Download File Liquefied Natural Gas Developing And Financing International Energy Projects International Energy Resources Law And Policy Series Set Free Download Pdf

Natural Gas in Developing Countries **Unconventional Shale Gas Development Natural Gas Environmental Impacts of Shale Gas Development in China** Governing Shale Gas Statistics of Oil and Gas Development and Production Combined Heat and Power Review of the Ikhil Gas Development and Pipeline Regulatory and Environmental Process Environmental and Health Issues in Unconventional Oil and Gas Development **The Economics of Natural Gas Oil and Gas Development and Possibilities in Parts of Eastern Illinois Outer Continental Shelf Oil and Gas Development and the Coastal Zone** Oil and Gas Development and Coastal Zone Management Development of Volcanic Gas Reservoirs **The Economics of Natural Gas in Developing Countries** The Development of European Gas Markets **Potential Exploration, Development and Production of Oil and Gas Resources, Vandenberg Air Force Base (AFB),**

Mineral Resources Management Plan Outer Continental Shelf Oil and Gas Development and the Coastal Zone Study Design for Resource Management Decisions **Economics of Unconventional Shale Gas Development** Offshore Oil and Gas Development **Energy, a Register of Research, Development, and Demonstration in the United Kingdom: Energy research in the social sciences** *Economics of Unconventional Shale Gas Development The Global Impact of Unconventional Shale Gas Development* **Waste-to-energy** Extractive Industries **Public Responses to Fossil Fuel Export The Global Impact of Unconventional Shale Gas Development** *China's Gas Development Strategies* **Greenhouse Gas Emission Inventories Helping Insure Our Energy Future Statistics of Oil and Gas Development and Production China's Gas Development Strategies** Challenges and Solutions for Climate Change **Developing China's Natural Gas Market** *Risks and Risk Governance in Shale Gas Development* **Designing and Building Fuel Cells** Opportunities and Challenges for Arctic Oil and Gas Development International Oil and Gas Development Underground Coal Gasification and Unconventional Gas Research, Development, and Demonstration Act

Thank you very much for downloading **Liquefied Natural Gas Developing And Financing International Energy Projects International Energy Resources Law And Policy Series Set**. As you may know, people have look numerous times for their chosen books like this Liquefied Natural Gas Developing And Financing International Energy Projects International Energy Resources Law And Policy Series Set, but end up in harmful downloads. Rather than reading a good book with a cup of coffee in the afternoon, instead they juggled

with some malicious virus inside their laptop.

Liquefied Natural Gas Developing And Financing International Energy Projects International Energy Resources Law And Policy Series Set is available in our book collection an online access to it is set as public so you can get it instantly.
Our digital library saves in multiple countries, allowing you to get the most less latency time to download any of our books like this one.
Merely said, the Liquefied Natural Gas Developing And Financing International Energy Projects International Energy Resources Law And Policy Series Set is universally compatible with any devices to read

This is likewise one of the factors by obtaining the soft documents of this **Liquefied Natural Gas Developing And Financing International Energy Projects International Energy Resources Law And Policy Series Set** by online. You might not require more times to spend to go to the book opening as well as search for them. In some cases, you likewise pull off not discover the message Liquefied Natural Gas Developing And Financing International Energy Projects International Energy Resources Law And Policy Series Set that you are looking for. It will enormously squander the time.

However below, behind you visit this web page, it will be suitably very simple to acquire as well as download lead Liquefied Natural Gas Developing And Financing International Energy Projects International Energy Resources Law And Policy Series Set

It will not say you will many times as we tell before. You can get it even if pretense something else at house and even in your workplace. suitably easy! So, are you question? Just exercise just what we pay for below as competently as evaluation **Liquefied Natural Gas**

Developing And Financing International Energy Projects International Energy Resources Law And Policy Series Set what you with to read!

As recognized, adventure as with ease as experience roughly lesson, amusement, as with ease as promise can be gotten by just checking out a book **Liquefied Natural Gas Developing And Financing International Energy Projects International Energy Resources Law And Policy Series Set** then it is not directly done, you could receive even more concerning this life, more or less the world.

We offer you this proper as competently as easy habit to get those all. We have the funds for Liquefied Natural Gas Developing And Financing International Energy Projects International Energy Resources Law And Policy Series Set and numerous books collections from fictions to scientific research in any way. along with them is this Liquefied Natural Gas Developing And Financing International Energy Projects International Energy Resources Law And Policy Series Set that can be your partner.

When somebody should go to the ebook stores, search commencement by shop, shelf by shelf, it is in fact problematic. This is why we give the books compilations in this website. It will enormously ease you to see guide **Liquefied Natural Gas Developing And Financing International Energy Projects International Energy Resources Law And Policy Series Set** as you such as.

By searching the title, publisher, or authors of guide you in point of fact want, you can discover them rapidly. In the house, workplace, or perhaps in your method can be every best area within net connections. If you purpose to download and install the Liquefied Natural Gas Developing And Financing

International Energy Projects International Energy Resources Law And Policy Series Set, it is enormously simple then, back currently we extend the associate to purchase and make bargains to download and install Liquefied Natural Gas Developing And Financing International Energy Projects International Energy Resources Law And Policy Series Set correspondingly simple!

Unconventional Shale Gas Development: Lessons Learned gives engineers the latest research developments and practical applications in today's operations. Comprised of both academic and corporate contributors, a balanced critical review on technologies utilized are covered. Environmental topics are presented, including produced water management and sustainable operations in gas systems. Machine learning applications, well integrity and economic challenges are also covered to get the engineer up-to-speed. With its critical elements, case studies, history plot visuals and flow charts, the book delivers a critical reference to get today's petroleum engineers updated on the latest research and applications surrounding shale gas systems. Bridges the gap between the latest research developments and practical applications through case studies and workflow charts Helps readers understand the latest developments from the balanced viewpoint of academic and corporate contributors Considers environmental and sustainable operations in shale gas systems, including produced water management This book examines the economics and related impacts of unconventional shale gas development. While focusing on the Marcellus and Utica Shales in the Mid-Atlantic region, additional insights from other regions are included to provide a broader view of these issues. Shale gas development in recent years has changed the energy discussion in the US, as existing reserves of

natural gas coupled with horizontal drilling and hydraulic fracturing make exploitation of these reserves economically feasible. The importance of natural gas is seen as likely to continue to expand over the coming years, and is expected to increase even further with environmental considerations, such as greenhouse gas emissions. Horizontal drilling and hydraulic fracturing producing natural gas from deposits such as the Marcellus Shale is making the US a net producer of natural gas. Previous studies have examined the economic impact of exploration and production in the region. Other studies have addressed legal, environmental, biodiversity, and public health impacts of unconventional shale development. This is the first volume to focus solely on the economics and related financial impacts of this development. This book not only fills the research gap, but also provides information that policy makers and the public need to better understand this pressing issue. Interest has re-emerged in developing oil and gas in the nation's offshore areas, such as the North Aleutian Basin. Located on the outer continental shelf where the Aleutian Islands meet the Alaskan mainland, the basin may contain sizable oil and gas deposits, although the area's environmental and cultural sensitivity has made oil and gas development in the area controversial. The Minerals Mgmt. Service (MMS) oversees oil and gas development in this offshore area. This report: (1) describes the basin's estimated quantities of oil and gas and needed infrastructure; (2) identifies steps MMS is to take to meet fed. requirements for oil and gas development; and (3) identifies challenges MMS faces in meeting these requirements. Illus. Describes how to run a sound and efficient bank in a liberalized financial environment. Also available: Banking Institutions in Developing Markets. Volume 2: Interpreting Financial Statements Chris J. Barltrop

and Diana McNaughton 152 pages / (ISBN 0-8213-2218-4) / Stock No. 12218 / $20.00 / Price code S2 This book is open access under a CC BY 4.0 license. This book examines how China can increase the share of natural gas in its energy system. China's energy strategy has global ramifications and impact, and central to this strategy is the country's transition from coal to gas. The book presents the culmination of a two-year collaboration between the Development Research Center of the State Council (DRC) and Shell. With the Chinese government's strategic aim to increase the share of gas in the energy mix from 5.8% in 2014 to 10% and 15% in 2020 and 2030 respectively, the book outlines how China can achieve its gas targets. Providing both quantifiable metrics and policy measures for the transition, it is a much needed addition to the literature on Chinese energy policy. The research and the resulting recommendations of this study have fed directly into the Chinese government's 13th Five-Year Plan, and provide unique insights into the Chinese government and policy-making. Due to its global impact, the book is a valuable resource for policy makers in both China and the rest of the world. Natural gas resembles oil in fulfilling a wide variety of uses as both a source of energy and a feedstock, but the proportion of world production that is traded internationally is very much lower, and insufficient for a world price of gas to be established. This book addresses the issues of how the economic price of gas is determined. These are illustrated with estimates of the costs of exploration and production of gas, and of the benefits to be derived from its use in various economic sectors for a number of Third World countries. Driven by an increasing recognition of the many advantages of natural gas and by the need to diversify its coal-dominated energy supply, China's natural gas industry is poised for rapid expansion. Some major gas

infrastructure projects have been launched to support ambitious gas growth targets in the country for the next five years and beyond. Other countries within the IEA and outside, have faced similar challenges in developing their gas markets, but the challenges faced by China are far greater. Chinese gas reserves are relatively limited and are located far from the main centres of demand; cheap alternatives are available; there is a lack of related technology and skill; and knowledge of how best to develop markets is not widespread. This report attempts to address these challenges. Shale energy development is an issue of global importance. The number of reserves globally, and their potential economic return, have increased dramatically in the past decade. Questions abound, however, about the appropriate governance systems to manage the risks of unconventional oil and gas development and the ability for citizens to engage and participate in decisions regarding these systems. Stakeholder participation is essential for the social and political legitimacy of energy extraction and production, what the industry calls a 'social license' to operate. This book attempts to bring together critical themes inherent in the energy governance literature and illustrate them through cases in multiple countries, including the US, the UK, Canada, South Africa, Germany and Poland. These themes include how multiple actors and institutions – industry, governments and regulatory bodies at all scales, communities, opposition movements, and individual landowners – have roles in developing, contesting, monitoring, and enforcing practices and regulations within unconventional oil and gas development. Overall, the book proposes a systemic, participatory, community-led approach required to achieve a form of legitimacy that allows communities to derive social priorities by a process of

community visioning. This book will be of great relevance to scholars and policy-makers with an interest in shale gas development, and energy policy and governance. Development of Volcanic Gas Reservoirs: The Theory, Key Technologies and Practice of Hydrocarbon Development introduces the geological and dynamic characteristics of development in volcanic gas reservoirs, using examples drawn from the practical experience in China of honing volcanic gas reservoir development. The book gives guidance on how to effectively develop volcanic gas reservoirs and similar complex types of gas reservoir. It introduces basic theories, key technologies and uses practical examples. It is the first book to systematically cover the theories and key technologies of volcanic gas reservoir development. As volcanic gas reservoirs constitute a new research area, the distribution and rules for development still being studied. Difficulties in well deployment and supportive development technology engender further challenges to development. However, in the past decade, research and development in the Songliao and Junggar Basins has led to marked achievements in volcanic gas reservoir development. Introduces the theory, key technologies and practice of volcanic gas reservoir development Provides links between theory and practice, highlighting key technologies for targeted development Offers guidance on complex issues in volcanic gas reservoir development Presents practical evidence from effective development and exploitation of gas reservoirs This book discusses the economic, political, and environmental issues surrounding the international exploration and exploitation of conventional and unconventional natural gas. Shale gas development in recent years has changed the energy discussion in the US as existing reserves of natural gas coupled with horizontal drilling and hydraulic fracturing make

exploitation of these reserves economically feasible; the discussion is quickly becoming international in scope. The potential expansion of natural gas development impacts many regions of the globe and spans multiple perspectives. In a volatile international climate, one of intense geopolitical conflict between Russia and the West, economic slowdowns in Europe and China, military conflicts in the Middle East and northern Africa, and widening income disparity in the U.S., a relatively inexpensive and plentiful energy source like shale gas could play a key role in mitigating such conflicts. In an energy interdependent global community, however, multiple factors such as oil prices, differing rates of exploration, environmental concerns, strategic initiatives, institutional changes, legal and regulatory issues, and actions of the nations involved all have the potential to influence future outcomes. This book discusses each of these in turn, detailing the issues most prevalent in each geographical area. The first volume to provide a comprehensive global view of the impacts of shale gas development, this book fills a gap in the current research literature, providing vital information for the scholarly community and the public alike. This book will be of interest to researchers and students of economics, energy policy, public administration, and international relations as well as policy makers and residents of the regions that are experiencing shale gas development. This book examines the economics and related impacts of unconventional shale gas development. While focusing on the Marcellus and Utica Shales in the Mid-Atlantic region, additional insights from other regions are included to provide a broader view of these issues. Shale gas development in recent years has changed the energy discussion in the US, as existing reserves of natural gas coupled with horizontal drilling and hydraulic fracturing make exploitation of these reserves

economically feasible. The importance of natural gas is seen as likely to continue to expand over the coming years, and is expected to increase even further with environmental considerations, such as greenhouse gas emissions. Horizontal drilling and hydraulic fracturing producing natural gas from deposits such as the Marcellus Shale is making the US a net producer of natural gas. Previous studies have examined the economic impact of exploration and production in the region. Other studies have addressed legal, environmental, biodiversity, and public health impacts of unconventional shale development. This is the first volume to focus solely on the economics and related financial impacts of this development. This book not only fills the research gap, but also provides information that policy makers and the public need to better understand this pressing issue. The Economics of Natural Gas in Developing Countries provides information pertinent to the utilization of natural gas in developing countries. This book examines the potential domestic uses of natural gas as well as its export possibilities. Organized into 13 chapters, this book begins with an overview of the policies that provide adequate incentives for gas development in order to maximize the availability of gas for domestic uses. This text then examines the worldwide demand and supply of natural gas. Other chapters consider the requirements for gas-trade projects, which consists of a substantial market in the importing region and a significant gas reserve in the exporting country. This book discusses as well the differences between oil and gas development in terms of cost, marketing, technology, and government regulation. The final chapter deals with the significant potential for natural gas. This book is a valuable resource for economists, engineers, and engineering consultants. This book features a comprehensive analysis of the development of shale gas

resources in China, with a focus on the potential environmental impacts that may result. China has the world's largest shale gas resources, which it is keen to develop to alleviate air pollution and successfully transition to a low-carbon energy future. However, one significant obstacle standing between the ambition and reality is the potentially serious environmental impacts of shale gas production. This book offers a systematic assessment of these potential impacts, including the risk of water contamination, ecological disruption due to the huge consumption of water and methane leakage. It presents valuable first-hand data collected from the authors' fieldwork in Sichuan and Chongqing and the latest information on China's current shale gas operations and also includes a set of models and methods developed to quantify the impacts. It allows readers to gain a deeper understanding of environmental regulatory management systems regarding shale gas production in China by examining whether the existing monitoring, reporting and verification (MRV) systems and environmental regulations can effectively prevent adverse impacts from shale gas production. Providing a detailed study of shale gas development in China based on an unprecedented primary dataset, the book is a valuable resource for scholars, engineers and students who are interested in the energy development and environmental risks. Natural gas in deep shale formations, which can be developed by hydraulic fracturing and associated technologies (often collectively referred to as "fracking") is dramatically increasing production of natural gas in the United States, where significant gas deposits exist in formations that underlie many states. Major deposits of shale gas exist in many other countries as well. Proponents of shale gas development point to several kinds of benefits, for

instance, to local economies and to national "energy independence." Shale gas development has also brought increasing expression of concerns about risks, including to human health, environmental quality, non-energy economic activities in shale regions, and community cohesion. Some of these potential risks are beginning to receive careful evaluation; others are not. Although the risks have not yet been fully characterized or all of them carefully analyzed, governments at all levels are making policy decisions, some of them hard to reverse, about shale gas development and/or how to manage the risks. "Risks and Risk Governance in Shale Gas Development" is the summary of two workshops convened in May and August 2013 by the National Research Council's Board on Environmental Change and Society to consider and assess claims about the levels and types of risk posed by shale gas development and about the adequacy of existing governance procedures. Participants from engineering, natural, and social scientific communities examined the range of risks and of social and decision-making issues in risk characterization and governance related to gas shale development. Central themes included risk governance in the context of (a) risks that emerge as shale gas development expands, and (b) incomplete or declining regulatory capacity in an era of budgetary stringency. This report summarizes the presentations on risk issues raised in the first workshop, the risk management and governance concepts presented at the second workshop, and the discussions at both workshops. Saving energy through energy efficiency improvements can cost less than generating, transmitting, and distrib- uting energy from power plants, and provides multiple economic and environmental benefits. Energy savings can reduce operating costs for local governments, free- ing up resources for

additional investments in energy efficiency and other priorities. Energy efficiency can also help reduce air pollution and GHG emissions, improve energy security and independence, and create jobs. Public Responses to Fossil Fuel Export provides wide-ranging theoretical and methodological international contributions on the human dimensions of fossil fuel export, with a distinctive focus on exporting countries, some of which are new entrants into the marketplace. What do members of the public think about exporting fossil fuels in places where it is happening? What do they see as its main risks and benefits? What connections are being made to climate change and the impending energy transition? How have affected communities responded to proposals related to fossil fuel export, broadly defined to include transport by rail, pipeline, and ship? Contributions to the work are presented in three parts. The first part synopsizes the background of the project, outlines major social science theories and relevant previous research, and identifies global trends in energy production. Regional and national case studies related to public opinion on fossil fuel export are included in part two of the manuscript. Part three highlights community-based case studies. Implications for research and practice feature in the concluding chapter. Serves as a definitive reference on the social dimensions of fossil fuel export, bringing together case examples and public opinion research from around the world on this important but understudied issue Explores the broader implications for growing field of energy social science, particularly those focused on public perceptions of energy development, siting controversies and community impacts from energy development Provides practical and policy implications, including the need for better community inclusion in export and transport facility siting decisions, the changing status

of certain fuels, impacts on public awareness, and the relevance of the movement of energy resources "A study prepared by the United Nations University World Institute for Development Economics Research (UNU-WIDER)". The latest scientific knowledge on climate change indicates that higher greenhouse gas concentrations in the atmosphere through unchecked emissions will provoke severe climate change and ocean acidification. Both impacts can fundamentally alter environmental structures on which humanity relies and have serious consequences for the food chain among others. Climate change therefore poses major socio-economic, technical and environmental challenges which will have serious impacts on countries' pathways towards sustainable development. As a result, climate change and sustainable development have increasingly become interlinked. A changing climate makes achieving Millennium Development Goals more difficult and expensive, so there is every reason to achieve development goals with low greenhouse gas emissions. This leads to the following five challenges discussed by Challenges and Solutions for Climate Change: 1. To place climate negotiations in the wider context of sustainability, equity and social change so that development benefits can be maximised at the same time as decreasing greenhouse gas emissions. 2. To select technologies or measures for climate change mitigation and adaptation based on countries' sustainable development and climate goals. 3. To create low greenhouse gas emission and climate resilient strategies and action plans in order to accelerate innovation needed for achieving sustainable development and climate goals on the scale and timescale required within countries. 4. To rationalize the current directions in international climate policy making in order to provide coherent and efficient support to developing countries in devising and

implementing strategies and action plans for low emission technology transfers to deliver climate and sustainable development goals. 5. To facilitate development of an international framework for financial resources in order to support technology development and transfer, improve enabling environments for innovation, address equity issues such as poor people's energy access, and make implementation of activities possible at the desired scale within the country. The solutions presented in Challenges and Solutions for Climate Change show how ambitious measures can be undertaken which are fully in line with domestic interests, both in developing and in developed countries, and how these measures can be supported through the international mechanisms. Environmental and Health Issues in Unconventional Oil and Gas Development offers a series of authoritative perspectives from varied viewpoints on key issues relevant in the use of directional drilling and hydraulic fracturing, providing a timely presentation of requisite information on the implications of these technologies for those connected to unconventional oil and shale gas development. 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 appreciation 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, governmental agencies, and the oil and gas industry This book is open access under a CC BY 4.0 license. This book examines how China can increase the share of natural gas in its energy system. China's energy strategy has global ramifications and impact, and central to this strategy is the country's transition from coal to gas. The book presents the culmination of a two-year collaboration between the Development Research Center of the State Council (DRC) and Shell. With the Chinese government's strategic aim to increase the share of gas in the energy mix from 5.8% in 2014 to 10% and 15% in 2020 and 2030 respectively, the book outlines how China can achieve its gas targets. Providing both quantifiable metrics and policy measures for the transition, it is a much needed addition to the literature on Chinese energy policy. The research and the resulting recommendations of this study have fed directly into the Chinese government's 13th Five-Year Plan, and provide unique insights into the Chinese government and policy-making. Due to its global impact, the book is a valuable resource for policy makers in both China and the rest of the world. Acquire an All-in-One Toolkit for Expertly Designing, Modeling, and Constructing High-Performance Fuel Cells Designing and Building Fuel Cells equips you with a hands-on guide for the design, modeling, and construction of fuel cells that perform as well or better than some of the best fuel cells on the market today. Filled with over 120 illustrations and schematics of fuel cells and components, this "one-stop" guide covers fuel cell applications...fuels and the hydrogen economy...fuel cell chemistry, thermodynamics, and electrochemistry...fuel cell modeling, materials, and system design...fuel types, delivery, and processing...fuel cell operating conditions...fuel cell characterization...and much more. Authoritative and

practical, Designing and Building Fuel Cells features: Complete information on stack design The latest fuel cell modeling techniques Guidance on cutting-edge materials and components Expert accounts of fuel cell types, processing, and optimization A step-by-step example for constructing a fuel cell Inside This State-of-the-Art Fuel Cell Sourcebook Introduction • Fuel Cell Applications • Fuel Cells and the Hydrogen Economy • Basic Fuel Cell Chemistry and Thermodynamics • Fuel Cell Electrochemistry • Fuel Cell Charge Transport • Fuel Cell Mass Transport • Fuel Cell Heat Transport • Fuel Cell Modeling • Fuel Cell Materials • Fuel Cell Stack Components and Materials • Fuel Cell Stack Design • Fuel Cell System Design • Fuel Types, Delivery, and Processing • Fuel Cell Operating Conditions • Fuel Cell Characterization International concern for the continued growth of greenhouse gas emissions, and the potentially damaging consequences of resultant global climate change, led to the signing of the United Nations Framework Convention on Climate Change by 155 nations at the Earth Summit in June 1992. The Convention came into force on 21 March 1994, three months after receiving its 50th ratification. All Parties to the Convention are required to compile, periodically update, and publish national inventories of anthropogenic greenhouse gas emissions and sinks using comparable methodologies. In support of this process, the US Country Studies Program (US CSP) is providing financial and technical assistance to 56 developing and transition countries for conducting national inventories. This book presents the results of preliminary national inventories prepared by countries participating in the US CSP that are ready to share their interim findings. In some cases, inventories were prepared with support from other organizations. Preliminary inventories of

twenty countries in Africa, Asia, Central and Eastern Europe and the Newly Independent States, and Latin America are presented, as well as regional and global syntheses of the national results. The regional and global syntheses also discuss results of eleven other preliminary national inventories that have been published elsewhere with the assistance of other programs. Results are discussed in the context of national and regional socioeconomic characteristics, and the regional and global syntheses compare national inventory estimates to other published estimates that are based largely on international databases. Papers also discuss inventory development issues, such as data collection and emission factor determination, and problems associated with applying the IPCC inventory methodologies. The preliminary inventory results reported here represent significant progress towards meeting country commitments under the Framework Convention, and provide useful information for refining international greenhouse gas emission databases and improving inventory methodologies. As the first book to compile national greenhouse gas emission estimates prepared by national experts in developing countries and countries with economies in transition, this will be an invaluable resource to scientists, policymakers, and development specialists in national, regional and global anthropogenic sources and sinks of greenhouse gases. This volume studies the driving forces behind the development of the European gas market and the uncertainties facing the industry in Europe. There is widespread consensus within Europe about the advantages of natural gas to reduce air pollution and to enhance energy supply diversification. Thus taking into account these most fundamental prerequisites for increased gas demand, this volume addresses the more immediate question of how the conglomeration and organisation of European gas

industries will be influenced by this latent demand potential. The purpose of this book is to focus both on the analysis of evolutionary organisational processes within the gas industry, and the pressures for change provoked by external forces such as interfuel competition, environmental imperatives and new trends in European economic policies. The potential for structural change in the organisation of the European gas industry is discussed, as well as the political, economic and commercial factors affecting its progress. With the present uncertainty as to whether the gas industry will take advantage of the obvious market opportunities that are opening up, this book takes a close look at the European gas industry at this time of change, and analyses how this process may develop and the possible implications this will have on the gas industry. Shale gas is natural gas that is tightly locked within low permeability sedimentary rock. Recent technological advances are making shale gas reserves increasingly accessible and their recovery more economically feasible. This resource is already being exploited in South Africa, China, the United States and Canada. Shale gas is being produced in large volumes, and will likely be developed in coming years on every continent except Antarctica. Depending on factors such as future natural gas prices and government regulations, further development of shale gas resources could potentially span many decades and involve the drilling of tens of thousands of hydraulically fractured horizontal wells. This development is changing long-held expectations about oil and gas resource availability; several observers have characterized it as a game changer. Abundant, close to major markets, and relatively inexpensive to produce, shale gas represents a major new source of fossil energy. However, the rapid expansion of shale gas development over the past decade has occurred

without a corresponding investment in monitoring and research addressing the impacts on the environment, public health, and communities. The primary concerns are the degradation of the quality of groundwater and surface water (including the safe disposal of large volumes of wastewater); the risk of increased greenhouse gas (GHG) emissions (including fugitive methane emissions during and after production), thus exacerbating anthropogenic climate change; disruptive effects on communities and land; and adverse effects on to human health. Other concerns include the local release of air contaminants and the potential for triggering small- to moderate-sized earthquakes in seismically active areas. These concerns will vary by region. The shale gas regions can be found near urban areas, presenting a large diversity in their geology, hydrology, land uses, and population density. The phrase environmental impacts from shale gas development masks many regional differences that are essential to understanding these impacts. This book discusses the economic, political, and environmental issues surrounding the international exploration and exploitation of conventional and unconventional natural gas. Shale gas development in recent years has changed the energy discussion in the US as existing reserves of natural gas coupled with horizontal drilling and hydraulic fracturing make exploitation of these reserves economically feasible; the discussion is quickly becoming international in scope. The potential expansion of natural gas development impacts many regions of the globe and spans multiple perspectives. In a volatile international climate, one of intense geopolitical conflict between Russia and the West, economic slowdowns in Europe and China, military conflicts in the Middle East and northern Africa, and widening income disparity in the U.S., a relatively inexpensive and plentiful energy source like

shale gas could play a key role in mitigating such conflicts. In an energy interdependent global community, however, multiple factors such as oil prices, differing rates of exploration, environmental concerns, strategic initiatives, institutional changes, legal and regulatory issues, and actions of the nations involved all have the potential to influence future outcomes. This book discusses each of these in turn, detailing the issues most prevalent in each geographical area. The first volume to provide a comprehensive global view of the impacts of shale gas development, this book fills a gap in the current research literature, providing vital information for the scholarly community and the public alike. This book will be of interest to researchers and students of economics, energy policy, public administration, and international relations as well as policy makers and residents of the regions that are experiencing shale gas development.