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The Fracking Debate The Risks, Benefits, and Uncertainties of the Shale Revolution Columbia University Press Over roughly the past decade, oil and gas production in the United States has surged dramatically—thanks largely to technological advances such as high-volume hydraulic fracturing, more commonly known as “fracking.” This rapid increase has generated widespread debate, with proponents touting economic and energy-security benefits and opponents highlighting the environmental and social risks of increased oil and gas production. Despite the heated debate, neither side has a monopoly on the facts. In this book, Daniel Raimi gives a balanced and accessible view of oil and gas development, clearly and thoroughly explaining the key issues surrounding the shale revolution. **The Fracking Debate** directly addresses the most common questions and concerns associated with fracking: What is fracking? Does fracking pollute the water supply? Will fracking make the United States energy independent? Does fracking cause earthquakes? How is fracking regulated? Is fracking good for the economy? Coupling a deep understanding of the scholarly research with lessons from his travels to every major U.S. oil- and gas-producing region, Raimi highlights stories of the people and communities affected by the shale revolution, for better and for worse. **The Fracking Debate** provides the evidence and context that have so frequently been missing from the national discussion of the future of oil and gas production, offering readers the tools to make sense of this critical issue. **Fracking 101** XinXii Fracking, or hydraulic fracturing to give its proper name, has become part of our lives recently, due to the massive exploitation of America’s shale oil and gas fields. Along the way it has stirred up controversy, with passionate opponents fighting against the oil companies. The fight has generated a lot of heat, but not much understanding. This guide, written by some-one who knows what he is talking about takes a detached, neutral view of the subject. Without pushing a view for or against, it provides the factual background you need to form an opinion of your own. **An Informed and Neutral Introduction** Like most people I have heard of fracking, but did I really understand what it was? To answer honestly, no. I knew it had something to do with mining and was perhaps destructive to the land. To me, it was just one of those words of the moment. This guide has given me a real sense and understanding of what fracking is. It allowed me, someone who has no experience in this field, to learn about the pros and cons of fracking, without having the good and bad of it forced down my throat. If you want an informed and neutral introduction into fracking, then this is the guide for you. ~ Debbie Prewer **The Fracking Debate Intergovernmental Politics of the Oil and Gas Renaissance, Second Edition** Routledge The disputes around fracking, and oil and gas policy, follow a long tradition of complicated intergovernmental relationships. Proponents argue that fracking supports new and well-paying jobs, revitalizes state and local economies, and that it can help replace reliance on other fossil fuels. Skeptics and opponents contend that oil and gas production via fracking contaminates air and water resources, causes earthquakes, and can ruin the character of many communities. Examining the intergovernmental politics of the first oil and natural gas boom of the 21st century, **The Fracking Debate, Second edition** offers a holistic understanding of the politics that characterize oil and natural gas operations, including why local governments are challenging their state’s preemptive authority, in order to initiate a larger conversation about improving intergovernmental relationships. Author Jonathan Fisk presents a novel argument about the ways in which local, state, regional, and national approaches to governance of shale gas development can work together to reduce conflict and forward the interests of the communities exposed to development, asking important questions such as: What state structures govern state-local relations? What state institutions impact and shape oil and gas production? What is the policymaking context in the state? What are the costs and benefits of hydraulic fracturing at the national, state, and local levels? How are risks and rewards distributed within states? What local policies have challenged the state, and why would local communities challenge the state? The result is a book that demonstrates that when stakeholders acknowledge their interdependencies and one another’s expertise, they create, design, and implement more responsive, strategic, and targeted public policies. **The Fracking Debate, Second edition** will be required reading for courses on oil and gas policy in the United States, environmental politics, and domestic energy politics, as well as a vital reference for practitioners and policymakers working in these fields. **The Shale Dilemma A Global Perspective on Fracking and Shale Development** University of Pittsburgh Press The US shale boom and efforts by other countries to exploit their shale resources could reshape energy and environmental landscapes across the world. But how might those landscapes change? Will countries with significant physical reserves try to exploit them? Will they protect or harm local communities and the global climate? Will the benefits be shared or retained by powerful interests? And how will these decisions be made? **The Shale Dilemma** brings together experts working at the forefront of shale gas issues on four continents to explain how countries reach their decisions on shale development. Using a common analytical framework, the authors identify both local factors and transnational patterns in the decision-making process. Eight case studies reveal the trade-offs each country makes as it decides whether to pursue, delay, or block development. Those outcomes in turn reflect the nature of a country’s political process and the power of interest groups on both sides of the issue. The contributors also ask whether the economic arguments made by the shale industry and its government supporters have overshadowed the concerns of local communities for information on the effects of shale operations, and for tax policies and regulations to ensure broad-based economic development and environmental protection. As an informative and even-handed account, **The Shale Dilemma** recommends practical steps to help countries reach better, more transparent, and more far-sighted decisions. **Crude Volatility The History and the Future of Boom-Bust Oil Prices** Columbia University Press As OPEC has loosened its grip over the past ten years, the oil market has been rocked by wild price swings, the likes of which haven't been seen for eight decades. Crafting an engrossing journey from the gushing Pennsylvania oil fields of the 1860s to today's fraught and fractious Middle East, **Crude Volatility** explains how past periods of stability and volatility in oil prices help us understand the new boom-bust era. Oil's notorious volatility has always been considered a scourge afflicting not only the oil industry but also the broader economy and geopolitical landscape; Robert McNally makes sense of how oil became so central to our world and why it is subject to such extreme price fluctuations. Tracing a history marked by conflict, intrigue, and extreme uncertainty, McNally shows how—even from the oil industry's first years—wild and harmful price volatility prompted industry leaders and officials to undertake extraordinary efforts to stabilize oil prices by controlling production. Herculean market interventions—first, by Rockefeller's Standard Oil, then, by U.S. state regulators in partnership with major international oil companies, and, finally, by OPEC—succeeded to varying degrees in taming the beast. McNally, a veteran oil market and policy expert, explains the consequences of the ebbing of OPEC's power, debunking myths and offering recommendations—including mistakes to avoid—as we confront the unwelcome return of boom and bust oil prices. **Hydrofracking What Everyone Needs to Know** Oxford University Press Examines the basics of hydraulic fracturing and introduces economic and political benefits of fracking and the possible dangers associated with it. **The Green and the Black The Complete Story of the Shale Revolution, the Fight over Fracking, and the Future of Energy** St. Martin's Press Gary Sernovitz leads a double life. A typical New York liberal, he is also an oilman - a fact his left-leaning friends let slide until the word "fracking" entered popular parlance. "How can you frack?" they suddenly demanded, aghast. But for Sernovitz, the real question is, "What happens if we don't?" Fracking has become a four-letter word to environmentalists. But most people don't know what it means. In his fast-paced, funny, and lively book, Sernovitz explains the reality of fracking: what it is, how it can be made safer, and how the oil business works. He also tells the bigger story. Fracking was just one part of a shale revolution that shocked our assumptions about fueling America's future. The revolution has transformed the world with consequences for the oil industry, investors, environmentalists, political leaders, and anyone who lives in areas shaped by the shales, uses fossil fuels, or cares about the climate - in short, everyone. Thanks to American engineers' oilfield innovations, the United States is leading the world in reducing carbon emissions, has sparked a potential manufacturing renaissance, and may soon eliminate its dependence on foreign energy. Once again the largest oil and gas producer in the world, America has altered its balance of power with Russia and the Middle East. Yet the shale revolution has also caused local disruptions and pollution. It has prolonged the world's use of fossil fuels. Is there any way to reconcile the costs with the benefits of fracking? To do so, we must start by understanding fracking and the shale revolution in their totality. **The Green and the Black** bridges the gap in America's energy education. With an insider's firsthand knowledge and unprecedented clarity, Sernovitz introduces readers to the shales - a history-upturning "Internet of oil" - tells the stories of the shale revolution's essential characters, and addresses all the central controversies. To capture the economic, political, and environmental prizes, we need to adopt a balanced, informed perspective. We need to take the green with the black. Where we go from there is up to us. **Struggling for Air Power Plants and the "War on Coal"** Oxford University Press Since the beginning of the Obama Administration, conservative politicians have railed against the President's "War on Coal." As evidence of this supposed siege, they point to a series of rules issued by the Environmental Protection Agency that aim to slash air pollution from the nation's power sector . Because coal produces far more pollution than any other major energy source, these rules are expected to further reduce its already shrinking share of the electricity market in favor of cleaner options like natural gas and solar power. But the EPA's policies are hardly the "unprecedented regulatory assault " that opponents make them out to be. Instead, they are merely the latest chapter in a multi-decade struggle to overcome a tragic flaw in our nation's most important environmental law. In 1970, Congress passed the Clean Air Act, which had the remarkably ambitious goal of eliminating essentially all air pollution that posed a threat to public health or welfare. But there was a problem: for some of the most common pollutants, Congress empowered the EPA to set emission limits only for newly constructed industrial facilities, most notably power plants. Existing plants, by contrast, would be largely exempt from direct federal regulation—a regulatory practice known as "grandfathering." What lawmakers didn't anticipate was that imposing costly requirements on new plants while giving existing ones a pass would simply encourage those old plants to stay in business much longer than originally planned. Since 1970, the core problems of U.S. environmental policy have flowed inexorably from the smokestacks of these coal-fired clunkers, which continue to pollute at far higher rates than their younger peers. In **Struggling for Air**, Richard L. Revesz and Jack Lienke chronicle the political compromises that gave rise to grandfathering, its deadly consequences, and the repeated attempts-by presidential administrations of both parties-to make things right. **Decision-making and Hydraulic Fracturing The Case of Local Policy Elites and the General Public in Arkansas and Oregon** This dissertation examines the ways in which cultural value predispositions impact decision-making associated with hydraulic fracturing (fracking) among both local policy elites and the general public in Arkansas and Oregon. First, I examine the mediating role of (dis)trust in information provided by three groups associated with the fracking debate - the energy industry, environmental groups, and the government - in shaping benefit-risk perceptions associated with fracking, and compare this process between a sample of local policy elites and the general public in Arkansas and Oregon. Findings indicate that perceptions of trustworthiness are shaped by cultural value predispositions which, in turn, shape perceptions of benefits and risks associated with fracking. Further, this process is similar, yet distinct, between local policy elites and the general public, with trust - particularly distrust - playing a larger role in shaping benefit-risk perceptions for local policy elites as compared to the general public. I then further examine the origins of trust in sources of information,

focusing on local policy elites. For this, I introduce the concept of perceived value congruence - the extent to which an individual believes their values are congruent with the values of those in their community - to examine how the perceived fit of values between an individual and those of their community impacts the relationship between cultural value predispositions and trust in two distinct contexts, Arkansas and Oregon. Broadly, findings indicate that both perceived value congruence and the context an individual is nested in affect the relationship between cultural value predispositions and trust in information provided by different sources. Finally, culturally nuanced narratives and knowledge (in)congruence - the degree to which an individual accurately assesses their knowledge levels of a given issue - are examined as moderators of the relationship between cultural value predispositions and fracking policy preferences. Results indicate that narratives impact the relationships between cultural value predispositions and policy preferences, but do not directly impact policy preferences. Further, cultural value predispositions impact fracking policy preferences differently for those overestimating their policy-relevant knowledge versus those underestimating their policy-relevant knowledge.

The Lost Spring U.S. Policy in the Middle East and Catastrophes to Avoid St. Martin's Press One of the greatest unanswered questions after the massive and violent changes that hit the Middle East in 2011, known to some as the "Arab Spring" and to others as the "Islamist Winter," is how the West failed to predict both cataclysmic seasons in world affairs and to meet their challenges. The so-called spring didn't last long, quickly unraveling into a collection of civil wars, civil unrest, and secessions. Phares argues that Washington is too hesitant to take action when necessary, that US policy is highly disoriented on counter terrorism efforts, and that the effects of these errors have already proven costly. In Benghazi, US foreign policy failed to see the explosions coming, didn't meet the challenges of political transformation where and with whom it should, and failed in isolating the Jihadi terrorists worldwide. Too many strategic errors were committed. In this fascinating new book, Phares, the only expert who accurately predicted the Arab Spring, will foretell a major demise in US and Western policies in the Middle East, unless a deep change in strategies and policies are made in Washington and around the world.

The Fracking Debate What is it really all about? BoD - Books on Demand The search for cheap, plentiful and reliable energy has become one of the holy grails of modern industrial society. Since the Western technologically-advanced nations own supplies began to deplete from the 1970s those economies became increasingly dependent on foreign oil, especially from volatile (and potentially hostile) areas in the Middle East, and gas from the world's major producer - Russia. The discovery of large deposits of shale oil and gas in North America and across other parts of the world has been a major game changer as it puts the control of energy back in the hands of the US and its European partners. These countries had been trying to develop alternative, renewable resources for many years without any real major breakthrough and these sources still only offer a very small percentage of the total (and growing) energy requirements. Shale gas and oil offers abundant supply within the geographical areas of US and Europe and self-sufficiency for, potentially, another century. But the method of extracting these resources - fracking - has become an area of major controversy, sparking one of the great political and economic debates of modern times. Shale gas and oil promises massive benefits to the US and other economies; but are the health and environmental risks just too great?

Fracking America's Alternative Energy Revolution John H Graves Energy opportunities and challenges Risks, Rewards and Regulation of Unconventional Gas A Global Perspective Cambridge University Press This book explains the drivers and implications of unconventional gas at regional, national and global scales with case studies and in-depth analyses. Make, Think, Imagine Simon and Schuster Today's unprecedented pace of change leaves many people wondering what new technologies are doing to our lives. Has social media robbed us of our privacy and fed us with false information? Are the decisions about our health, security and finances made by computer programs inexplicable and biased? Will these algorithms become so complex that we can no longer control them? Are robots going to take our jobs? Can we provide housing for our ever-growing urban populations? And has our demand for energy driven the Earth's climate to the edge of catastrophe? John Browne argues that we need not and must not put the brakes on technological advance. Civilization is founded on engineering innovation; all progress stems from the human urge to make things and to shape the world around us, resulting in greater freedom, health and wealth for all. Drawing on history, his own experiences and conversations with many of today's great innovators, he uncovers the basis for all progress and its consequences, both good and bad. He argues compellingly that the same spark that triggers each innovation can be used to counter its negative consequences. Make, Think, Imagine provides an eloquent blueprint for how we can keep moving towards a brighter future.

Environmental and Health Issues in Unconventional Oil and Gas Development Elsevier Environmental and Health Issues in Unconventional Oil and Gas Development offers a unique and bipartisan perspective relevant to a variety of stakeholders on the use of directional drilling and hydraulic fracturing in the oil and gas industry in North America and worldwide. Including such important considerations as air exposure, water exposure, worker safety, ecological health, and seismic impacts, the book presents the issues as written from a broad range of experts in order to present a clear, non-partisan picture of these potential impacts of the process. Utilizing expertise from a range of contributors in academia, non-governmental organizations, and the oil and gas industry, Environmental and Health Issues in Unconventional Oil and Gas Development is an essential resource for academics and professionals in the oil and gas, environmental, and health and safety industries as well as for policy makers. Offers a multi-disciplinary examination of the environmental and health issues related to unconventional oil and shale gas development Serves as a collective resource for academics and professionals in the oil and gas, environmental, health, and safety industries, as well as environmental scientists and policymakers Features a diverse and expert group of chapter authors from academia, non-governmental organizations, and the oil and gas industry

Comeback America's New Economic Boom PublicAffairs Charles R. Morris's The Trillion Dollar Meltdown (2008) was the first book to warn of the impending financial crash in all its horrific scale and speed. Now, with Comeback, Morris reveals that the United States is on the brink of a strong recovery that could last for twenty years or more. The great economic boom times in American history have come because of fortuitous discoveries. Natural resources (coal first, then oil) fueled vast economic and industrial expansions, which in turn helped create and supply new markets. The last genuine economic game changer was the technology boom of the 1990s, which gave the U.S. a global competitive advantage for a while based on electronics and silicon. One of the first writers and analysts in the U.S. to predict that the tech boom would lead to a period of sustained economic growth was Charles Morris. In defiance of the recessionary times (in 1990), he saw the coming boom. Now, in 2013, he sees the threshold of another. This time the gift is natural gas. The amount and distribution of gas in American shale is so vast that it has the potential to transform the manufacturing economy, creating jobs across the country, and requiring a new infrastructure that will benefit the nation as a whole. Because of fracking, jobs that once would have been outsourced abroad will return home, America can become a net exporter of energy, and cheap energy will provide the opportunity for innovation and competition. In light of this new opportunity, and other complementary developments Morris explores in this book, the U.S. ought to be approaching the future with a robust self-confidence it has not experienced in a while. But we could fumble it away. The gold-rush style of shale boom companies does not make them good neighbors. A counter-reaction could put their industry, and the new era of national prosperity, at risk. We also have a political system that has the capacity to spoil the benefits of this huge boon. If the wealth locked in the continental shelf is not shared for the general economic good, but is instead exploited in short-term profiteering, then many of the opportunities that exist will be choked off by a few very rich corporations. Managing the great bonus of the vast store of cheap energy is going to become a defining political challenge in the years ahead. At the threshold of a thrilling opportunity, Morris is a brilliantly perceptive guide.

Living on the Grid The Fundamentals of the North American Electric Grids in Simple Language iUniverse Theres probably a good chance that youve turned on your television, computer, or an appliance without giving much thought about the electric grid. But when theres a power outage, its a different story. Suddenly, youre asking yourself questions such as: What is the electric grid and who owns it? Who controls the grid and how is it controlled? What causes a grid blackout? What is the future of the grid? William L. Thompson, who retired from Dominion Virginia Power after thirty-eight years in the electric business, answers those questions and many more in this book for anyone curious about the electric grid and how it works. In plain, simple language, he reveals what goes on behind the scenes at grid control centers across the country. He also explains how electricity is generated through renewable energy sources such as wind and solar. He also examines the causes behind the largest blackout in United States history and how global warming and technological developments could permanently change Living on the Grid. Unsettled What Climate Science Tells Us, What It Doesn't, and Why It Matters BenBella Books "Unsettled is a remarkable book—probably the best book on climate change for the intelligent layperson—that achieves the feat of conveying complex information clearly and in depth." —Claremont Review of Books "Surging sea levels are inundating the coasts." "Hurricanes and tornadoes are becoming fiercer and more frequent." "Climate change will be an economic disaster." You've heard all this presented as fact. But according to science, all of these statements are profoundly misleading. When it comes to climate change, the media, politicians, and other prominent voices have declared that "the science is settled." In reality, the long game of telephone from research to reports to the popular media is corrupted by misunderstanding and misinformation. Core questions—about the way the climate is responding to our influence, and what the impacts will be—remain largely unanswered. The climate is changing, but the why and how aren't as clear as you've probably been led to believe. Now, one of America's most distinguished scientists is clearing away the fog to explain what science really says (and doesn't say) about our changing climate. In Unsettled: What Climate Science Tells Us, What It Doesn't, and Why It Matters, Steven Koonin draws upon his decades of experience—including as a top science advisor to the Obama administration—to provide up-to-date insights and expert perspective free from political agendas. Fascinating, clear-headed, and full of surprises, this book gives readers the tools to both understand the climate issue and be savvier consumers of science media in general. Koonin takes readers behind the headlines to the more nuanced science itself, showing us where it comes from and guiding us through the implications of the evidence. He dispels popular myths and unveils little-known truths: despite a dramatic rise in greenhouse gas emissions, global temperatures actually decreased from 1940 to 1970. What's more, the models we use to predict the future aren't able to accurately describe the climate of the past, suggesting they are deeply flawed. Koonin also tackles society's response to a changing climate, using data-driven analysis to explain why many proposed "solutions" would be ineffective, and discussing how alternatives like adaptation and, if necessary, geoengineering will ensure humanity continues to prosper. Unsettled is a reality check buoyed by hope, offering the truth about climate science that you aren't getting elsewhere—what we know, what we don't, and what it all means for our future.

Sustainability John Wiley & Sons The pursuit of sustainability has generated lifestyle changes for individuals across the globe; innovations within the arts and sciences, business, design, engineering, and agriculture; historic policies and laws at municipal and state levels; and crucial international protocols and agreements. Yet the meaning of sustainability remains unsettled, and the term frequently serves as green veneer for business as usual rather than a driver of fundamental change. The second edition of this popular and lively book explores the concept and practice of sustainability through a broad range of current issues and debates. Fully revised and updated, the book integrates expanded global breadth with increased attention to the importance of local relationships and responsibilities, while illustrating that sustainability demands creativity as well as conservation. New Inquiry and Exploration sections with links to web-based resources are also included to help students probe and deepen central debates and topics. Sustainability presents a hopeful account of crucial opportunities while directly confronting the hurdles, disputes and challenges that lie ahead. It will be a valuable resource for students and general readers keen to grapple with one of the most pressing issues of our times. Teaching in the Outdoors Booktango Teaching in the Outdoors provides a practical guide for getting students outdoors and helpful suggestions for maximizing the outdoor learning experience. It features the best articles on outdoor education ever published in Green Teacher magazine, including tips for leading fantastic field trips and the proper technique for class hikes.

Is Fracking the Next Financial Crisis? A Development Lens for Understanding Systemic Risk and Governance Natural gas sits in deposits across vast regions of the United States, and hydraulic fracturing ("fracking") is the current method used to extract it. Fracking for natural gas has been billed as the next economic boon to poor communities and the key to mitigating the negative effects of climate change. But fracking also involves risks: Risks to our environment, to our communities, and to our markets. To date, the debate about fracking -- and efforts to address concerns about the risks of fracking -- has largely been a debate about who should regulate, the federal government, the states, or some combination of the two. Framing the current fracking debate as a federalism question is a mistake. This Article argues that the narrow frame of the current fracking debate misses important features of the problem. It argues that fracking is best understood within the much broader context of development in the United States, and more specifically as an example of an approach to development called "hybridity." The Article maps hybridity as comprised of the following three key features: (1) private actors engaged in difficult-to-regulate activities, (2) involvement of public goods, and (3) creation of systemic risk. Drawing together the financial crisis of 2008, the BP oil

spill of 2010, and fracking shows that all three share the common features of hybridity, and give rise to a similar suite of concerns. Regulation alone is not sufficient to address these concerns. Instead, the Article proposes several ways in which the hybridity of fracking might be disrupted, thereby easing the overall risks of fracking while realizing its potential benefits. Induced Seismicity Potential in Energy Technologies National Academies Press In the past several years, some energy technologies that inject or extract fluid from the Earth, such as oil and gas development and geothermal energy development, have been found or suspected to cause seismic events, drawing heightened public attention. Although only a very small fraction of injection and extraction activities among the hundreds of thousands of energy development sites in the United States have induced seismicity at levels noticeable to the public, understanding the potential for inducing felt seismic events and for limiting their occurrence and impacts is desirable for state and federal agencies, industry, and the public at large. To better understand, limit, and respond to induced seismic events, work is needed to build robust prediction models, to assess potential hazards, and to help relevant agencies coordinate to address them. Induced Seismicity Potential in Energy Technologies identifies gaps in knowledge and research needed to advance the understanding of induced seismicity; identify gaps in induced seismic hazard assessment methodologies and the research to close those gaps; and assess options for steps toward best practices with regard to energy development and induced seismicity potential. Public Engagement on Genetically Modified Organisms When Science and Citizens Connect: Workshop Summary National Academies Press The National Research Council's Roundtable on Public Interfaces of the Life Sciences held a 2-day workshop on January 15-16, 2015, in Washington, DC to explore the public interfaces between scientists and citizens in the context of genetically engineered (GE) organisms. The workshop presentations and discussions dealt with perspectives on scientific engagement in a world where science is interpreted through a variety of lenses, including cultural values and political dispositions, and with strategies based on evidence in social science to improve public conversation about controversial topics in science. The workshop focused on public perceptions and debates about genetically engineered plants and animals, commonly known as genetically modified organisms (GMOs), because the development and application of GMOs are heavily debated among some stakeholders, including scientists. For some applications of GMOs, the societal debate is so contentious that it can be difficult for members of the public, including policy-makers, to make decisions. Thus, although the workshop focused on issues related to public interfaces with the life science that apply to many science policy debates, the discussions are particularly relevant for anyone involved with the GMO debate. Public Engagement on Genetically Modified Organisms: When Science and Citizens Connect summarizes the presentations and discussion of the workshop. Up to Heaven and Down to Hell Fracking, Freedom, and Community in an American Town Princeton University Press A riveting portrait of a rural Pennsylvania town at the center of the fracking controversy Shale gas extraction—commonly known as fracking—is often portrayed as an energy revolution that will transform the American economy and geopolitics. But in greater Williamsport, Pennsylvania, fracking is personal. Up to Heaven and Down to Hell is a vivid and sometimes heartbreaking account of what happens when one of the most momentous decisions about the well-being of our communities and our planet—whether or not to extract shale gas and oil from the very land beneath our feet—is largely a private choice that millions of ordinary people make without the public's consent. The United States is the only country in the world where property rights commonly extend "up to heaven and down to hell," which means that landowners have the exclusive right to lease their subsurface mineral estates to petroleum companies. Colin Jerolmack spent eight months living with rural communities outside of Williamsport as they confronted the tension between property rights and the commonwealth. In this deeply intimate book, he reveals how the decision to lease brings financial rewards but can also cause irreparable harm to neighbors, to communal resources like air and water, and even to oneself. Up to Heaven and Down to Hell casts America's ideas about freedom and property rights in a troubling new light, revealing how your personal choices can undermine your neighbors' liberty, and how the exercise of individual rights can bring unintended environmental consequences for us all. The New Map Energy, Climate, and the Clash of Nations Penguin A Wall Street Journal bestseller and a USA Today Best Book of 2020 Named Energy Writer of the Year for The New Map by the American Energy Society "A master class on how the world works." —NPR Pulitzer Prize-winning author and global energy expert, Daniel Yergin offers a revelatory new account of how energy revolutions, climate battles, and geopolitics are mapping our future The world is being shaken by the collision of energy, climate change, and the clashing power of nations in a time of global crisis. Out of this tumult is emerging a new map of energy and geopolitics. The "shale revolution" in oil and gas has transformed the American economy, ending the "era of shortage" but introducing a turbulent new era. Almost overnight, the United States has become the world's number one energy powerhouse. Yet concern about energy's role in climate change is challenging the global economy and way of life, accelerating a second energy revolution in the search for a low-carbon future. All of this has been made starker and more urgent by the coronavirus pandemic and the economic dark age that it has wrought. World politics is being upended, as a new cold war develops between the United States and China, and the rivalry grows more dangerous with Russia, which is pivoting east toward Beijing. Vladimir Putin and China's Xi Jinping are converging both on energy and on challenging American leadership, as China projects its power and influence in all directions. The South China Sea, claimed by China and the world's most critical trade route, could become the arena where the United States and China directly collide. The map of the Middle East, which was laid down after World War I, is being challenged by jihadists, revolutionary Iran, ethnic and religious clashes, and restive populations. But the region has also been shocked by the two recent oil price collapses--and by the very question of oil's future in the rest of this century. A master storyteller and global energy expert, Daniel Yergin takes the reader on an utterly riveting and timely journey across the world's new map. He illuminates the great energy and geopolitical questions in an era of rising political turbulence and points to the profound challenges that lie ahead. Aquifers Matrix and Fluids BoD - Books on Demand The rock matrix and the fluids contained therein define the aquifer as a whole, the custodian of continuity of life on this planet Earth. Its sustainable development, equitable utilization, quality maintenance, and balanced discharge and recharge are the essential elements to ensure that the next generation receives the resource baton passed on by the current generation. Spanning across the political and regional frontiers, transboundary aquifers have the potential to provide a unifying platform to the participatory nations. The common good of water can be enhanced by synergized research, data and knowledge sharing, joint development ventures, and hazard mitigation. Covering the multifarious facets of aquifers, this book will form an essential and interesting reading for all stakeholders?researchers, engineers, academia, intelligentsia, and the common consumer. The Frackers The Outrageous Inside Story of the New Billionaire Wildcatters Penguin "A lively, exciting, and definitely thought-provoking book." —Booklist Things looked grim for American energy in 2006, but a handful of wildcatters were determined to tap massive deposits of oil and gas that giants like Exxon and Chevron had ignored. They risked everything on a new process called fracking. Within a few years, they solved America's dependence on imported energy, triggered a global environmental controversy, and made and lost astonishing fortunes. No one understands the frackers—their ambitions, personalities, and foibles—better than Wall Street Journal reporter Gregory Zuckerman. His exclusive access drives this dramatic narrative, which stretches from North Dakota to Texas to Wall Street. Confronting the Climate Challenge U.S. Policy Options Columbia University Press Without significant reductions of greenhouse gas emissions, climate change will cause substantial damage to the environment and the economy. The scope of the threat demands a close look at the policies capable of reducing the harm. Confronting the Climate Challenge presents a unique framework for evaluating the impacts of a range of U.S. climate-policy options, both for the economy overall and for particular household groups, industries, and regions. Lawrence Goulder and Marc Hafstead focus on four alternative approaches for reducing carbon dioxide emissions: a revenue-neutral carbon tax, a cap-and-trade program, a clean energy standard, and an increase in the federal gasoline tax. They demonstrate that these policies—if designed correctly—not only can achieve emissions reductions at low cost but also can avoid placing undesirable burdens on low-income household groups or especially vulnerable industries. Goulder and Hafstead apply a multiperiod, economy-wide general equilibrium model that is distinct in its attention to investment dynamics and to interactions between climate policy and the tax system. Exploiting the unique features of the model, they contrast the shorter- and longer-term policy impacts and focus on alternative ways of feeding back—or "recycling"—policy-generated revenues to the private sector. Their work shows how careful policy design, including the judicious use of policy-generated revenues, can achieve desired reductions in carbon dioxide emissions at low cost, avoid uneven impacts across household income groups, and prevent losses of profit in the most vulnerable U.S. industries. The urgency of the climate problem demands comprehensive action, and Confronting the Climate Challenge offers important insights that can help elevate policy discussions and spur needed efforts on the climate front. Global Implications of Lower Oil Prices International Monetary Fund The sharp drop in oil prices is one of the most important global economic developments over the past year. The SDN finds that (i) supply factors have played a somewhat larger role than demand factors in driving the oil price drop, (ii) a substantial part of the price decline is expected to persist into the medium term, although there is large uncertainty, (iii) lower oil prices will support global growth, (iv) the sharp oil price drop could still trigger financial strains, and (v) policy responses should depend on the terms-of-trade impact, fiscal and external vulnerabilities, and domestic cyclical position. Oil and Gas Wells BoD - Books on Demand The aim of this book is to present some advances in different aspects of oil and gas technology. Two chapters are dedicated to the scientific research in the domain of reservoir engineering and characterization. Four chapters are dedicated to the field of well drilling and performance and another chapter is related to oil and transport. Global Trends 2030 Alternative Worlds Createspace Independent Publishing Platform This publication covers global megatrends for the next 20 years and how they will affect the United States. This is the fifth installment in the National Intelligence Council's series aimed at providing a framework for thinking about possible futures and their implications. The report is intended to stimulate strategic thinking about the rapid and vast geopolitical changes characterizing the world today and possible global trajectories during the next 15-20 years by identifying critical trends and potential discontinuities. The authors distinguish between megatrends, those factors that will likely occur under any scenario, and game-changers, critical variables whose trajectories are far less certain. NIC 2012-001. Several innovations are included in Global Trends 2030, including: a review of the four previous Global Trends reports, input from academic and other experts around the world, coverage of disruptive technologies, and a chapter on the potential trajectories for the US role in the international system and the possible the impact on future international relations. Table of Contents: Introduction 1 Megatrends 6 Individual Empowerment 8 Poverty Reduction 8 An Expanding Global Middle Class 8 Education and the Gender Gap 10 Role of Communications Technologies 11 Improving Health 11 A MORE CONFLICTED IDEOLOGICAL LANDSCAPE 12 Diffusion of Power 15 THE RISE AND FALL OF COUNTRIES: NOT THE SAME OLD STORY 17 THE LIMITS OF HARD POWER IN THE WORLD OF 2030 18 Demographic Patterns 20 Widespread Aging 20 Shrinking Number of Youthful Countries 22 A New Age of Migration 23 The World as Urban 26 Growing Food, Water, and Energy Nexus 30 Food, Water, and Climate 30 A Brighter Energy Outlook 34 Game-Changers 38 The Crisis-Prone Global Economy 40 The Plight of the West 40 Crunch Time Too for the Emerging Powers 43 A Multipolar Global Economy: Inherently More Fragile? 46 The Governance Gap 48 Governance Starts at Home: Risks and Opportunities 48 INCREASED FOCUS ON EQUALITY AND OPENNESS 53 NEW GOVERNMENTAL FORMS 54 A New Regional Order? 55 Global Multilateral Cooperation 55 The Potential for Increased Conflict 59 INTRASTATE CONFLICT: CONTINUED DECLINE 59 Interstate Conflict: Chances Rising 61 Wider Scope of Regional Instability 70 The Middle East: At a Tipping Point 70 South Asia: Shocks on the Horizon 75 East Asia: Multiple Strategic Futures 76 Europe: Transforming Itself 78 Sub-Saharan Africa: Turning a Corner by 2030? 79 Latin America: More Prosperous but Inherently Fragile 81 The Impact of New Technologies 83 Information Technologies 83 AUTOMATION AND MANUFACTURING TECHNOLOGIES 87 Resource Technologies 90 Health Technologies 95 The Role of the United States 98 Steady US Role 98 Multiple Potential Scenarios for the United States' Global Role 101 Alternative Worlds 107 Stalled Engines 110 FUSION 116 Gini-out-of-the-Bottle 122 Nonstate World 128 Acknowledgements 134 GT2030 Blog References 137 Audience: Appropriate for anyone, from businesses to banks, government agencies to start-ups, the technology sector to the teaching sector, and more. This publication helps anticipate where the world will be: socially, politically, technologically, and culturally over the next few decades. Keywords: Global Trends 2030 Alternative Worlds, global trends 2030, Global Trends series, National Intelligence Council, global trajectories, global megatrends, geopolitics, geopolitical changes Planetary Economics Energy, Climate Change and the Three Domains of Sustainable Development How well do our assumptions about the global challenges of energy, environment and economic development fit the facts? Energy prices have varied hugely between countries and over time, yet the share of national income spent on energy has remained surprisingly constant. The foundational theories of economic growth account for only about half the growth observed in practice. Despite escalating warnings for more than two decades about the planetary risks of rising greenhouse gas emissions, most governments have seemed powerless to change course. Planetary Economics shows the surprising links

between these seemingly unconnected facts. It argues that tackling the energy and environmental problems of the 21st Century requires three different domains of decision-making to be recognised and connected. Each domain involves different theoretical foundations, draws on different areas of evidence, and implies different policies. The book shows that the transformation of energy systems involves all three domains - and each is equally important. From them flow three pillars of policy - three quite distinct kinds of actions that need to be taken, which rest on fundamentally different principles. Any pillar on its own will fail. Only by understanding all three, and fitting them together, do we have any hope of changing course. And if we do, the oft-assumed conflict between economy and the environment dissolves - with potential for benefits to both. Planetary Economics charts how. The Role of Oil and Gas Companies in the Energy Transition Why the Conventional Wisdom about the 2008 Financial Crisis is Still Wrong Ten Years Later Cambridge Scholars Publishing

Much of what has been heard, read, or taught about the 2008 financial crisis is incorrect. It was not caused by free market capitalism run amok. The crisis was not created by deregulatory zeal. It wasn't primarily due to greed on Wall Street. The crisis was not simply created by people's "irrational exuberance" or "animal spirits." Perhaps most importantly, it did not require bailouts and thousands of pages of new regulations to fix. Instead, it came about because of significant market distortions created by government subsidies, misregulation, and perverse incentives. The conventional wisdom blames unbridled markets for mortgage fraud, imprudent risks, and extreme leverage in financial institutions. Policy makers told us that the failure of Lehman Brothers, and the near failure of American International Group and many large banks, would have resulted in catastrophic decline and perhaps another Great Depression. After the crisis, thousands of pages of new regulations were written to limit the types of risk banks can take and the kinds of investments they can make so that a financial crisis of this magnitude can't happen again. But what if this conventional wisdom was wrong? If the problem wasn't unregulated, unrestrained markets leading to fraud and excessive risk-taking, if instead it was perverted incentives and distorted market signals due to numerous regulations and mandates in the first place, then the thousands of new pages of regulations haven't solved the fundamental problem. In fact, they have made it worse. This book shows that it is time to reassess the conventional wisdom. Perhaps there is still time to reverse the faulty solutions based upon it before another financial crisis breaks out. The End of Country Dispatches from the Frack Zone Random House Trade Paperbacks "A rare, honest, beautiful, and, yes, sometimes heartbreaking examination of the echoes of water-powered natural gas drilling—or fracking—in the human community . . . vivid, personal and emotional."—Minneapolis Star Tribune Susquehanna County, in the remote northeastern corner of Pennsylvania, is a community of stoic, low-income dairy farmers and homesteaders seeking haven from suburban sprawl—and the site of the Marcellus Shale, a natural gas deposit worth more than one trillion dollars. In The End of Country, journalist and area native Seamus McGraw opens a window on the battle for control of this land, revealing a conflict that pits petrodollar billionaires and the forces of corporate America against a band of locals determined to extract their fair share of the windfall—but not at the cost of their values or their way of life. Rich with a sense of place and populated by unforgettable personalities, McGraw tells a tale of greed, hubris, and envy, but also of hope, family, and the land that binds them all together. "To tell a great story, you need a great story. Seamus McGraw . . . has lived a great story. . . . [He] is just one of its many characters—very real characters—caught up in a very human story in which they must make tough, life-altering decisions for themselves, their community, and ultimately their country."—Allentown Morning Call "Compelling . . . The End of Country is like a phone call from a close friend or relative living smack-dab in the middle of the Pennsylvania gas rush. . . . Anyone with even a passing interest in the [fracking debate should] read it."—Harrisburg Patriot-News "This cautionary tale should be required reading for all those tempted by the calling cards of easy money and precarious peace of mind."—Tom Brokaw "A page-turner . . . McGraw brings us to the front lines of the U.S. energy revolution to deliver an honest and humbling account that could hardly possess greater relevance."—The Humanist Superpower One Man's Quest to Transform American Energy Simon & Schuster Meet Michael Skelly, the man boldly harnessing wind energy that could power America's future and break its fossil fuel dependence in this "essential, compelling look into the future of the nation's power grid" (Bryan Burrough, author of The Big Rich). The United States is in the midst of an energy transition. We have fallen out of love with dirty fossil fuels and want to embrace renewable energy sources like wind and solar. A transition from a North American power grid that is powered mostly by fossil fuels to one that is predominantly clean is feasible, but it would require a massive building spree—wind turbines, solar panels, wires, and billions of dollars would be needed. Enter Michael Skelly, an infrastructure builder who began working on wind energy in 2000 when many considered the industry a joke. Eight years later, Skelly helped build the second largest wind power company in the United States—and sold it for \$2 billion. Wind energy was no longer funny—it was well on its way to powering more than 6% of electricity in the United States. Award-winning journalist, Russel Gold tells Skelly's story, which in many ways is the story of our nation's evolving relationship with renewable energy. Gold illustrates how Skelly's company, Clean Line Energy, conceived the idea for a new power grid that would allow sunlight where abundant to light up homes in the cloudy states thousands of miles away, and take wind from the Great Plains to keep air conditioners running in Atlanta. Thrilling, provocative, and important, Superpower is a fascinating look at America's future. Renewable Energy A Primer for the Twenty-first Century Columbia University Earth Institute Sustainability Primers Renewable energy in the twenty-first century -- Energy transitions : fire to electricity -- The rise of renewables -- Renewable wind energy -- Renewable solar energy -- Financing renewable energy -- Energy transitions : oats to oil -- The rise of electric vehicles -- Parity -- Convergence -- Consequences -- No time to lose Hydraulic Fracturing and Well Stimulation Wiley-Scrivener Hydraulic fracturing (or "fracking") has been a source of both achievement and controversy for years, and it continues to be a hot-button issue all over the world. It has made the United States an energy exporting country once again and kept the price of gasoline low, for consumers and companies. On the other hand, it has been potentially a dangerous and destructive practice that has led to environmental problems and health issues. It is a deeply important subject for the petroleum engineer to explore as much as possible. This collection of papers is the first in the series, Sustainable Energy Engineering, tackling this very complex process of hydraulic fracturing and its environmental and economic ramifications. Born out of the journal by the same name, formerly published by Scrivener Publishing, most of the articles in this volume have been updated, and there are some new additions, as well, to keep the engineer abreast of any updates and new methods in the industry. Truly a snapshot of the state-of-the-art, this groundbreaking volume is a must-have for any petroleum engineer working in the field, environmental engineers, petroleum engineering students, and any other engineer or scientist working with hydraulic fracturing. Exploring Universal Basic Income A Guide to Navigating Concepts, Evidence, and Practices World Bank Publications Universal basic income (UBI) is emerging as one of the most hotly debated issues in development and social protection policy. But what are the features of UBI? What is it meant to achieve? How do we know, and what don't we know, about its performance? What does it take to implement it in practice? Drawing from global evidence, literature, and survey data, this volume provides a framework to elucidate issues and trade-offs in UBI with a view to help inform choices around its appropriateness and feasibility in different contexts. Specifically, the book examines how UBI differs from or complements other social assistance programs in terms of objectives, coverage, incidence, adequacy, incentives, effects on poverty and inequality, financing, political economy, and implementation. It also reviews past and current country experiences, surveys the full range of existing policy proposals, provides original results from micro†tax benefit simulations, and sets out a range of considerations around the analytics and practice of UBI. Energy Kingdoms Oil and Political Survival in the Persian Gulf Columbia University Press After the discovery of oil in the 1930s, the Gulf monarchies—Saudi Arabia, Kuwait, Qatar, the United Arab Emirates, Oman, and Bahrain—went from being among the world's poorest and most isolated places to some of its most ostentatiously wealthy. To maintain support, the ruling sheikhs provide their subjects with boundless cheap energy, unwittingly leading to some of the highest consumption rates on earth. Today, as summertime temperatures set new records, the Gulf's rulers find themselves caught in a dilemma: can they curb their profligacy without jeopardizing the survival of some of the world's last absolute monarchies? In Energy Kingdoms, Jim Krane takes readers inside these monarchies to consider their conundrum. He traces the history of the Gulf states' energy use and policies, looking in particular at how energy subsidies have distorted demand. Oil exports are the lifeblood of their political-economic systems—and the basis of their strategic importance—but domestic consumption has begun eating into exports while climate change threatens to render their desert region uninhabitable. At risk are the sheikhdoms' way of life, their relations with their Western protectors, and their political stability in a chaotic region. Backed by rich fieldwork and deep knowledge of the region, Krane expertly lays out the hard choices that Gulf leaders face to keep their states viable.