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MASTER THESIS

Oil multinationals' response to global warming

A critical assessment of climate-related CSR reporting and the possible implications for CSR effectiveness

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List of abbreviations

BP	British Petroleum
CDP	Carbon Disclosure Project
CNPC	China National Petroleum Corporation
CPLC	Carbon Pricing Leadership Coalition
CSR	Corporate social responsibility
GCC	Global Climate Coalition
GHG	Greenhouse gas(es)
GRI	Global Reporting Initiative
IEA	International Energy Agency
IPCC	Intergovernmental Panel on Climate Change
KPMG	Klynveld Peat Marwick Goerdeler ¹
MNC	Multinational Corporation
OGCI	Oil and Gas Climate Initiative
OPEC	Organization of the Petroleum Exporting Countries
SDG	Sustainable Development Goal
UN	United Nations
UNFCCC	United Nations Framework Convention on Climate Change

¹ KPMG is a global accounting enterprise.

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1. Introduction

Only recently, the *Intergovernmental Panel on Climate Change* (IPCC) found that “rapid and far-reaching” (IPCC 2018, 15) and "unprecedented" (*ibid.*) changes in all aspects of society are required to limit global warming to 1.5°C above pre-industrial level and mitigate the destructive impact of the changing climate on people and planet. Even to meet the Paris Agreement’s minimum target of a temperature rise of 2°C at maximum, global CO₂ emissions must be halved in each of the upcoming decades (Rockström et al. 2017, 1269).

As a part of the broader development to include non-state actors in international climate policy, it has been widely acknowledged that a significant contribution from the business sector is crucial to turn these ambitions into reality (Falkner 2016; Nasiritousi, Hjerpe, and Linnér 2016). Their involvement is chiefly important due to major corporations’ remarkable share of the blame for climate change in the past and present: Heede (2014, 234) has shown that 63% of cumulative worldwide emissions of industrial CO₂ and methane between 1751 and 2010 can be traced back to only 90 companies from the emission-intensive industries.

Almost two-thirds of these so-called ‘carbon majors’ are multinational companies from the oil and gas industry (*ibid.*). These companies’ commercial model in its core is incompatible with the global efforts to limit climate change. Increasing profits from their conventional business are inevitably linked with persistent harm to the planet and threats to general well-being. In the light of growing scientific, political and societal awareness about the anthropogenic character of global warming and its effects, the industry has come under increasing public pressure, with the Kyoto Protocol, the 2007 IPCC report and the Paris Agreement as central cornerstones. Most importantly, the latter event has been interpreted as a global consent about the medium-term goal to decarbonize the global economy and embrace alternatives to oil, gas, and coal (Kinley 2017, 10; Graaf 2017, 184).

Despite the flourishing landscape of political regulatory tools², binding regulation of business only plays a minor role in climate change mitigation efforts (Benjamin 2016,

² Market-based approaches like carbon taxation and cap-and-trade system are among the most popular (see Dessler 2016, 197ff. for an overview of popular measures).

354f.). To a large extent, companies are expected to mitigate their impact on the climate voluntarily, often under the guidance of ‘soft’ private or public-private regulatory initiatives (Green 2016; Abbott 2012).

Consequently, climate change has trickled into the oil and gas industry’s corporate social responsibility (CSR) agenda. CSR is a mostly voluntarism-based approach to limit the negative impact of business on society and environment and has largely replaced binding political regulation of companies in the highly liberalized global economy since the 1990s (Rosen-Zvi 2011, 530ff.; Scherer and Palazzo 2011). At the heart of the CSR concept lies the idea that societal and institutional pressures force companies to go beyond legal requirements in order to obtain a level of legitimacy on the market and in society (Freeman 1984; DiMaggio and Powell 1983). Accordingly, enterprises are expected to adjust their behavior to expectations and common practices of their environment and associated interest groups. *Shell*’s chairman Chad Holliday (2019) recently drew on this idea when communicating that the firm’s success in the future “will depend largely on whether society trusts us. Investors invest in companies they trust, governments allow trusted companies to operate and consumers buy things from people they trust.”

However, it is an ongoing debate if private regulation in the realm of CSR indeed contributes to sound corporate behavior and serves the community. Those who praise CSR (e.g. Camilleri 2017) consider it a promising and pragmatic approach to tackle the “regulatory vacuum effects” (Scherer and Palazzo 2008, 423) of the global economy in which states have lost grasp on globally operating corporations. Critics (Karnani 2010; S. B. Banerjee 2014, 2008) oppose that CSR is little more than a marketing tool which mainly serves companies and forestalls real change, since it lacks enforcement mechanisms and can be easily manipulated for corporate benefit.

By focusing on the issue of climate change, this thesis analyzes how the oil and gas industry deals with the vast freedom which the ‘soft’ regulatory approach based on CSR leaves them. After a general introduction to the concept of corporate social responsibility and a portrayal of the interlinkages of business and climate change, the study analyzes the scope, content and rhetoric of climate-related CSR reporting of ten large oil multinationals from different geographies, using quantitative content analysis as well as discourse analysis.

CSR reports contain the companies' communication with their economic, societal and institutional environment with regards to major social and environmental challenges. They document if a company perceives the issue of climate change as relevant to its stakeholder environment and display how the firm responds to external demands and expectations.

The study attempts to determine to which degree the companies feel accountable towards the public and which external pressures most forcefully guide their responses to climate change. By doing so, it attempts to contribute to the debate on CSR efficiency, focusing on the question if it has the potential to substantially support the global efforts to tackle the pressing challenge of climate change. To set a standard the corporate strategies can be measured against, this research project understands the Paris Agreement targets as the scientifically-grounded political and societal consent to which corporate behavior needs to be aligned to.

The study's results suggest that CSR alone seems to have a limited capacity to discipline oil multinationals and to 'softly' align their strategies with the goal to limit the global rise in temperature. US corporations and especially European companies do react to public pressure regarding climate change relatively comprehensively but don't seem to take it as an incentive for fundamental change. Instead, they approach their environment proactively, in an attempt to shape the issue in their own terms and aiming to proceed with business-as-usual. The direct impact of societal actors and non-binding political initiatives (e.g. the SDGs or the Paris Agreement) on 'Western' firms' behavior is found to be relatively limited.

Instead, these investor-owned companies seem to be strongly guided by the position of their investors. While such shareholder primacy alone rather tends to lead to profit-maximization and forestall a radical shift in strategy, it also promises some potential for change through climate-oriented shareholder activism. However, to unlock this potential, a more ambitious and concrete regulatory framework which decreases the profitability of carbon-based energy seems necessary.

In comparison, the climate change reporting of the analyzed firms from emerging economies on average is much less comprehensive. This indicates that they generally feel less accountable to their multi-stakeholder environment. However, their rather obedient

and servant rhetoric displays closer structural ties to the governments in their home countries, especially in the case of the Chinese companies. This invites the interpretation that these firms might adjust their climate change strategies in response to progressive governmental positions or initiatives – even without ‘hard’ regulatory measures.

These results might be hardly surprising if we consider our knowledge of the modern capitalist firm. Nevertheless, this study enhances our knowledge of firm behavior and CSR effectiveness by taking a new research approach based on the study of corporate communication.

2. A brief introduction to corporate social responsibility

Five decades ago, neoclassical economist Milton Friedman published an op-ed article in the *New York Times Magazine* in which he took a clear stance regarding the relationship between business and society:

“There is one and only one social responsibility of business – to use its resources and engage in activities designed to increase its profits so long as it stays within the rules of the game, which is to say, engages in open and free competition without deception or fraud.” (Friedman 1970)

In today’s business world, almost fifty years later, such a claim would qualify as little more than an outsider’s view. Activists and consumers today expect the business sector to take care of social and environmental problems to which they contribute through their business operations, such as human rights violations, water scarcity or climate change. Under this pressure, CEOs and board leaders commonly have recognized the need to take greater responsibility for the world surrounding them (Bielak, Bonini, and Oppenheim 2007; PricewaterhouseCoopers 2016, 27ff.). Famously, John Elkington (1998) has noted that economic success today is only one factor to consider when doing business. In the 21st century’s business world, he argues by referring to a ‘triple bottom line’, *profit-seeking* essentially needs to be brought in accordance with *people* and *planet*.

These developments are reflected in the expansion of corporate social responsibility³ (CSR) across the globe. What CSR exactly encompasses and what it does not, remains an ongoing debate within academia and the business community. CSR “means something, but not always the same thing, to everybody” (Yang and Rivers 2009, 156). Dozens of scholars have attempted to develop a conclusive definition over the years (see Carroll 1999 for a chronological overview). Much-cited are the early conceptualizations by Davis (1973, 312) who understood CSR as a “firm’s consideration of, and response to, issues beyond the narrow economic, technical, and legal requirements” and Carroll (1979, 500) who wrote that “the social responsibility of business encompasses the economic, legal,

³ Partially, authors use different terms to describe similar concepts, i.e. ‘corporate accountability’, ‘corporate responsibility’ or ‘corporate citizenship’ (see Frynas 2009, 5 for an overview). For consistency, only ‘corporate social responsibility’ as the most common term – or the abbreviation CSR – will be used in this study.

ethical, and discretionary expectations that society has of organizations at a given point in time”.

Spite of an abundance of attempts, neither the corporate nor the academic world have managed to agree on what CSR precisely means and encompasses. As a result of his analysis of 37 definitions, Dahlsrud (2008) concludes that CSR is a concept which is socially constructed within a specific context and therefore takes a slightly different form and focus in every firm, depending on firm size, sector, and origin. It is a concept “in a continuing state of emergence” (Lockett, Moon, and Visser 2006, 133). Therefore, authors like Marrewijk (2003) or Blowfield and Flynas (2005) suggest to give up on the hard task to develop an inclusive ‘one solution fits all’ definition. Instead, the latter argue that CSR should rather be understood

“as an umbrella term for a variety of theories and practices all of which recognize the following: (a) that companies have a responsibility for their impact on society and the natural environment, sometimes beyond legal compliance and the liability of individuals; (b) that companies have a responsibility for the behavior of others with whom they do business (e.g. within supply chains); and (c) that business needs to manage its relationship with wider society, whether for reasons of commercial viability or to add value to society” (Blowfield and Flynas 2005, 503).

Adapting this broad understanding, CSR in the present thesis is understood as a mindset rather than an actual set of practices or specific behavior. CSR is a set of values, norms, and beliefs regarding corporate behavior which acknowledges a certain level of responsibility of business vis-à-vis society and the environment. As such, it touches the five dimensions of CSR which Dahlsrud (2008, 4) has found to form the intersection of most existing definitions of CSR: the stakeholder dimension⁴, the social dimension, the economic dimension, the voluntariness dimension, and the environmental dimension.

In the last decades, as a result of globalization, corporate focus increasingly has shifted to problems of global scale (e.g. climate change or biodiversity) instead of only targeting problems in the firms’ respective local environments. This is demonstrated by Stohl et al. (2007) who portray the emergence of a global CSR which does not distinguish between ‘out there’ and ‘in here’ but considers the corporate contributions to global problems.

⁴ According to Freeman (1984, 25), stakeholders are “any group or individual who can affect or is affected by the achievement of the firm’s objectives” (or further explanations, see chapter 2.2.).

Starting from here, this chapter introduces some key aspects of corporate social responsibility which are considered important for this study.

2.1. Corporate social responsibility and neoliberal globalization

CSR by no means is a recent idea. In his early work on the relationship between business and society, Howard Bowen (1953, 52) stated that “the acceptance of obligations to workers, consumers, and the general public is a condition for survival of the free enterprise system”. Business leaders increasingly began to be confronted with public demands to contribute to social development in the “issue era” (Camilleri 2017, 60) of the 1960s and 1970s. At that time, social movements advocating for civil rights, women’s rights, consumer rights, and environmental protection gained momentum and increased pressure not only on governments but also on the business sector (*ibid.*).

The roots of CSR, however, can be traced back even further, at least to the late 19th century, when the modern capitalist firm as we know it today emerged in the West (Sukhdev 2012, 19ff.). Through the incorporation of increasingly large parts of the population into their operations, companies started to have a growing impact on society in the late 19th century (Cheney, Roper, and May 2007, 4f.). As a response to the negative effects of factory labor on the community (i.e. air pollution and health problems), firm owners introduced private welfare programs to demonstrate their sense of interconnectedness between their business and society and to increase their legitimization. Cheney, Roper, and May (2007, 4) therefore call CSR “a product of industrialization”.⁵

However, corporate social responsibility has never been as widely spread as it is today (KPMG International 2017, 5). In the past three decades, accelerated globalization has

⁵ However, socially responsible corporate strategies by no means a purely ‘Western’ phenomenon. In India, socially responsible behavior of major firms could already be observed around 1900 (Elankumaran, Seal, and Hasmi 2013). In China, business has always been guided by close personal networks (*guanxi*) and was linked to Confucian principles such as kindness, justice or trust (Zhao 2014, 41ff.).

Since the 2000s, the modern form of CSR has also become more widespread in many emerging economies (Frynas 2006) and in some cases even is found to be more elaborated than in high-income countries (Baskin 2006). In a more recent study, companies from the BRICS rank “nearly on par with those of advanced countries in including measures and policies for corporate social responsibility (CSR) in their business plans, but still lag in terms of concreteness of actions and in monitoring output” (Betz 2015, 230).

A closer look at the academic findings on single countries would exceed the scope of this project. For further information, see for example: on China (Noronha et al. 2013; Zheng, Luo, and Maksimov 2015; Zhao 2014; Li and Zhang 2010); on Russia (Preuss and Barkemeyer 2014; Kuznetsov, Kuznetsova, and Warren 2009); on India (Dhanesh 2014; Mishra, Singh, and Sarkar 2013; Betz 2015) or on Brazil (Cavalcanti Sá de Abreu et al. 2012).

fundamentally changed the relationship between business, governments, and society. Emerging conflicts between the three poles and the consequentially evolving challenges nowadays often are of global character, with climate change as only one example.⁶ This is a result of what Scherer and Palazzo (2008, 423) have labelled the ‘regulatory vacuum effect’: an imbalance between highly flexible corporations which move capital and production around the world with ease, to wherever they find lower taxes or production costs, and a mostly state-based political system which struggles to deal with problems which reach beyond their borders.

It is no coincidence that the world saw a massive increase in CSR activities in the business sector during the 1990s (Cheney, Roper, and May 2007, 7). At that time, the neoliberal paradigm coined policies in many parts of the world, fostered by agenda-setters such as the *World Trade Organization*, the *International Monetary Fund*, and the *World Bank*. In the light of the Washington Consensus, more and more governments loosened their grip on corporations to follow the promises of a freely-acting market (Harvey 2007). As a result, large and often multinational corporations became the “primary societal institution influencing social developments” (Allen and Craig 2016, 5) and increasingly overtook tasks which formerly were in the hands of governmental actors, from security to welfare (Matten and Crane 2005). This is embedded in a broader shift from (top-down) government to (bottom-up) governance, which has famously been described by Rosenau, Czempiel, and Smith (1992).

Interestingly, the decreased pressure from governmental side thus did not lead to less but more social engagement of the business sector. More and more, the destructive side of neoliberal globalization (Harvey 2006) became visible – especially in countries of the global South – and public awareness about multinational companies’ contribution to these developments arose. In the light of anti-globalization protests in the late 1990s, firms broadened their social and moral agenda in an attempt to gain legitimacy (Scherer and Smid 2000) and respond to growing critique.

⁶ Climate change is an issue “that creates and is created by a global sense of the world” (Malone 2002, 143). Processes of economic globalisation – i.e. the shipping of products in enlarged supply chains – contribute massively to the phenomenon. At the same time, it also has been acknowledged as a problem which needs to be addressed globally: While the greenhouse gases are emitted locally, their harmful effects are felt globally (*ibid.*).

Within this “globalization of responsibilities” (Rasche, Morsing, and Moon 2017, 3), companies are now expected to contribute to solutions for social and ecological problems, and one can increasingly observe “business models that are designed to meet environmental, societal and governance deficits” (Camilleri 2017, 60). Companies have become a political actor (Scherer and Palazzo 2011). In this context, CSR as a concept has gained special attention as it represents a pragmatic, low-barrier form of (self-) regulation through social norms, values, and beliefs which are expressed by the multiple stakeholders a firm depends on or are simply taken for granted (see chapter 2.2.).

However, the capacity of CSR to contribute to general well-being has constantly been challenged. Some argue that the political role assumed by the business sector tends to “blur the lines of accountability and responsibility between public and private actors” (Breit and Böhm 2014, 8) and in the end might foreclose a constructive solution from any side. As one of the loudest critics, Banerjee (2008, 2014) has repeatedly questioned the usefulness of CSR, calling it an “ideological movement” (2008, 52) which is intended to legitimize and consolidate the power of large corporations. He argues that

“corporations do not have the ability to take over the role of governments in contributing to social welfare simply because their basic function (the rhetoric of triple bottom line aside) is inherently driven by economic needs” (S. B. Banerjee 2008, 74).

In most cases, as other critics note, doing good for society is detrimental to the corporate aim to maximize profits (Karnani 2010, 1; Benjamin 2016, 357f.). Following this argument, companies are not likely to pursue voluntary CSR strategies which do not simultaneously boost their profits. Instead, the maximization of shareholder value as the single most important goal ultimately always drives management decisions. This is explained by the critical role of managers in capitalism who need to guarantee short-term economic success (Karnani 2010, 2). Due to the conflicting relationship between corporate goals and general well-being, the potential of CSR is called into question. Instead, political involvement – in the form of regulation, taxation or punitive fines – are found to be unavoidable to effectively force businesses to act for the good of society (*ibid.*).

2.2. CSR as the product of external pressures

The debate about why companies engage with CSR is as old as the concept itself. As a conclusion to their review of the different theoretical approaches to corporate social responsibility, Garriga and Melé (2004) give a helpful overview of the existing theories. Broadly, they distinguish between instrumental theories (CSR to maximize profits), political theories (CSR as an attempt to use corporate power responsibly), integrative (CSR as a means to integrating social demands) or value theories (CSR for moral reasons).

The present study builds one stakeholder theory (e.g. Freeman 1984; Rowley 1997) and institutional theory (e.g. Scott 2001; DiMaggio and Powell 1983) as the broadest and most popular approaches among them (see figure 1, p. 11). Both understand CSR activities as a reaction to external pressures and merge normative considerations and economic thinking. In the past decades, it has been recognized that societal actors increasingly raise concerns about the social and environmental impact of business (e.g. J. S. Harrison and Freeman 1999; Reid and Toffel 2009). The growing importance of CSR thus can be explained as a reaction to this development, as the increasing application of a tool to find the balance between economic profitability and general claims for a respectful treatment of people and environment.

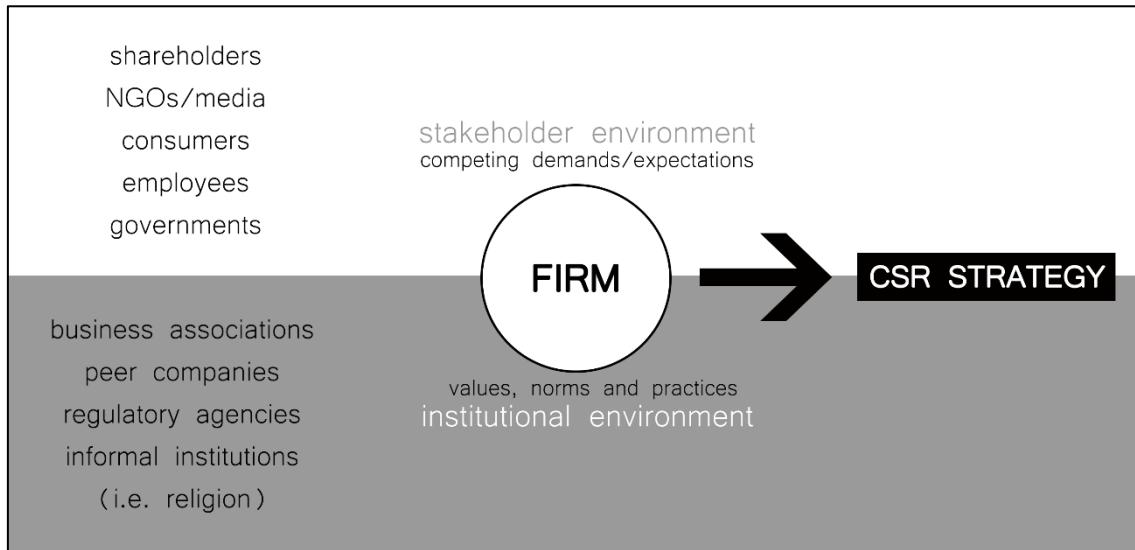
In this context, reputation and legitimization play an important role as a firm's vulnerable spot vis-à-vis the public. Building on Max Weber's thoughts on legitimacy, Wæraas (2007, 285) argues that organizations only obtain legitimization if they "respect the limits of what the environments find acceptable". This understanding is linked to the assumption that there is a social contract between business and society which implies direct and indirect obligations and a certain degree of consent regarding business practices (Donaldson 1982; Donaldson and Dunfee 1999).

The underlying idea is that corporations which behave in opposition to external expectations are punished on the market⁷. Since a firm's economic success strongly depends on a certain level of external support, responsible behavior is necessary for long-

⁷ Studies have empirically approved that firms who behave socially responsible are rewarded by consumers (Orlitzky, Schmidt, and Rynes 2003). Ihlen (2009, 258) opposes the business case for CSR, pointing to "plenty of evidence to show that the market does not necessarily punish corporations that do not engage in CSR". He refers to Vogel (2005) who stresses that CSR economically only makes sense for a limited set of companies.

term commercial success and survival. Camilleri (2017, 65) writes: “If it is a company’s goal to survive and prosper, it can do nothing better than to take a long-term view and understand that if it treats society well, society will return the favour.” Despite the costs it implies, addressing social issues can create added value and turn into a competitive advantage vis-à-vis less responsible peers (Porter and Kramer 2006, 92).

Figure 1: CSR as a response to external pressures (own illustration)



Opposing the more neoclassical understanding of a firm as an entity whose single responsibility is the creation of profits for its shareholders (e.g. Friedman 1970), stakeholder theorists treat business as “a set of interrelated, explicit or implicit connections between individuals and/or groups of individuals” (Sriramesh et al. 2007, 122).

Accordingly, it considers firms to be not only accountable to their shareholders but to a broader set of stakeholders, defined as “any group or individual who can affect or is affected by the achievement of the organization’s objectives” (Freeman 1984, 46). This encompasses investors but also consumers, employees, and suppliers (primary stakeholders) or governmental regulators and environmental activists (secondary stakeholders; see Clarkson 1995, 106ff.)⁸. These groups all confront the firm with

⁸ By introducing these groups as relevant, stakeholder theory also manages to give a more concrete face to the relatively abstract idea of ‘society’. In a more recent work, Freeman et al. (2010, xvii) even suggest to replace the word behind the ‘s’ in CSR, making it “corporate stakeholder responsibility”.

different – financial and non-financial – demands and expectations and in this way influence management decisions. As Freeman (1984, 107) notes,

“corporate survival depends, in part, on there being some ‘fit’ between the values of the corporation and its managers, the expectations of stakeholders in the firm, and the societal issues which will determine the ability of the firm to sell its products”.

Therefore, a firm needs to find a balance between the competing external interests and the very own aim to succeed economically. Successful business making – according to stakeholder theory – thus essentially requires incorporating and balancing these different interests, and CSR activities are a way to do so.

Since a firm usually can't satisfy the multiple conflicting expectations at the same time, it needs to evaluate the relevance of the individual stakeholder demands and balance them accordingly to the importance they have for a firm's legitimacy (Mitchell, Agle, and Wood 1997; Ihlen 2008). Therefore, firm behavior is understood as the result of a conscious process of reflection and can display a firm's perception of its stakeholder environment and the priorities attached to the single groups.

Enhancing this stakeholder-oriented understanding of responsible corporate conduct, institutional theorists (e.g. Scott 2001; DiMaggio and Powell 1983) stress the impact of shared and established social norms and practices on organizational behavior. These theorists understand “society as consisting of tightly and rationally coupled institutions” (DiMaggio and Powell 1983, 156) and assume that in a firm's environment certain values “are taken for granted as ‘the way we do these things’” (Frynas 2009, 16).

The institutional approach attaches less importance to single stakeholders and their concrete demands and instead explains firm behavior through a set of value-based rules every actor within a given institutional environment is expected to obey, may it be the industrial sector or the country it operates in⁹. A firm accordingly does not only seek

⁹ Considering the global character of many companies' operations today, special attention has been given to the question which is the environment that dominates multinational companies' CSR behavior. Operating across borders, they are confronted with the complexity of a more heterogeneous field of stakeholder groups and a large variety of legislations, norms and values (Brammer, Pavelin, and Porter 2006, 1026).

It remains debated if it's the home country's or the host country's institutional framework that ultimately coins CSR behavior or in other words, if multinationals pursue one homogenous global CSR strategy or develop several local approaches (Muller 2006). MNC's seem to be likely to adapt to local circumstances if their subsidiaries meet an environment which is very different to the corporation's home base (Yang and Rivers 2009; Reimann et al. 2012). However, domestic institutions in the companies' home country and long-standing ideological traditions within a firm seem to remain dominating forces for MNC behavior (Pauly and Reich 1997) since constancy “contributes to the reduction of uncertainties and to the solution of organizational coordination problems” (Heidenreich 2012, 576).

legitimation from directly associated interest groups but establishes CSR to fit into the broader institutional context, i.e. business associations or trade unions but also informal institutions like religious or cultural norms (Brammer, Jackson, and Matten 2012, 8). According to Doh et al. (2010, 1464), “legitimate organizations meet and conform to societal expectations and, as a result, are accepted, valued, and taken for granted as right, fitting, and good”. Accordingly, it is necessary that firms act within a frame that has been established within its given institutional environment – or manage to manipulate this frame according to their needs.

DiMaggio and Powell (1983) have argued that these dynamics tend to result in “isomorphic pressures”, thus spill-over effects from one institution to another which result in a converging behavior of different firms acting within the same country or industry. This is due to comparable external culturally-grounded expectations from organizations upon which firms are dependent, such as governments (coercive isomorphism), similar socialization and education of the companies’ executive leaders (normative isomorphism) or the inter-firm imitation of competitors’ behavior (mimetic isomorphism).

2.3. CSR reports as corporate dialogue with society

Jointly with the increased awareness for CSR described in the previous chapter, annual reports on the CSR-related activities of firms have become more widespread. In 2017, 93% of the world’s 250 largest companies by revenue and 75% of a broader set of 4900 companies reported on their activities regarding human rights, labor rights, anti-corruption, pollution or climate change (KPMG International 2017, 9). Compared to 1993, this means a considerable increase. Back then, the same study found that only 35%, respectively 12%, of the companies in the sample published such a report. This growth partly may be explained through the increasing number of governments and stock

Levy and Kolk (2002) have argued that a single global solution in dependence from the home country’s institutional context is the most probable approach for global issues such as climate change. Since such issues generally are negotiated in unified multilateral arenas, MNCs “have little choice but to develop unified company-wide positions regarding the scientific, regulatory, and economic aspects of such regimes” (*ibid.*, 277). This aspect is important to keep in mind for the analysis of oil multinational’s response to climate change which forms of the present thesis.

exchanges requiring corporations to disclose non-financial information on their operations (for an overview see C. Herzig and Kühn 2017, 206ff.).

If we understand corporate social responsibility as the attempt to incorporate external demands, CSR reporting is the public mirror of this process. The reports are a central – and possibly the most comprehensive – element of corporate stakeholder communication and are used to “illuminate a corporation’s alignment of its business practices with stakeholder and societal expectations” (Grantham and Vieira 2018, 3). Put into a nutshell, corporate social responsibility reports

“portray the relationship between a corporation and society. They seek to improve communication between the corporate world and the broader society within which companies report.” (Boston College Center for Corporate Citizenship 2010, 5)

Usually, the reports provide details on policies and practices, report data, collect anecdotes, document goals for the future and discuss challenges and issues the company faces (Boston College Center for Corporate Citizenship 2010, 16ff.). The thematical foci and exact composure of a report can strongly change over time, depending on a firm’s country of origin and the business sector it forms part of (van Marrewijk 2003; Gjølberg 2009; Carnevale and Mazzuca 2014).

This can be explained by the differing stakeholder interest foci across companies, sectors, and countries: While employees in a risk-intensive sector like mining might be especially interested in a firm’s concerns about working safety, those of a bank probably care less about the same issue. As a consequence of this stakeholder dependence, the analysis of the structure and thematical focus of CSR reports can be a fruitful approach for those who want to get a clearer picture of how a specific firm maps its own environment. As O’Connor and Gronewold (2012, 216) put it, the publications provide signals “about regulative, normative, and cultural-cognitive influences that determine actions and routines”.

It has been argued that CSR report can create a certain level of accountability because they “set a standard that the organization is held to” (Grantham and Vieira 2018, 1f.). By comparing the picture that a company drafts in its report and its actual performance, stakeholders get the chance to check the credibility of the organization’s sustainability efforts. However, critics repeatedly stress that CSR reporting does not foster but rather

hinders real change since communication efforts might be given priority over action when it comes to responding to public critique (Rasche, Morsing, and Moon 2017, 15; Allen and Craig 2016, 7ff.; Porter and Kramer 2006, 79). In other words, the reports create a discourse of sustainability around a company which satisfies stakeholders and therefore allows the firm to smoothly proceed with business as usual (Spence 2007, 859).

Therefore, scholars regularly stress the importance of not taking the reports' content for granted. Being a central part of the corporations' public relations efforts, the disclosures have been criticized for blurring reality and for presenting an idea of what public might desire to read, rather than actual behavior (Skjærseth and Skodvin 2003, 7). The reports allow a company to transmit a particular self-presentation to the public and construct a desired corporate identity (Frandsen and Johansen 2011). This blurry character makes it necessary to 'read between the lines' and interpret the wider context and rhetoric of what firms disclose in their reports.

Communication "orients people to consider a particular perspective, evokes certain values and not others, and creates referents for our attention and understanding" (Allen and Craig 2016, 7). Therefore, corporate disclosures should not primarily be understood as a generous corporate service of transparency towards the public sphere but first and foremost as an opportunity for the firm to influence public opinion or policies and create "ideological consent" (Spence 2007, 857) in support of their position. They primarily shed light on how the firm wants to be seen and towards which issues and aspects it aims to direct public interest but also which problems it attempts to hide between the lines. As Porter and Kramer (2006, 80) have critically concluded,

"such publications rarely offer a coherent framework for CSR activities, let alone a strategic one. Instead, they aggregate anecdotes about uncoordinated initiatives to demonstrate a company's social sensitivity. What these reports leave out is often as telling as what they include."

Additionally, it has been criticized that missing performance metrics, unreliable and non-verifiable date, different units of measurement and a lack of contextualization hinder comparisons between companies and at maximum allow to see correlations but no causations between the disclosures and a firm's strategy (Sullivan and Gouldson 2007; Rosen-Zvi 2011). In the past decades, several voluntary reporting initiatives have been established to harmonize CSR reporting, with the *Global Reporting Initiative* and the

United Nations Global Compact as the most prominent ones. These initiatives have helped to gradually streamline the information disclosed by companies and make the results more understandable and transparent (Post 2013; Fortanier, Kolk, and Pinkse 2011). However, due to the guidelines' non-binding character, firms still can decide what they want to hide from the public eye and still have "ample opportunities for reality construction" (Pollach 2018, 248).

This chapter has served to introduce corporate social responsibility as the idea that the business sector has a societal mandate which goes beyond the maximization of profits. CSR is a concept with historical roots which has become increasingly widespread in the era of largely unregulated neoliberal globalization and whose actual contribution to general well-being has repeatedly been challenged. In the following chapter, this thesis looks at corporate strategies to climate action as an example of CSR behavior, in preparation for the empirical part of this research project.

3. Business and climate change

At latest with the publication of the fourth report of the Intergovernmental Panel on Climate Change (IPCC) in 2007, which massively contributed to the general recognition of the man-made character of global warming (Pinkse and Kolk 2009, 25), climate change has become “an institutionalized megastandard” (Frandsen and Johansen 2011, 517) in global society. The issue is one of the dominating discourses of our time as it constitutes a significant risk for all kinds of organizations and areas of everyday life and will affect income, biodiversity, health, mortality, and infrastructure all at the same time (Cuevas 2011).

The business sector has been found to be a central factor in this phenomenon, bearing a particularly high responsibility (Frumhoff, Heede, and Oreskes 2015). In his landmark study, Heede (2014) showed that almost two-thirds of the global historical emissions of greenhouse gases (GHG) have been emitted by only 90 companies. This is estimated to equal nearly half of the rise in global average temperature and about one-third of global sea-level rise since 1880 (Ekwurzel et al. 2017). The GHG emissions of some large companies easily surpass those of smaller industrialized states like Belgium (Patenaude 2011, 260).

In consideration of these numbers, ‘hard’ political regulation of business remains relatively limited (Benjamin 2016, 354f.), despite the growing emergence of carbon tax regimes (L. Herzig and Caspar 2019) and cap-and-trade emission markets in China or the European Union (Welfens et al. 2017). Instead, non-binding self-regulatory tools – often under the guidance of businesses and NGOs – play a major role (Green 2016; Rosen-Zvi 2011, 531ff.). In 2012, Abbott (2012) found 68 private or public-private initiatives to address global warming. To give two popular examples, the London-based *Carbon Disclosure Project* calls companies to disclose their GHG emissions annually (CDP n.d.). The *Carbon Pricing Leadership Coalition* works on the orchestration of different emissions trading initiatives and legislations (CPLC n.d.). Such initiatives today complement the state-based top-down approach to tackle climate change, which has been criticized for its ineffectiveness (Victor 2011). Most prominently, the Paris Agreement in 2015 emphasized the importance of incorporating the private sector into the efforts to combat climate change (Nasiritousi, Hjerpe, and Linnér 2016; Falkner 2016).

These developments seem remarkable when looking at historical business responses to climate change. The first decades of the climate change debate in the 1980s and early 1990s were coined by massive anti-climate lobbying, the public denial of scientific evidence and the refusal of strategic changes and only started to morph slowly in the context of the Kyoto Protocol in 1997 (Pinkse and Kolk 2009, 3). In that time, corporations began to “reconstruct themselves as responsible stewards of the environment” (Levy and Egan 2003, 804) and attempted to establish a narrative of industrial leadership within the overall efforts to combat climate change (Schlichting 2013). As Frandsen and Johansen (2011, 514) put it, corporate focus – at least in communication – has shifted “from green to blue”, thus from attention to more locally relevant environmental issues to a focus on climate change.

Today, global warming is a central field of corporate social responsibility strategies (Pollach 2018; Freundlieb and Teuteberg 2013). It has started to be considered as ‘CSR meta issue’ since it affects all relevant CSR levels, from the workplace to society as a whole, being connected to all different kinds of stakeholders (Crane, Matten, and Spence 2014a, 352). Subsequently, climate-related measures have become widespread all across the business community, reaching from process optimization to the participation in emission trading systems, technological innovation or divestment strategies (for an overview, see Kolk and Pinkse 2005, 2004).

This remarkable shift has been explained by several facts. One doubtlessly is the increasing public pressure which followed the scientific and political consent in the course of major cornerstones like the Kyoto Protocol, the IPCC reports or the Paris Agreement. Following the assumption that “what is considered to be proper corporate conduct is a social construction that varies according to culture and time” (Ihlen 2008, 13f.), *zeitgeist* requires companies to display a certain degree of responsibility towards the climate in order to maintain legitimacy. Climate activism from investors has steadily grown (Reid and Toffel 2009; Clark and Perrault Crawford 2012; Grewal, Serafeim, and Yoon 2016; Cheeseman 2016) and research indicates that the general public expects companies to reconsider their business practices in view of global warming (Unsworth, Russell, and Davis 2016). Furthermore, a growing number of climate change-related lawsuits against companies have emerged as another field of pressure (Boom, Richards, and Leonard 2016; Ganguly, Setzer, and Heyvaert 2018).

Obviously, moral considerations and public pressure were only partial drivers for this change. Spence (2007, 855) has argued that all environmentally-sensitive business strategies “essentially form part of a business case” and are often presented as a ‘win-win’-situation for both, firm and the environment. After all, climate change – in difference to earlier CSR-relevant issues – does not only threaten business reputation but in the long run also physically endangers production facilities and supply chains, thus the firms’ economic success and ultimately their survival (Okereke, Wittneben, and Bowen 2012). Therefore, mitigating the effects of climate change can make economic sense, as it was famously argued in Stern’s (2006) report on the economics of climate change¹⁰.

At the same time, adaptation does not only reduce risks but is also perceived as a business opportunity, since it can directly open new markets, foster innovation and consequently might increase shareholder value¹¹. Gasbarro, Iraldo, and Daddi (2017, 9ff.) provide a good overview of studies which make the business case argument for climate action and identify regulatory changes, physical changes, product and technology innovation, operational efficiency, reputation, financial impacts and changes in consumer needs as potential economic drivers.

However, various study have shown that the level of engagement (Weinhofer and Hoffmann 2010; Freundlieb and Teuteberg 2013; Kolk and Pinkse 2008) as well as the rationales for action (Mikler and Voss 2014; Ihlen 2009; Levy and Kolk 2002) strongly varies across countries of incorporation – mostly explained by differing regulatory pressures and socio-cultural environments – and the sector context (Rosen-Zvi 2011, 541; Ihlen 2009; Jose and Lee 2007; Agrawala et al. 2011). Therefore, these authors have repeatedly stressed the need to consider the particularities of each sector when analyzing corporate responses to climate change. Due to its exceptionally close interlinkages with climate change, this seems even more relevant for the case of the oil and gas industry which is the object under study in the present thesis.

¹⁰ Stern estimates that “if we don’t act, the overall costs and risks of climate change will be equivalent to losing at least 5% of global GDP each year, now and forever. If a wider range of risks and impacts is taken into account, the estimates of damage could rise to 20% of GDP or more” (Stern 2006, xxviii).

¹¹ For example, innovative sustainable products can help to attract new consumer groups and expand to new markets, ultimately leading to growth in revenue. Other drivers can be improved cost-efficiency – for example through the sustainable management of water or waste – or risk minimization, for example through measures which reduce the threats environmental hazards potentially can mean for a firm’s production facilities (UN Global Compact n.d.).

3.1. From denial to ‘a place on the fence’: Oil multinationals and climate change

Among the different economic sectors, the oil and gas industry has always been in a special position when it came to its relationship with the critical public. Due to the companies’ size and the severe and visible ecological impact of its operations on people and planet¹², the pressure from affected communities, media, and activists traditionally is higher than in other sectors (Frynas 2009, 6ff.), especially due to major disasters like the 2010 oil spill at a BP platform in the Gulf of Mexico. Consequently, as one of the “environmentally-sensitive industries” (Jose and Lee 2007, 319), oil and gas companies historically “pay greater lip service to CSR” (Frynas 2009, 7; also see: Levy and Kolk 2001) and were among the first sectors to embrace corporate social responsibility (Crane, Matten, and Spence 2014b, 3).

While human dependence on oil¹³ has fueled the large multinationals’ massive economic success and power for many decades (Stevens 2013), the changing environment now threatens to put their business model under existential pressure. Climate change has created an ethical dilemma for the industry: Since ongoing usage of their products is closely linked to large-scale greenhouse gas emissions and therefore increases the probability of more frequent extreme weather events, sea-level rise or crop failure, its operations are detrimental to the well-being of society in the long run (Hove, Le Menestrel, and Bettignies 2002, 14ff.). If humankind seriously aims to keep the rise in global temperatures substantially lower than 2°C, the use of fossil fuels must be reduced massively and expire entirely as soon as possible (Tong et al. 2019).

Considering the fundamental character of the challenge which climate change poses to the industry, it is little surprising that the sector’s opposition to arising public concern about climate change historically was extraordinarily strong. Noting increasing public concern and political awareness about global warming at the end of the 1980s, major industrial consumers and producers of fossil fuel founded the powerful *Global Climate Coalition* (GCC). This lobby organization challenged scientific findings and the

¹² Different to other sectors, oil and gas do not only impact the environment in the phase of production but especially when it comes to the consumers’ use of these products (Frynas 2009, 65).

¹³ According to the International Energy Agency, oil traditionally accounts for the largest share of the world’s energy consumption, covering 40,8% of global demand in 2016 (IEA n.d.)

legitimacy of the IPCC in order to prevent political regulation of business, such as the introduction of a carbon tax in the United States (Skjærseth and Skodvin 2003, 164ff.).

However, it is essential to note that starting in the late 1990s, as a reaction to the Kyoto Protocol, differences between the big players in the industry could be observed (Pulver 2007; Levy and Kolk 2002). The largest US oil majors, *Chevron* and especially *Exxon*, continued to oppose climate science aggressively and stressed the economic costs of regulation, although at least *Exxon* had already been aware of the devastating impact of their products since the 1970s (N. Banerjee, Song, and Hasemyer 2015). In contrast, their European counterparts, *BP* and *Shell*, publicly supported the Kyoto Protocol at an early stage (Levy and Kolk 2002, 275; Skjærseth and Skodvin 2003, 57f.). These differences have been explained as a result of the individual firm histories but also by differing institutional contexts the companies are based in: In the more liberal US market, managers saw an opportunity to influence political behavior through lobbying, while their European colleagues wanted to forestall regulation which they expected to be inescapable (Levy and Kolk 2002, 291).

Interestingly, over the years, the strategies seemingly converged on both sides of the Atlantic¹⁴. Van den Halderen and Bhatt (2016) conceptualize this development as follows: After first advocating their initial, differing stances in response to the Kyoto Protocol (1997 to 2000) and later refining them (2001 to 2004), both sides began to pacify concerned stakeholders (2005 to 2006) and finally moved to a more balanced position (2007 to 2009), “a kind of sitting on the fence” (Jaworska 2018, 198). This convergence underlines the isomorphic pressures which institutional theory has stressed (DiMaggio and Powell 1983) and for example has been explained by the exchange of ideas in the

¹⁴ It is important to note that most of the findings presented here are based on the analysis of US and European corporations. Their counterparts from the emerging economies which will also form part of this study’s sample remain largely understudied, with the exception of few studies on single major firms.

Barros de Cerqueira Paes (2012) analyzed the climate change response of Brazilian *Petrobras* and finds an “proactive and assertive” (*ibid.*, 261) position. By conducting interviews, he identifies regulatory institutions, Brazil’s government, investors, internal scientist and NGOs as the most influential stakeholders driving the company’s decision (*ibid.*, 261).

For Indian oil and gas companies, Mishra, Singh and Sarkar (2013, 8) note that their assessment of environmental performance is “mainly based on primary environmental impact such as natural resource depletion, land degradation, pollution emissions, energy consumption and waste generation” but neglect climate change and a broader long-term perspective.

Looking at a diverse sample of firms, Ihlen (2009) hardly found any consideration of climate change in Chinese oil companies’ CSR reports and therefore assumes that “the legitimacy of Chinese corporations lies in something other than addressing climate change” (*ibid.*, 257).

context of collaborative industry associations and their similar capabilities to face the global issue of climate change (Levy and Kolk 2002) or through the evolving global political response to climate change (Nasiritousi 2017, 641).

After Kyoto, the 2015 Paris Agreement generally was understood as the second – possibly even more severe – “game changer” (Graaf 2017, 184) for the industry. Although the Paris accord, in fact, is not more than a general frame for action, not providing states with a clear, binding and predetermined pathway on how to achieve the agreed targets (Bodansky 2016, 318), it still can function as leverage for change. Trickling down from the political into the wider societal sphere, the accord represents a broad global consent that bears the risk of being publicly shamed for all those who turn their back to it (Jacquet and Jamieson 2016, 645). Politically, it marks the large-scale commitment to collective efforts towards a post-carbon economy, at least on the middle run. As Kinley (2017, 10) states, “although the timelines are somewhat open, the signal is clear that the era of fossil fuels is ending.”

Climate change poses an even more significant challenge to the petroleum industry than to the business world in general since it seemingly leads the political sphere to call the sector’s business as such into question. To date, carbon-based energy still forms a fundamental pillar of the economic system (IEA n.d.) and continues to be the crucial driver of wealth and economic growth which it has been throughout the past 150 years, as a central resource of complex modern civilization (Tainter 1988). However, in 2020, global demand for oil is expected to reach a peak, turning the oil industry into an ‘ex-growth sector’ (Graaf 2017, 184). Apart from the mentioned political developments, further factors such as falling costs of renewables, improved energy efficiency and predicted slower economic growth in emerging economies like China are expected to contribute to shrinking demand for oil in the future (Capalino, Spedding, and Fulton 2014, 16ff.).

By now, the fundamental change which the Paris Agreement potentially is, has not yet lead to a drastic turnaround in the sector’s corporate strategies. This might be due to the agreement’s rather vague character. For example, it does not even mention the words ‘oil’, ‘gas’ or ‘fossil fuels’ and does not provide a clear pathway on how exactly emissions are supposed to be reduced. This leaves plenty of space for states to design their

nationally-determined contributions and did not automatically lead to immediate consequences for the industry.

Recent studies have attempted to identify which strategies the oil and gas companies predominantly have embraced in the post-Paris era. Politically, they seem to stick to their 'place on the fence', being simultaneously involved in "supporting, undermining, changing and/or reducing the pressure for new government policies" (Nasiritousi 2017, 642). Their management responses are coined by the promotion of natural gas¹⁵ as an alternative to oil products and carbon capture, use, and storage (Bach 2019, 91). In contrast, renewables remain a niche product in the companies' portfolios, in total only making a share of roughly one percent of total budgets, despite some considerable investments by European corporations (Fletcher et al. 2018, 3).

Predominantly, the industry supports market-based solutions, with a focus on emission trading, while hints to a proactive withdrawal from their business model as such remain absent (Cadez and Czerny 2016, 4141). This has been evaluated in different manners: Bach (2019, 100) describes it as one legitimate pathway among many to move towards a low-carbon world. In opposite, critical scholars note that market and technology should not be perceived as a solution but as the central cause of the problem (Jaworska 2018, 217). The market-oriented position is far from new and already a decade ago was criticized for exposing "a type of economic instrumentality that seems ill-suited to the systemic criticisms and changes that are needed" (Ihlen 2009, 258).

As a relatively recent development, 13 large oil and gas firms from both, industrialized and emerging economies¹⁶, joined forces in the *Oil and Gas Climate Initiative* (OGCI). Established in the context of the World Economic Forum in Davos in 2014 (Bach 2019, 90ff.), the initiative aims to further streamline the industry's proactive political response to climate change and foster capacity building (Oil and Gas Climate Initiative 2018, 5). For example, the members have created a fund to invest in climate-friendly technologies and have announced to slash their GHG emissions by a fifth by 2025 (*ibid.*, 38ff.).

¹⁵ Due to high methane emissions, natural gas as a substitute is approached very critically by scholarship and environmental NGOs (Levi 2013; Stockman, Trout, and Blumenthal 2019).

¹⁶ Currently, the members are *BP, Chevron, CNPC, Eni, ExxonMobil, Occidental Petroleum, PEMEX, Petrobras, Repsol, Saudi Aramco, Shell, Statoil* and *Total* (OGCI n.d.).

The OGCI so far has attracted surprisingly little academic attention. Nasiritousi (2017, 631f.) finds that the participating companies attempt to “portray themselves as constructively engaging with climate change, and voluntary, industry-driven initiatives as part of the solution”, for example through public support for the Paris Agreement. While Bach (2019, 99) warns of simply dismissing these efforts and interprets the OGCI as a potentially serious attempt of the oil and gas majors “to redefine their role vis-à-vis an accelerating energy transition”, critics argue that it is only the communication which has changed, not the actual behavior. Recently, an NGO investigation (InfluenceMap 2019) unveiled that *ExxonMobil*, *Chevron*, *BP*, *Total* and *Shell* alone have spent more than one billion US dollar on misleading climate-related branding and lobbying since the Paris Agreement. “The aim is to maintain public support on the issue while holding back binding policy”, the authors conclude (*ibid.*, 2). The following chapter sheds light on the role of corporate communication for the firms’ attempts to reach this aim.

3.2. Climate change in the oil and gas industry’s CSR reporting

In industries which are involved in the extraction of natural resources and therefore attract a lot of public criticism, CSR reporting (O’Connor and Gronewold 2012, 217) and especially environmental disclosures (Frynas 2009, 68) are more common than elsewhere. In 2010, more than three quarters of the oil and gas companies worldwide reported on their CSR activities (O’Connor and Gronewold 2012, 211). Considering the general global growth in the years after (KPMG International 2017, 9), these numbers might have even further increased. Once again, it is important to stress that intensive reporting does not mean that oil and gas companies do more than those from other sectors to mitigate their impact on climate change but that they rather perceive it as necessary to justify their strategies in more detail.

The industry widely participates in the *Global Reporting Initiative*¹⁷ (Cunha 2017) and the *UN Global Compact* (2019) and voluntarily publishes its emission metrics in the context of the *Carbon Disclosure Project* (Fletcher et al. 2018). In 2005, the sector association *IPIECA* additionally created the sector-specific *Oil and Gas Industry*

¹⁷ Cunha (2017) only finds incomplete fulfilment of the GRI standards for environmental reporting among oil and gas companies.

Guidance on Voluntary Sustainability Reporting (Murphy et al. 2015). Despite the growing significance of such initiatives, the reporting is by no means homogenous. Within the frame provided by reporting standards, firms still have kept plenty of freedom in their decision what to disclose and what to hide (Pollach 2018, 248). For example, firms from industrialized economies in the past have found to report more sophisticatedly than by their competitors from emerging economies (Frynas 2009, 74).

As cross-sectional studies have found earlier (Ihlen 2009; Rosen-Zvi 2011), the petroleum sector's high engagement with CSR reporting in general also seems to apply to the subfield of climate-related reporting. Frynas's (2009, 74) findings that disclosures on GHG emissions dominate the sector's environmental reporting further stress the importance attached to climate change. The general uncertainty about global warming and the exceptionally high responsibility of the industry make it "important for investors and other stakeholders to understand how a company thinks about the relationship between its business strategy and climate change" (Ahmad 2017, 9). However, Jaworska (2018, 214) notes that attention to climate change in the industry's CSR reports by no means is constantly high. Instead, it ebbed and flowed between 2000 and 2013, with a peak between 2005 and 2008. Following the findings of Grantham and Viera (2018) on *ExxonMobil*, Jaworska argues that this peak in intensity of climate change reporting might have been linked to external events, namely the hurricane Katrina or the release of Al Gore's *An Inconvenient Truth*.

In the past years, the industry's CSR reports have become a source of analysis for communication scholars and linguists which study the reports' rhetoric and the discourses constructed through it. The strong impact corporate actors and their financially well-equipped public relations sections can have on public opinion is a repeatedly mentioned motivation for this research trend (e.g. Ihlen 2009, 257; Grantham and Vieira 2018, 4). Their language is understood as "constitutive, by actively shaping the world around us by providing conceptual guidance for actions and policy prescriptions" (Ferguson, Sales de Aguiar, and Fearfull 2016, 297). The purpose of these studies generally is either to identify the underlying motives of action on climate change or the understanding of the phenomenon which the companies communicate through their reports.

Dahl and Fløttum (2019) study the framing of global warming and find notable differences among the firms under study (*Total*, *Statoil* and *Suncor*). *Total*, for example, mostly demonstrates climate change as a responsibility it is ready to take on, putting itself into a more proactive role. *Suncor* mostly stresses the risks associated with climate change, *Statoil* the opportunities. However, the authors conclude that the discourse of risk degradation overall dominates.

These findings are in line with Jaworska (2018) who finds that the companies portray climate change as an “unpredictable and out of control agent” (ibid., 215) and morph themselves into one among the many victims of climate change while obscuring their own contribution. According to her findings, this represents a remarkable shift in the discourse since climate change in earlier reports rather was discussed as an object which one could still mitigate. Furthermore, she finds that causes for climate change are hardly discussed and that if they are mentioned, they imply some doubt about the link between their business and climate change. Responsibilities are shifted to other stakeholders.

The present thesis partly draws on these findings but at the same time widens the scope of analysis: By looking at rhetoric and reporting intensity alike, using the lens of stakeholder theory and institutional theory, it attempts to map the environment as the firms perceive it and attempts to derive assumptions for CSR effectiveness. Furthermore, it does not only look at major companies from the US and Europe but also takes major corporations from emerging economies into account. On the subsequent pages, the methodology is explained in detail.

4. Analysis of the oil and gas industry's CSR reporting on climate change

Throughout the introductory chapters of this thesis, the important and powerful role of oil multinationals for the global challenge of tackling climate change has been outlined. As we have seen, in the absence of comprehensive ‘hard’ regulation, the corporations are left with quite some freedom in designing their climate change-related strategies. As Falkner (2016, 1123) writes, “international regimes and governmental regulation can provide a supportive regulatory framework, but it is companies that decide on the direction of technological innovation, R&D expenditure and investment flows.” Therefore, it is important to better understand the oil and gas sector’s climate-related strategies and the logics surrounding it. Ultimately, this can help to evaluate if CSR can contribute to the alignment of corporate strategy with the broader political aim to decarbonize the energy sector.

The approach used in this study builds on institutional and stakeholder theory and the understanding of CSR and CSR reporting as driven by external pressures from dominant actors and institutions (see chapter 2.2. and 2.3.). Assuming that CSR reports “portray the relationship between a corporation and society” (Boston College Center for Corporate Citizenship 2010, 5) and are constantly evolving as a reaction to changing external pressures (Pollach 2018), we can perceive the reports as the product of corporate efforts to balance these competing economic, social and environmental demands. They are the expression of a conscious management decision about where to set their priorities in communication with its multiple stakeholders and which of their – often conflicting – demands and expectations they feel pressured to satisfy in order to stay legitimate.

In order to analyze this process, the present research project uses a two-fold approach with two subordinate research questions, namely:

- How intensively do the single firms report on climate change in their CSR reports?
- Which rationales for action on climate change do the firms disclose and how are they framed rhetorically?

In a first step, this study measures the intensity of reporting of climate change as an issue in the companies' CSR reporting, especially in relation to other topics. This can show us if the firms perceive climate change as a relevant topic for their institutional environment and their stakeholders and – most importantly – to which degree they feel the need to justify for their contributions to the changing climate. According to this understanding, low-level reporting on climate change invites the interpretation that a corporation perceives the external pressures to justify its strategy in the light of climate change to be rather weak. In contrast, comprehensive reporting provokes the assumption that the demands of external actors push the firm to respond.

Since the “mere mention of a word or term, even if frequent, does not tell us much about the meanings, values, and practices associated with it” (Jaworska 2018, 214), this quantitative analysis is not considered sufficient to answer the given research question. Therefore, in a second step, the study identifies the dominant rationales the firms express for their response to climate change. Hereby, it attempts to examine which logics dominate the firm strategies and to which of the external interests they might respond most intensively. Frequent references to national climate policy, for example, could raise the assumption that a firm's actions predominantly are driven by governmental pressures and expected regulation. Herewith, this thesis draws on a similar study on US American and Chinese multinationals from different sectors by Mikler and Voss (2014). However, in contrast to these authors, this study does not analyze rationales quantitatively but interprets the wider frames the rationales are embedded into. Looking beyond the surface of the marketing messages conveyed in the reports is crucial since the actual message tends to be hidden there.

By looking at the scope and direction of corporate reporting on climate change as well as the discursive practices applied within it, the study attempts to unveil the environment which drives the sector's corporate responses to climate change. Do political developments and activist pressure play a role in the firms' behavior or do they mainly focus on the interest of shareholders? Answering this question can help to understand whose purpose oil multinationals' climate-related strategies serve and what this means for the potential of CSR to combat global warming.

4.1. Sample

The sample of reports which is analyzed for this study consists of publications which have been published by globally leading multinational corporations from the oil and gas sector. The analysis looks at the ten largest oil and gas corporations as ranked in the 2018 edition of the *Global 500* list by *Fortune* magazine which annually composes a list of the world's largest companies sorted by revenue (Fortune 2019a).¹⁸ As the only exception to this straightforward sample selection, US-based *Phillips 66* (ranked 9th) was replaced by India's largest oil and gas corporation *IndianOil*. This decision was made in order to create a slightly more diverse sample which evenly looks at companies based in industrialized countries as well as in emerging economies.

Table 1: Sample overview

	Fortune Global 500 ranking (2018)	Revenue (2018, in million US\$)¹⁹	Ownership structure	Document analyzed to determine reporting intensity	Document analyzed to determine rationales
SINOPEC (China)	3 rd	326,953	State-owned	CSR report 2018	CSR report 2018
CNPC (China)	4 th	326,008	State-owned	CSR report 2017	CSR report 2017
INDIANOIL (India)	137 th	65,916	Mostly state-owned ²⁰	CSR report 2017-18	CSR report 2017-18
LUKOIL (Russia)	63 rd	93,897	Investor-owned	CSR report 2017	CSR report 2017
PETROBRAS (Brazil)	73 rd	88,827	Mostly state-owned ²¹	CSR report 2018	CSR report 2018 + climate change supplement
BP (Great Britain)	8 th	244,582	Investor-owned	CSR report 2018	CSR report 2018
SHELL (Great Britain / Netherlands)	5 th	311,870	Investor-owned	CSR report 2018	CSR report 2018
TOTAL (France)	28 th	149,099	Investor-owned	Relevant parts of integrated report 2018	Relevant parts of integrated report 2018
CHEVRON (USA)	33 rd	134,533	Investor-owned	CSR highlights report 2018	CSR highlights report 2018 + climate change supplement
EXXONMOBIL (USA)	9 th	244,363	Investor-owned	CSR highlights report 2017	CSR highlights report 2017 + climate change supplement

¹⁸ It is important to note that the *Fortune Global 500* only is one among several rankings of firm size. It only contains publicly listed companies which “publish financial data and report parts or all of their figures to a government agency” (Fortune 2019b). Therefore, the large state-owned oil companies from the OPEC countries – e.g. *Saudi Aramco*, *PDVSA* or the *Kuwait Petroleum Corporation* – do not form part of the list.

¹⁹ All revenue numbers were retrieved from the *Fortune* database (Fortune 2019a).

²⁰ The Indian government holds 56,98 percent of the company's shares (IndianOil 2018, 12).

²¹ The Brazilian government holds 50,3 percent of the company's shares (Petrobras 2019a).

This is important because the study attempts to fill further gaps which previous research has left. The existing studies with a similar research target which were introduced during the last chapter either looked at a relatively small number of companies from Europe and the United States or analyzed reports from the time before the global community's landmark agreement in Paris. Both aspects are clear deficits from today's standpoint: As described in chapter 3.1., Paris has been understood as a paradigm shift for the industry and it is essential to understand the event's impact on some of the most important contributors to climate change. Simultaneously, a broader geographical scope of research is needed. The focus on corporations from the United States and Europe neglects the fact that relevant emitters not only come from industrialized but also from industrializing economies (Heede 2014)²². Due to the different socio-cultural and institutional environment they operate in, findings for Euro-American companies cannot simply be applied to these firms, especially since climate-related CSR activities have found to vary depending on "the institutional lenses firms apply as a result of their institutional embeddedness in their home states" (Mikler and Voss 2014, 222).

Ultimately, the firms under study are *Sinopec*, *CNPC*, *IndianOil*, *Petrobras*, *Lukoil*, *Shell*, *BP*, *Total*, *Chevron*, and *ExxonMobil*. From each selected company, the most recent CSR report which has been made available on the firm's website is taken into account²³. Since not all companies have released their reports for 2018 yet, three of the documents (those of *Lukoil*, *ExxonMobil*, *CNPC*) cover the CSR activities in 2017. *IndianOil* publishes its reports biannually and consequently, the joint report for 2017 and 2018 is analyzed. Spite of these differences, the selection of the latest releases for each firm enables a relatively fair comparison since the global political and economic circumstances the reports are embedded in mostly resemble each other.

The reports provided by 7 of the 10 companies are regular CSR reports which exclusively deal with issues of corporate social responsibility. Thus, they cover the non-financial reporting and represent a counterpart to the financial reporting in the firms' annual reports. As an exception, *Total* only publishes an integrated report²⁴ in which the financial

²² The idea of 'common but differentiated responsibilities' is a central principle of the UNFCCC. For a critical discussion, see Peel (2016).

²³ Date of reference was the May 31st, 2019.

²⁴ Such integrated reports in recent years have become increasingly widespread in the business sector (C. Herzog and Kühn 2017, 196f.; Kannenberg and Schreck 2018).

reporting and CSR reporting are merged. In this case, only those parts of the document which – according to the corporations' website (Total 2019a) – reveal its sustainability strategy and policy are considered.

Chevron and *ExxonMobil* represent exceptional cases within the sample for other reasons. The reports these two companies publish as one coherent document are labeled as CSR ‘highlights’ reports. On their websites, both companies disclose additional information (Chevron 2019b; ExxonMobil 2018b). This additionally disclosed information was not considered in this study. Some might criticize that this decision bears the risk of distorting the results, especially where absolute numbers matter.

However, one can argue that of all information provided, the print-ready ‘highlights’ version of their CSR reporting represents the document which most appropriately can be compared with the full-length CSR reports provided by the other firms. In fact, every CSR report is a ‘highlights’ report, whatever title it wears. It is the result of a firm’s conscious decision about which information it finds most important to communicate vis-à-vis the public. Information published on webpages does not have the same value as text which is fixed in a print-ready publication since the former potentially can always be edited²⁵. Furthermore, the decision must be taken for practical reasons: Since the information online is spread across many different subpages, it is not coherently searchable. Additionally, page numbers are an essential measure in the analysis and logically do not exist in the online version. Although it is necessary to be aware of the distinctive character of the documents under study as a possible source of distortion for the viability of the results, this proceeding for the quantitative analysis was found to be the fairest and most promising.

A first cross-reading showed that the reports of *Petrobras*, *ExxonMobil*, and *Chevron* hardly disclose any information on the firms’ motivation for their climate change responses but rather focus on the simple presentation of numbers and anecdotes about which measures they embrace. This was judged to be a problem for the qualitative part of the analysis. Therefore, it was decided to additionally search for rationales in these firms’ additional monothematic climate change supplements. Such supplements were published by six of the ten companies and have stronger focus on future strategy of firms

²⁵ See Géring (2015) for a discussion of the problematic temporal characteristics of texts on the internet.

than regular CSR reports which more strongly cover the past year and the present (Dahl and Fløttum 2019, in press). Initially, these records only were planned to be considered as one factor to assess the intensity of the firms' climate change reporting. However, in order to get a better impression of corporate rhetoric, the cases of *Chevron*, *ExxonMobile*, and *Petrobras* represent an exception from this proceeding.

Again, it is crucial to clarify the limitations of the analyzed documents as a source of information. As mentioned earlier, CSR reports do not provide direct insights into the firms' actual position and internal ambitions. They should not primarily be understood as a generous corporate service towards the public sphere but first and foremost are an opportunity for the firms to influence public opinion and to establish a picture of how it wants to be perceived.

4.2. Methodological approach

As mentioned above, the analysis is two-fold. It uses content analysis and discourse analysis, exploiting the benefits of both approaches as they are comparatively presented by Géring (2015). The first part builds on quantitative content analysis, a widely used method to analyze climate change communication (Metag 2016). Content analysis is “a research technique for the objective, systematic, and quantitative description of the manifest content of communication” (Berelson 1952, 18) and was developed to analyze long texts and identify thematic tendencies and their frequency. It uses pre-defined coding categories to analyze documents systematically and in a reliable and valid way (Krippendorff 2004, 18ff.). This classical approach to content analysis forms a central part for the evaluation of reporting intensity, the first part of this research project.

The second part of the study requires a more qualitative and interpretative approach. Such methodology always challenges the objectivity of results, since the scholar brings personal values and objectives to the research and therefore, “only sees and talks about what one's values dictate” (Ratner 2002). However, in order to identify the dominant rationales of firms to pursue a particular strategy and the narratives it constructs around them, it is important to take a look beyond the semantic surface of the text and consider its genesis, purpose and the broader social context it is embedded into. Critical discourse analysis offers such an approach, as a methodology which has a history in the study of

powerful societal actors and their communication (van Dijk 1993). The critical path is chiefly important due to the whitewashing language which CSR reports can contain. As Géring (2015, 8) writes "analyses of discourses are not the examination of texts in themselves, but how these texts are utilized and what strategies are related to them". It asks what social action a text performs (Waring 2017, 77ff.). Underlying is the idea that language is always used for a particular purpose and herewith actively shapes the world, by excluding certain realities and stressing others (Spence 2007, 857).

4.2.1. Intensity of reporting on climate change

The first part of the analysis is supposed to determine the intensity with which the companies report on climate change, as well as the prominence they ascribe to the topic in relation to other issues. This is done through five different measures:

(a) *Key terms* from the field of climate change are counted. It is assumed that if the selected keywords are used frequently, climate change is discussed in a report at length (see Ihlen 2009 for a similar approach). The study distinguishes between three keyword families: One covers direct mentions of the issue²⁶ in the reports. The second groups keywords with a link to the international climate politics regime²⁷. A third one is linked to the major causes of climate change²⁸. Such a differentiation offers the opportunity to assess "the extent to which certain aspects of climate change are covered in the text under study" (Metag 2016, 6). If terms formed part of repeatedly occurring layout elements (i.e. 'climate change' in the headline of each page of the chapter on climate change), they were not counted in order to avoid result distortions.

The (b) *share of pages of the entire report which predominantly deals with climate change* is calculated. All pages on which climate change-related topics make the most prominent single topic are considered. Such topics are all issues which are linked with climatic changes and the energy transition, for instance emission reduction, investments in alternative energy sources, energy efficiency and conservation, climate policy, climate-

²⁶ Searched terms: "climate (change)" / "global warming".

²⁷ Searched terms: "Paris (Agreement)" / "Rio (Declaration)" / "Kyoto (Protocol)" / "COP", "Conference of the Parties" / "UNFCCC", "United Nations Framework Convention for Climate Change" / "SDG", "Sustainable Development Goals" / "IPCC", "Intergovernmental Panel on Climate Change".

²⁸ Searched terms: "greenhouse (gases)", "GHG" / "CO2", "carbon dioxide" / "methane".

related risk management. This ought to determine the importance which firms attach to climate change in relation to other CSR-relevant issues.

For the same purpose, it is identified *(c) in which quartile of the report the main section on climate change is positioned*. Here, it is assumed that a firm's decision to place a topic in the first or second quartile of its CSR report indicates that the company currently regards it as a priority in its external communication with society.

Lastly, it is checked if the reports contain *(d) a separate chapter on climate change* or if the topic is less prominently blended with other environmental issues and if the company publishes *(e) an additional monothematic supplement on their climate change-related CSR activities*. Such a supplement means a mentionable effort for the company and is supposed to express a form of outstanding commitment to the issue. By publishing such a report, a firm underlines the particularly high relevance it attaches to climate change in its stakeholder communication.

Having collected the corresponding results for all ten corporations, a simple index is developed to allow a comparison of the individual results. In each category, the best-performing company is set as the standard and attributed with 100 index units. The remaining firms are assessed in relation to the company which leads the respective category. For example, if a company dominates category *(a)* with 100 mentioned keywords, a second company which reaches 77 keywords is rated with an index of 77. This index thus is self-referential and by itself can't serve to assess intensity in absolute terms but rather helps to compare the different firms under study.

In category *(c)* – the positioning of the topic – all companies which talk about climate change in the first quartile of their report collect 100 index units, those who deal with it in the second quarter gain 75 and so on.

In category *(d)*, companies either are marked with 100 (publishes a separate chapter) or 0 (doesn't publish a separate chapter) index units.

For indicator *(e)*, the length of the monothematic supplements on climate change is considered. Consequently, an overall index score of 500 is the best possible result a single firm can achieve.

Obviously, despite their seemingly objective character, indices always bear the risk of subjectively influencing the results by setting a false focus of evaluation. For example, one might consider attaching more weight to one category or another. However, to measure reporting intensity, all factors are considered equally important. By measuring five different indicators at the same time, the study attempts to get a result which is barely coined by the stylistic characteristics of single reports. For example, if the keyword count of a report is relatively low since the company uses a vocabulary which is different to the one expected by the researcher, it can still reach a good score through good performance in other categories.

4.2.2. Rationales for responses to climate change

For the second part of the analysis, by cross reading the documents, the author in a first step determined those parts of the reports which deal with climate change. Subsequently, the rationales for the corporate strategy in the face of climate change were identified, collected and categorized to find dominant patterns of explanation for the single firm's strategy.

By identifying predominant patterns, we gain insights into how the firms map their environment and which stakeholders' demands they attempt to satisfy through their reporting. For example, a pattern which predominantly explains the business strategy in the face of climate change by stressing the emerging business opportunities is interpreted as a hint at a perception of economic shareholders to be most important for the firm's legitimacy.

The blurry character of CSR reports as marketing documents makes it vital to look beyond the surface of what is written (see chapter 2.3.). The documents are drafted by public relations experts who are aware of the fact that "discourses are formed by excluding certain realities and including others" (Spence 2007, 859). This makes it necessary to code not only explicitly stated rationales (e.g. "In response to the Paris Agreement, we strive for the reduction of our GHG emissions") but also those which only indirectly point to the driving force behind a measure (e.g. "Risks associated with climate change are gaining increasing attention, both from governments and the investment and financial communities").

The categorization of rationales was pursued inductively. This means that the categories only were fully developed after the motives had been extracted from the report and sorted according to what they express. In the result, three categories of rationales were established:

- *Economic rationales*: climate change action as a business opportunity (i.e. new investment opportunities, changing demand that needs to be satisfied), climate change as a business challenge (i.e. economic risks or threats to profitability and competitiveness through climate change; shareholder concerns; physical risk to production facilities)
- *Societal and moral rationales*: response to societal/non-financial stakeholder concern, sense of duty, expression of the will to contribute to society's well-being, references to the firm's philosophy or history, consciousness for the issue's urgency
- *Political rationales*: reaction to the policies of national governments, commitment to international agreements and the international climate policy regime

One sentence was coded in two or more different categories if it contained multiple rationales. If an explanation appeared several times in different parts of the text, each of the sentences was coded individually. Repetition here is understood as underlining the particular relevance that a company assigns to an argument.

For this part of the analysis, quantity (in the sense of which kind of rationale is mentioned most frequently) only is of subordinate importance since the explanations often can't be understood separately anyway. For example, adherence to governmental policies often may also have economic reasons since further regulation in case of non-adherence might cause high costs for a company.

Instead, the analysis identifies the broader narratives which dominate within the reports and attempts to link them to the possible underlying intentions. Since the documents do not necessarily display the firms' actual internal ambitions and positions but the motivation they profess to have, the material needs to be treated critically. The discourses established around the rationales might be more important than the content itself since they indicate how the firms approach the freedom which the CSR-based regulatory regime leaves them for their strategic planning.

5. Results

In this chapter, the results of the analysis described above are summarized. This section is divided along the two subordinated research parts: the quantitative analysis of reporting intensity and the interpretative assessment of the reports.

5.1. Intensity of reporting on climate change

As a first important finding, the analysis shows that all ten companies do report on climate change in their CSR reports. This underlines that climate change today is acknowledged as an issue of relevance by all analyzed oil and gas companies.

Table 2: Intensity of reporting on climate change (index, sorted by total score)

	(a) Keyword count	(b) Share of pages on climate change	(c) Position of main part on climate change	(d) Individual Chapter on climate change	(e) Length of monothematic supplement on climate change	index
BP (Great Britain)	74	100	100	100	90	464
SHELL (NL / GB)	100	68	50	100	100	418
TOTAL (France)	98	36	50	100	68	352
CHEVRON (USA)	24	14	100	100	56	294
EXXONMOBIL (USA)	30	35	75	100	46	286
PETROBRAS (Brazil)	21	20	100	100	28	269
SINOPEC (China)	20	34	75	100	0	229
LUKOIL (Russia)	15	21	75	100	0	211
CNPC (China)	26	14	50	100	0	165
INDIANOIL (India)	14	25	50	0	0	89

However, substantial differences within the sample have been found (for a detailed overview of the results, see appendix 1, p. I). The gap between *BP* as the leading company and last-ranked *IndianOil* comprises roughly 370 index units. This is the most extreme expression of the visible differences between companies from industrialized countries and their counterparts from emerging economies, a first key finding of this first part of the analysis. Put differently, the five companies reporting with the highest intensity all come from industrialized countries (median: 352 index units) while climate change reporting in BRICS countries (median: 211 index units) is less comprehensive.

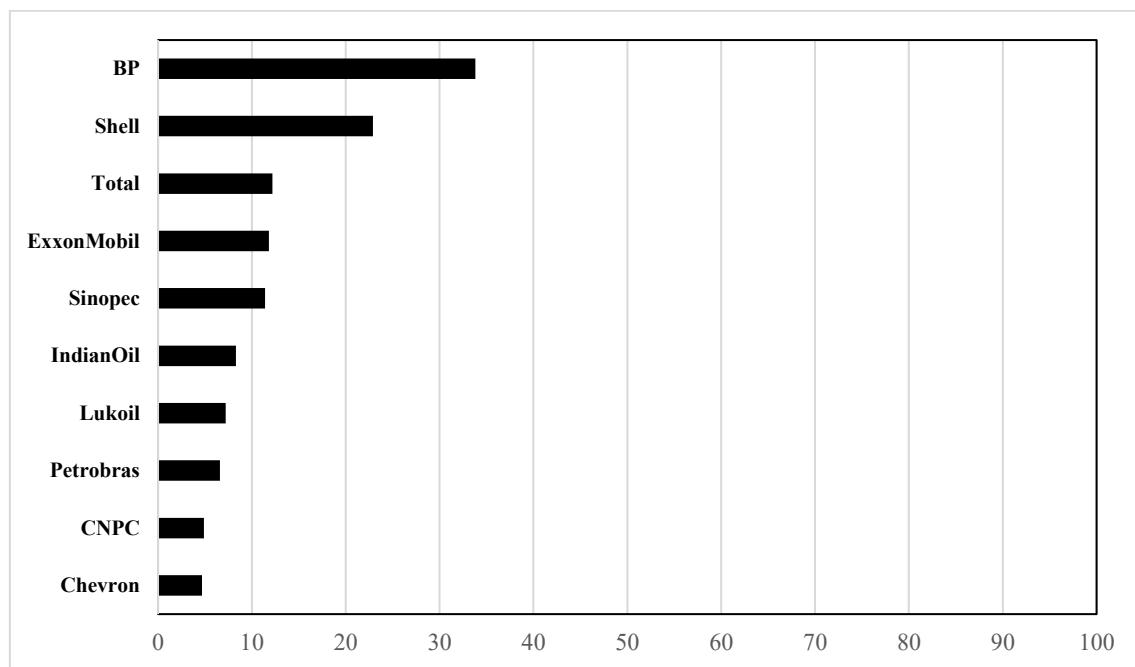
Broadly, the results divide the sample into three sections: the three European leaders, a midfield from the Americas and the companies from China, Russia and India at the bottom of the ranking. Within the BRICS group, the differences again are remarkably strong. Following our understanding of CSR reporting as a response to external pressures, this points to differing perceptions of the corporations regarding how relevant climate change as an issue is to their respective institutional and stakeholder environments.

The European dominance is most powerfully expressed by the frequency in the use of key terms linked with climate change. The two companies leading this indicator, *Shell*, and *Total*, use the selected key words five to six times more than the companies with the lowest record. Especially remarkable is that *Total* uses the terms ‘climate (change)’ and ‘global warming’ much more often than any other (168 times, compared to 69 times in the secondly ranked report by *Shell*). Looking closer at the single subcategories of key words – *key issue, international climate policy regime, causes* –, it becomes clear that the large differences mostly can be traced back to the differing intensity of mentions of climate change causes. This might indicate that the European companies mostly direct their efforts to the roots of the problem and invites the interpretation that they talk about the problem more technically. *Shell* most frequently refers to the international policy regime surrounding climate change, such as the Paris Agreement or the Sustainable Development Goals (SDGs). By doing so, the company seems to stress its commitment to international efforts to tackle climate change. However, all companies mention relevant international agreements and organizations at least once. This shows that all companies – to a different degree – feel the necessity to display their recognition of the global climate regime and the consent established around it.

The clear division between the three groups of companies is equally visible in the results for indicator (*e*) which concerns the publication of additional monothematic reports on climate change. Such supplements draw a much clearer picture of a firms’ position and strategy on the issue under study. Drafting and publishing the supplements means a considerable additional effort which arguably only is made if a company sees the necessity to communicate on climate change to its stakeholders in detail. The six highest-ranked companies in the sample have done so, while the remaining four have not. In fact, these reports mark a crucial difference between more and less dedicated companies.

It is important to note that the topic of climate change overall falls relatively short when set into relation with other CSR issues (see figure 2 below). Only *BP* (33,8% of the total report deal with climate change) and *Shell* (22,9%) have made climate change a clear focus of their CSR reporting. The vast majority of firms deal with the topic at maximum on every tenth to twentieth page of their publications. By most of the firms, climate change apparently is just perceived as one among several CSR issues of stakeholder concern.

Figure 2: Indicator (b) - share of pages dealing with climate change (in %)



The clear laggard among the companies, *IndianOil* ranks beneath average in all five indicators. As the only company, it does not dedicate an individual chapter to climate change but merges it with other, more locally relevant topics in a general chapter on environmental issues. However, while the numbers suggest that the company perceives the problem as little relevant to its stakeholders and its institutional environment, the CEO statement at the beginning of the CSR report draws a different picture. Climate change here clearly is a dominant topic. Possibly, this finding points to an active personal commitment to climate-related issues from the CEO's side, which is not (yet) reflected in the firm's general strategy.

The analysis of the positioning of climate change as an issue within the reports (indicator (c)) produces mixed results. Three firms position climate change in the first quartile of the report, two in the second and five in the third. The results for this category show some contradictions when juxtaposed with the overall findings. While *Shell* and *Total* which generally report on climate change intensively only establish the topic in the third quarter of their reports, average performers like *Petrobras* or *Chevron* deal with climate change already on the very first pages. This invites the assumption that the position of a topic in a CSR report does not necessarily tell us something about the importance which is attached to the issue.

5.2. Rationales for responses to climate change

This chapter presents the main patterns of explanation which the ten firms under study provide for their strategies regarding climate change within their CSR publications. First and foremost, it needs to be noted that all firms give economic as well as societal/moral and political rationales for their behavior (see table 3, p. 54). Considering the varied interests of the multiple stakeholders' oil multinationals are confronted with, it is little surprising that all three categories of motives are covered. On the subsequent pages, differences, as well as central sector-wide commonalities, will be concluded. In order to do so, the dominant frames are identified and discussed, sorted by the three groups of rationales. Certainly, the assumptions which are derived are only one possible reading. This fact must always be kept in mind when pursuing a discourse analysis.

5.2.1. Economic rationales

Overall, the economic rationales for the climate change strategies and market-oriented speech prevail in the analyzed reports but more strongly do so in the reports of the investor-owned companies. Two different sets of explanations are found, dividing the sample into two groups: One group rather frames climate change as a risk or challenge, the second one as an opportunity. This division mirrors the ambivalent character of climate change which was introduced in chapter 3. None of the firms exclusively uses only one of the narratives, but dominant patterns are found everywhere, apart from the Chinese companies' reports.

Firms predominantly using the ‘**risk narrative**’ mainly point to the challenges involved, such as shrinking demand for fossil fuels, carbon pricing policies or physical damages to corporate assets. Thus, the ‘risk narrative’ does not necessarily imply concern about physical risks but also the expectation that standstill in a changing energy landscape might endanger the own profitability and survival. Such a narrative might be used to express alignment with general concern about climate change, a sort of ‘We have understood, and now we act’. It is used to underline that the firm is aware of the problem’s severity and takes the potentially disruptive character of climate change seriously. Such a perspective, for example, plays a dominant role in the reports of *IndianOil*, *Lukoil* and *Petrobras*. The Russian company, for example, states that

“increasing energy efficiency, including through lowering fuel and energy resource consumption, is a key component of our overall efforts to improve operating efficiency and a *critical factor in the maintenance of the Company’s competitive edge in our rapidly changing world*” (*Lukoil* 2017, 36),²⁹

especially, since such efficiency requirements have become “noticeable trends on the fuels and lubricants market” (*ibid.*, 37). *IndianOil* more generally notes that it “firmly believes that long-term business growth is inseparably linked to the responsible use of natural resources and mitigation of environmental footprints” (*IndianOil* 2018, 6). Similarly, *Petrobras* stresses the economic necessity of climate-related innovation by writing that “it is also a business need for us in order to stay competitive and profitable in an environment of transition to a low carbon economy with high uncertainty” (*Petrobras* 2018, 2). In all cases, the firms communicate that they consider a change in strategy necessary to remain competitive and profitable beyond the realm of the energy transition. Generally, the risks to lose shareholder value dominates, while physical dangers to people and facilities are only mentioned in single phrases in three reports (Total 2019b, 201; Chevron 2018, 8; Sinopec 2019, 30) and seem to be perceived as secondary.

The US American companies *ExxonMobil* and *Chevron* establish a slightly different discourse around the climate-related risks. On the one hand, they recognize the challenges linked with climate change as well as general concern about it, for example when stating:

²⁹ Highlighting in italic added by author.

“Chevron faces a broad array of risks, including market, operational, strategic, legal, regulatory, political and financial risks. We undertake an enterprisewide process to identify major risks to the company and ensure that appropriate mitigation plans are in place.” (Chevron 2018, 3)

“Uncertainties include changes in economic growth, the evolution of energy demand and/or supply, emerging and disruptive technologies, and policy goals and actions, in part to address climate change risks.” (ExxonMobil 2019, 32)

At the same time, the ‘risk narrative’ is enhanced by a form of appeasement communication. It is obviously directed towards shareholders who express concerns about shrinking profits in the face of the energy transition and is most strongly embraced by *Chevron* that “recognizes that climate change is a growing area of interest for our investors and stakeholders. We have listened to your concerns, and we are responding” (Chevron 2018, 1). In this context, the firms strongly underline that they are aware of the risks but that they do not identify a need to worry and expect their business to remain profitable without quick and radical strategic shifts:

“How the global energy landscape will evolve in response to growing energy needs and changing climate policy has always been uncertain. Energy transitions take time, and there are limited economic substitutes at scale for some oil and gas needs.” (Chevron 2018, 34)

“In some uses, like aviation, marine, freight and petrochemicals, there are few, if any, cost-effective and scalable alternatives to oil.” (Chevron 2018, 12)

“Production from our proved reserves and investment in our resources continue to be needed to meet global requirements.” (ExxonMobil 2019, 2)

To sum up, both firms attempt to reassure investors about the continuous profitability of fossil fuels in the future and rhetorically attempt to forestall demands for significant changes in strategy. Risks are acknowledged and relativized at the same time.

In contrast, the ‘**opportunity narrative**’ attempts to frame climate change more positively by stressing the resulting innovation potential, new growth opportunities in the course of the energy transition and the potential to gain the competitive advantage of the forerunner in the creation of a more sustainable business. This narrative, for example, is strongly dominating in the reports of the three European companies. The energy transition is framed as a path to exploit newly arising fields of investment, by “unlocking access to new markets and boost profitable growth in the low carbon electricity businesses” (Total 2019b, 10). Likewise, *BP* writes:

“At BP we’re not daunted by this challenge. In fact, we see the possibilities it presents, and continue to make bold changes across the group as part of our commitment to advancing a low carbon future.” (BP 2019, 1)

The strategies supporting this narrative are most frequently introduced as a service to customers who aim to reduce their own emissions. Vis-à-vis investors, it might serve to underline that there is substantial growth in demand for alternative approaches to energy supply and that the firms are taking “the chance to grasp the opportunities arising from the substantial changes” (Shell 2018, 8). Consequently, the narrative is often illustrated through the portrayal of changes in strategy. This encompasses steps which would mean relatively significant changes in the firms’ policies, such as divestment projects, innovative side-businesses or the announcement of ambitions to enter the electricity market but also smaller shifts, such as increased exploitation of natural gas instead of oil.

At this point, it is essential to set corporate rhetoric and business reality into relation. The oil majors’ assets in low-carbon energy sources have been found to very limited when compared with investments in the exploitation of oil and gas. Taking 24 oil companies into account, the budgets for renewables in 2018 only made a share of roughly one percent of total budgets (Fletcher et al. 2018, 3). *Shell* has announced to invest approximately two billion US\$ in renewable energies between 2017 and 2020 and is considered a forerunner but likewise remains very much focused on oil and gas (Witsch 2019). Corporate rhetoric thus is much more ambitious than actual behavior.

5.2.2. Societal and moral rationales

The analysis of motives with a societal focus virtually displays what has repeatedly been criticized about the language of CSR reports (see chapter 2.3.): Often in rather pathetic and general terms, the firms stress their alignment with widespread concern about climate change, as well as their commitment to responsible, morally rightful strategies in facing climate change. For example, the companies claim that they “promote social development and meet people’s living needs” (Sinopec 2019, 30), and “advocate ecological civilization” (China National Petroleum Corporation 2018, 46), want to be a “responsible corporate” (IndianOil 2018, 86) or simply feel the obligation to “do the right thing on climate change” (Shell 2018, 1).

One general difficulty when analyzing the results in this subchapter is the lack of a common understanding of the term ‘society’. What it is and what it is not might be the consequence of differing conceptualizations. For example, when *Petrobras* (2019b, 3) writes that “society recognizes the need to address climate change globally”, this eventually does not only imply ‘the people’ but also the political sphere. Although the broader semantic context was taken into account to gain a better understanding of the firms’ understanding of the term, this blurriness makes a clear and objective separation from the other categories of rationales a problematic task.

Generally, corporate language is particularly vague whenever societal or moral rationales are given. None of the companies makes a direct reference to a specific interest group to whose interest it responds with its strategy. As explained above, ‘society’ is treated as a loose and anonymous object. Compared to its competitors, *CNPC* (2018, 3) already is relatively precise when stating that “green development is an urgent demand of Chinese people in the new era and is critical to the sustainable development of CNPC”. With this, it at least limits the perspective to the national context while the concept of ‘society’ in the other firms’ reports could also encompass the entire global population.

The vague language might indicate that there are not any concrete interest groups in this field to which the firms feel accountable. For example, within the whole sample, there is not a single reference to an environmental organization, social movements or other critical actors from civil society. Instead, firms very generally talk about “a wide range of stakeholders” (*Lukoil* 2017, 32) or “other stakeholders [than their investors]” (*Chevron* 2018, 4). This stands in contrast to the analysis of economic rationales above, where the clear distinction between the types of economic stakeholders – i.e. consumers and investors – was explicitly made most of the time. This invites the interpretation that concrete societal actors do not really play an important role in influencing the firms’ behavior.

Nevertheless, one central societal frame in the intersection with economic rationales and must be introduced in depth. It reoccurs all across the present sample (with the exception of *Lukoil*’s report), constituting a kind of superordinate ‘master frame’ of the sector as a whole. Derived from the title of *BP*’s report (“Responding to the dual challenge”), it could

be labelled the ‘**dual challenge narrative**’. Right at the beginning of the publication, the company writes:

“As the world demands more energy to fuel increasing prosperity and provide people with a better quality of life, it also demands energy delivered in new ways, with fewer emissions.” (BP 2019, 1)

In a nutshell, this narrative expresses the firms’ consciousness about the fundamental character of climate change while at the same time stressing the industry’s critical role for societal and economic development in times of growing energy demand, especially in regions where population numbers and industrial production are on the rise³⁰. Climate change is degraded from the most existential issue of our time to one task in a multi-challenge scenario. Within the present sample, this narrative is the most striking example for corporate attempts to use CSR reporting “to reconstruct themselves by framing the debate on their own terms” (Ferguson, Sales de Aguiar, and Fearfull 2016, 279).

Albeit in different words, this narrative is taken up by most firms under study, regardless of their home base, size or ownership structure. One can understand the reoccurrence of this theme as a joint response to the existential challenge which the sector faces through climate change. By reminding the public of the central role it has played for wealth and economic growth over many decades, the companies seek legitimacy for its future existence. The ‘dual challenge narrative’ stresses that despite its contribution to climate change, the industry remains to be vital for society in the future. This is most pathetically stressed by *ExxonMobil* (2019, 1):

“Energy underpins modern life. People around the world rely on energy to cook their meals, heat their homes, fuel their cars, and power their hospitals, schools and businesses. Our industry plays a critical role in fulfilling society’s economic needs and providing the foundation for a healthier and more prosperous future. ExxonMobil is committed to doing our part to help society meet this dual challenge.”

The narrative becomes problematic when looking closer at how the industry is planning to meet the dual challenge. Mostly, it is used as an excuse for the ongoing focus on

³⁰ This communicative strategy has a history in the industry and can also be found in other studies. As Ketola (2007, 172) has noted,: “The oil companies take advantage of the economic and social pillars of their concept of ‘sustainable development’ to exploit the huge, tempting commercial prospects in the second and third world. They claim that people in those countries should have a right to raise their material living standards to the same level as people in the first world – ignoring the fact that the first world economic growth and consumerism are ecologically unsustainable in the long run.” Jaworska (2018, 208) made similar findings in her study of reports from around 2010.

carbon-based energy sources in the future. This focus is particularly strong for the case of the American companies. *Petrobras* (2018, 7) announces to plan further investment in oil since “even in an accelerated transition scenario, we see persistent, although declining demand” for fossil fuels and underlines the role for society by stating that “fossil energy chains have a dynamizing role for the economy, with a positive impact on income, employment and tax collection” (*ibid.*, 13). *Chevron* stresses to “remain focused on improving current sources of energy” (*Chevron* 2019a, 8) and that “driving economic growth and improved living standards in the years ahead will require all forms of energy” (*ibid.*, 11). The report repeatedly (*ibid.*, 9; 15; 25; 34) cites outlooks which expect the key role of oil and gas for future energy supply. *ExxonMobil* (2019, 2) notes that “even under a 2°C pathway, significant investments will be required in oil and natural gas capacity”. Similarly, Chinese *CNPC* also underlines its commitment to oil as one source among several when writing:

“In response to the dual challenges of growing energy demand and carbon emissions reduction, we spared no efforts to develop green and low-carbon energy while *stabilizing oil production, actively enhancing refining capacity and improving oil product quality.*”
(China National Petroleum Corporation 2018, 3)³¹

While the explicit firm commitment to oil remains limited to the companies mentioned above, there is widespread agreement on increasing the production of natural gas as a substitute for oil. *Shell* (*Shell* 2018, 52) stresses that “when used instead of higher-carbon fuels such as coal and diesel for generators, it can help to meet increasing demand while lowering greenhouse gas emissions and air pollution”. At this point, it is important to note that the climate benefits of natural gas as a ‘bridge fuel’ have been found to be very limited (Levi 2013). Although CO₂ emissions are substantially lower than for coal or gas, the high methane emissions associated with its burning still damage the atmosphere significantly, primarily due to their extremely long lifetime of more than 50.000 years (IPCC 2001, 38). The development and exploitation of new fossil fuels – natural gas included – is considered incompatible with the Paris Agreement since even the exploitation of existing reserves would push the world past a temperature increase of 1,5°C above pre-industrial level (Stockman, Trout, and Blumenthal 2019, 6).

³¹ Highlighting in italic added by author.

Investments in renewable energies which would mean a considerable strategical turnaround play a role for all companies in the sample, albeit with varying enthusiasm. *Shell* rhetorically embraces it the most, writing that “more renewable energy like solar and wind is critical for a cleaner energy future, and that increasingly how people live, work and play is going to need to be powered by lower-carbon electricity” (*Shell* 2018, 44) or that “hydrogen has great potential” (*ibid.*, 60) as a substitute for conventional fuels.

Compared to that, other companies sound much more passive. *Total* (2019b, 10; 199) and *CNPC* (2018, 47) classify renewables as a central part of a heterogeneous energy mix in the future. *BP* writes that in plans to expand in renewables “where we see opportunities for growth” (*BP* 2019, 25). *Petrobras* (*Petrobras* 2018, 8) avoids a concrete commitment to alternative energy sources and only writes: “In the long term, we will study opportunities in renewable energies that have synergies with our activities and competitive advantages.” It argues that – due to an already high share of renewables in Brazil’s energy mix – “remaining alternatives for reducing emissions in the energy sector are restricted or have a high implementation cost for society” (*ibid.*, 9).

Most passively, *Chevron* only states that the company “continues its commitment to understanding and evaluating the economic viability of renewable energy sources (*Chevron* 2018, 37) and moans that setting targets for investments in renewables “could limit our ability to select the most profitable energy development opportunities” (*ibid.*, 34). The general restraints regarding renewables are reflected in the earlier mentioned low investments the sector has announced (see p. 45).

After all, it becomes evident that – all risks aside – larger and cost-intensive changes in the face of the ‘dual challenge’ remain somewhat limited. Despite being framed as a societal rationale – ‘providing the right energy to people’ – the ‘dual challenge narrative’ thus becomes more of an economic argument when seen in context.

A second important finding, beside of the overarching ‘dual challenge narrative’, is that there is powerful distinction to be made with regard to the role the companies put themselves into vis-à-vis society and the combat on climate change. *Shell*’s rhetoric is a particularly interesting example in this regard. The company does constantly speak of the big challenge which climate change represents to ‘society’ and the massive steps which ‘society’ needs to make in order to limit climate change. By doing so, *Shell* rhetorically

pushes the focus away from its own contribution to global warming, turning climate change into a problem of others, not of itself. In consequence, it frames its action towards climate change through an '**assistance narrative**', thus as a voluntary service towards society, which is strongly expressed by the reoccurring use of the word 'help':

"Shell is determined to help provide more and cleaner energy solutions." (Shell 2018, 44)

"To help achieve the energy transition and ensure opportunities to achieve better living standards for all, the world needs to transform the way it produces and uses energy." (ibid., 44)

"Our experience, partnerships and technical know-how can help find new ways to provide energy that people need and want – and do this responsibly to help shape a more sustainable energy future." (ibid., 52)

A similar but slightly weaker version of the same narrative can be found in *BP*'s report. The firm writes: "We have a role to play in solving the dual challenge but can't do it alone" (BP 2019, 1). It promises to be "helping to drive tangible actions towards delivering a cleaner, better energy future (ibid., 6), for example by assisting other businesses and organizations in offsetting their carbon footprint (ibid., 24).

The other firms with a comparatively proactive societal argumentation in their reporting on climate change take a different stance and commit to a '**responsibility narrative**'. They clearly recognize their responsibility and portray their strategies on climate change as a logical response to it. *Lukoil* (2017, 32) admits that

"through their operations energy companies create significant amounts of greenhouse gas emissions, which can affect the climate and lead to the emergence of risks that are significant for a wide range of stakeholders."

Likewise, *Petrobras* acknowledges "the intrinsic relationship between energy and greenhouse gas emissions" (*Petrobras* 2019b, 3) and calls its action on climate change "an ethical requirement" (ibid., 2). Being less explicit, *Total* describes climate change as a global risk which "results from various human actions such as energy production and consumption" (*Total* 2019b, 94). Interestingly, the firm repeatedly stresses that it aims to "become the responsible energy major" (ibid., 105; 198). The word 'become' can be read as an acknowledgement of the fact that it still needs to go a long way to reach that goal. Just like *Petrobras*, *Total* thus takes a rather humble approach in its CSR reporting. Even more salient is the rhetoric of *Sinopec* when stating that its "low-carbon transformation

may fall short of stakeholders expectation which may impact our reputation” (Sinopec 2019, 30). These companies thus approach society relatively meekly, especially when compared to *BP* and *Shell*.

Interestingly, the firms under study almost exclusively frame climate change as a challenge to people but hardly to the planet as such. The environment as a stakeholder (Khojastehpour and Riad Shams 2019, 3) hardly seems to play a role. As the only firms, *IndianOil* and *Lukoil* use the massive visible impact of climate change on the environment to explain their strategies. *IndianOil*, for example, stresses that it finds it crucial to undertake “various climate mitigation and adaptation actions to prevent adverse impact on our ecosystem” (*IndianOil* 2018, 91). *Lukoil* expresses that it shares concerns over this topic due to the “threat to the lives and health of the people, flora and fauna of the planet” (*Lukoil* 2017, 32).

5.2.3. Political rationales

Looking at the impact of political rationales on the firms’ climate change responses, differences between corporations from industrialized and those from emerging economies are particularly strong. While concrete references to state-based climate politics are hardly found in reports of companies from the former, those from the latter – especially the Chinese companies and *IndianOil* – frequently refer to domestic policies, projects and regulations and in varying intensity subscribe to a broader national ambition in the face of global warming. One could call this the **‘obedience narrative’**.

For example, *IndianOil* expresses the aim to “propel the country’s shift to cleaner fuels” (*IndianOil* 2018, 6). *Petrobras* (2018, 9) stresses that emission reductions are “a strategic requirement [...] while contributing to meeting Brazilian climate ambitions”. Being slightly more concrete, Russian *Lukoil* picks up several governmental initiatives and proposals on emission reductions and the expansion of renewable energies (*Lukoil* 2017, 33ff.).

Most powerfully, the influence of domestic politics becomes visible in the reports of the two Chinese companies, *Sinopec* and *CNPC*. Among others, they make reference to the national carbon emission trading system (Sinopec 2019, 30), the Chinese Energy

Production and Consumption Revolution Strategy 2016-2030 (*ibid.*, 32), China's National Program to Address Climate Change, the National Plan on Climate Change 2014-2020 (China National Petroleum Corporation 2018, 45), low carbon requirements in the context of the Belt and Road Initiative (*ibid.*, 46) or a green finance initiative proposed in China's 13th Five-year Plan (*ibid.*, 46). Both firms stress to act 'in accordance with' or 'as a response to' these policies. Their language thus reflects a form of obedience and humility and a self-embedding into a wider national project. From this observation, one can derive the interpretation that these firms seek to demonstrate themselves as servants of the respective governments and/or societies. While this is little surprising if we consider their entirely or mostly state-owned character, it still is interesting to see the ownership structure reflected in corporate communication.

These findings are especially interesting because they stand in sharp contrast to the results for the US and European companies. The reports of *Total* and *Shell* do not refer to concrete national legislation or regulation at all. When talking about policies as a general factor, they do so with an entirely different attitude compared with their Chinese, Indian or Russian counterparts. In contrast to these companies' submissive understanding as extensions of national governments, the Western companies position themselves with a strong and assertive stance, using an '**influence narrative**'.

ExxonMobil for example demands that "policies should be clear and guard against duplicative, overlapping and conflicting regulations, which may distort markets and impose unnecessary costs on consumers" (*ExxonMobil* 2018a, 19) and that it plans to further engage on policy "to address the risks of climate change at the lowest cost to society" (*ExxonMobil* 2019, 2). *BP* and *Chevron* use a similarly proactive language and self-confidently stage themselves as powerful political actors. *BP*, for example, reports that it has "*engaged* with policymakers" (*BP* 2019, 9) in the EU, Australia, Canada and China, that it "*opposed* the ballot initiative proposal to introduce a carbon fee in Washington state in the US" (*ibid.*, 9) and "*support[s]* federal regulation of methane emissions" (*ibid.*, 15)³². Politics is portrayed as a field in which the firm has a certain power and can direct things towards a development which is suitable to them. Similarly, *Chevron* stresses its proactive role:

³² Accentuations in italic added by the author.

“As governments further consider pursuing specific policies and actions, Chevron remains committed to working with policymakers to help inform any decisions and actions.” (Chevron 2018, 20)

“We work constructively with governments toward balanced policies to address potential climate change risks while providing access to reliable and affordable energy to support social and economic progress.” (ibid., 20)

Furthermore, the firm duns that “policies should be balanced and measured to ensure that long-term economic, environmental and energy security needs are all met” (Chevron 2018, 20). Referring to the ‘dual challenge narrative’, this can be read as another attempt to relativize climate change vis-à-vis other societal challenges. Generally, *Chevron* frames policy developments and regulations as potential risks to its business which need to be watched but which also can be controlled through effective risk assessment and engagement with the authorities (ibid., 7f.; 20ff.). In a nutshell, the Western companies rather use their reports as means to express a clear position towards policy measures or even shape them, instead of showing obedience. None of them takes them for granted but attempts to influence governance bodies through lobbyism.

Similar observations can be made concerning the international climate policy regime. The Paris Agreement generally is an important reference point to which both, firms from emerging as well as industrialized economies, subscribe to. One remarkable exception is *Lukoil*, which is the only firm that does not make any reference to the accord from 2015 and only stresses its commitment to the climate-related Sustainable Development Goals (Lukoil 2017, 7).

For the other firms, interestingly, many of the findings which above have been described for their position towards national or regional policies also apply for the international policy framework on climate change. *IndianOil* and the Chinese companies frame their position in favour of the Paris Agreement as a reaction to the respective national government’s commitment to the international climate regime. Chinese *CNPC* aims at “making significant contribution to China’s efforts to honor international accords on climate change” (China National Petroleum Corporation 2018, 46). *IndianOil* explains that its strategy “supports India’s commitment towards Paris Agreement” (IndianOil 2018, 5).

The companies from industrialized countries again take a more independent and self-assertive position. They don't refer to any concrete political actor but argue more from their own perspective. For example, *ExxonMobil* expresses its supportive but comparatively distanced stance when stating that it

“supports the Paris Agreement as an important framework for addressing the risks of climate change. We welcomed the Paris Agreement when it was announced in December 2015, and again when it came into effect in November 2016. We have reiterated our support to government officials, nongovernmental organizations and the broader public” (ExxonMobil 2018a, 18).

Going further, *Chevron* writes that it perceives the Paris Agreement as “generally in line with the first of Chevron's Policy Principles for Addressing Climate Change” (*ibid.*, 20). That is an interesting rhetoric juxtaposition compared to the companies from the BRICS: The company rhetorically sets its own strategy as the standard of comparison for the broad global agreement, not vice-versa. Apparently, it does not see the need to align with the consent but purports that it has set a valid standard itself. Beside of that, *Chevron*'s position again is dominated by the risk focus which can be found all across its report. It does not openly embrace the agreement as other firms do but mainly portray it as a political reality it recognizes and copes with to assure that its business is as little affected as possible:

“As part of our strategic planning process, we use our proprietary models to forecast demand, energy mix, supply, commodity pricing and carbon prices—all of which include assumptions about future policy developments, such as those that may be implemented in support of the Paris Agreement.” (Chevron 2018, 3)

The European companies generally take the most proactive role among the firms in the sample. Being aware of the agreement's vague character regarding the path to its realization, *BP*, *Total* and *Shell* explicitly propose possible pathways to achieve the general targets. That can be interpreted as an attempt to shape the energy transition in a way which is suitable for them. For example, *Total* stresses that it encourages the setting of a worldwide price for each ton of carbon emitted but calls for “ensuring fair treatment of sectors exposed to carbon leakage” (*Total* 2019b, 200). *BP* underlines its ambition to foster carbon capture, use and storage technology in order to reach the Paris goals (*BP* 2019, 7). Such innovation obviously would support the firm's interest since the possibility to capture emissions to a certain degree would enable them to pursue with their conventional business while reducing harm to the atmosphere.

Particularly interesting rhetoric is applied by *Shell*. The report mentions the firm's 'Sky scenario', a drafted strategic outline for global emission reduction in the upcoming years, and calls it "a technically possible, but challenging pathway for society to achieve the goals of the Paris Agreement" (Shell 2018, 45). Herewith, the company seeks to demonstrate its pioneering role as a responsible actor guiding society through the uncertain future it faces. In the same context, the firm stresses the heavier burden it supposedly carries in comparison with society at large:

"Our starting point is higher than society's because our portfolio has a different energy mix compared to the overall energy system. We do not have the large quantities of nuclear power, hydro power, wind, solar and large-scale primary biomass that the global energy system has." (Shell 2018, 46)

By stressing this heavy burden, it further underlines its pioneering role, implying a narrative of 'Although we face a tougher challenge than society, we still lead the way.' However, it spares out that this energy mix also comes with a higher responsibility for action than the rest of society, as one could argue (Frumhoff, Heede, and Oreskes 2015).

This chapter has comparatively analyzed the rationales which the firms under study express for their responses to climate change in their CSR reports, which narratives they establish and which behavior their rhetoric displays. While the 'dual challenge narrative' is the most important sector-wide commonality, central differences have been found at the same time, namely: a more proactive and confident approach among investor-owned companies from industrialized countries versus a rather obedient language and a stronger political focus in the reports of the companies from the BRICS. The following chapter attempts to explain and further interpret these findings.

6. Discussion

In this concluding chapter, it remains to be discussed how the results from the previous pages (see table 3) can be explained and which assumptions we can derive from them with regards to the potential of CSR to align corporate strategies with the general efforts to protect the climate. In a nutshell, the findings call the effectiveness of the ‘soft’ regulatory approach based on CSR into question. Due to the significant differences that have been found between the companies, we need to look at the results (see table 3, p. 44) for firms from industrialized and from industrializing countries separately. The discussion admittedly focuses on the broad common lines which have become visible and likewise attempts to find overarching patterns of explanation for both groups. A more detailed interpretation, taking into account the single firms’ individual histories and the particular national contexts would certainly be useful but reaches beyond the scope of this thesis.

Table 3: Overview of dominant rationales

	Firms from the EU and the US	Firms from the BRICs
Economic rationales	<p>‘opportunity narrative’ (<i>BP, Shell, Total</i>)</p> <p>‘risk narrative’ with appeasement character (<i>Chevron, ExxonMobil</i>)</p>	<p>‘risk narrative’ (<i>Petrobras, Lukoil, IndianOil</i>)</p>
Societal/moral rationales	<p>‘dual challenge narrative’ (except of <i>Lukoil</i>)</p> <p>‘assistance narrative’ (<i>Lukoil, Petrobras, Sinopec</i>)</p> <p>‘responsibility narrative’ (<i>Total</i>)</p>	<p>‘responsibility narrative’ (<i>Lukoil, Petrobras, Sinopec</i>)</p>
Political rationales	‘influence narrative’	‘obedience narrative’

For the firms under study which are headquartered in emerging economies, on average rather scarce CSR reporting on climate change has been found, especially when compared to their European peers. Judging by these results, they generally seem to feel less pressured to justify their strategies and consequently seem to be coined by multi-stakeholder pressures to a smaller extent. Under these conditions – looking at the results

of this part of the analysis – CSR appears to be little promising to influence corporate behavior on climate change. These firms apparently seek legitimization elsewhere than in a multi-stakeholder-oriented environment.

A possible explanation can be found in the comparative capitalism literature. Authors here have repeatedly stressed the dominant role of the state for the society-business relationship, referring to the BRICS states as “state-permeated” (Nölke and Claar 2013) or “incorporated” (Buhr and Frankenberger 2014) varieties of capitalism. Many strategically-relevant companies have remained state-owned in these countries. Consequently, the respective governments are not only the most important political stakeholder but also the largest shareholder³³. This massively simplifies corporate management: Pressures on firms are coined by relatively homogenous interests since political and economic pressures are convergent, in contrast to the more complex multi-stakeholder environment of their investor-owned peers which are pulled and pushed from many different sides. In fact, firm strategies are likely to be directly coined in close interaction with the authorities since the government “can use the companies to advance its own agenda, sometimes at the expense of minority shareholders” (Frynas 2009, 30). Acting in opposition to national policies presumably would severely threaten the firms’ legitimacy. The comparatively high frequency of references to the national governmental initiatives or standpoints and the generally obedient language which is used in this context further underlines this observation.

Therefore, it seems probable that these firms from ‘state-permeated’ market economies indeed do respond to ‘soft’ external pressures – as long as they come from the governmental side. At the same time – in the absence of a multi stakeholder-based environment as conceptualized and experienced in the ‘West’ – they do not do so in the realm of CSR reporting, possibly since it might not be a common channel to coordinate strategical decisions. Further research on this aspect is suggested.

Alternatively, the comparatively narrow climate change reporting of the firms from the BRICS could be explained by the weaker civil societies in these countries (Nasiritousi

³³ This explanation is relatively straightforward for the entirely or mostly state-owned *CNPC*, *Sinopec*, *IndianOil* and *Petrobras*. For the case of *Lukoil*, a privatized company, the traditionally close state-business-relationship in Russia and patrimonial elements of Kremlin capitalism might play a role (Vasileva 2014, 113f.). In this context, the private company does not act as freely from political influence as in more liberal market economies.

2017, 638) or, more generally, by lower critical awareness about climate change among the population. For example, in 2015 a survey found that more than 65% of the Indian population had never heard of climate change, one of the lowest numbers of all countries worldwide (Lee et al. 2015, 1015). In Russia, people are more aware of the phenomenon but only 35% of the population – notably less than in the average of industrialized European countries – have been found to be worried about the effects of climate change (Pohjolainen et al. 2018, 8). If we understand responsible corporate behavior as a response to strong shared beliefs and expectations in the respective corporate environments, such numbers seem unlikely to provoke a strong CSR focus on climate change.

Investor-owned firms with a home base in ‘Western’ markets, especially in Europe, more intensively cover the issue of climate change in their CSR reports. That leads to the assumption that the external pressure to act on climate change is stronger for the firms in industrialized countries – or at least seems to be perceived as stronger by the companies. These findings are in line with previous studies which have made the link between intense reporting and a firm’s embeddedness in stakeholder-oriented markets (Rosen-Zvi 2011, 557f.). In such institutional settings, external stakeholders play a more dominant role for corporate behavior and companies need to put more effort into satisfying their demands. Judging by the findings of the quantitative analysis alone, stakeholders in general seem to have stronger opportunities to influence corporate behavior in ‘Western’ – and most notably in European – countries than elsewhere.

However, when mingled with the analysis of the rhetoric analysis within their reports, these findings must be relativized. This part of the analysis has unveiled the very proactive position which the ‘Western’ firms take within in the loose frame which is set through ‘soft regulations’. That suggests that they don’t see the necessity to adhere to external demands but rather take them as leverage which can be shaped in their own terms, for their own benefits. These findings are in line with Nasiritousi (2017, 633) who stressed that investor-owned oil and gas companies from industrialized countries engage more actively in the field of governance than state-owned enterprises.

Behind the commitment to some unnegotiable consent, US and European firms establish their own narratives on climate change which mainly seem to be used to legitimize a proceeding with their conventional business. In a sense, their language is relatively

aggressive and vying. That could be the case since these firms tend to face more intense competition with similar peers and need to fish for the attention of investors and consumers in order to survive. In difference to the mostly or entirely state-owned entities which dominate among the firms from emerging economies, they are highly dependent on foreign capital from the free market and consequently might feel a stronger need to trump their sector peers rhetorically.

Indeed, shareholder orientation seems to be the hegemonic principle in the climate-related strategies of US and European firms. This is further underlined through the comparatively strong dominance of economic rationales in the reports of the firms from Europe and the United States. Following the theoretical concept established in chapter 2.2., economically-oriented stakeholders apparently are perceived as the most relevant interest group in the process of balancing competing interests which ultimately drives firm behavior. Previous studies with different research approaches have made similar assumptions (e.g. Reid and Toffel 2009).

A logical consequence of such “shareholder primacy” (Leung 1997) is the focus of economic aims in the climate-related strategies, more precisely the maximization of shareholder value. As argued earlier, such orientation in the oil and gas industry means continuous harm to the planet and can hardly be aligned with general efforts to protect the climate. This alone gives little ground for hope.

However, the assumed strong dependence from one interest group also bears some potential for change since a company is “unlikely to resist institutional demands and expectations when it is highly dependent on the constituent exerting pressure” (Oliver 1991, 174). In other word, shareholders theoretically have considerable potential to influence firm behavior and push the corporations towards climate-friendly strategies within the loose framework of CSR.

The open question is how realistic such climate-friendly shareholder behavior is. According to Ketola’s (2007, 183) portray of economically-oriented stakeholders,

“the economic ‘investors’ (customers, shareholders, financiers and insurers) and the economic partners (contractors, suppliers, distributors, trade unions and non-governmental organizations) of oil companies have one thing in common: they all depend on the oil companies to perform their own activities. That is why they either do not dare

to put pressure on the Sisters³⁴, or find that the environmental issues compete with their own interests. Customers wish to buy cheap fuels. Shareholders want to maximize their profits. Financiers and insurers want to have major oil industry clients. Contractors, suppliers and distributors wish to do lots of business with oil companies. Non-governmental organizations wish to get grants and other funding from oil companies. They all emphasize the first pillar, economic responsibility, in the oil companies' sustainable development.”

One now could argue that environmentally sound behaviour does not necessarily contradict economic success. As outlined throughout this study, there is a business case for climate-friendly strategies (see chapter 3.), bearing the potential to mobilize even those investors who don't take environmental concerns into account. Bach (2019, 88) claims that “the commonly held view that sustainability represents a challenge to economic growth [...] has become a thing of the past”.

However, one must assume that this does not dissolve the conflict between the goal to maximize shareholder value and the climate crisis. Due to the long half-life period of greenhouse gases³⁵, mitigation efforts promise positive effects only in the long run and in the near term primarily are cost-intensive. This makes them little attractive to most shareholders who logically tend to prefer short-term profits (Benjamin 2016, 357). Only if shareholders consider ecological or moral aspects of their investments, they can be expected to call for change.

Reality reflects these ambiguities: On the one hand, investors' pressure on oil and gas companies has generally risen in the past years. Average votes in support of shareholder resolutions attempting to push the firms towards more efforts and transparency regarding their role for climate change have recently grown from an average of 21% in 2014 to 53% in 2018 (Fletcher et al. 2018, 3). Activist shareholders forced *BP* to check their strategy for compliance with the Paris goals and *Shell* was pushed to link managers' salaries to success in emission reductions (Keating 2019). However, such activism has a very mixed record when it comes to more ambitious demands and fundamental changes: Calls for binding targets in emission reduction were strongly rejected by shareholders of both companies, *Shell* and *BP* (*ibid.*). Likewise, investors of *ExxonMobil* and *Chevron*

³⁴ The term ‘Sisters’ is used as a synonym for the world's largest oil multinationals. It was developed to describe the seven large corporations dominating the market after World War II: *Anglo-Persian Oil Company*, *Gulf Oil*, *Shell*, *Standard Oil Company of California*, *Standard Oil Company of New Jersey*, *Standard Oil Company of New York* and *Texaco* (Sampson 1975). These seven later merged into four: *ExxonMobil*, *Chevron*, *BP* and *Shell* (Hoyos 2007).

³⁵ For example, once emitted, carbon dioxide in some cases remains in the atmosphere for up to 200 years. Methane even for more than 50.000 years. (IPCC 2001, 38).

opposed resolutions by activist peers who attempted to push the firms past their conventional business (Hiller 2019).

Consequently, as long as fossil fuels continue to be the most profitable product for the oil and gas industry, CSR alone is not likely to lead to the radical shift in business strategies which the world needs to achieve the Paris goals. A policy regime to enforce action seems crucial since firms which are confronted with weak and uncertain policies are most likely to exploit short-term profit opportunities instead of embracing ‘green’ development (Teeter and Sandberg 2017). In order to make fossil fuels economically unattractive, the political sphere must set a more explicit and more ambitious realm, for example by further enforcing the global expansion of alternative sources of energy and increasing the comparative costs for burning coal, oil and gas through ambitious cap-and-trade systems and high carbon taxes (e.g. Edenhofer et al. 2019).

While societal pressure from environmental activists or social movements does not seem to concern corporate behavior directly, these groups might come into play here, driving political changes and increasing general awareness for the issue (Jamison 2010). Considering the rise in climate change litigation and the potential high compensations linked to it, incentives might also come from the jurisdictional side (Ganguly, Setzer, and Heyvaert 2018). Such economic pressures have the potential to mobilize investors and quickly provoke a more fundamental rethinking in the industry and more progressive strategies to reduce GHG emissions (Cadez, Czerny, and Letmathe 2019).

After all, CSR must be backed by an ambitious political framework in order to contribute to the alignment of corporate strategies with the targets established in Paris. In this aspect, this thesis is in line with Rosen-Zvi (2011, 557) who assumed: “The more stringent the hard regulation is, the more effective the soft law mechanisms that complement it are.”

7. Conclusion

It is academic consent that the global community will hardly be able to achieve the goals it has set itself in the Paris Agreement without the commitment of major corporate emitters from the oil and gas industry. In fact, a radical shift away from their conventional business model – the exploitation, refinement and sale of carbon-products – is needed, rather sooner than later. However, in the absence of comprehensive political regulation, corporations are left with a good deal of freedom to decide how far they want to make their contributions to climate change.

This study has sought to understand better how ten major multinational oil companies from industrialized and industrializing countries deal with the liberty they are provided with. Therefore, it has analyzed the firms' climate-related CSR reporting. It has looked at reporting intensity patterns of explanation and the rhetoric applied in order to determine which factors drive the firms' responses to global warming.

It has found that reporting on climate change is most intensive among investor-owned European companies and – generally speaking – more comprehensive among companies with headquarters in industrialized countries than among their partly or entirely state-owned peers from the BRICS. Rhetorically, corporations from Europe and the US take a relatively self-assertive position on climate change and seem to understand the reports as a tool to shape their environment in their own terms. Their reports most strongly seem to target their shareholders. In comparison, the companies from the BRICS under study more often make references to concrete national political initiatives and do so with a much more servile and obedient rhetoric.

On that basis, one can assume that CSR alone is little promising to discipline firm behavior. The companies from emerging economies generally do not seem to react too strongly to external demands regarding climate change which raises doubt about the efficiency of CSR as such in this firm context. However, the obedience they express towards the governments in their home countries leads to the assumption that they still could be relatively easily be pushed towards a more climate-friendly strategy under the guidance of climate-friendly governments, even without hard regulation.

In contrast, the results for the ‘Western’ companies show that the firms take advantage of the ‘soft’ regulations, mainly attempting to legitimize business-as-usual. However, the results indicate that shareholder pressure might have the potential to push them towards more ambitious changes in strategy. However, for such pressure to occur, carbon-based energy must become less profitable. Consequently, the study closes with the call for a sound policy framework which further promotes such a shift towards alternative energy sources.

Obviously, these findings must be approached critically and should not be taken as a general truth. The limited number of analyzed firms, as well as the temporal limitation to one single year, can only provide a snapshot. However, the presumably most important limitation of this study lies in the character of the researched documents. As mentioned at various points, CSR reports are a delicate source for research. After all, they remain a black box, blurring companies’ actual internal ambitions behind a high-gloss surface. The study has attempted to gain an impression of what stands behind their rhetoric, but the interpretation presented here is only one among several possible readings. That is also due to the generally subjective character of results which discourse analysis produces. However, by setting rhetoric into a relationship with what is known about the actual firm behavior and arguing along the widely recognized theoretical understandings of CSR, this study still represents a valid approach to analyze corporate behavior in response to climate change.

A derived suggestion for further research would be to enhance and test the findings provided here with interviews of managers who are responsible for the firms’ CSR strategies. This would also allow to analyze the importance of personal convictions of influential managers on CSR behavior. This aspect is entirely left aside by the theoretical understandings of CSR which were used in this study but for example plays a vital role in the Austrian economics understanding of CSR, as portrayed by Frynas (2009, 18ff.). Furthermore, in a more comprehensive work, major state-owned companies from the OPEC countries could additionally be considered. Moreover, a long-term study which eyes changes in the sector’s CSR reporting throughout the energy transition and in response to the evolving challenges and possibly decreasing revenues could be enlightening.

References

- Abbott, Kenneth W. 2012. "The Transnational Regime Complex for Climate Change." *Environment and Planning C: Government and Policy* 30 (4): 571–90.
- Agrawala, Shardul, Maëlis Carraro, Nicholas Kingsmill, Elisa Lanzi, and Guillaume Prudent-Richard. 2011. "Private Sector Engagement in Adaptation to Climate Change." 39. *OECD Environment Working Papers*.
- Ahmad, Fatima Maria. 2017. "Beyond the Horizon: Corporate Reporting on Climate Change." Arlington: Center for Climate and Energy Solutions.
<https://www.c2es.org/site/assets/uploads/2017/09/beyond-horizon-corporate-reporting-climate-change.pdf> (accessed: July 14, 2019).
- Allen, Myria W., and Christopher A. Craig. 2016. "Rethinking Corporate Social Responsibility in the Age of Climate Change: A Communication Perspective." *International Journal of Corporate Social Responsibility* 1 (1): 1–11.
- Bach, Matthew. 2019. "The Oil and Gas Sector: From Climate Laggard to Climate Leader?" *Environmental Politics* 28 (1): 87–103.
- Banerjee, Neela, Lisa Song, and David Hasemyer. 2015. "Exxon's Own Research Confirmed Fossil Fuels' Role in Global Warming Decades Ago." Inside Climate News. <https://insideclimatenews.org/news/15092015/Exxons-own-research-confirmed-fossil-fuels-role-in-global-warming> (accessed June 13, 2019).
- Banerjee, Subhabrata Bobby. 2008. "Corporate Social Responsibility: The Good, the Bad and the Ugly." *Critical Sociology* 34 (1): 51–79.
- . 2014. "A Critical Perspective on Corporate Social Responsibility: Towards a Global Governance Framework." *Critical Perspectives on International Business* 10 (1): 84–95.
- Barros de Cerqueira Paes, Henrique. 2012. "Investigation into Stakeholders' Influence on the Environmental Strategies of Oil Companies - A Case Study of Petrobras." In *International Conference on Communication, Media, Technology and Design*, 257–64. Istanbul.
- Baskin, Jeremy. 2006. "Corporate Responsibility in Emerging Markets." *The Journal of Corporate Citizenship* 24 (Winter): 29–47.
- Benjamin, Lisa. 2016. "The Responsibilities of Carbon Major Companies: Are They (and Is the Law) Doing Enough?" *Transnational Environmental Law* 5 (2): 353–78.
- Berelson, Bernard. 1952. *Content Analysis in Communication Research*. Foundations of Communication Research. New York: Hafner Press.
- Betz, Joachim. 2015. "Corporate Social Responsibility and Emerging Powers." *International Journal Business Governance and Ethics* 10 (3/4): 230–47.
- Bielak, Debby, Sheila M. J. Bonini, and Jeremy M. Oppenheim. 2007. "CEOs on Strategy and Social Issues." *The McKinsey Quarterly*.

- Blowfield, Michael, and Jedrzej George Frynas. 2005. "Setting New Agendas: Critical Perspectives on Corporate Social Responsibility in the Developing World." *International Affairs* 81 (3): 499–513.
- Bodansky, Daniel. 2016. "The Paris Climate Change Agreement: A New Hope?" *The American Journal of International Law* 110 (2): 288–319.
- Boom, Keely, Julie-Anne Richards, and Stephen Leonard. 2016. "Climate Justice: The International Momentum Towards Climate Litigation." Brussels: Heinrich Böll Foundation. <https://www.boell.de/sites/default/files/report-climate-justice-2016.pdf> (accessed July 24, 2019).
- Boston College Center for Corporate Citizenship. 2010. "How to Read a Corporate Social Responsibility Report: A User's Guide." Boston: Institute for Responsible Investment.
- Bowen, Howard R. 1953. *Social Responsibilities of Businessman*. New York: Harper.
- BP. 2019. "Responding to the Dual Challenge." London: BP. https://www.bp.com/content/dam/bp-country/fr_ch/PDF/bp-sustainability-report-2018.pdf (accessed May 3, 2019).
- Brammer, Stephen, Gregory Jackson, and Dirk Matten. 2012. "Corporate Social Responsibility and Institutional Theory: New Perspectives on Private Governance." *Socio-Economic Review* 10 (1): 3–28.
- Brammer, Stephen, Stephen Pavelin, and Lynda A. Porter. 2006. "Corporate Social Performance and Geographical Diversification." *Journal of Business Research* 59 (9): 1025–34.
- Brei, Vinicius, and Steffen Böhm. 2014. "'1L=10L for Africa': Corporate Social Responsibility and the Transformation of Bottled Water into a 'consumer Activist' Commodity." *Discourse and Society* 25 (1): 3–31.
- Buhr, Daniel, and Rolf Frankenberger. 2014. "Emerging Varieties of Incorporated Capitalism. Theoretical Considerations and Empirical Evidence." *Business and Politics* 16 (3): 393–427.
- Cadez, Simon, and Albert Czerny. 2016. "Climate Change Mitigation Strategies in Carbon-Intensive Firms." *Journal of Cleaner Production* 112: 4132–43.
- Cadez, Simon, Albert Czerny, and Peter Letmathe. 2019. "Stakeholder Pressures and Corporate Climate Change Mitigation Strategies." *Business Strategy and the Environment* 28: 1–14.
- Camilleri, Mark Anthony. 2017. "Corporate Sustainability and Responsibility: Creating Value for Business, Society and the Environment." *Asian Journal of Sustainability and Social Responsibility* 2: 59–74.
- Capalino, Reid, Paul Spedding, and Marc Fulton. 2014. "Oil Demand: Comparing Projections and Examining Risks." London: Carbon Tracker Initiative. <https://www.ourenergypolicy.org/wp-content/uploads/2014/05/CTI-Oil.pdf> (accessed July 15, 2019).

- Carnevale, Concetta, and Maria Mazzuca. 2014. “Sustainability Reporting and Varieties of Capitalism.” *Sustainable Development* 22 (6): 361–76.
- Carroll, Archie B. 1979. “A Three-Dimensional Conceptual Model of Corporate Performance.” *The Academy of Management Review* 4 (4): 497–505.
- . 1999. “Corporate Social Responsibility: Evolution of a Definitional Construct.” *Business & Society* 38 (3): 268–95.
- Cavalcanti Sá de Abreu, Mônica, Felipe De Castro, Francisco De Assis Soares, and José Carlos Filho Silva. 2012. “A Comparative Understanding of Corporate Social Responsibility of Textile Firms in Brazil and China.” *Journal of Cleaner Production* 20: 119–26.
- CDP. n.d. “About Us.” <https://www.cdp.net/en/info/about-us> (accessed July 26, 2019).
- Cheeseman, Gina-Marie. 2016. “Record Number of Climate Change Shareholder Resolutions Filed This Year.” Justmeans. <http://www.justmeans.com/blogs/record-number-of-climate-change-shareholder-resolutions-filed-this-year> (accessed June 30, 2019).
- Cheney, George, Juliet Roper, and Steve May. 2007. “Overview.” In *The Debate over Corporate Social Responsibility*, edited by George Cheney, Juliet Roper, and Steve May. New York: Oxford University Press.
- Chevron. 2018b. “Climate Change Resilience: A Framework for Decision Making.” <https://www.chevron.com/-/media/shared-media/documents/climate-change-resilience.pdf> (accessed May 4, 2019).
- . 2019a. “2018 Corporate Responsibility Report Highlights.” Chevron: San Ramon. <https://www.chevron.com/-/media/shared-media/documents/2018-corporate-responsibility-report.pdf> (accessed May 4, 2019).
- . 2019b. “Chevron Corporate Responsibility Reporting.” 2019. <https://www.chevron.com/reporting> (accessed May 4, 2019).
- China National Petroleum Corporation. 2018. Beijing: CNPC. “Corporate Social Responsibility Report 2017.” <http://www.cnpc.com.cn/en/csr2014enhms/201504/cb96856b38364d7eaac792883e12d27b/files/74024b5b42084949b1b2529e8d89dcd1.pdf> (date accessed: 2.5.2019).
- Clark, Cynthia E., and Elise Perrault Crawford. 2012. “Influencing Climate Change Policy: The Effect of Shareholder Pressure and Firm Environmental Performance.” *Business & Society* 51 (1): 148–75.
- Clarkson, Max B. E. 1995. “A Stakeholder Framework for Analyzing and Evaluating Corporate Social Performance.” *The Academy of Management Review* 20 (1): 92–117.
- CPLC. n.d. “Why Carbon Pricing Matters.” <https://www.carbonpricingleadership.org/why> (accessed July 27, 2019).

- Crane, Andrew, Dirk Matten, and Laura J. Spence. 2014a. “CSR in the Ecological Environment.” In *Corporate Social Responsibility: Readings and Cases in a Global Context*, edited by Andrew Crane, Dirk Matten, and Laura J. Spence, 349–90. Oxon: Routledge.
- . 2014b. “Understanding Corporate Social Responsibility.” In *Corporate Social Responsibility: Readings and Cases in a Global Context*, edited by Andrew Crane, Dirk Matten, and Laura J. Spence, 1–2. Oxon: Routledge.
- Cuevas, Sining C. 2011. “Climate Change, Vulnerability, and Risk Linkages.” *International Journal of Climate Change Strategies and Management* 3 (1): 29–60.
- Cunha, Darliane Ribeiro. 2017. “Environmental Indicators of Oil Companies.” *European Journal of Scientific Research* 146 (4): 386–94.
- Dahl, Trine, and Kjersti Fløttum. 2019. “Climate Change as a Corporate Strategy Issue: A Discourse Analysis of Three Climate Reports from the Energy Sector.” *Corporate Communications: An International Journal*, in press.
- Dahlsrud, Alexander. 2008. “How Corporate Social Responsibility Is Defined: An Analysis of 37 Definitions.” *Corporate Social Responsibility and Environmental Management* 15: 40–51.
- Davis, Keith. 1973. “The Case for and Against Business Assumption of Social Responsibilities.” *The Academy of Management Journal* 16 (2): 312–22.
- Dessler, Andrew. 2016. *Introduction to Modern Climate Change*. Cambridge: Cambridge University Press.
- Dhanesh, Ganga S. 2014. “Why Corporate Social Responsibility? An Analysis of Drivers of CSR in India.” *Management Communication Quarterly* 29 (1): 114–29.
- Dijk, Teun A. van. 1993. “Principles of Critical Discourse Analysis.” *Discourse and Society* 4: 249–293.
- DiMaggio, Paul J., and Walter W. Powell. 1983. “The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields.” *American Sociological Review* 48 (2): 147–60.
- Doh, Jonathan P., Shawn D. Howton, Shelly W. Howton, and Donald S. Siegel. 2010. “Does the Market Respond to an Endorsement of Social Responsibility? The Role of Institutions, Information, and Legitimacy.” *Journal of Management* 36 (6): 1461–85.
- Donaldson, T. 1982. *Corporations and Morality*. Englewood Cliffs: Prentice Hall.
- Donaldson, T., and T. Dunfee. 1999. *Ties That Bind: A Social Contracts Approach to Business Ethics*. Boston: Harvard Business School.

- Edenhofer, Ottmar, Christian Flachsland, Matthias Kalkuhl, Brigitte Knopf, and Michael Pahle. 2019. "Optionen für eine CO2-Preisreform." Berlin: Potsdam Institute for Climate Impact Research / Mercator Research Institute on Global Commons and Climate Change. <https://www.pik-potsdam.de/news/press-releases/files/eckpunkte-einer-co2-preisreform-fur-deutschland> (accessed July 29, 2019).
- Ekwurzel, B., J. Boneham, M. W. Dalton, R. Heede, R. J. Mera, M. R. Allen, and P. C. Frumhoff. 2017. "The Rise in Global Atmospheric CO₂, Surface Temperature, and Sea Level from Emissions Traced to Major Carbon Producers." *Climatic Change* 144 (4): 579–90.
- Elankumaran, Srinivasan, Rekha Seal, and Anwar Hasmi. 2013. "Transformation: Enlightening Endeavours at Tata Steel." *Journal of Business Ethics* 59 (1): 109–19.
- Elkington, John. 1998. "Partnerships from Cannibals with Forks: The Triple Bottom Line of 21st Century Business." *Environmental Quality Management* 8 (1): 37–51.
- ExxonMobil. 2018a. "2017 Sustainability Report." Irving: ExxonMobil. <https://www.gpt.com.au/sites/default/files/2018-05/Sustainability%20Reporting%20Pack%202017v2.pdf> (accessed May 8, 2019).
- . 2018b. "Sustainability Report | ExxonMobil." <https://corporate.exxonmobil.com/en/Community-engagement/sustainability-report> (accessed May 8, 2019).
- . 2019. "2019 Energy & Carbon Summary." Irving: ExxonMobil. <https://corporate.exxonmobil.com/-/media/Global/Files/energy-and-carbon-summary/Energy-and-carbon-summary.pdf> (accessed May 8, 2019).
- Falkner, Robert. 2016. "The Paris Agreement and the New Logic of International Climate Politics." *International Affairs* 92 (5): 1107–25.
- Ferguson, John, Thereza Raquel Sales de Aguiar, and Anne Fearfull. 2016. "Corporate Response to Climate Change: Language, Power and Symbolic Construction." *Accounting, Auditing & Accountability Journal* 29 (2): 278–304.
- Fletcher, Luke, Tom Crocker, James Smyth, and Kane Marcell. 2018. "Beyond the Cycle: Which Oil and Gas Companies Are Ready for the Low-Carbon Transition?" London: CDP. <https://www.cdp.net/en/investor/sector-research/oil-and-gas-report> (accessed July 17, 2019).
- Fortanier, Fabienne, Ans Kolk, and Jonatan Pinkse. 2011. "Harmonization in CSR Reporting: MNEs and Global CSR Standards." *MIR: Management International Review* 51 (5): 665–96.
- Fortune. 2019a. "Global 500 2018." <https://fortune.com/global500/2018/search/?industry=Petroleum+Refining> (accessed April 27, 2019).
- . 2019b. "Methodology for Global 500." <https://fortune.com/global500/2019/methodology/> (accessed April 27, 2019).

- Frandsen, Finn, and Winni Johansen. 2011. "Rhetoric, Climate Change, and Corporate Identity Management." *Management Communication Quarterly* 25 (3): 511–30.
- Freeman, R. Edward. 1984. *Strategic Management: A Stakeholder Approach*. Pitman Series in Business and Public Policy. Cambridge: Cambridge University Press.
- Freeman, R. Edward, Jeffrey S. Harrison, Andrew C. Wicks, Bidhan L. Parmar, and Simone de Colle. 2010. *Stakeholder Theory: The State of the Art*. Cambridge: Cambridge University Press.
- Freundlieb, Michael, and Frank Teuteberg. 2013. "Corporate Social Responsibility Reporting - a Transnational Analysis of Online Corporate Social Responsibility Reports by Market-Listed Companies: Contents and Their Evolution." *International Journal of Innovation and Sustainable Development* 7 (1): 1.
- Friedman, Milton. 1970. "The Social Responsibility Of Business Is to Increase Its Profits." *The New York Times Magazine*, September 1970.
<https://graphics8.nytimes.com/packages/pdf/business/miltonfriedman1970.pdf> (accessed June 2, 2019).
- Frumhoff, Peter C., Richard Heede, and Naomi Oreskes. 2015. "The Climate Responsibilities of Industrial Carbon Producers." *Climatic Change* 132 (2): 157–71.
- Frynas, Jędrzej George. 2006. "Introduction: Corporate Social Responsibility in Emerging Economies." *The Journal of Corporate Citizenship* 24 (Winter 2006): 16–19.
- . 2009. *Beyond Corporate Social Responsibility: Oil Multinationals and Social Challenges*. Milton Keynes: Cambridge University Press.
- Ganguly, Geetanjali, Joana Setzer, and Veerle Heyvaert. 2018. "If at First You Don't Succeed: Suing Corporations for Climate Change." *Oxford Journal of Legal Studies* 38 (4): 841–68.
- Garriga, Elisabeth, and Domènec Melé. 2004. "Corporate Social Responsibility Theories: Mapping the Territory." *Journal of Business Ethics* 45 (4): 51–71.
- Gasbarro, Federica, Fabio Iraldo, and Tiberio Daddi. 2017. "The Drivers of Multinational Enterprises' Climate Change Strategies: A Quantitative Study on Climate-Related Risks and Opportunities." *Journal of Cleaner Production* 160: 8–26.
- Géring, Zsuzsanna. 2015. "Content Analysis Versus Discourse Analysis: Examination of Corporate Social Responsibility in Companies' Homepage Texts." *SAGE Research Methods Cases*. <https://methods.sagepub.com/case/content-analysis-discourse-examination-corporate-social-responsibility> (accessed June 28, 2019).
- Gjølberg, Maria. 2009. "Measuring the Immeasurable? Constructing an Index of CSR Practices and CSR Performance in 20 Countries." *Scandinavian Journal of Management* 25 (1): 10–22.

- Graaf, Thijs Van De. 2017. "Is OPEC Dead? Oil Exporters, the Paris Agreement and the Transition to a Post-Carbon World." *Chemical Physics Letters* 23: 182–88.
- Grantham, Susan, and Edward T. Vieira. 2018. "Exxonmobil's Social Responsibility Messaging – 2002–2013 CEO Letters." *Applied Environmental Education and Communication* 17 (3): 266–79.
- Green, Jessica F. 2016. "Blurred Lines: Public-Private Interactions in Carbon Regulations." *International Interactions* 43 (1), 103–28.
- Grewal, Judy, George Serafeim, and Aaron Yoon. 2016. "Shareholder Activism on Sustainability Issues." 17–003. Harvard Business School Working Paper.
- Halderen, Mignon van den, and Mamta Bhatt. 2016. "Managing Impressions in the Face of Rising Stakeholder Pressures: Examining Oil Companies' Shifting Stances in the Climate Change Debate." *Journal of Business Ethics* 133: 567–82.
- Harrison, Jeffrey S., and R. Edward Freeman. 1999. "Stakeholders, Social Responsibility, and Performance: Empirical Evidence and Theoretical Perspectives." *The Academy of Management Journal* 42 (5): 479–87.
- Harvey, David. 2006. "Neo-Liberalism as Creative Destruction." *Geografiska Annaler. Series B, Human Geography* 88 (2): 145–58.
- . 2007. *A Brief History of Neoliberalism*. Oxford: Oxford University Press.
- Heede, Richard. 2014. "Tracing Anthropogenic Carbon Dioxide and Methane Emissions to Fossil Fuel and Cement Producers, 1854–2010." *Climatic Change* 122: 229–41.
- Heidenreich, Martin. 2012. "The Social Embeddedness of Multinational Enterprises: A Literature Review." *Socio-Economic Review* 10: 549–79.
- Herzig, Christian, and Anna-Lena Kühn. 2017. "Corporate Responsibility Reporting." In *Corporate Social Responsibility: Strategy, Communication, Governance*, edited by Andreas Rasche, Mette Morsing, and Jeremy Moon, 187–219. Cambridge: Cambridge University Press.
- Herzig, Linus, and Oldag Caspar. 2019. "CO2-Preise: Eine Idee, deren Zeit gekommen ist. Bestehende Instrumente und aktuelle Debatten in Europa." Bonn: Germanwatch. www.germanwatch.org/de/16693 (accessed July 27, 2019).
- Hiller, Jennifer. 2019. "Exxon Shareholders Reject Resolutions on Climate and Splitting CEO, Chairman Roles." Reuters. <https://www.reuters.com/article/us-exxon-mobil-agm/exxon-shareholders-reject-resolutions-on-climate-and-splitting-ceo-chairman-roles-idUSKCN1SZ22Z> (accessed July 20, 2019).
- Holliday, Chad. 2019. "Chair's Message." <https://reports.shell.com/annual-report/2018/strategic-report/chairs-message.php> (accessed July 20, 2019).
- Hove, Sybille Van Den, Marc Le Menestrel, and Henri-Claude De Bettignies. 2002. "The Oil Industry and Climate Change: Strategies and Ethical Dilemmas." *Climate Policy* 2: 3–18.

- Hoyos, Carola. 2007. "The New Seven Sisters: Oil and Gas Giants Dwarf Western Rivals." *Financial Times*. 2007. <https://www.ft.com/content/471ae1b8-d001-11db-94cb-000b5df10621> (accessed July 10, 2019).
- IEA. n.d. "World TFC by Fuel, Mtoe." <https://www.iea.org/statistics/kwes/consumption/> (accessed July 20, 2019).
- Ihlen, Øyvind. 2008. "Mapping the Environment for Corporate Social Responsibility: Stakeholders, Publics, and the Public Sphere." *Corporate Communication: An International Journal* 13 (2): 135–46.
- . 2009. "Business and Climate Change: The Climate Response of the World's 30 Largest Corporations." *Environmental Communication* 3 (2): 244–62.
- IndianOil. 2018. "Sustainability Report 2017-18: Enduring Trust. Enabling Growth." Mumbai: IndianOil. <https://www.iocl.com/SustainabilityReport.pdf> (accessed May 10, 2019).
- InfluenceMap. 2019. "Big Oil's Real Agenda on Climate Change: How the Oil Majors Have Spent \$1bn since Paris on Narrative Capture and Lobbying on Climate." London: InfluenceMap. <https://influencemap.org/report/How-Big-Oil-Continues-to-Oppose-the-Paris-Agreement-38212275958aa21196dae3b76220bddc> (accessed June 30, 2019).
- IPCC. 2001. "Climate Change 2001. The Scientific Basis." Geneva: IPCC. https://www.ipcc.ch/site/assets/uploads/2018/03/WGI_TAR_full_report.pdf (accessed July 24, 2019).
- . 2018. "Summary for Policymakers." Geneva: IPCC. https://www.ipcc.ch/site/assets/uploads/sites/2/2019/05/SR15_SPM_version_report_LR.pdf (accessed July 24, 2019).
- Jacquet, Jennifer, and Dale Jamieson. 2016. "Soft but Significant Power in the Paris Agreement." *Nature Climate Change* 6 (7): 643–46.
- Jamison, Andrew. 2010. "Climate Change Knowledge and Social Movement Theory." *Wiley Interdisciplinary Reviews: Climate Change* 1 (6): 811–23.
- Jaworska, Sylvia. 2018. "Change But No Climate Change: Discourses of Climate Change in Corporate Social Responsibility Reporting in the Oil Industry." *International Journal of Business Communication* 55 (2): 194–219.
- Jose, Anita, and Shang-mei Lee. 2007. "Environmental Reporting of Global Corporations: A Content Analysis Based on Website Disclosures." *Journal of Business Ethics* 72: 307–21.
- Kannenberg, Linda, and Philipp Schreck. 2018. "Integrated Reporting: Boon or Bane? A Review of Empirical Research on Its Determinants and Implications." *Journal of Business Economics* 89 (5): 515–67.
- Karnani, Aneel. 2010. "The Case Against Corporate Social Responsibility." *Wall Street Journal*. <https://www.wsj.com/articles/SB10001424052748703338004575230112664504890> (accessed June 11, 2019).

- Keating, Dave. 2019. “BP Shareholders Demand Climate Action, but Reject Calls for Hard Targets.” Euractiv. <https://www.euractiv.com/section/energy/news/bp-shareholders-demand-climate-action-but-reject-calls-for-hard-targets/> (accessed July 22, 2019).
- Ketola, Tarja. 2007. “Ten Years Later: Where Is Our Common Future Now?” *Business Strategy and the Environment* 16: 171–89.
- Khojastehpour, Morteza, and S.M. Riad Shams. 2019. “Addressing the Complexity of Stakeholder Management in International Ecological Setting: A CSR Approach.” *Journal of Business Research*, in press.
- Kinley, Richard. 2017. “Climate Change after Paris: From Turning Point to Transformation.” *Climate Policy* 17 (1): 9–15.
- Kolk, Ans, and Jonatan Pinkse. 2004. “Market Strategies for Climate Change.” *European Management Journal* 22 (3): 304–14.
- . 2005. “Business Responses to Climate Change: Identifying Emergent Strategies.” *California Management Review* 47 (3), 6–20.
- . 2008. “Business and Climate Change: Emergent Institutions in Global Governance.” *Corporate Governance* 8 (4): 419–29.
- KPMG International. 2017. “The Road Ahead: The KPMG Survey of Corporate Responsibility Reporting 2017.” Amstelveen: KPMG. <https://assets.kpmg/content/dam/kpmg/xx/pdf/2017/10/kpmg-survey-of-corporate-responsibility-reporting-2017.pdf> (accessed May 31, 2019).
- Krippendorff, Klaus. 2004. *Content Analysis: An Introduction to Its Methodology*. Thousand Oaks: Sage.
- Kuznetsov, A., O. Kuznetsova, and R. Warren. 2009. “CSR and the Legitimacy of Business in Transition Economies: The Case of Russia.” *Scandinavian Journal of Management* 25 (1): 37–45.
- Lee, Tien Ming, Ezra M. Markowitz, Peter D. Howe, Chia Ying Ko, and Anthony A. Leiserowitz. 2015. “Predictors of Public Climate Change Awareness and Risk Perception around the World.” *Nature Climate Change* 5 (11): 1014–20.
- Leung, Wai Shun Wilson. 1997. “The Inadequacy of Shareholder Primacy: A Proposed Corporate Regime That Recognizes Non-Shareholder Interests.” *Columbia Journal of Law and Social Problems* 30 (4): 587–634.
- Levi, Michael. 2013. “Climate Consequences of Natural Gas as a Bridge Fuel.” *Climatic Change* 118 (3–4): 609–23.
- Levy, David L., and Daniel Egan. 2003. “A Neo-Gramscian Approach to Corporate Political Strategy: Conflict and Accommodation in the Climate Change Negotiations.” *Journal of Management Studies* 40 (4): 803–29.
- Levy, David L., and Ans Kolk. 2002. “Strategic Responses to Global Climate Change: Conflicting Pressures on Multinationals in the Oil Industry.” *Business and Politics* 4 (3): 275–300.

- Li, Wenjing, and Ran Zhang. 2010. "Corporate Social Responsibility, Ownership Structure, and Political Interference: Evidence from China." *Journal of Business Ethics* 96 (4): 631–45.
- Lockett, Andy, Jeremy Moon, and Wayne Visser. 2006. "Corporate Social Responsibility in Management Research: Focus, Nature, Salience and Sources of Influence." *Jornal of Management Studies* 43 (1): 115–36.
- Lukoil. 2017. "Making Opportunities Reality: Lukoil Group Sustainability Report 2017." Moskau: Lukoil. https://csr2017.lukoil.com/download/full-reports/csr_en_annual-report_pages.pdf (accessed May 11, 2019).
- Malone, Elizabeth L. 2002. "Hot Topics: Globalization and Climate Change." *Social Thought and Research* 25 (1/2): 143–73.
- Marrewijk, Marcel van. 2003. "Concepts and Definitions of CSR and Corporate Sustainability: Between Agency and Communion." *Journal of Business Ethics* 44 (2): 95–105.
- Matten, Dirk, and Andrew Crane. 2005. "Corporate Citizenship: Toward an Extended Theoretical Conceptualization." *The Academy of Management Review* 30 (1): 166–79.
- Metag, Julia. 2016. "Content Analysis in Climate Change Communication." *Oxford Research Encyclopedia of Climate Science*. <https://oxfordre.com/climatescience/view/10.1093/acrefore/9780190228620.001.0001/acrefore-9780190228620-e-486> (accessed June 23, 2019).
- Mikler, John, and Hinrich Voss. 2014. "US and China Corporations' Climate Change Strategies Economic." In *Climate Innovation: Liberal Capitalism and Climate Change*, edited by Neil E. Harrison and John Mikler, 215–34. New York City: Palgrave Macmillan.
- Mishra, R. K., Punam Singh, and Shulagna Sarkar. 2013. "Corporate Social Responsibility: Interventions of Oil and Gas Central Public Sector Enterprises in India." *International Journal of Business Ethics in Developing Economies* 2 (2): 1–9.
- Mitchell, R. K., B. R. Agle, and D. J. Wood. 1997. "Toward a Theory of Stakeholder Identification and Salience: Defining the Principle of Who and What Really Counts." *Academy of Management Review* 22 (4): 853–86.
- Muller, Alan. 2006. "Global Versus Local CSR Strategies." *European Management Journal* 24: 189–98.
- Murphy, Helen, Louise Tyson, Hilde Røed, and Bertrand Janus. 2015. "Third Edition of the Oil and Gas Industry Guidance on Voluntary Sustainability Reporting." London: IPIECA. <http://www.ipieca.org/resources/good-practice/oil-and-gas-industry-guidance-on-voluntary-sustainability-reporting-3rd-edition/> (accessed June 17, 2019).

- Nasiritousi, Naghmeh. 2017. "Fossil Fuel Emitters and Climate Change: Unpacking the Governance Activities of Large Oil and Gas Companies." *Environmental Politics* 26 (4): 621–47.
- Nasiritousi, Naghmeh, Mattias Hjerpe, and Björn Ola Linnér. 2016. "The Roles of Non-State Actors in Climate Change Governance: Understanding Agency through Governance Profiles." *International Environmental Agreements: Politics, Law and Economics* 16 (1): 109–26.
- Nölke, Andreas, and Simone Claar. 2013. "Varieties of Capitalism in Emerging Economies." *Transformation: Critical Perspectives on Southern Africa* 81 (1): 33–54.
- Noronha, Carlos, Si Tou, M. I. Cynthia, and Jenny J. Guan. 2013. "Corporate Social Responsibility Reporting in China: An Overview and Comparison with Major Trends." *Corporate Social Responsibility and Environmental Management* 20: 29–42.
- O'Connor, Amy, and Katherine L. Gronewold. 2012. "Black Gold, Green Earth: An Analysis of the Petroleum Industry's CSR Environmental Sustainability Discourse." *Management Communication Quarterly* 27 (2): 210–36.
- OGCI. n.d. "Our Members." <https://oilandgasclimateinitiative.com/our-members/> (accessed July 28, 2019).
- Oil and Gas Climate Initiative. 2018. "At Work: Committed to Climate Action." London: OGCI. https://oilandgasclimateinitiative.com/wp-content/uploads/2018/09/OGCI_Report_2018.pdf (accessed June 11, 2019).
- Okereke, Chukwumerije, Bettina Wittneben, and Frances Bowen. 2012. "Climate Change: Challenging Business, Transforming Politics." *Business and Society* 51 (1): 7–30.
- Oliver, Christine. 1991. "Strategic Responses to Institutional Processes." *The Academy of Management Review* 16 (1): 145–79.
- Orlitzky, Marc, Frank L. Schmidt, and Sara L. Rynes. 2003. "Corporate Social and Financial Performance: A Meta-Analysis." *Organization Studies* 24 (3): 403–41.
- Patenaude, Genevieve. 2011. "Climate Change Diffusion: While the World Tips, Business Schools Lag." *Global Environmental Change* 21 (1): 259–71.
- Pauly, Louis W., and Simon Reich. 1997. "National Structures and Multinational Corporate Behavior: Enduring Differences in the Age of Globalization." *International Organization* 51 (1): 1–30.
- Peel, Jacqueline. 2016. "Re-Evaluating the Principle of Common but Differentiated Responsibilities in Transnational Climate Change Law." *Transnational Environmental Law* 5 (2): 245–54.
- Petrobras. 2018. "Sustainability 2018." Rio de Janeiro: Petrobras. https://www.investidorpetrobras.com.br/fck_temp/1030_5/file/Sustainability_2018_10_06.pdf (accessed May 7, 2019).

- . 2019a. “Capital Ownership Composition.” Petrobras Investor Relations. 2019. <https://www.investidorpetrobras.com.br/en/overview/shareholding-structure> (accessed May 7, 2019).
- . 2019b. “Climate Change Supplement.” Rio de Janeiro: Petrobras. https://issuu.com/estantepetrobras/docs/climate_change_supplement_eng_versi (accessed May 7, 2019).
- Pinkse, Jonatan, and Ans Kolk. 2009. *International Business and Climate Change*. Oxon: Routledge.
- Pohjolainen, Pasi, Iida Kukkonen, Pekka Jokinen, Wouter Poortinga, and Resul Umit. 2018. “Public Perceptions on Climate Change and Energy in Europe and Russia: Evidence from Round 8 of the European Social Survey.” London: ESS ERIC. https://www.europeansocialsurvey.org/docs/findings/ESS8_pawcer_climate_change.pdf (accessed July 18, 2019).
- Pollach, Irene. 2018. “Issue Cycles in Corporate Sustainability Reporting: A Longitudinal Study.” *Environmental Communication* 12 (2): 247–60.
- Porter, Michael E., and Mark R. Kramer. 2006. “Strategy and Society: The Link Between Competitive Advantage and Corporate Social Responsibility.” *Harvard Business Review* 84 (12): 78–92.
- Post, James E. 2013. “The United Nations Global Compact: A CSR Milestone.” *Business and Society* 52 (1): 53–63.
- Preuss, Lutz, and Ralf Barkemeyer. 2014. “CSR Priorities of Emerging Economy Firms: Is Russia a Different Shape of BRIC ?” *Corporate Governance* 11 (4): 371–85.
- PricewaterhouseCoopers. 2016. “19th Annual Global CEO Survey: Redefining Business Success in a Changing World.” London: PwC. <http://www.pwc.com/gx/en/ceo-survey/2016/landing-page/pwc-19th-annual-global-ceo-survey.pdf> (accessed July 28, 2019).
- Pulver, Simone. 2007. “Making Sense of Corporate Environmentalism.” *Organization & Environment* 20 (1): 44–83.
- Rasche, Andreas, Mette Morsing, and Jeremy Moon. 2017. “The Changing Role of Business in Global Society: CSR and Beyond.” In *Corporate Social Responsibility: Strategy, Communication, Governance*, edited by Andreas Rasche, Mette Morsing, and Jeremy Moon, 1–28. Cambridge: Cambridge University Press.
- Ratner, Carl. 2002. “Subjectivity and Objectivity in Qualitative Methodology.” *Forum Qualitative Sozialforschung / Forum: Qualitative Social Research* 3 (3): Art. 16. <http://www.qualitative-research.net/index.php/fqs/article/view/829/1800> (accessed June 12, 2019).
- Reid, Erin M., and Michael W. Toffel. 2009. “Reponding to Public and Private Politics: Corporate Disclosure of Climate Change Strategies.” *Strategic Management Journal* 30: 1157–78.

- Reimann, Felix, Matthias Ehrgott, Lutz Kaufmann, and Craig R. Carter. 2012. “Local Stakeholders and Local Legitimacy: MNEs’ Social Strategies in Emerging Economies.” *Journal of International Management* 18 (1): 1–17.
- Rockström, Johan, Owen Gaffney, Joeri Rogelj, Malte Meinshausen, Nebojsa Nakicenovic, and Hans Joachim Schellnhuber. 2017. “A Roadmap for Rapid Decarbonization.” *Science* 355 (6331): 1269–71.
- Rosen-Zvi, Issachar. 2011. “You Are Too Soft! What Can Corporate Social Responsibility Do For Climate Change?” *Minnesota Journal of Law, Science & Technology* 12 (2): 527–72.
- Rosenau, James N., Ernst-Otto Czempiel, and Steve Smith. 1992. *Governance Without Government: Order and Change in World Politics*. Cambridge Studies in International Relations. Cambridge: Cambridge University Press.
- Rowley, Timothy J. 1997. “Moving beyond Dyadic Ties: A Network Theory of Stakeholder Influences.” *The Academy of Management Review* 22 (4): 887–910.
- Sampson, Anthony. 1975. *The Seven Sisters: The Great Oil Companies and the World They Shaped*. London: PFD.
- Scherer, Andreas Georg, and Guido Palazzo. 2008. “Globalization and Corporate Social Responsibility.” In *The Oxford Handbook of Corporate Social Responsibility*, edited by Andrew Crane, Abigail McWilliams, Dirk Matten, Jeremy Moon, and Donald S. Siegel, 413–31. Oxford: Oxford University Press.
- . 2011. “The New Political Role of Business in a Globalized World: A Review of a New Perspective on CSR and Its Implications for the Firm, Governance, and Democracy.” *Journal of Management Studies* 48 (4): 899–931.
- Scherer, Andreas Georg, and Marc Smid. 2000. “The Downward Spiral and the US Model Business Principles - Why MNEs Should Take Responsibility for the Improvement.” *Management International Review* 40 (4): 351–71.
- Schlichting, Inga. 2013. “Strategic Framing of Climate Change by Industry Actors: A Meta-Analysis.” *Environmental Communication* 7 (4): 493–511.
- Scott, William R. 2001. *Institutions and Organizations*. Foundations for Organizational Science. London: SAGE Publications.
- Shell. 2018. “Delivering Energy in a Responsible Way.” London: Shell.
http://reports.shell.com/sustainability-report/2018/servicepages/downloads/files/shell_sustainability_report_2018.pdf (accessed May 5, 2019).
- Sinopec. 2019. “2018 Sinopec Corp. Communication on Progress for Sustainable Development.” Beijing: Sinopec.
<http://www.sinopec.com/listco/en/Resource/Pdf/201903240310.pdf> (accessed May 5, 2019).
- Skjærseth, Jon Birger, and Tora Skodvin. 2003. *Climate Change and the Oil Industry: Common Problem, Different Strategies*. Manchester: Manchester University Press.

- Spence, Crawford. 2007. "Social and Environmental Reporting and Hegemonic Discourse." *Accounting, Auditing and Accountability Journal* 20 (6): 855–82.
- Sriramesh, Krishnamurthy, Chew Wee, Soh Ting Ting, and Luo Wanyin. 2007. "Corporate Social Responsibility and Public Relations: Perceptions and Practices in Singapore." In *The Debate over Corporate Social Responsibility*, edited by Steve May, George Cheney, and Juliet Roper, 119–34. Oxford: Oxford University Press.
- Stern, Nicholas. 2006. *The Economics of Climate Change*. London: Government of the United Kingdom.
- Stevens, Paul. 2013. "History of the International Oil Industry." In *Global Resources*, edited by Roland Dannreuther and Wocjech Ostrowski, 13–32. London: Palgrave Macmillan.
- Stockman, Lorne, Kelly Trout, and Barb Blumenthal. 2019. "Burning the Gas 'Bridge Fuel' Myth: Why Gas Is Not Clean, Cheap, or Necessary." Washington DC: Oil Change International. <http://priceofoil.org/2019/05/30/gas-is-not-a-bridge-fuel/> (accessed June 14, 2019).
- Stohl, Michael, Cynthia Stohl, and Nikki C. Townsley. 2007. "A New Generation of Global Corporate Social Responsibility." In *The Debate Over Corporate Social Responsibility*, edited by George Cheney, Juliet Roper, and Steve May, 30–44. Oxford: Oxford University Press.
- Sukhdev, Pavan. 2012. *Corporation 2020. Transforming Business for Tomorrow's World*. Washington DC: Island Press.
- Sullivan, Rory, and Andy Gouldson. 2007. "Pollutant Release and Transfer Registers: Examining the Value of Government-Led Reporting on Corporate Environmental Performance." *Corporate Social Responsibility and Environmental Management* 14 (5): 263–73.
- Tainter, Joseph. 1988. *The Collapse of Complex Societies*. Cambridge: Cambridge University Press.
- Teeter, Preston, and Jörgen Sandberg. 2017. "Constraining or Enabling Green Capability Development? How Policy Uncertainty Affects Organizational Responses to Flexible Environmental Regulations." *British Journal of Management* 28 (4): 649–65.
- Tong, Dan, Qiang Zhang, Yixuan Zheng, Ken Caldeira, Christine Shearer, Chaopeng Hong, Yue Qin, and Steven J Davis. 2019. "Committed Emissions from Existing Energy Infrastructure Jeopardize 1.5 °C Climate Target." *Nature*.
- Total. 2019a. "Our CSR Reports." <https://www.sustainable-performance.total.com/en/our-csr-reports> (accessed May 10, 2019).
- . 2019b. "Registration Document 2018." Courbevoie: Total. <https://www.total.com/sites/default/files/atoms/files/ddr2018-en.pdf> (accessed May 10, 2019).

- UN Global Compact. n.d. "Communicate the Value of Sustainability to Investors." <https://www.unglobalcompact.org/take-action/action/value-driver-model> (accessed June 20, 2019).
- . 2019. "Our Participants." 2019. https://www.unglobalcompact.org/what-is-gc/participants/search?utf8=%E2%9C%93&search%5Bkeywords%5D=&search%5Bsectors%5D%5B%5D=23&search%5Bper_page%5D=10&search%5Bsort_field%5D=&search%5Bsort_direction%5D=asc (accessed June 20, 2019).
- Unsworth, Kerrie L., Sally V. Russell, and Matthew C. Davis. 2016. "Is Dealing with Climate Change a Corporation's Responsibility? A Social Contract Perspective." *Frontiers in Psychology* 7 (1212): 1–9.
- Vasileva, Alexandra. 2014. "Continuity & Change in Russian Capitalism." In *The BRICs and Emerging Economies in Comparative Perspective: Political Economy, Liberalization and Institutional Change*, edited by Uwe Becker, 100–124. Oxon / New York: Routledge.
- Victor, David G. 2011. *Global Warming Gridlock: Creating More Effective Strategies for Protecting the Planet*. Cambridge: Cambridge University Press.
- Vogel, David. 2005. *The Market for Virtue. The Potential and Limits of Corporate Social Responsibility*. Washington DC: Brookings Institution Press.
- Wæraas, Arild. 2007. "The Re-Enchantment of Social Institutions: Max Weber and Public Relations" 33: 281–86.
- Waring, Hansun Zhang. 2017. *Discourse Analysis: The Questions Discourse Analysts Ask and How They Answer Them*. New York: Routledge.
- Weinhofer, Georg, and Volker H Hoffmann. 2010. "Mitigating Climate Change - How Do Corporate Strategies Differ?" *Business Strategy and the Environment* 19: 77–89.
- Welfens, Paul J.J., Nan Yu, David Hanrahan, and Yong Geng. 2017. "The ETS in China and Europe: Dynamics, Policy Options and Global Sustainability Perspectives." *International Economics and Economic Policy* 14 (3): 517–35.
- Witsch, Kathrin. 2019. "Ölkonzern Shell attackiert die Strombranche." Handelsblatt. 2019. <https://www.handelsblatt.com/unternehmen/energie/energie-oelkonzern-shell-attackiert-die-strombranche/24373696.html> (accessed July 18, 2019).
- Yang, Xiaohua, and Cheryl Rivers. 2009. "Antecedents of CSR Practices in MNCs' Subsidiaries: A Stakeholder and Institutional Perspective." *Journal of Business Ethics* 86: 155–69.
- Zhao, Jingchen. 2014. *Corporate Social Responsibility in Contemporary China. Corporations, Globalisation, and the Law*. Cheltenham: Edward Elgar Publishing.
- Zheng, Qinjin, Yadong Luo, and Vladislav Maksimov. 2015. "Achieving Legitimacy through Corporate Social Responsibility: The Case of Emerging Economy Firms." *Journal of World Business* 50 (3): 389–403.

Appendices

Appendix 1: Intensity of reporting on climate change

	(a) Keyword count	(b) Share of pages on climate change	(c) Position of main part on climate change	(d) Individual Chapter on climate change	(e) Length of monothematic supplement on climate change
SINOPEC (China)	Key issue ³⁶ : 24 International climate regime ³⁷ : 2 Causers ³⁸ : 43 Total: 68	8 pages / 70 pages = 11,4%	Starting at p. 28/70 – 2 nd quarter of the report	Yes	-
CNPC (China)	Key issue: 30 International climate regime: 5 Causers: 51 Total: 86	4/81 = 4,9%	45/81 – 3 rd quarter	Yes	-
INDIANOIL (India)	Key issue: 20 International climate regime: 4 Causers: 23 Total: 47	13/157 = 8,3 %	86/157 – 3 rd quarter	No	-
LUKOIL (Russia)	Key issue: 24 International climate regime: 1 Causers: 27 Total: 52	8/111 = 7,2%	30/111 – 2 nd quarter	Yes	-
PETROBRAS (Brazil)	Key issue: 29 International climate regime: 3 Causers: 39 Total: 72	6/91 = 6,6%	7/91 – 1 st quarter	Yes	22 pages
BP (Great Britain)	Key issue: 50 International climate regime: 15 Causers: 182 Total: 248	27/80 = 33,8%	6/80 – 1 st quarter	Yes	71 pages

³⁶ Searched terms: “climate (change)” / “global warming”

³⁷ Searched terms: “Paris (Agreement)”/ “Rio (Declaration)” / “Kyoto (Protocol)” / “COP”, “Conference of the Parties” / “UNFCCC”, “United Nations Framework Convention for Climate Change”/ “SDG”, “Sustainable Development Goals” / “IPCC”, “Intergovernmental Panel on Climate Change”

³⁸ Searched terms: “greenhouse (gases)”, “GHG” / “CO2”, “carbon dioxide” / “methane”

SHELL (Great Britain / Netherlands)	Key issue: 69 International climate regime: 36 Causers: 232 Total: 337	19/83 = 22,9%	43/83 – 3 rd quarter	Yes	79 pages
TOTAL (France)	Key issue: 168 International climate regime: 11 Causers: 151 Total: 330	11/90 = 12,2%	64/90 – 3 rd quarter	Yes	54 pages
CHEVRON (USA)	Key issue: 16 International climate regime: 14 Causers: 53 Total: 83	2/43 = 4,7%	8/43 – 1 st quarter	Yes	44 pages
EXXONMOBIL (USA)	Key issue: 52 International climate regime: 6 Causers: 44 Total: 102	4/34 = 11,8%	16/34 – 2 nd quarter	Yes	36 pages

Appendix 2: Rationales for responses to climate change

	Economic rationales	Social and moral rationales	Political rationales
SINOPEC (China)	<p>Extreme weather events such as typhoons, hurricanes or floods caused by climate change may cause direct asset damage to the Company's production and operation. The supply chain disruptions caused by climate change may also exert indirect impacts. (p. 30)</p> <p>People's attention to climate change may lead to public choice of low-carbon products and services. (p. 30)</p> <p>People's attention to climate change may lead to public choice of low-carbon products and services. (p. 30)</p> <p>Consensus has been reached on combating climate change. Series of International, national and regional laws and regulations enacted to limit GHG emissions, together with more stringent climate-related regulations that might be formulated in future, will affect global demands for fossil fuels. (p. 30)</p> <p>Actions to addressing climate change can foster Sinopec Corp. new growth drivers, help accelerate the Company's low-carbon energy transition and promote high-quality development. (p. 31)</p> <p>the Company continued to strengthen the refined management of gas reservoirs in main gas fields in order to meet the social demands for natural gas (p. 32)</p> <p>Attaching importance to climate change will help relieve bottleneck constraints on the current resources, accelerate fostering new economic growth, which will accelerate the transformation of economic development pattern and contribute to promoting the industrial transformation and upgrading. (p. 30)</p> <p>on the other hand, the Company pays high attention to the climate-related risks and opportunities to the enterprise's development (p. 30)</p> <p>Sinopec Corp. has actively implemented Green and Low-carbon Development Strategy, continuously strengthened the integrated management of energy and environment, launched Green Enterprise Campaign, speeded up Energy Efficiency Improvement Plan, promoted clean production and strengthened carbon assets management to embrace the Climate-Related opportunities. (p. 31)</p> <p>... enhanced communication with stakeholders who concern climate-related financial disclosures and analysed the Company's climate related risks and opportunities (p. 9)</p>	<p>Sinopec Corp., on one hand, focuses on the development of major businesses and provides clean, high-quality and affordable energy and petrochemical products to promote social development and meet people's living needs; on the other hand, the Company pays high attention to the climate-related risks and opportunities to the enterprise's development. (p. 30)</p> <p>Stakeholders pay more attention to ESG (environment, society and corporate governance) performance of the Company. The Company's low-carbon transformation may fall short of stakeholders expectation which may impact our reputation (p. 30)</p>	<p>China promoted the supply-side structural reform, fulfilled the responsibilities of advancing the construction of ecological civilization (p. 2)</p> <p>Consensus has been reached on combating climate change. Series of International, national and regional laws and regulations enacted to limit GHG emissions, together with more stringent climate-related regulations that might be formulated in future, will affect global demands for fossil fuels. (p. 30)</p> <p>China has made a set of commitments that are to be reached by 2030: to achieve its peak CO2 emissions (and to make every possible effort to peak earlier), to lower CO2 emissions per unit of GDP by 60 to 65 percent from the 2005 level, and to increase the share of non-fossil fuels in primary energy consumption to around 20 percent (p. 30)</p> <p>China launched the national carbon emission trading system in 2017. The energy and chemical industry is expected to be gradually incorporated into the system (p. 30)</p> <p>Energy Production and Consumption Revolution Strategy (2016-2030) of the China proposes to realise the continuous growth of low-carbon energy such as natural gas in 2021-2030, significantly reduce the use of high-carbon fossil fuels and increase the use of natural gas in key areas with air pollution prevention target. In accordance with national strategic requirements of gas development, the Company formulates a strategic plan for effective and rapid development of natural gas, and builds an imported resources pool combining long, medium and short terms with spots and futures on the base of strengthening stability of domestic production. (p. 32)</p> <p>Series of International, national and regional laws and regulations enacted to limit GHG emissions, together with more stringent climate-related regulations that might be formulated in future, will affect global demands for fossil fuels.</p> <p>collective efforts were made to promote the United Nations 2030 Agenda for Sustainable Development focusing on addressing climate change, eradicating poverty and revitalising global cooperation partnership etc. (p. 2)</p> <p>We mapped our business operations with United Nation's 17 Sustainable Development Goals (SDGs)... (p. 9)</p> <p>SDG mapping table: Setting up the goal of GHG emission reduction; conducting evaluations on energy efficiency and carbon emissions; setting up the mid and long term development goals of natural gas; conducting carbon capture and methane recovery and promoting the development of alternative energy sources such as bio-jet fuel, biodiesel and photovoltaic power (p. 10)</p> <p>Consensus has been reached on combating climate change. Series of International, national and regional laws and regulations enacted to limit GHG emissions, together with more stringent climate-related regulations that might be formulated in future, will affect global demands for fossil fuels. (p. 30)</p> <p>Series of International, national and regional laws and regulations enacted to limit GHG emissions, together with more stringent climate-related regulations that might be formulated in future, will affect global demands for fossil fuels.</p>

	Economic rationales	Social and moral rationales	Political rationales
CNPC (China)	<p>Advanced and applicable technology and effective management innovation enable us to provide better energy solutions, address climate change, improve energy utilization efficiency, and mitigate hedge against the economic risk of low oil prices. (p. 22)</p> <p>Conduct management of carbon assets and reduce the energy cost per unit production capacity to boost the Company's competitiveness. (p. 46)</p> <p>Reinforce the synergy of enterprises, colleges and universities, research institutes and users to accelerate the translation and popularization of cutting-edge technology and research findings and meet the urgent demand for energy and environmental conservation in business growth. (p. 46)</p>	<p>Recognized as the trend of the times, green development is an urgent demand of Chinese people in the new era and is critical to the sustainable development of CNPC. (p. 3)</p> <p>We actively develop natural gas, coal-bed methane, shale gas, biomass energy and other low-carbon energies, constantly promote the exploitation of geothermal energy, solar energy and other renewable energies, and studied the exploitation of natural gas hydrate and other resources, in order to play a positive role in improving China's energy structure. (p. 47)</p> <p>Promote the low-carbon concept and advocate ecological civilization, take an active part in the south-south cooperation on climate change, construct corresponding demonstration low-carbon projects in accordance with the general arrangements of the Belt and Road Initiative, and build the image of a responsible energy company. (p. 46)</p>	<p>In addition, according to relevant national plans and work programs for greenhouse gas control in China, we established our Roadmap for Low-carbon Development with specific goals and work tasks. (p. 3)</p> <p>Plans and initiatives for greenhouse gas emission reduction and control supported and participated in by CNPC: Paris Agreement, China's National Program to Address Climate Change, National Plan on Climate Change (2014- 2020), China Technology Strategic Alliance for CO2 Capture, Utilization and Storage Technology Innovation (CTSA-CCUS), Oil and Gas Climate Initiative (OGCI) (p.45)</p> <p>Meanwhile, we conducted accounting of greenhouse gas emission according to relevant national technical specifications. (p. 45)</p>

	<p>In response to the dual challenges of growing energy demand and carbon emissions reduction, we spared no efforts to develop green and low-carbon energy while stabilizing oil production, actively enhancing refining capacity and improving oil product quality. (p. 3)</p> <p>The Company will, following the investment strategy of giving top priority to the development of oil and gas while developing hydropower, nuclear power, wind power and photovoltaic power generation, keep intensifying its efforts to expand green finance business in the clean energy market. It is expected that green finance will become one of the pillar businesses of the Company by 2020. (p. 46)</p>	<p>Following the concept of "improving the local environment whenever building an oilfield", Changqing Oilfield invests tens of millions of RMB each year in establishing and maintaining large-scale carbon emission reduction bases and restoring vegetation on abandoned well fields and roads in the well area. (p. 48)</p> <p>Conduct supply-side structural reform to provide society with low-carbon and clean energy</p>	<p>By 2050, uphold the principle of low-carbon development and reach international advanced level in low carbon development, thus making significant contribution to China's efforts to honor international accords on climate change and to curtail greenhouse gas emission. (p. 46)</p> <p>Promote the low-carbon concept and advocate ecological civilization, take an active part in the south-south cooperation on climate change, construct corresponding demonstration low-carbon projects in accordance with the general arrangements of the Belt and Road Initiative, and build the image of a responsible energy company. (p. 46)</p> <p>In response to the initiative of green finance proposed in China's "13th Five-year Plan", we actively participated in the construction of clean energy and environmental protection projects such as hydropower, wind power, photovoltaic power generation, and waste power generation. (p. 46)</p> <p>In 2017, in accordance with the relevant planning and work program for greenhouse gas control, we formulated the Roadmap for Low-carbon Development, and set goals and tasks for low-carbon development. (p. 45)</p> <p>In 2017, important steps were taken in the global efforts to build a low-carbon future. The Paris Agreement and the UN Sustainable Development Goals (SDGs) entered into force, setting new goals for addressing climate change and providing modern energy. (p. 3)</p> <p>We respond to the "Paris Agreement" adopted by the 2015 United Nations Climate Change Conference, embrace the goal of limiting global warming to less than 2 degrees Celsius by the end of this century. To this end, we actively responded to climate change, devoted ourselves to low-carbon development, and shared the practice of greenhouse gas control with industry peers and all sectors of society. (p. 45)</p> <p>Plans and initiatives for greenhouse gas emission reduction and control supported and participated in by CNPC: Paris Agreement, China's National Program to Address Climate Change, National Plan on Climate Change (2014-2020), China Technology Strategic Alliance for CO2 Capture, Utilization and Storage Technology Innovation (CTSA-CCUS), Oil and Gas Climate Initiative (OGCI) (p.45)</p>
INDIAN OIL (India)	<p>As the environment risks for any organization have grown in importance during the past two decades, IndianOil is committed to conduct its business responsibly and take continuous efforts to mitigate the environment impacts due to its operations. (p. 86)</p> <p>Global warming due to anthropogenic emissions has grown into one of the most complex issues faced globally. The vast consequences of climate change threaten to affect not only our environment but also economic, social and political setup. (p. 91)</p> <p>However, the country's fossil fuel reserves are limited which entails efficient utilization of resources, deriving maximum value from the available resources. Hence, there is a greater emphasis for secured, sustainable and affordable energy as a means to underpin development, while addressing environmental concerns. (p. 87)</p> <p>IndianOil believes material efficiency in the production improves its economic and business competitiveness besides reducing the environment impacts. (p. 87)</p> <p>IndianOil firmly believes that long-term business growth is inseparably linked to responsible use of natural resources and mitigation of environmental footprints. Accordingly, we have voluntarily committed to reduce our specific carbon footprint by 18 per cent and specific water footprint by 20 per cent by the year 2020. (p. 6)</p> <p>IndianOil is conscious of the fact that its operations are highly dependent on imported raw materials and hence, various initiatives have been undertaken for optimum utilization of resources, considering the ever increasing demand and consumption and our dependence on natural resources. (p. 87)</p>	<p>IndianOil believes enhancing the awareness of each employee of the Corporation about climate change vulnerability, impacts, and adaptation can help build individual and institutional capacity for undertaking climate change mitigation and adaptation measures.</p> <p>Accordingly, IndianOil organizes sustainability workshops across the divisions and operating locations to enhance awareness about sustainability among the employees at all levels. (p. 66)</p> <p>IndianOil's approach to sustainability is factual and realistic as we continuously account for impact on environment and society due to our operations across the value chain. (p. 86)</p> <p>As a responsible corporate, IndianOil undertakes various climate change mitigation and adaptation measures at the Corporate-level to reduce its overall environmental footprint, which in turn percolates into specific interventions at individual locations including retail network. (p. 86)</p> <p>The vast consequences of climate change have become more apparent in recent years implying the need for various mitigation and adaptation strategies to address climate change, as no single option is sufficient by itself. (p. 86)</p> <p>Human influence on climate system is more evident with the CO levels surpassing 400 ppm in 2013 for the first time in the history of mankind. In this context, it is critical that companies and governments actively pursue sustainable growth by continuously undertaking various climate mitigation and adaptation actions to prevent adverse impact on our ecosystem. (p. 91)</p> <p>Global warming due to anthropogenic emissions has grown into one of the most complex issues faced globally. The vast consequences of climate change threaten to affect not only our environment but also economic, social and political setup. (p. 91)</p>	<p>IndianOil's business strategy supports India's commitment towards Paris Agreement with the United Nations Framework Convention on Climate Change, or UNFCCC. For this, we are focussing on climate-friendly green fuels, renewable energy options, operational excellence, energy efficiency & conservation measures, mitigation of green house gas emissions, waste disposal, etc. (p. 5)</p> <p>To propel the country's shift to cleaner fuels, IndianOil is importing natural gas and setting up countrywide infrastructure by way of LNG import terminals, pipelines and city gas distribution networks, on its own and through joint ventures. (p. 6)</p> <p>We are also undertaking waste-to-fuel projects under the aegis of Swachh Bharat Abhiyan of the Government of India. (p. 7)</p> <p>We are inspired and guided in our business by the United Nations' Sustainable Development Goals, and our commitment to long-term sustainable value creation is in line with the principles of the United Nations Global Compact. (p. 5)</p>
LUKOIL (Russia)	<p>LUKOIL takes climate change risks into account when determining the Integrated Scenario Conditions (ISC), which are used to develop its strategy, assess investment projects, and create annual and medium-term plans (p. 32)</p> <p>In order to assess risks and to test the sustainability of the Company's strategy, we also developed a scenario which envisages an accelerated reduction in the consumption of hydrocarbons in the transportation sector. (p. 32)</p> <p>We believe that effecting general improvements to business processes and making timely adjustments to the customer basket and staying abreast of changes in the operational environment are equally important tasks. (p. 32)</p> <p>Increasing energy efficiency, including through lowering fuel and energy resource consumption, is a key component of our overall efforts to improve operating efficiency and a critical factor in the maintenance of the Company's competitive edge in our rapidly changing world (p.36)</p> <p>The goals of energy conservation measures include a reduction and/or containment of growth in the share of energy costs in total production costs, as well as a reduction and/or containment of the specific consumption of energy resources in production, oil refining, and petrochemistry, as well as in the sale of petroleum products and electricity and heat generation. (p. 36)</p>	<p>Through their operations energy companies create significant amounts of greenhouse gas emissions, which can affect the climate and lead to the emergence of risks that are significant for a wide range of stakeholders. (p. 32)</p> <p>To develop alternative energy sources in Russia, and to ensure that the industry can benefit from human resources with the required level of qualifications, LUKOIL assisted in setting up a specialized renewable energy sources department at Gubkin Russian State Oil & Gas University. (p. 35)</p> <p>In view of the observable global impact of climate change, we include in our priorities a reduction in greenhouse gas emissions. (p. 18)</p> <p>Climate change may present a threat to the lives and health of the people, flora, and fauna of the planet, and hence we share worldwide concerns over this topic. (p. 32)</p>	<p>The concept underlying the system for monitoring, reporting, and verifying the volume of greenhouse gas emissions in the Russian Federation involves the implementation of standardized calculation methods. LUKOIL plays an active role in shaping the statutory and regulatory framework in this area, puts forward suggestions, and discusses and assesses the current methodologies being developed (p. 33)</p> <p>The LUKOIL Group's RES goals are: business diversification through implementing projects using the state support system for renewable energy in Russia (a mechanism for concluding capacity supply agreements with a guaranteed return on investment. (p. 35)</p> <p>The Industry Program for Developing the Power Engineering Business Sector for 2018-2027 includes proposals on the construction of new solar parks on unused sites at oil refineries in Saratov and Volgograd (p. 35)</p> <p>most global initiatives (including UN initiatives and programs) are based on the conclusion from scientific studies that global warming is tied to industrialization and growth in industrial production. European Union countries have set a goal to reduce greenhouse gas emissions by at least 20% by 2020, chiefly by transitioning from fossil fuels to renewable sources of energy. (p. 32)</p> <p>Risks associated with climate change are gaining increasing attention, both from governments and the investment and financial communities. (p. 32)</p>

	<p>Increased energy efficiency requirements on the part of consumers and a reduction in emissions of pollutants and greenhouse gases have become noticeable trends on the fuels and lubricants market. (p. 37)</p> <p>Looking ahead to the wider use of electric cars, we are installing charging stations at our filling stations... (p. 32)</p> <p>The wider use of electric vehicles is seen in various countries as a potential way of reducing greenhouse gas emissions and pollutants. (p. 37)</p> <p>The LUKOIL Group's RES goals are: business diversification through implementing projects using the state support system for renewable energy in Russia (a mechanism for concluding capacity supply agreements with a guaranteed return on investment. (p. 35)</p> <p>Risks associated with climate change are gaining increasing attention, both from governments and the investment and financial communities. (p. 32)</p>		<p>The Company's operations are geared towards achieving the Sustainable Development Targets established by the United Nations, including in such areas as combating climate change. (p. 7)</p> <p>most global initiatives (including UN initiatives and programs) are based on the conclusion from scientific studies that global warming is tied to industrialization and growth in industrial production. European Union countries have set a goal to reduce greenhouse gas emissions by at least 20% by 2020, chiefly by transitioning from fossil fuels to renewable sources of energy. (p. 32)</p>
PETROBRAS (Brazil)	<p>among the dimensions that characterize the carbon risk, we consider, for example, the lower oil prices or carbon pricing impacts. One of the resilience elements in all scenarios, and in particular in accelerated transition scenarios for low carbon, is production cost (p. 17)</p> <p>it is also a business need for us in order to stay competitive and profitable in an environment of transition to a low carbon economy with high uncertainty. (p. 2)</p> <p>Prepare Petrobras for a more competitive environment based on cost efficiency, scale and digital transformation (p. 7)</p> <p>Maximize the value of Petrobras through active management of the refining, logistics, commercialization and petrochemical portfolio integrated into national oil and gas production activities; (p. 7)</p> <p>Optimize the position in the segment of natural gas and energy in Brazil and develop positions in the global market (p. 7)</p> <p>Our strategies seek to provide resilience to our business models for different energy transition paces (p. 7)</p> <p>Maximize the value of Petrobras through the active management of the E&P portfolio; (p. 7)</p> <p>Digital technology will permeate our activities with a focus on reducing costs and increasing productivity (p. 7)</p> <p>good operational performance in greenhouse gas emissions is a strategic requirement for the long term, adding credibility and market options to our products, while contributing to meeting Brazilian climate ambitions. (p. 9)</p> <p>We understand that our performance in e&p always requires a focus on efficiency and cost reduction as one of the main pillars of the industry's competitiveness. In this sense, while re-inventing our exploratory portfolio and promoting active portfolio management, we invest in the development of new technologies focused on reducing costs and emissions, as well as on digital transformation as a lever for value generation, in line with our strategies to "maximize the petrobras' value through active management of our e&p portfolio" and "ensure oil and gas production sustainability by prioritizing deep water operations." (p. 8)</p> <p>by 2025 we have planned to reinject some 40 million tCO2, which will contribute to technological evolution, cost reduction and safety demonstration of CCUS technology for application in the oil and gas industry and other sectors. (p. 11)</p> <p>Operate in renewable-energy businesses in a profitable way, focusing on wind and solar energy (p. 7)</p> <p>In order to fulfill our commitment to operational performance and transparency, we have disclosed in our Pe 2040 Strategic Plan and 2019-2023 Png Business and Management Plan our ambitions, goals and perspectives for greenhouse gases operational emissions by 2025 (2015-2025). (p. 10)</p> <p>The energy transition involves uncertainties that affect our markets and our cost structure. Our role in the process of transition to a low carbon future requires us to remain a healthy economy agent, creating value for society. Due to the capital intensive and long-cycle nature of our business, adequately considering carbon in governance, strategy, portfolio management, risk assessment, metrics and other processes will be key to increasing our competitiveness. (p. 16)</p> <p>even in an accelerated transition scenario, we see persistent, although declining demand for oil for the coming decades, therefore, there is a need for continued investment to prevent the production from falling to below the demand. (p. 7)</p>	<p>Society recognizes the need to address climate change globally, with attention to measures to mitigate greenhouse gas emissions and adapt to their impacts, according to the consolidation of the science reported by the intergovernmental Panel on Climate Change (IPCC).(p. 3)</p> <p>the adequate operational performance in emissions is even more important in a country like Brazil, which has an energy matrix with a high share of renewable energies (43.2% in 2017, according to data from the national energy Balance - Ben, 2018) and, consequently, low-cost emission mitigation options have already been partially or fully implemented. this means that the remaining alternatives for reducing emissions in the energy sector are restricted or have a high implementation cost for society. (p. 9)</p> <p>in Brazil and in the world, fossil energy chains have a dynamizing role for the economy, with a positive impact on income, employment and tax collection. technological advancement is fundamental in identifying energy arrangements that do not increase the cost of energy for society, are profitable without subsidies and maintain their contribution to public financing through taxes (p. 13)</p> <p>We reaffirm our commitment to provide the energy that drives society to realize its potential, while reducing the carbon intensity of our emissions. (p. 3)</p> <p>The energy transition involves uncertainties that affect our markets and our cost structure. Our role in the process of transition to a low carbon future requires us to remain a healthy economy agent, creating value for society. Due to the capital intensive and long-cycle nature of our business, adequately considering carbon in governance, strategy, portfolio management, risk assessment, metrics and other processes will be key to increasing our competitiveness. (p. 16)</p> <p>at Petrobras, we monitor the evolution of climate science and its developments over energy, social and economic systems for more than 15 years. Considering climate change in our planning and decision making is an ethical requirement (p.2)</p> <p>When considering climate change, we are aware that our role transcends emissions from our own operations. We recognize our ability to influence the value chain, and even beyond, through our choices regarding portfolio, product innovation, communication, supplier management, customer relationship, and so on. (p. 2)</p> <p>We are aware of the intrinsic relationship between energy and greenhouse gas emissions. (p. 3)</p> <p>Evaluate current and future partnerships seeking integrity and value creation (p. 7)</p> <p>Develop critical skills and a high-performance culture to meet the company's new challenges (p. 7)</p> <p>In order to fulfill our commitment to operational performance and transparency, we have disclosed in our Pe 2040 Strategic Plan and 2019-2023 Png Business and management Plan our ambitions, goals and perspectives for greenhouse gases operational emissions by 2025 (2015-2025). (p. 10)</p> <p>We value transparency by adhering to the leading global codes of conduct and reporting. (p. 19)</p> <p>in addition, we believe that the transition to a low carbon economy is an area where collaboration is essential, and we partner with other companies and the science, technology and innovation (St&i) community (p. 19)</p>	<p>economic growth models, environmental and climate policies, innovation and behavior change play a key role in the transition (p. 7)</p> <p>Contribute to sustainable development and to mitigation of climate change, acting in alignment with national and international covenants of which we are signatories. (p. 16)</p> <p>the initiatives were planned based on the analysis of requirements and trends in regulation, industry, transparency and investors' questionnaires and aims at considering the necessary improvements in all Petrobras' processes. (p. 18)</p> <p>good operational performance in greenhouse gas emissions is a strategic requirement for the long term, adding credibility and market options to our products, while contributing to meeting Brazilian climate ambitions. (p. 9)</p> <p>The World Bank's "Zero Routine Flaring by 2030" initiative aims at eliminate routine flaring, which is derived from the inability to dispose of or use gas produced in the E&P segment. (p. 10)</p> <p>in 2018, we announced our support for the World bank's "Zero routine flaring by 2030" initiative and took the opportunity to announce that Petrobras is no longer routinely burning gas in production assets under our operational management, with average gas use, in 2018, of 97% (p. 11)</p> <p>We are aware that the Paris Agreement requires neutrality in the net balance of greenhouse gas emissions in the second half of the 21st century, which exceeds the current voluntary commitments of the signatory countries of the agreement and involves challenges for energy systems far beyond emissions in energy production. (p. 13)</p> <p>Society recognizes the need to address climate change globally, with attention to measures to mitigate greenhouse gas emissions and adapt to their impacts, according to the consolidation of the science reported by the intergovernmental Panel on Climate Change (IPCC).(p. 3)</p> <p>the challenge of reconciling increased access to energy, energy security, and less greenhouse gas emissions, both in required time frame and at acceptable costs, is far from being achieved by a single government or sector, each society needs to develop its path in the transition to a low carbon future based on its social and economic needs, emission profile and mitigation options. (p. 3)</p> <p>economic growth models, environmental and climate policies, innovation and behavior change play a key role in the transition (p. 7)</p> <p>Contribute to sustainable development and to mitigation of climate change, acting in alignment with national and international covenants of which we are signatories. (p. 16)</p>

	<p>in light of the worldwide need for a lower-carbon energy supply, we recognize the role of natural gas as a relevant fuel in the transition. (p. 8)</p> <p>The carbon intensity of this segment is affected by the country's regional electricity needs, due to the hydrological regimes, which dictate the dispatching needs of our different thermoelectric power plants (p. 12)</p> <p>We acknowledge the need for innovation to meet energy demands with emission reductions and have recently joined the Oil and Gas Climate Initiative (OGCI), an organization committed to investing USD 1 billion over 10 years for a low-carbon future. (p. 11)</p> <p>as a company in the energy sector, we recognize that the way society's energy needs are met is facing unprecedented transformations. In the first half of the 21st century, we observe a process of energy transition beginning to materialize, which tends to consolidate the necessary decarbonisation of energy systems in order to mitigate climate change. (p. 4)</p> <p>In the long term, we will study opportunities in renewable energies that have synergies with our activities and competitive advantages. Thus, we will grant the formation of a sustainable portfolio. (p. 8)</p> <p>The electrification of economies is a consolidated trend, as well as the renewable sources' scaling up and cost reduction. With a long-term vision, we seek to analyze business opportunities in renewable energies (p. 8)</p> <p>The commercialization and use of natural gas as a source to generate energy will gain more relevance in our business in the medium term, following the trend of this fuel in the energy transition. (p. 8)</p> <p>As a long term vision, we will study opportunities in renewable energies that have synergies with our activities and competitive advantages (p. 8)</p> <p>We note the legitimate interest of our stakeholders in knowing how we are prepared to remain competitive in a market in transition. (p. 2)</p> <p>the initiatives were planned based on the analysis of requirements and trends in regulation, industry, transparency and investors' questionnaires and aims at considering the necessary improvements in all Petrobras' processes. (p. 18)</p>		
BP (Great Britain)	<p>As the world demands more energy to fuel increasing prosperity and provide people with a better quality of life, it also demands energy delivered in new ways, with fewer emissions. (p. 1)</p> <p>we are investing in technologies to help meet the changing needs of customers across our global network of retail sites. (p. 24)</p> <p>Our investment in FreeWire is helping us respond to demand for electric charging facilities on our forecourts. (p. 24)</p> <p>Demand for lower carbon fuels, industrial materials and other products is growing. The airline industry, for example, has ambitious carbon reduction targets – pledging to cut its emissions in half by 2050, despite anticipated growth in air travel. (p. 24)</p> <p>We have set targets and aims to reduce emissions in our operations, improve our products to help our customers reduce their emissions, and create low carbon businesses. (p. 10)</p> <p>That's why we are always looking for a wide variety of ways to innovate with fuels, lubricants and chemicals that can help our customers and consumers lower their emissions (p. 18)</p> <p>For example, we supply BP Biojet to our airline customers in certain markets. For the past 13 years we've also been helping consumers take action on their emissions through our carbon offsetting programme, BP Target Neutral. (p. 18)</p> <p>We fuel more than 6,000 flights around the world every day and are committed to helping our aviation customers meet the International Air Transport Association's target of cutting net carbon dioxide emissions in half by 2050, relative to 2005 levels. (p. 20)</p> <p>we see the possibilities it presents and continue to make bold changes across the group as part of our commitment to advancing a low carbon future. (p. 1)</p> <p>is reflected in our strategy to grow advantaged oil and gas in the upstream; market-led growth in the downstream; pursuing low carbon growth opportunities and modernizing the group. (p. 1)</p> <p>improve our products to help customers lower their emissions and create low carbon businesses (p. 6)</p> <p>our strategy designed to grow shareholder value under a range of scenarios, while also helping to meet the dual challenge of providing more energy with fewer emissions (p. 7)</p>	<p>As the world demands more energy to fuel increasing prosperity and provide people with a better quality of life, it also demands energy delivered in new ways, with fewer emissions. (p. 1)</p> <p>The world needs more energy but produced and used in cleaner, better ways. (p. 1)</p> <p>For the energy sector, this dual challenge is the defining issue of our times (p. 1)</p> <p>We have a role to play in solving the dual challenge but can't do it alone (p. 1)</p> <p>The world needs more energy but with fewer emissions. (p. 6)</p> <p>The focus on the role we play in the energy transition is helping to drive tangible actions towards delivering a cleaner, better energy future. (p. 6)</p> <p>Through our carbon trading business, we help to enable emissions reduction projects that allow businesses and other organizations to offset their carbon footprint. (p. 24)</p> <p>BP has been in the renewable energy business for more than 20 years. We remain one of the largest operators among our peers and we're expanding in areas where we see opportunities for growth. (p. 25)</p> <p>Our approach to the energy transition is grounded in the experience we've gained since we first called for action on the threat of climate change more than 20 years ago. (p. 7)</p>	<p>We have engaged with policymakers in Europe, in relation to the EU Emissions Trading Scheme, and in Australia, Canada and China. (p. 9)</p> <p>We opposed the ballot initiative proposal to introduce a carbon fee in Washington state in the US in November 2018. (p. 9)</p> <p>In the US, we support federal regulation of methane emissions to eliminate overlap between different government agencies and state authorities. (p. 15)</p> <p>We firmly believe our strategy is consistent with the climate goals of the Paris Agreement and have welcomed a resolution from a group of institutional investors for a range of additional reporting (p. 1)</p> <p>We believe it is consistent with the climate goals of the Paris Agreement, which calls for the world to rapidly reduce greenhouse gas emissions in the context of sustainable development and eradicating poverty. (p. 7)</p> <p>We are aiming for zero routine flaring by 2030, as part of an initiative by the World Bank (p. 14)</p> <p>We believe carbon capture, use and storage (CCUS) has a vital role to play in limiting emissions and helping to meet the objectives of the Paris Agreement. (p. 23)</p> <p>At a global level, we are working with our peers and other companies, governments and civil society to help support the expansion of carbon pricing through the Carbon Pricing Leadership Coalition. And we are a founding member of the US-based Climate Leadership Council, which is considering a carbon tax that would be returned to citizens in the form of dividends (p. 9)</p>

	<p>Our strategy is designed to grow shareholder value while also helping to meet the dual challenge. (p. 7)</p> <p>The use of electric vehicles (EVs) is expected to increase and by 2040 there could be around 350 million electric vehicles on the road. We are exploring opportunities to support this growth in demand. (p. 21)</p> <p>We are active in finding and producing gas, in addition to its transport, storage and sale. This means we are in a good position as the market continues to grow. (p. 22)</p> <p>BP is growing low carbon and digital businesses to help accelerate and commercialize new technologies, products and business models. (p. 24)</p> <p>We remain one of the largest operators among our peers and we're expanding in areas where we see opportunities for growth. (p. 25)</p> <p>In 2018 we divested three wind energy operations in Texas, as part of a broader restructuring programme designed to optimize our US wind portfolio for long-term growth. (p. 26)</p> <p>We have set targets and aims to reduce emissions in our operations, improve our products to help our customers reduce their emissions, and create low carbon businesses. (p. 10)</p> <p>BP has been in the renewable energy business for more than 20 years. We remain one of the largest operators among our peers and we're expanding in areas where we see opportunities for growth. (p. 25)</p> <p>We firmly believe our strategy is consistent with the climate goals of the Paris Agreement and have welcomed a resolution from a group of institutional investors for a range of additional reporting (p. 1)</p>		
SHELL (Great Britain / Netherlan ds)	<p>We believe that the need to reduce greenhouse gas (GHG) emissions, which are largely caused by burning fossil fuels, will transform the energy system in this century. This transformation will generate both challenges and opportunities for our existing and future portfolio. (p. 46)</p> <p>The Net Carbon Footprint ambition will help ensure our relevance and resilience in the energy system of the future, which is crucial to being a world-class investment over the long term. (p. 2)</p> <p>Shell's purpose is to power progress together by providing more and cleaner energy solutions. Our strategy is to strengthen our position as a leading energy company by providing oil, gas and low-carbon energy as the world's energy system transforms. (p. 8)</p> <p>If society is to meet the aims of the Paris Agreement, there is a lot of work to do to cut global greenhouse gas emissions while meeting rising demand for energy. (p.2)</p> <p>As the global population grows and living standards rise, society will need to meet increasing energy demand with a lower carbon footprint. (p. 44)</p> <p>By broadening our focus to the full life-cycle emissions from the energy products that we sell to our customers, instead of solely on our operational emissions, we believe we will be better aligned with societal need and growing customer demand for more energy with lower life-cycle greenhouse gas emissions. (p. 46)</p> <p>Our experience, partnerships and technical know-how can help find new ways to provide energy that people need and want – and do this responsibly to help shape a more sustainable energy future (p. 52)</p> <p>When used instead of higher-carbon fuels such as coal and diesel for generators, it can help to meet increasing demand while lowering greenhouse gas emissions and air pollution. (p. 52) DUAL CHALLENGE</p> <p>This means that a range of different fuels and vehicle technologies will be required to meet the growing demand for mobility, while reducing emissions. Shell is investing in a range of lower-carbon energies including biofuels, hydrogen for transport, and charging for electric vehicles. (p. 52)</p> <p>Electric mobility will also help meet growing demand for transport in a lower-carbon world. And Shell is exploring how best to serve an increasing number of electric vehicle drivers, both in and beyond our service stations. (p. 52)</p> <p>We are reshaping our portfolio to provide the energy, and related products and services, that consumers will need through the transition. (p. 45)</p> <p>We are exploring how best to serve an increasing number of electric vehicle drivers, both in and beyond our forecourts. (p. 60)</p>	<p>To help achieve the energy transition and ensure opportunities to achieve better living standards for all, the world needs to transform the way it produces and uses energy. (p. 44)</p> <p>We have set a long-term ambition to reduce the Net Carbon Footprint of our energy products, measured in grams of carbon-dioxide equivalent per megajoule consumed, by around 20% by 2035 and by around 50% by 2050, in pace with society. (p. 45)</p> <p>Shell aims to help make electricity available to more people. Having a reliable supply of energy is critical to economic and social development but, globally, around 1 billion people are without access to electricity. In 2018, we outlined our new ambition: to bring a reliable electricity supply to 100 million people in the developing world by 2030. (p. 53)</p> <p>In addition, we are developing ways to provide electricity to those who have unreliable access, or none at all. Shell's ambition is to provide a reliable electricity supply to 100 million people in the developing world by 2030. We continue to work on developing a longer-term strategy to achieve this ambition. (p. 56)</p> <p>In 2018, we outlined our new ambition to provide a reliable electricity supply by 2030 to 100 million people in the developing world. (p. 57)</p> <p>We believe more renewable energy like solar and wind is critical for a cleaner energy future, and that increasingly how people live, work and play is going to need to be powered by lower-carbon electricity (p. 44)</p> <p>To help achieve the energy transition and ensure opportunities to achieve better living standards for all, the world needs to transform the way it produces and uses energy. (p. 44)</p> <p>Shell is determined to help provide more and cleaner energy solutions. (p. 44)</p> <p>In 2018, we published our Sky scenario, which illustrates a technically possible, but challenging pathway for society to achieve the goals of the Paris Agreement. (p. 45) → leading society through the challenge</p> <p>Our experience, partnerships and technical know-how can help find new ways to provide energy that people need and want – and do this responsibly to help shape a more sustainable energy future (p. 52)</p> <p>By broadening our focus to the full life-cycle emissions from the energy products that we sell to our customers, instead of solely on our operational emissions, we believe we will be better aligned with societal need and growing customer demand for more energy with lower life-cycle greenhouse gas emissions. (p. 46)</p> <p>To play our part in a cleaner energy future, we will offer customers more low-carbon products and services, including lower-carbon fuels for drivers, and solutions such as forests and wetlands to act as natural carbon sinks. (p. 44)</p>	<p>If society is to meet the aims of the Paris Agreement, there is a lot of work to do to cut global greenhouse gas emissions while meeting rising demand for energy. (p. 2)</p> <p>Shell's ambition is to reduce the Net Carbon Footprint of the energy products we sell by around half by the middle of the century in step with society as it moves towards meeting the aims of Paris. (p. 2)</p> <p>We worked with the Task Force on Climate-related Financial Disclosures (see Greenhouse gas emissions) and set our ambition to reduce the Net Carbon Footprint of the energy products we sell by around half by the middle of the century and in step with society as it moves towards meeting the goals of the Paris Agreement. (p. 9)</p> <p>We support the UN Paris Agreement on climate change, which aims to limit the rise in global average temperatures this century to well below two degrees Celsius above pre-industrial levels. (p. 10)</p> <p>We decided to focus on supporting the three goals where we can make the greatest contribution: Goal 7 (Ensure access to affordable, reliable, sustainable and modern energy), Goal 8 (Decent work and economic growth) and Goal 13 (Climate action) (p. 12)</p> <p>We have an ambition to reduce the Net Carbon Footprint of the energy products we sell by around half by 2050, in step with society, towards meeting the goals of the Paris Agreement to keep the rise in global average temperatures to well below two degrees Celsius above pre-industrial levels. (p. 12)</p> <p>As a signatory to the World Bank's "Zero Routine Flaring by 2030" initiative, Shell continues to actively pursue its 2015 commitment to eliminate associated gas flaring at its operations by 2030 (p. 34)</p> <p>We fully support the Paris Agreement and we are driving our business strategy in the context of the energy transition and climate-related risks and opportunities. (p. 44)</p> <p>Thriving through the energy transition requires working with society, including helping to advance the UN sustainable development goals. (p. 44)</p> <p>Governments took a great stride forward in 2015, when they reached agreement in Paris to tackle climate change by limiting the rise in global average temperatures this century to well below two degrees Celsius above pre-industrial levels. We fully support this goal. (p. 44)</p> <p>In 2017, Shell announced a long-term ambition to reduce the Net Carbon Footprint of the energy products we sell - a carbon intensity measure that takes into account their full life-cycle emissions including customers' emissions when they use these products - in step with society's drive to meet the goal of the Paris Agreement on climate change. (p. 46)</p>

	<p>An adequate recharging infrastructure needs to be developed, to ensure customers can charge their vehicles and continue their journeys smoothly (p. 60)</p> <p>Hydrogen has great potential to help meet growing demand for transport, while reducing emissions and improving air quality (p. 60) DUAL CHALLENGE</p> <p>To meet the decarbonisation goals of the Paris Agreement, society needs an increasing supply of energy products that produce lower or zero greenhouse gas emissions over their full life cycle, to use those products more efficiently and to store emissions that cannot be avoided in sinks. (p. 46)</p> <p>The International Maritime Organization has agreed to limit sulphur oxide and nitrogen oxide emissions from all ships from January 2020. LNG fuel can help ship operators reduce emissions. (p. 53)</p> <p>Our strategy is founded on our outlook for the energy sector and the chance to grasp the opportunities arising from the substantial changes in the world around us. (p. 8)</p> <p>The key will be to adapt to develop new opportunities in areas that will be essential in the energy transition, and where we see growth in demand over the coming decades. (p. 45)</p> <p>We believe that the need to reduce greenhouse gas (GHG) emissions, which are largely caused by burning fossil fuels, will transform the energy system in this century. This transformation will generate both challenges and opportunities for our existing and future portfolio. (p. 46)</p> <p>At the same time, preventing or reducing methane leaks makes good commercial sense because methane is the largest component of natural gas – the less that leaks, the more we can sell to market. (p. 48)</p> <p>Qq<, now the fastest growing part of the global energy system, is a crucial element in the ongoing transition to a lower-carbon world. We aim to make electricity a significant business for Shell, one that in the future could sit alongside oil, gas and chemicals. (p. 53)</p> <p>We aim to make electricity a major business for Shell, one that could sit alongside oil, gas and chemicals. (p. 56)</p> <p>We see a commercial opportunity to invest in energy access solutions in Africa and Asia. (p. 57)</p> <p>We invest in research and development (R&D) to improve the quality of our products and efficiency of our projects, processes and operations – and to commercialise new technologies for the transition to a low-carbon energy future. (p. 62)</p>	<p>Thriving through the energy transition requires working with society, including helping to advance the UN sustainable development goals. (p. 44)</p> <p>But there are tough challenges ahead that society will need to address because the transition to a lower-carbon energy system will require enormous levels of investment, and profound changes in consumer behaviour. For Shell, it could mean significant changes in the long term. We will learn, and adapt our approach over time. (p. 44)</p> <p>We must do the right thing on climate change, which means helping to reduce the environmental impact that comes with making our energy products. (p. 1)</p> <p>To advance solutions to the energy and climate challenge, we continue to work with others (see Collaborations), including the Oil and Gas Climate Initiative (OGCI), a voluntary CEO-led group taking practical actions on climate change. (p. 44)</p> <p>We need to go faster than society to achieve this ambition. Our starting point is higher than society's because our portfolio has a different energy mix compared to the overall energy system. (p. 46)</p> <p>We believe that the need to reduce greenhouse gas (GHG) emissions, which are largely caused by burning fossil fuels, will transform the energy system in this century. (p. 46)</p> <p>Meeting this ambition requires changes in the way energy is produced, used and made accessible to more people while drastically cutting emissions. (p. 46)</p>	<p>Shell supports the goal of the Paris Agreement of limiting the rise in global average temperature this century to well below two degrees Celsius above pre-industrial levels. In pursuit of this goal, we also support the vision of a transition towards a net-zero emissions energy system. (p. 46)</p> <p>To meet the decarbonisation goals of the Paris Agreement, society needs an increasing supply of energy products that produce lower or zero greenhouse gas emissions over their full life cycle, to use those products more efficiently and to store emissions that cannot be avoided in sinks. (p. 46)</p> <p>Consistent with our desire to stay in step with society's progress towards the goals of the Paris Agreement, in 2018 we moved away from using a flat project screening value (PSV) of \$40/tonne of carbon dioxide (CO2) equivalent to country-specific estimates of future carbon costs. These estimates were developed using the currently Nationally Determined Contributions submitted by countries as part of the Paris Agreement. (p. 47)</p> <p>In this way, we help to achieve the UN's sustainable development goal 7, which calls for access to affordable, reliable, sustainable and modern energy for all. (p. 57)</p>
TOTAL (France)	<p>Aware of the importance of climate-change challenges faced by the Group, the Board of Directors decided, in 2016, to introduce changes to the variable compensation of the Chairman and Chief Executive Officer to take better account of the achievements of Corporate Social Responsibility (CSR) and the Group's HSE targets. (p. 105)</p> <p>Aware of the importance of climate change challenges faced by the Group, the Board of Directors decided, in 2016, to introduce changes to the variable compensation of the Chairman and Chief Executive Officer to take better account of the achievements of Corporate Social Responsibility (CSR) and the Group's HSE targets (p. 199)</p> <p>The Group also ensures that it assesses the vulnerability of its facilities to climate hazards so that the consequences do not affect the integrity of the facilities, or the safety of people. (p. 201)</p> <p>In order to ensure the viability of its projects and long-term strategy in light of the challenges raised by climate change, the Group integrates, into the financial evaluation of investments presented to the Executive Committee, either a long-term CO2 price of \$30 to \$40 per ton (depending on the price of crude), or the actual price of CO2 in a given country if higher. (p. 105)</p> <p>In order to ensure the viability of its projects and long-term strategy in light of the challenges raised by climate change, the Group integrates, into the financial evaluation of investments presented to the Executive Committee, either a long-term CO2 price of \$30 to \$40 per ton (depending on the price of crude), or the actual price of CO2 in a given country if higher (p. 201)</p> <p>The Group performs sensitivity tests to assess the ability of its asset portfolio to withstand an increase in the price per ton of CO2 (p. 201)</p> <p>TOTAL advocates the emergence of a balanced, progressive international agreement that prevents the distortion of competition between industries or regions of the world.</p> <p>Energy efficiency is a key factor for the improvement of economic, environmental and industrial performance. Since 2013, the Group has used a Group Energy Efficiency Index (GEEI) to assess its performance in this area. (p. 203)</p> <p>TOTAL advocates the emergence of a balanced, progressive international agreement that prevents the distortion of competition between industries or regions of the world. Drawing attention to future constraints on GHG emissions is crucial to changing the energy mix. TOTAL</p>	<p>Meeting the energy needs of a growing global population, providing tangible solutions to contribute limiting global warming, adapting to new patterns of energy production and consumption and changes to the expectations of customers and stakeholders constitute the challenges that a major energy player like TOTAL can help to tackle. (p. 9)</p> <p>The nature of its activities and its geographical footprint in complex environments place the Group at the junction of a range of society's concerns relating to people, the environment or business ethics. Faced with these challenges, TOTAL's ambition is to become the responsible energy major by contributing to supply to as many people as possible a more affordable, more available, and cleaner energy (p. 179)</p> <p>The Group also ensures that it assesses the vulnerability of its facilities to climate hazards so that the consequences do not affect the integrity of the facilities, or the safety of people. (p. 201)</p> <p>To become the responsible energy major and to help provide specific solutions to major challenges that are to come over the next decades, TOTAL can rely on several advantages: its strong identity and values, the know-how of employees committed to better energy, its integrated business model and its geographic presence. (p. 10)</p> <p>TOTAL steers its operations with the aim of working in a sustainable, active and positive manner. (p. 23)</p> <p>Climate change is a global risk for the planet and results from various human actions such as energy production and consumption. As an energy producer, TOTAL seeks to reduce its direct greenhouse gas emissions resulting from its operated Activities (p. 94)</p> <p>TOTAL's ambition is to become the responsible energy major. (p. 105)</p> <p>tackling climate change requires cooperation between all actors, from both public and private sectors (p. 106)</p> <p>Reducing routine flaring has been a long-standing target of the Group, which designs its new projects without resorting to it. (p. 107)</p> <p>This ambition is embodied by the One Total Company project, which unites the various activities of the Group, its entities and all of its employees around a Company's evolution process with the aim to supply energy to an ever-growing population, taking into account the</p>	<p>However, TOTAL has identified certain SDGs as those on which it can have the most significant contribution, such as decent work and human rights, climate change and access to energy. (p. 9)</p> <p>The Group is committed to contributing to the United Nations Sustainable Development Goals, particularly with regards to those subjects that are connected to climate change and the development of more available and cleaner energy for as many people as possible. (p. 105)</p> <p>Thus, in 2014, TOTAL decided to join the call of the UN Global Compact, which encourages companies to consider a CO2 price internally and publicly support the importance of such a price via regulation mechanisms suited to the local context. (p. 106)</p> <p>taking into account the United Nations' Sustainable Development Goals (SDGs) in its operations. As such, TOTAL intends to conduct its activities according to the following principles of: taking into account climate change challenges into its strategy; (p. 179)</p> <p>The Group is committed to contributing to the United Nations Sustainable Development Goals, particularly with regards to those subjects that are connected to climate change and the development of more available and cleaner energy for as many people as possible. (p. 179)</p> <p>The Group intends to reduce its carbon intensity by 15% between 2015, the date of the Paris Agreement, and 2030. This undertaking represents a responsible contribution by TOTAL to the Paris Agreement targets and it also enables the Group to fulfill its mission to supply to as many people as possible a more affordable, more available and cleaner energy. (p. 203)</p> <p>In June 2017, the TCFD of the G20's Financial Stability Board published its final recommendations on information pertaining to climate to be released by companies. These recommendations include additional details for certain sectors, such as energy. TOTAL publicly announced its support for the TCFD and its recommendations during the summer of 2017, while noting that it is up to companies to define the information about climate-related risks and opportunities that are significant, (p. 203)</p> <p>In addition, TOTAL is working with the World Bank as part of the Carbon Pricing Leadership Coalition (CPLC). In June 2017, TOTAL became a founder member of the Climate Leadership Council, an initiative that calls for the introduction of a "carbon dividend", namely, a redistribution mechanism that would tax the biggest fossil fuel consumers (a population's wealthiest citizens) in order to pay a dividend to the entire population. In 2014, TOTAL was actively involved in launching and developing the Oil & Gas Climate Initiative (OGCI), a global industry partnership.</p>

	<p>therefore encourages the setting of a worldwide price for each ton of carbon emitted, while ensuring fair treatment of "sectors exposed to carbon leakage" (as defined by the EU)</p> <p>Meeting the energy needs of a growing global population, providing tangible solutions to contribute limiting global warming, adapting to new patterns of energy production and consumption and changes to the expectations of customers and stakeholders constitute the challenges that a major energy player like TOTAL can help to tackle. (p. 9)</p> <p>increase the distribution of petroleum products, particularly in high- growing regions, and offer innovative solutions and services that meet the needs of customers above and beyond the supply of petroleum products (p. 9)</p> <p>To respond responsibly to the strong rise in demand for electricity, TOTAL remains committed to gas, whose CO2 emissions are half those of coal when used to generate electricity (p. 105)</p> <p>Climate change also provides TOTAL with opportunities. In the coming decades, demand for electricity will grow faster than the global demand for energy, and the contribution of renewables and gas to the production of electricity shall therefore play an essential role in the fight against climate change. (p. 199)</p> <p>Certain sectors, particularly the cement industry and the steel sector, could struggle to reduce their GHG emissions. They will therefore require CO2 capture, use and storage technology (CCUS). Consequently, the Group intends to step up the development of CCUS to respond to these needs. (p. 199)</p> <p>As demand for electricity is expected to grow strongly in the coming decades, TOTAL intends to become a major player in this segment. (p. 200)</p> <p>This ambition is embodied by the One Total Company project, which unites the various activities of the Group, its entities and all of its employees around a Company's evolution process with the aim to supply energy to an ever-growing population, taking into account the challenges of climate change and new energy production and consumption patterns (p. 179)</p> <p>TOTAL positions itself on high-growth low- carbon markets and intends to offer customers an energy mix with a carbon intensity that shall gradually decrease. To accompany these changes, TOTAL has introduced a carbon intensity indicator for the energy products used by its customers (p. 199)</p> <p>To respond responsibly to the strong rise in demand for electricity, TOTAL remains committed to gas, whose CO2 emissions are half those of coal when used to generate electricity (p. 200)</p> <p>DUAL CHALLENGE</p> <p>TOTAL also offers customers an energy efficiency consultancy service so that they can optimize their own energy consumption and reduce their GHG emissions. (p. 199)</p> <p>The Group intends to reduce its carbon intensity by 15% between 2015, the date of the Paris Agreement, and 2030. This undertaking represents a responsible contribution by TOTAL to the Paris Agreement targets and it also enables the Group to fulfill its mission to supply to as many people as possible a more affordable, more available and cleaner energy. (p. 203)</p> <p>expand along the full gas value chain by unlocking access to new markets and boost profitable growth in the low carbon electricity businesses, from production based on gas and renewable energies to electricity and gas distribution to end customers (p. 10)</p> <p>The Group wishes to be present throughout the whole gas chain, from production to end customer. Significant operations have taken place in the upstream and the downstream to make this possible. (p. 200)</p> <p>Helping customers to reduce their energy consumption and environmental impact also offers opportunities and forms part of a trend that will be accelerated by digital technology. TOTAL intends to innovate in order to provide them with new product and service offers that will support their energy options and their usages. (p. 199)</p>	<p>challenges of climate change and new energy production and consumption patterns. This ambition is based on the values restated and shared by all. (p. 179)</p> <p>TOTAL's ambition is to become the responsible energy major. (p. 198)</p> <p>Climate change is at the heart of the Company's strategic vision. (p. 199)</p> <p>TOTAL is also committed to various sector initiatives on the main challenges raised by climate change. Indeed, tackling climate change requires cooperation between all actors, from both public and private sectors. (p. 200)</p> <p>Drawing attention to future constraints on GHG emissions is crucial to changing the energy mix. TOTAL therefore encourages the setting of a worldwide price for each ton of carbon emitted, while ensuring fair treatment of "sectors exposed to carbon leakage" (as defined by the EU) (p. 200)</p> <p>The Group considers that companies have a major role to play in shaping how these issues evolve and that the modalities of the application of scenarios and the use of metrics should be further studied (p. 203)</p> <p>The Group's vocation is to produce the energy that the world needs, and will need in the future, and to make it accessible to as many people as possible. This is a real challenge; close to one billion individuals (2) still have no access to electricity. This vocation is to be accomplished in a responsible manner and by working to make an effective contribution to the climate change challenge, in particular (p. 9)</p> <p>cleaner – as the Group aims to both reduce the environmental footprint and the CO2 emissions of its operations, and to actively contribute to finding solutions to limit the impact of climate change, particularly by providing its customers with a mix of energy products whose carbon intensity is expected to decrease regularly (p. 9)</p> <p>The challenges posed by climate change require a collective effort. The Group has played an active role in various international initiatives that involve the private and the public sectors to bring about notably (p. 26)</p> <p>In order to make an effective contribution to the climate change issue, TOTAL relies on an organization and structured governance framework to make sure climate- related challenges are fully integrated into the Group's strategy. Consequently, the Group has a robust strategy and implements a structured risk management system (p. 105)</p> <p>In 2014, TOTAL was actively involved in launching and developing the Oil & Gas Climate Initiative (OGCI), a global industry partnership. At year- end 2018, this initiative involved 13 major international energy players. Its purpose is to share experiences, advance technological solutions and catalyze meaningful action in order to assist the evolution of the energy mix in a manner that takes into account climate change issues. (p. 106)</p> <p>In order to make an effective contribution to the climate change issue, TOTAL relies on an organization and structured governance framework to make sure climate- related challenges are fully integrated into the Group's strategy (p. 198)</p> <p>In 2014, TOTAL was actively involved in launching and developing the Oil & Gas Climate Initiative (OGCI), a global industry partnership. At year- end 2018, this initiative involved 13 major international energy players. Its purpose is to develop solutions for a sustainable low emissions future. (p. 201)</p> <p>an environment more beneficial to humans through the natural storage of carbon by conserving and restoring forests, mangroves, wetlands and degraded soils, by improving biodiversity and the quality of life of local communities through the conservation and restoration of sensitive ecosystems, by raising awareness and training, especially young people, in environmental conservation. (p. 215)</p>	
CHEVRON (China)	<p>We take prudent and cost-effective actions to manage climate change business risks and pursue opportunities to lower our emissions and develop lower-carbon energy. (p. 4)</p> <p>Chevron faces a broad array of risks, including market, operational, strategic, legal, regulatory, political and financial risks. We undertake an enterprise-wide process to identify major risks to the company and ensure that appropriate mitigation plans are in place. (p. 3)</p> <p>Chevron's governance structure includes multiple avenues for the Board of Directors and executive leadership to exercise their oversight responsibilities with respect to risk, including those related to climate change. (p. 4)</p>	<p>As the world's energy needs grow and change, we remain focused on improving current sources of energy and scaling future solutions to deliver greater benefit to communities, with fewer environmental impacts. (p. 8)</p> <p>In the decades ahead, the world will need all forms of energy in order to maintain the benefits of modern life and help advance people reaching for a better quality of life. (p. 1)</p> <p>This investment supports our businesses globally and is focused on protecting people and the environment, ensuring reliability, efficiency and productivity for our portfolio now and in the future (p. 39)</p> <p>The costs, risks, trade-offs and uncertainties associated with GHG reduction and climate change adaptation efforts must be transparent and openly communicated to global consumers (p. 20)</p>	<p>Chevron shares the concerns of governments and the public about a rapidly changing climate. (p. 8)</p> <p>Chevron faces a broad array of risks, including market, operational, strategic, legal, regulatory, political and financial risks. We undertake an enterprise-wide process to identify major risks to the company and ensure that appropriate mitigation plans are in place. (p. 3)</p> <p>Such regulations could impose additional costs on the oil and gas sector. To the extent the market allows for pass-through of any direct costs to consumers, the potential impact of such regulations would be reduced (p. 8)</p> <p>Chevron faces a broad array of risks relating to its business, including market, operational, strategic, legal, regulatory, political and financial (p. 7)</p>

	<p>The Board Nominating and Governance Committee identifies and recommends prospective Directors with the goal of maintaining a Board composition appropriate to overseeing the wide-ranging risks affecting Chevron. (p. 5)</p> <p>Chevron employs long-standing risk management processes in assessing the risks to its business, including risks related to climate change (p. 7)</p> <p>Chevron faces a broad array of risks relating to its business, including market, operational, strategic, legal, regulatory, political and financial (p. 7)</p> <p>Climate change presents different potential risks to different segments of our business. (p. 7)</p> <p>to protect the facilities against possible storm surges, we spent \$120 million on raising a dike at our Pascagoula, Mississippi, refinery and \$16.2 million to construct a seawall at our Port Arthur, Texas, lubricants plant. (p. 8)</p> <p>Long-standing practices developed to manage these impacts are being applied and extended to reflect possible effects of climate change and to ensure the ongoing resilience of our infrastructure, both for current operations and for those being developed and considered (p. 8)</p> <p>The plan, process and alternative facilities are regularly reviewed and tested to ensure business continuity. (p. 8)</p> <p>Such regulations could impose additional costs on the oil and gas sector. To the extent the market allows for pass-through of any direct costs to consumers, the potential impact of such regulations would be reduced (p. 8)</p> <p>In some jurisdictions, Chevron is exposed to direct financial costs relating to GHG and climate regulation. (p. 22)</p> <p>Continued research, innovation and application of technology are essential to enable significant and cost-effective mitigations to climate change risks over the long term. (p. 20)</p> <p>A factor that contributes to the need for ongoing investment in oil and gas is the continued need for maintenance and investment in existing assets (p. 18)</p> <p>We think about market behavior and prices in both the near and the long term. (p. 19)</p> <p>Business units in jurisdictions with regulations that impose a carbon price go through an annual compliance-planning process with the goal of achieving the most efficient manner of compliance (p. 25)</p> <p>Where we have multiple assets in a single jurisdiction, integrated plans are developed to optimize total compliance costs across the business (p. 25)</p> <p>We take many steps, as outlined in this report, to understand the potential impacts of climate change on our business segments in order to maximize and protect stockholder value (p. 34)</p> <p>Our long history in the oil and gas sector convinces us that flexible investment strategies are the best way to maximize stockholder value, and setting targets, such as investing a predetermined percentage of renewables within our asset base, could limit our ability to select the most profitable energy development opportunities (p. 34)</p> <p>Chevron continues to manage its emissions profile and will deploy abatement technologies when they make sense for the business and for the applicable geological settings (p. 36)</p> <p>Chevron continues its commitment to understanding and evaluating the economic viability of renewable energy sources, including solar, wind, geothermal and biofuels (p. 37)</p> <p>This investment supports our businesses globally and is focused on protecting people and the environment, ensuring reliability, efficiency and productivity for our portfolio now and in the future (p. 39)</p> <p>Changes in anticipated demand, pricing, competitiveness and regulation become apparent over time, and Chevron takes these factors into account in revising our capital allocation and redirecting our portfolio as needed. (p. 8)</p> <p>Costs initially incurred by Chevron may ultimately be borne by customers through pricing of products sold in the competitive marketplace, mitigating their impact on our financial outcomes. (p. 23)</p> <p>We believe that managing climate change risks is an important element of our strategic focus to return superior value to stockholders (p. 1)</p> <p>We periodically reassess our governance structure to ensure that Chevron maintains a Board composition and framework that is effective for managing the company's performance and risks to our business as we strive to deliver value to our stockholders. (p. 3)</p>	<p>We work constructively with governments toward balanced policies to address potential climate change risks while providing access to reliable and affordable energy to support social and economic progress. (p. 20)</p> <p>we take prudent, practical and cost-effective actions to address potential climate change risks as part of our commitment to running our business the right way and unlocking the potential for progress and prosperity everywhere we work (p. 35)</p> <p>for nearly 140 years, chevron has provided affordable, reliable energy to improve lives and power the world forward (p. 1)</p> <p>We are committed to addressing the risks of climate change while delivering the energy that benefits societies and economies (p. 1)</p> <p>We're committed to addressing the risks of climate change while delivering the energy that benefits societies and economies. (p. 4)</p> <p>Chevron shares the concerns of governments and the public about climate change. (p. 20)</p> <p>As we work to address climate change, we must create solutions that balance environmental objectives with global economic growth and our aspirations for a better quality of life for people across the world (p. 20) DUAL CHALLENGE</p> <p>Our intent is to have strategies that drive our actions to enable human progress and deliver industry-leading results and superior stockholder value in any business environment. (p. 3)</p> <p>Chevron shares the concerns of governments and the public about a rapidly changing climate. (p. 8)</p> <p>Chevron recognizes that climate change is a growing area of interest for our investors and stakeholders. We have listened to your concerns, and we are responding. (p.1)</p> <p>Climate change is a growing area of interest for our investors and other stakeholders. (p. 4)</p> <p>Continuing the conversation over the past year has helped us better understand your interests and potential concerns related to climate change. (p.1)</p> <p>To help us make the best decisions about emerging energy sources, we are conducting research and development and collaborating with government, academia and other stakeholders on alternative fuels and emission reduction opportunities (p. 9)</p> <p>we take prudent, practical and cost-effective actions to address potential climate change risks as part of our commitment to running our business the right way and unlocking the potential for progress and prosperity everywhere we work (p. 35)</p> <p>Potential climate change risks are integrated into multiple ERM risk categories because a truly global challenge like climate change requires a comprehensive review strategy. (p. 7)</p> <p>Addressing Climate Change shown on Page 20, reducing GHG emissions is a global issue that requires global engagement and careful consideration of broader policy, regulatory and economic priorities. (p. 8)</p> <p>Chevron sees the Paris Agreement as a first step toward a global framework that is generally in line with the first of Chevron's Policy Principles for Addressing Climate Change: (see right): Global engagement is needed to solve this global issue. (p. 20)</p> <p>Reducing greenhouse gas emissions is a global issue that requires global engagement and action. (p. 20)</p> <p>Our company's foundation is built on our values, which guide our actions to deliver results. We conduct our business in a socially and environmentally responsible manner, respecting the law and universal human rights, in order to benefit the communities where we work. (p. 3)</p> <p>Chevron recognizes the value of water as a fundamental social, environmental and economic resource, and we strive to use the lowest quantity of fresh water practicable in our operations. (p. 39)</p> <p>Chevron has always been a leader in improving how reliable and affordable energy is developed and delivered to meet global demand. We have demonstrated our ability to innovate and respond to society's changing needs and expectations over our nearly 140-year history; we will continue to do so as we look forward (p. 40)</p>	<p>Chevron's ERM process targets a broad range of geopolitical risks, including legislative, regulatory and legal risks, to ensure that they are appropriately assessed and reviewed. In the years ahead, companies in the energy industry, including Chevron, may face an increase in international and domestic regulation of greenhouse gas (GHG) emissions. (p. 8)</p> <p>Chevron engages in ongoing efforts to understand the potential impact of climate change policy on the different parts of our business—particularly supply, demand and pricing—and works with governments to ensure that they fully understand the perspectives of a major participant in the industry. These efforts help us better evaluate how GHG/climate regulation may unfold in jurisdictions where we operate. Changes in anticipated demand, pricing, competitiveness and regulation become apparent over time, and Chevron takes these factors into account in revising our capital allocation and redirecting our portfolio as needed. (p. 8)</p> <p>Chevron's ERM process targets a broad range of geopolitical risks, including legislative, regulatory and legal risks, to ensure that they are appropriately assessed and reviewed. In the years ahead, companies in the energy industry, including Chevron, may face an increase in international and domestic regulation of greenhouse gas (GHG) emissions. (p. 8)</p> <p>We develop strategies to deliver results under a range of scenarios, including those resulting from potential carbon-constrained policies and scenarios, such as the one presented in the IEA's Sustainable Development Scenario (SDS) (p. 9)</p> <p>Most outlooks we track conclude that oil and gas demand will continue to grow over the coming decades, but we also track and analyze leading indicators that might signal change, such as potential policy developments. (p. 9)</p> <p>Energy efficiency improvements are expected to have the largest moderating impact on energy demand growth. Improvements in energy intensity continue to accelerate due to targeted policy initiatives, like vehicle efficiency standards and standards for power, the industrial sector and consumer products. (p. 13)</p> <p>Fuel mandates, like renewable portfolio standards, renewable fuel standards and low-carbon-fuel standards, can change the fuel mix by requiring certain types of energy sources. (p. 13)</p> <p>Cost effects like carbon pricing, renewable feed-in tariffs and fuel taxes often increase the cost of using fossil fuels and can affect the relative economics of the fuel mix. Particularly for biofuels, economics may be affected by value from policy-driven compliance credits. When economical, we pursue biofuels opportunities, such as renewable diesel (p. 13)</p> <p>Policies should be balanced and measured to ensure that long-term economic, environmental and energy security needs are all met; costs that are allocated in an equitable, gradual and predictable way, and that actions consider both GHG mitigation and climate change adaptation. (p. 20)</p> <p>Oil demand has grown at a rate of about 1 mmbd, or 1 percent per year, over the past 20 to 30 years, but the IEA's NPS shows oil demand growing at a more modest pace in the future, due to slower economic growth, aging populations in traditional oil-consuming centers like Europe, Japan and the United States, and policy-driven efforts to increase vehicle efficiency and alternative fuel penetration. (p. 14)</p> <p>Growth in natural gas demand is driven by an abundant low-cost resource, a desire among key energy consumers to diversify fuel sources and efforts in some jurisdictions to reduce air pollution. (p. 15)</p> <p>As governments further consider pursuing specific policies and actions, Chevron remains committed to working with policymakers to help inform any decisions and actions. (p. 20)</p> <p>We work constructively with governments toward balanced policies to address potential climate change risks while providing access to reliable and affordable energy to support social and economic progress. (p. 20)</p> <p>The extent to which carbon prices affect commodity prices and margins depends on the ability to recover the costs in the marketplace. Many jurisdictions take this into consideration in the context of local production and refining trade competitiveness. (p. 22)</p> <p>In 2016, approximately 50 percent of Chevron's total Scope 1 and Scope 2 equity GHGs were in regions with existing or developing carbon pricing policies. (p. 23)</p> <p>In addition to carbon pricing regulations, in some jurisdictions Chevron is subject to other GHG regulations, such as low-carbon-fuel standards and methane regulations. (p. 23)</p> <p>When triggering events arise, we perform impairment reviews to determine whether any write-down in the carrying value of an asset is required. Impairments could occur, for example, due to changes in national, state and local environmental laws, including (p. 25)</p> <p>we maintain flexibility in our portfolio and continually examine ways to adapt investment patterns in response to changing policy and demand. (p. 25)</p>
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(p. 8)</p> <p>Growth in natural gas demand is driven by an abundant low-cost resource, a desire among key energy consumers to diversify fuel sources and efforts in some jurisdictions to reduce air pollution. (p. 15)</p> <p>Most outlooks we track conclude that oil and gas demand will continue to grow over the coming decades, but we also track and analyze leading indicators that might signal change, such as potential policy developments. (p. 9)</p> <p>Included in our strategic planning are: • Energy demand and supply projections • Energy mix projections • Commodity price outlooks (p. 9)</p> <p>oil and gas are forecasted to continue to be competitive on price and with scale, reinforcing that Chevron's portfolio is robust under multiple scenarios (p. 9)</p> <p>The world's energy demands are greater today than at any other time in human history, and they will continue to grow as populations expand, the world's industrial base grows and technologies are invented that will need to be powered. (p. 10)</p> <p>Oil and gas may fall below today's share of the energy mix, but most energy experts agree that oil and natural gas will account for about half of global energy consumption for at least the next two decades under almost any future market scenario (p. 11)</p> <p>Oil and gas have a diverse set of end uses. In some uses, like aviation, marine, freight and petrochemicals, there are few, if any, cost-effective and scalable alternatives to oil. (p. 12)</p> <p>There is a positive correlation between population growth and energy demand. And as more people's incomes increase and they gain access to personal mobility, electricity and appliances, energy demand increases. (p. 13)</p> <p>Changes in consumer behavior can increase or moderate energy use. For example, vehicle choice and use patterns can affect demand for refined products. (p. 14)</p> <p>Oil demand has grown at a rate of about 1 mmbd, or 1 percent per year, over the past 20 to 30 years,⁵ but the IEA's NPS shows oil demand growing at a more modest pace in the future, due to slower economic growth, aging populations in traditional oil-consuming centers like Europe, Japan and the United States, and policy-driven efforts to increase vehicle efficiency and alternative fuel penetration. (p. 14)</p> <p>Growth in natural gas demand is driven by an abundant low-cost resource, a desire among key energy consumers to diversify fuel sources and efforts in some jurisdictions to reduce air pollution. (p. 15)</p> <p>The IEA's NPS forecasts gas demand to grow by 45 percent between 2016 and 2040, as shown in the chart to the right, with 80 percent of the growth coming from developing countries such as China, India and other countries in Asia (p. 15)</p> <p>Transportation fuels and petrochemicals have accounted for nearly 95 percent of the growth in global oil demand since 2000 and are expected to underpin sustained growth in demand over the next two decades. (p. 15)</p> <p>Although the disruptive potential of demand-side technologies often gets the headlines, the effect of supply-side technologies—more specifically, the unconventional-oil and -gas revolution in the United States—has been more impactful. (p. 16)</p> <p>The IEA projects natural gas to be the fastest-growing source of fossil fuel through 2040, becoming the second-largest fuel source in the world after oil. (p. 18)</p> <p>additions planned in the next few years in line with anticipated demand growth (p. 19)</p>		<p>Business units in jurisdictions with regulations that impose a carbon price go through an annual compliance-planning process with the goal of achieving the most efficient manner of compliance (p. 25)</p> <p>In 2018, our Board of Directors established greenhouse gas emissions performance measures, targeting a 20 to 25 percent reduction in methane emissions intensity and a 25 to 30 percent reduction in flaring intensity by 2023, in line with the first "stock-take" under the Paris Agreement. (p. 8)</p> <p>According to the IEA, CCS is an important tool for mitigating GHG emissions and meeting Paris Agreement global warming targets in the 2030 to 2050 time frame.²(p. 36)</p> <p>Chevron's views on the future energy mix are generally aligned with prominent third-party projections like the IEA's NPS (p. 11)</p> <p>As part of our strategic planning process, we use our proprietary models to forecast demand, energy mix, supply, commodity pricing and carbon prices—all of which include assumptions about future policy developments, such as those that may be implemented in support of the Paris Agreement. (p. 3)</p> <p>We have analyzed the recommendations issued by the Financial Stability Board's Task Force on Climate-Related Financial Disclosures and have developed this report with the aim of aligning our disclosures with the recommendations that we believe are most useful to our stockholders. (p. 1)</p> <p>Chevron's ERM process targets a broad range of geopolitical risks, including legislative, regulatory and legal risks, to ensure that they are appropriately assessed and reviewed. In the years ahead, companies in the energy industry, including Chevron, may face an increase in international and domestic regulation of greenhouse gas (GHG) emissions. (p. 8)</p> <p>Chevron engages in ongoing efforts to understand the potential impact of climate change policy on the different parts of our business—particularly supply, demand and pricing—and works with governments to ensure that they fully understand the perspectives of a major participant in the industry. These efforts help us better evaluate how GHG/climate regulation may unfold in jurisdictions where we operate. Changes in anticipated demand, pricing, competitiveness and regulation become apparent over time, and Chevron takes these factors into account in revising our capital allocation and redirecting our portfolio as needed. (p. 8)</p> <p>Most outlooks we track conclude that oil and gas demand will continue to grow over the coming decades, but we also track and analyze leading indicators that might signal change, such as potential policy developments. (p. 9)</p> <p>we incorporate existing energy policies, as well as an assessment of the results likely to stem from the implementation of announced policy intentions, such as those supporting the Paris Agreement. (p. 11)</p> <p>Policies, like those that support the Paris Agreement, can change the amount of energy consumed, the growth rate of energy demand, the energy mix and the relative economics of one fuel versus another. (p. 13)</p> <p>We recognize the findings of the Intergovernmental Panel on Climate Change (IPCC) that the use of fossil fuels to meet the world's energy needs contributes to the rising concentration of GHGs in Earth's atmosphere, which contribute to increases in global temperatures (p. 20)</p> <p>We align our activity with the principles noted above and with the processes for governance, risk management and strategy outlined in this report. (p. 20) (IPCC)</p> <p>The timing, scope and scale of adoption of policies to support the goals of the Paris Agreement will vary and could have direct and indirect impacts on the company. (p. 21)</p> <p>Our expectations regarding the impacts of these policies are incorporated into the previously described proprietary models that forecast demand, energy mix, supply and prices (p. 21)</p> <p>it outlines a path to 2040 that achieves the objectives of the Paris Agreement, including a peak in emissions being reached as soon as possible, followed by a substantial decline (p. 30)</p>
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EXXONM OBIL (USA)	<p>Meeting the world's growing energy demand while simultaneously reducing environmental impacts, including the risks of climate change, is one of society's most pressing challenges. (p. 8)</p> <p>The men and women of ExxonMobil are focused on meeting society's dual challenge – meeting energy needs while also minimizing the environmental impacts of energy use, including the risks of climate change. (p. 3)</p> <p>We are focused on mitigating emissions in our operations, developing technology solutions, providing solutions that reduce emissions for our customers and engaging on climate change policy. (p. 8)</p> <p>In addition to developing and deploying technologies to reduce emissions from our own operations, we are working to help our customers reduce their emissions. (p. 18)</p> <p>we help our customers reduce their emissions through the use of our energy-saving technologies and sustainable products (1)</p> <p>nd our ongoing actions to meet energy needs and environmental expectations, ExxonMobil will continue to take a leadership role in meeting the world's dual challenge (1)</p> <p>Our Company has a proven record of successfully responding to changes in society's needs. With long-standing investments in technology, we are well-positioned to meet the demands of an evolving energy system. (2)</p> <p>global energy needs will rise about 25 percent over the period to 2040, led by non-OECD(1) countries (2)</p> <p>the world will need to pursue all economic energy sources to meet this need (2)</p> <ul style="list-style-type: none"> • Worldwide electricity from solar and wind will increase about 400 percent • Natural gas will expand its role, led by growth in electricity generation and industrial output • Rising oil demand will be driven by commercial transportation and the chemical industry. Road fuel demands for cars and heavy-duty vehicles reflect efficiency improvements and growth in alternative fuels <p>cumulative investments in oil and natural gas supplies could approach \$21 trillion from 2018 to 2040 (2)</p> <p>sensitivities related to light-duty vehicle fuel economy gains and electric vehicle penetration, and also introduce new sensitivities tied to efficiency and alternative fuel use potentially affecting the heavy-duty vehicle sector. (2)</p> <p>Even under a 2°C pathway, significant investments will be required in oil and natural gas capacity. In (2)</p> <p>Production from our proved reserves and investment in our resources continue to be needed to meet global requirements and offset natural field decline (2)</p> <p>Near-term actions, consistent with society's energy requirements and environmental objectives, include:</p> <ul style="list-style-type: none"> • Expanding the supply of cleaner-burning natural gas • Transitioning our refining facilities to growing higher-value distillates, lubricants and chemical feedstocks • Mitigating emissions from our own facilities through energy efficiency, cogeneration and reduced flaring, venting and fugitive emissions, including GHG intensity reduction in Imperial Oil Limited's (Imperial) operated oil sands facilities • Supplying products that help others reduce their emissions, such as premium lubricants and fuels, lightweight materials, and special tire liners (2) <p>last year we joined the Oil and Gas Climate Initiative (OGCI), a voluntary collaboration of leading companies in our industry aimed at reducing climate-related risks.</p> <p>Uncertainties include changes in economic growth, the evolution of energy demand and/or supply, emerging and disruptive technologies, and policy goals and actions, in part to address climate change risks. (32)</p> <p>Our goal is to develop solutions that are economically competitive and affordable, (p. 18)</p> <p>Policies should be clear and guard against duplicative, overlapping and conflicting regulations, which may distort markets and impose unnecessary costs on consumers. (p. 19)</p>	<p>We are committed to providing affordable energy to empower human progress and improve standards of living while advancing effective solutions to address climate change (p. 16)</p> <p>last year we joined the Oil and Gas Climate Initiative (OGCI), a voluntary collaboration of leading companies in our industry aimed at reducing climate-related risks. (1)</p> <p>designed to encourage the informed conversation society needs on these important issues. (1)</p> <p>our ongoing actions to meet energy needs and environmental expectations, ExxonMobil will continue to take a leadership role in meeting the world's dual challenge</p> <p>Climate change is a global issue that requires the collaboration of governments, companies, consumers and other stakeholders. We engage a variety of stakeholders on climate change issues — including policymakers, investors, consumers, nongovernmental organizations, academics and the public — to advocate for responsible policies that would be effective in addressing the risks of climate change. (p. 18)</p> <p>Expanding the supply of cleaner-burning natural gas to reduce emissions in power generation: The use of natural gas in power generation represents one of the greatest opportunities for society to reduce emissions and transition to a lower greenhouse gas-intensive energy system. (p. 18)</p> <p>It's one of society's largest and most complex challenges and requires thoughtful engagement at all levels, focusing on practical and affordable solutions that work at the necessary scale. (p. 3)</p> <p>Along with several industry peers, we issued Guiding Principles, which provide a framework for continually reducing methane emissions, improving accuracy of methane emissions data and advocating sound policies and regulations. (p. 17)</p> <p>We understand that dealing successfully with climate change risks will require a coordinated effort involving individuals, governments and industry leaders around the world. (1)</p> <p>There are few challenges more important than meeting the world's growing demand for energy while reducing environmental impacts and the risks of climate change. (1)</p> <p>Energy underpins modern life. People around the world rely on energy to cook their meals, heat their homes, fuel their cars, and power their hospitals, schools and businesses. Our industry plays a critical role in fulfilling society's economic needs and providing the foundation for a healthier and more prosperous future. ExxonMobil is committed to doing our part to help society meet this dual challenge. (p. 1)</p> <p>our ongoing actions to meet energy needs and environmental expectations, ExxonMobil will continue to take a leadership role in meeting the world's dual challenge</p>	<p>Engaging on policy to address the risks of climate change at the lowest cost to society (2)</p> <p>nationally determined contributions (NDCs) related to the Paris Agreement provide important signals on government intentions related to the general direction and pace of policy initiatives to address climate change risks (7)</p> <p>ExxonMobil supports the Paris Agreement as an important framework for addressing the risks of climate change. We welcomed the Paris Agreement when it was announced in December 2015, and again when it came into effect in November 2016. We have reiterated our support to government officials, nongovernmental organizations and the broader public.</p> <p>ExxonMobil supports the 2015 Paris Agreement. (1)</p> <p>Should society choose to more aggressively pursue a 2°C pathway, we will be positioned to contribute through our engagement on policy, development of needed technologies, improved operations, and customer solutions (34)</p>
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Statutory Declaration

I hereby declare that this thesis has been written by myself without any external unauthorized help, that it has been neither presented to any institution for evaluation nor previously published in its entirety or in parts. Any parts, words or ideas of the thesis, however limited, and including tables, graphs, maps etc., which are quoted from or based on other sources, have been acknowledged as such without exception.

Place:

Date:

Signature: