CHAPTER ONE

Introduction: An Energy Revolution

This is a book about the geopolitical consequences of revolutionary changes in the supply, demand, and flow of energy. These changes are transforming the global economy, reordering the relationship between states, and leading to rapid changes in the nature of, and prospects for, international security. Furthermore, climate change and fossil fuel pollution are creating pressures for an unprecedented shift in the way we use energy, piling new problems on both national and international policy.

The world's leading powers are grappling to understand this revolution. The pressure is greatest in Asia, where China and India are finding that resource risk is the flip side of their growing economic muscle. Both their domestic politics and their foreign policies are shaped by energy insecurity, as each country—in very different ways—tries to respond to a serious economic and geopolitical threat.

In contrast, the United States has reemerged as a dominant energy player, much to its surprise and that of its rivals. It enjoys increased strategic latitude as a result, but remains unsure how it will play the cards that energy riches have placed in its hand. What kind of globalization, and global order, does it want to be part of? Will it use energy to reinforce that order or to undermine it? Does it have the domestic tools and political consensus to drive effective policy, and to play a global leadership role?

This debate is shaped by the fact that we live in an unusual geopolitical moment, when some of the world's top ten economies and military powers also happen to be developing countries, and many states are rising

economically. For these countries, still struggling with poverty even as they navigate global finance and international security, energy is the source of acute challenges and domestic political strain. This book is about those issues, too, as it is about the major knock-on effects that changes in the energy markets have had on that other most political commodity, food (and with it, land and water). The way the connections between energy, food, land, and water are playing out for resource-insecure citizens in the world's rising states is also central to this book.

This geopolitical context may be new, but energy and security have always been tightly bound together, with oil at the heart of U.S. diplomacy ever since it succeeded Great Britain as the dominant global power. Let's start with the role energy played in building the postwar order, the foundations of which were laid at a little-known event.

The President and the King

The meeting took place in secrecy, received little press or diplomatic coverage when it became known, and is neglected in accounts of how international order was forged in the wake of World War II. Yet it began a relationship that was central to geopolitics for seventy years.[1] And it shaped the fate of the Middle East, the global oil trade, and the projection of American power in the postwar world.

The date was February 14, 1945, just days after U.S. President Franklin D. Roosevelt's fateful talks in Yalta with Prime Minister Winston Churchill of Britain and Premier Josef Stalin of the Soviet Union. The site was the USS *Quincy,* afloat in the Great Bitter Lake, part of the Suez Canal. On board, FDR and a delegation of admirals and advisers awaited their guest. Earlier, the USS *Murphy* had steamed to Jeddah to fetch him. It was a sign of the limited contact between the United States and Saudi Arabia at the time that the U.S. Navy had no up-to-date chart of Jeddah's harbor, and little diplomatic presence in Saudi Arabia to secure one. Rather, the effort to coordinate the *Murphy's* arrival—symbolically, in light of what was to come—took place via the offices of the Arabian American Oil Company, better known as ARAMCO (and the Standard Oil Company of California before that).[2]

At Jeddah, the *Murphy* boarded its passengers—47 men, 7 sheep, and a large, ornate throne. Just before midday on the 14th, the *Murphy*

rendezvoused with the *Quincy,* and this throne was hoisted across. Its owner was King Abdulaziz Ibn Saud, the founder of Saudi Arabia. This was the first and only meeting between the president and the king, and the first time that the king had left his country. In Jeddah, rumors flew that the king had absconded or been kidnapped by the Americans. The ladies of his harem went into ritual mourning at the thought their protector would never return.

The meeting between the two leaders lasted for four hours. Discussion focused on the fate of Jewish refugees from Europe and whether the king would support the notion of a Jewish homeland in Palestine (he did not). The two leaders also discussed agriculture—President Roosevelt offered to assist King Abdulaziz with the technology that would be needed to irrigate Saudi Arabia and generate an agricultural industry (an offer the king politely spurned, telling the president he was too old to become a farmer). Those policy issues may not have been advanced, but international politics is sometimes about personality, not policy. Roosevelt charmed the Saudi leader. He also convinced the Saudi leader that the United States was not looking for a relationship of dominance in the region, but one of openness and mutual support. The question of oil was not discussed.

And yet energy questions loomed large. The United States had supplied much of the oil consumed by Allied forces during World War II, but the strain had been keenly felt, despite unprecedented cooperation between government and industry to keep supplies flowing. Roosevelt knew it was important for the United States to diversify its own supply and to resist British moves to shut American oil companies out of the Middle East. Churchill reacted with fury when he discovered the American president was meeting the Saudis behind his back and hastily organized his own summit to re-exert control. But this went poorly after he drank and smoked cigars in the king's presence, underlining the Saudi leader's perceptions of British insensitivity and arrogance. King Abdulaziz was convinced that his country's future lay in partnership with a country that embraced the future, not one that was tied to a colonial past.

Within weeks, the Saudis would begin preparations for work on a pipeline from the Kingdom's main oil fields in Dhahran toward the Mediterranean, allowing the flow of Saudi oil to the United States and Europe. American investors provided the capital and the expertise and, in the early years at least, took the bulk of the profits. Middle Eastern oil was to become

important to American industry, but, in the immediate term, it played a much greater role in rebuilding Europe's shattered economies. The United States, meanwhile, began construction of an airfield that it occupied until the 1960s and started training the Saudi air force, such as it was.

These events represented the start of a strategic and economic partnership: an American guarantee of security for Saudi Arabia in exchange for Saudi de facto guarantees about the free flow of oil. It was a relationship that put the United States—for good and bad—at the heart of the Arab world and pushed Britain to the sidelines. The Saudis received reassurance that they would be protected from neighbors who coveted Saudi oil riches (a commitment that bore its greatest fruit when Iraq invaded Kuwait decades later). The United States gained a bulwark against Soviet influence in the Middle East, as its military provided a security guarantee to the region whose costs would rise to an estimated $500 billion annually in the 2000s.[3] Saudi willingness to act as a swing producer of oil, and U.S. determination to secure Middle Eastern supplies, were fundamental to the architecture of global economics and international security in the late twentieth century and into the twenty-first. And they bound together an authoritarian and secretive kingdom and the country that led the free world.

Seventy years after that fateful meeting, the relationship between energy and international security endures, but it is partway through a transformation triggered by a revolution in the way energy is produced, consumed, and distributed. This is a book about why and how this change is happening, and what it means. Our focus is on the geopolitics of energy—that is, what the paramount importance of energy to modern societies means for patterns of global power. Our topic is security in a traditional sense: of strategic rivalry between the world's dominant military forces. But it is also about the ways international power is constrained now that all major powers are enmeshed in a complex economic globalization that requires an uninterrupted flow of resources to survive.

We have six central messages. The first is that Asia's appetite for resources comes with a cost. As energy flows to the region's emerging powers—China and India in particular—so does risk. We don't yet know whether we will see a full U.S. foreign policy pivot to Asia, but what we call a "risk pivot" is well under way. The Asian powers find themselves increasingly exposed to the geopolitical risks inherent in dependence on energy supplies that come

from parts of the world over which they have minimal control. Energy insecurity is far from the only driver of Chinese and Indian foreign policy, but it is a powerful one.

At the same time, U.S. energy security is improving as it relies to a growing extent on domestic and reliable regional supplies, and its exposure to risk is diminishing as a result. These observations are true only to a point, of course. The United States remains embedded in a global energy system that supports a $70+ trillion economy and will be damaged by any erosion of that system's ability to function smoothly. Some of its regional suppliers—like Venezuela—remain hostile or unstable. A revolution in U.S. energy supply has created a buffer, but not a firewall, against global risk, but the buffer is a sizable one and creates an important bulwark against American decline.

Our third message is that the risk pivot offers the United States new strategic choices. Some politicians and strategists are attracted by the sense that the United States can now play dirty: attempting to use energy as a strategic weapon to weaken China, marginalize Russia, and bolster its allies—as we saw, for example, with calls from some in Congress to use America's new natural gas abundance as a weapon against Russia, thereby weakening what Senator John McCain called "a gas station masquerading as a country."[4] Or, the United States could turn its back on the problem, standing back from the management of international energy flows in order to focus on the energy riches within its borders and those of its region. Under this scenario, it would let the chips fall where they may elsewhere in the world. Or it could choose a more complex, but potentially more rewarding path, by attempting to forge a more effective system of energy and climate governance in a way that promotes stable relations—or somewhat stable relations—with China and India.

However, decisions about these strategic choices must be infused with a greater sense of realism about the nature of global markets and the commercial dynamics of the energy industry. For example, the notion that the United States could rapidly wean Europe from Russian gas ignores basic market realities—a lack of gas export infrastructure in the United States and regional price differences that would pull gas toward Asian rather than European markets. Another example: many have asserted that because the United States will soon import little if any oil from the Persian Gulf, it is insulated from instability there. This assumption neglects a basic reality,

that oil is a globally traded commodity, and the United States is still exposed to the global price. True, the United States now faces less risk of supply interruption, but it still faces economic consequences if we see prolonged instability in the Gulf—again, a buffer, not a firewall.

Fourth, we look beyond the major powers to the broader impacts of the energy revolution on globalization, an economic system that now encompasses all but a handful of isolated or conflict-ridden states. Anyone seeking to understand the relationship between energy and globalization must confront several challenges: the "rising middle" of countries and people that face a squeeze for the resources needed to fuel the next stage of development; the fragile states that are weakened by having too many natural resources, or having not enough of them; and the way that the interaction between resources and globalization is complicating life for an already turbulent Arab world, whose political instability in turn threatens global energy markets.

Fifth, there is climate change, a challenge that carves its way through every aspect of the energy revolution, that places the resulting shift in geopolitical risk in a new light, and that is set to become a predominant risk to globalization. Here, we are not simply making the argument that changing climate is driving weather patterns that have security or economic impacts, even though there is strong evidence that that is true. Rather, we are claiming that climate change negotiations in their broadest sense—the attempt to establish rules about who gets to emit what and when—have become central to the relations between major powers. This is not always appreciated in the United States, where few treat climate as a strategic topic (and many politicians fail to regard it as a serious challenge at all). For a long time, Washington has been the only capital where climate politics is seen as the exclusive domain of climate specialists and environmental activists. From Beijing to Delhi to Brasília, America's allies and potential adversaries view climate as integral to one of the essential questions of our time: what will the international order of the future look like, and will the emerging powers choose to challenge or accept it? Washington is now beginning to catch up to this strategic dimension as well.

And so this book is also, sixth and finally, about the loose system of global energy and climate governance whose shape we can begin to discern. Its existence is new. Only a few years ago, there was a scattering of important organizations, but nothing like the institutions and norms and

rules that shape global economic interactions, or even those that bind international security together. That's changing fast. Now, a veritable flotilla of international and regional bodies, groups, and institutions, formal and informal, are attempting to manage different parts of the global energy system, linking state action to the private sector (or trying to), and responding to energy's links with climate, with food and water—and with poverty. What's more, international security institutions, from NATO to the Security Council, have become increasingly entangled in energy challenges.

Our concern is that energy and other resource challenges are currently *amplifying* political, economic and social tensions, whether among great powers or more broadly across the international system. The new flotilla of governance responses aims to manage these tensions, but it lacks clear goals and direction and is a long way from being able to function effectively. For the United States—still the actor with the greatest capacity to shape international affairs and to drive international governance arrangements—this creates a choice. It could choose to view resource tensions as an inevitable consequence of a changing balance of economic power and of a dynamic, but fragile, globalization. Or it could seize an opportunity for leadership—leadership not in the form of military adventurism but through the task of forging new arrangements for governance, seeking to buttress the existing international order by acting as an "admiral" that creates and directs a coherent governance system.

The Energy Revolution

These choices for the United States, and the resulting opportunity to exercise leadership, arise primarily from an energy revolution that has two parts.

On one side, we find sources of demand—that is, who needs energy, and who is importing it. Here, the newly thirsty countries matter most. Explosive growth in the emerging powers, especially China and increasingly India, has reshaped global energy markets and will continue to do so. This is about emerging Asia.

On the other side of the revolution, we find sources of supply—that is, energy producers, and their export markets. The supply revolution is partly about technology, government-sponsored research, deregulation, and market innovation. It is about shale gas and fracking, and "tight" and "deep" oil. This is about the United States, first and foremost. But it is also about

a far-flung search for new sources of supply on the world's fragile frontiers that is bringing new energy exporters into play. The same tonic—high prices—has hit the world's most powerful economy and some of its least sophisticated ones in very different ways.

The two sides of the energy revolution have played out at different speeds. The surge in demand came first. After the oil shock of the 1970s, energy prices entered a protracted period of decline, punctuated only by short-lived geopolitical shocks. But consumption was surging, increasing by nearly 50 percent between 1990 and 2008.[5] Growth in the West was modest, where per capita energy use has been declining, but the emerging economies were increasingly dominating the world's energy-intensive industries. Low prices gave them little incentive to use energy efficiently and sucked investment out of the commodity sector. Despite tight supply, price signals were slow to filter through to markets that were distorted by subsidies and political interference. The result was an inevitable erosion in the stability that spread from energy to other resource markets. In 2005, his final year as chairman of the Federal Reserve, Alan Greenspan was among those who had become preoccupied with the impending crisis. "How did we arrive at a state in which the balance of world energy supply and demand could be so fragile that weather, not to mention individual acts of sabotage or local insurrection, could have a significant impact on economic growth?" he complained in one of a series of speeches on the subject.[6]

In 2008, the shock that Greenspan had foreseen finally came, but its dimensions were greater than he or anyone else had anticipated, and it was part of a global crisis that had three dimensions: not just energy, but also finance and food. In July of that year, the spot price for oil hit $147 per barrel, while food prices soared to levels not seen since the 1970s. Some concluded that global oil production was close to peaking, but it soon became clear that the world had *more* oil than many thought—as long as investors had incentives to surmount technological obstacles or increase their appetite for political risk. Investment in the oil sector had already begun to pick up by 2003, a trend reinforced as underutilized capital sought a home in the wake of the Great Recession.[7] At the same time, the scale of the American shale gas boom was hitting home. As recently as 2006, the International Energy Agency (IEA) had told the United States to get ready to import more gas. Bad advice, as it turned out. Even industry had been caught by surprise: it knew that shale reserves existed, but its

analysis of their potential was outdated and conservative.[8] Not all the technologies were new, but upstart independent companies were spurred on by higher prices and looser regulation, and government-sponsored research and price guarantees helped encourage investment that broke down technological hurdles. As fracking entered the American lexicon, the country switched in just a few years from fretting about how to get gas *into* the country to how to get it *out*.[9]

The results of the 2008 global crisis are still playing out, but several key consequences or lessons can already be discerned.

The money that flooded into energy markets has demonstrated that the long reign of fossil fuels is far from over. Energy is not just any other ingredient in economic growth; it is the irreplaceable ingredient that makes that growth possible. Before the Industrial Revolution, most energy was consumed within the household for basic subsistence.[10] Fossil fuels provided an energy surplus for the first time, allowing an escape from Malthusian strictures, with first coal, then oil, and finally gas powering modern economies. Look forward a generation from today and fossil fuels are still projected to account for more than three quarters of energy use—and that is if governments implement current climate and energy efficiency commitments.[11] Nor will the link between energy and economic growth be broken during this period, although the world will likely continue to get better at squeezing more GDP from fewer raw materials. Absent a major push on climate policy, fossil fuel use likely will increase by almost a quarter by 2035, requiring a continued scramble to open up new resources and putting definitively out of reach a climate target limiting the rise in global temperatures to 2 degrees Celsius.[12]

But the golden age of oil *has* drawn to a close. While a period of high prices has discredited a simplistic "peak oil" thesis, the world's dominant liquid fuel is becoming increasingly expensive, complex, and risky to extract. Anything other than a brief return to the very low prices of the 1990s is likely only if the global economy enters a period of chronic underperformance—a disastrous prospect for both China and India. Over the next decade, prices will be shaped by the cost of extracting deepwater and unconventional oil on the one hand, and the level at which low-cost producers such as Saudi Arabia are prepared to sell to global markets on the other.

During this period, we likely will see the oil market continue to split into three broad segments. There will be *accessible oil,* important portions

of which will be controlled by national oil companies in countries that dominated the oil market in the late twentieth century, especially in the Persian Gulf. *Smart oil* will be found in countries such as the United States where the right mix of innovation, regulation, property rights, investment, and private sector leadership allows technologically complex projects to be tackled. *Risky oil,* meanwhile, will be tapped in contested waters, in very deep waters, and along the unstable frontiers of the developing world, as investors struggle to connect new producer states to global markets. It remains an open question whether the West's oil majors or Asia's state-owned prospectors will prove best able to navigate the political complexities that abound in these new markets. One thing is certain: the Asian actors have no choice but to try.

At the same time, the dash for gas seems likely to accelerate. The world's rising powers need electricity and they need it urgently, as they scale up power supplies to fast-growing urban centers filled with citizens who expect middle-class lifestyles as a minimum, not as something to which they aspire; these citizens of a new global middle class are emerging as a powerful political force. Both allies and competitors also are keen to benefit from the low natural gas prices and abundant supply that are an emerging source of comparative advantage for the American economy.[13]

Gas markets remain regional: at present, Europe pays twice what gas costs in the United States.[14] Asian prices are double Europe's. But the Asian price premium, combined with the pace at which its demand is growing, will see investment flood into domestic production on one hand, and transportation on the other (both long-distance pipelines and the expensive infrastructure needed to liquefy gas and ship it across the oceans). A very substantial increase in trade seems likely, as Russia redirects gas from Europe to Asia and as new exporters, including the United States, build terminals to export liquefied natural gas (LNG). Given the fragmented and opaque nature of gas markets and the length of investment cycles, boom-and-bust cycles may continue to be endemic in the sector. This process of building a global gas market is likely to be far from painless.

When prices rise or energy supplies get tight, countries will continue to default to coal. Coal is dirty, cutting life expectancies by as much as five years in the worst-affected parts of China.[15] Make electricity from it and carbon emissions are at least twice those from gas.[16] But the original fossil fuel remains cheaper and more plentiful than its competitors, accounting

for 90 percent of the world's remaining nonrenewable resources.[17] It is also the one fuel that Asia's giants can rely on at home. Despite its commitment to cut pollution, China continues to make massive investments in coal mining and coal-fired power generation, while India will soon overtake the United States as the world's second-largest coal consumer.[18] So while some analysts remain confident that pollution risks will topple "King Coal" from his throne, his demise is far from assured while countries fret that they will not be able to secure other forms of energy at an acceptable price. Indeed, some estimates suggest that by the late 2010s, coal will meet more of the increase in energy demand than either gas or oil.[19] And this holds not just for Asia: when the Fukushima disaster led Germany to shutter its nuclear power plants, coal imports to Europe from the United States surged (helped by a collapse in the price of emissions permits in its carbon market).

Continued reliance on fossil fuels will not go unchallenged, though. The Chinese government faces growing environmental pressures at home, with filthy air the issue most likely to bring its middle class out onto the street.[20] Similar pressures are growing in India, as its cities compete with China's for the dubious mantle of worst air quality.[21] But above all, climate change will rally opposition to the consequences of the energy revolution. The IEA's chief economist has warned that on current trends, "the door to 2 degrees will be closed" by 2017.[22] Warming is expected to be more intense over land than over oceans. In other words, it is going to get warmer faster than most people think. If anything, the energy revolution has pushed a low-carbon future further from reach. In the past, many analysts have operated under the unspoken assumption that fossil fuel scarcity will eventually force a transition to renewables. There are *some* signs of this happening, for example, as solar moves toward having an effective grid system in the sunniest parts of the world, and as rooftop solar makes important advances. But high prices have unleashed carbon-intensive investment as well. Climate change would be simpler to solve if we were really running out of fossil fuels.

In the United States, a switch from coal to gas has helped cut emissions—as has investment in renewables—while high prices have boosted energy efficiency and the Great Recession has lowered demand. As the U.S. economy recovers fully, the resilience of recent declines in emissions will be tested, but new regulations announced by the Obama administration for carbon emissions by energy plants will add to downward pressure.

Emissions are set to fall further, in other words, but *only* if policy is used to reinforce current trends. China, where emissions are growing fastest, may be making an unprecedented investment in wind and solar power and in nuclear, but it is also increasing its spending on coal and other fossil fuels. This dual track strategy—green *and* black growth—is replicated across other emerging economies and will be sustained for a decade or more, absent a major policy shift. Even if U.S. emissions fall, global emissions will continue to grow fast. But policymakers do not get to set the clock on climate change, so something has to give. Every year political tension will continue to ratchet up between a high-carbon growth trajectory on the one hand, and the necessity of a low-carbon future on the other. Given time, that tension will poison international relations—if governments let it.

Winner and Losers

In strategic terms, the country that will profit most from the energy revolution is the United States.

Take two simple measures. In 2014, China is overtaking the United States to become the world's largest importer of oil. And in the same year, the United States is passing Russia to become the world's largest producer of natural gas and is on track to overtake Saudi Arabia as the world's largest producer of oil—in short, to become the world's largest energy producer.[23] Far from being a declining power, when seen through the prism of its energy endowment, America is rising. Add in its other entrenched advantages and we can see why its global leverage remains high. The United States is an enduring, not a receding, power.[24]

The interplay between America's strategic choices and Asia's vulnerabilities is at the heart of chapter 2 of this book. At a time when it is gaining leverage from the energy revolution, the United States has the greatest opportunity to lead. Our aim is to provide a clearer understanding of each of the directions the United States could take. Many Americans now view the energy revolution not just with equanimity, but with a growing sense of euphoria. Some hope that increased domestic energy security will translate into a welcome isolation from global risks. Others wonder whether China's energy insecurity can, and should, be used to American advantage. We take these scenarios seriously but keep some hard facts in mind. There is only one global price for oil, an "inelastic" commodity where rapid substitution

is difficult and even small supply shocks can panic markets. High prices will be better for parts of America than they were before—as producer profits rise—but consumers will still suffer. And then there is the inescapably interdependent nature of the global economy. The success of the Chinese economy may be problematic for the United States at times, but its failure—whether sudden or drawn out—would be much more painful. The same can be said of India, a country that is already struggling to manage the economic and political risks associated with resource insecurity.

Geopolitical questions are at the forefront of our analysis. In the South China Sea, the United States already faces tensions associated with China's competition for resources and its need to secure maritime transit routes. There is a risk that China's obsession with its own insecurity will become the dominant driver in how it deals with its neighbors, and through them with the United States. This is a clear threat to international order. But there are more positive examples. In the Arctic, for example, we have seen strategic reassurance—and institutional innovation—used to manage tensions that many observers expected to run out of control. Similar restraint will be needed if the broader links between oil and security are to be effectively managed, and here the United States seems likely to remain the dominant actor. Resource risk may be pivoting eastward, but the responsibility for managing this risk will remain, in large part, with the West. American capacity to lead in regions that feed the global oil market dwarfs that of the emerging powers and will do so for the foreseeable future. Can the United States share the burden of this role through new types of joint response? Will it continue to bear a disproportionate share of the costs for duties from which its rivals derive a growing benefit? Or, will isolationist sentiments and budget pressures drive a deeper change—with uncertain but probably negative consequences for the Persian Gulf, and for global energy markets?

Chapter 3 looks at the same challenges through a wider lens. The world's leading powers are embedded in globalization, and that has broader consequences. What's more, if the concept of an American-led international order means anything, it rests on the notion that America wields its power not just for its own security, but in defense of broader values and of a global economic system that it created after World War II. Energy and climate dynamics are posing new challenges to that system. If we look at citizens, rather than national economies, we find massive gaps in prosperity between

the West and its rising competitors. India may be the world's sixth largest economy, but its GDP is just 3 percent that of the United States on a per capita basis. Even Chinese per capita GDP is one-tenth of America's.[25] For these countries—and even for somewhat richer Brazil, Indonesia, Mexico, and Turkey—development remains a central objective of national strategy, and the political price of a failure to develop is high. And it is not just that Brazil, Russia, India, and China (four of the BRICS) have been rising in the years between the fall of the Berlin Wall and the fall of Lehman Brothers. Fueled in part by China's expansive growth, virtually every developing country in the world grew, and grew rapidly.[26] As a result, the world now has a dynamic, but impatient and often insecure, global urban middle class. It will be quick to mobilize if rising energy or food prices threaten its aspirations, or if it finds that a lack of energy is strangling the economies on which it depends. In contemporary globalization, in other words, the geopolitics of energy and the geopolitics of development are intertwined. And there are proliferating connections between energy and food, water, and land, with unpredictable consequences for the lives of both the world's poor and its insecure middle class. It is not only morally bankrupt to ignore these threats, but short-sighted, too: we live in a world where localized political instability crosses borders with alacrity.

This brings us to fragile states, a topic until recently rarely found inside a book about the geopolitics of energy. That is going to change as the top powers come to terms with the reality that a critical share of the world's energy and other resources now comes from its fragile frontiers, including in Africa. There are serious international risks here, especially the potential disruption of supply. But again, the risks are not shared equally. Reflect on this fact: around a third of China's oil imports come from fragile states. (This figure takes into account imports from Angola, Cameroon, Chad, Iran, Iraq, Nigeria, Sudan, South Sudan, and Yemen.)[27] China and India—and even Brazil and Turkey—have entered a globalized scramble for diversified supply, even as the West pulls back. These emerging actors are accepting higher levels of political risk as a result. Their ability to manage this risk effectively remains unproven, however.

We also look at the networks among countries. Energy provides generous funds for the export of revolution and extremism. Fragile states, or the nonstate actors they shelter, threaten the pipelines and sea-lanes that connect suppliers to consumers. We also face growing problems from

globalized technology, which is allowing states grappling with energy insecurity to turn to civilian nuclear power, often without adequate capacity to manage or safeguard their nuclear materials.

In chapter 3, we also turn to the crisis that grips a region that has been ground zero for global energy markets over the past fifty years. The Middle East continues to be battered by the fallout from the U.S. intervention in Iraq, which is still teetering between recovery and a further bout of insecurity, and the parallel challenge of Iran, where negotiations with the West (with Russia and China sitting in) could lead to a resurgence of Iranian oil and gas—or a return to even deeper crisis. But the elephant in the room is the stability of Saudi Arabia, as the forces unleashed by the Arab Spring continue to reshape the countries that surround it. For all the changes in global energy production, Saudi Arabia remains the dominant source of cheap and accessible oil and has significant, but far from unlimited, latitude to influence global prices. Asia probably now has the most to lose if Saudi Arabia falters, or if the Middle East goes up in flames, but America would be very far from immune, and its allies would be as exposed to pain as its rivals. It would then undoubtedly bear much of the burden of what would be a costly and protracted attempt to cope with the global and regional fallout that would follow.

And then, in chapter 4, we turn to climate, which sits at the heart of a knot of strategic questions that surround energy, like the queen dominating a chessboard. The emerging powers have risen within a system of global finance and trade that has been at least tolerably stable, and their growth accelerated during the aftermath of the cold war, an uncharacteristically peaceful period. They also benefited from the tail end of an era of cheap energy that has underpinned all growth since the Industrial Revolution, and from the unregulated ability to emit carbon into the atmosphere. But, as we discuss in chapter 4, the carbon age will have to come to an end as humanity begins to push the climate to average temperatures not experienced since the beginning not just of industry but since the birth of agriculture around 12,000 years ago. We face a journey into the unknown. By the time the 2-degree threshold is crossed, the world is likely to be home to more than 10 billion people—compared to just over 7 billion today. The aspiration is for them to be enjoying a reasonable standard of living; the reality may be a mix of progress and reversals that are driven by resources, climate, and the interaction between the two.

Climate change illustrates a divide that is at the heart of this book. On the one hand, the necessity of dealing with it is the ultimate expression of humanity's common destiny, a challenge that can be solved only if all the top economies push in roughly the same direction. On the other, though, the challenge splits the emerging powers from the established ones. The rich West looks at the world's fastest-growing countries and sees a growth in emissions that makes a mockery of any effort it could make to cut its own carbon budgets. The rising powers look back and see countries with per capita emissions that are greater than those their citizens benefit from at home, and that is before they point out the massive historical head start that the West enjoyed in carbon-intensive industrialization. Binding these contrasting perspectives together into a coherent collective response is a massive challenge that will strain both domestic and international politics.

There are, however, signs that the United States, experiencing falling emissions for the first time ever, is beginning to move into a position to lead on the issues, despite opposition from an unconvinced and uncooperative Congress. This is the ultimate test of U.S. ability to offer strategic reassurance to its counterparts. Can it sustain a consensus at home that is sufficiently robust to allow it to pursue a consistent policy abroad? Can it translate this into a geopolitical bargain with rising powers that provides a credible pathway for them to grow? And would this potential alignment lead to governance arrangements that send market signals strong enough to redirect trillions of dollars of energy investment? It is these questions we turn to in chapter 5.

A New Pillar of Order?

America will make these choices in the aftermath of a global crisis that has left great uncertainty in its wake.

Uncertainty is the watchword for global energy markets, too. Whether it's the positive prospect of a successful nuclear deal with Iran or the negative prospect of deeper instability in Venezuela, the prospects of significant global suppliers are up in the air. Nor can we know how rapidly energy technologies pioneered in the United States will be taken up by other countries. The scale of demand for energy is equally hard to read. While China has managed to continue to grow quickly, there's mounting concern about the level of debt it is using to sustain that growth, and about the challenges of

the "middle-income transition" that it confronts. Chinese leaders are beginning to warn of a new normal of slower growth. Indian growth also has slowed, and it remains to be seen whether its political system can muster the will to push through the next set of reforms the Indian market needs, notwithstanding an impressive electoral victory in May 2014 by Narendra Modi. Meanwhile Western growth remains sluggish. The acute phase of the euro crisis is over, but the problems facing the euro zone should not be underestimated. A new generation of trade deals might unlock growth, but their prospects are uncertain and their impact will take years to be felt. Every one of these issues will help shape energy patterns, and be shaped by them.

From a geopolitical perspective, this uncertainty is important, as governments—and opposing political factions in capitals—come to different conclusions about what the future holds, thus increasing the scope for miscalculation, misunderstanding, and sudden swings in policy. Investors face similar constraints, with political risk and regulatory uncertainty complicating their ability to allocate their financial capital in a sector where infrastructure has very long life cycles. It underlines that, in the energy sector, it is *always* political. Global energy markets have become extraordinarily powerful, with fuel accounting for almost one in every five dollars traded in 2008.[28] The trend toward further globalization is strong. International markets for both gas and coal are likely to diversify and deepen, while oil will continue to be a critical part of global energy markets.

But these are some of the most politicized and distorted markets in the world. Economies cannot function without energy, so governments obsess over the possibility of any interruption to supplies—as Ukraine and other European states have learned to their cost. Nor can they change their energy mix overnight, leaving countries heavily dependent on key trading relationships. The world's major commodity producers, meanwhile, depend on natural resources for a substantial share of government revenue with some risking financial collapse if prices go too low. And energy is an essential ingredient of strategic power projection (for example, the U.S. Department of Defense is the world's largest single consumer of energy).[29]

As a result, energy is treated by many top powers not as a market good but as a strategic commodity. Even the United States, a country whose political identity is bound up in the defense of free markets, has legal restrictions against selling U.S. oil overseas. Any analysis of the energy revolution that fails to put the political dimensions of markets front and center

is doomed to fail. And so in chapter 5, we return to the question of the relationship between energy and power, but introduce the question of governance. We explore how the great powers can, if they choose to, strive to move from rivalry to restraint, through an approach to international order that recognizes the political constraints each faces. We do so cognizant of the fact that governments in each of the powers can't simply dictate policy; powerful market forces are a reality that can be shaped over time, but not simply waved away. Even China's nationally owned energy companies are facing growing market pressure. Still, we explore the frameworks needed to manage energy competition between the world's dominant economies and look into how a combination of state and private action can build greater resource resilience into globalization in ways that benefit the rising middle and fragile states, while improving the security of the world's evolving energy networks. We also set out an approach to climate change negotiations that is grounded in geopolitical realities, rather than on the assumption that yet another round of UN talks can transform those realities into something better. Our argument is that, if the United States is serious about turning energy and climate from a source of insecurity into one of stability, it needs to begin the work of building a new pillar of international governance—an effort it will have to sustain for a generation.

The postwar world order had oil at its core, and oil will continue to be vital to twenty-first century prosperity and security. But the future international system must be built on a much broader commitment to the irreplaceable role natural resources play in human well-being. It also needs to have a commitment to low carbon at its heart. We do not accept the argument that the United States has a declining stake in these discussions because others have become increasingly important consumers of the world's resources. Energy has once again put the leadership card in U.S. hands and offered it opportunities to influence these trends. It is time for a debate about how the United States should play it.