Setting the Scene

Far more than a legal document, the 2015 Paris Agreement marks the culmination of half a century of evolutionary developments spanning science, technology, policy, and culture. As early as 1965, the U.S. President’s Science Advisory Committee warned that human activities could produce significant climatic consequences. With much prescience, that committee highlighted possible outcomes that have since become reality, from the melting of the Antarctic ice cap to the rise of sea levels and extreme weather events. Only some time later, in 1988, was the first institution established to address climate issues: the Intergovernmental Panel on Climate Change (IPCC), which was mandated by the United Nations (UN) to assess the available information on this topic and to foster a scientific consensus that could inform policy. This was followed in 1992 by the UN Framework Convention on Climate Change (UNFCCC), one of the three global conventions adopted amid the optimism of the Rio Earth Summit, marking the official start of international climate policymaking. Since then, the number of actors and fora dedicated to climate change has exploded, leading to what some have called the climate change regime.

The business world has also joined the fray. The focus of this article is to assess the mixed responses of the oil and gas industries in the context of the overall business response. More than 2,000 companies, representing US$ 36.6 trillion in revenue, as well as 16 of the world’s 20 largest banks have made public climate commitments through the UN’s NAZCA portal. In parallel, We Mean Business, a leading business climate action network, now gathers nearly 700 companies and investors representing over US$ 8 trillion in market capitalization. This ambitious network supports them to “reduce greenhouse gas emissions, build climate resilience and unlock climate finance” as part of

“Transformative change in the energy sector, the source of at least two-thirds of global greenhouse-gas emissions, is essential to reach the objectives of the [Paris] Agreement.” (OECD/International Energy Agency, 2016)
a transition to a low-carbon economy. The ambition is perhaps best seen in the 83 firms including the likes of Apple and IKEA that have committed to go 100% renewable by 2030.

Yet in spite of the blooming, buzzing confusion of efforts aimed both at mitigating and adapting to climate change, the Paris Agreement so far has established only an all-nation agreement over the boundary goal of 2°C warming. This comes with the crucial proviso of seeking to aim for well below that and in the region of 1.5°C overall warming since preindustrial times. Environmental law scholar David Estrin emphasizes that the Paris Agreement is not binding in the sense of requiring specific countries to reduce their emissions. He points to worrying gaps, among them the absence of “specific measures and enforceable means to limit emissions,” the deliberate avoidance of penalties for noncompliance, and the lack of restrictions on those responsible for greenhouse gas emissions, such as oil and gas firms. His more realistic interpretation that the Paris Agreement is not quite the legal coup it has been made out to be has been echoed by others. However, as Daniel Bodansky claims, the agreement’s legal character (i.e., the degree to which it is binding) represents only one avenue for assessing its value to the fight against climate change.

The reality is that the agreement represents two key developments. The first one relates to the nature of global climate policy, as argued by Robert Falkner: “[Paris] heralds the beginning of a new era in international climate politics, one that offers the chance of more durable international cooperation.” The novelty lies in shifting from a top-down mandatory approach to emissions reductions that relies on “naming and shaming” to a bottom-up, nationally driven strategy dependent on voluntary pledges that are then compared and reviewed. The second one is that Paris represents a political shift, propelling efforts to build a low-carbon world from niches to the mainstream. It is through this development that oil and gas firms have found themselves not only contemplating a future in which fossil fuels need no longer play a central role in the provision of our energy, but also feeling compelled to undertake their own actions to mitigate climate change.

It may appear odd to speak of oil and gas firms and climate action in one breath—“fossils,” “merchants of doubt,”
and “polluters” are the terms that we mostly associate with the oil and gas industry in this regard. And, indeed, it has done much to deserve such labels. As early as 1989, just one year after the establishment of the IPCC, a number of the largest oil and gas and coal firms came together to launch the Global Climate Coalition (GCC), an advocacy group dedicated to promoting climate skepticism. However, much has changed over the past 27 years. The chief financial officer of oil major Shell recently told investors that oil demand could begin to decline in the next 5 to 15 years. Wood Mackenzie, one of the preeminent oil and gas industry research providers, echoed this sentiment in a report that sees a peaking of oil and coal demand within 20 years with renewables growing by up to 500% over that same period. As Andrew Ward from the Financial Times notes, “Oil companies risk being left behind in the transition to low-carbon energy according to a report that says the industry is not investing enough in green technology.”

Some firms have begun to reimagine themselves within a post-Paris world, to secure a role in a future no longer reliant on them. Only posterity will tell whether this industry is acting out of genuine concern over the outcomes of climate change or attempting to avoid the risks and responsibilities linked to it. However, given that oil and gas firms are breaking with traditional patterns of opposition to climate governance, speaking of enacting policies supportive of the Paris Agreement, of increasing their investment in nonfossil forms of energy, and of developing low-carbon “transition” strategies, there is cause to believe that this beleaguered industry may well be priming itself for a new role in the governance of climate change.

Though it is too early to issue any definitive judgements, this article seeks to highlight that although there was previously little to no positive engagement from the oil and gas sector in climate governance, this situation is evolving; this could be taken as an indication that elements of the sector are taking the Paris Agreement seriously. Thus, most importantly, there is a noticeable shift in the patterns of interactions, which can also be linked to macro-level changes. While this could—and should—be viewed with appropriate caution, this also has the potential to open new opportunities for intervention to academics and civil society.

This shift, encouraging as it may be, cannot be used to circumvent some of the more troubling questions that we face in relation to the oil and gas–climate change nexus. These center on the thorny issue of responsibility: that of actors, whether public or private, for emissions, past, present, and future; and that of locating responsibility to mitigate and adapt to climate change. Traditional answers to these questions have focused on the state, both as the unit for emissions statistics and as the target for international climate policy, which is essentially constituted by legal contracts between states. A clearer and stronger understanding of responsibility should not, however, lead to a witch hunt against those most responsible for emissions. Fossil fuels have made tremendous contributions to our societies over the past centuries and are unlikely to vanish in the immediate future. Instead, we need an approach to climate change that is at once with and well beyond states, and shares historical and future responsibilities explicitly and broadly.

**Breaking With Old Patterns**

In the early years of climate policy, the oil and gas industry took a fairly uniform stance in its rejection of efforts to mitigate warming temperatures, in some cases viewing them as conspiracies meant to bring them to their knees. It was clear from the outset that “controls on CO₂ would directly threaten the revenues and profits of oil and coal companies, and raise costs for industries dependent on these fuels.” The GCC did its utmost to derail nascent climate science and policy, pushing for business as usual and claiming that the risks pinpointed by scientists were vastly exaggerated. Though typically characterized as a narrow U.S. fossil fuel enterprise, it nevertheless represented about 40 international companies and industry associations from sectors including automobiles and paper. Older, more established business organizations also advocated for businesses linked to oil and gas, though these avoided the flat climate denialism of the GCC. The International Chamber of Commerce (ICC) helped coordinate business positions in advance of the 2nd Conference of the Parties (COP) that took place in Geneva in 1993, and the International Petroleum Environmental Conservation Association (now simply known as IPIECA) expanded from a focus on the UN Environment Program (UNEP) to include the UNFCCC.

Yet within a decade of the GCC’s founding, cracks in the oil and gas sector’s stance toward climate change became apparent:

[Shell and BP] broke ranks by embracing climate change as a business opportunity. At that time the rest of the oil industry, dominated by Exxon and Mobil and working through the Global Climate Coalition, was highlighting the uncertainty of climate science and emphasising the economic cost of mandated greenhouse gas emission reductions.

As early as 1996, both BP and Shell left the GCC; by contrast, ExxonMobil and Texaco (now Chevron) remained more or less until the very end in the early 2000s. For its part, BP publicly recognized human-induced climate change in 1997, whereas Shell characterized it as “the most controversial and pressing environmental issue we face” in 1998. To illustrate this rift further, while BP became the “largest vertically integrated solar company in the world” in 1999, ExxonMobil went to great lengths to discredit climate science—the precise extent of these efforts has only recently been exposed. In this sense, oil and gas firms rapidly began to adopt a range of strategies toward climate change, which van der Hove et al. would
categorize as “(1) placing priority on the business consequences while weakening the perception that anthropogenic greenhouse gas emissions are causing climate change; (2) avoiding responsibility; and (3) placing priority on the need for a modification of the business process while limiting the negative effect in terms of business consequences.”

Fast forward to 2016, much has changed. One by one, firms have publicly recognized climate change as a major issue and have moved to explore how they might one day fit in a lower carbon world. Even ExxonMobil, better known for its ongoing fight against U.S. attorneys general, journalists, and environmental groups, characterized the entry into force of the Paris Agreement as “an important step forward by world governments in addressing the serious risks of climate change” and went so far as to state its belief that “the company has a constructive role to play in developing solutions.” This sense that the oil and gas industry can play a positive role in the transition to a low-carbon world was captured through a poll of participants at the New York Times energy conference in Paris in early November 2016. They outlined several avenues for action, including investing in renewable energy production, supporting a global price on carbon, adapting business models, and keeping more fossil fuels underground.

What is driving this shift? Among the broader dynamics influencing the positions of oil and gas firms on climate, four stand out in particular.

First, though marginal in terms of total primary energy, renewables have been growing at astonishing rates, beating both industry and independent forecasts. The fact that some European countries are able to sustain themselves wholly from renewables, even if for short times only, gives an idea of the new positioning of renewables. This rapid expansion has been aided by an equally speedy decline in unit costs for renewable technologies, as well as supportive public policies, including from the G7 and G20. Offshore wind offers a particularly good illustration of these trends, having grown from producing a few megawatts to more than 12 gigawatts in 15 years; over this same time period, costs have fallen by 30%. The sector is expected to grow by up to 650% before 2030, although policies could drive an even faster expansion. More broadly, leading consultancy McKinsey & Company has found that global clean-energy investments outperformed fossil ones in the first quarter of 2015 and that total investment neared US$ 300 billion. And though the spread of renewables has so far mostly affected the power-generation sector, the impending rise of electric vehicles could begin to affect oil demand more quickly than expected. Nevertheless, the latest forecasts see natural gas and oil remaining largely undisturbed, with fossil fuels...
overall capturing 60% of the US$ 4 trillion that is needed in energy supply investments to accommodate a 30% rise in energy demand.37

Second, climate-related public and private policy is gathering pace: States, regions, and cities are taking on ambitious mitigation goals; the Paris Agreement has established a regulatory floor, which is likely to be raised further in the years to come. The oil and gas industry is keenly aware of this, and as Paul McConnell from industry research producer Wood Mackenzie observes: “As carbon policy intensifies, the oil and gas majors will face more regulatory burden and are likely to face increasing costs.”38 One of their recent studies indicates that at least half of international oil companies’ production could be negatively affected by carbon costs. This comes as industrialized nations have reaffirmed their intention to provide their developing brethren with US$ 100 billion in climate finance,39 while 48 of them have committed to a 100% renewable future.40 Coal has so far borne the brunt of efforts to stem emissions, with a string of countries announcing their intention to phase it out by 2030.41 However, oil and gas may well remain prominently in the energy mix well into the second half of the century. This is largely due to difficulties in replacing oil as a feedstock for petrochemicals and as a fuel for the transport sector, whereas natural gas has been touted as both relatively clean, low in cost, and complementary to renewables.42 States also reinforce the persistence of fossil fuels by continuing to subsidize them to the tune of US$ 325 billion in 2015, on par with all investment in renewable energy, in an effort to boost their competitiveness in the global economy. But once again, the trend remains in favor of decarbonization. These subsidies fell from nearly US$ 500 billion in 2014 and should be contrasted with the nearly US$ 150 billion in subsidies offered to renewables in 2015.43 More broadly still, calls are mounting to scrap all fossil fuel subsidies. Organization for Economic Cooperation and Development (OECD) Secretary-General Angel Gurría considers that “the time is ripe for countries to demonstrate they are serious about combating climate change, and reforming harmful fossil fuel support is a good place to start.”44 Legal developments are also taking place that may ultimately reshape the responsibilities of state and nonstate actors for climate damages. One approach has been to link climate change and human rights law.45 Another has been to litigate at the domestic level; courts have taken on stronger positions and found states in default to their obligations towards citizens (e.g., in the Netherlands,46 the United States,47 and Pakistan48).

Third, discursive shifts are taking place that serve to marginalize the role of oil and gas in a low-carbon future. Two prominent examples include the spread of the fossil fuel divestment movement, which primarily pushes institutional investors to remove their funds from oil, gas, and coal companies, and the stranded assets concept, which argues that the majority of oil and gas reserves need to be kept in the ground to avoid disastrous climate change. The former had a major symbolic victory when the Rockefeller Family Fund publicly announced its decision to divest from fossil fuels. Owned by the descendants of the eponymous founder of Standard Oil, the ancestor of such firms as ExxonMobil and Chevron, the fund stated that “there is no sane rationale for companies to continue to explore for new sources of hydrocarbons.”49 Sir Mark Moody-Stuart, the former chairman of Shell, has supported this conclusion, arguing that divestment is a “rational approach.”50 More broadly, more than 500 organizations collectively managing in excess of US$ 3.4 trillion have joined the movement.51

The stranded assets concept has very much influenced those divesting from fossil fuels. Its message has been taken up by a far wider audience, including states,52 international organizations,53 and financial institutions.54,55 The argument goes that only a fraction of the world’s fossil fuel resources can be extracted if we are to avoid moving beyond a 2°C temperature increase. The implication is that oil and gas firms and their shareholders may face significant financial risks, as portions of their reserves on the basis of which they are valued could become stranded. Should this argument play out, ongoing efforts to find and develop new resources would be equally misguided,56 although current projections tend to take the opposing view by expecting natural gas and oil to maintain a significant role in the decades to come.57

Fourth, the past years have added an additional challenge to oil and gas firms in the form of a low price environment.
Between June 2014 and January 2016, the oil price collapsed from over US$ 100 per barrel to barely US$ 30, wrong-footing an industry that had become accustomed to capital-intensive projects. At this price level, companies struggle to turn a profit, although states relying on oil sales face an even steeper challenge. The industry responded by cutting over US$ 1 trillion in spending for exploration and development and shedding more than 350,000 jobs. The news has been even worse for smaller producers, especially in the U.S. shale oil and gas sector, where 105 bankruptcies have been reported. Analysts, however, have argued that this belt-tightening has made the industry more resilient—oil production has not fallen and producers are regaining profitability. By decreasing returns and forcing vast capital and employee cuts on firms, this situation is nevertheless leading some to question the industry’s ability to invest sufficiently in new fossil resources, in order to maintain a dominant position in the energy system. This was recently highlighted in the International Energy Agency’s report on energy investment, which found that oil, gas, and coal investment fell by 25% in 2015 and a further 24% in 2016.

Developing Low-Carbon Transition Visions

Faced by mounting challenges, firms are being pressed by stakeholders—from shareholders to civil society—to sketch out a vision of how they might remain competitive and relevant in a post-Paris world. Shareholders, in particular, have been putting forward increasing numbers of resolutions asking international oil companies to clarify their plans on how to adapt to the Paris Agreement and requesting them to “stress test” their business plans against it (see Figure 1). In other cases, firms are being asked to
disclose potential stranded assets or to unlink executive pay from the growth in reserves. Though some have so far evaded such demands, the majority have begun to articulate their own plans.

These visions tend to bear three key elements: energy efficiency, carbon pricing, and carbon capture and storage (CCS), of which the last two are particularly controversial. The reason for this is that their combination paves the way for firms to continue operating along a business-as-usual pathway. Carbon pricing internalizes the cost of emissions, providing investment signals for low-carbon investments, although current prices remain too low overall. CCS, for its part, is a relatively new technology intended to capture carbon dioxide as it is being emitted from power plants through the combustion of gas (or coal). This carbon would then be sequestered in empty geological reservoirs, effectively diverting it from the atmosphere and in this way avoiding additional emissions from oil and gas. CCS could in theory make it possible to keep burning fossil fuels without worrying much about their impact on the climate, and some see it as an essential component to keep to 2°C pathways. There nonetheless remains a healthy dose of skepticism regarding the feasibility of such plans, in large part due to the lack of implementation at scale. As Meadowcroft and Langhelle point out, we know little about its potential impact on human health and the environment, and it is at heart politically contentious, a reality that could jeopardize its rapid rollout.

These two approaches to low-carbon oil and gas are furthermore highly interdependent: Without a sufficiently high price for carbon, CCS would remain economically unattractive. In this way, firms are arguing that these three elements will allow us to continue consuming fossil fuels for the better part of the century, while mitigating the worst of climate change, and providing firms with the required investment signals to justify an expansion into low-carbon technologies. Though some view these proposals as “magical thinking,” recent proposals made by oil and gas firms on the integration of their business into a low-carbon world represent the very first attempts to do so and, as such, signal that they may well be taking the post-Paris reality seriously.

Significant work remains to be done across the sector: Of 1,131 commitments made by companies to multi-stakeholder initiatives in 2015, oil and gas accounted for a mere 3% (author’s own calculation). Firms have joined initiatives established by international organizations, such as the World Bank’s Zero Flaring by 2030 initiative, which as its name indicates seeks to decrease emissions from flaring in oil and gas operations—a major contributor to greenhouse gas emissions—and the UN’s Climate and Clean Air Coalition Oil and Gas Methane Partnership, which commits member firms to report on their methane emissions and reduction strategies. They have also entered into partnerships with other firms, in particular through three specific initiatives. The Oil and Gas Climate Initiative (OGCI) is the only for industry by industry group, which gathers 10 companies that produce about 20% of global oil and gas. The Energy Transitions Commission was catalyzed by Shell and gathers chief executive officers (CEOs) and civic leaders to advise governments on climate mitigation and adaptation. And finally, the World Business Council for Sustainable Development’s Low Carbon Technology Partnership initiative explores pathways for renewables-driven development. Tellingly, all have been established since 2014. Moreover, industry associations such as IPIECA have stepped up their efforts to address climate issues, for instance, making their case vocally at COP21 in Paris and now even more so at COP22 in Marrakesh.

Important as the Paris COP may have been in signaling the emergence of a low-carbon future, the wheels of international climate policy have not stayed still. Meeting upon meeting paved the way to the 22nd COP of the UNFCCC in Marrakesh for climate diplomats and assorted activists and lobbyists. Though lacking the drama of the Paris Agreement, it delivered a renewed focus on the role of nonstate actors, as its...
outcome document made clear: “We, collectively, call on all non-state actors to join us for immediate and ambitious action and mobilization.” COP22 has also reinforced the role of nonstate actors through the establishment of the Marrakech Partnership for Global Climate Action, which is intended to “provide a stable basis for governments and non-state actors to align their efforts in 2017–2020” and “make the [Marrakesh] Action Agenda more coherent, robust and organized, including through a structured plan of meetings to yield tangible results.”

However, it isn’t all smooth sailing for oil and gas firms in their growing engagement with the climate governance. In the spring of 2016, developing nations including Ecuador and Venezuela sought a conflict-of-interest policy aimed at limiting the presence of fossil fuel representatives at UNFCCC events, as a number of them have budgets far exceeding those of small states. The United States, the United Kingdom, and Australia shot down the proposal, claiming it was unclear and unfeasible. Then, in the run-up to COP22, the NGO Corporate Accountability International (CAI) gathered more than half a million signatures for a petition calling to exclude fossil fuel lobbyists from UN climate change negotiations.

In a move possibly signaling a change of position, the United States officially accepted the petition. CAI was basing itself on research it had carried out regarding the influence of fossil fuel-related organizations at the UNFCCC, which claims that “it would be naive to believe these business groups have a genuine interest in ambitious climate action and emissions reductions.” Another NGO, Influence Map, has worked to expose what it sees as oil and gas firms’ attempts to “manipulate lawmakers and public discourse on climate change.” It found that some of the largest firms and their business associations spent US$ 114 million in 2015 to limit climate action. A study of lobbying targeting the European Union (EU) found similar antiregulatory efforts.

Increasing Investment in Nonfossil Energy

For all the talk of low-carbon pathways and commitments to the Paris Agreement, one can legitimately question whether the rhetoric will eventually wind its way into action, especially given the industry’s past and more recent efforts to oppose climate action, as well as the emissions-intensive nature of its activities. As the journalistic adage “follow the money” suggests, taking a look at the financial decisions of oil and gas firms may provide additional clues as to whether or not the sector is firm in its resolve to address climate change and engage with its governance. This approach, however, warrants some caution. The conventional wisdom is that profit maximization, generally in the form of generating shareholder returns, constitutes the sole raison d’être of firms. It is important here to be aware of the Anglo–Saxon bias of this interpretation.

The implication is that economic rationales may not necessarily be the ultimate locus of truth and that policies and other types of actions may well carry a similar—or at times, more significant—weight. Most important here is the...
divide between international oil companies and national oil companies. While the former are, for the most part, bound to their shareholders and required to engage with stakeholders in order to earn and maintain their social license to operate, national oil companies have no such obligations as they rely on the authority of states to undertake their activities. As such, decisions are not exclusively economically driven.

The economic decisions being taken by oil and gas firms—and European or North American international oil companies in particular—might nevertheless indicate whether there is a degree of coherence between the purse and the pen. Should we find these firms intend to invest significantly in low-carbon forms of energy, this would reinforce the possibility that the oil and gas sector is making a genuine attempt to reimagine itself within a more sustainable future.

One of the key difficulties here is that no studies exist that provide an overview of investment from the industry in renewable or alternative forms of energy. The lack of data is a troubling gap in efforts to understand vital developments in the global energy transition. Nevertheless, a wealth of anecdotal evidence is available that oil and gas firms are accelerating their investments into low-carbon technologies: Table 1 gathers some of these examples. Though these represent a mere 6% of investments in renewable energy and a little over 2% of capital investments for oil and gas for 2015, almost all of these cases have been announced within the past 2 years and there is a substantial growth in their magnitude.

**Concluding Thoughts**

Whether the oil and gas industry is taking the Paris Agreement seriously is something that will remain up for debate for quite some time. However, what is clear is that traditional patterns of interaction between the sector and the climate regime have been broken. This is best expressed by firms joining or crafting climate governance initiatives.

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**Table 1. Recent Examples of Oil and Gas Firm Investment in Renewables**

| Example                                                              | Total (bn. €) | Comparison                        |
|---------------------------------------------------------------------|---------------|-----------------------------------|
| OGCI                                                                | 1.088         |                                   |
| Biofuels from majors                                                 | 8.786         | Max. 24€ billion globally          |
| Total acquisitions                                                   | 3.088         | 2016 capital expenditure:         |
| Total biorefinery                                                    | 0.288         | ca. 16–17€ billion                |
| Statoil New Ventures Fund                                            | 0.291         | 2016 capital expenditure:         |
| Statoil/E.ON/Arkona Baltic Offshore Wind Partnership                 | 1.293         | ca. 12€ billion                   |
| Shell New Energy Business                                            | 1.795         | 14€ billion in Q1 and Q2 2016     |
| Total                                                                | 16            | 28€ billion (2016)                |
The increasing engagement of the oil and gas sector in searching out a low-carbon role for itself is also becoming apparent in its putting forward new visions of itself, mostly based on the use of technologies (e.g., CCS), economic instruments (e.g., carbon pricing), and the optimization of existing processes (e.g., flaring reduction).

While it can be argued that the oil and gas sector is largely taking the post-Paris world seriously and is prepared to adapt to a new low-carbon reality, several questions remain. The first of these is: Does this actually help? Even if firms are now moving to decrease their climate footprint, it could be a case of too little, too late. We also find ourselves in an uncomfortable position, knowing neither how (un)realistic these visions for a low-carbon role are, nor how rapidly we will be able to wean ourselves of fossil fuels, while also providing sufficient and sustainable energy for a growing world population. A second problematic question is that of the role of states: Should they essentially step back and let other actors address climate change, or should they take a lead role in constraining the actions of these actors through new regulation and other measures?

Last, we need to ask ourselves about oil and gas firms’ past, present, and future responsibility toward climate change. A recent calculation finds that 63% of historical CO₂ and methane emissions from 1751 to 2010 are linked to just 90 entities, of which 56 are oil and gas firms. The majority of emissions from this group of 90, which Heede terms “carbon majors,” have occurred since 1986. Looking to the future, though the sector is making significant efforts to rein in its emissions (especially methane, which although shorter lived than CO₂ has a far more potent warming potential), much remains to be done if we are to mitigate the worst impacts of climate change. We do not have the luxury of delaying answers. And we cannot ignore the flip side of the coin. Historically, oil and gas have formed the bedrock of our productive industrialized societies. What is more, there are few indications that the industry will disappear in the near future—current projections indicate a sustained role for it until at least 2040. We face a conundrum—we can neither disregard the obvious social and environmental harm being caused by fossil fuels, nor deny our remarkably stable addiction to them.

What is sorely needed, then, are better and clearer roles and responsibilities that will rapidly limit emissions. How we tackle this may well be the real game changer that determines the future of the sector, its longer term role in a low-carbon world, and our ability to protect our societies and ecosystems. In this sense, whether or not the oil and gas sector is taking Paris seriously may not be quite the right question, as it implies a choice. The time for hesitation is out; now the sector faces a moral imperative to act.

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earth-policy.org/plan_b_updates/2000/alert6 (accessed 23 August 2016).

4. Butler, "Will Oil Peak Within 5 Years?", The Financial Times, 3 November 2016, http://blogs.ft.com/nick-butler/2016/11/03/will-oil-peak-oil-within-5-years/ (accessed 15 November 2016).

5. Wood Mackenzie, “Fossil Fuels to Low Carbon: The Makers’ Energy Transition”, Insight (November 2016), https://www.woodmac.com/reports/macroeconomics-risks-and-global-trends-fossil-fuels-to-low-carbon-the-majors-energy-transition-4345785 (accessed 2 December 2016).

6. A. Ward, "Oil Groups ‘Not Investing Enough’ in Green Energy", The Financial Times, 18 November 2016, https://www.ft.com/content/ba37196e-ad41-11e6-ba7d-7637f8e4fe24 (accessed 19 November 2016).

7. See note 13.

8. D. L. Levy and D. Egan, “A Neo-Gramscian Approach to Corporate Political Strategy: Conflict and Accommodation in the Climate Change Negotiations,” Journal of Management Studies 40, no. 4 (2003): 803–9; drawing on M. Mansley, “Long Term Financial Risks to the Carbon Fuel Industry from Climate Change” (London: The Delph Group, 1995).

9. Levy and Egan, note 18.

10. S. Pulver, “Organising Business: Industry NGOs in the Climate Debates” Greener Management International 39 (2002): 55–68.

11. I. H. Rowlands, “Beauty and the Beast? BP’s and Exxon’s Positions on Global Climate Change,” Environment and Planning A 18 (2000): 339–54.

12. Pulver, note 20.

13. D. L. Levy and A. Kolb, “Strategic Responses to Global Climate Change: Conflicting Pressures on Multi-national in the Oil Industry,” Business and Politics 4, no. 3 (2002): 275–300; and D. L. Levy and P. Newell, “Oceans Apart? Business Responses to Global Environmental Issues in Europe and the United States,” Environment, Science and Policy for Sustainable Development 42, no. 9 (2000): 8–20.

14. J. Birger Skjærneth and T. Skovdlin, “Climate Change and the Oil Industry: Common Problem, Different Strategies,” paper presented at the Sixth Session of the Conference of the Parties to the Climate Convention, The Hague, 23 November 2000, page 54.

15. J. Pinkse and D. Van den Buusse, “The Development and Commercialization of Solar PV Technology in the Oil Industry,” Energy Policy 40 (2012): 11–20, page 15.

16. N. Banerjee et al., “Exxon Believed Deep Dive Into Climate Research Would Protect Its Business” Inside Climate News, 17 September 2015, https://insideclimate.net/news/16092015/exxon-believed-deep-dive-into-climate-research-would-protect-its-business (accessed 14 August 2016); N. Banerjee et al., “Exxon’s Own Research Confirmed Fossil Fuels’ Role in Global Warming Decades Ago,” Inside Climate News, 16 September 2015, https://insideclimate.net/news/1590215/exxoms-own-research-confirmed-fossil-fuels-role-in-global-warming (accessed 14 August 2016); K. Jennings et al., “How Exxon Went From Leader to Skeptic on Climate Change Research,” Los Angeles Times, 23 October 2015, http://graphics.latimes.com/exxon-research (accessed 14 August 2016); S. Jerving et al., “What Exxon Knew About the Earth’s Melting Arctic,” Los Angeles Times, 9 October 2015, http://graphics.latimes.com/exxon-archived (accessed 14 August 2016); and A. Lieberman and S. Rust, “Big Oil Braced for Global Warming While It Fought Revisions,” Los Angeles Times, 31 December 2015, http://graphics.latimes.com/oil-operations/ (accessed 14 August 2016).

17. S. van den Hove et al., “The Oil Industry and Climate Change: Strategies and Ethical Dilemmas,” Climate Policy 2, no. 1 (2002): 3–18, page 3.

18. K. Mulvey, “Post-Election, ExxonMobil Goes After Scientists and Climate Advocates,” Union of Concerned Scientists, 16 November 2016, http://blog.ucusa.org/kathy-mulvey/post-election-exxonmobil-goes-after-scientists-and-climate-advocates_ga=1.113322119.1463931092.1479718684 (accessed 23 November 2016).

19. ExxonMobil, “Statement on Paris Climate Agreement Entering Into Force,” Press Release (4 November 2016).

20. Democracy 2.1 audience survey at New York Times Energy conference, https://twitter.com/D21World/status/79486882490093440 (accessed 19 November 2016).

21. Oil and gas accounts for over half of the total primary energy supply, and coal brings the total share of fossil fuels to over 80%. Wind, solar, and other renewables account for just over 1%. See OECD/International Energy Agency, Key Energy Facts (Paris, 2016).

22. A. Nelson, “Portugal Runs for Four Days Straight on Renewable Energy Alone,” The Guardian, 18 May 2016, https://www.theguardian.com/environment/2016/may/18/portugal-runs-for-four-days-straight-on-renewable-energy-alone (accessed 17 July 2016).

23. REN21, Renewables 2016 Global Status Report (Paris, 2016), http://www.ren21.net/wp-content/uploads/2016/06/GSR_2016_Full_Report.pdf (accessed 29 November 2016).

24. IRENA, Innovation Outlook Offshore Wind (Abu Dhabi, 2016), http://www.irena.org/DocumentDownloads/Publications/IRENA_Innovation_Outlook_Offshore_Wind_2016.pdf (accessed 29 November 2016).

25. McKinsey & Co., “Lower Oil Prices but More Renewables: What’s Going On?, June 2016, http://www.mckinsey.com/industries/oil-and-gas/our-insights/lower-oil-prices-but-more-renewables-whats-going-on (accessed 15 November 2016).

26. OECD/IEA, note 1.

27. Ibid.

28. Wood Mackenzie, note 15.

29. A. Doyle, “Rich Nations Say on Track for Promised $100 Billion Climate Finance,” Reuters, 18 October 2016, http://in.mobile.reuters.com/article/idINKBN12H5IW (accessed 14 November 2016).

30. CVF, Climate Vulnerable Forum Vision, Outcome Documentation: CVF2016/1 (Marrakesh, 18 November 2016).

31. C. Littlecott, “UK to Move Beyond Coal by 2025,” The Guardian, 9 November 2016, https://www.theguardian.com/energy/uk-to-move-beyond-coal-by-2025 (accessed 10 November 2016).

32. For a discussion of the “natural gas as bridge to a low-carbon future” argument, see M. Lazarus et al., Natural Gas: Guardrails for a Potential Climate Bridge, The New Climate Economy/Schomburg: Stockholm Environment Institute, May 2015.

33. OECD/IEA, note 1.

34. OECD, “Support to Fossil Fuels Remains High and the Time Is Ripe for Change,” Press Release (Paris, 21 September 2015).

35. IBA, Achieving Justice and Human Rights in an Era of Climate Disruption, International Bar Association: Climate Justice and Human Rights Task Force Report (July 2014); OHCHR, Understanding Human Rights and Climate Change, Submission of the Office of the High Commissioner for Human Rights to the 21st Conference of the Parties to the United Nations Framework Convention on Climate Change (26 November 2015); D. Bell, “Climate Change and Human Rights,” WIRLS Clim Change 4 (2013): 159–70.

36. Urgenda v. the Netherlands, The Hague District Court (24 June 2015).

37. Juliana, et al. v. United States of America, et al., Oregon District Court (10 November 2016). The oil and gas industry through trade associations such as the American Petroleum Institute constituted itself as co-defendants in this case.

38. Leghari v. Federation of Pakistan, 16 November 2016.

39. ExxonMobil, “Statement on Paris Climate Agreement Entering Into Force,” Press Release (4 November 2016).

40. OCHA, “ExxonMobil, State of the Earth’s Climate: Impacts of the Paris Agreement,” (October 2016), http://www.unenvironment.org/eti/earth-s-climate-2016.html (accessed 14 November 2016).
63. R. Katsky, “Shell Smashes Estimates as BG Acquisition Drives Up Output,” Bloomberg, 1 November 2016, https://www.bloomberg.com/news/articles/2016-11-01/shell-profit-rises-17-after-bg-purchase-counting-oil-s-slimp--accessed 2 November 2016; and R. Raper, “The Break-even Cost for Shell Oil,” Forbes, 29 February 2016, http://www.forbes.com/sites/rrapper/2016/02/29/the-break-even-cost-for-shale-oil/#2ad4efe792 (accessed 2 November 2016).

64. The IEA oil and gas still represents 45% of total energy investment; see OECD/International Energy Agency, World Energy Investment 2016 (Paris, 2016).

65. CERES, “Investors Raising Heat on Fossil Fuel Companies and Their Strategies for Emerging Low-Carbon Economy,” Press Release (7 March 2016).

66. B. Olson and N. Friedman, “Exxon, Chevron Shareholders Narrowly Reject Climate Change Stress Tests,” Wall Street Journal, 25 May 2016, http://www.wsj.com/articles/exxon-chevron-shareholders-narrowly-reject-climate-change-stress-tests-1464206192 (accessed 29 May 2016).

67. Shell, “Response to Shareholder Resolution on Climate Change,” Shell 2015 AGM, 19 May 2015; Statoil, Energy Perspectives 2016 (Stavanger, 2016), https://www.statol.com/no/NewsAndMedia/News/2016/Downloads/Energy%20Perspectives%202016.pdf (accessed 27 September 2016); and “Response to Shareholder Resolution on Climate Investment Strategy” (Paris, May 2016), http://www.total.com/sites/default/files/atoms/files/integrating_climate_into_our_strategy_eng.pdf (accessed 27 September 2016).

68. CERES, “Shareholder Resolutions,” https://www.ceres.org/investor-network/resolutions/1 (accessed 25 November 2016).

69. For an overview of current efforts, see World Bank, State and Trends of Carbon Pricing (Washington, DC: World Bank Group Climate Change, October 2016).

70. OECD/International Energy Agency, 20 Years of Carbon Capture and Storage (Paris, 2016).

71. J. R. Meadowcroft and O. Langhelle, “Correlation of Fossil Fuels Unused When Limiting Global Warming to 2°C,” Climatic Change, 116, no. 1–2 (2013): 225–241.

72. UNFCCC, “Marrakech Action Proclamation for our Climate and Sustainable Development,” November 2016, http://unfccc.int/files/meetings/marrakech-nov-2016/application/pdf/marrakech_action_proclamation.pdf (accessed 1 December 2016).

73. Francis Laurence Towhain, quoted in L. Mead, “Marrakech Partnership for Global Climate Action Launched as COP, CMP Hold Closing Plenaries,” IISD SDG Knowledge Hub, 18 November 2016, http://sdg.iisd.org/news/marrakech-partnership-for-global-climate-action-launches-cop-cmp-hold-closing-plenaries/ (accessed 1 December 2016).

74. M. Slezak, “Marrakech Climate Talks: Giving the Fossil Fuel Lobby a Seat at the Table,” The Guardian, 6 November 2016, https://www.theguardian.com/environment/2016/nov/07/marrakech-climate-talks-giving-the-fossil-fuel-lobby-a-seat-at-the-table (accessed 17 November 2016).

75. M. Slezak, “Marrakech Climate Talks: US Accepts Petition Calling for Fossil Fuel Lobbyists to Be Excluded,” The Guardian, 16 November 2016, https://www.theguardian.com/environment/2016/nov/07/marrakech-climate-talks-giving-the-fossil-fuel-lobby-a-seat-at-the-table (accessed 17 November 2016).

76. CAL Uncovered: Fossil Fuel Industry Has Back Door Access to U.N. Climate Talks (Corporate Accountability International, 1 November 2016), https://www.stopcorporateabuse.org/blog/uncovered-fossil-fuel-industry-has-back-door-access-un-climate-talks (accessed 15 November 2016).

77. A. Pashley, “Big Oil Spends $115m ‘Obstructing’ Climate Laws in 2015, NGO Says,” Climate Home, 7 April 2016, http://www.climatechangenews.com/2016/04/07/big-oil-spent-115m-obstructing-climate-laws-in-2015-ngo-says (accessed 17 November 2016).

78. Influence Map, “How Much Big Oil Spends on Obstructive Climate Lobbying” (April 2016), https://influence map.org/report/Climate-Lobbying-by-the-Fossil-Fuel-Sector (accessed 13 August 2016).

79. B. Fagan-Watson et al., Lobbying by Trade Associations on EU Climate Policy (London: Policy Studies Institute, March 2015).

80. J. Veldman et al., Corporate Governance for a Changing World: Final Report of a Global Roundtable Series (Brussels and London: Frank Bold and Cass Business School, 2016).

81. James A. Baker III Institute for Public Policy of Rice University, The Changing Role of National Oil Companies in International Markets, Baker Institute Policy Report, no. 35 (Houston, April 2007), http://www.bakerinstitute.org/center-for-energy-studies/national-oil-companies-international-energy-markets/ (accessed 28 November 2016); and P. Stevens, “National Oil Companies and International Oil Companies in the Middle East: Under the Shadow of Government and the Resource Nationalism Cycle,” Journal of World Energy Law & Business 1, no. 1 (2008): 5–30.

82. Author’s own calculation based on Frankfurt School–UNEP Centre, Global Trends in Renewable Energy Investment 2016 (Frankfurt am Main: 2016); and Rascouet, note 69.

83. R. Heede, “Tracing Anthropogenic Carbon Dioxide and Methane Emissions to Fossil Fuel and Cement Producers 1854–2010,” Climatic Change 122, no. 1–2 (2014): 229–41.

84. OECD/International Energy Agency, note 1.

85. OCGI, website, http://www.oilandgasclimate initiative.com (accessed 1 December 2016).

86. J. Ryan, “Big Oil Unexpectedly Backing Newest Non-Fossil Fuels,” Bloomberg, 10 May 2016, http://www.bloomberg.com/news/articles/2016-05-10/big-oil-unexpectedly-backs-newest-non-fossil-fuels (accessed 1 December 2016).

87. The OECD/International Energy Agency (see note 64) puts biofuels and solar thermal into a single category, which totals US$ 25 billion in 2015.

88. A. Rascouet et al., “Total to Buy Battery Maker Saft in Push to Expand Clean Energy,” Bloomberg, 9 May 2016, http://www.bloomberg.com/news/articles/2016-05-09/total-to-buy-french-battery-maker-saft-in-1-1-billion-deal (accessed 1 December 2016); and T. Macalister, “Shell Creates Green Energy Division to Invest in Wind Power,” The Guardian, 15 May 2016, https://www.theguardian.com/business/2016/may/15/shell-creates-green-energy-division-to-invest-in-wind-power (accessed 1 December 2016).

89. Total, “Strategy & Outlook” presentation given on 22 September 2016 in London, http://www.total.com/en/media/news/press-releases/total-strategy-outlook-presentation-0 (accessed 1 December 2016).

90. T. Macalister, “Green Really Is the New Black as Big Oil gets a Taste for Renewables,” The Guardian, 21 May 2016, https://www.theguardian.com/business/2016/may/21/oil-majors-investments-renewable-energy-solar-wind (accessed 1 December 2016).

91. Macalister, note 89.

92. Statoil, Q4 2015 results, http://www.statool.com/ en/NewsAndMedia/News/2016/Pages/q4-2015.aspx (accessed 29 November 2016).

93. Macalister, note 89.

94. J. Shankleman, “Offshore Wind Investments So Far This Year Already Beat 2015,” Bloomberg, 27 July 2016, https://www.bloomberg.com/news/articles/2016-07-27/offshore-wind-investments-so-far-this-year-already-beating-2015 (accessed 1 December 2016).

95. Macalister, note 87.

96. R. Katakey and R. Chilcote, “Shell Deepens Constructive Climate Lobbying” (accessed 2 November 2016).

97. 2016, http://www.bloomberg.com/news/articles/2016-05-07/big-oil-unexpectedly-backs-newest-non-fossil-fuels (accessed 1 December 2016).

98. The OECD/International Energy Agency (see note 64) puts biofuels and solar thermal into a single category, which totals US$ 25 billion in 2015.

99. A. Rascouet et al., “Total to Buy Battery Maker Saft in Push to Expand Clean Energy,” Bloomberg, 9 May 2016, http://www.bloomberg.com/news/articles/2016-05-09/total-to-buy-french-battery-maker-saft-in-1-1-billion-deal (accessed 1 December 2016); and T. Macalister, “Shell Creates Green Energy Division to Invest in Wind Power,” The Guardian, 15 May 2016, https://www.theguardian.com/business/2016/may/15/shell creates green-energy-division-to-invest-in-wind-power (accessed 1 December 2016).

100. Total, “Strategy & Outlook” presentation given on 22 September 2016 in London, http://www.total.com/en/media/news/press-releases/total-strategy-outlook-presentation-0 (accessed 1 December 2016).

101. T. Macalister, “Green Really Is the New Black as Big Oil gets a Taste for Renewables,” The Guardian, 21 May 2016, https://www.theguardian.com/business/2016/may/21/oil-majors-investments-renewable-energy-solar-wind (accessed 1 December 2016).

102. Macalister, note 89.

103. J. Shankleman, “Offshore Wind Investments So Far This Year Already Beat 2015,” Bloomberg, 27 July 2016, https://www.bloomberg.com/news/articles/2016-07-27/offshore-wind-investments-so-far-this-year-already-beating-2015 (accessed 1 December 2016).

104. The OECD/International Energy Agency (see note 64) puts biofuels and solar thermal into a single category, which totals US$ 25 billion in 2015.