



Risk and Energy Infrastructure

Cross-Border Dimensions

Consulting Editor **Thomas J Dimitroff**

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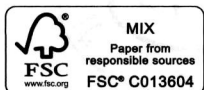


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Executive summary

This book is divided into four key sections. Section 1 addresses two macro-risks that face project planners implementing large-scale energy infrastructure projects: macroeconomic and political risks. The next section examines a variety of horizontal (state-to-state) dimensions of risk encountered in the development of cross-border energy infrastructure projects. Section 3 proceeds to address the vertical (state-to-investor) dimensions of risk from the perspectives of investors and host states. The last section looks at risks posed to, and by, energy infrastructure from the perspectives of the investors and other stakeholders. The following is a chapter-by-chapter summary highlighting key points made by this book's authors.

Section 1: Macrorisks

The first chapter, by Kevin Gardiner, examines the range of macroeconomic and financial risks that planners of energy infrastructure projects should consider. Gardiner provides a 50-year summary of economic cycles that identify a variety of risk factors. These include:

- a sudden setback in aggregate demand and output;
- fluctuations in economic activity and prices;
- volatility; and
- other important macro-variables such as interest rates and exchange rates, and the prices of major factors of production such as the price of steel.

Gardiner suggests that other macroeconomic risks posed to planners are contextual in nature – for instance, domestic and cross-border legal and regulatory risk, monetary and fiscal policy fluctuations, and changes in results by amending the calculus for determining the internal rate of return or net present value. Other types of contextual risk can include a change in demand for a commodity due to a shift in consumer preference – for example, the viability of nuclear energy projects post-Fukushima has been undercut by safety concerns. The range and scale of macro-shocks surveyed by Gardiner demonstrate that there are always new ‘unknown unknowns’ and the best advice to planners is to stress-test their calculations extensively.

Arve Thorvik examines the topic of political risk within the context of large-scale energy infrastructure projects in the second chapter. Analytical tools are offered to help developers to understand and mitigate types of political risk presented in the development and implementation of projects. After mapping out a typology

describing different political systems, ranging from those that are dysfunctional to transitional and Western democracies, Thorvik identifies a catalogue of root causes of political risk. Thorvik provides a variety of recommendations for preventing and reducing political risks before reaching two counter-intuitive conclusions: that political risks do not necessarily originate with politicians, but rather with the project itself, and also that a Western democracy may pose political risks that are at least as challenging as those posed by so-called 'less developed' political systems.

Section 2: Cross-border dimensions

The third chapter, by Tom Cummins and Ronnie King, examines risks that arise when infrastructure provides routes for energy transit between states. Unlike energy infrastructure developed within the context of a single state, transboundary infrastructure may involve states that have no direct interest in the function of the infrastructure and really have only a transit fee to gain as a benefit. Cummins and King observe that there are now over 2,600 bilateral investment treaties and several key multilateral treaties in force which provide protections against governmental interference with investments. Through an analytical survey of numerous arbitral awards, the co-authors review key provisions contained in most bilateral investment treaties, ranging from, among other things, the definitions of 'investor', 'investment' and 'expropriation' to the critical dispute resolution provisions. Three important multilateral investment treaties are referenced (the North American Free Trade Agreement, the Association of Southeast Asian Nations and the Energy Charter Treaty), before the authors proceed to detail the unique provisions of the Energy Charter Treaty in respect of investment in energy. The Energy Charter Treaty Model Intergovernmental and Host Government Agreements are referenced. The authors conclude by observing that jurisprudence associated with bilateral and multilateral investment treaties is evolving, as is the confidence of many emerging economies that may now be less willing to respect the protections offered.

The fourth chapter, by Katie Baehl, R Coleson Bruce and George F Goolsby, examines the use of tailored project-specific intergovernmental agreements to support large-scale strategic infrastructure. The chapter examines intergovernmental agreements (Vienna Convention treaties) as tools to mitigate risks posed to projects by allocating state-to-state risks to the party best placed to manage it – that is, the state. The authors stress that such agreements are not limited to energy infrastructure and may be used effectively to abate risks to all types of cross-border infrastructure project. Project risks are viewed from the perspective of the host states, including producing states, transit states and consuming states. Private sector stakeholders are fundamentally concerned to secure project rights that are certain and predictable over time. Intergovernmental agreements differ from bilateral investment treaties by providing efficiencies in respect of applicable home country taxes and uniformity in the application of fiscal, legal, technical and regulatory standards, and by supplanting domestic laws unsuitable for cross-border projects. The chapter concludes by examining ways in which intergovernmental agreements may be deployed alongside of host government agreements. Two case studies are presented:

- the Baku-Tbilisi-Ceyhan pipeline, where the intergovernmental agreement

provided for compatible host government agreements across Azerbaijan, Georgia and Turkey; and

- the West African Gas Pipeline, in which a single omnibus host government agreement was entered into between the states of Benin, Ghana, Nigeria and Togo and the project sponsors.

Glen Plant explores, in the fifth chapter, the risks posed to large-scale energy infrastructure projects that have maritime segments involving the carriage of crude oil, liquefied natural gas or refined products by tankers. Plant comprehensively examines the key risks posed to maritime energy cargoes, including:

- war risk, terrorism, piracy, armed robbery and hijacking;
- safety, environmental protection law and blockage risk; and
- direct action protest risk.

While many of the risks appear to be of high impact but low probability, Plant demonstrates through numerous well-researched and well-documented examples that these risks need to be factored into the assessments of project planners. Plant cites as examples two international chokepoints (the Straits of Hormuz and the Straits of Malacca) through which nearly 80% of all seaborne traded oil transits, leaving oil tankers vulnerable to many of the aforementioned risks.

Leigh Hancher analyses regulatory risks to terrestrial cross-border energy infrastructure in developed markets that have comprehensive competition regulation. This chapter therefore stands in marked contrast to other chapters that examine regions where there may be little more in place than applicable bilateral investment treaties. In developed markets, such as the European Union, competition policies are given a high priority and counterbalance the policy objectives associated with attracting investment. The EU electricity and gas exemption regime is designed to discourage bundled ownership between transmission owners, operators and shippers, and their long-term capacity reservations. Accordingly, developers of new energy infrastructure need to demonstrate why failing to secure an exemption to the foregoing principles would pose a risk that the investment would not be viable. Hancher expertly surveys current EU jurisprudence governing the electricity and gas exemption regime, and concludes that the new regime remains partial and unpredictable.

Section 3: Host states' perspectives

Charles Lindsay examines the range of interrelated investor risks from the investment perspective within the context of particular host government jurisdictions in which large-scale transboundary projects are developed. For Lindsay, the investment perspective includes the position of equity investors, their project financiers and shippers, or customers, utilising the infrastructure and thus underpinning the economics of the project. In particular, Lindsay focuses on the use of the host government agreement as a tool for reducing investment-related risks. In addition to discussing the ultimate practical value of host government agreements, this seventh chapter surveys various techniques that may be deployed to enhance

the likelihood that such agreements' rights and obligations will ultimately be enforceable. Lindsay goes on to examine the utilisation of these agreements' provisions to mitigate a full range of specific host government risks, including political risk, government permitting risks, land rights, transit rights, foreign labour and materials, technical standards, changes in law taxation and expropriation.

The economics of any energy infrastructure investment are critically dependent upon the tax treatment afforded by the host government in which it is located and the home government where the investor is based and/or incorporated. The viability of cross-border infrastructure projects hinges upon tax stability and, frequently, tax concessions from host states. The host state's willingness to provide these concessions may depend upon its appetite for the venture. In the eighth chapter, Stuart Schaffer shares his extensive experience of, and practical insights into, tax issues and considerations that investors are likely to confront when seeking to minimise the tax treatment of energy infrastructure projects. For Schaffer, the pre-development stage is critical and a careful survey of all potential fiscal impacts upon a project should be undertaken, with all effects thoroughly identified and understood upfront. He goes on to examine the variety of 'host government take' and offers insights into likely negotiating positions, strategies and tactics that tax negotiators may wish to consider to minimise the risk of fiscal leakage. He offers approaches to the preparation of tax provisions in host government agreements, including ways to minimise the potential tax implications of non-tax provisions, stabilising the project's tax treatment over time and harmonising tax treatment in cross-border projects.

Energy infrastructure investments are often large scale and always long term, and therefore require a fair balance of interests in order to be sustainable. However clever the negotiators may be when the initial deal is struck, unfair advantages invariably become evident over time and will lead to the unravelling of the deal. In the ninth chapter, Judith Kim and Geoffrey Picton-Turbervill view the range of risks confronted by the host state offtaker in evaluating the benefits of a potential energy infrastructure investment. Kim and Picton-Turbervill suggest that the reader consider a hypothetical country and potential gas transit project, and examine the range of objectives and core conditions that the host state would likely want fulfilled. These include many of the same commercial concerns that a downstream offtaker would consider, including delivery schedule, gas quality and pricing. Whether the host state is an offtaker or merely a transit country, all states have additional concerns, including protecting the environment, health, safety and physical security. Kim and Picton-Turbervill neatly illustrate the policy tensions that host states face in balancing the need for investment and the interest in securing supplies against the sometimes countervailing interests of the investor. As host states in emerging markets become more experienced, they may become less willing to accept residual risks – that is, risks not fully within their control. The chapter concludes with the observation that where host states seek a more commercially balanced approach to investment, the result is more likely to prove sustainable over time.

Section 4: Investors' and other stakeholders' perspectives

In the 10th chapter, this book's consulting editor examines the internal risks that

joint venture participants pose to themselves when they join forces. While joint ventures offer the benefits of minimising cost, spreading risk and pooling expertise, they can also create obstacles that impede delivery on schedule, on standard and on budget. Proper management of internal risks is a core issue of corporate governance that should lie entirely within the control of the joint venture. Unfortunately, many joint ventures fail to achieve their business objective and many more remain dysfunctional. The chapter surveys a wide variety of factors that present internal risks to joint ventures, including corporate identity, ownership (western independent, listed and state-owned), business culture and corporate values. The chapter goes on to argue that a failure to align behaviour, standards, values and management systems at the formation stage of a joint venture may sow the seeds for its failure at later stages. The chapter closes by examining current trends and observes that requirements for higher standards in corporate behaviour are often more rigorous in US, UK and Western European contexts. This stands in marked contrast to applicable requirements in markets with the fastest growth in hydrocarbon production and largest reserves. Lastly, the ability of Western privately held and publicly traded oil companies to compete effectively and/or join forces with state-owned companies will be shown to depend upon policy and enforcement choices made by governments going forward.

The lack of adequate finance constitutes a key risk to the implementation of energy infrastructure. Financing can also be used as an effective risk mitigation tool. In the 11th chapter, William E Browning and Alexandre Chavarot discuss the use of project financing in energy infrastructure developments. After defining the core attributes of project finance, Browning and Chavarot examine two main reasons that project sponsors choose to project finance: to access capital (especially useful for weaker credit sponsors that participate with creditworthy sponsors) and to ensure proper mitigation through allocation of key project risks to the party most capable to manage the risks. The chapter expertly reviews the key pre and post-completion risks that financing institutions focus upon. It also explores the discrete roles that various participants in project financing play and the sources, purpose, products and constraints that sponsors should consider in sourcing debt in project financing. The chapter concludes by examining key criteria and processes involved in successful project financing as evidenced in three large-scale recent projects: Baku-Tbilisi-Ceyhan, Nord Stream (Phase 1) and Blue Stream. By posing a series of questions to the finance manager or adviser to each of the three projects under discussion, a series of truly fascinating case studies emerges from an already compelling chapter.

The 12th chapter, by Deborah L Grubbe, examines the nature of technical and operational risk by exploring the nature of economic value ascribed to these risks in the context of an M&A due diligence process. Ironically, Grubbe observes that these risks are referred to as 'non-financial risks' and she discusses them in the context of three broad categories. The first involves valuing people and includes an examination of the workforce, its leadership and culture. The second involves plant (ie, the facility and related hard assets), with subtopics including operations, supply chain and procurement processes. The third involves processes or the soft asset base. Grubbe offers useful tables with practical sample questions that will provide a highly

effective generic aide to participants on M&A teams. This will enable a pragmatic assessment of this all-important dimension of risk in the context of any energy infrastructure project. Grubbe's tables will also be useful as reference points for mitigating technical and operational risk in the implementation of new energy infrastructure developments.

William E Browning and Yashar Latifov explore in the 13th chapter the core components of successful project management. The authors counsel that it is only through a deeply embedded project management system, strong leadership and a strong governance system that the successful technical delivery of a project is assured. The chapter goes on to survey the organisational management of risk, where all risks are comprehensively identified and coordinated activities required to manage those risks are accepted and agreed by the management team. The structure and goals of a successful project management system are also characterised by the authors as holistic planning. As major energy infrastructure projects evolve, the authors argue, the specific management system deployed must be sufficiently robust to evolve throughout the project's various stages. The authors further observe that the maximum opportunity to influence a project is at the project design phase. As expenditures increase, the ability to retrofit design becomes more difficult and costly. It is therefore imperative that all project assumptions be rigorously understood and challenged prior to the final investment decision. Browning and Latifov conclude by underscoring the value of iterative challenges to the project management process across all stages of a project's timeline.

Traditional approaches to environmental and social impact assessments are often a one-step process geared primarily towards fulfilling financing or regulatory requirements. This is in marked contrast to the more fundamental need to manage environmental and social performance throughout the lifecycle of a project. Accordingly, traditional environmental and social impact assessments are of questionable value. In the 14th chapter, David Blatchford and Martin Lednor propose a strategic approach to environmental and social impact assessments that cater all-inclusively to stakeholder interests and constitute a core component of a project's success. The authors argue that this strategic approach requires sponsors to view the assessment as an ongoing iterative risk management tool evolving alongside the project. From this perspective, risk factors gain or lose importance according to whether the project is in the pre-development, construction or decommissioning phase. Blatchford and Lednor propose that strategic assessments offer enhanced environmental and social performance, greater stakeholder acceptance and reduced project risk at a reduced cost to the project sponsors.

In Chapter 15, Anthony FS Ling counsels business to give priority to the causes of security failure and observes that all risks discussed in this book can lead to security problems if left unmitigated. In order to grasp the range of potential causes, Ling urges businesses to adopt a method that alleviates the risk of security failure by prioritising the recognition of potential causes as early as possible – preferably pre-entry; these causes are then logged onto a risk matrix. Categories within the prescribed risk matrix include regional assessments, country security risk assessment scenarios, reputational assessments, environmental, health and social impact

assessments, and project security risk assessments. Dimensionality is enhanced in his discussion of each category by drawing upon a wealth of professional experience in Asia, South America, Africa, the former Soviet Union and the Middle East. Ling's chapter further offers a methodology to source and organise the data points into low, medium and high risks for each assessment category before turning to a discussion of risk mitigation. In particular, Ling suggests that for any risk graded medium or above, a risk assessment plan be recommended. With respect to transboundary projects, Ling observes that the causes of risk are likely to belong to any of three overlapping areas (social, political and project risks), and concludes by providing specific pragmatic recommendations on risk mitigation within each area.

Henry Thompson examines the interrelated dynamics between energy infrastructure projects and communities where he places a specific emphasis on land utilised for projects in the book's closing chapter. This 16th chapter is divided into two parts, with the first examining the risks that arise when there is a breakdown in communication between projects and communities, and the second examining the risks and issues that arise in connection with land tenure and land rights. Thompson elegantly enables the reader to share the differing viewpoints of business and communities by offering a case study as focal point for his analysis. His chapter's many insights are penetrating and explain with precision sources of misunderstanding, such as: "local communities are primarily agrarian, stable, traditional in outlook, and ostensibly conservative and ...the land is quite literally the foundation of their life ...[while] extractive companies are not so much connected to the land as to the resources that lie beneath it." In the second part of the chapter, Thompson skilfully analyses the types of ownership and usage of land – especially rural land – and observes that, in general, indigenous populations incur significant losses to livelihoods, status and stability as a direct result of major investments in oil and gas. He goes on to observe that indigenous people also constitute a significant risk. "The poorer, less well educated, less well resourced and legally empowered people are, the more likely they are to incur loss and create conflict." Thompson concludes by pointing out that the fundamental onus lies squarely on the company to address the multiplicity of issues and risks in an inclusive and appropriate manner. "Free prior informed consent is rooted in international human rights law and constitutes a core principle of corporate responsibility."

Introduction

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Projecting global requirements for future primary energy is notoriously difficult and must ultimately rely upon some form of scenario analysis. The International Energy Agency has estimated that global requirements will increase by 1.6% per annum or 45% in total between 2007 and 2030. In addition to the replacement of ageing infrastructure, the development, financing, construction and operation of the future energy infrastructure required to deliver this energy to end users will place acute emphasis upon mobilising large-scale public and private sector investment. The agency further projects that total investment in energy supply infrastructure between 2007 and 2030 will require approximately \$26.3 trillion.¹ Whatever the actual scale of demand growth in energy, the investment required to satisfy it will rest upon a staggering array of complex international trade, macroeconomic, political, technical, environmental and social challenges, presenting areas of risk that warrant careful analysis by policy makers and private sector investors.

The dislocations in global supply and demand for oil and gas are becoming increasingly marked. Remaining lower-cost hydrocarbon reserves are now concentrated in the Middle East, North Africa and the former Soviet Union, while the main consuming markets are located in North America, Europe and – increasingly – Asia-Pacific (China and India). In the aftermath of the 2008 financial crisis, economic growth in emerging markets has driven demand for oil higher and thus has created higher commodity prices. The upward pressure on oil prices has also been pushed by unprecedented instability across the Middle East and North Africa. In addition, that pressure – exacerbated by the Fukushima tragedy in Japan – has renewed the cloud over the utilisation of nuclear energy as a potential substitution for hydrocarbons.

The supply/demand dislocation has driven disparate and competing policy responses. On the one hand, the distance from conventional producing fields to markets is increasing as governments and international oil and gas companies are forced to seek out new reserves further afield. This requires the construction and operation of additional infrastructure such as oil and gas pipelines and related facilities, including liquefied natural gas facilities; this, in turn, raises further concerns, prompting additional policy considerations.

Diversification away from cheaper oil in the Middle East, North Africa and the former Soviet Union also forces governments and international oil companies to

1 www.iea.org/speech/2009/Tanaka/4th_OPEC_Seminar_speech.pdf.

develop and produce reserves in new, more politically fluid and hostile environments such as Iraq or in environmentally sensitive areas such as the Arctic, the ultra-deep water Gulf of Mexico or Brazil. While reserves diversification may in one sense further secure energy supplies and aid international oil companies to maintain their reserves' replacement ratios, the technological complexity and longer lead times also escalate costs.

By contrast, the exploitation of reserves closer to home reduces the distance from production source to market, ensures security of supply and alleviates strains on balance of payments associated in part with financing high-cost imported oil. On the other hand, the development and production of heavy oil sands in Canada coupled with shale gas in the United States and the European Union raise concerns relating to the environment, potential social impacts and the risk of climate change; each case requires, as a consequence, the cost-intensive deployment of technology.

The pragmatic reality is that the projected rise in primary energy demand appears to be a juggernaut that will require vast amounts of global investment to maintain pace. Governments will need to secure energy supplies for their populations and to do so they will need to work with investors. Decisions will need to be taken to minimise risks and lead times posed by legal, regulatory and fiscal requirements. Governments will also have equally compelling obligations to ensure that the interests of their populations are protected by ensuring fair terms for enabling investment while minimising potential detrimental impacts on health, safety, environmental, security and human rights of their population.

Policy makers, industrial players and financiers will need a clear understanding of the nature and range of potential risks involved. In particular, investors will need to quantify the cost associated with assuming risks that cannot be controlled (eg, political risk) and the cost associated with managing risks that can be controlled (eg, health, safety and environmental risks). The costs and lead times associated with mitigating and managing these risks will in part determine the ultimate return on investment. Where the risks (and associated costs) are so high, or the lead times so long, that acceptable returns are not possible, investors will simply not commit the required investment.

In reconciling these competing policy considerations, additional questions arise in connection with whether these risks are best managed bilaterally between states and investors. A common assumption prevails: as investors move from more mature members of the Organisation for Economic Cooperation and Development (OECD) to emerging markets, risks to investment increase. This enhanced risk is largely associated with perceptions about relative deficiencies in the application of the rule of law and the overall strength of the underlying economy.

The recent financial crisis has challenged this assumption as investors look to emerging markets for growth and greater returns on capital as more mature OECD countries appear to stagnate. The root cause of the financial crisis is the direct result of unregulated risk taking on Wall Street and other financial centres among OECD countries. Coincidental with the financial crisis, two of the most spectacular and tragic industrial accidents in the last decade (Texas City and Macando) occurred in the United States. Both were in part blamed on inadequate regulatory oversight by

agencies otherwise charged with protecting health, safety and environment. Together these events have wreaked havoc on regional macroeconomic stability, and have also resulted in loss of life, injury and significant environmental effects upon the ecosystem of the Gulf of Mexico and the many people who depend upon it for their livelihood. With regulators either sleeping at the wheel or having inadequate regulatory oversight at their disposal, the idea that respect for the rule of law is greater among OECD members than in emerging markets may now have less of a deterrent effect on investment in developing economies.

Civil society is increasingly demanding that the interests of people, communities and the environment be taken more directly into account in establishing the legal architecture that defines how energy infrastructure projects are developed, financed, constructed and operated. The traditional bilateral arrangement – host state and investor, where rights to develop projects are granted to investors and the forward implementation of the project is defined entirely within the framework of that bilateral relationship – appears increasingly inadequate to protect these broader interests. The role of government as the exclusive protector of the interests of people, communities and the environment is prompting unprecedented scrutiny by all stakeholders. Direct consultations between affected communities and investors are being demanded. Norms are being put into place by governments, international organisations and, internally, companies to identify and manage the risks associated with failing to take into account the wider impacts of these vitally important projects.

This book brings together experts in the field of identifying various risks posed to, and by, complex energy infrastructure projects, and explores the mitigation of those risks. It is hoped that several objectives are thereby fulfilled. By asking each expert to offer a perspective on the risks lying within their particular area of expertise, and collecting these perspectives together into a single volume, a broad-spectrum analysis of the variety of risks facing the development, financing, construction and operation of large-scale energy infrastructure projects is presented. It is also hoped that this book may form a reference point for professionals in one discipline who wish to gain an understanding of the risks viewed through the lens of another professional.

It is surprising to note the absence of a holistic view of the risks posed to, and by, these large-scale projects among core players involved in their implementation: international oil and gas companies, governments and civil society. This book is intended to provide a comprehensive viewpoint on associated risks. It may also contribute to an informed dialogue among industry, policy makers and civil society to develop an enhanced understanding of the risks and pragmatic challenges associated with delivering key energy infrastructure projects.

Within international oil companies, the absence of a 360° vision may be due to the way that many such companies are organised and mobilised to deliver projects. Typically, the personnel deployed at the front end of a project (ie, in the feasibility and business development phase) are different from the personnel deployed to execute the project (ie, the construction phase) and the personnel brought in to operate the infrastructure. Moreover, the implementing company (the operator) will

often procure vast numbers of third-party contractors to undertake the front-end engineering, design and construction of the project. Operator assurance over the execution of the contracted works and services may often fall between the cracks separating the operator's procurement department, its on-ground construction managers and assurance personnel. Lastly, given the 20 to 30-year economic lifespan of these projects, the operating personnel may change many times over the lifespan of the infrastructure developed. The utility of a holistic view of each phase of such a project will, it is hoped, be of undisputed value to the management at any given stage of development or operation.

Within governments, there is rarely an understanding of the core commercial drivers that require alignment in the correct sequence before a project may be realised. Time and again, governments fail to understand that when private sector finance is involved, politics and commerciality are both necessary conditions, but rarely is either sufficient on its own to deliver a large-scale energy infrastructure project. Without a clear line of sight to a commercial return on investment, private sector money will not be invested.

Within international civil society organisations, there is often an abundance of goodwill that is frequently undermined by a failure to understand the pragmatic dimensions of risk involved in the implementation of energy infrastructure projects. In those instances where the expertise is present, civil society organisations are often tempted to campaign against high-profile projects rather than focusing on the more mundane task of policing the day-to-day implementation of more conventional projects or commitments made by projects after they have been constructed and long after they disappear from the headlines.

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