Project Finance: Practical Case Studies
Second Edition
Volume I – Power and Water

Henry A. Davis
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Second Edition

VOLUME I

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Henry A. Davis
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About the author

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Foreword

Jacob J. Worenklein
Managing Director and Global Head of Project and Sectorial Finance Group
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Henry A. Davis’s survey of the major project financing developments in the power sector appears at a critical time for the industry globally. In both the developing world and the richest nations, major portions of the power and infrastructure sectors are convulsed by crisis.

In the developing world, the largest and most important private-sector power projects of the 1990s – including the multi-billion dollar Dabhol and Paiton projects in India and Indonesia discussed in Chapters 5 and 6 of this book – went into default. The Indian government was unwilling, and the Indonesian government and others were unable, to honour their obligations to some of the world’s largest industrial and financial companies, as well as to the governments of the United States, Japan and Germany. These companies, banks and governmental agencies had shown their confidence in these countries – as well as others such as Argentina and Brazil – by investing billions of dollars in the largest power projects that these developing nations ever had undertaken. This confidence, however, was shattered and investors learned tough lessons that, sadly, will hurt developing countries seeking private-sector infrastructure investments for years to come.

In the United States and the United Kingdom too, the power sector has been racked by the loss of confidence in the industry among investors, beginning with the failure and fraud of Enron, and by collapsing power prices arising from excess capacity; the freezing of deregulation midstream, which created an uneven playing field between regulated and unregulated entities; the elimination of long-term contracting capability among most power marketers and traders; and other factors. As a result, many now question both the business models that took hold in the power sector and the credibility of deregulation. Hal Davis’s excellent studies of Drax in the United Kingdom (see Chapter 12) and Panda-TECO in the United States (see Chapter 13) demonstrate how the confluence of many seemingly unrelated events can inflict significant pain on major participants in these projects. When major corporations fail, such as TXU Europe and Enron in these two cases, they spread havoc even in unexpected places, as the failure of Enron did in destroying its subsidiary Nepco, the Panda-TECO contractor.

Focusing on the US and UK power sectors, the magnitude of the financial pain is unprecedented. The collapse of power prices and asset values, along with the failure of many of the major players in the unregulated power business (which led to the cascading collapse of additional players and projects), has resulted in the loss of several hundred billion dollars by equity and debt investors. The equity market capitalisation of nine of the US industry’s players alone declined in one year from some US$130 billion to less than US$10 billion. The carnage permanently destroyed the merchant power model for generation, ensuring that nei-
ther equity investors nor lenders will finance future capacity on a merchant-power basis without long-term contracts from load-serving, regulated utilities.

What will replace the merchant model for power generation remains to be seen, but it is likely to be founded on a central role for the load-serving utilities. At a minimum, regulatory commissions will encourage or compel power generators to enter into contracts for capacity that are sufficiently in advance of need, in order that shortages do not arise (and market participants can observe that they will not arise) and power prices do not reach the astronomical levels that would result if shortages were to materialise. Some regulatory commissions are likely to encourage their regulated utilities to add capacity themselves to play it safe.

Disengagement of investors and lenders

In the meantime, investors have disengaged themselves from much of the power sector, causing a collapse of prices and withdrawal of capital. This is the natural result of the loss of confidence among investors who thought that they understood the rules governing the power system, but then invested in companies and projects that collapsed. It is reasonable to expect that this disengagement will last until investors gain an understanding of the new reality and believe that the environment is stable. Re-establishing such confidence requires a great deal of time. Regulators should understand that it is a key part of their job to help create a climate of stability in which the reasonable expectations of investors can be realised.

If a collapse of confidence is the case for the power sectors in the United States and the United Kingdom, it is even more evident in the developing world – and more dangerous for its prospects. In one way or another, the necessary investment will be forthcoming for the richest countries, such as the United States and the United Kingdom. However, we have no basis for believing that the same will be true for the world’s developing countries.

Indeed, private-sector investment in infrastructure such as power, water and transportation in the emerging markets has been dealt a severe blow. A new model is needed to ensure that capital can continue to flow where it is so greatly needed.

The powerful idea of private sector investment in infrastructure

Most of us in the project finance business have dedicated our professional lives to implementing around the world one great and powerful idea: that supplying energy, water, transportation and other infrastructure to the world through a competitive private sector will do much good for the world, including the alleviation of poverty through economic development, and will create excellent businesses for our companies.

Massive amounts of capital have flowed around the world in support of this great idea — US$1 trillion for the power sector alone in the past 10 years. Great companies have been built in pursuit of this idea, with public and private equity markets embracing — up to now — the vision of growth and profitability. This confidence, however, is now gone and will be hard to restore.

Vulnerability of emerging markets infrastructure

Hal Davis’s case studies underscore the lesson that emerging markets projects are highly vulnerable to economic problems in their host countries. This clearly has been seen in the past
10 years in Argentina, Brazil, Colombia, Indonesia, Mexico, Pakistan and Thailand. Most distressing are projects where the will to pay was lacking, as in the case of projects such as Dabhol in India (see Chapter 5) and Meizhou Wan in China (see Chapter 2).

Common aspects among most of these cases were:

- severe foreign exchange crises in the host country;
- national political instability and changes in government;
- allegations of corruption in obtaining contracts; and
- economic problems resulting in overestimating the need for power.

On balance, the governments involved were not able, or did not feel a compelling need, to perform their obligations.

Among the lessons we have learned, as evidenced in a number of Henry Davis’s case studies, is that the expected political risk protections built into many projects often have proved illusory. Political risk ‘protection’ provided by the involvement of major multilateral agencies and export credit agencies (ECAs) has proved to be weaker than expected because of their conflicting national or supranational interests. For example, in the early 1990s, when Thailand abrogated its commitment to increase tolls in the Bangkok Second Stage Expressway (a project with large Japanese involvement), the Japanese government was remarkably quiet considering the other major interests of Japan in Thailand. The United States similarly felt that it had broader national interests in Indonesia, given the political turmoil in that country in the late 1990s, than to insist on payment to power projects undertaken by US companies and funded significantly by US government agencies (see the case study on Paiton Energy, Chapter 6).

Certainly the involvement of major multinationals has not proved to be a deterrent to politically inspired action against projects. Moreover, the agreement of host countries and project sponsors on the independent arbitration of disputes under clear international rules, in places such as London and Stockholm, in reality often has been frustrated by the actions of host governments, as the author points out in several of his case studies.

**Context of continued decline of net private capital to emerging markets**

The crisis in emerging-market infrastructure projects is part of a broader crisis of private capital flows to emerging markets. In 2001 these flows stood at the lowest level in 10 years: US$115 billion, down US$54 billion from 2000. This is less than half the average in 1995-97.

New lending to emerging markets as a whole was close to zero from 1998 through to 2001. In 2001, total private lending to emerging markets (including new bond issuances) was minus US$32 billion. In other words, more money was repaid to global lending institutions and bondholders than was borrowed. Net official flows were expected to total US$18 billion in 2002.

**Equity investors do not buy the story of emerging markets infrastructure**

That shortfalls are likely to continue in private infrastructure investment in these countries has become particularly clear during 2002 and 2003. Some of the best global power companies with large emerging markets businesses, such as AES, have seen their stock prices devastated as a result of problems in some of their emerging markets investments, particularly in Latin America.
Equity investors today are not buying the story that emerging-market infrastructure is a good business — at least not in the current model of how the business has been done. Under this model, infrastructure projects in emerging markets will not be the beneficiaries of major private capital flows for a long time.

Emerging markets: rethinking Public-Private Partnerships

The private build-own-transfer (BOT) or build-own-operate (BOO) model does not appear to be as powerful an answer to the infrastructure needs of the developing world as it was once thought to be. New models for partnership between the public and private sectors in the developing world are needed to provide greater assurance of project viability and greater incentives for performance by governmental parties.

Some constructive approaches include the following:

- insisting that projects be part of a well-structured regulatory approach for the industry as a whole (for example, the Azito project in Côte D'Ivoire, discussed in Chapter 4), with a focus on the health of the distribution system, and not merely adding islands in a bankrupt system (as was done in the Dabhol project, discussed in Chapter 5);
- co-investment in projects by host-government agencies through loans and minority equity ownership, with a waterfall of equity payments directed first to private sector investment and then to government;
- the purchase of political risk insurance for emerging-market projects on a more routine basis;
- the greater use of targeted, 'enhanced' political risk insurance aimed at major specific risks of the project or privatisation, including default in performance of obligation by a government or related entity. Such insurance may come from private-sector entities (as in the case study of the CBK project in the Philippines, discussed in Chapter 10) as well as from governmental entities;
- creative approaches being pursued by the World Bank, the International Finance Corporation (IFC), other multilateral and ECAs. One approach of particular promise is the IFC's consideration of a liquidity facility to provide several years of transitional project support during periods of currency crisis (to keep interest current, for example);
- a greater financing role by multilateral agencies, ECAs and other governmental entities (although this is not a panacea, as case studies in this book make clear); and
- the creative application of the IFC's partial-credit guarantee to support local-currency financing of projects and longer tenors in local markets.

In general, much greater respect is warranted for the value that can be added by multilateral, ECAs and other governmental agencies — despite the resulting delays — than most project financiers have recognised in years past, when most focused on the ability to finance many emerging-market projects in stronger countries through bank and bond markets without multilateral and ECA support. This was not wise — it was a triumph of optimism over experience — and is no longer a viable approach.
New form of Public-Private Partnerships needed in the poorest countries

In the poorest countries in the developing world in particular, the classic project finance approach does not work. In these countries governments and people are often too poor to pay for the critical water, power, transport, health and other infrastructure facilities that they need. For many of the world's poorest countries it is not realistic to expect that, at this stage in their development, they can attract sufficient trade and investment to help them break the cycle of poverty.

In the United States and other countries development assistance needs to be put back on the national agenda — but in a more effective form.

Implementing development assistance through Public-Private Partnerships in poorest countries

Development assistance would be implemented more effectively and quickly, and with fewer concerns about waste and corruption, if the private sector played a key role in the execution of development assistance projects. A private sector initiative for the development of critical water, transport, power, health and other facilities in the world's poorest countries is needed in partnership with local governments, Western government donors and multilateral institutions.

Under one approach for such a partnership:

- private-sector companies would take the lead in developing, financing, implementing, owning and operating critical health, water, transport, power and other projects deemed to be of the highest priority by the governments of the recipient countries and by Western donor countries; and
- Western donor countries would pay for the services provided by these projects as part of a programme of official development assistance (directly or through multilateral institutions such as the World Bank).

Governmental payments would be made through an agreed schedule of payments for services delivered to provide the greatest incentives for effective service delivery. Where payment for services is not a practical approach, government donors may need to help pay for the funding of construction and operation, particularly in the most difficult countries.

Placing the responsibility and the flow of funds for these projects in the private sector would help address public concerns in the United States and elsewhere that foreign aid is wasted, being spent on ineffective 'vanity projects' that do not help the recipient countries significantly, and that a large portion of the funds historically has been diverted to the pockets of corrupt politicians.

Building on the project finance Public-Private Partnership model

The Public-Private Partnership approach would be based in part on the project finance model, through which more than US$100 billion per annum of power, water, transport and other infrastructure projects have been implemented in both the developed and developing worlds.

There are encouraging examples of successful projects, such as the provision in Buenos Aires over the last eight years of a drinking water network for 1.6 million people and a sewage system for nearly one million people, but these are exceptions.
FOREWORD

Necessary infrastructure projects are rarely implemented in the world’s poorest areas because of the need for adequate credit quality of the off-takers, but it is in these countries that the need is greatest.

Project finance will continue to play a major role

As the model for infrastructure projects throughout the world continues to be refined to apply the lessons learned, it is likely that project financing will continue to play a major role in the sound and creditworthy structuring of projects. Despite the losses experienced in some of the projects discussed by Hal Davis and alluded to in this foreword, the fact remains that even these projects have, in most cases, proved to be resilient over time.

One of the key lessons learned is that projects that fill an important social need, are fundamentally sound and low-cost, and have sponsors with the financial resources and patience to work though problems have enabled investors and lenders to recover a much higher percentage of their investment than have similarly rated corporate investments. This reflects the secure nature of these investments, the strategic nature of the facilities being financed and the careful structuring of all contractual, and other, aspects of the projects.

Examples of such projects include the Indonesian power projects, including Paiton Energy (discussed in Chapter 6) and Jawa Power (not in this book), which are on the path to recovery, and the Indonesian telecommunications projects (not in this book), which are expected to recover. Similarly, the success of International Power in working through the problems of its Pakistan projects (not in this book) is encouraging.

Government agencies in these countries have worked through project problems in the midst of great domestic difficulties, but still have demonstrated much higher recovery rates than similarly rated corporate transactions.

Role of private sector in global power and infrastructure

The common element in all of the initiatives discussed in this important book is the creativity of the private sector, working with governments and other affected parties, in building key facilities needed by people around the world to live better lives. Henry Davis’s excellent introduction and case studies demonstrate the great challenge we face in the development and financing of critical infrastructure on a global basis, particularly in the developing world. We have learned many lessons from our mistakes, and Henry Davis teaches them well. This book comes at a time of crisis. It makes an important contribution to our understanding of what can go wrong and what is needed to implement better the critical power and infrastructure facilities that the world needs.
Introduction

The scope of project finance both changed and expanded in the 1990s. The growing need for power and other infrastructure facilities increased the demand for project financing, while the sources of project finance broadened to include the capital markets. Financial tools such as pooling, securitisation and derivatives provided new ways to mitigate project risks. As investors and lenders became more familiar with project finance, they showed increasing risk tolerance. As a result, the boundaries of project finance have widened. In the mid-1990s banks and institutional investors financed projects with structures and terms that would have been hard to imagine just five years before. The total worldwide volume of project finance increased rapidly from 1994 to 1997, lessened after the Asian financial crisis in 1997 and then increased to a new high in 2000. Project finance then declined once again along with the collapse of equities, particularly in technology and telecommunications; the related decline in technology and telecom capital expenditures; and the Enron bankruptcy and associated scrutiny of power companies’ trading activities and balance sheets (see Exhibit A).

Project Finance: Practical Case Studies consists of 38 case studies of recent project financings. This first volume covers power and water (irrigation) projects, and Volume II covers resources and infrastructure projects. The project case studies were selected to exhibit the types of projects most frequently financed in a variety of countries. Because these case studies illustrate different aspects of project finance across the major geographical areas, the nature of their content varies considerably. For example, some contain a detailed description of project documentation while others do not cover documentation at all. Some power pro-

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Source: Dealogic ProjectWare.
The case studies are concerned primarily with negotiating contracts in countries that are just beginning to privatise their electricity sectors, while others concentrate on new financing techniques and adapting to a merchant power environment.

The case studies in these volumes cover a broad range of industries and geographical areas as illustrated in Exhibit B.

Industry sectors

*Volume I – Power and Water* covers issues such as the privatisation and deregulation of the electricity industry, adaptation to merchant sales and pricing environments, negotiating initial independent power projects in developing countries, political risk, recent financing innovations, and the worldwide ripple effect of the California power crisis and the Enron bankruptcy, including the pullback of large international power players.

In *Volume II – Resources and Infrastructures*, the pipeline project case studies discuss the increasing willingness of both the bank and capital markets to take risks in a developing country; the requirements for multilateral agency participation; and the need to address environmental, social, and sustainability issues. The oil field production project case study demonstrates how the credit rating of a solid export-oriented project with strong sponsors can pierce the sovereign ceiling of a country with political difficulties. Similarly, the refinery case study presents an example of a project with pure emerging-market risk that can survive in a difficult economic environment. The mining project case studies demonstrate sensitivity to commodity price risk, the negotiation of a basic legal structure with a host government, and the construction and operating difficulties involved. The toll road project case studies outline bridge construction challenges, and issues related to the respective roles of the government and the private sector in assuming construction and traffic risks, a flexible repayment mechanism to cope with traffic risks, and problems when traffic does not meet projections. The airport case studies present an example of a whole-business securitisation, and describe difficulties related to lower-than-projected passenger traffic and ongoing negotiations with the government on concession issues. Finally, the three telecommunications pro-
ject case studies discuss topics such as a creative lease structure that provided financing for a state-owned telephone company, an aggressive multinational network expansion that could not be supported when telecom capital expenditures collapsed and an international consortium’s overpayment for a local cellular telephone licence.

Geographical areas
The case studies in these volumes were intentionally selected to provide geographical diversity. Although, over the long term, there is not a great deal of difference between project financings in geographical areas per se, recent regional economic difficulties, such as the Asian financial crisis, the Russian default and the Brazilian devaluation, have had medium-term effects both on sponsors’ abilities to finance projects and on the terms of available financing. There also is a significant difference between financing projects in member states of the Organisation for Economic Cooperation and Development (OECD) and developing countries. Among worldwide emerging-market considerations for projects across all industry sectors are prolonged negotiations; the familiarisation of government officials, lawyers and bankers with financial and legal concepts new to the local market; and the enactment of new laws to cover a broad range of issues, including commercial contracts, collateral and security interests, power and fuel purchase agreements, mineral rights and repatriation of profits and capital. These issues are particularly apparent in Africa, which became a significant project financing venue in the 1990s.

Content and research method
Prior to delving into the case studies in this volume, and those in Volume II – Resources and Infrastructure, this introductory, analytical chapter, replicated in each volume, discusses current trends in project finance and important themes that run through the case studies. When a specific case is referred to, the chapter in which it is discussed is noted if it appears in this volume and a note to see Volume II – Resources and Infrastructure is provided if it appears in Volume II. Information for both this chapter and the case studies was gathered from the financial press; credit rating agency analytical reports; and on-site and telephone interviews with commercial bankers, investment bankers, project sponsors, institutional
investors, rating agency analysts and others. On-site interviews generally ranged between one and two hours. The interviews were taped and the case studies were approved for accuracy by the interviewees. To help focus the interviews and the content of the case studies, the author developed an interview protocol and used the 'Checklist for a successful project financing' from Project Financing Seventh Edition (see Exhibits C and D). For more than 25 years, the seven editions of Project Financing have been one of the most widely used sources of basic information on project finance. For each project, it was understood that some items on the interview checklist were more applicable than others. The interviewees’ comments and the contents of the case studies generally concentrate on aspects of the project financings that were the most interesting, unusual or useful to the practitioner. Each project has its own purpose and momentum, and the case studies are not intended to touch on all of the same issues.

The nature of project finance
Project finance is generally defined as the provision of funds for a single-purpose facility (or facilities) that generates cash flow to repay the debt. Debt is secured by the project’s assets and cash flows, not by the assets or general credit of the project’s sponsor(s). Therefore the debt generally is issued with no recourse, or, in some cases, with limited recourse, to the project sponsors. Project finance often is used for capital-intensive facilities such as power plants, refineries, toll roads, pipelines, telecommunications facilities and industrial plants. Before the 1970s the majority of project lending was for natural resource ventures such as mines and oilfields. Since then the applications of project finance have broadened considerably, but power has been the largest sector.

Exhibit D

Checklist for successful project financing

1. A credit risk rather than equity risk is involved.
2. A satisfactory feasibility study and financial plan have been prepared.
3. The cost of product or raw material to be used by the project is assured.
4. A supply of energy at a reasonable cost has been assured.
5. A market exists for product, commodity, or service to be produced.
6. Transportation is available at a reasonable cost to move the product to the market.
7. Adequate communications are available.
8. Building materials are available at the costs contemplated.
9. The contractor is experienced and reliable.
10. The operator is experienced and reliable.
11. Management personnel are experienced and reliable.
12. New technology is not involved.
13. The contractual agreement among joint venture partners, if any, is satisfactory.
14. A market exists for product, commodity, or service to be produced.
15. A stable and friendly political environment exists, licences and permits are available, contracts can be enforced, and legal remedies exist.
16. There is no risk of expropriation.
17. Country risk is satisfactory.
18. Sovereign risk is satisfactory.
19. Currency and foreign exchange risks have been addressed.
20. The key promoters have made an adequate equity contribution.
21. The project has value as collateral.
22. Satisfactory appraisals of resources and assets have been obtained.
23. Adequate insurance coverage is contemplated.
24. Force majeure risk has been addressed.
25. Cost over-run risk has been addressed.
26. Delay risk has been considered.
27. The project will have an adequate return for the investor.
28. Inflation rate projections are realistic.
29. Interest rate projections are realistic.
30. Environmental risks are manageable.

INTRODUCTION

For lenders and investors the essence of project finance is the analysis of project risks, including construction risk, operating risk, market risk (applying to both inputs and outputs of a project), regulatory risk, insurance risk and currency risk. These risks often are allocated contractually to parties best able to manage them through construction guarantees, power purchase agreements (PPAs) and other types of output contracts, fuel and raw material supply agreements, transport contracts, indemnifications, insurance policies, and other contractual agreements. However, with projects in all sectors, sponsors, lenders and bank investors are exposed to significant market risk. Although recourse to sponsors is usually limited, they often provide credit support to the project through guarantees or other contractual undertakings. For example, an industrial sponsor of a cogeneration project may contract to buy steam from a project and another sponsor may contract to sell power to it. Sponsors' economic interests in the success of a project make impressive contributions to the project's creditworthiness.

Project financing generally is done without recourse to project sponsors, and projects are often, but not always, off corporate sponsors' balance sheets. As it does with a subsidiary, a sponsor includes a project's assets and liabilities on its balance sheet when a project is consolidated. When the equity method of accounting is used the sponsor's investment in a project is shown as a single amount on its balance sheet, and gains or losses on the project are shown as a single amount on its income statement. A sponsor generally uses the equity method to account for an investment in a project where it owns less than 50 per cent but can still influence its operating and financial decisions. If a sponsor has less than a 20 per cent interest in a project it is presumed to lack significant influence over the project's management and neither consolidation nor the equity method is required. Presumably, a sponsor's investment in a project and the related income or losses would be combined with other items on its balance sheet and income statement. It would be considered good practice on the part of the sponsor to include some mention of the project investment in the footnotes, particularly given the emphasis on disclosure and transparency in today's post-Enron environment.

Why project finance is used

Project finance can be more leveraged than traditional on-balance-sheet financing, resulting in a lower cost of financing. In countries with power and other infrastructure needs, project finance allows governments to provide some support without taking on additional direct debt. The growth of project finance in recent years has coincided with a trend toward privatisation.

For sponsor companies project finance may accomplish one or more of the following objectives:

- financing a joint venture;
- undertaking a project that is too big for one sponsor;
- assigning risks to parties that are in the best position to control them;
- insulating corporate assets from project risk;
- keeping debt off the corporate balance sheet;
- protecting their corporate borrowing capacity;
- maintaining their credit rating;
- improving corporate return on equity (ROE);
• restricting proprietary information to a limited number of investors;
• avoiding double taxation;
• sharing ownership of projects with employees; and/or
• establishing a business venture in a foreign country.

Sources of capital
Historically, commercial banks have provided construction financing for projects, while insurance companies have provided take-out financing with terms of 20 years or more. Banks have been relatively more comfortable with construction risks and short-term loans, while insurance companies have been more comfortable bearing the long-term operating risks after construction has been completed and the project has demonstrated its capability to run smoothly.

In the early 1990s, however, the investor base for project finance began to broaden. It now includes institutional investors, such as pension and mutual funds, and investors in the public bond markets in a growing number of countries around the world. Two important developments made institutional investors more receptive to project finance investments than they had been in the past: a ruling by the US Securities and Exchange Commission (SEC), and the issuance of project credit ratings by the major credit rating agencies.

SEC Rule 144a allows the resale of eligible, unregistered securities to qualified institutional buyers and eliminates the requirement that investors hold on to securities for two years before selling them. Recently, sponsors of some large power projects have aimed their financing solely at the institutional 144a market. Others have been able to reduce their financing costs by committing themselves to full registration for sale in the public markets within six months after their 144a securities are issued, thereby providing a more liquid market for the institutional investors that hold the securities.

With respect to project credit ratings, as the capital markets became an important source of funding the amount of rated project debt grew rapidly. For example, in 1993 Standard & Poor’s (S&P) portfolio of rated project debt was $5.8 billion. The agency then established a project rating team in 1994. By mid-1996 it had rated $16.3 billion and by the end of 2002 $106 billion of project debt had been rated. Debt rated by the two other leading credit rating agencies, Moody’s and Fitch Ratings, has grown in a similar fashion.

Institutional investors' needs
For institutional investors project finance offers a way to diversify and earn very good returns for the amount of risk taken. As more power and other infrastructure projects are financed and demonstrate a track record, more investors are becoming comfortable with the risk. William H. Chew, Managing Director of Corporate and Government Ratings at S&P, sees project finance as not just another Wall Street invention, but a growing investment vehicle with a strong demand on both the buy and the sell sides. It provides the uncorrelated returns for which portfolio managers have been looking, and risks that are different from the credit of the sponsor or the off-taker of the project’s product.

Trends in project finance
Recent trends in project finance include the following.
Infrastructure requirements
There continue to be massive infrastructure requirements, particularly in developing countries. For example, the World Bank estimated that between 2001 and 2006 Latin America alone would need more than US$70 billion per year in infrastructure investment to meet the needs of its growing and largely impoverished population. Developing countries in other regions have needs of a similar magnitude.

Privatisation
This is a worldwide trend that both reflects political currents and provides a way to supply needed infrastructure in the face of government budgetary limitations. Variations on this trend include public/private partnerships, notably the Private Finance Initiative in the United Kingdom.

Legislative and regulatory frameworks
Historically, the lack of legislative and regulatory frameworks has been an impediment to project financing in developing countries. Some case studies in these volumes, however, show how sponsors of first-of-their-kind projects have worked with host governments to develop legal and regulatory structures for future projects in emerging markets in Africa, Asia and Latin America.

Financial innovation
As innovations are made in other financial disciplines, such as leasing, insurance and derivatives-based financial risk management, they are applied quickly to project finance.

Broadened sources of funding
An ongoing trend since the early 1990s has been the growing use of bonds, both investment-grade and high yield, for project financing. These bonds have been sold to a broadening base of institutional investors, leading to a growth in credit-rated project debt. Connected to this trend, power project portfolios and investment funds comprising projects from different industries are providing investors with a way to spread risks and project sponsors with an additional source of financing. Also related is the growing flexibility between bond and bank financing, which is helped by the increasing number of financial institutions with both commercial and investment banking capabilities which can offer both loan and bond alternatives in a single project financing package.

Local currency financing
As the role of pension funds and other institutional investors broadens in many emerging markets, local-currency funding is becoming increasingly available for project financing. This development is particularly helpful to sponsors of infrastructure projects that generate local-currency revenues, as it allows them to avoid mismatches between those revenues and dollar-denominated debt.
POWER AND WATER

Blending of project and corporate finance

A lack of risk tolerance and market liquidity sometimes prevents projects from being financed off the corporate balance sheet on a pure non-recourse basis. Projects today are financed along a spectrum ranging from pure project finance to pure corporate finance. A company such as Calpine, which is essentially a power plant portfolio, is one example of the blurring of the line between corporate finance and project finance.

Insurance

The role of insurance in project finance has increased steadily in recent years. Historically, the insurance industry has provided property and casualty coverage, and political risk coverage. Recently, insurers have become more active in covering completion risk, operating risk, off-take risk and residual value risk.

Residual value insurance, for example, can help sponsors and lenders to refinance risk when projects require loan pay-outs with longer terms than are available in the bank market. If a balloon payment (the repayment of most or all of the principal at maturity) is not made, or a project cannot be refinanced and the loan goes into default, the lender can seize the asset. If liquidation proceeds are less than the amount of residual value coverage, a claim for the difference can be made against the policy.2

Highly rated insurance companies with dynamic risk management capabilities can close the gaps in capital structures of projects exposed to market risks. For example, in 1999 Centre Group guaranteed the subordinated debt tranche for the Termocandelaia merchant power project in Colombia. If the project's cash flow was insufficient to make a debt payment, the insurance company agreed to step in and make that payment. An insurer can provide a take-out guarantee for project lenders when a PPA matures before a loan. Insurers can guarantee that a project receives a minimum floor price, regardless of what happens to the market price of its output. Insurers can provide standby equity and subordinated debt commitments and residual-value guarantees for leases.3

The events of 11 September 2001 exacerbated an already difficult insurance market and created a new problem for the insurance industry: how should exposure to terrorism be managed? The combination of reduced capacity, underwriter defections and shock losses from 11 September has, at the time of writing, created one of the most difficult insurance markets in history. Among the implications for project sponsors are increases in deductibles, which require projects to assume additional risk; the reduced availability of coverage for terrorism, new or unproven technologies, and catastrophic perils, such as earthquakes and floods; and substantial premium increases.4

Over recent years the credit ratings of many infrastructure bond deals have been raised to the 'AAA' level by guarantees or 'wraps' AAA-rated monoline insurance companies. However, as the monoline insurers themselves have diversified from their US municipal bond base their own risks have increased, leading to higher spreads on monoline-wrapped paper.

An emerging trend in project and concession financing is the use of targeted risk coverage, a structured financial mechanism that shifts specifically identified project risks to a third party, such as a multiline insurance or reinsurance company, a designated creditor, or, conceptually, any party that is willing to assume those risks, including project sponsors. The following have been among recent applications of targeted risk coverage:
• revenue risk mitigation, including coverage against commodity pricing risk, revenue guarantees for toll road projects and coverage against default of offtakers;
• substitutes for liquidity mechanisms, such as fully funded debt-service reserves and standby letters of credit; and
• political risk coverage.

Contingent capital is a form of targeted risk coverage that can reduce a project’s cost of financing. The insurer provides a facility under which capital is injected into the project in the form of debt, equity or hybrid securities upon the occurrence of a predefined trigger event or set of events. In this way contingent capital allows the project to increase its capital base only when necessary, thereby increasing its return on invested capital.

Recent crises in Asia, Latin America and Eastern Europe have reminded lenders and investors that political/economic events do not merely have the potential to cause losses, but actually cause them, according to Gerald T. West, Senior Advisor at the Multilateral Investment Guarantee Agency in Washington, DC. These events have stimulated the demand for political risk insurance, leading to expanded coverage and new products from multilateral agencies, national agencies and private insurance providers. In recent years private insurers have lengthened the terms of their coverage and increased their share of the political risk insurance market. Recent innovations include capital markets political risk insurance, which can be used to raise the credit ratings of bonds that finance projects in emerging markets.

Increasing and then decreasing risk tolerance

Until 1997, there were trends of lengthening maturities, thinning prices (which was reflected in spreads over benchmark funding indices), loosening covenants, extending project finance to new industries and geographical regions, and a willingness on the part of lenders and investors to assume new risks. This was partly a result of more institutional investors becoming interested, and developing expertise, in project finance. These trends reversed as a result of the worldwide ripples caused by the Asian financial crisis starting in 1997, the Russian default in 1998 and the Brazilian devaluation in 1999. Banks became less willing to commit themselves to emerging-market credits, and spreads on emerging-market bonds widened. To be financed, projects required increasing support from sponsors, multilateral agencies, export credit agencies (ECAs) and insurance companies. Since the Enron debacle, investors and lenders have reduced their tolerance for risk related to power companies with trading activities, overseas operations and difficult-to-understand financial statements.

Commodity price volatility

Prices below long-term forecast levels sometimes place commodity-based projects such as mines, petrochemical plants and oilfields ‘under water’ in terms of profitability. With deregulation and merchant power, the ‘spark spread’, the difference between a power plant’s input (fuel) costs and output (electricity) prices, may at times not be sufficient for profitability.
Interest rate volatility

In the early 1990s, declining interest rates increased the number of financially viable projects. Although interest rates then rose slightly, they are again, at the time of writing, relatively low.

Bank capabilities

The number of financial institutions with broad project finance syndication capabilities is shrinking, as is the number with specialised project finance groups. Institutions with broad geographical scope and with both commercial and investment banking capabilities have a competitive edge in today's market.

Bank capital requirements

In 2002, the Basle Committee on Banking Regulation charged its Models Task Force with the role of analysing the unique credit considerations of structured credit products that merited special attention, including project finance. In its initial hypothesis, the Task Force determined that project finance should have a higher capital weighting than unsecured corporate loans because of its unique risk characteristics. Higher capital requirements for project loans could both impair the profitability of such loans for banks and raise loan pricing to uncompetitive levels, deterring banks from participating in loan syndications. An initial four-bank study conducted by S&P Risk Solutions indicated that project finance loans have lower losses subsequent to defaults than unsecured corporate loans, partly because of credit enhancements that mitigate risk, such as first-priority liens, cash-flow sweeps, covenant triggers and limitations on indebtedness. Banks often use such features as early-warning mechanisms to both alert themselves to project difficulties and encourage sponsors to cure defaults by providing equity or other forms of sponsor support, or to work with the banks to restructure the loans.

Rating triggers

The fall of Enron and numerous recent power company defaults have been caused by 'rating triggers', which are provisions in loan agreements that define credit-rating downgrades below certain levels, often the minimum investment-grade level, as events of default.

Merchant power

Because of power price volatility and other recent market events, merchant power businesses have been downgraded by credit rating agencies and have had increasing difficulty in raising new financing.

Refinancing of mini-perms

In the past several years, numerous merchant power plants have been financed by four-to-six-year 'mini perm' bank loans. Refinancing these loans will be a challenge in the current environment. S&P notes that to do so power companies may be required to put up increased equity, structure cash sweeps and provide increased security.
Declining importance of trading

In an article published in October 2002, Robert Sheppard, a consultant and attorney based in North Carolina, predicted that the role of trading in the electric power industry would diminish in the coming years. He pointed out that supply/demand imbalances and price uncertainty in the 1990s were caused largely by an uncertain and changing regulatory environment, and that the electricity market does not have many of the characteristics of other commodity markets in which users need to hedge, such as the unpredictability of supply or the potentially ruinous consequences for producers or users who do not hedge. The majority of consumers can bear electricity price risk without the benefit of risk-management intermediaries. Sheppard believes that the historical business practices of the electric power industry will reassert themselves as distribution companies once again recognise the benefits of stable, long-term sources of supply, and that project developers will rediscover the advantages of long-term debt supported by long-term contracts with highly rated power purchasers.

Regulation of trading

As abuses such as power swaps transacted simply to inflate the revenues of counterparties come to light, attempts are being made to reign in the largely unregulated energy trading market. For example, in the summer of 2002 Richard Green, Chairman of Aquila, testified before the US Senate Agriculture, Nutrition and Forestry Committee in favour of more regulation and overseeing of the energy derivatives trading market, to remove uncertainty and increase competitive power price transparency. He was in support of a bill introduced by Senator Dianne Feinstein that would mandate the US Commodity Futures Trading Commission (CFTC) and the Federal Energy Regulatory Commission (FERC) to oversee all energy transactions with respect to fraud, and to require all energy derivatives trades to be subject to registration, reporting, disclosure and capital requirements. (It is noted in the Panda-TECO case study, in Chapter 13, that later in 2002 Aquila decided to withdraw from energy trading and return to its roots as a traditional utility, having acknowledged its own difficulty in managing risk and making a profit in this volatile and shrinking market.)

Scepticism about deregulation

Along with privatisation, deregulation in the power industry was intended to attract capital and ultimately result in lower consumer prices. However, the crisis that resulted from a flawed and poorly implemented deregulatory structure in California has caused scepticism and slowed the pace of worldwide power industry deregulation. In an article published in October 2002, Eric McCartney, Head of Project Finance for the Americas at KBC Global Structured Finance, pointed to the overall questioning and reassessment of why there has been such a push for electricity deregulation in the United States and other markets. Some interest groups are making pleas to roll back electricity reform and return to the concept of vertically integrated monopolies and cost-of-service regulation. McCartney notes that electricity prices in the United States dropped 35 per cent in real terms between 1985 and 2000 but questions whether deregulation had any influence on it. He also cites studies that conclude that less than 5 per cent of retail consumers care about electricity deregulation because differences between suppliers would amount to only a few dollars per month on their electricity bills. Industrial power users, on the other hand, may stand to benefit more from deregulation.
Uncertainties concerning transmission

One of the problems cited in the Panda-TECO merchant power case study is that insufficient transmission capacity limits the potential of an Arizona power plant to sell electricity in the California market. As substantial numbers of new electric generation facilities are added to the US grid, transmission congestion can be expected to intensify, particularly in high-growth urban areas, causing bottlenecks and pricing aberrations. McCartney of KBC notes that one of the reasons for inefficiency in the US electricity market is the lack of investment in the transmission sector. This in turn is the result of regulatory uncertainty concerning transmission siting, transmission pricing methodologies, interconnection rules and practices, the authority of the FERC over regional transmission organisations (RTOs), and a scheme for investors in transmission facilities to recover their costs and earn a fair profit. McCartney believes that the transmission sector has potential for the application of the project finance model and financing in the commercial market, but the development of that market is not yet sufficiently advanced and the risks are not adequately quantified. He observes that the project finance model needs a stable regulatory regime and a dependable stream of cash flow on which it can depend to service debt. He sees the FERC regulated-return concept as a proven model that would have a stabilising effect on the development of the transmission and distribution business, thus encouraging much needed investment.

Telecoms meltdown

The bankruptcy described in the FLAG (Fiberoptic Link Around the Globe) case study (see Volume II – Resources and Infrastructure) illustrates problems faced by highly visible undersea cable competitors, such as Global Crossing and other recent projects, throughout the telecommunications industry. Aggressive network expansion financed with high leverage may have been a viable strategy while internet use, telecom traffic and related capital spending were growing rapidly, but when the telecom market collapsed FLAG and many other telecom projects did not have the cash flow to service their debt.

Effect of Enron

Many trends in project finance over the past year have been related to the collapse of Enron. The role of off-balance-sheet, special-purpose entities in Enron’s loss of confidence and subsequent bankruptcy has led some to question what the proper boundaries of project finance are. However, a survey that the author conducted for an article in The Journal of Structured and Project Finance (Spring 2002) found traditional project finance to be alive and well, and not adversely affected by the Enron debacle.

The Enron bankruptcy and related events have changed neither the nature nor the usefulness of traditional project finance, but they have led to a slowing down of some of the more innovative forms of structured project finance. Among the other direct and indirect effects of Enron have been increased caution among lenders and investors about the energy and power sectors; increased scrutiny of off-balance-sheet transactions; increased emphasis on counterparty credit risk, particularly with regard to companies involved in merchant power and trading; and deeper analysis of how companies generate recurring free cash flow. There is now increased emphasis on transparency and disclosure, even though disclosure in
traditional project finance always has been more robust than in most types of corporate finance. At the time of writing, for reasons that extend beyond Enron, some power companies in the current market environment have been cancelling projects and selling assets to reduce leverage, resorting to on-balance-sheet financing to fortify liquidity, and reducing their trading activities.

The immediate cause of the Enron bankruptcy was the loss of confidence among investors caused by Enron's restatement of earnings and inadequate, misleading disclosure of off-balance-sheet entities and related debt. However, because Enron was a highly visible power and gas marketer, and involved in far-flung activities ranging from overseas power plants to making a market in broadband capacity, its failure brought scrutiny to all aspects of the energy and power business, and particularly to the growing sectors of merchant power and trading.

Even before the Enron bankruptcy, as Jacob J. Worenklein, Managing Director and Global Head of Project and Sectorial Finance at Société Générale points out, the confidence of many power and gas companies was shaken by other devastating events during 2001, including the California power crisis; the related bankruptcy of Pacific Gas & Electric Company (the regulated utility subsidiary of PG&E Corporation); falling spot-power prices in US markets; the effects of 11 September; and the collapse of the Argentine economy and financial system. The California power crisis, as evidence of a flawed deregulation structure, caused a global setback in power deregulation and paralysed US bank markets for much of the first half of 2001. Worenklein explains that falling spot power prices were caused primarily by the overbuilding of new projects and overdependence on the spot market.

Worenklein observes that the combination of these events in 2001, accentuated at the end of the year by the Enron bankruptcy, caused a dramatic change in the perception of risk among investors, lenders and rating agencies. In particular, these parties began to perceive independent power producers (IPPs) and traders to be riskier than they ever had before. They considered trading businesses difficult to evaluate. They suspected earnings manipulation through the marking to market of power contracts and off-balance-sheet vehicles, particularly in the case of thinly traded contracts that companies marked to market purely on the basis of their own calculations. They feared sustained low power prices in the US market. After problems in countries such as Argentina, Brazil, India and Indonesia, emerging-market IPP projects began to seem to offer more danger than opportunity. Investors and lenders started to perceive earnings in the IPP and trading business to be less predictable and sustainable than they had before. As a result, they discounted the growth prospects of these companies, and focused on liquidity and leverage in light of higher perceived risk.

By the beginning of 2003 the US power market seemed to be at a much greater level of crisis than Worenklein and others had anticipated just a few months earlier. The collapse of forward prices in the merchant power market was far worse than anyone had anticipated. Forward prices in late 2002, for delivery in 2003, were one quarter to one third of comparable prices two years earlier. Worenklein notes that the effect of these prices on the economic viability of merchant power was greatly aggravated by gas price increases, which compressed spark spreads to levels that did not provide an adequate margin for capital recovery. This greatly exacerbated the power crisis in the United States, resulting in project downgrades by the credit rating agencies and significantly contributing to the collapse of two major unregu-
lated power suppliers in 2002: PG&E National Energy Group, which had been one of the most highly respected developers and owners of merchant power plants in the United States and NRG. At the same time financial pressure was increased on such players as El Paso, Dynegy and Mirant.

From a credit market perspective, the effect of all this was a significant increase in both the level of writeoffs and the provisioning for losses by the major commercial banks and other investors in the US power and project finance sectors. Worenklein believes that the result is likely to be a reduction in the amount of capital that will be available to the power sector in the United States, even outside the merchant power and trading arenas, as some players decide to reduce their overall exposure to the US power sector.

Some energy players have been hit by what Dino Barajas, an attorney with Milbank, Tweed, Hadley & McCloy, describes as a ‘perfect storm’. They have had exposures in foreign markets that have collapsed; they have had to cancel advance purchase orders for turbines because of a slowing US power market; their stock prices are tumbling as a result of reduced growth prospects; and they are facing a credit crunch from lenders, some of which are ‘gun­-shy’ from recent losses related to PG&E or Enron. The energy and power market has been affected by both the Enron bankruptcy and other situations, caused by a combination of all the factors discussed above. Before going further, let us look at how Enron has affected pure, traditional project finance.

Effect on traditional project finance

Jonathan B. Lindenberg, Managing Director at Citigroup, reminds us that traditional project finance is cash-flow-based, asset-based finance that has little in common with Enron’s heavily criticised off-balance-sheet partnerships. According to Roger Feldman, Partner and Co-Chair of the Project and Structured Finance Group at Bingham McCutchen, the historic elements of project finance are firmness of cash flow, counterparty creditworthiness, the ability to execute contracts over a long time frame and confidence in the legal system. Barry P. Gold, Managing Director at Salomon Smith Barney, points out that project finance is a method of monetising cash flows, providing security and sharing or transferring risks. The Enron transactions had none of these characteristics. They were an attempt to arbitrage accounting treatment, taxes and financial disclosure.

Traditional project finance, in Lindenberg’s view, is based on transparency, as opposed to the Enron partnerships where outside investors did not have the opportunity to do the due diligence upon which any competent project finance investor or lender would have insisted. Those parties are interested in all the details that give rise to cash flows. As a result there is a lot more disclosure in project finance than there is in most corporate deals.

Gold points out that, in traditional project finance, analysts and rating agencies do not have a problem with current disclosure standards; project financing is not hidden and it never has been. First, analysts and rating agencies know that project financing is either with or without recourse, and either on or off the balance sheet. For example, in the case of a joint venture where a company owns 50 per cent of a project or less, the equity method of accounting is used. On both the income statement and the balance sheet, the company’s share of earnings from the project is included below the line in the equity investment in unconsolidated subsidiaries. Therefore, whether a project is financed on or off the balance sheet, analysts know where to look.
INTRODUCTION

Off-balance-sheet treatment, Lindenberg explains, may not be the principal reason for most project financing. It usually is carried out to transfer risk or to provide a way for parties with different credit ratings to jointly finance a project (if parties provided the financing on their own balance sheets, they would be providing unequal amounts of capital because of their different borrowing costs). None of these considerations has anything to do with the Enron partnerships, where a 3 per cent equity participation from a financial player with nothing at risk was used as a gimmick to get assets and related debt off the balance sheet. This abuse has caused the US Financial Accounting Standards Board (FASB) to re-examine the accounting for special-purpose entities.

Structured project finance

Even though pure project finance has not been affected greatly by Enron, both Lindenberg and Worenklein see some slowing of activity in the more innovative types of structured finance, such as synthetic leasing, structured partnerships and equity share trusts – at least for the time being. Lindenberg notes that synthetic leases are a mature product, understood by rating agencies and accountants, in which billions of dollars-worth of deals have been done. (A synthetic lease is an operating lease for accounting purposes, but structured as a debt financing for tax purposes. The lessee retains the tax benefits of depreciation and interest deduction. A true lease is structured as a lease for both accounting and tax purposes.) The problem, however, is ‘headline risk’: one can hardly pick up a newspaper today without seeing yet another company with disclosure issues. Even though synthetic leases are transparent and well-understood, they have an off-balance-sheet element that creates headlines in today’s environment. More synthetic leases may be arranged in a year or two.

Special-purpose entities

By using corporate stock as collateral, and by creating conflicts of interest, Feldman of Bingham McCutchen believes that Enron undermined the pristine nature of the special-purpose, non-recourse entity and caused all such structures to look suspect. He stresses that, in traditional project finance, a special-purpose, non-recourse entity must be clean and fully focused on the transaction concerned. In the immediate aftermath of the Enron bankruptcy, project sponsors, and the bankers and lawyers who support them, will have to make a special effort to explain the legitimate business reasons for these entities.

Caution among lenders and investors

Because they may have been stung by PG&E or Enron, and because of other recent market factors such as declining power prices and emerging-market problems, lenders and investors recently have approached all energy and power companies with increased caution. They are scrutinising merchant power and trading businesses with particular care, and they are doing deals mainly with prime names that have proven staying power. Lindenberg sees bankers focusing on straightforward project deals with healthy sponsors, conservative structures and strong offtakers. Although that always has been a banker’s focus, it is more intense now.
Rating agency downgrades

Rating agencies are downgrading hitherto fast-growing independent power companies, or requiring them to reduce their leverage to maintain a given rating. Among the agencies’ concerns in the current market environment are the exposure of these companies’ merchant plants to fluctuating fuel and electricity prices, and the companies’ reduced access to equity capital. Having been criticised for not downgrading Enron soon enough, the rating agencies are particularly sensitive about the energy and power sector. In the context of these volumes, however, it is important to remember that the fast-growing power companies using innovative revolving credits to finance the construction of new power plants are single sponsors with fully disclosed on-balance-sheet debt. Even though the collapse of Enron is one of the factors that have discouraged banks from increasing their industry exposure, most of the restrictions that the markets are placing on the growth of independent power companies are related to the market factors discussed above, all of which were evident before the Enron bankruptcy.

Like lenders and investors, companies that trade with each other are becoming more concerned about counterparty credit risk. In evaluating the creditworthiness of a given counterparty, they are looking at the whole portfolio to see if — diversification benefits aside — one risky business, such as merchant power or energy trading, could drag the others down. For example, a company with primarily merchant plants in its portfolio is more vulnerable to overbuilt power plant capacity than is a company with mainly power purchase agreements.

Sources of free cash flow

William H. Chew, Managing Director of Corporate & Government Ratings at Standard & Poor’s, recalls that immediately after Enron filed for bankruptcy protection some questioned whether project and structured finance would survive in their current form. Indeed, some corporations with large amounts of off-balance-sheet financing and inadequate disclosure were subjected to increased scrutiny, and sustained sharply reduced valuations for both their equity and debt. In response such companies expanded their liquidity and reduced their debt to the minimum possible. Chew however, believes that, as time passes, the main fallout of the Enron bankruptcy and other recent market shocks may not be a turning away from project finance, but rather a greater stress on bottom-up evaluation of how companies generate recurring free cash flow and what might affect that cash flow over time. Chew believes that in this process project, as well as structured, finance will probably continue to play an important role. The change, in his view, is that the focus will be not only on the project structures, but on how these structures may affect corporate-level cash flow and credit profiles. Examples of these effects might include springing guarantees and potential debt acceleration, calling on contingent indemnification and performance guarantees, negative pledges and their limits at both the project and the corporate holding company level, and the potential for joint-venture and partnership dissolution to create sudden changes in cash flows. S&P reminds us in its project as well as its corporate credit analysis that there can be a big difference between GAAP accounting and cash flow analysis.

Security interests

Feldman of Bingham McCutchen notes that the power business, in part, has shifted from a
contract business to a trading, cash-flow kind of business in which the counterparty becomes critical to the viability of a transaction. The security in the transaction is less the asset itself and more what the trading counterparty does with the asset. That asset has an option value in the hands of a counterparty, and a very different value if a bank has to foreclose on it — a value that the bank would rather not find out.

Enron's alleged tendency to set its own rules for marking gas, electricity and various newer, thinly-traded derivative contracts to market raises some interesting questions about collateral and security, in Feldman's opinion. Historically, the security in a power plant financing has consisted of contracts, counterparty arrangements and assets. However, if a lender's security depends on marking certain contracts to market and there is some question as to the objectivity of the counterparty that is marking them to market, additional questions are raised. For example, what is an adequate sale, what is adequate collateral, how does a lender take an adequate security interest, how does a lender monitor the value of its security interest, and what does a lender need to do to establish a sufficient prior lien in the cash flow associated with the transaction? Feldman believes that in the case of a structured finance transaction, the key question remains the same: is the security real and can lenders get their hands on it?

How companies have responded

Worenklein of Société Générale has seen affected companies respond rapidly and decisively to the current market environment, strengthening their liquidity by issuing new equity, cancelling projects, selling assets, unwinding structured finance deals or putting them on the balance sheet, and increasing transparency and disclosure (further discussed below).

Even though traditional project finance has little to do with the off-balance-sheet entities that brought Enron down, Barajas of Milbank Tweed fears a backlash that could affect project finance in the event of a credit crunch. If that happens, one possible solution could be simply to finance more projects on the corporate balance sheet. Some power companies have set up massive credit facilities for doing just that on the basis of their overall corporate cash flow and creditworthiness. Another option for a company is to borrow against a basket of power projects, allowing the lenders to diversify their risks. Such a facility, however, is still largely based on the credit fundamentals of the corporation. Barajas believes that project financing on an individual-plant basis may be preferable to either of these approaches, for both project sponsors and lenders. For example, say a company is financing ten projects and three of them run into trouble. The company can make a rational economic decision as to which of these projects are salvageable and which do not merit throwing good money after bad. The company might let one go into foreclosure, to be restructured and sold. If a company is financing ten projects together, however, its management may feel compelled to artificially bolster some of its other projects so that the failure of one does not bring the entire credit facility down. Making such an uneconomic decision for the near term would not be in the company's long-term interests.

Increased transparency and disclosure

Worenklein reports that major players generally are releasing much more information about their businesses and financing arrangements than before. Similarly, Gold of
Salomon Smith Barney sees an overriding atmosphere of conservatism in disclosure — for example, in conference room discussions while drafting prospectuses for project finance deals. Bankers are making an extra effort to confirm that deals are being disclosed and explained the right way. Given the current tarnishing of the merchant power sector, bankers might explain that a company’s trading is not speculative and that it is using accepted risk management measures such as value at risk (VaR). They also might break out the percentage of sales from power sales and from ‘marketing’ — a term that sounds better than trading in today’s environment.

Worenklein believes that strong management actions are needed to restore belief in the honesty of numbers. A company’s management needs to demonstrate the same passion for integrity as it has for growth in the past. It needs to get rid of gimmicks, and consistently communicate and execute a simple, clear strategic vision. This involves cleaning up the balance sheet by putting transactions that have significant recourse to the sponsor back onto it. Only true non-recourse deals should be left off the balance sheet. To convey an accurate, fair picture of the business, companies need to communicate — to the point of obsession — information and assumptions about how earnings, including mark-to-market transactions, are recognised. In Worenklein’s view, managing earnings is out and managing cash flow is in, and, as Chew notes above, that is what the rating agencies are looking at.

Some of the measures that Worenklein recommends go beyond financial reporting. Companies may need to re-examine their strengths and weaknesses, and refocus and simplify their basic business strategies. As companies implement the US Sarbanes–Oxley Act of 2002 their boards of directors and audit committees might become more helpful in this process with the addition of non-executive members who understand the business. (The corporate governance reforms in Sarbanes–Oxley apply not only to US companies but to other companies that list their securities on US exchanges.) For companies with low stock prices, it is too late to panic, so Worenklein recommends looking at the bright side. Now might be the time to fix the business, clean up earnings, take losses and rebalance. Unfortunately, now is not the greatest time to clean out the attic and sell non-strategic assets, because there are more sellers than buyers. However, the key, in Worenklein’s view, is to be patient and thoughtful about prospective buyers, including, in some markets, local buyers that can see the greatest value in such assets.

Lessons learned from Enron
A great deal has been written about the Enron debacle, but we are not yet far enough away from the event to give proper weight to the various lessons to be learned, according to James F. Guidera, Senior Vice President and Head of Project Finance at Credit Lyonnais Americas. Nonetheless, Guidera sees some general lessons that can be learned from Enron that go beyond the realm of structured and project finance, and others that are more particular to project and structured finance. The following are among the more general lessons.

- It is risky to over-invest in business sectors such as broadband or water.
- A power trading business, though potentially profitable, is highly vulnerable to liquidity crises and has a low liquidation value.
- Trading to hedge a power company’s inherent physical position in power or gas should
not be regarded as a suspect business *per se*, but it can involve the risk of sudden liquid­
ity crises – especially for companies rated ‘BBB–’ that don’t want to slip below invest­
ment-grade status.

- Mark-to-market accounting rules can mislead investors, lenders and analysts about the extent of non-recurring earnings, even in the absence of fraud.

Among the lessons more directly related to project and structured finance, Guidera identifies the following.

- The transfer of assets, intangible and otherwise, into non-consolidating vehicles con­
trolled by a sponsor may mislead investors as to the extent of non-recurring earnings or deferred losses, even in the absence of fraud.
- There is a risk of low recovery rates on structured transactions secured by intangible assets (such as investments, contracts and company stock) or by tangible assets whose values are not established on an arm’s-length basis.
- Having been badly burned by the Enron bankruptcy, banks and investors in Enron’s structured and project financings, and in the energy sector generally, will be especially conservative, limiting credit and capital access for many clients in the sector, and creating a general liquidity issue for these customers.

Christopher Dymond, Director of Taylor-DeJongh, a boutique investment bank based in Washington, DC, that specialises in project finance, has several recommendations concerning accounting treatment and disclosure.

- An effort must be made by all in the project finance industry and investor relations to underscore the distinction between true non-recourse structures and Enron’s activities.
- The terms ‘non-recourse’ and ‘off balance sheet’ should remain synonyms. Liabilities that truly have no recourse to a company’s shareholders can justly be treated as off the balance sheet. Enron appears to have violated this principle because the undisclosed lia­bilities in the off-balance-sheet partnerships actually had significant recourse to Enron shareholders through share-remarketing mechanisms.
- Many project finance structures are ‘limited’ rather than ‘non-’ recourse, and thus there is potentially a grey area in which accounting rules allow off-balance-sheet treatment, but there is nonetheless some contingent liability to the parent company’s shareholders. Full footnote disclosure of any potential shareholder recourse was advisable before Enron and is absolutely necessary now.

John W. Kunkle, Vice President at Fitch Ratings, reminds us of two basic tenets of project finance:

- the financing of hard assets has ongoing value through economic cycles; and
- high levels of sponsor expertise and commitment are required.

Kunkle observes that as Enron grew and expanded it seemed more interested in whether or not businesses or transactions would generate a certain return than if ventures would com­plement its existing core businesses. Enron invested in a number of businesses in which it did
not have the required expertise and was not particularly committed to those businesses when expectations were not met.

**Common themes**

As mentioned above, the project case studies in these volumes were selected to exhibit the types of projects most frequently financed in a variety of countries. As a result, common themes can be identified across the two volumes. Some of these are summarised below.

**Infrastructure requirements**

Power shortages motivated the privatisation of the electricity sector in China, Colombia, Côte d’Ivoire, India, Indonesia, Mexico and the Philippines, and led to commercial project financing of power projects in these countries.

**Legal and regulatory**

First-of-their-kind projects in developing countries typically introduce new legal concepts. In China, India, Indonesia, Mexico and the Philippines inadequate existing legal and regulatory frameworks meant that negotiating contracts according to international standards for each country’s first IPP required both the introduction of legal issues, contract structures and financial concepts new to each country, and lengthy negotiations with government officials. A similar process was evident in contract and financing negotiations for Greece’s first build-operate-transfer (BOT) toll road and Uruguay’s first cellular telephone system (see Volume II - Resources and Infrastructure). Lack of coordination among government agencies and weak provisions in privatisation statutes has created problems for the SCL Terminal Aéreo Santiago project in Chile (see Volume II - Resources and Infrastructure). Project negotiations highlighted the need for concession contact law in Côte d’Ivoire (see Chapter 4) and for mining law in Tanzania (see Volume II - Resources and Infrastructure).

The availability of international arbitration was an issue in many project contract negotiations, including those for power projects such as Meizhou Wan in China (see Chapter 2), Azito in Côte d’Ivoire (see Chapter 4), Dabhol in India (see Chapter 5) and Paiton I in Indonesia (see Chapter 6). International arbitration was used, but largely failed, with Dabhol and Paiton I.

The refusal of host governments to honour contracts and guarantees is highlighted in the Dabhol (India) and Paiton I (Indonesia) case studies.

**Credit risk**

Political risk insurance is a necessity for project financing in most emerging markets. It was required to attract lenders to the Azito (Côte d’Ivoire) and CBK (Philippines) power projects (see Chapters 4 and 10) and the three Tanzanian gold mine project loans (see Volume II - Resources and Infrastructure). The CBK power and Geita gold mine (Tanzania) projects highlight the growing use of private political risk insurance.

The International Finance Corporation’s A/B loans, which provide private commercial
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banks the comfort of lending alongside a multilateral agency with so-called 'preferred creditor' status, were part of the financing for the Azito (Côte d'Ivoire) and Chad-Cameroon Pipeline projects (see Volume II – Resources and Infrastructure).

IPPs' increasing assumption of merchant power risk and requirement to manage their spark spreads are important issues in the Mexican power projects (see Chapters 7, 8 and 9), where PPAs and fuel supply contracts are being delinked; the Panda-TECO projects (see Chapter 13), the two largest merchant power plants in the United States; and the Drax power plant in the United Kingdom (see Chapter 12), where the termination of a hedging contract, combined with high leverage and debt-service obligations, has led to debt restructuring.

Although capital-markets financing in the past had not been possible for emerging-market projects before construction, bonds were issued in 1995 for the Transgas pipeline project in Colombia (see Volume II – Resources and Infrastructure) and a flexible commercial bank/capital markets financing was arranged in 1997 for the TermoEmcali power plant, also in Colombia (see Chapter 3), before construction began. Market conditions have changed since then and pre-construction financing would not be available today for similar projects in Colombia or in many other emerging-market countries.

Because their exports generate hard currency captured in offshore accounts, credit ratings for the Mega project in Argentina and the Petrozuata project in Venezuela pierce their respective sovereign credit rating ceilings. Fitch maintained the credit rating for Ocensa, the Colombian oil pipeline, above its sovereign ceiling because lenders have access to the oil as collateral if transport fees are not paid. See Volume II – Resources and Infrastructure for case studies on these projects.

Social and environmental

The need for local government and community support, and the implementation of sustainable development programmes, are discussed in the Quezon Power (Philippines) case study in Chapter 11, and the Chad–Cameroon pipeline and Tanzanian gold mines case studies in Volume II – Resources and Infrastructure.

Strategic

The Enron bankruptcy has resulted in more intensive investor and lender scrutiny of power companies with trading operations, international networks and difficult-to-understand financial statements. Calpine and AES, owner of the Drax power plant in the UK, have scaled down their capital expenditure programmes, sold assets and reduced their leverage (see Chapter 14). After TXU, a diversified energy company based in Dallas, Texas, decided to withdraw support for its European operations, which are now in administration (bankruptcy), a British TXU subsidiary’s fixed-price contract to purchase 60 per cent of Drax’s power output was cancelled. Aquila, soon to be replaced as a risk manager for the Panda–TECO project (see Chapter 13), is discontinuing its energy trading operations and returning to its roots as a Midwestern US utility.

Reasons for financial difficulty

Among the 38 projects studies, 11 have defaulted, come close to default or encountered some
degree of financial difficulty. The reasons for financial difficulty fall into eight categories. Exhibit E lists these categories and shows the number of projects in each. For many of the projects, there were several reasons for financial difficulty.

By far the most frequent cause of financial difficulty was market risk, which relates to passenger traffic, vehicle traffic or customers’ capital expenditures not meeting projections; a decline in power or commodity prices to uneconomic levels; and financial market conditions that made refinancing difficult. Currency risk was evident in four infrastructure projects that generated local-currency revenues but had to service US dollar-denominated debt. Counterparty risk was evident in the case of three power project off-takers and one bank issuer of a standby letter of credit. High leverage was a problem with three projects; in two of these cases the sponsors took on high debt to acquire the projects for prices that some observers considered excessive. The need for political risk insurance to attract lenders to developing countries is evident in many of the case studies. For two of the projects political risk materialised when government entities refused to honour contract obligations. For another a deteriorating political situation was the primary cause of a depressed economy. Construction and operating risks are apparent in the financing of most projects, but measures to protect against them are usually successful. Each of these risks materialised in just a single case study.

The reasons for financial difficulty in 11 of the case studies are summarised below.

**Market risk**

Vehicle traffic for the PYCSA toll road in Panama did not meet the projections made at the time of the project financing. Similarly, air passenger traffic through the Arturo Merino Benitez International Airport in Santiago, Chile, did not meet projections made by the airport concessionaire, SCL Terminal Aéreo Santiago, at the time of the project financing. See *Volume II – Resources and Infrastructure* for more on these projects.

**Market risk, high leverage, high purchase price**

Among others, Ofgem, the UK power industry regulator, warned that electricity prices would decline when the New Electricity Trading Arrangements (NETA) were implemented. Despite these warnings international power companies such as AES continued to pay high prices for assets such as Drax. The effects of NETA on the Drax power plant in the United Kingdom were underestimated. After a fixed-price contract for 60 per cent of its output was cancelled Drax faced the prospect of operating on a merchant basis with a heavy debt load in an unfavourable electricity-price environment. When default on its debt became inevitable Drax entered into restructuring negotiations with its bondholders and lenders. As a high-growth, high-leverage company Drax’s parent AES was vulnerable to the combina-
tion of a worldwide drop in wholesale electricity prices, economic collapse in Argentina and the ripple effects of the Enron bankruptcy. AES recently has implemented its own restructuring to avoid bankruptcy. See Chapter 12 for more information on the Drax power plant and AES’s restructuring plan.

Market risk, political risk
The Maharashtra State Electricity Board cancelled the PPA for the Dabhol power project in India (see Chapter 5) because it could not afford to pay the tariff and there was an oversupply of power in the state. Regulations prevented the plant from selling electricity to other states that needed it. Both the federal and the state government dishonoured their guarantee obligations.

Market risk, counterparty risk, currency risk, political risk
Perusahaan Listrik Negara (PLN), the Indonesian state-owned utility, refused to make US dollar-indexed payments for electricity to Paiton Energy after the value of the Indonesian rupiah plunged during the Asian financial crisis (see Chapter 6). PLN and Paiton reached an interim agreement in 2000 that allowed the utility to purchase power at reduced rates. The original 1994 PPA was amended in 2002.

Counterparty risk, political risk
In May 2002 the Fujian provincial government reportedly reneged on its obligations under its PPA with the Meizhou Wan power project (see Chapter 2) and proposed that the tariff be reduced. After prolonged negotiations with the provincial government the project sponsors were reportedly trying to replace the project’s US dollar-denominated loans with local-currency financing because the reduced revenues proposed by the provincial government would not be sufficient to service the original project financing provided by the foreign bank consortium and the Asian Development Bank.

Market risk, currency risk, political risk, high purchase price
BCP paid US$2.5 billion, an unexpectedly high price, for its cellular telephone licence in São Paulo, Brazil, and financed it with a high level of debt. Although operating performance, and earnings before interest, taxes, depreciation and amortisation (EBITDA), exceeded its business plan, BCP had difficulty rolling over its local-currency paper every two years and servicing its US dollar-denominated debt as the value of the Brazilian real declined. Debt restructuring was impeded by a disagreement between two deadlocked 47-per-cent shareholders.

Market risk, high leverage
FLAG was able to repay its original project debt, but then continually borrowed and reinvested to expand its undersea cable network, and could not service its debt after a worldwide drop-off in spending by major telecom carriers. The company declared bankruptcy in
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early 2002 and then re-emerged six months later (see Volume II – Resources and Infrastructure).

Market risk, operating risk
The Andacollo gold mine in Chile was closed earlier than projected and its parent, Dayton Mining, merged because of higher-than-expected production costs and lower-than-expected gold prices (see Volume II – Resources and Infrastructure).

Counterparty risk, political risk
TermoEmcali, a natural-gas-fired power plant that serves Cali, Colombia's second largest city, has been a successful project aside from a minor construction delay. Its problems stem from the financial difficulty of Emcali, its sole off-taker, which relates to a weak underlying economy and financial mismanagement (see Chapter 3).

Counterparty risk, construction risk
The Casecnan Water & Energy project in the Philippines is viable under the ownership of MidAmerican Energy Holdings despite a construction delay, but its original engineering, procurement and construction (EPC) contract contractor defaulted, and Korea First Bank refused to honour its standby letter of credit backing the contractor's obligations. The bank finally paid MidAmerican after a prolonged legal battle in US courts (see Chapter 15).

Lessons learned
The case studies in Volume I – Power and Water and Volume II – Resources and Infrastructure allow for the identification of certain lessons that may benefit future sponsors and investors of project financing. Among the lessons learned from the 38 case studies in these volumes are the following.

Negotiating process
Brandon Blaylock of the GE Capital Services Structured Finance Group believes that project participants in emerging-market projects must be prepared to both learn and teach. A successful project requires close teamwork among all project participants, and sensitivity to each other's issues and needs. As those involved in concurrent IPP ventures in other developing countries would agree, financing takes longer than expected in any first-of-its-kind project, especially when there are difficult risk-allocation issues. Often the process is just as important as the substance.

Local community sensitivity and sustainable development programmes
The success of the Chad-Cameroon pipeline project (see Volume II – Resources and Infrastructure), the Quezon Power project in the Philippines (see Chapter 11), and the Tanzanian gold mine projects (see Volume II – Resources and Infrastructure) depended part-
ly on sensitivity to local community concerns, as they provided local communities with needed infrastructure improvements and other resources in return for dislocations and other inconveniences related to the projects, and on implementing environmentally sensitive, sustainable development programmes.

Banks with local branch presence
ABN AMRO, in the Ancel cellular-telephone project in Uruguay, and Barclays, in the Tanzanian gold mine projects, benefited from local branch presence, the ability to deal in local currency and contact with local government officials at all levels. See Volume II – Resources and Infrastructure for more on these projects.

Government and legal system
Laibin B’s high visibility as a pilot for future BOT projects in China helped the often-cumbersome multi-agency government approval process (see Chapter 1). Multiple letters of support at the central government level and the local need for power are helpful factors that reduce project risk at a time when governments are reluctant to issue guarantees. However, recent experience in India and Indonesia shows that support letters and even guarantees can be unreliable.

Foreseeing a trend towards less government support in the future, the sponsors of the Meizhou Wan power project demonstrated that true limited-recourse project financing could be achieved outside the BOT scheme in China (see Chapter 2).

Among the critical factors behind the success of the Azito project financing in Côte d’Ivoire (see Chapter 4) were the government’s acknowledgment of the need for concession laws; the financial, managerial and negotiating skills of the government team; and the government’s clear notions concerning the role of private participants and social goals such as rural electrification as a result of its recent work in power sector reform. The lack of concession law and a government template for infrastructure financing contributed to the length of negotiations and the complexity of documentation for the Athens Ring Road project in Greece (see Volume II – Resources and Infrastructure).

Role of government, market and construction risk
The case study of Highway 407 (see Volume II – Resources and Infrastructure) in the Greater Toronto area describes how the government assumed environmental, technology, construction and traffic risks to build the first 69-kilometre section of a 108-kilometre toll road. After these risks had been significantly reduced a private firm was best equipped to manage and develop the road’s future growth. Amid controversy the privatisation process was facilitated by the Ontario government’s consistent and unwavering commitment to carry it through, and the sale of the road was facilitated by a clean, clear and transparent bidding process.

Financing of the A2 motorway in Poland, a country with virtually no toll-road experience, was made possible by a strong mandate from the government, a government guarantee of 40 per cent of the debt, a strong commitment from the European Investment Bank and concessions by all the major parties, including senior lenders that accepted a flexible repayment
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schedule, and sponsors that increased their equity participation and provided a contingent equity facility (see Volume II – Resources and Infrastructure).

Role of multilaterals

The case study on the Chad–Cameroon pipeline project demonstrates that project sponsors wishing to involve the World Bank Group in future projects may have to accept some degree of monitoring to ensure that they meet their environmental commitments and that project revenues are directed as planned (see Volume II – Resources and Infrastructure). By the same token, an organisation of the World Bank’s stature was required to make a convincing statement that the environmental and social concerns of other special-interest groups would be addressed in a responsible manner.

Commercial bank versus capital market financing

The TermoEmcali power project in Colombia (see Chapter 3) demonstrated that it is efficient to provide a bond issue and a standby commercial loan facility from the same financial institution, with flexibility between bank and capital-market debt depending on market conditions. Common terms between commercial lenders and bondholders, as defined in the Common Security Agreement for the Petrozuata financing in Venezuela (see Volume II – Resources and Infrastructure), provided the flexibility to adjust the respective amounts of bank and bond financing depending on market conditions.

Construction risk

The Transgas (see Volume II – Resources and Infrastructure) and TermoEmcali (see Chapter 3) projects in Colombia showed that infrastructure projects, such as power plants and pipelines, that generate local revenues in a developing countries can be financed ‘out of the box’ (prior to construction) under the right circumstances. However, these circumstances have changed considerably since the project financing of these projects was done in 1997, particularly in Colombia, where the economic and political situation has deteriorated considerably.

Based on his experience in lending to three gold mining projects in Tanzania (see Volume II – Resources and Infrastructure), Milo Carver of Barclays Capital concludes that lenders need to be assured that sponsors are not relieved of their pre-completion support undertakings before a project has passed meaningful completion tests. Such projects require documented tests covering categories such as operating performance, environmental management, cost control and budgeting.

The EPC contractors were recognised as weak links at the time of the Casecnan Water & Energy project financing. EPC contractors often do not fail, standby letters of credit often are not called upon and, when they are, they are often dishonoured by their opening parties. Casecnan Water & Energy reminds us that these risks do materialise from time to time.

Counterparty risk

The Maharashtra State Electricity Board’s failure to honour its obligations under its PPA with
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the Dabhol power project in India (see Chapter 5). PLN’s refusal to pay under its PPA with Paiton Energy in Indonesia (see Chapter 6) and the Fujian (China) provincial government’s disavowal of its PPA obligations related to the Meizhou Wan project (see Chapter 2) showed that contract parties – even when they are government organisations – do not honour their contractual obligations when it is beyond their economic ability, or not in their economic interest, to do so. The unwillingness of the Indian federal and state governments to make policy changes that would allow Dabhol to sell electricity to out-of-state entities illustrates a painful principle of project restructuring: preventative restructuring is rare. Contract parties usually do not make concessions until there is a crisis.¹³

The Paiton Energy case study shows that contracts are of diminished value when a project participant can no longer afford to abide by their terms. Nonetheless, the PPA provided a framework and set the boundaries for several years of negotiations. The strength of the agreement, and the likelihood of litigation and arbitration ultimately favouring Paiton Energy, were important restraints on the government-owned utility and power off-taker.

Political risk

The TermoEmcali case study (see Chapter 3) shows that in a developing country such as Colombia the political and economic situation, as well as the credit-worthiness of the off-taker, can change considerably in just a few years, not to mention over the term of a PPA or a bond. By not honouring their guarantee and counter-guarantee obligations the governments of India and Maharashtra undermined the foundation of the Dabhol power project. Such political decisions could be considered creeping forms of expropriation. International arbitration was relatively ineffective for both projects.

Persistence, including consistent, steadfast denial of corruption charges and willingness to explore alternatives such as extending the term of the contract and building new power capacity, helped the sponsors of Paiton Energy to salvage a difficult situation.

An International Development Agency partial risk guarantee for the Azito power project (see Chapter 4) was critical in attracting lenders to Côte d’Ivoire, which was not yet an established international borrower. With respect to the Golden Pride, Bulyanhulu and Geita gold mining projects (see Volume II – Resources and Infrastructure), Carver of Barclays comments that the maximum size of a deal in a country such as Tanzania is driven by how comfortable the bank and insurance markets are with the political risks.

Market risk

For a project such as the El Abra copper mine in Chile, which depends on commodity prices, lenders must know where prices are in relation to long-term cycles. The Andacollo gold mine in Chile showed that mining projects are subject to the risk of falling commodity prices and the risk that, despite the results of expert feasibility studies, ore grades and production costs will not meet expectations. (See Volume II – Resources and Infrastructure for case studies on these projects.)

Carver of Barclays observes that gold price hedging has been a one-way bet during a long period of falling gold prices. Through hedging gold projects consistently have been able to sell at above-market prices. If the gold market were to reverse and enter into a long-term price upswing, Carver wonders whether gold producers would maintain their appetite for hedging.
The leverage of the Drax power plant in the United Kingdom (see Chapter 12) was too high to withstand the deterioration of wholesale electricity prices and the related upheaval in the UK electricity market. The effect of the NETA on wholesale electricity prices was greatly underestimated.

Lower-than-expected power demand in one market served by the Panda Energy-TECO Power joint venture (see Chapter 13), combined with lagging development of transmission facilities in another, highlights the risk of merchant power when combined with high leverage. A few credit problems with prominent merchant power players, combined with scepticism concerning the purpose and benefits of electricity deregulation, could begin to push power companies back toward the traditional integrated-utility business model.

The financial difficulty of the PYCSA toll road project in Panama (see Volume II - Resources and Infrastructure) shows that the rate of growth in the use of a new toll road is difficult to predict. It is easy to be unrealistically optimistic when estimating how rapidly people will change their habits, especially when tolls are relatively high considering the average personal income in the area. Given these risks and Poland's lack of experience with toll roads, financing of the A2 Motorway (see Volume II - Resources and Infrastructure) required significant government and multilateral agency support, as mentioned above.

Currency and financial market risk

Financial problems with the BCP cellular telephone project in São Paulo, Brazil (see Volume II - Resources and Infrastructure), remind us that, given currency volatility, it is difficult for a project generating revenues in a domestic currency to depend on US dollar debt. On the other hand, the project required financing with longer terms than were available in the Brazilian market and therefore faced constant risks related to the rolling over of most of its debt every two years.

High leverage

Unexpectedly high purchase prices financed with high leverage accentuated problems with the Drax power plant in the United Kingdom (see Chapter 12) and the BCP cellular telephone project in Brazil (see Volume II - Resources and Infrastructure). For the FLAG under-sea cable project, aggressive network expansion financed with high leverage may have been a viable strategy while internet use, telecommunications traffic and related capital spending were growing rapidly, but FLAG did not have sufficient cash flow to service its debt when the telecommunications market collapsed (see Volume II - Resources and Infrastructure).

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12 McCartney, Eric, op. cit, p. 63.