change***

As mentioned before, one economical sector particularly relevant to the matter of climate change mitigation and consequently, to the necessity of implementing preventive policies and technologies to decrease greenhouse gas (GHG) emissions is the energy industry. Greenhouse gases, which are the main responsible cause for global warming, are strongly related to the massive use of fossil fuels for producing energy (Greenpeace, 2007). Current energy production patterns are highly fossil fuel dependent on more than 80% of the source base (ExxonMobil, 2008).

A significant share of global greenhouse gas emissions is derived from the activities of multinational oil companies. In 2004 alone, GHG emissions from production operations of the three “oil majors” ExxonMobil, Shell and BP were about 330 million tons of CO<sub>2</sub> equivalent. This amounts to as much as half of the total GHG emissions of the UK, the second largest EU emitter. And yet, emissions from company production are small (estimated at 10 percent) relative to the emissions that result from the consumption of sales of hydrocarbon products (ExxonMobil, 2008).

In terms of influence the private oil and gas industry is by far, in economic terms, the most powerful business sector in the world. Of the Fortune Global 500, almost 10% belongs to this industry alone, including 6 in the top 10 and 3 in the top 5 (Fortune Magazine, 2008). The economic power of the industry is unparalleled, with the combined 2007 revenues of the top 10 oil and gas corporations’ accounting for almost \$2 trillions. Only the G8 countries have a higher nominal GDP. With respect to profit, the two most lucrative corporations worldwide irrespective of industry are ExxonMobil and Shell.

Taking into account the considerable economic power and clout in the energy industry this research tries to understand the discursive and corporate positions of the leading private firms and the potential repercussions for the issue of climate change mitigation.

## 2. Theorizing global environmental governance, climate change and the energy industry

### 2.1 The political economy of global environmental governance

The analytical point of departure of this research is the assumption that, *de facto*, a ‘system’ of global environmental governance already exists (Najam, Christopoulou and Moomaw, 2004:23). Over the last few decades, and certainly after the establishment of the UNEP in 1972, a whole range of environmental policy instruments, organizations and institutions were established, the sum of which composes a somewhat disheveled global network of environmental actors and institutions. In this network of global environmental governance the state remains the primary actor. However, the system is composed of other entities such as international environmental organizations, NGOs and other civil society organizations, the media and corporations, each of which is influenced by and impacts the behavior of states (Najam, Christopoulou and Moomaw, 2004:24).

To understand this complex global environmental governance system, a political economy approach is useful since it directs the analysis at the interplay between economic structures, corporate and civil society strategies, and the development of environmental governance systems (Newell, 2005). In this sense, rather than comprehend the growing role of non-state actors, particularly business, in the international governance of the environment as a trend unique to environmental politics, these changes can be interpreted as part of broader shifts in the global political economy associated with globalization.

And though the state remains central in global governance it can still be argued that there is a move in the balance of power away from states and towards markets. Nevertheless, there is debate about whether state power is being reconstituted as “competition states” (Cerny, 1990) positioning themselves to attract mounting mobile investment, or whether state power is increasing in some parts of the world (Weiss, 2003). Most scholars concur however, that in the contemporary context business is gaining the upper hand in the state- MNC bargaining process (Newell, 2005).

This power shift can be explained partially by the internationalisation of production and mobility of capital that has greatly enhanced the influence of firms to set the terms of investment (Levy, 2005). This power has translated into various sorts of political roles, where firms have been able to shape environmental agendas at national, regional and international levels (Newell, 2008:19). Oil corporations like ExxonMobil with a strong lobbying tradition in its home country has sought to extend its leverage into institutions of global reach like the IPCC, where it has managed to include two of its scientists as leading authors of the IPCC 4<sup>th</sup> Assessment Report (ExxonMobil, 2008).

## 2.2 A neo-Gramscian approach to global environmental governance

For the case of forecasting exercises of oil corporations, a neo-Gramscian conceptual framework proves to be adequate. This framework mainly proposes that international environmental governance is a profoundly political process that engages business, NGOs, state agencies, and intergovernmental actors in contestation over structures and processes of governance. As Gale (1998) argues, 'A neo-Gramscian approach forces us to widen our focus beyond the diplomats who are formally engaged in negotiations to include the struggles taking place among competing social forces over the principles, norms, rules and procedures of the international regime'.

We refer particularly to the neo-Gramscian material perspective initiated by Robert Cox (1981), enriched with discourse approaches by Stephen Gill (1995) and adapted to business by Peter Newell and David Levy (2005), which is shaped by a rejection of mainstream positivist International Relations (IR) approaches on the basis of considering them as problem-solving theories. In contrast, a neo-Gramscian approach for Cox 'does not take institutions and social and power relations for granted but calls them into question by concerning itself with their origins and whether they might be in the process of changing' (Cox, 1981: 139). Also the IR literature tends to treat corporate interests at an abstract, aggregate level, as capital rather than corporations (Newell, 2008:16).

However, the application of Gramscian thought to current trends in the international political economy has not been without critique. Germain and Kenny (1998) have questioned whether Gramsci indeed offers a coherent perspective on the relationship between economic structure, ideology, and agency. Another common stand of criticism is the Marxist background of Gramsci's ideas, pointing to analytical reductionism in the exposed relationship between people and their own culture (Strinati, 2004). Authors like Raymond Williams (1985:112) also assert that Gramsci proposed the concept of hegemony as a uniform, static and abstract structure.

Still it can be argued that Gramscian sociopolitical theory, although developed under a more state dominant focus, retains contemporary validity in describing the specific ensemble of economic and discursive relations that bind a network of actors within a framework of international institutions (Newell, 2005). In addition, his theory highlights the role of non-state actors in building and defying 'hegemonic' regimes.

In general terms the neo-Gramscian approach has been selected because its multi-level analysis helps to build a coherent framework that can link the macro-world of international governance structures with the micro-level of corporate practices within a specific environmental issue arena (this will be explored in more detail in section 2.2.1). In this research a post-positivist theoretical approach is adopted, accepting that neo-Gramscian perspectives, in their emancipatory drive, recognize that 'theory is always for someone and for some purpose' (Cox, 1981:129).



### ***2.2.1 Gramscian key concepts***

Possibly Gramsci's most significant contribution to political thought is the concept of *hegemony* in explaining social order. For Gramsci hegemony is not dependent on coercive control by a small elite, but rather rests on coalitions and compromises that provide a measure of political and material accommodation with other groups and ideologies that convey a mutuality of interests. Hegemonic stability is rooted in the institutions of civil society, such as the church, academia, and the media, which play a central role in ideological reproduction, providing legitimacy through the assertion of moral and intellectual leadership and the projection of a particular set of interests as the general interest (Levy, 2005). In other words, hegemony is understood as an expression of broadly based consent, manifested in the acceptance of ideas and supported by material resources and institutions (Bieler and Morton, 2003a: 2). Hegemony is therefore a form of dominance, but it refers more to a consensual order so that 'dominance by a powerful state may be a necessary but not a sufficient condition of hegemony' (Cox 1981: 139).

Furthermore, in Gramsci's view civil society has a dual existence. As the ideological arena in which hegemony is secured, it presents part of the "extended state", complementing the coercive potential of state agencies. However, the relative autonomy of civil society from economic structures and from state authority turns the ideological realm into a key site of political contestation (Newell, 2005).

In this sense, to analyze the construction of hegemony, Gramsci approaches the case of capitalism and argues that we must look for supportive shifts within the "relations of force" at three levels: the material forces of production; the relations of political forces through which the interests of one class fraction come to be accepted as the common interest of society in general; and the relations of military forces and other coercive actions (Gramsci, 1971:181).

These levels of relations of force are in continuous flux as other actors try to resist the hegemonic coalitions. Consequently, hegemony is not a static concept. All actors both in hegemonic and counter-hegemonic coalitions engage in a "war of position" across the three pillars of hegemony for securing or challenging positions of power and domination. Also when the balance of force at all these three levels of relations converges around a specific and coherent set of ideas, it is what Gramsci would call a "historical bloc". However, Gramsci used this term in two different ways. He sometimes used it to refer to the alliances among social forces necessary to move a particular agenda forward. Yet, elsewhere in Gramsci's writings, "historical bloc" describes the alignment of material, organizational, and discursive formations that stabilize relations of production and meaning and thus enable these alliances (Andrée, 2005: 136). In this research it will be argued that the presence of a "fossil fuel hegemonic block", albeit with signs of weakness and division, still converges on the material key hegemonic pillar while more divergent on the discursive pillar.

### ***2.2.2 Gramscian political approach adapted to the case of business***

Although Gramscian perspectives are broad and complex, the neo-Gramscian framework is relevant to the business case as it highlights the political nature of corporate strategies to protect market position, legitimacy, and autonomy in the face of environmental issues. Therefore, technological innovations, partnerships with NGOs, and the development of private standards can all be viewed as political elements of environmental systems in this broader sense (Newell, 2008:4). The focus on strategy also emphasizes the processes of political contestation and compromise as actors attempt to build alliances and frame public debates over science and economics in particular ways, as the case of ExxonMobil and Shell portray (see sections 4.3 and 4.4).

For the particular case of the oil industry the scientific and public agreement that human emissions of GHG are changing the world's climate system constitutes a global environmental issue with massive market transforming potential. The threat from climate change extends beyond the purely economic realm to the ideological foundations of corporate legitimacy and autonomy (Levy and Egan, 1998). And from a neo-Gramscian perspective corporate responses to climate change are therefore geared not just to economic survival in a carbon-constrained world, but also to sustaining the moral authority essential to the fossil fuel hegemonic bloc (Levy, 2005:77).

From a neo-Gramscian approach to the case of business in global environmental politics we depart from Gramsci's "relations of force", and identify three levels of analysis, with certain specific strategies that expected to be observed as actors engage in "wars of position" across the three pillars of hegemony. On the **material level**, companies may develop product and technology strategies to secure existing and future market positions. On the **discursive level**, companies might attempt to challenge the scientific and economic basis for regulation and use public relations to portray themselves and their products as "green", adopting the language of sustainability, stewardship, and corporate citizenship. On the **organizational level**, companies may seek to build issue-specific coalitions that traverse sectoral and geographic boundaries and reach into civil society.

Thus the neo-Gramscian approach and its conception of hegemony provides a basis for a more critical view to corporate political strategy that emphasizes the interaction of material and discursive practices, structures, and stratagems in sustaining corporate dominance and legitimacy in the face of environmental challenges. The contested nature of Gramsci's notion of hegemony finds a path between state-centred accounts of traditional regime theory and overly instrumental accounts of corporate power (Newell, 2005). From this view business is not just the subject of a regulatory system imposed by the state. Rather, business is an intrinsic part of the fabric of environmental governance, as rule-maker, and often as rule-enforcer (Garcia-Johnson, 2000).

## 2.3 Discursive politics in climate change

At the second discursive level of neo-Gramscian analysis adapted to the business case, Gramsci notes that every relationship of hegemony is necessarily an educational relationship (Gramsci, 1971: 350). It is also argued that the exercise of power is closely related to the production of knowledge, which in turn can sustain a discourse. Hence, discourses are embedded in power relations, “as historically variable ways of specifying knowledge and truth, what is possible to speak at a given moment” (Ramazanoglu, 1993:19).

In an expert-driven global environmental governance system, modern scientific knowledge, techniques, practices and institutions enable the production and maintenance of discourses. Discourses as “knowledge regimes”<sup>2</sup> bring us directly to the key role of science in environmental politics, pointing out that MNCs like ExxonMobil and Shell for example, engage in discourse communities through publications that claim to be science-based. In this vein, discourse analysis<sup>3</sup> can be brought to the forefront of the analysis of power and policy, as policies are not neutral tools but rather a product of discursive struggles. Accordingly, policy discourses favor certain descriptions of reality, empowering certain actors while marginalizing others (Bäckstrand and Lövbrand, 2006:52).

A Gramscian political economy approach accounts for why the knowledge forums that business often uses to substantiate their policy preferences are privileged in policy discourse. Relating this both to their deployment of salient modern rational-technical discourses to support their claim-making as well as their material power that helps to ensure that their voice is heard over others (Newell, 2005). Therefore ExxonMobil and Shell energy outlooks and other documents made public by these corporations can be understood in part through the lens of discursive politics.

### *2.3.1 Oil corporate meta-discourse: Ecological Modernization*

From the 1980s and with the publishing of the Brundtland report a discourse of ecological modernization gained ground in Western industrial societies which challenged the notion that modern civilization are facing “limits to growth” as suggested by the Club of Rome in 1972. The distinct feature of ecological modernization is the compatibility of economic growth and environmental protection, the potential coexistence of a liberal market order and sustainable development (Bäckstrand and Lövbrand, 2006:52).

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<sup>2</sup> Discourse coalitions and communities: based on the theory of ‘transnational discourse community’, it identifies symbols, language and policy narrative as a source of power. This framework emphasizes firstly the transnational qualities of professional groups and secondly, the role of discourse. Drawing upon Foucault, the discourse community concept locates discourse at the interface of power and knowledge (Stone, 2005).

<sup>3</sup> In line with argumentative discourse analysis, we subscribe to a conception of discourse that bridges the gap between the linguistic aspects and institutional dimensions of policy-making (Des Gasper, 2000).

At a discursive level, embracing ideas about ‘ecological modernisation’ indicate the way in which discourses and the institutions that adopt and diffuse them play a part in reconciling contradictions derived from the conflict between production in the global economy and the ecological harm it generates. Discursive power then reflects ‘the argumentative struggle that determines which perceptions at some point start to dominate the course of affairs in environmental politics’ (Hajer, 1995).

Levy (2005) points to the considerable efforts by companies in fossil-fuel related sectors to emphasize scientific uncertainties concerning climate change, stressing the economic costs of mitigation and illustrating business awareness of the crucial role of discursive politics in securing legitimacy. Language and knowledge are clearly key sites of contestation in environmental politics.

### **3. Energy and climate change mitigation scenarios**

This chapter will present the subject of energy scenarios as partially a political process that contrasts with the commonly discursive technical oriented portrayal of these forecasting exercises. Furthermore it will be presented alternative energy scenarios done by one of the most visible environmental NGOs and by the leading intergovernmental energy agency, arguing that these forecasts has been developed as counter-hegemonic tactics to challenge the dominant position of fossil fuel sources in the energy industry. This analysis also highlights the complex process of setting climate change mitigation targets at a global scale, since the politically agreed mitigation targets by States are often in tension with the ones agreed by the scientific community. The aim of this chapter is to build a case to contextualize and enrich the neo-Gramscian analysis of the leading private fossil fuel energy industry of chapter 4.

#### **3.1 Climate change mitigation**

The recognition of climate change as a global issue has gone through a long legitimating process which achieved its peak when in the 10<sup>th</sup> of December 2007, The Intergovernmental Panel on Climate Change and Albert Arnold (Al) Gore Jr. were awarded of the Nobel Peace Prize "for their efforts to build up and disseminate greater knowledge about man-made climate change, and to lay the foundations for the measures that are needed to counteract such change" (The Nobel Foundation, 2008). In the last two decades the "war of position" has been carried mainly but not exclusively between the 'climate science bloc' composed by the main science academies of the industrialized countries, and what we can label the 'leading emissions bloc', the industries such as oil and gas, transportation, chemical and steel, which were often supported by their home countries governments, particularly the US-based ones (Levy, 20005). These industries founded the now infamous Global Climate Coalition (GCC) just one year after the IPCC published its first climate report in 1989. And during most of the 90s this became the most oppositional and visible group against preventive climate action (SourceWatch, 2008).

The "climate science bloc" gained wider visibility and influence in 1992 when the UN Convention on Climate Change was developed within the Earth Summit, the Convention entered into force in 1994 (currently enjoying near universality with 192 signing countries), setting an overall framework for intergovernmental efforts to tackle the challenge posed by climate change. It defined its principal normative aim as 'to achieve stabilization of greenhouse gas concentrations in the atmosphere at a level that would prevent dangerous anthropogenic interference with the climate system. Such a level should be achieved within a time frame sufficient to allow ecosystems to adapt naturally to climate change, to ensure that food production is not threatened and to enable economic development to proceed in a sustainable manner'.

The creation of this international framework increased the antagonistic position of the GCC and other affected actors by the prospect of legally binding reductions in GHG emissions. The process became an "open war" when in 1997 The Kyoto Protocol was being discussed in the US Congress, with the GCC launching an aggressive oppositional campaign that claimed

about the Protocol ‘it’s not global and it won’t work’ (SourceWatch, 2008). The business interests of US corporations succeeded in that fight and the US remains the only developed country that hasn’t ratified the Kyoto Protocol.

On the other hand the position of the climate science bloc ‘won the war’ by legitimating in the public opinion the anthropogenic causality of global warming and the prospect of catastrophic consequences if global action is not carried (Stern, 2008). However the debate is far from over. Currently the main point of contestation is reflected on how to address the acknowledged issue of climate change, and in this sense the most widely used tool to address climate change mitigation options is precisely energy and climate change scenarios, where in recent years more than 750 climate change scenarios exercises have been published (IPCC, 2007c).

The key issue remains the perceived economic consequences and costs of reducing GHG emissions, were ‘main areas of uncertainty plague estimates of damages from climate change at all levels’ (IMF, 2008). High emissions emitter actors posit that potentially costly mitigation measures could have adverse effects on economic growth (ExxonMobil, 2008; The New York Times, 2008), whereas international organizations as the IMF (2008) and the UNDP (2007) argues the contrary, that late or no mitigation action will have greater economic negative impacts than the preventive costs of mitigation. This results in a tension that is manifested in the debate over the scale of the interventions and the balance to be adopted between climate policy and economic development (Stern, 2007). The economic argument reflects the discursive position of both ExxonMobil and Shell, which will be explored in the discursive analysis part of the next chapter.

### **3.2 Climate change mitigation scenarios: an overview**

The IPCC have successfully managed to make the case of a scientific consensus on which should be the mitigation target for addressing climate change, defining it as the requirement of “GHG emissions to be reduced to less than 50% of today’s emissions by 2050, in order to maintain the global mean temperature limits increase between 2-2.4°C above pre-industrial levels”. The IPCC have achieved the consensus that higher stabilization levels pose high risks of irreversible climate change (see Table 3.1). However the scientifically desirable climate change mitigation pathway is at odds with governments perceived political feasibility of implementing them, when even in the UK, the State with the most progressive climate change legal framework (World Wide Fund, 2008), ‘there is a disjuncture between scientific necessity and political possibility’ (Matthews, forthcoming).

In the core of the issue is the fossil fuel energy industry, since the evolution of future GHG emissions is directly linked and intertwined with the evolution of the energy industry as the majority of emissions (with more than 60%) comes from energy production and consumption (IEA, 2008). In consequence climate change scenarios and energy ones are interconnected, and the forecast of one informs and interacts with the other.

**Table 3.1 Mitigation targets for global mean temperature increase**

Climate change mitigation risk	Temperature increase in °C above pre-industrial level	CO <sub>2</sub> -eq (ppm) concentration for warming level in column 1	CO <sub>2</sub> -eq concentrations expected to limit warming below level in column 1
Relatively safe mitigation threshold	0.6	319	305
	1.6	402	356
	2	441	378
High risk adverse climate change	2.6	507	415
	3	556	441
	3.6	639	484
	4	701	515
High risk irreversible climate change	4.6	805	565
	5	883	601
	5.6	1014	659
	6	1112	701
	6.6	1277	768

Constructed by the author based on IPCC (2007c)

### ***3.2.1 The contested definition of scenarios***

Scenarios in general terms describe possible future developments. They can be used in an “exploratory manner or for a scientific assessment in order to understand the functioning of an investigated system” (Carpenter *et al.*, 2005). Scenario definitions in the literature differ depending on the purpose of the scenarios, on how they were developed, and particularly on which institutional or economic interests are behind the scenario exercise. The IPCC (2000) defines a scenario as a plausible description of how the future might develop, based on a coherent and internally consistent set of assumptions (‘scenario logic’) about the key relationships and driving forces like rate of technology change, prices, demographic changes, etc.

Some studies in the literature apply the term ‘scenario’ to ‘best-guess’ or forecast types of projections. Such studies do not aim primarily at exploring alternative futures, but rather at identifying ‘most likely’ outcomes, this category type of forecasts are frequently labeled ‘non-intervention scenarios’ because they reflect no major policy changes (IPCC, 2007c) or as labeled by the IMF (2008) and Greenpeace (2007) they are usually identified as ‘business as usual’ (BAU) scenarios.

In the context of the IPCC assessments, scenarios are directed at exploring possible future GHG emissions pathways, their main underlying driving forces and how these might be affected by policy interventions. In this sense the International Energy Agency (IEA) takes as departing point for the construction of energy scenarios the IPCC climate change mitigation targets. However Shell (2008), which is a pioneer in the use of scenarios disagrees with the IEA approach, stating “we pioneered the use of scenarios over 30 years ago to help us understand, prepare for and succeed in a changing world. Scenarios are not predictions and do not start from specific goals for the future. Instead they describe plausible alternatives of how the world’s energy system could develop over a number of decades”. The definition of a scenario is observed to greatly reflect the interests of the organization that is defining it, and this rarely follows only technical considerations but also the political convenience of the selected definition (Gregory and Duran, 2001).

In general the scenario literature can be split into two largely non-overlapping streams: quantitative modeling and qualitative narratives (Morita *et al.*, 2001). This dualism “mirrors the twin challenges of providing systematic and replicable quantitative representation, on the one hand, and contrasting social visions and non-quantifiable descriptors, on the other” (Raskin *et al.*, 2005). This polarization of approaches is clearly present in the polarized methodologies of ExxonMobil and Shell scenarios, for which the former uses a very quantitative oriented approach, while the latter relies more in a narrative methodology.

Some scenarios in the literature are difficult to classify as mitigation (intervention) or baseline (nonintervention), such as those developed to assess sustainable development paths. These studies consider futures that require radical policy and behavioral changes to achieve a transition to a postulated sustainable development pathway. Greenpeace formulated one of the first such scenarios (Lazarus *et al.*, 1993), and the Greenpeace alternative scenario presented further in this chapter follows this trend.

Another type of mitigation (intervention or climate policy) scenario approach specifies future ‘worlds’ that are internally consistent with some specified climate target, and then works backwards to develop feasible emission trajectories and emission driver combinations leading to these targets. Such scenarios also referred to as ‘safe landing’ or ‘tolerable window’ scenarios, imply the necessary development and implementation of climate policies intended to achieve these targets in the most efficient way (Morita *et al.*, 2001). The IEA alternative scenario evaluated in this chapter fits this category.

**Table 3.2 Properties of emissions pathways for alternative ranges of CO<sub>2</sub> stabilization targets under different scenario categories**

Scenario categories	Multi-gas concentration level	Stabilization level for CO <sub>2</sub> only	Number of scenario studies	Temp increase above pre-industrial	Peaking year for CO <sub>2</sub> emissions	Change in emissions in 2050
I	445-490	350-400	6	2-2.4	2000-2015	-85 to -50
II	490-535	400-440	18	2.4-2.8	2000-2020	-60 to -30
III	535-590	440-485	21	2.8-3.2	2010-2030	-30 to -5
IV	590-710	485-570	118	3.2-4	2020-2060	10 to 60
V	710-855	570-660	9	4-4.9	2050-2080	25 to 85
VI	855-1130	660-790	5	4.9-6.1	2060-2090	90 to 140

Constructed by the author based on IPCC (2007c)

### 3.3 Alternative energy scenarios as counter-hegemonic strategies: intergovernmental and NGO perspectives

It can be argued that alternative energy scenarios that are aimed at projecting sustainable energy pathways to mitigate climate change are in fact challenging the hegemonic position of the fossil fuels industry in the energy system, projecting the possibility of a global energy system non dependent on hydrocarbons. Therefore these alternative scenarios can be interpreted in neo-Gramscian terms as counter-hegemonic tactics, which intends to advance the



position of what be identified as a “green bloc” that promotes technologies based on renewable sources. In this section it will be presented two of the most relevant of these alternative scenarios. One of them is developed by the IEA, as this institution have the most referenced energy databases (IPCCc), and Greenpeace that is the NGO that has more visibly confronted the fossil fuel private industry with high profile targeted campaigns against both Shell and ExxonMobil (CorpWatch, 2000).

### ***3.3.1 IEA Energy Technology Perspectives Scenarios to 2050***

The International Energy Agency is a Paris-based intergovernmental organization founded by the Organization for Economic Co-operation and Development (OECD) in 1974 in the wake of the oil crisis. Their *Energy Technology Perspectives* (2008) study is delivered under the context of the G8 request to the IEA “to advise on alternative energy scenarios and strategies aimed at clean, clever and competitive energy future” (FCO, 2005). This organization responds to both fossil fuel and renewable blocs, and represents in itself the “war of position” that is being fought around the future of the energy system, also portraying the complexity of the energy policy arena when the same organization represents the competing positions of its membership that includes both petroleum producers and importers, high and low GHG emitters. It is argued that in the case of the IEA *Energy Technology Perspectives*, the interests reflected are those of the EU, which are keen to support more renewable sources (European Commission, 2008).

#### **The BLUE Map scenario**

The IEA approach to scenario building is that “these scenarios are not predictions. They are internally consistent analyses of the least-cost pathways that may be available to meet energy policy objective, given a certain set of technology assumptions”. From the climate change mitigation perspective this is the more radical and ambitious of the scenarios that the IEA has developed since its foundation (IEA, 2008). This scenario trend draws on the IPCC (2007) conclusions that only scenarios resulting in a 50% to 80% of global CO<sub>2</sub> emissions by 2050 compared to 2000 levels can limit the long-term global mean temperature rise to 2.0 to 2.4 degrees. It also follows the Stern Review conclusion that the benefits of limiting temperature rises to two degrees would outweigh the costs of doing so.

The IEA Blue Map scenario acknowledges that the change needed to achieve this aim is daunting, amounting to ‘nothing less than an energy revolution’ (IEA, 2008), reflected in ways of how energy is supplied and used. It also points that for this aim far greater energy efficiency is a core requirement, together with renewables, nuclear power, and CO<sub>2</sub> capture and storage (CCS) deployed on a massive scale, and a carbon-free transport developed. In the economic side this scenario states that is required additional investments of the order of \$45 trillion, pointing out that although this is a large number in absolute terms, it is small relative to the expected growth in global economic activity over the next forty years and small relative to the cost of not taking action (IEA, 2008).

### 3.3.2 The Energy [R]Evolution: A Sustainable World Energy Outlook

Greenpeace International is an Amsterdam-based organization founded in Canada in 1971 to oppose the United States testing nuclear devices in Alaska. The focus of the organization later turned to other environmental issues and is widely known for its confrontational and high visible tactics (SourceWatch, 2008). The *Energy [R]Evolution* was developed under the request of the German aerospace center and done together with the European Renewable Energy Council, thus as expected the renewable sector is privileged in the projections.

The Energy [R]Evolution scenario includes several rather unique features in comparison to the majority of energy scenarios assessed by the IPCC. One of these distinctive attributes is its radical dismissal of the nuclear power technology based on its safety and environmental risks even in the latest generation version prospective of this energy technology. Another relevant feature is its rejection of the carbon capture and storage technology (CCS), mainly due to the environmental risks uncertainties of underground and ocean storage and more importantly because CCS technology wide diffusion implies continued deployment and a “green light” of more fossil fuel-based energy production. In general and in reference of IPCC assessed scenario categories this alternative scenario asserts a very high technology optimism of the potential development of renewables technologies.

This scenario the same as the IEA one asserts the possibility that by 2050 CO<sub>2</sub> emissions will halve from 2003 levels, reducing by half the energy demand with reference to the business as usual scenario. It also posits that by the same year almost half of primary energy demand will be covered by renewable energy sources, with the electricity sector leading renewable energy utilization.

**Table 3.3 Main comparative metrics of the IEA Baseline reference scenario, the BLUE Map scenario and the Greenpeace Energy [R]Evolution Scenario**

Comparative metrics	Baseline Reference Scenario	IEA BLUE Map Scenario	Greenpeace Energy [R]Evolution
Analysis timeline	2005-2030/50	2005-2050	2003-2050
Population growth	9.2 billions	9.2 billions	8.9 billions
GDP annual growth	3.2% to 2050 3.6% to 2030	3.2% to 2050 3.6% to 2030	2.70% to 2050 3.2 % to 2030
CO <sub>2</sub> reduction target reduction	No target	50% reduction of 2000 level	50% reduction of 1990 level
CO <sub>2</sub> emissions forecast	+ 130%	- 51%	- 50%
CO <sub>2</sub> reductions from CCS	None	19%	None
Fossil Fuels share primary energy	84%	50%	50.30%
Renewables share primary energy	9%	35%	49.70%
Nuclear Power energy share	3.70%	14%	None
Energy efficiency (intensity) gain	+ 40.5 % (0.9% per year)	+112% (2.5% per year)	+ 70% (1.5% per year)

Source: Own construction based on Greenpeace (2007) and IEA (2008)

Although there is a significant number of divergences between the IEA Blue Map scenario and Greenpeace Energy [R]Evolution Scenario, the convergences are relevant (see Table 3.4). In general terms both scenarios shares the same objectives and reach the same climate change mitigation feasibility conclusions, even portraying significant convergence on the future role for renewables and energy efficiency. The main divergences come from the policy pathways options in the role of CCS technology and nuclear power, although is relevant to point out that IEA did developed a sensitive analysis scenario without CCS which was not included in this comparison exercise. Its concluded that the congruencies of these two scenarios are substantive enough to apply both scenarios as alternative references for the next chapter climate change analysis on ExxonMobil energy outlook and Shell energy strategic scenarios, their divergent points will be used to enrich the analysis perspectives on the case study.

## **4. ExxonMobil and Shell climate change mitigation neo-Gramscian analysis**

This chapter focuses on energy forecasts of fossil fuel private business and it argues that they are more than technical forecasting exercises; they portray a political dimension aimed at influencing the public opinion for the benefit and legitimization of the fossil fuel industry despite potential environmental consequences. However the fossil fuel private industry does not have a monolithic stance, showing apparent signs of division in their communication approaches, though discursively, materially and organizationally very converged, as it will be explored further.

Specifically in this chapter the ExxonMobil energy outlook and the Shell strategic scenarios will be analyzed under the three neo-Gramscian levels of examination: material, organizational and discursive. For the material and organizational analysis other sources of information from these corporations such as financial and annual reports will be used to make the case. The argumentation analysis will be mainly focused on the claims contained in the forecast reports and will be complemented only with the ExxonMobil Citizenship Report and the Shell Sustainability Report.

### **4.1 ExxonMobil and Shells' corporate and environmental profiles**

Exxon Mobil Corporation is a US based corporation with headquarters in Houston, Texas, and is a direct descendant of John D. Rockefeller's Standard Oil Company, legally formed on November 30, 1999, by the merger of Exxon and Mobil. Fortune Magazine (2008) provides us with a description of ExxonMobil: "known as the *project masters* for getting things done on time and under budget, the world's most profitable company has stayed ahead of the pack with a surge in exploration and drilling in risky corners of the world like the Middle East and Africa".

On the other hand Royal Dutch Shell has Dutch and British origins, with headquarters in The Hague. Organizationally it does not have the high efficient reputation of ExxonMobil, having faced one of their more serious crises in 2004 when a disclosure of overstatement of oil reserves broke up, leading to the dismissal of their CEO (The Economist, 2004).

The environmental aspect of ExxonMobil and Shell has been a consistent target of critics, both organizations having been targeted with two of the most infamous corporate environmental controversies of all time (CorpWatch, 2007). That pertaining to ExxonMobil was the 1989 Exxon Valdez oil spill that resulted in the discharge of approximately 11 million gallons of oil into Alaskan coastline, for which ExxonMobil is still in court appeals (Greenpeace, 2007); while Shell was the target of the 1995 relocation scandal of the Brent Spar production platform in Britain, and allegedly compliant in the execution of environmentalist Ken Saro-Wiwa by the Nigerian militia in the same year (BBC, 1998).

Relevant for this research is that ExxonMobil has drawn widespread criticism as a former major funder of organizations that campaign against the scientific consensus that global warming is caused by the burning of fossil fuels, and for its previous public position against the Kyoto Protocol (The Union of Concerned Scientists, 2007). On the climate change public side Shell's response has been considerably different than that of ExxonMobil. Shell has engaged in highly visible corporate social responsibility initiatives like leaving early the Global Climate Coalition (the 90s high profile lobby group that opposed restrictions on greenhouse gases), being a founding member of the World Business Council for Sustainable Development, committing as first supporter of the Global Reporting Initiative, being one of the first signatories of the UN Global Compact and initiating an embryonic renewables business.

Although both corporations have been heavily criticized for their environmental actions, Shell has a considerably more favourable social reputation than ExxonMobil. The material analysis of point 4.2 will explore whether in reference to climate change mitigation terms, Shell 'green' discourse is coherent with its investment practices.

## **4.2 A material analysis on ExxonMobil and Shell strategies**

From a neo-Gramscian perspective it would be expected that corporations develop products and technologies that secure them their market positions (Andrée, 2005). In the specific case of oil companies to also retain legitimacy under the issue of climate change that threatens the economic foundations of the sector and their industry hegemony as key energy providers (Levy, 2005).

It will be argued in this section that currently the fossil fuel industry has little material incentive to move towards higher investments into modern renewable sources, even despite the high growth levels of that sector, possibly because of the low profitability ratio of renewables when compared with fossil fuel projects (US Congress Select Committee on Energy Independence and Global warming, 2008). As one high executive of Greenpeace International commented in an informal conversation with the author ‘Shell and BP that since the late 90s begun investing in renewables are currently selling their renewable business and moving towards the Exxon model of focusing on core fossil fuels... they didn’t find a way to make money with renewables’ (2008). This section will explore the financial performance and investments strategies of both Shell and ExxonMobil.

### ***4.2.1 Financial analysis***

Besides being in the same business, ExxonMobil and Shell have something else in common: they are currently the two most profitable private corporations in the world irrespective of industry (Fortune, 2008). ExxonMobil achieved \$40.6 billions in profits in 2007, and Shell recorded \$31.3 billions; moreover they are second and third in revenues, just behind Wal-Mart, ExxonMobil with \$373 billions and Shell with \$356 billions (Fortune, 2008). Both corporations have been beating their own financial records for the last 4 years, which means that as long as oil prices continue to be high, they are likely to maintain similar or superior levels of profitability.

To be fair, it is important to note that ExxonMobil and Shell’s combined daily production of around 7.50 million barrels of oil equivalent (MBOE) in 2007 (IEA, 2008) accounts for only approximately 5% of world production and its daily production is surpassed by several of the largest state-owned petroleum companies, like the Saudi Arabian Oil Company which is believed to be more profitable than Exxon and Shell combined (Financial Times, 2008).

Still, from a financial strength perspective, ExxonMobil and Shell are the most powerful modern private corporations the world has ever witnessed (Fortune, 2008). Such extraordinary profitability from fossil fuels-based sources means that from a business “bottom line” point of view, more incentives are created for more fossil fuels in the energy system, not less (Greenpeace, 2007). It is therefore unsurprising that in the 2008 ExxonMobil’s shareholders’ meeting, a resolution passed by the Rockefeller dynasty to limit ExxonMobil’s emissions and to include a renewable energy policy in the company was rejected by more than 70% of votes (The Guardian, 2008). It does not seem unreasonable to speculate that the investors might have asked themselves, why change the policy that has created the most profitable machine of the world?

Furthermore, both Shell and ExxonMobil have the financial resources to defend and protect their market position better than any other private organization in the sector. However this financial strength is not unlimited, it is also a source of problems and dilemmas for these corporations, making them too visible a target from environmental groups and more governments 'windfall profit taxes' proposals (ExxonMobil, 2008).

#### ***4.2.2 Investments analysis***

Both ExxonMobil and Shell significantly invest in technological research. The nature and magnitude of these investments can provide hints of where the energy industry is moving to, and serve as a material reference to analyze better the forecasts and energy scenarios these corporations publish. It can also shed light on the extent to which these corporations are observing trends in the energy sector or rather actively promoting and shaping them.

As expected all key investment of ExxonMobil in 2007 were devoted to a fossil fuel based portfolio, investing nearly \$21 billions in capital and exploration projects, initiating seven big projects in Qatar, Angola, Norway, Kazakhstan, and The Netherlands, and with plans to start-up other 19 major upstream projects (exploration and production of fossil fuels) in the next three years. ExxonMobil does not have any single investment in renewable energy nor does it have any plans to invest in this sector in the years to come. Accordingly its main focus has been the development of technologies like 'Advanced Reservoir Prediction' models and 'Geological Data Visualization', which allows new fossil fuel exploration opportunities.

On the side of Shell, it follows even more intensively the "core business" trends of ExxonMobil, with \$27 billions in capital investment on fossil fuel projects in 2007 alone (30% more than ExxonMobil). Furthermore, Shell invested close to \$2 billions in oil sands in Canada, which is an oil source far more energy intensive and contaminating than traditional oil drilling.

Also similar to ExxonMobil, Shell's main investments are directed towards exploration of previously unreachable fossil fuel sources by using advanced technologies like 'Electromagnetic Waves', 'Snake Wells' and 'Smart Fields' technologies. As they explicitly state, "technology is opening up new frontiers in the drive to find and develop untapped resources of oil and gas."

Moreover, though Shell has some marginal investments in renewable technologies<sup>4</sup>, it is currently on a tendency of de-investment in that sector. For example in early May 2008 it decided to step back its investment in a high profile UK windfarm project that was going to become the world's largest offshore windfarm, and in general it "has been selling off much of its solar business while moving more into Canada's carbon-heavy tar sands" (The Guardian, 2008). Also in 2007 Shell relocated the renewables unit and fused it within the Gas & Power division, a sign that can imply deprioritization of their commitment to renewable technologies.

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<sup>4</sup> The exact figure is confidential. Shell rejected the author the petition for accessing that information.

However Shell states that they have plans to invest more in wind energy in the US. Still, the renewable business within Shell's structure is economically marginal. Despite this, Shell frequently develops advertisement campaigns that highlight their commitment to renewable sources, and precisely for this reason Shell has faced strong reactions from environmental and CSR groups that have accused Shell several times of "greenwashing" practices (Corporate Watch, 2008). On the basis of the above consideration, it seems fair to argue that Shell's money is not put where its mouth is, so to speak.

Nevertheless it can be argued that the private corporation solely purpose and responsibility to society is to provide profits to its shareholders (Friedman, 1974). However Shell is actually one of the most active business supporters of the Corporate Social Responsibility (CSR) movement that argues for an extended and more integral view of the role of the corporation in society (Bendell, 2004). Hence Shell seems to be facing an enormous dilemma trying to maintain high levels of financial performance with projects that question their public commitment with sustainable developments objectives.

About ExxonMobil's other technological investments, its focus is mainly on cleaner fossil fuel based technologies and on lower emission vehicle research initiatives. One of it flagged "green" projects is its support to the Stanford University Global Climate and Energy Project (GCEP) with \$100 millions for 10 years, with particular interest in carbon capture and storage technologies, although this technology is not expected to become commercially available at least for the next 15 years. But its main investment focus is in the vehicle sector, for which ExxonMobil has a very active strategy of partnerships with vehicle producers like Toyota and Caterpillar "to address the fuel and vehicle as a single system to improve efficiency" (ExxonMobil, 2008). These technology investments concentrate largely on engine research, tire and automotive parts, lithium-ion battery materials and advance fuel economy motor oil. ExxonMobil is also researching in technologies that they believe could have an impact beyond 2030 like hydrogen for vehicles.

Shell in their expanded technology investment strategy also focus on research for carbon capture and storage technology, specifically supporting a demonstration plant in Australia and a project in Norway for which CCS was technically feasible but not economically profitable, thus the implementation wasn't carried. Shell does invest in mainly two renewable sources, which are 'thin-film solar' technology and the more sustainable second generation of biofuels that are not expected to be commercially available for the next 10 years, but as stated before it shows a general trend of de-investing in renewables (IEA, 2008). Also it has developed demonstration hydrogen refuelling stations in the USA, Europe and Japan that follows the same business model of current gas stations. The rest of Shell technological investment is directed towards increasing the efficiency performance of their lubricants and chemical products.

It can be thus concluded that the leading firms in the fossil fuel energy industry are compromising all their major investments in fossil fuel based projects, and that they show no sign of increasing the supply energy share of renewable technologies, most likely due to the high profitability current oil prices are producing (The Guardian, 2008), and also because of the threat to



the industry that “supplies of easily accessible oil and natural gas will probably no longer keep up with demand after 2015” (Shell, 2008). The investment strategies of both corporations depict an interest in developing mainly fossil fuel friendly technologies like CCS. However ExxonMobil shows an outward strategy actively seeking to influence the transportation sector in energy efficiency terms also with non-petroleum based technologies, while Shell shows a more inward strategy, focusing more on enhancing the energy efficiency performance of their petroleum and chemical products.

Therefore from a neo-Gramscian material perspective the industry is consolidating its hegemony, with ExxonMobil and Shell aiming to secure their fossil fuel market participation at least for the next 20 years. In line with this trend is how these firms are moderately investing in long-term technologies like hydrogen vehicles that could eventually compete with their fossil fuel core business, and in that sense it can be interpreted that they are trying to gain control of the technology development of potential substitutes.

### **4.3 An organizational examination on ExxonMobil and Shell**

This section will explore partially the coalitions and organizations that both ExxonMobil and Shell are currently supporting or engaging with, albeit with the acute limitation of only including those tactics that are reported by these corporations.

These two oil giants used to have a common organizational stance in the early 90s, when the public opinion on the issue of global warming was ambivalent. As stated before, both Shell and Exxon were founders of the Global Climate Coalition (GCC), which by then became the most powerful anticlimate group in the US and possibly in the world, advocating against preventive climate action and the implementation of the Kyoto Protocol (SourceWatch, 2008). But in 1997 BP became the first corporation to step out from the GCC and soon after Shell followed. This was the beginning of polarized public positions around the issue of climate change between Shell and Exxon. Another important factor is the fact that Shell was at that time the central target of critics and campaigns from environmental groups that were widely covered by the media (CorpWatch, 2004), thus Shell had a stronger public relations incentive to shift its reactive position towards climate change.

In organizational terms ExxonMobil has a long history of seeking to have more influence on the political arena particularly in the United States than with civil society groups, which is reflected in the company commitment (\$) towards those groups. ExxonMobil political support for national political organizations in the US in 2007 amounts to \$135 millions, almost 80% of which was directed to the Republican Attorneys General Association and the Republican Governors Association.

Also ExxonMobil contributed another US\$132 million to support governors' campaigns in seven different US States. Notably, 35% of the contribution was directed solely for the State of California, which is considered the most progressive of the United States in renewable energy policies (The Economist, 2007). It does not seem unreasonable to presume that the big oil company is trying to influence the state perceived as the most "green," seeking more conservative political stances in the State-level energy policy arena that can support the status quo ExxonMobil promotes in the fossil fuel energy sector (see the argumentation analysis in table 4.2).

ExxonMobil also participates in the US political process by contributing with a company-sponsored Political Action Committee (PAC) for candidates for Federal Office, the 2007 contribution accounts for \$267 millions, placing ExxonMobil in the top 30 list of corporate contributors in US federal politics (US Federal Election Commission, 2008). The only other country where ExxonMobil makes political contributions is in Canada, through its affiliate Imperial Oil Limited. For legal limitations ExxonMobil does not make more political contributions in other countries. However it is observed signs that its priority is to continue influencing the US energy politics, possibly for pushing the company's antagonistic position to legally binding GHG emissions reductions (Greenpeace, 2007).

Another side of ExxonMobil organizational strategy is reflected in the \$166 millions directed in ‘community investments’ (excluding employee giving) in 2007, 42% of which was targeted to educational initiatives and only 4% in environmental ones, with 60% of all the investment focused to the United States alone. Although ExxonMobil’s investment in environmental community initiatives is remarkably low it does protect its fossil fuel projects by partnering when convenient with organizations that can minimize real environmental damage and bad public relations against the oil corporation; engaging in initiatives with local groups and contractor in Brazil, Equatorial Guinea, Cameroon, Indonesia, Russia, and other places where the company has significant economic interests.

In contrast with this passive community investment strategy, ExxonMobil has a very active partnering strategy with the vehicle industry, focusing its technological competence to develop product technologies that do not affect directly the fossil fuel industry but that do potentially affect oil consumption per vehicle. This is the only point where ExxonMobil seems not to follow a reactive climate stance, as the corporation goes as far to challenge the US Energy Information Administration (EIA) forecast of a 50% increase in the light duty fuels demand in the US market by 2030, projecting instead a negative demand decrease of 5% in the same period. ExxonMobil claims that they expect higher fuel economy gains and a saturation affecting the fleet size. And indeed ExxonMobil has currently more than 7 different initiatives of vehicle fuel efficiency, for which the corporation launched in July 2008 a more efficient technology for batteries.

The neo-Gramscian framework with the information available on the case can not clearly explain this more progressive stance of ExxonMobil on the vehicle sector, nor the rationale of ExxonMobil choosing to direct its effort to improve the product efficiency of other industry (albeit very much connected), instead of its own chemical and petroleum based products (as Shell does). This technological support seems on the surface to make more fragile the fossil fuel industry hegemony by promoting lesser consumption levels in the biggest oil market of the world.

It can be argued that ExxonMobil might be advancing these projects because of future profitability perspectives as a US stricter emissions reduction legal framework for vehicles seems inevitable (IEA, 2008). On the other hand from a neo-Gramscian perspective another explanation is that ExxonMobil is seeking to be perceived as a leader in low consumption technologies, which would secure the corporation a higher influence in the US energy policy-making and a better stance with environmental groups. This argument is backed by the intensive advertisement campaign ExxonMobil have maintained since mid 2008 promoting these initiatives (US Congress Select Committee on Energy Independence and Global warming, 2008).

However this is not clearly observed with the available data and can only be posited as a hypothesis. Nevertheless this strategy is indeed congruent with ExxonMobil general organizational approach of securing its fossil fuel based market position, and seeking to influence further the energy policy of the US.

Shell on the other hand makes no contributions to political associations and engages in community investments of quantitatively the same magnitude as ExxonMobil, contributing with the similar amount of \$170 millions to local groups and NGOs in 2007, with no particular area of focus. Although it does prioritize engaging with groups like the Round Table for Sustainable Palm Oil that can potentially secure public support for their business interest in leading the commercialization of second-generation biofuels (Shell, 2008).

However from a neo-Gramscian approach the most significant organizational strategy of Shell is its “Shell Foundation”. This foundation was launched in 1997, after Shell’s public image suffered greatly from the Brent Spar and Nigerian human rights scandals. The Shell Foundation was originally endowed with \$250 millions and uses an “enterprise-based-approach” to tackle social issues “arising from the impact of energy and globalization on poverty and the environment”. Its slogan is “Everyone knows the problems... We have the solutions... And we follow them through”. Also the Foundation applies a business model to the NGO sector, the idea being to take the “business DNA” and apply it to development objectives.

Shell’s sophisticated organizational strategy can be indeed be considered an innovation in the corporate social responsibility movement, and Shell is very aware of the fact that “we (Shell) have redefined the ‘Corporate Foundation’, offering a radical departure from traditional ‘grant-giving’ approaches - one that sees us demanding both financial and social returns from most of our programs” (Shell, 2006). However from a neo-Gramscian perspective Shell tries to transform traditional civil society partners into business partners, actively aiming to make the business discourse and approach the dominant one in the development debates Shell engages with. As it is explicitly stated in their webpage “The Foundation knows that to achieve large-scale impact it must demonstrate to others that its enterprise-based approach is the way forward”.

This is a discursive sign of a hegemonic expansion strategy as Gramsci (1971:181), when explaining his concept of hegemony stated, “not only a unison of economic and political aims, but also intellectual and moral unity... the development and expansion of the [dominant] group are conceived of, and presented, as being the motor force of a universal expansion... in other words, the dominant group is coordinated concretely with the general interests of the subordinate groups”.

Although this foundation aims are ambitious its resources are not, specially when compared to other private foundations like the Ford Foundation (over \$500 millions yearly grants) or the Bill and Melinda Gates Foundation (with a \$38.7 billions endowment), and tiny with reference to the whole company resources. However it is not unreasonable to argue that Shell does have an organizational influencing strategy towards the social sector. Particularly taking in count that Shell has already succeeded in making their scenario building method one of the most recognized forecasting methodologies (IPCC, 2007c).

It can thus be concluded that both ExxonMobil and Shell use organizational strategies in different ways to complement the material tactics to secure their hegemony in the energy sector, the former seeking to influence the political arena and related industries in the US, and the latter pursuing more homogenization of the social sector with business approaches.

#### 4.4 Energy industry scenarios: discursive analysis

In neo-Gramscian terms, corporate energy forecasting can be seen as a strategy of ‘war of position’ in which the oil companies are trying to justify and defend their ‘industry hegemony’ and confront climate change as a threat to their business and financial perspectives (Levy, 2005). Although with the legitimization of the climate science (a hegemonic loss of the fossil fuel industry) this can no longer be a ‘public war’ as it used to be in the 90s. Thus digging deeper into the corporate discourses can serve as a means of potentially identifying more subtle manifestations of how the private fossil fuel energy industry might be defending its hegemony.

The Shell energy scenarios and ExxonMobil’s energy outlook are different in various aspects. First, Shell forecasts till 2050 in comparison to the 2030 time limit of ExxonMobil, which makes comparability problematic. Other relevant differences are that the detail of information made public by Shell is much less than that made publicly available by ExxonMobil; and while Shell is open concerning the methodology (but not with its sources) used to construct its scenarios, ExxonMobil is remarkably obscure in its methods and sources of its forecasting exercise. Also Shell uses a more narrative method of scenario building, deemphasizing quantitative metrics and projections. It is noteworthy to mention that Shell pioneered the use of scenarios during the 70s as an internal planning tool (IPCC, 2007c), and can easily be considered as the corporation with the greater experience in scenario building (IPCC, 2007c).

The main observation is that although both corporations’ forecasts are different in discursive terms they are very congruent in the arguments posited; in other words, they say the same thing in very different ways. Thus, while superficially one may get the impression that the corporations have different stances, a closer look reveals higher levels of congruence. Shell uses a more open discursive approach, specifying clearly which energy policy options it supports and making climate change its primary concern. ExxonMobil on the other hand uses a more refrained and general-claims oriented discursive approach, making the energy needs of developing countries its primary concern, it being noteworthy that ExxonMobil does not even mention the term ‘climate change’ once in their report. Although this discursive discrepancy the emissions projections of both corporations to 2030 are very similar. Exxon Mobil forecasts under a “business as usual scenario” a CO<sub>2</sub> atmosphere concentration in 2030 of 37 million tonnes; Shell “Scramble” scenario forecast around 38 million tonnes in the same time frame.

This comparison has to be taken into account carefully as Shell’s “Blueprints” emission projection level by 2050 is far lower at 25 tonnes of CO<sub>2</sub> (2004 level), and also Shell considers its alternative scenario to be feasible, while ExxonMobil is highly sceptical about its occurrence. This reflects the difference of corporate stances about the relationship between fossil fuel burning and global warming, but in their forecasts exercise this difference appears to be less evident as Shell’s most optimistic scenario is considerably far from meeting the IPCC climate change mitigation targets they claim to support, and although Shell would claim ‘realism’ in their approach, the IEA alternative scenario which departs from the same fossil fuel data arrives at more optimistic potential outcomes, projecting less use of all fossil fuels.

This might signify that there is a common corporate response to defend the centrality of fossil fuels in the energy industry, and the different discursive approaches can be interpreted more as individual business strategies to defend their own market positions in the industry. Also, as Levy (2005) argues, they communicational polarization can be interpreted as a reflection of individual corporate discursive idiosyncrasies. In the next two subsections the arguments that underlie the corporate discourses in the selected energy forecasts will be explored more thoroughly.

#### ***4.4.1 ExxonMobil The Outlook for Energy: A View to 2030***

It is argued that the ExxonMobil's long-term outlook for energy is as well a tool to legitimize the fossil fuel energy industry in the midst of strong public concern on the industry levels of profitability and potential environmental damage (The Guardian, 2008). ExxonMobil mainly portrays the oil business as indispensable for future economic growth and thus framing the climate change mitigation issue as depending on economic priorities. It is also argued that this report is presented as a technical document aiming to contribute to the debate of the future of the energy system, but as the obscure methodology of this forecast and as the argumentation analysis of its key claims indicates, it is rather a veiled political document, advocating for the status quo in the energy industry to remain fossil fuel based in the foreseeable future.

The report focuses on energy demand to the year 2030, examining various energy sources available, predominantly fossil fuels, and also nuclear power and to some extent renewable energies. This outlook can be characterized as a non-intervention scenario (see chapter 3) because it does not aim at exploring alternative futures and it reflects no major policy changes in the energy industry. However, the last part of the outlook related to CO<sub>2</sub> emissions does include "sensitivities" potential for emissions reductions, thus making the outlook sort of a hybrid scenario, primarily a non-intervention one with a rather limited emissions mitigation scope.

ExxonMobil energy outlook discursively is characterized as notably limiting the argumentation exposition, with the use of descriptive and neutral language in most of the report portraying the information as 'objective'. Although the report doesn't refer to other information sources (with the exception to the United States Energy Information Agency, which is cited to contradict its data), neither has it explained the methodology used to calculate its energy projections, nor it explicitly states its basic assumptions such as population growth. Therefore this lack of transparency is the most obvious contestation of ExxonMobil's portrayal to objectivity.

The key claim that is central to the whole report is that developing countries have a prospect of achieving better standards of life reflected in expected GDP growth of "around 3%" per year, entailing that this economic advancement combined with growing population will trigger energy demand and thus greenhouse gas emissions. This claim presupposes the implicit principle that economic progress should be the main normative criteria to analyze the energy sector over any other criteria, following the neoclassic economic approach that views climate change mitigation as a cost that disrupts conditions of market equilibrium (IPCC, 2007c).

**Table 4.2 The argumentative structure of ExxonMobil Energy Outlook key claims**

Main claims	Grounds (data)	Warrants (principles)	Rebuttals
To support continued economic progress for developing countries, more energy will be needed.	GDP growth expected to be 3% per year and energy demand to grow at 1.3 per year.	Economic progress should be the main criteria to analyze the energy sector and its consequences to climate change.	Economic growth can be greatly decoupled from energy (IEA 62% energy efficiency gain potential to 2030).
More deployment of fossil fuels is justified on the basis of future energy demand growth and the impossibility of other alternatives to provide enough energy.	By 2030 fossil fuels will account for more than 80% of energy sources. Renewables have limited potential, in total less than 13%.		Renewable technologies with the right policies can serve as 50% of the energy sources by 2050 and more than 25% to 2030 (Greenpeace, 2007; IEA, 2008).
<i>Unstated claim:</i> increasing CO <sub>2</sub> emissions (thus climate change) is inevitable as It is not possible to reduce emissions and at the same time foster economic growth.	95% of the 56% CO <sub>2</sub> emissions increase between 2005 and 2030 will come from developing countries.	Climate change concerns though relevant (but still uncertain) should be deprioritized in favor of economic advancement. It's a zero-sum situation.	Economic growth without considering climate change can result in higher economic costs and climate change can be mitigated with minimal impact on economic growth (Stern, 2006).

Source: Own construction

ExxonMobil implicitly frames the climate change issue as a zero-sum situation, where economic growth and global warming mitigation are in competition and cannot be achieved at the same time. In this sense the energy outlook puts the weight of the balance in economic growth independently of the potential catastrophic environmental consequences. A counterargument that can be posited is that many studies, the most visible of them the Stern Report (2006), concludes that the economic costs of negative climate change will outweigh by far the preventive costs of mitigation (IMF, 2008).

The other main claim of ExxonMobil derived from the previous one is that to meet these prospects of economic growth more energy will be needed, and under the convenient assumption that renewable technologies have low potential to meet significantly part of that demand, fossil fuels have to continue being the major energy source, maintaining in 2030 the same share of supply that it currently enjoys, which is over 80%. And because the world has to continue under 'business as usual' conditions, GHG emissions will unavoidably persist growing. On this matter it is relevant to point out that the word 'climate change' is not mentioned once in the whole report. ExxonMobil moves from defying the climate science to ignoring it.

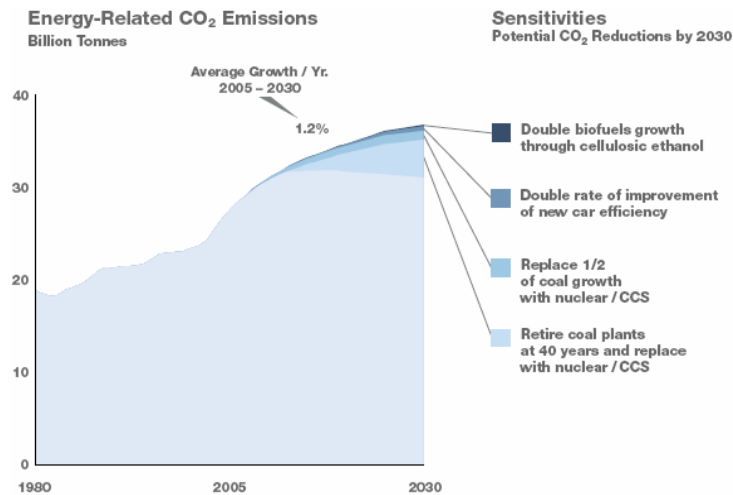
Although the oil giant in other publications and in their webpage recognizes climate change as a 'real' threat they do not explicitly acknowledge fossil fuel causality in the issue. Specifically their energy outlook never explicitly recognize climate change as a real problem; approaching it indirectly in the part of the CO<sub>2</sub> reductions "sensitivities", for which it warns that emissions reductions "are highly unlikely to be achieved", thus reemphasising the almost inevitability of a 'warmer future' (unstated). The omission of addressing climate change directly in the ExxonMobil energy outlook is voluntary (this is more evident when compared with how Shell devotes complete sections of analysis to the issue) and is inferred to respond to ExxonMobil communications tactics that are seeking to influence the public opinion of the inevitability of more oil, gas and coal in the world energy system.

And since ExxonMobil never explicitly states its position on the issue of climate change in their energy outlook, no clear energy options are reflected besides a call for wider support for fossil fuels. Contrastingly in their ‘energy & environment’ section on their webpage they do posit explicit public policy recommendations, which reinforce the same message of the outlook of approaching climate change without affecting economic criteria, and maximize the use of markets in the solutions to be considered. ExxonMobil is observed to assume a highly instrumental approach to climate change, reacting to public pressure with ambivalence in the recognition of the causal responsibility of fossil fuels in the climate change issue.

Concerning the key projection of energy-related CO<sub>2</sub> emissions, ExxonMobil’s energy outlook expects it to reach an annual level of 37 billion tonnes (a 32% increase from 2005 levels), even with “aggressive assumption for energy intensity improvements”, which are really not so aggressive when compared with those of the IEA, which projects a 62.5% potential energy gains to 2030 vs. 32% from ExxonMobil. Again, ExxonMobil’s CO<sub>2</sub> emission forecast is problematic because the outlook does not explain with which methodology this figure was calculated.

A very important divergence is that the IEA Baseline scenario forecast a far higher energy related CO<sub>2</sub> emissions increase in the same timeframe under ‘business as usual’ assumptions, with a projection of around 41 million tonnes, which is 11% higher than ExxonMobil estimates. Taking into account the methodological rigor of the IEA, ExxonMobil might be downplaying the current CO<sub>2</sub> emission trends of the energy industry, since higher expected emissions levels create more incentives and public pressure for policy makers to look for alternative sources of energy.

**Figure 4.1 ExxonMobil global CO<sub>2</sub> emissions forecast and “sensitivities” reductions**



Curiously, ExxonMobil does include some room for emissions reduction, exploring two sets of transportation and power generation “sensitivities” that in the words of ExxonMobil “illustrate the significant challenges -and the practical realities the world faces in reducing emissions”. The power generation



“sensitivities” only focus on coal efficiency, and strategically leave oil and gas (ExxonMobil core business) potential reductions out of the equation. The ExxonMobil “sensitivities” combined have a potential CO<sub>2</sub> emissions reduction of 15% to 2030, in reference to the energy outlook “business as usual projections” (from 37 to 31.6 tonnes). This contrasts sharply with both IEA and Greenpeace energy scenarios that posit the possibility of even reducing 18% of today’s emissions levels by 2030 (23 CO<sub>2</sub> tonnes). This frames the climate change mitigation not as a technical problem (for which alternative technologies already exists: see Figure 4.2), but rather as also a political issue where it is being observed a hegemony struggle, in which the fossil fuel industry already lost the anthropogenic climate change ‘science battle’, and now is observed to be deploying its discursive resources to continue dominating the energy supply in detriment of renewable and other alternative options (Greenpeace, 2007).

**Table 4.2 Technologies not considered in ExxonMobil "sensitivities"**

Technology	Capacity by 2030	Source
Ocean energy	28 GW	Greenpeace
Geothermal	70 GW	Greenpeace
Coal ultra-supercritical steam cycle	100 GW	IEA
Photovoltaic systems	150 GW	IEA
Bioenergy	306 GW	Greenpeace
Solar space and water heating	650 GW	IEA

Source: Based on IEA Technology Perspectives (2008) and Greenpeace Energy [R]Evolution (2007)

#### ***4.4.2 The Shell’s Strategic Energy Scenarios***

Shell’s energy scenario uses a discursive approach entirely different from that of ExxonMobil. The argumentation is loaded with a colloquial and simplistic language style, very rich in values propositions and always avoiding neutral or too descriptive language. It includes a foreword by the CEO and an introduction by the Vice-president of the Global Business Environment division, thus personalizing the authorship of the scenarios presented, something ExxonMobil completely avoids. The scenario building methodology is narrative, as in their own words, “scenarios are written as stories that make potential futures seem vivid and compelling... They provide their users with a common language and concepts for thinking and talking about current events...”.

In this sense Shell is more explicit than ExxonMobil in its discursive hegemonic attempts, which as stated before are also evident in the Shell Foundation strategies. It is noticeable that the typography selected resembles the ones commonly used in children books, a contrast that possibly aims at reducing the anxiety reactions of the worrying conclusions of the scenarios. Also the graphics are of the most simplistic kind, suggesting a very wide public target for the document. A complete argumentation analysis of Shell’s energy scenarios would require a full research paper solely devoted to that aim, so the next paragraphs focuses primarily on Shell key claims.

Shell energy scenarios emphasize three main trends, which are rhetorically called “the three hard truths the world can no longer avoid”. First, demand for energy is growing rapidly as several large countries enter the most energy intensive phase of economic development. Second, supplies of easily accessible oil and natural gas will probably no longer keep up with demand after 2015. To close the gap, the world will have “no choice” but to use energy more efficiently and increase its use of other sources of energy. “This means more renewables like solar, wind and biofuels, more nuclear energy, more coal, and more oil and natural gas from difficult to- reach locations or unconventional sources like oil sands”. And third, that as a result, CO<sub>2</sub> emissions from energy, responsible for more than half of man-made GHG emissions, are set to rise, “even as concerns about climate change grow” (the statement of the inevitability of global warming). Although rephrased differently and arrived with a polarised methodology, Shell energy scenarios main claims are very much similar to those of ExxonMobil, thus the Shell argumentative structure presented in Table 4.3 is remarkably alike with the one constructed for ExxonMobil, with the difference that Shell story-telling approach makes the identification of warrants less clear.

**Table 4.3 The argumentative structure of Shell Energy Scenarios key claims**

Main claims	Grounds (data)	Warrants (principles)	Rebuttals
Demand for energy is growing rapidly as several large countries enter the most energy intensive phase of economic development.	Disappointing the aspirations of millions (Chinese and Indians) by adopting policies that may slow economic growth is not a politically feasible answer.	Economic progress should be the main policy criteria to analyze the energy sector and its consequences for climate change.	Economic growth can be greatly decoupled from energy (IEA 62% energy efficiency gain potential to 2030).
The world will have no choice but to use energy more efficiently and increase its use of all sources of energy: more renewables and much more fossil fuels.	Supplies of easily accessible oil and natural gas will probably no longer keep up with demand after 2015.	Economic progress should be the main policy criteria to analyze the energy sector and its consequences to climate change.	Climate threats caused by use of fossil fuels is the main reason to aim for a deeper reorganization of the world energy mix in favor of a bigger share of renewable energy sources (Greenpeace, 2007).
CO <sub>2</sub> emissions from energy, responsible for more than half of man-made GHG emissions, are set to rise, even as concerns about climate change grow.	Even with the moderation of fossil fuel use and effective CO <sub>2</sub> management, the path forward is still highly challenging.	Climate change concerns tough relevant and legitimate, unfortunately have to be accommodated in favor of economic advancement.	CO <sub>2</sub> emissions are not unavoidably going to rise, there are technically feasible and more sustainable pathways in which emissions can actually be reduced, requiring aggressive and timely global climate policies (IEA, 2008).

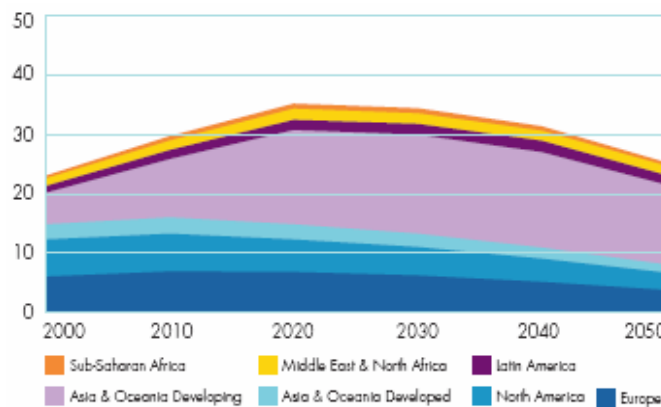
Source: Own construction

Specifically Shell describes two routes the energy system could take between now and 2050. The first of these routes is what Shell has denominated the “Scramble” scenario, which resembles the outcomes of non-intervention scenarios like that of ExxonMobil outlook and the Baseline scenario of the IEA. In the words of Shell it is described as “a world of intense competition between individual countries, which rush to secure more energy for themselves. Political responses to the twin crises of the energy squeeze and climate change are often knee-jerk and severe, leading to price spikes, periods

of economic slowdown and increasing turbulence”. This means that in this scenario there is no effective framework for managing GHG emissions by 2050, although emissions are stabilized at 40 tonnes per year after 2030. This forecast can be characterized as an IPCC scenario type IV (see Table 3.2). Consequently it will be heading towards concentration levels in the atmosphere far above the ones that the IPCC indicate are safe.

The second scenario is called “Blueprints” and in terms of emissions reductions is similar to ExxonMobil “sensitivities”. Shell’s own description of this scenario is that “it is disorderly at first, as local initiatives result in a patchwork of different policies and approaches to deal with the challenges of economic development, energy security and climate change. A global policy framework – and with it a global cost of emitting CO<sub>2</sub> – emerges that spurs innovation, increases energy efficiency, limits the impact of rising energy demand and global warming, and helps maintain steady economic growth”. Even the more optimistic projections of the “Blueprints” scenario, it still projects higher emissions by twofold of the safe threshold agreed by the IPCC. Making the Shell’s ‘good’ scenario, not really ‘good enough’.

**Figure 4.2 Shell “Blueprints” scenario direct CO<sub>2</sub> (Gt per year) emissions from energy**



Source: The Shell Sustainability Report 2007

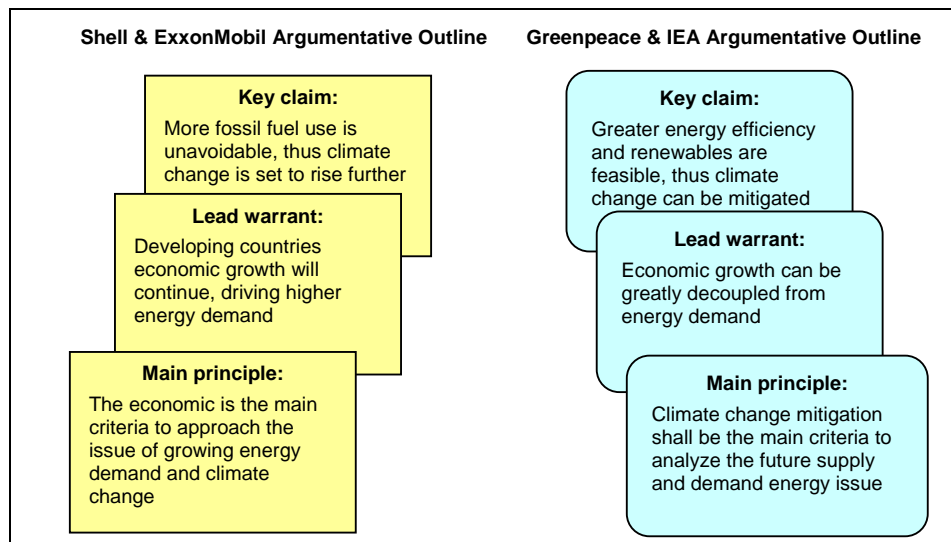
Both Shell scenarios are constructed on the basis of projections of different pathways the global political context can take. Shell uses a targeted communications strategy, using very different discursive approaches in various public documents, from an over simplistic forecasts portrayal in the official Shell Energy Scenarios document to the ultra-sophisticated (3D graphics, operational maps, etc.) approach in their Financial Report. Contrasting with ExxonMobil communication strategy that uses the same approach in all public documents but saying different things in each one of them.

Shell places considerable attention on portraying the “Blueprints” as the best alternative energy future possible, when in fact even this scenario is far from meeting climate change mitigation criteria and targets. This is not a satisfactory alternative scenario, taking in count that besides the IEA and Greenpeace scenarios presented in this research there are at least 24 more other forecasts which projects the potential of achieving lower CO<sub>2</sub> emissions than Shell’s ‘best guess’ (see Table 3.2).

Similar to ExxonMobil but in a more subtle and convincing way, Shell depicts a foreseeable future unavoidably highly dependent on fossil fuels, and although Shell in a very explicit way recognizes climate change as a real threat and the responsibility of the industry in the issue, Shell still projects a ‘warmer future’ even in its more optimistic scenario. And though the discursive approaches of both corporations are polarised, the argumentation structures are remarkably similar. Both companies thus portray almost the same claims, grounding them differently but under the same normative assumptions of the economic criteria as the main one in analyzing the issue of energy and climate change mitigation, as it can be seen in Tables 4.1 and 4.3.

It can be concluded that the leading private fossil fuel energy sector is discursively highly convergent in arguing and framing the issue of climate change as unavoidable dependent upon the economic priorities of developing countries. And thus moving the climate change debate to the acceptance of further deployment of fossil fuels in the energy system and higher (and inevitable) levels of global warming.

**Figure 4.3 Argumentative comparison of selected energy scenarios**



Source: own construction

As stated before the energy forecasting exercise that is portrayed as highly technical is observed to be also greatly political, where institutions on both sides use the scenario tool to secure or challenge the hegemonic position of primacy of fossil fuels in the energy industry. The argumentative structures are polarized, each contradicting the other and defending opposing aims (See Figure 4.3). It is concluded that climate change and energy scenarios should not be framed narrowly as technical instruments, it should be recognized the political dimension of the issue that deals with conflicting interests of the various actors that interact and shape the global energy system.

## 5. Conclusions

The central argument posited in this research is that energy and climate change scenarios from the leading private energy firms are more than technical forecasting exercises. It was argued that they also have a political dimension that aims at influencing the public debate to support in the foreseeable future an energy system dependent on fossil fuels, in spite of potential negative environmental consequences.

This argument was approached through a political economy perspective on global environmental governance and an exposition of alternative energy scenarios. Moreover a neo-Gramscian analytical framework was selected, privileging the discursive level dimension in the analysis of the climate change mitigation position of the leading private firms in the energy sector.

### 5.1 Methodological Contribution

The use of a Critical Discourse Analysis (CDA) tool (Argumentation Analysis) to approach the discursive level of a neo-Gramscian analytical framework has proved to be useful in the case of examining the discursive practices of private actors in the energy industry. This approach has the potential to improve what some authors identify as methodological weaknesses of both CDA and neo-Gramscian IPE traditions. For example prominent scholars of CDA like Van Dijk and Fairclough have been criticized for not properly match their textual analyses with the analysis of practices of production and consumption, even though both scholars recognize the importance of doing so (Widdowson, 2004).

Furthermore, one of the key features of the neo-Gramscian framework is its understanding of the role that discourses play in relations of power (Levy, 2005). However discourse analysis tools were absent in all the neo-Gramscian IPE analyses revised for this research.

Although this research could have benefited with more rigorous methods to approach the material and organizational levels of analysis, it does make a modest contribution in the direction of expanding the scope of CDA and neo-Gramscian IPE methodological perspectives by combining them.

### 5.2 Empirical Contributions

A key observation is that even though the energy and climate change forecasts of both corporations are polarised in their communication approaches, they are in fact very congruent in the arguments posited. In other words, they say the same thing in very different ways, by arguing that a global energy system dependent on fossil fuel is indispensable in the foreseeable future due to expected substantial growth in emerging economies. Thus narrowly framing the climate change mitigation issue in economic terms and presenting the inevitability of a warmer future climate. This argument is contested on the basis of the alternative energy scenarios of Greenpeace and the IEA, and other 24 climate change mitigation scenarios included in the IPCC 4<sup>th</sup> Report (2007c), which presents the feasibility of decarbonising the energy system with greater share for renewable technologies and more energy efficiency gains.

Second, after signs of fragmentation in the fossil fuel private industry by the end of the 90s, with the leading European companies (Shell and BP) moving toward renewable business and the US leading ones (ExxonMobil and Chevron) maintaining the 'oil core business' (Sæverud and Skjærseth, 2007). It is currently observed the presence of converged corporate discursive stances, and a material tendency of increasing investments in exploration and production of fossil fuels projects and disinvesting in renewable technologies. These signs of convergence in all neo-Gramscian relations of force are indicative of the presence of a 'fossil fuel industry hegemonic block'. This hegemonic convergence coincides with oil record prices and high public concern for potential catastrophic climate change.

With respect to climate change scenarios, it is observed how different actors use them as 'discursive weapons' in a complex struggle to maintain or challenge hegemonic positions in the energy industry. Although key actors like the leading private energy firms, a influential transnational environmental NGO and an intergovernmental agency, all depart from similar energy databases and climate change references (IEA energy databases, IPCC Reports and The Stern Review), they arrive at not only different but contradictory conclusions and forecasts. This suggests that the widely used scenario building methodologies (IPCC, 2007c) are not only technical tools but also political instruments that reflect the organizational interests of the institutions that develop them.

The implication for climate change derived from this research is that the prospect for effective implementation of mitigation actions from key actors is uncertain. As it is concluded that the leading private firms' scenarios and investment strategies in the energy sector are unaligned with the scientific consensus of global warming halting objectives.

A precautionary note is that this does not seem to be a trend unique to the fossil fuel energy sector; as the transportation industry, which after the energy is the most relevant sector for climate change mitigation (IEA, 2008), is also far from being aligned or even intending to be aligned with climate objectives (The International Transportation Forum, 2008). Moreover no single State has adopted a climate policy that fully meets the IPCC climate mitigation criteria (UNDP, 2007), where the two highest emitter countries (the US and China) have rejected binding reduction emission targets (Germanwatch, 2008).

Therefore even if the leading oil corporations align toward sustainable energy pathways, for a climate change mitigation perspective that wouldn't be sufficient without the effective policy commitment of governments and other key emitter sectors in industrialized and industrializing economies.

### **5.3 Suggestions for further research**

As stated before, the neo-Gramscian perspective in the IPE literature privileges the discursive level of analysis but it rarely internalizes in its methodology rigorous discourse analysis tools. Building on the methodological contribution of this paper and acknowledging that the Argumentation Analysis CDA tool utilized is rather simple (Des Gasper, 2000), it is suggested to further explore possibilities of enriching neo-Gramscian approaches with more

sophisticated discourse analysis tools like Textual, Rhetoric, Frame and Category Analysis. This has the potential of opening deeper levels of examination for neo-Gramscian perspectives and more grounded contextual basis for CDA approaches.

Another area of relevancy for deeper inquiry identified in this research is a climate change impact analysis of major state-owned fossil fuel corporations, which are in fact in economic terms the most powerful actors in the energy system, even more than ExxonMobil and Shell (The Guardian, 2008). However it is acknowledged the great difficulty in addressing this subject, as many of these state-owned corporations are precisely known for their secrecy and nontransparent information policies (Transparency International, 2008).

A final recommendation is to explore in more detail the quality and character of the methodologies utilized to construct climate change forecasts. The case of the energy scenarios of the IEA, Greenpeace, ExxonMobil and Shell questions the technical rigor of such exercises, as they use the same or similar baseline data however arrive in many metrics to completely different and even contradictory projections. It would be relevant to identify to which extent the organizational priorities of the forecasting institutions shapes beforehand the projections to be arrived at.

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## **Webpages**

[www.api.org](http://www.api.org) (The American Petroleum Institute)

[www.corpowatch.org](http://www.corpowatch.org)

[www.exxonmobil.com](http://www.exxonmobil.com)

[www.exposexxon.com](http://www.exposexxon.com)

[www.eu.europa.eu](http://www.eu.europa.eu)

[www.fec.gov](http://www.fec.gov) (Federal Electoral Commission of the United States)

[www.globalreporting.org](http://www.globalreporting.org)

[www.greenpeace.org](http://www.greenpeace.org)

[www.guardian.co.uk](http://www.guardian.co.uk)

[www.ica.org](http://www.ica.org)

[www.imf.org](http://www.imf.org)

[www.internationaltransportforum.org](http://www.internationaltransportforum.org)

[www.news.bbc.co.uk](http://www.news.bbc.co.uk)

[www.nobelprize.org](http://www.nobelprize.org)

[www.nytimes.com](http://www.nytimes.com)

[www.shell.com](http://www.shell.com)

[www.sourcewatch.org](http://www.sourcewatch.org)

[www.worstlobby.eu](http://www.worstlobby.eu)