Electrifying The Oil And Gas Industry Ge Energy

An optimistic--but realistic and feasible--action plan for fighting climate change while creating new jobs and a healthier environment: electrify everything. Climate change is a planetary emergency. We have to do something now—but what? Saul Griffith has a plan. In Electrify, Griffith lays out a detailed blueprint—optimistic but feasible—for fighting climate change while creating millions of new jobs and a healthier environment. Griffith's plan can be summed up simply: electrify everything. He explains exactly what it would take to transform our infrastructure, update our grid, and adapt our households to make this possible. Billionaires may contemplate escaping our worn-out planet on a private rocket ship to Mars, but the rest of us, Griffith says, will stay and fight for the future. Griffith, an engineer and inventor, calls for grid neutrality, ensuring that households, businesses, and utilities operate as equals; we will have to rewrite regulations that were created for a fossil-fueled world, mobilize industry as we did in World War II, and offer low-interest "climate loans." Griffith's plan doesn't rely on big, not-yet-invented innovations, but on thousands of little inventions and cost reductions. We can still have our cars and our houses—but the cars will be electric and solar panels will cover our roofs. For a world trying to bounce back from a pandemic and economic crisis, there is no other project that would create as many jobs—up to twenty-five million, according to one economic analysis. Is this politically possible? We can change politics along with everything else.

The Climate Change Encyclopedia responds to the outstanding risk, survival, and ethical issue of our time, requiring action and providing opportunity. Primary-source expert authors write in a unique case-study structure that enables the Encyclopedia to be approachable, informational, and motivational for the public. The key focus areas are Climate Change and Finance, Economics, and Policy, with many other related climate categories included. The over 100 case studies provide realistic and interesting views of climate change, based on authors' published papers, reports, and books, plus climate-related activities of organizations, and selected topics. This inspiring work can enhance optimism and courage to act urgently and persistently on climate change, with foresight for a livable future.For more information on the list of contributors, please refer to https://www.worldscientific.com/page/encyclopedia-of-climate-change.Related Link(s)

Global climate change is one of the greatest challenges of our times and in order to tackle this carbon emissions need to be mitigated. China and India have recently become some of the world's largest greenhouse gas emitters. Transitions to low carbon energy, for reducing emissions that lead to climate change, are therefore an urgent priority for China and India and at a global level. This is the first book focusing on low carbon energy transitions for emerging economies such as China and India, assessing the opportunities and barriers for transitions to renewable and low carbon energy as climate change mitigation options. It uses energy modelling to assess the China's power sector, the economy of Beijing and rural Indian households that do not have access to electricity. The research evaluates the environmental, technical, socio-economic and policy implications of these low carbon transitions, concluding that they are possible in China and India and they can considerably contribute to climate change mitigation. This interdisciplinary book will be of interest to scholars, students, practitioners and policy-makers working in the fields of energy and development, energy policy, energy studies and modelling, climate policy, climate change mitigation, climate change and development, low carbon development, sustainable development, environment and development and environmental management.

Hearing Before the Committee on Energy and Natural Resources, United States Senate, One Hundred Eleventh Congress, First Session, to Receive Testimony on Current Energy Security Challenges, January 8, 2009

TERI Energy Data Directory and Yearbook (TEDDY) 2005-06

Electrify

Policies for a Carbon-Neutral Industry in the Netherlands

Policy for a Low-Carbon Future

The Party's Over

Space and water heating account for nearly two-thirds of energy consumption in U.S. homes, and a large contributor to energy costs of end-use residential dwellings. Most home heating systems in the United States are fueled by fossil fuels - natural gas and fuel oil (heating oil) - representing more than 50 percent of all U.S. homes' heating. These heating systems result in higher greenhouse gas emissions than electric heating systems now, and the emissions difference will increase as the grid trends toward lower carbon intensity in the decades ahead. Electrification of residential heating systems, by eliminating site fossil fuel use for heating, provides an important element of ultimately achieving carbon-free buildings. The objective of this research is to analyze the heating load of end-use residential dwellings. The research for this thesis achieves this by first conducting a survey of energy usage profile of some residents in Boston, Massachusetts and Houston, Texas. It then applies a thermal model to simulate building heat load, which was used in developing an electrification cost model to verify and validate the case for electrification of residential dwellings. Thermal models were developed for two cities, Boston and Houston, having contrasting winter weather and electricity rates. The model simulated heat load demand and energy outputs from heat pumps in both cities and analyzed resulting data and potential tradeoffs compared with electric resistance and gas furnace heating systems. Results show that heat in residential dwellings using electric air-source heat pumps (ASHPs) is more cost-effective and energy efficient compared with other heating systems. Model analyses indicate that heat demand in residential dwellings, which increase as outside temperature decreases due to heat loss, is disproportionately higher at low temperatures because the performance of ASHPs drops with outside temperature. However, ASHP performance is higher in Houston compared to Boston due to milder winter temperatures in the former. And the "balance point" between heat load and energy output decreases as capacity of ASHP increases.

This report presents a comprehensive assessment of the policy instruments adopted by the Netherlands to reach carbon neutrality in its manufacturing sector by 2050. The analysis illustrates the strength of combining a strong commitment to raising carbon prices with ambitious technology support, uncovers the pervasiveness of competitiveness provisions, and highlights the trade-off between short-term emissions cuts and longer-term technology shift.

One pathway to decarbonizing global energy systems is to replace fossil fuels with renewable forms of energy such as solar and wind. However, the geo-spatially and temporally variant nature of these energy sources makes their integration into conventional electric grids a technically and economically onerous effort. By identifying processes compatible with intermittent renewable energy sources, energy-intensive industries can displace the need for fossil fuels globally while circumventing many of the barriers to integrating these energy sources into electricity grids. This dissertation assessed the techno-economic feasibility of utilizing wind and solar resources to meet the energy demands of desalination facilities, as well as electrified pneumatic control systems at oil and gas production sites. The first study in this dissertation developed a method for assessing the technical and economic viability of using these renewable forms of energy to power brackish groundwater desalination facilities. The method relies on a multi-layered, spatial model that incorporated multiple variables such as depth of water resource, salinity levels, magnitude of local

renewable energy resources, distance to water infrastructure, and, for comparative purposes, the local price of water. To illustrate this method, it was applied to 1,445 site locations on state of Texas lands owned by the General Land Office that overlay brackish aquifer resources. Using this approach, 193 potentially economically viable sites were identified that have estimated renewable desalination water production costs lower than local municipal water prices. The results of this analysis showed that using wind to power a desalination facility is economically preferable to solar power at 145 of the 193 sites; solar was preferable at the remaining 48 sites. Solar and wind resources are both abundant in Texas; however, the particularly high capacity factors for wind across much of the state helps wind deliver electricity costs that are often lower than those provided by solar. The second study sought to assess the technical and economic viability of using variable renewable energy to power electrified well site pneumatic control systems. Conventional pneumatic control systems vent methane-containing well gas during their operation. Electrifying these systems can avoid the venting of methane, which is a potent greenhouse gas. Under this study, two different strategies were considered for replacing pneumatic systems powered by well gas. One option is to exchange all components controllers, actuators and pumps to equipment that is directly powered by electricity. This scheme is referred to as the electric configuration. The second option, referred to as the electro-pneumatic configuration, is to retain the pneumatic system, but power its components with instrument air, which is ambient air that has been compressed by an electrically-driven compressor. This option thus replaces the emission of methane with ambient air. First, an energy simulator was developed to serve as a screening tool to determine the temporally-varying power demands incurred by switching a standard pneumatic system to an electrified one. The tool uses a comprehensive set of user inputs to simulate site-specific single-day power loads for the electric and electro-pneumatic configurations of well site control systems based on specifications from controllers, valve actuators, and chemical pumps commonly used at well sites. To assess the viability of meeting well site power loads with intermittent renewable energy, electric and electro-pneumatic systems were modeled with solar photovoltaic (PV) power generation and electric battery storage during one year of typical conditions at sites located near Midland, Texas (Permian Basin), Nacogdoches, Texas (Haynesville Shale), and Edmonton, Canada (Kaybob-Duvernay Formation) using a time-resolved energy flow model. The electro-pneumatic model included a thermodynamic analysis to simulate storage of energy as compressed air in addition to electric battery storage. Of the two configurations, the all-electric option was found to be cheaper than the electro-pneumatic option while potentially supplying power to the system more reliably. An electric battery with a capacity of 1-2 kWh can deliver 100% reliability under typical meteorological conditions for the all-electric configuration utilizing a 200-250 W solar panel for sites located in Texas, resulting in a methane abatement cost of $190-$200 per ton of avoided methane emissions. The solar-powered electric system could potentially be employed at a well site in Alberta, Canada. However, because its solar resource is less abundant than in Texas, ensuring a high level of reliability would be 14% more costly. Other forms of on-site power generation such as geothermal energy might be more viable, or could possibly be used in conjunction with solar PV to ensure reliable operation during the winter when insolation levels are considerably lower. The higher power demands required by the electric air compressor in the electro-pneumatic design require larger PV generation capacity to achieve high levels of reliability. However, if the electro-pneumatic design is implemented, well-gas could potentially be used as a back-up to the air compressor to achieve equivalent reliability of the systems currently used in the field without the PV/battery system providing meet 100% of energy demands. While it is technically and economically feasible for electro-pneumatic systems to utilize compressed air tanks as the primary energy storage medium, electric batteries are the more viable option due to their energy density, stability and relative affordability. For new well sites, the all-electric option will be more cost-effective. However, if electrification is performed as a retrofit, the electro-pneumatic configuration might be more cost effective if installing the electric system requires more than a week of downtime. Together, these studies illustrate methods that can be used to assess the techno-economic viability of integrating variable forms of renewable energy into carbon and energy-intensive industries

Energy in Africa

Oil, War and the Fate of Industrial Societies

Bartlett's Roget's Thesaurus

Laying the Path for One Hundred Percent Clean Energy

The Engineer

Low Carbon Transitions for Developing Countries

Throughout the 20th century, electricity was considered to be the primary vehicle of modernity, as well as its quintessential symbol. In India, electrification was central to how early nationalists and planners conceptualized Indian development, and huge sums were spent on the project from then until now. Yet despite all this, sixty-five years after independence nearly 400 million Indians have no access to electricity. Electrifying India explores the political and historical puzzle of uneven development in India's vital electricity sector. In some states, nearly all citizens have access to electricity, while in others fewer than half of households have reliable electricity. To help explain this variation, this book offers both a regional and a historical perspective on the politics of electrification of India as it unfolded in New Delhi and three Indian states: Maharashtra, Odisha, and Andhra Pradesh. In those parts of the countryside that were successfully electrified in the decades after independence, the gains were due to neither nationalist idealism nor merely technocratic plans, but rather to the rising political influence and pressure of rural constituencies. In looking at variation in how public utilities expanded over a long period of time, this book argues that the earlier period of an advancing state apparatus from the 1950s to the 1980s conditioned in important ways the manner of the state's retreat during market reforms from the 1990s onward.

What kinds of expertise and knowledge relate to electricity, and where is the space for alternative voices? How can the new roles for electricity in social and cultural life be acknowledged? How can we speak about ‘it’ in its own right while acknowledging that electricity is not one thing? This book re-describes electricity and its infrastructures using insights from anthropology and science and technology studies, raising fascinating questions about the contemporary world and its future. Through ethnographic studies of bulbs, bicycles, dams, power grids and much more, the contributors shed light on practices that are often overlooked, showing how electricity is enacted in multiple ways. Electrifying Anthropology moves beyond the idea of electricity as an immovable force, and instead offers a set of potential trajectories for thinking about electricity and its effects in contemporary society. With new contributions on an emerging area of research, this timely collection will be of value to students and scholars of anthropology, science

and technology studies, geography and engineering.
"Over the next few decades, we will see a profound energy transformation as society shifts from fossil fuels to renewable resources like solar, wind, biomass. But what might a one hundred percent renewable future actually look like, and what obstacles will we face in this transition? Authors explore the practical challenges and opportunities presented by the shift to renewable energy."--Page 4 of cover.
Regional Political Economies of Development
Methods for Evaluating the Potential to Power Industrial Processes with Geospatially and Temporally Varying Renewable Energy Resources
A Case for Electrifying Heat in End-use Residential Sector Towards Carbon-free Buildings
Exploring Electrical Practices and Infrastructures
Electrifying India

The light-duty vehicle fleet is expected to undergo substantial technological changes over the next several decades. New powertrain designs, alternative fuels, advanced materials and significant changes to the vehicle body are being driven by increasingly stringent fuel economy and greenhouse gas emission standards. By the end of the next decade, cars and light-duty trucks will be more fuel efficient, weigh less, emit less air pollutants, have more safety features, and will be more expensive to purchase relative to current vehicles. Though the gasoline-powered spark ignition engine will continue to be the dominant powertrain configuration even through 2030, such vehicles will be equipped with advanced technologies, materials, electronics and controls, and aerodynamics. And by 2030, the deployment of alternative methods to propel and fuel vehicles and alternative modes of transportation, including autonomous vehicles, will be well underway. What are these new technologies - how will they work, and will some technologies be more effective than others? Written to inform The United States Department of Transportation's National Highway Traffic Safety Administration (NHTSA) and Environmental Protection Agency (EPA) Corporate Average Fuel Economy (CAFE) and greenhouse gas (GHG) emission standards, this new report from the National Research Council is a technical evaluation of costs, benefits, and implementation issues of fuel reduction technologies for next-generation light-duty vehicles. Cost, Effectiveness, and Deployment of Fuel Economy Technologies for Light-Duty Vehicles estimates the cost, potential efficiency improvements, and barriers to commercial deployment of technologies that might be employed from 2020 to 2030. This report describes these promising technologies and makes recommendations for their inclusion on the list of technologies applicable for the 2017-2025 CAFE standards.
The present study finds that electrifying transportation and heating (along with some other sectors) while decarbonizing the Colorado electricity sector will enable the reduction of economy-wide GHG emissions to below 70% of 2005 levels by 2040, while lowering both electricity and energy costs for all Coloradans. Personal vehicle fuel costs are reduced by over $600 per year (if an EV is used), household heating fuel costs are reduced by over $500 when electrified. In addition, all electricity rates are lowered by 15%, meaning those that do not electrify also benefits with lower costs amounting to $98 per year. The reduction in GHG emissions equates to Colorado exceeding all its target in HB19-1261 through 2040. The electrification of transportation and heating becomes essential in helping lower economy-wide emissions in an affordable manner. Their additions provides flexibility within the electricity grid over Colorado, which can enable more variable renewable energy sources.
At a time when climate-change deniers hold the reins of power in the United States and international greenhouse gas negotiations continue at a slow crawl, what options are available to cities, companies, and consumers around the world who seek a cleaner future? Scott Victor Valentine, Marilyn A. Brown, and Benjamin K. Sovacool explore developments and strategies that will help fast-track the transition to renewable energy. They provide an expert analysis of the achievable steps that citizens, organizational leaders, and policy makers can take to put their commitments to sustainability into practice. Empowering the Great Energy Transition examines trends that suggest a transition away from carbon-intensive energy sources is inevitable—there are too many forces for change at work to stop a shift to clean energy. Yet under the status quo, change will be too slow to avert the worst consequences of climate change. Humanity is on a path to incur avoidable social, environmental, and economic costs. Valentine, Brown, and Sovacool argue that new policies and business models are needed to surmount the hurdles separating the current consumption model from a sustainable energy future. Empowering the Great Energy Transition shows that with well-placed efforts, we can set humanity on a course that supports entrepreneurs and communities in mitigating the environmental harm caused by technologies whose time has come and gone.
Electrifying the Rural American West
The Iron Age
An Optimist's Playbook for Our Clean Energy Future
Forbes
A Bibliography
The Petroleum Gazette

The Role of Oil and Gas Companies in the Energy TransitionEmpowering the Great Energy TransitionPolicy for a Low-Carbon FutureColumbia University Press
Old-House Journal is the original magazine devoted to restoring and preserving old houses. For more than 35 years, our mission has been to help old-house owners repair, restore, update, and decorate buildings of every age and architectural style. Each issue explores hands-on restoration techniques, practical architectural guidelines, historical overviews, and homeowner stories--all in a trusted, authoritative voice.
Most Americans consider electricity essential to their lives, but the historic disparity of its distribution and use challenges notions of a democratic lifestyle, economy, and culture. By the beginning of the twentieth century, substations, wires, towers, and poles had followed migrants westward as the industrial era?s most prominent symbols of progress and power. When private companies controlled power production, electrical transmission, and distribution without regulation, they argued that it was not ?economically feasible? for many ethnic and rural communities to access ?the grid.? Yet, government agents continued to advocate electrical living through federal programs that reached into and across farming communities and American Indian reservations to homogenize and assimilate them through urban technologies. In the end, however, rural electrification was a locally directed process, subject to local and regional issues, concerns, and parameters. ø Electrifying the Rural American West provides a social and cultural history of rural electrification in the West. Using three case studies in Arizona, Leah S. Glaser details how, when examined from the local level, the process of electrification illustrates the impact of technology on places, economies, and lifestyles in the diverse communities and landscapes of the American West. As today?s policy-makers advocate building more power lines as a tool to bring democracy to faraway places and ?smart grids? to deliver

renewable energy, they would do well to review the historical relationship of Americans with electronic power production, distribution, and regulation.

Electrifying Anthropology

Rural Electrification News

Cost, Effectiveness, and Deployment of Fuel Economy Technologies for Light-Duty Vehicles

Oil & Gas Journal

Congressional Symposium, Railroads--1977 and Beyond--Problems and Promises

World Scientific Encyclopedia Of Climate Change: Case Studies Of Climate Risk, Action, And Opportunity (In 3 Volumes)

The push to decarbonize the world's economies has led to discussions about fully electrifying the residential sector. This transition involves replacing any appliances that use on-site fuels (e.g. propane natural gas, fuel oil) to versions that use electricity. For space heating, this transition includes replacing a fossil fuel powered furnace with an electric heater such as an air-source heat pump (ASHP) or a mini-split heat pump (MSHP). Widespread installation of heat pumps could have large impacts on the electrical infrastructure in regions that typically rely heavily on fossil fuel furnaces for heat. The projected change in load on the electrical grid are valuable to evaluate now, in anticipation of increased adoption of electrified heating units. This dissertation develops novel methods that (1) quantify energy consumption and peak demand from residential electrification, (2) validate an aggregate building energy model utilized for residential electrification modeling, and (3) assess the system-wide effects of residential electrification on a synchronous electric grid. First, a method was developed to quantify the energy consumption and peak demand of a residential sector with fully electrified space heating. This method was applied to the synchronous Texas electric grid operated by the Electric Reliability Council of Texas (ERCOT). The method utilizes the National Renewable Energy Laboratory's (NREL) ResStock tool to develop geographically representative housing stock models and the physics-based EnergyPlus modeling software to create an aggregate building stock energy model that represents the residential sector in the ERCOT operating region. In this aggregate building energy model, all natural gas and other fossil-fuel furnaces are replaced with reversible electric heat pumps of varying efficiencies that can provide heating in the winter and cooling in the summer. Spatially-resolved actual meteorological weather data are integrated with the building stock energy model to simulate a specific year (2016) of hourly-resolved energy usage in the ERCOT region. Annual electricity consumption, peak hourly power demand for each day, and load duration curves for each of 17 regions within ERCOT are estimated for a variety of electrification scenarios and an as-is base scenario. From the base scenario, the absolute winter peak electrical power demand in the residential sector could increase by as much as 36%, or 12 GW. These results indicate that grid capacity would need to increase by 10 GW (a 25% increase for the residential sector) to accommodate a winter peaking residential sector. Though winter electricity consumption would increase for home heating, the annual amount of electricity consumption would stay roughly the same or decrease because the higher efficiency heat pumps provide more efficient cooling than the conventional air conditioners they also replace. Using average 2018 emissions rates, the analysis shows a change to standard efficiency heat pumps would reduce CO2 emissions 4.1% and NO [subscript x] emissions 5.8% from the residential sector. There is no significant change in SO [subscript x] emissions in the standard efficiency scenario, but in the high and ultra-high aggregate efficiency scenarios, SO [subscript x] emissions are reduced by 8.3% and 15.0% respectively. Second, a method to validate the aggregate building stock energy model was developed. Publicly available measured electricity and natural gas consumption data from the Texas and ERCOT residential sectors were compared to energy consumption data produced by the aggregate building stock energy model. The validation analysis includes comparisons on annual energy consumption, monthly electricity consumption, consumption trends via geographic location, and consumption trends via heating fuel type. This validation analysis revealed relatively accurate results from the aggregate building stock energy model during months with historically mild weather in 2018: March, April, November, and December. During the winter peak month of January, the model overestimated consumption by 10% and during the summer peak month of July, the model underestimated summer consumption by 20%. This deviation was seen in most of the other hot months of 2018: June, August, and September. Geographically, the model performed accurately in low population regions. Higher population regions like those that contain Houston or Dallas/Fort Worth saw larger errors between the measured data and the modeled data. Homes with heating powered by a fuel other than electricity saw relatively large deviations in consumption from measured data---approximately 0.5 kWh less energy per household. During the summer, the aggregate building stock energy model's average occupancy behavior was shifted 2 hours earlier than the measured data's average occupancy behavior. These deviations likely stem from differences in actual occupant behavior and how occupant behavior is represented in the model. Lastly, a method to assess the impacts of residential electrification on the electric grid was formulated. This method used a multi-nodal UC&D grid model of the ERCOT wholesale market with load data of electrification scenarios modeled by an aggregate building stock energy model. The results from the grid model show that residential electrification would increase the grid's dependency on peaker power plants, like natural gas boiler generators, during the system's winter peak. For some electrification scenarios, the natural gas boiler plants' capacity factors increased by 350% to 400% compared to the base case. In the summer, dependency on peakers is reduced. This reduction was especially large in scenarios with an added 10 GW of solar capacity where the capacity factor of natural gas boiler plants' was reduced over 75% compared to the base case. Additional findings include a reduction in CO2 emissions ranging between 2.9% and 22.1% for all electrification scenarios. There is an increase in CO2 emissions for the winter peak day in the majority of electrification scenarios because of the added amount of load from electric heating. Despite this increase in load, the electrification scenarios cause relatively low amounts of congestion during the winter peak timeframe, adding as much as 7 hours of line congestion over a 15 day span

Explores how electricity seeped into and redefined American culture, becoming fundamental to modern life.

An atmospheric scientist explains why global climate change mitigation and energy decarbonization demand American diplomacy, technology, and policy "Daniel Cohan makes a compelling case that the problem of climate change is solvable. Fixing the gridlock on global action requires fixing the gridlock here in the United States of America. Cohan shows how that can be done."--David Victor, UC San Diego Professor of environmental engineering Daniel Cohan argues that escaping the gravest perils of climate change will first require American diplomacy, technological innovation, and policy to catalyze decarbonization globally. Combining his own expertise along with insights from more than a hundred interviews with diplomats, scholars, and clean-technology pioneers, Cohan identifies flaws in previous efforts to combat climate change. He highlights opportunities for more successful strategies, including international "climate clubs" and accelerated development of clean energy technologies. Grounded in history and emerging scholarship, this book offers a forward-looking vision of solutions to confronting climate gridlock and a clear-eyed recognition of the challenges to enacting them.

The Oil and Gas Journal

Social Meanings of a New Technology, 1880-1940

Electrical World

Colorado Electrification & Decarbonization Study

Petroleum Pipeline Engineering

Challenges and Opportunities

The world is about to run out of cheap oil and change dramatically. Within the next few years, global production will peak. Thereafter, even if industrial societies begin to switch to alternative energy sources, they will have less net energy each year to do all the work essential to the survival of complex societies. We are entering a new era, as different from the industrial era as the latter was from medieval times. In The Party's Over, Richard Heinberg places this momentous transition in historical context, showing how industrialism arose from the harnessing of fossil fuels, how competition to control access to oil shaped the geopolitics of the twentieth century and how contention for dwindling energy resources in the twenty-first century will lead to resource wars in the Middle East, Central Asia and South America. He describes the likely impacts of oil depletion and all of the energy alternatives. Predicting chaos unless the United States—the world's foremost oil consumer—is willing to join with other countries to implement a global program of resource conservation and sharing, he also recommends a "managed collapse" that might make way for a slower-paced, low-energy, sustainable society in the future. More readable than other accounts of this issue, with fuller discussion of the context, social implications and recommendations for personal, community, national and global action, Heinberg's updated book is a riveting wake-up call for human-kind as the oil era winds down, and a critical tool for understanding and influencing current US foreign policy.

An updated edition of Roget's word-finder reorganizes it according to new, more modern subject categories, features 350,000 entries, and contains hundreds of example quotations from throughout history

This timely collection of essays examines the legal and regulatory dynamics of energy transitions in the context of emerging trends towards decarbonisation and low-carbon energy solutions. The book explores this topic by considering the applicable energy law and policy frameworks in both: (i) highly industrialised and major economies such as the US, EU, China and Australia; (ii) resource-rich developing countries such as Nigeria and regions like Southern Africa. Comprising 16 chapters, the book delves into the tradeoffs and regulatory complexities of carbon-constraints in conventional energy supply systems, while maintaining a reliable and secure energy system that is equally sustainable (ie decarbonised). It highlights the importance of ensuring affordable access to energy services in developing economies as the energy transitions unfold and explores the potentials of emerging technologies such as hydrogen networks, power-to-gas and Carbon Capture and Storage. Additionally, the book also considers the international investment law implications of energy decarbonisation. Focusing on the nexus between law, regulation and institutions, it adopts a contextual approach to examine how and to what extent institutions can effectively facilitate more reliable, sustainable and secure energy supply systems in the twenty-first century. This book portrays the conventional hydrocarbon-based energy supply industry in a largely international and interconnected context. It highlights the costs, benefits and losses that may arise as the transition towards decarbonisation unfolds depending on the pathways and solutions adopted. With chapters written by leading experts in energy law and policy, the reader-friendly style and engaging discussions will benefit an international audience of policymakers, academics, students and advisers looking for a more incisive understanding of the issues involved in energy transitions and the decarbonisation of energy systems.

Indian Industries and Power

Electrifying America

Northeast Corridor Improvement Project, Electrification, New Haven to Boston [CT,MA]

Current Energy Security Challenges

Decarbonisation and the Energy Industry

The Role of Oil and Gas Companies in the Energy Transition

This open access book presents a picture of the current energy challenges on the African continent (and the Sub-Saharan region in particular) and proposes pathways to an accelerated energy transition. Starting with an analysis of the status quo and the outlook for Africa's energy demand and energy access, it provides an account of the available resources, including hydrocarbons and renewable energy resources, which are playing an increasingly crucial role. It then moves on to analyze the level of investment required to scale-up Africa's energy systems, shedding light on the key barriers and elaborating on potential solutions. It also provides a suggestion for improving the effectiveness of EU–Africa cooperation. While mainly intended for policymakers and academics, this book also speaks to a

broader audience interested in gaining an overview of the challenges and opportunities of the African energy sector today and in the future.

Stories of Power, People, and Place

A Method to Model the System-wide Impacts of Residential Heating Electrification Under Various Future Load Scenarios in Texas

Industrial Refrigeration

Confronting Climate Gridlock

Environmental Impact Statement

An Optimist's Playbook for Our Clean Energy Future