Infrastructure Finance
Trends and Techniques

Edited by Henry A Davis
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Céline Kauffmann is an Economist at the OECD. She has been the OECD project leader on the African Economic Outlook for the past six editions of the report. She has special expertise in the socio-economic conditions of African countries. She is in charge of the AEO macroeconomic forecasting model and co-authors the focus chapter. She previously participated in Chapter 5 of the 2000 Transition Report on ‘Labour Markets, Unemployment and Poverty During the Transition’ at the EBRD and worked as research assistant at the London School of Economics. Céline holds a Ph.D. in Economics from the Université Paris I, Panthéon-Sorbonne.

Conor Kelly
Conor Kelly is a Managing Director and Head of Infrastructure Finance, Americas for DEPFA Bank (‘DEPFA’). Conor has over 15 years’ experience within the banking industry, the last eight of which have been with DEPFA where he has been involved in financing over $10bn worth of PPP around the world, including the very first PPP financings in Japan, Korea, Portugal, Norway, Estonia, Ireland, Cyprus and more recently in the US. Prior to taking up his position as Head of Infrastructure Finance, Americas, Conor was responsible for DEPFA’s PPP development in the Baltics, Iberia, Ireland and the Netherlands. Conor’s experience in advising and financing public infrastructure projects is wide-ranging and includes transportation (toll roads, shadow toll roads, rail and airports), health, solid waste, water and wastewater, prisons and education. Some recent examples of PPP projects that Conor has either advised or structured and arranged include the Chicago Skyway Toll Road (Project Finance North American Deal of the Year 2004), the Indiana Toll Road, the Pocahontas Parkway Toll Road (Virginia) (ARTBA Deal of the Year 2006) and the Golden Ears Bridge project (BC, Canada) (PFI’s Infrastructure Deal of the Year 2006 and the Canadian Council for PPPs Deal of the Year, 2006).

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Jonathan Manley
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Varsha Marathe is currently a Financial Specialist at the World Bank’s South Asia Finance and Private Sector Development Unit in the New Delhi Office. Since joining the World Bank in April 2003, she has worked on capital market development issues, including corporate debt markets, corporate governance, financial regulation, pension reforms and private sector development at the state-level in India. She has also worked on capital market issues in Pakistan, Bangladesh and Nepal. Varsha has previously worked with the capital markets regulator Securities and Exchange Board of India in Mumbai and Delhi where she focused on policy issues relating to the secondary capital market development, primary markets and corporate governance.

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Bart Oosterveld is a Senior Vice President in Moody’s Global Project Finance and Infrastructure Group. He is also the Chairman of the Project Finance Credit Committee, which sets rating policy for Moody’s project finance franchise. He covers a diversified portfolio of project finance transactions in the Americas, with a focus on large infrastructure projects and PPPs. Bart first joined Moody’s in 1997 in the Infrastructure Finance Team and previously served as Moody’s Lead Analyst for the US airport sector. He is a co-author of Moody’s default study for the US municipal market, and of a variety of other rating methodologies and special comments. He currently chairs a company-wide working group charged with writing rating methodologies for PPP financings, and is also a member of the Public Finance Credit Committee. Prior to joining Moody’s, Bart interned at the United Nations and a major Dutch law firm. He holds undergraduate degrees in Law and Spanish Literature from the University of Amsterdam and received a Master of Public Administration from Columbia University,
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**Tom Paolicelli**
Tom Paolicelli is a Vice President/Senior Analyst in Moody’s Investors Service Infrastructure Finance Team, and covers a diversified portfolio of credits. Tom first joined Moody’s in 1998 and worked in the Infrastructure Team until 2000. He rejoined Moody’s after nearly five years at the New York City Municipal Water Finance Authority where he most recently served as Treasurer. While at the Water Authority, Tom managed the issuance of over $11bn in revenue bonds during the most active period in the authority’s history. Tom has also worked as a consulting civil engineer and an assistant County Manager. He has a Master’s in Public Administration from the University of Albany and a Bachelor’s in Civil Engineering from the University of Buffalo, and is also a professional engineer.

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Benjamin Perez is a Consultant with the Strategic Consulting Group of Parsons Brinckerhoff. He is an expert on managed highway lanes, including high-occupancy toll lane applications and value pricing, and has conducted extensive research on innovative finance and the use of PPPs. He has authored prominent industry handbooks on design-build project delivery and PPPs, and is the author of *Achieving Public–Private Partnership in the Transport Sector*, published by the Diebold Institute for Public Policy Studies in 2004.

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David Rickards is an Executive Director of Macquarie Bank where he is responsible for equities research for Macquarie Securities. Previously, David has also been an Equities Analyst for quantitative and resources stocks research at Macquarie. David also led the Australian office of Barra in 1988 and 1989. Prior to this he practised as a structural and civil engineer with Maunsell in Australia, Hong Kong and London.

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**Günter Schroefel**

Günter Schroefel of Unicredit Markets & Investment Banking, joined the Project and Commodity Finance department in 1996, focusing mainly on transport-related projects. Günter has more than 10 years of project finance experience, during which he has been involved in a number of major international transactions and has done arranging as well as advisory work. In the airport sector, he worked on a number of prestigious MLA mandates, including the privatisation of Kingsford Smith Airport, Sydney, and various airport projects in Turkey. Günter graduated as an economist from the University of Münster, Germany, and holds a BSc in Economics from Trent University, Canada.

**Tom Speechley**

Tom Speechley is an Executive Director in the Investment Management Group at Abraaj Capital. Abraaj Capital is one of the premier private equity firms in the Middle East with over US$4bn under management, including a US$2bn infrastructure private equity fund which is co-sponsored by Deustche Bank and Ithmaar Bank.

**Frank Thiesen**

Frank Thiesen started his career with German construction group Hochtief in the international division. From there, he moved onto the project development activities of the group and was
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Valeria Vences is a research assistant in the Collaboratory for Research on Global Projects at Stanford University. Prior to this, she worked for Exxon Mobil as a member of the project management team on the new plant and hydrant system for Lima International Airport in her home country of Peru.

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Robert Vitale has played a leadership role in Parsons Brinckerhoff’s Management Consulting Group in Australia. He has provided advisory services on privately financed economic and social infrastructure deals across Australia, the UK and Asia.

Antonio Vives
Antonio Vives is Principal Associate at Cumpetere, an infrastructure investment and sustainability consultancy. He was Former Manager of Sustainable Development at Inter-American Development Bank. He was with the Bank in operations and in technical support departments for 28 years and has taught corporate finance at several graduate schools of business in the US, including George Washington University, Virginia Tech and Carnegie Mellon. He has authored a textbook on corporate financial evaluation, published numerous articles on financial management and private infrastructure finance, and wrote a book, edited five volumes and published over 20 articles on corporate social responsibility. Antonio, a chemical engineer, holds an MBA and a Ph.D. in Corporate Finance and Capital Markets from Carnegie Mellon University.

Michael Wilkins
Michael Wilkins is a Managing Director and Regional Head of the Infrastructure Finance Ratings Group based in London. Michael is responsible for coordinating analytical assignments in utilities, project finance, PPPs and transportation in Europe, the Middle East and Africa. He is also co-head of the Corporate Securitization Group which is a joint practice involving analysts from across Corporate & Government Services and Structured Finance. Before joining Standard & Poor’s Ratings Services in 1994, Michael worked as a financial journalist in the UK specialising in water utilities. Michael holds a BA honours in Modern Languages from Bristol University and an MBA in Finance from Cass Business School (formerly City University Business School), London, and is also a Director of the International Project Finance Association.
Introduction

Purpose of the book
The purpose of this book is to provide a broad view of trends and techniques in infrastructure financing around the world today written by experts in the field. Authors from various disciplines were invited to provide balanced geographic, organisational, functional, technical and industry perspectives. The 56 authors and co-authors who have contributed chapters to the book include bankers, lawyers, consultants, economists, academics, project developers, insurance underwriters, investment analysts, credit rating analysts, government officials and multilateral agency officials.

Organisation of the book
The book consists of 36 chapters organised into seven sections. We start with a section on Infrastructure Investment and Financing Needs in various geographic regions of the world, with case examples on the Latin American, African, and Middle East/North Africa/South Asia regions and country examples on India and Turkey. A section on Government Accounting Issues focuses on efforts in Europe to move infrastructure investment and related debt out of current budgets and off government balance sheets. We then devote a section to the organisation, achievements, controversies and risks surrounding Public–Private Partnerships, with case examples from Latin America, the United States and the United Kingdom. Then, in a section on Infrastructure Financing Techniques, we cover the application of securitisation, leasing, and Islamic financing techniques; the use of various risk mitigation instruments such as political risk insurance, credit enhancement and local currency financing; and, using Italy as a case example, the development of legislative and regulatory frameworks for PPPs. A section on Sources of Infrastructure Financing covers the roles of commercial banks, development banks, ECAs and the capital markets, with case examples on the Eastern European and Middle Eastern regions. An Industry Perspectives section shows case examples of financing health care facilities, transportation systems, stadiums and airports. Finally, a section on Credit Rating of Infrastructure Projects covers trends in the credit quality of PPPs and infrastructure funds, debt rating criteria for project finance bonds, and credit issues particular to the power, airport and toll road sectors in the United States.

Common themes
There are many common themes running through various chapters of the book, including the following:
Introduction

- rising need for infrastructure investment;
- quality of country infrastructure as a competitive advantage;
- effect of infrastructure investment on poverty and inequality;
- ageing infrastructure in need of replacement in developed countries;
- government budget limitations;
- declining government investment in infrastructure;
- infrastructure investment gap;
- allocation of budget dollars between capital investment and maintenance;
- regional cooperation in infrastructure development;
- users and taxpayers as the ultimate sources of funding;
- public and private participation in infrastructure projects;
- benefits and risks to governments in privatising infrastructure assets;
- privatization of infrastructure as a funding source for other government projects;
- critical role of governments in all aspects of infrastructure projects;
- public perception of private-sector participation;
- need for sensitivity to all stakeholders and their interactions with each other;
- environmental and social impact analysis;
- need for effective government communication;
- need for sound concession agreements and other contracts;
- transparency of bidding and contract award processes;
- protection against corruption;
- development of legislative and regulatory frameworks;
- special purpose vehicle design, including structural separation from sponsors and bankruptcy remoteness;
- sales and leases of infrastructure assets;
- bank lending criteria and capital constraints;
- construction versus post-construction financing;
- bank versus capital market financing;
- hard versus soft currency financing;
- diversification of funding sources;
- roles of capital markets, commercial banks, development banks, ECAs;
- development of local currency capital markets and financial infrastructure;
- loan pricing and bond yields;
- securitisation of infrastructure financing;
- integration of Islamic with other forms of financing;
- construction, operating, market, counterparty, political, currency and other project risks;
- allocation of project risks to parties most capable of bearing them;
- allocation of project risks between public and private sectors;
- leverage in project capital structures;
- risk mitigation instruments, including political risk insurance and credit enhancement;
- institutional investors’ risk and maturity preferences;
- long time horizons of infrastructure projects;
- infrastructure as an asset class, comparative volatility, correlation with other asset classes;
- liquidity in infrastructure investment and lending markets;
• increasing prominence of infrastructure investors from emerging markets;
• credit ratings on infrastructure project bonds;
• default probability, probability of loss given default;
• rating stability and default records.

Infrastructure investment and financing needs

Chapter 1: In our first chapter, David Rickards of Macquarie Bank provides a comprehensive view of the need for infrastructure investment around the world and then discusses the emergence of infrastructure as an asset class with distinctive characteristics that can help diversify an investment portfolio. The need for investment in infrastructure can be viewed from a basic humane perspective and from an economic growth and competitiveness perspective. From a basic humane perspective, Mr Rickards cites a recent World Bank study finding that 2.4bn people globally do not have access to sanitation, 2.5bn are without access to modern energy supplies, 1.2bn lack access to safe drinking water and 1bn do not have access to roads to reach markets, jobs and health facilities. From an economic growth and competitiveness perspective, sustainable economic growth over the long term requires investment in new infrastructure and maintenance of existing infrastructure assets. A strong factor in a country’s ability to attract foreign direct investment is how prospective investors perceive the quality of its transport, energy, housing and information- and communication-technology infrastructure. But in both industrialised and developing countries, actual investment in infrastructure lags behind the amount required for generally acceptable levels of safety, living standards, economic growth and country competitiveness. Although demand for infrastructure has risen, government spending on infrastructure has fallen, and the private sector has not been able to make up for the difference, hence the infrastructure investment gap. Recognising their need to fill that gap despite budgetary pressures, governments have become more interested in tapping private funding through public-private partnerships (PPPs) and private finance initiatives (PFIs). And as opportunities have increased for private investment in infrastructure, institutional investors have begun to recognise infrastructure as an asset class that has low correlation with other asset classes such as equities, bonds, emerging markets and cash. For investors, infrastructure projects have a number of appealing characteristics including inelastic demand, high barriers to entry, inflation-linked cash flow and a high degree of regulation.

Chapter 2: Mary Morrison and Marianne Fay of the World Bank summarise their recent study on infrastructure investment in Latin America. Insufficient investment in infrastructure is hampering the region’s ability to grow, compete, and reduce poverty. On average, Latin American countries spend less than 2 per cent of GDP on infrastructure, whereas between 3 and 6 per cent is required to catch up or keep pace with others that once trailed them, such as China and the Republic of Korea. Regardless of how they are financed, infrastructure costs are ultimately borne by users and/or taxpayers. So if infrastructure investment is to increase, the payment culture must be changed, and users who really cannot afford to pay must be protected. The region also needs to spend in better ways, improving the allocation between investment and maintenance. Although the private sector plays a vital role, governments remain at the heart of infrastructure delivery. In recent years, investors’ interest
in emerging markets and infrastructure projects has waned, and Latin American public opinion has turned against private participation in infrastructure projects because of poorly managed perceptions, unreasonable expectations, excessive renegotiation of project terms and a few well-publicised failures. Attracting more private investment requires an improved framework for private participation in infrastructure, including improved contract award processes, better concession design, better management and allocation of risks in project contracts, increased availability of third-party guarantees and institutional reform. Financing infrastructure in Latin America can be increased by adjusting user charges, improving risk coverage to attract private investors, drawing on local capital markets, expanding public investment and strengthening local governments’ access to funding.

Chapter 3: Andrea Goldstein and Celine Kauffmann of the OECD discuss the promotion and financing of transport infrastructure in Africa. Many problems plague African roads, railways, airports, ports and air space, including improper planning and bad management, lack of safety and maintenance, and inappropriate regulation. The result is that the poor state of infrastructure, the poor quality of the transport services provided, and their high cost to users all combine to leave many people, and especially the poorest of the poor, in a state of stranded mobility. Moreover, the potential benefits of Africa’s insertion into the global economy are only minimally realised, and major obstacles remain to weaving together states and provinces within a country and nations within a region. African governments and their development partners have increasingly recognised the importance of transport infrastructure in facilitating economic growth and achieving the United Nations Millennium Development Goals. Over the past decade or so, many attempts have been made to plan transport needs more effectively and to facilitate greater private participation in transport investment and management. Attracting such involvement presents problems: identifying potential investors, raising financial resources, writing sound contracts, improving regulatory frameworks and predicting revenue streams. There are limits to what can be achieved in this way, moreover, and both African governments and the donor community will need to continue developing innovative approaches for raising additional public and private resources and to learn to use them more efficiently in order to provide more and better transport infrastructure to the peoples of Africa.

Chapter 4: Tom Speechley of Abraaj Capital explains how the recent surge in economic growth in the Middle East, North Africa and South Asia (MENASA) region has quickly pushed the underinvested infrastructure in that region to overload. Further economic expansion and living standards will be severely impeded unless urgent investments are made. Although Gulf Coast Cooperation Council (GCC) governments for the most part are awash with liquidity, these revenues still cannot fully fund the vast investments required. The same is even more true of India and Pakistan, which are more industrialised and have far greater populations, but do not come close to possessing the financial resources of the Middle East. In order to fill the funding shortfall, countries in both regions are openly turning to the private sector, which is responding with unprecedented levels of interest. Project-development and finance expertise is rapidly ramping up in centres across the MENASA region as an increasing number of interested parties look to leverage the available opportunities. As a result it seems increasingly likely that the MENASA region will enhance its position as a global hub for financial organisations and intermediaries who will cater to the increasing needs for project
and infrastructure financing. As this phenomenon picks up pace, technical and human capital resources from across the globe will converge to the region, bringing the skills and experience needed to uplift MENASA to its next level of development. This chapter discusses infrastructure needs and investment opportunities separately for the Middle East, North Africa and the South Asia regions in the power, water, transportation, petrochemical and healthcare sectors.

Chapter 5: In this chapter, Priya Basu, Inderbir Dhingra and Varsha Marathe of the World Bank focus primarily on financial-sector-related constraints to private investment in key infrastructure sectors in India, where the potential for greater private participation exists, including the telecom, port, airport, urban power, and urban water sectors. It is well recognised that, with its present state of physical infrastructure, India will be hard-pressed to sustain 7 per cent plus annual GDP growth over the medium term. Investment in infrastructure over the past decade has not lived up to expectations. The 1996 India Infrastructure Report projected the need for an increase in investment in infrastructure from levels of under 5 per cent to about 8 per cent of GDP by 2005/06. At the end of the 1990s, however, actual investment (public and private) in infrastructure remained at under 4 per cent of GDP per annum. Current financial sector constraints to private financing of infrastructure in India include the difficulty of raising equity financing; a shallow, albeit improving, capital and debt market; weaknesses in corporate governance (primarily minority protection rights); limited sources of mezzanine financing; interest rate caps on external commercial borrowing; restrictive government guidelines and regulatory policies; and regulatory uncertainty. Infrastructure projects require multiple clearances at centre (federal), state and local levels, resulting in serious delays. The capacity effectively to conceptualise, procure and manage PPPs is limited within India’s public sector. A deeper and more diversified financial sector could help increase private participation in India’s infrastructure development. Key priorities include improving exit policies to make it easier for investors to exit; encouraging the use of more innovative financing instruments such as mezzanine and takeout financing; removing interest rate caps on external commercial borrowings; developing a longer-term corporate bond market; encouraging greater participation by insurance companies, pension funds, mutual funds, banks and other financial institutions to increase their participation in infrastructure financing through more flexible investment policies and regulatory guidelines; fiscal concessions such as reducing the customs duty on capital goods and machinery and extending tax-free periods for projects; streamlining approvals; and cutting down on red tape. The development of India’s corporate bond market could benefit from improved issuance and listing procedures, better corporate credit information, more efficient trading and settlement systems, and new product development in areas such as credit enhancement and bond insurance.

Chapter 6: Mete Yegen and Fuat Tuaç of Pekin and Pekin in Istanbul offer a view of infrastructure financing in Turkey. After a surge of power projects in the 1990s, legal uncertainties made foreign investors reluctant to channel their investments into Turkey. The election of Tayyip Erdoğan in 2002 helped restore foreign investors’ confidence. All in all, it is the state’s responsibility to attract potential foreign investors into Turkey. Three basic factors come to mind in this context: the transparency of the bidding process: a solid and efficient legal regime; and finally an accurate information flow with an emphasis on the social outcome of the proposed project. Despite many efforts on a parliamentary basis by the members of the ruling party, the Turkish legal regime regulating the bidding process still contains many
bottlenecks for potential bidders where it often proves difficult to cut corners. The state must further strive to solidify the legal framework that a foreign investor is required to follow. Recently, through issuance of a new corporation tax law, some tax incentives have been provided to foreign investors. Framework legislation is being drafted that should remove major obstacles to the swift completion of large infrastructure projects.

**Government accounting issues**

Chapter 7: Wolfgang Meister of Dexia Kommunalkredit Bank in Vienna explains how the Maastricht limits on government debt and deficit affect infrastructure projects in European Union countries. Eurostat has created clear guidelines for the recording of PPP projects and their impacts on the data of the government sector in the system of accounts. If a PPP project is classified under the private sector, the treatment of the contract is similar to the treatment of an operating lease in the 1995 ESA; the construction of the asset does not trigger any direct consequences for the deficit and debt of the government. PPP assets can be considered non-government assets only if there is strong evidence that the private partner is bearing most of the risk in the partnership. Specifically, the private partner must bear the construction risk and at least one of either availability or demand risk. Under provisions of the 1995 ESA, a government can provide a guarantee without triggering a reclassification of a PPP because guarantees are contingent assets and thus not recorded in the ESA system.

**Public–private partnerships**

Chapter 8: Luis Andrés, Maktar Diop and José Luis Guasch of the World Bank analyse the results and consequences of private sector participation in infrastructure in the Latin American region from the end of the 1980s to 2005, presenting evidence that illustrates the results of privatisation programmes, their economic and social impacts, and the public perception regarding privatisation programmes in infrastructure, the source of the concerns and how to address them to move forward. In addition, this chapter briefly identifies the threats, opportunities, challenges and key lessons of private sector participation, and concludes with recommendations in order to achieve a well-balanced and fair participatory process. On one hand there is an increasing amount of analytical evidence showing and suggesting that private participation has had an important positive impact on the economic performance of Latin American countries and the well-being of their consumers, while not having significant adverse impacts on poverty and inequality. But on the other hand, in spite of this evidence, the public opinion has turned in opposition to privatisation, and a number of recent attempts to privatise have unleashed a great social discomfort. Several Latin American countries have opposed continuing with programmes of private participation in infrastructure, but have left the door open to alternatives such as the public–private associations. The authors find that the main deficiencies of the privatisation process in Latin American infrastructure projects have been failure of governments to develop proactive communication strategies, an absence of social programmes in affected sectors along with attention to affected workers, higher priority assigned to fiscal considerations than to the efficiency of performance in the infrastructure sector at large, lack of transparency and participation, insufficient efforts to
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develop appropriate regulatory frameworks and prevent public monopolies from becoming private monopolies, poor design of concession agreements, and violations of contracts by both operators and governments, leading to renegotiations. Key elements of a successful private participation programme should include greater fairness and support to those adversely affected, greater transparency, involvement of affected communities from the start, better regulation and administrative and technical capacity, better concession design, improved evaluation and monitoring, and better communication to create popular support.

Chapter 9: Conor Kelly of Depfa Bank discusses the role of infrastructure finance and PPPs in North America. PPPs may take on many guises such as:

1. long-term design, build, finance and operate (DBFO) concession contracts;
2. design and build contracts;
3. operating concessions;
4. privatisations;
5. securitisations.

In any developing PPP infrastructure market there is a tendency for the first projects to be focused on the transportation sector, not only because generally this is where there is the greatest need, but also because such projects tend to be less complicated to structure compared with other types of infrastructure project. Because tax-exempt capital markets offerings, one of the traditional sources of US infrastructure financing in the past, have limitations in attracting private investors, new financing techniques have arisen, including mini-perm structures, monoline insured bank loans, accreting swaps, private activity bonds and TIFIA (Transportation Infrastructure Finance and Improvement Act of 1998) credit facilities. Establishing a PPP programme can be complex and initially expensive. Therefore, it is important that a controlling unit coordinates project implementation and manages the costs while also benefiting from deal experience that can be shared across numerous sectors. Public sector entities should consider establishing high-level steering committees or PPP units to:

1. co-ordinate the public sectors’ policy towards PPPs;
2. identify and prioritise projects;
3. oversee project procurement and implementation;
4. ensure standardisation of documentation; and
5. manage costs.

This approach has been adopted by a number of countries that have successfully introduced PPP programs. Brownfield acquisition has been driving the US PPP market to date. Greenfield construction projects will be slower to develop in the United States owing to their challenging risk profile compared with acquisition projects. Between brownfield and greenfield PPPs in the toll road industry are managed lane projects and major maintenance design–build contracts. Overall, the cautious view is that there will be three to five PPP transactions per year in the US market for the next few years. The Canadian market’s predictable deal flow is evidence of a considerably more mature market than in the US. The Canadian PPP deals are noticeably smaller in value than US PPPs, but they are more numerous and varied than US projects.
Chapter 10: Valeria Vences and Ryan J. Orr of Collaboratory for Research on Global Projects at Stanford University use the Camisea Gas Project in Peru to illustrate how social and political dynamics can delay efforts to develop large infrastructure projects. The Camisea Gas Project faced two decades of social and political opposition from the time that the fields were first discovered in a pristine area of the Peruvian rain forest to the ultimate start-up of operations in 2004 when gas actually started flowing through the pipes. The case study illustrates the enormous complexity of interactions among different stakeholders—each with their own interests and core values—and the changing nature of that complexity over time. Five categories of stakeholders are considered, that is, government agencies, developers, financial institutions, local communities and non-governmental organisations. Using some simple assumptions, the case study quantifies the total possible number of stakeholder interactions at the group, organisation and individual levels. Some of the specific conflicts and negotiations that occurred between different stakeholder groups are further discussed. Overall, the case study underscores the need for a full-life-cycle, multi-stakeholder perspective in the infrastructure development process, with a deeper understanding of the beliefs and interests of each of the parties to the project and a more complete awareness of the dynamics and challenges that come with large numbers of stakeholders and ad hoc coalitions and the myriad interactions among them.

Chapter 11: David Eaton of the University of Salford (UK) and Rifat Akbiyikli of Sakarya University (Turkey) utilise a case-based approach to demonstrate the effect of risk transfer on major stakeholder groups within a major UK road PPP project. The value of the chapter is in the analysis of how the risk transfer affects individual stakeholders at the aggregate and individual level within a single PPP. The ability to understand the financial implications of the risk transfer mechanism and to demonstrate the impact that such a mechanism has on value for money is at the core of PPP philosophy. The method is analytical, taking an actual project risk register and identifying the potential impacts of each individual risk on each stakeholder. These potential impacts are compared with the contractual risk allocations concluded under the contractual agreements. A multiple estimating of risk analysis (MERA) technique is applied to the register of construction risks; ground condition risks; third-party risks; design risks; legislative, financial and economic change risks; and operation and maintenance risks, which are further classified using the social, legal, economic, environmental, political, technological (SLEEPT) methodology. The analysis concludes that the contractual risk allocation is ineffective and has a detrimental effect on achieving value for money within the projects. The methodology presented within this paper could be utilised in pre-contract negotiations to explore the effects of different risk allocations and, hence, achieve improved value for money within PPPs.

Chapter 12: Abu Nasser Chowdhury and Chotchai Charoenngam of the Asian Institute of Technology (Thailand) explain how the development of a special purpose vehicle (SPV) is essential for successful financial closing of PPP projects. The financing of infrastructure projects depends on the anticipated financial performance of the SPV. Improper set-up of an SPV causes difficulties with a project, forces a restructuring of its debt, and may even bring bankruptcy to giant companies. Concerted efforts from the government and private sectors, as well as political, legal and financial issues, need to be dealt with for the smooth running of an SPV. These issues have been identified and evaluated from 12 worldwide infrastructure
projects. It is found that different projects have used different SPV structures. The authors have identified various attributes governing the set-up of SPVs in these cases. Furthermore, six cases out of 12 in Asia, the Mediterranean, and the Middle East have been screened out for in-depth analysis of financial strategies, legal framework, contracts and security for the SPV framework. The findings are based on a variety of diverse situations. Finally, an SPV structure for infrastructure projects in general has been developed, addressing key issues in five areas:

1. ability to be financed;
2. sources of funds;
3. security and other agreements;
4. sovereign support; and
5. credit enhancement.

The research findings should enable public as well as private sector clients to establish more efficient SPVs with respect to financial frameworks for infrastructure projects.

Infrastructure financing techniques

Chapter 13: Antonio Vives, Juan Benevides and Angela Paris of the Inter-American Development Bank explain that many conditions affect an investor’s willingness and ability to participate in infrastructure investments, but three factors have generally had a significant impact on the success of such involvement:

1. the presence or absence of local conditions favorable to investment (for example, legal framework, political risk, macro-economic factors);
2. the type of modality used (for example, fully private, fully public, concession, joint venture); and
3. the application of risk mitigation instruments (for example, political risk insurance, credit enhancement, local currency financing).

The authors’ analytical framework shows how these three critical components can interact at a high level to shape a successful project structure. Simply put, local conditions dictate much of what can be successfully accomplished in any given country or project. Many projects have failed by ignoring the full extent of local conditions. The modality used to set up the project and the risk instruments available must address issues raised by the local conditions. A careful analysis of such conditions, therefore, is the starting point for determining which modalities may be successful. Risk mitigation tools can then expand the range of possible modalities by mitigating risks that are raised in the local environment. The absence or underdevelopment of some risk mitigation tools can make some project modalities unfeasible. A great number of failures in infrastructure investments, particularly in water and sanitation, can be attributed to the application of financial structures, mostly imported from other environments, without paying due attention to the local conditions described in this paper, taking for granted or severely underestimating their impact on the success of the project. The analytical framework presented considers the feasibility of different modalities
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given the prevailing, or likely to prevail, local conditions and classifies them as being feasible, non-feasible, or feasible only with enhancements or risk mitigants.

Chapter 14: Pascal Bernous and Jonathan Manley of Standard & Poor’s explain how significant advanced structuring techniques are developing within the financing of infrastructure assets, discuss trends they have recognised from the credit rating agency point of view, and make some predictions about how asset securitisation will evolve. They note that securitisation in the infrastructure sector has generally taken the form of either corporate securitisation or collateralised debt obligations (CDOs) of infrastructure loans. Because corporate securitisation is best suited to companies with predictable cash flows and a stable regulatory environment, it is often an attractive form of financing for transportation, utility, and other infrastructure companies. Financial institutions that originate infrastructure loans can use CDOs to free up capital for additional lending activity and lower their regulatory capital requirements. For investors, CDO structures are efficient vehicles for diversifying the risks inherent in individual project loans or bond investments.

Chapter 15: Paul Forrester of Mayer, Brown, Rowe & Maw LLP explains the structures and features of project finance CDOs and why project and infrastructure finance debt is an attractive asset for a CDO. Project finance CDOs allow portfolio investors a greater opportunity to participate in infrastructure debt markets and will bring additional liquidity and transparency to such markets. Project finance CDOs will also allow commercial banks, which have a long and successful history with project and infrastructure finance, better to manage their balance sheets and asset–liability mismatches.

Chapter 16: Robert Doty of American Governmental Services Company proposes a cost-efficient form of securitisation finance for public infrastructure in China. The chapter emphasises the water sector, a national priority. The proposed technology, however, has much broader application. That technology, the issuance of securities of local and provincial governments in a domestic Chinese public securities market, is already used widely in the United States and other developed countries. Although international investors most likely would be interested in investing in debt instruments of sound public projects in China, Chinese restrictions on foreign direct investment in governmental debt securities (as opposed to equity in joint ventures) discourages pursuit of that market. Because of negative perceptions and burdensome approval requirements for the issuance of local and provincial bonds, this paper proposes the sale of certificates of participations (COPs) securitising long-term leases and installment purchase agreements, another technology used commonly in the public securities markets of the United States and elsewhere. China’s procurement law already authorises local and provincial governments to engage in financial leasing transactions. The financing leases would be made with local utility enterprises, and would be supported with user tariffs, not local taxes or general government budgets. Local governments themselves would not be obligated to make the lease payments. By means of such technology, the author postulates that the interest cost of financing public projects in China could be reduced from the present range of 12 per cent to 20 per cent paid to equity investors in build-operate-transfer (BOT) formats to yields to domestic investors perhaps in the neighbourhood of 4 to 5 per cent.

Chapter 17: Andreas A. Jobst of the International Monetary Fund critically surveys the recent development of sovereign securitisation in emerging markets and informs a more
specific debate about the attendant infrastructural, legal and regulatory challenges. Over many
years, securitisation has proven to be an expedient and highly flexible refinancing tool for
corporations and public-sector entities that seek a more accurate capital-market based valuation
of asset performance. Asset securitisation has also become an attractive financing method
for governments that seek private-sector involvement to fund pressing infrastructural
investments at times when budgetary deficits and fiscal restraint limit financing options. After
successful securitisation in advanced countries, sovereigns in emerging economies are
becoming increasingly adept at securitisation. Amid lower risk premiums in a changing
interest rate cycle, the current trend of greater investor differentiation in emerging markets
creates a benign environment for sovereign securitisation to accommodate continued
institutional investor demand for highly rated debt.

Chapter 18: Michael J.T. McMillen of Fulbright & Jaworski LLP addresses infrastructure
and other project financings that are compliant with the principles and precepts of Islamic
Shari’ah (the ‘Shari’ah’). The Shari’ah is frequently characterised as Islamic religious law.
It is binding upon Muslims as a matter of religious mandate and also may be incorporated
into the secular law of a given jurisdiction. Governments and major industrial participants
in the Middle East and other Organization of the Islamic Conference (OIC) jurisdictions are
requiring, with increasing frequency, that at least part of the financing structures for
infrastructure, real estate and industrial projects in these jurisdictions include at least some
Islamic finance component, if not a completely Shari’ah-compliant financing structure.
Consequently, a significant number of Islamic and conventional multinational banks, investment
banks and other financial institutions, as well as western asset managers, lawyers, accountants
and other professionals, are entering the field of Islamic finance. This chapter first touches
upon the nature of infrastructure and project finance. It then briefly considers the basis of
the Shari’ah and its explication by Shari’ah supervisory boards. This entails a summary con­sideration of the composition of those boards, their roles, and the nature of fatwa or Shari’ah
opinions. A summary of some of the Shari’ah principles of particular relevance to infrastructure
and project finance is provided. The chapter then turns to descriptions and observations on
structures used in Shari’ah-compliant project and infrastructure finance, beginning with a
structure involving a single Shari’ah-compliant tranche in a financing that otherwise involves
conventional interest-based financing, and moving through purely compliant transactions,
including sukuk (Shari’ah-compliant bonds and securitisations) that are currently in use for
project and infrastructure financings.

Chapter 19: Marco Cerritelli of Banca OPI S.p.A. uses Italy as a case example of how
a major OECD and EU country has developed a legislative and regulatory framework for
PPPs. After several years of improvements in the legislative environment, the market for
infrastructure financing (PFI/PPP) in Italy has delivered a significant number of valuable
initiatives through to financial close. These initiatives now spread from roads to local public
transport systems. A fertile ground has been found in the health care sector, as well as in
water and waste management initiatives (including waste-to-energy plants). Although not the
easiest way, PFI/PPPs have become one of the major procurement routes for government
and local authorities (municipalities or comuni and regioni). Their influence is likely to
increase further over the coming years. In recent years, many European countries, including
Italy, have looked at the UK’s experience with its PFI, borrowing the legal devices and
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instruments successfully tested in that market over the past 15 years, passing bills of law or regulations that are aimed at establishing a legal framework for private financing of public infrastructure, setting up dedicated task forces devoted to the promotion of the PFI initiative in their respective countries, and monitoring certain pathfinder projects. From an historical perspective, Italian infrastructure projects have traditionally been funded by the government; the recourse to PPP schemes was regulated only recently through legislation enacted and implemented over the last decade. In effect, although the concept of concession (being a contractual relationship between the public and the private sector) has been known in Italian legislation since the 1920s, a revised scheme suitable for PPPs was introduced only in 1998, with a series of amendments to the framework law governing the award and execution of public works contracts known as the ‘Merloni Law’. Since its enactment in 1994, the Merloni Law has been amended several times in order to achieve a better regulatory environment for the realisation of public infrastructure projects. This chapter describes the creation and objectives of the Italian PFI Task Force (the Unità tecnica finanza di progetto); the nature of contractual relationships, including concession agreements, the length of concessions, financial balance, availability payments, termination and step-in rights; regulations concerning project companies, including the rationale behind the incorporation of the project in a single vehicle, corporate structure, the contracting out of works and services, the issuance of bonds and the selling and purchase of SPV shares; and the nature and forms of security in Italian transactions, including the purpose of security, the classification of security, preferential rights of lenders, general liens, assignment of receivables and mortgages over concessionaires’ assets. The chapter concludes with an assessment of the current Italian PPP market.

Chapter 20: Kenneth Hansen of Chadbourne & Parke explains that the many important business opportunities for infrastructure developers and investors in emerging markets—and sometimes in developed markets as well—are accompanied by political risks. The eclectic marketplace of political risk coverage providers includes commercial insurance companies, national investment promotion agencies, export credit agencies and multilateral development banks. The core coverages they provide are against expropriation, political violence and currency inconvertibility. Although breach-of-contract coverage is generally not offered, an investor can insure against a government either failing to pay an award that comes out of an arbitration process or frustrating that arbitration process. There are other related risks that are more difficult to cover with insurance. Instability in currency values is a greater risk than inconvertibility. Whether a regulatory action is insurable depends on whether a government, under international law, can be held liable for the investor’s losses. There are also other pitfalls for the unwary. The requirement for an investor to pledge unencumbered shares in the covered project company for expropriation coverage conflicts with project lenders’ requirements for priority liens on such shares. Although expropriation coverage typically protects against acts by local and regional as well as central governments, it is sometimes difficult to determine whether acts of the offending institution qualify as acts of any level of government. Not all policies cover business interruption losses, and whether losses arising from indirect damage or avoided damage are covered may be disputed. The insured party needs to study carefully what a policy does and does not cover, as well as the requirements to enjoy the benefits of that coverage in the event project problems are not resolved.
Sources of infrastructure financing

Chapter 21: Jeff Delmon and Ellis Juan provide the World Bank's view of the role of development banks in infrastructure finance. Attracting infrastructure finance to developing economies is one of the most significant challenges to the World Bank in fulfilling its mandate. Infrastructure lending grew to a peak of 40 per cent of the World Bank's total lending in 1987, declined significantly in the 1990s as priorities shifted and the private sector assumed a more prominent role, and has recently grown back toward previous levels. Based on experience over the last 20 years, the World Bank has learned seven principal lessons.

1. Projects must be chosen carefully.
2. Project design standards must be adapted to local circumstances.
3. Excessive loan conditions or project complexity can lengthen preparation and implementation time, and occasionally cause projects to collapse under their own weight.
4. Pro-poor regulatory policies and subsidy schemes can work if they are targeted carefully at specific needs.
5. Although the private sector can help finance infrastructure, it ultimately provides only about 20 per cent of total funding required. Government institutions must remain central to sector strategy, investment and expenditure priorities, regulation and risk management.
6. Addressing environmental and social issues is a commercial and financial necessity.
7. The instruments that reduce the influence of corrupt practices also reduce the cost of providing infrastructure services, increase the speed of procurement, and enable economies to increase the flow of private capital into infrastructure.

Experience has demonstrated that the best way to attract more private capital into infrastructure is to provide a sustainable and credible policy and regulatory framework. The key to the success of PPPs is risk allocation, balanced with rewards, between public and private partners. Whereas in the past large international sponsors from the developed world dominated infrastructure finance, developing-country investors are capturing an important share of the market and showing signs of increasing their presence. The World Bank provides low-interest loans through the International Bank for Reconstruction and Development (IBRD), concessional credits and grants through the International Development Association (IDA), and political risk insurance to private investors and lenders in private projects through the Multilateral Investment Guarantee Agency (MIGA).

Chapter 22: Arthur Schankler describes how the European Bank for Reconstruction and Development (EBRD) supports infrastructure development in central and eastern Europe. The EBRD was established in 1991 to assist the former communist countries of the Soviet Union and central and eastern Europe in making the transition from a command economy to a market economy. This assistance has largely been in the form of financing for private-sector companies. However, a major component of the Bank's activities has been supporting the improvement of infrastructure in the Bank's countries of operation through both the public and private sectors. The Bank tries to ensure that it is not the only source of financing for a project and relies either on contributions from the government entity involved or third-party donor contributions to provide financing. In addition, wherever possible, the Bank tries...
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to attract co-financing from other banks, both commercial and multilateral. This has the benefit of reducing the Bank’s exposure, but also achieves the aim of the Bank to stimulate investment by commercial banks into its countries of operation. The EBRD does not provide concessional financing; the pricing of its loans is based on the risk assessment of the particular transaction. Maturities of loans for infrastructure projects are generally longer than the Bank’s standard lending and in some cases in the 20–25 year range, although 15-year maturities are more common. Every project financed by the EBRD, including infrastructure projects, must go through an environmental due diligence process, including an environmental audit, which in some cases leads to a requirement for an Environmental Impact Analysis. Case studies in this chapter describe a wide range of EBRD projects and support of a number of different elements of infrastructure financing. They include: support of capital markets; use of local-currency financing for projects with local-currency revenues; long-term financing for long-term assets; developing innovative project structures, including contractual arrangements, which reduce financial risk; encouraging the participation of commercial banks and other financing partners; and support for environmental safeguards in project design and implementation.

Chapter 23: Declan Hegarty of HSBC observes that strong industrial growth, supported by continued strength in oil prices, has contributed to the rising profile of the Middle East in the global investment community. Governments and regional, frequently state-sponsored corporations are increasingly turning to project finance as a means of financing their infrastructure needs in these sectors to allow resources to be deployed in areas of greater need such as education and social services for growing populations. International bank lenders that previously moved away from the Middle East market because thin pricing did not compensate for the attendant risk are now seeing favourable yields there compared with other markets. Club loans and large underwriting groups with minimum sell-down requirements are allowing borrowers to price deals at very keen rates. Another noteworthy development has been the shift in composition of lenders within a successful project financing. As the international market has adjusted down the risk premiums required for regional projects, the percentage of lending by Middle Eastern regional banks has been reduced from 60 to 70 per cent to 30 to 40 per cent at best, with even the larger regional players finding it difficult to justify entering some of the recent deals on pricing grounds. With increasing acceptance of Islamic structures by the wider banking market, it is now possible to structure financings of a certain size exclusively on a Shari’ah compliant basis and for these structures to be booked both by purely Islamic institutions and by conventional banks, generally through dedicated Islamic departments. The majority of innovation and growth in Islamic finance has been in the fast-growing area of sukuk issuance. There is now a growing appreciation by sponsors that export credit offices (ECAs) enable financial institutions to reallocate not only credit risk but also country risk outside of the region, permitting the mitigation of single-borrower limits, country caps and credit exposure. GCC states have undergone a wave of credit rating upgrades in the last couple of years, and more entities—sovereign, state sector and private sector—have become more comfortable with the disclosure required to obtain formal credit ratings. Capital markets financing is still best suited to refinancing project finance transactions post-completion. Regional corporations are increasingly acquiring credit ratings also and graduating into the bond market.

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Chapter 24: Piers Constable of Deutsche Bank AG explains that an ECA helps its domestic manufacturers win business in overseas markets by providing guarantees and insurance to exporters and banks against the risk of non-payment by an overseas buyer or borrower. ECAs are as relevant today as they have been over the past 20 years, as new buyers and borrowers come to the market seeking long-term funds, and the established players look for diversification of their financing strategies on account of the sheer scale of project opportunities in the pipeline. This chapter looks at the role that the ECAs have traditionally played in infrastructure project financing, highlights the relative strengths and weaknesses of this funding tool, and offers some views as to the potential requirements for the ECAs over the next decade. The key benefit to the borrower of having an ECA guarantee the loan is that, in the vast majority of instances, the bank will lend for longer tenors and at lower interest rates than if it had been a purely commercial loan made from its own balance sheet. ECAs traditionally work in developing markets to get riskier projects off the ground, and then roll away as the project and the country move up the credit curve. However, over the past few years the ECAs have also played an important role in providing additional liquidity to good-quality projects in established markets, particularly in the Gulf region. A common theme of the more recent projects is that an ECA has taken a minority tranche that is part of a very large and wide financing structure. Such projects may utilise a commercial loan tranche, a bond tranche, a metals tranche or even an Islamic tranche alongside the ECAs. Sometimes the ECAs have been included to reassure investors and get the project off the ground; other times they have been used to plug a funding gap on a mega-project. Whatever the reasons, the ECAs have learned to work alongside other lenders and investors on these projects, and to appreciate they are just one of a number of parties involved and that they will not always get their way when calling the shots.

Industry perspectives

Chapter 25: Michael Cox of the Royal Bank of Scotland explains that investment in health care facilities has grown in recent years as governments have increased spending in response to ageing populations and to exploit technological advances in health care to the benefit of their citizens. Government policy and favorable demographics have attracted an escalation of private equity interest in the sector over the last few years. Aside from traditional bank lending, a number of innovative structures have been used to raise debt backed by health care assets. Key structures include: whole business securitisation, multiple-tenant sale and leaseback, opco/propco (also known as single-tenant sale and leaseback), loans funded through the issue of commercial mortgage-backed securities (CMBs), and the UK’s version of PPPs, the PFI. Recently the use of whole-business securitisation has declined in favour of opco/propco financing, in which debt is raised based more on the basis of property value than on the credit quality of the operator. Although assets such as care homes, private hospitals, funeral homes, crematoria, psychiatric hospitals and National Health Service hospitals may be funded in the capital markets at lower cost, up-front costs are relatively large, making only larger financings cost-effective. Bank lending in the health care sector continues to thrive because of greater flexibility, the possibility of greater discretion, more emphasis on relationships,
and ability to accommodate businesses in their aggressive growth phases. Bank financing has become increasingly aggressive in recent years, measured against cash flows of the borrowers. PPP activity so far in continental Europe has primarily been bank financed. However, there are signs that the market for bond-financed PPP projects could expand as investors become more familiar with the concept. There is potential for financing new types of assets such as primary care facilities in the capital markets when sufficient scale is developed. New techniques such as bank CMBS conduit programmes may help smaller borrowers access the most efficient funding. The implementation of real-estate investment trusts (REITs) in the UK will create new opportunities for equity investment in the health care sector.

Chapter 26: Pamela Bailey-Campbell, Yuval Cohen, George Currie, Alasdair Macphail, Benjamin Perez and Robert Vitale of Parsons Brinckerhoff examine current trends in the use of PPPs to deliver transportation infrastructure projects in different parts of the world. This chapter describes key practices and policy issues in the application of PPPs in four main regions: North America/USA, Latin America, Australia and Europe. The chapter also presents three case summaries describing noteworthy projects around the world, including key features of the financing process. Although each region offers a distinctive profile of PPP application in the planning, implementation and operation of transportation projects, the underlying motivations are essentially the same: to relieve the burden on the public purse while meeting essential public needs; to optimize ‘value for money’ within a competitive environment; to allocate risks to parties best equipped to manage them; and to harness private-sector strengths such as technological innovations and management techniques that boost efficiency and improve outcomes. In all these regions, despite occasional obstacles and uncertainties, PPPs have emerged as a viable and generally accepted strategy for delivering transportation projects. For example in the United States, the tremendous need for funding transportation is driving a dramatic increase in the use of PPPs. States such as Oregon have traditionally relied on taxes, fees and federal grants to fund needed transportation projects, but now find that these sources are no longer sufficient. Within the last three years, a trend involving long-term leases and sales of existing assets has begun to develop in the United States. Although these sales and leases offer value in terms of a predictable cash flow, their long-term success is still to be determined. There has been quite a diversity of experience with public–private participation throughout Latin America, which experienced a rapid popularity with private concessions in the late 1980s, fuelled by the drive towards market reforms in many economies. This continued unabated in the 1990s, particularly in Argentina (in water and roads), Chile, Brazil, Ecuador and Uruguay. Although true operational efficiencies are difficult to measure and assess, and reactions to nominal fare increases in several areas only anecdotally observed, on the whole, the experiment has been working, and service is being well provided. Overall, the benefits of reforms can be measured more in terms of service innovations and offerings, rather than cost and fare cutting. Australia has implemented some of its infrastructure projects using a PPP procurement framework for over two decades, although the country’s overall commitment to PPPs has been somewhat tentative. During the 1980s, the principal examples of using PPPs to capture investment and promote efficient delivery of public-sector projects were found in the UK, and UK governments across the political spectrum have since used PPPs with relative consistency. Across Europe, various tools and policies have been developed to
facilitate PPP application. The European Investment Bank regularly makes loans to support PPP initiatives in Europe and elsewhere. Present indications are that PPPs will continue to be a viable method for delivering public infrastructure in Europe for the foreseeable future. This chapter’s brief discussion of various approaches to PPPs across the globe illustrates the following principles:

1. A successful PPP must start with a project of importance to the public and a commitment to the PPP delivery method.
2. Each region turns to PPPs to address specific needs. The UK experience is more focused on improving the speed and timeliness of delivery, for example, whereas the US is looking for more effective use of tolling and increased leverage for projects to allow more projects to be built for the same revenue stream or a reduced public-sector contribution.
3. PPPs can be effective risk-transfer mechanisms if risks are appropriately allocated between the public and private sectors and to those parties best able to manage the risk.
4. There is likely to be increased use of PPPs in numerous countries over the next decade and beyond to meet a variety of needs that cannot be addressed solely by government.

Chapter 27: J. Paul Forrester of Mayer, Brown, Rowe & Maw LLP and Cynthia Baker of Chapman & Cutler LLP note that the cultural and social importance and sometimes powerful economic development attributes of sports and other entertainment facilities have long been recognised, but more recently the public funding spigot has been turned off owing to both a perception that public funding unduly enriches team-franchise owners and the difficulty of demonstrating the projected economic development contribution of such facilities to a sceptical public. The structured financing the authors describe for the St Louis Cardinals’ new stadium was the largest private placement of debt for a Major League Baseball (MLB) stadium, the first MLB stadium transaction using a bankruptcy-remote-securitisation structure, the first set of structured cash flows from a baseball stadium to be rated investment grade by both Moody’s and Standard and Poor’s and insured to ‘AAA’ by Ambac Assurance, and only the third privately financed MLB stadium. In the current market, this and other major league sports arenas and stadiums are often funded by monetising the related ‘contractually-obligated income’ (COI). Examples of COI include so-called stadium ‘naming’ rights, luxury suites, sponsorships (i.e. signage within the stadium), beverage ‘pouring’ rights, food and parking concessions and other multi-year contracts that result in a future revenue stream. The sale of receivables to a special-purpose vehicle (SPV), combined with certain corporate separateness and organisational limitations placed on the SPV, works to isolate the receivables from the bankruptcy and credit risks of the originator and can allow the receivables to be self-financing at a higher credit rating than that of the originator. The SPV finances its purchase of the receivables either by issuing securities (typically, debt securities), by selling an undivided interest in the receivables to a commercial paper conduit, or in some instances through a borrowing arrangement with a commercial paper conduit. Although it could not be implemented within the required time frame, the Cardinals also pursued an alternative hybrid securitisation-leveraged lease structure that participants in the structured finance markets may find of interest. The introduction of securitisation techniques to big-ticket leasing is the point where securitisation, project finance and lease finance converge. A leveraged lease
financing structure may offer a number of benefits to the sponsor/lessee, including an additional source of capital to a structure: equity capital provided by the owner participant (OP). The tranche of capital provided by the OP is subordinate to debt, and, as the OP is the owner of the leased property, it is entitled to the tax depreciation and other related tax benefits.

Chapter 28: An airport usually represents a portfolio of different businesses commonly split between aviation and non-aviation business, explains Guenter Schroefel of Bayerische Hypo- und Vereinsbank AG. In both emerging and more mature markets there is a strong interest in equity and debt financing of airports from a seemingly growing group of providers. This would most certainly allow for the development of a much larger market if governments decided to sell or concession a larger share of airports, which, on a global scale, are still predominantly owned by the state. In terms of financing, there is abundant liquidity in the market. On the debt side, lenders are choosing airports for their strong and relatively stable yields with weak correlations to traditional sovereign and corporate bond markets. Given their relatively low cash flow volatility, equity investors perceive airports as offering solid long-term returns. Both types of funders have recognised airports as assets that are fairly resilient to macro-economic downturns and event risk. Hence, there seems to be a great opportunity for governments in the mature and emerging markets alike to raise funds desperately needed for investment in other public sectors by privatising existing airport infrastructure and mobilising private capital for the construction of new or expanding existing airport capacity. Sadly, it does not appear as if governments across the globe are eagerly taking advantage of this occasion. With respect to funding issues, the valuations and financial structures of recent transactions could well signal that the market is now overheated, or at least that it has become more difficult to tell viable from less viable deals. Fortunately, none of the transactions closed in the recent past have run into major difficulties at the time of writing. In any event, there is little doubt that airports represent a fascinating asset class and will legitimately continue to attract interest in the debt and equity markets.

Chapter 29: Airport privatisation is usually driven by financial necessity, explains Frank Thiesen of Vossing GmbH. In recent years, airport privatisations have gained significant momentum, and airport companies in both emerging and developed markets are being fully or partly sold or ‘concessioned’ by their public owners. Because infrastructure privatisation is a long-term policy decision that lasts much longer than the average political cycle, it is worthwhile for these public owners to devote time and effort to develop the right methodology for each individual airport asset—reflecting the long-term stakeholder interests, the economic system, cultural norms and the importance of the airport to the economy in the respective country or region. Airport privatisations have gained momentum, and there are now plenty of successful examples that can serve as models. Every new transaction is somehow different from the last, ranging from limited concessions to PPPs and straightforward equity sales. Not surprisingly, a ‘one size fits all’ model has not evolved. Well-developed airports allow for a more light-handed approach in terms of investment requirements, and a transparent and reliable regulatory framework can give a private operator and its clients the freedom for market-based price negotiation. Governments that own ageing airports and aim to upgrade these facilities tend to employ concession models with rigid technical standards and investment programs. Governments will continually need to strike the right balance between financial gain and minimising refinancing risk, while achieving other objectives.
Credit rating of infrastructure projects

Chapter 30: Having rated and reviewed in excess of 100 PPPs over the past decade, Michael Wilkins and Jonathan Manley of Standard & Poor's (S&P) discuss the key trends emerging in the sector in this chapter. The sector has experienced continued rating stability and a limited default record, with the various structural and contractual risk mitigants established within the PPP structures operating successfully. The credit track record of the sector is therefore positive. Although none of the bond-funded projects publicly rated by S&P have defaulted, a small number of bank-funded PPP projects reviewed as part of structured portfolios have required financial restructuring in order to avoid a default, which itself could, under S&P’s criteria, mean a default. Thus the sector is not immune to credit stress. PPP project ratings continue to reflect the single-asset nature and aggressive financing structures (characterised by high leverage and consequent low debt-service coverage levels) that have largely limited issue ratings to the ‘BBB’ category to date. Despite this, they remain relatively robust to sensitivities on key variables. In addition to their robustness against default, the recovery ratings assigned to projects in the PPP sector have, to date, indicated the likelihood of a substantial (80 to 100 per cent) recovery of principal if a default should occur. This reflects a number of factors, including the PPPs’ beneficial termination provisions that provide for a termination payment to be made to lenders, the generally benign nature of the availability payment regime, as well as the protective mechanisms such as cost benchmarking contained in PPP contracts. The relatively benign nature of PPP asset construction has resulted in only a small number of PPP projects—most of them bank funded—encountering delays and overruns severe enough to cause the entire project to default. The exposure of projects to counterparty risk, rather than inherent project risk, tends to be a prime cause for project stress. Smaller contractors have less ability to absorb cost overruns and, as limited third-party support is available for liquidity, there is a risk that the project company will be required to absorb potentially significant cost increases. In addition, there is a potential knock-on effect on the performance of the subcontracting supply chain, with possible payment delays from the main contractor. Two recent trends S&P has observed have been:

1. an appetite for increased risk within the structure of PPP projects, including diminishing thresholds for shareholder distributions and delays or conditions for shareholders injecting their subordinated debt into the financial structure;
2. projects’ retention of lifecycle and major asset maintenance risks, which in S&P’s view are the key identifiable untested risks at this stage.

Chapter 31: Michael Wilkins of Standard & Poor’s cautions that both investors and lenders need to be fully aware of the credit risks arising from the recent breathtaking rise of global infrastructure funds. Infrastructure funds are managed vehicles through which investors are able to gain exposure to the underlying characteristics of a portfolio of infrastructure assets. The rise of funds in the infrastructure sector has led to banks, private equity groups, and investment managers alike struggling to buy suitable assets in the sector. Simultaneously, infrastructure deals are becoming increasingly highly leveraged, reflecting what S&P believes
to be a pricing bubble caused by the wave of new funds chasing limited assets. Despite this increased appetite, however, full risk analyses of assets must always be carried out, because not all will boast the strong, stable features assumed typical across the global infrastructure sector. Pension funds in particular have been driving demand for infrastructure assets, attracted by their essential long-term nature, strong competitive position, and stable and relatively strong yield returns. Infrastructure assets have also demonstrated a low correlation to equity markets and other major asset classes, helping to provide valuable diversification to fund managers. Therefore, the long-life, inflation-indexed returns provide a very good match for the long-dated liabilities of pension funds. A key trend amid this growth has been the rise of consortium deals, with private equity companies, infrastructure funds, pension funds and banks joining forces. Interestingly, the line between private equity companies and established market participants is becoming blurred as the former diversify away from core businesses and establish their own infrastructure funds. Regulated infrastructure assets do not typically lend themselves to operational turnaround or financial restructuring within the 3–5 year investment period typically adopted by private equity players.

Chapter 32: Acknowledging that infrastructure project credit risks are essentially project finance credit risks, Peter Rigby of Standard & Poor’s explains his agency’s project finance debt rating criteria. S&P defines a project company as a group of agreements and contracts among lenders, project sponsors and other interested parties that creates a form of business organization that will issue a finite amount of debt on inception; will operate in a focused line of business; and will ask that lenders look only to a specific asset to generate cash flow as the sole source of principal and interest payments and collateral. Five levels of analysis form S&P’s framework of project analysis: project-level risks, sovereign risk, business and legal institutional development, force majeure risk and credit enhancements. Project-level risk consists of the following categories: contractual foundation; technology, construction, and operations; competitive market exposure; legal structure; counterparty exposure; and financial strength. In 2004, S&P analysed the performance of 217 rated project debt financings over the preceding 10 years by comparing original ratings with the most recent available ratings for those project financings at that time. Performance of project finance debt over that 10-year period, as measured by defaults and ratings downgrades, proved the strength of this asset class. Defaults of project debt initially rated investment grade—‘BBB-’ or higher—were about 4.1 per cent of the total rated portfolio. Similarly, defaults of debt originally rated non-investment grade were about 4.6 per cent. Furthermore, although rated project assets included such diverse industries as power generation, petroleum refining, liquefied natural gas, transportation, mining and entertainment, the causes of defaults and ratings downgrades were remarkably similar. Counterparty and sovereign (or sovereign-related) risks together accounted for just over 16 per cent of all project downgrades. Technical risk, which includes construction, technology and operations risk, contributed to just 1.4 per cent of all project debt downgrades, and weakened financial performance caused only 3.2 per cent of the agency’s downgrades.

Chapter 33: Dan Aschebach and Thomas Paolicelli of Moody’s expect continued credit stability for the US public power sector through 2007. Although the sector faces challenges,
its credit strengths, including near monopoly economic position, lack of federal and state regulation, and assured recovery of costs through the local rate-setting process, should continue to provide credit stability. Challenges include commodity price volatility, environmental regulation, ongoing uncertainty about electric industry deregulation and difficult resource-adequacy decisions. Factors likely to maintain or improve credit quality in the US power sector include: legal ability and demonstrated willingness to set retail rates to recover power supply costs and maintain sound debt service coverage; longer-term power supply contracts that provide cost predictability and credit stability; deepening experience with risk management programs, including natural-gas price hedging, which should continue to improve the stability of public power utility cash flow; limited success with retail choice programs throughout the US, which reduces the potential competitive threat of deregulation, particularly for municipal utilities with large-load customers; retail rate competitiveness, which should continue to hold advantages for public power utilities, particularly as rate freezes end for investor-owned utilities in deregulated states; and reduced likelihood of major electric industry restructuring, given the market failure in California and blackout in Northeast. Factors likely to cause credit pressure are: sudden increases in fuel prices, which could pressure the creditworthiness of some utilities that do not have mechanisms for timely fuel-cost recovery or that already have high retail rates; use of locational marginal pricing (LMP) by regional transmission organisations, which may interfere with the transmission access that public power electric utilities require to support new debt-financed generation projects; environmental concerns such as global warming, which may delay and drive up the costs of new generation projects, and may in turn impact resource adequacy and longer-term power supply costs; the repeal of the Public Utility Holding Company Act of 1935 (PUHCA) in 2005 and a possible consolidation of the electric industry serving multi-state regions, which could limit wholesale market competition over the long term; an increase in interest rates, to the extent it occurs, which could increase costs for utilities with significant exposure to variable-rate debt or those undertaking large capital projects; and fiscal pressure for some cities, which may translate into increased revenue transfers from their electric utilities and result in increased rates and reduced competitiveness. Much of the industry focus in the past few years has shifted towards decisions about resource adequacy. Increasing global demand for fossil fuels has become a serious concern, not just because of its impact on global warming and on current fuel costs but also because of its impact on planning assumptions for new natural-gas generation projects. The Energy Policy Act of 2005 addresses the development of new energy supply and includes numerous incentives for the development of nuclear and renewable energy as well as clean coal technology. Public power utilities are facing environmental and political challenges as they plan for new electric generation projects to achieve resource adequacy. As commodity prices have trended higher, planning for new natural gas-fired generation to meet future demand has stalled because of the volatility of natural-gas prices and mounting concerns about the availability of long-term supply. Also complicating new power supply decisions is the debate over environmental policy, which results in different decisions by different communities regarding the choice of fuel or technology. Decisions about new generation have always had to consider environmental factors, but now a new intensity in the debate about global warming and electricity production could have a significant impact on the cost
and reliability of new coal-fired generation. Also, significant attention has been focused on adding renewable energy as a larger share of the overall power supply mix. Although renewable energy is politically popular, cost and reliability issues remain. Public power utility management, driven by the need to ensure reliable power generation and supply to meet new customer demand, is faced with making difficult choices. Political constraints can also narrow what fuel mix is achievable for public power utilities.

Chapter 34: Bart Oosterveld and Kurt Krummenacker of Moody’s find that overall credit quality in the US airport sector has stabilised in recent years based on strong passenger recovery following the terrorist attacks of 11 September 2001. Although the strong enplanement growth that enabled the sector’s recovery in the early years of this decade has shown signs of abating since late 2005, Moody’s expects the majority of rated airports to continue to experience enplanement growth through 2007. Moody’s notes that mergers or consolidations between airlines could slow enplanement growth further as capacity is reduced to make the consolidated carriers more efficient. The upcoming reauthorisation legislation for the Federal Aviation Administration (FAA) presents some near-term uncertainties for those airports that are contemplating capital projects financed by grants from the Airport Improvement Programme (AIP) and opportunities for airports that receive a large share of their revenues from Passenger Facility Charge (PFC) revenues. Moody’s has noted a steep rise in construction costs in recent years, which stems from increases in prices for commodities, energy and labour imbedded in construction materials, as well as the vastly increased global demand for construction, and impacts expansion efforts at airports. The strong economic growth that has enabled the strong passenger recovery nationwide has shown signs of abating since late 2005, driven mostly by the capacity cutbacks and route restructurings by legacy carriers such as Delta Airlines. In addition, both the average fare gap and the cost structure differences between legacy carriers and low-cost carriers (LCCs) have narrowed in recent years, somewhat dampening the prospect of additional industry-wide strong growth based solely on LCCs entering additional markets. By and large, airports continue to maintain solid levels of liquidity. Liquidity levels, measured by number of days of operating expenses that an airport has available (‘days cash on hand’), reached a median of 400 days for FY 2005. Moody’s notes that such liquidity levels are especially crucial for airports with a compensatory or hybrid rate making methodology, which in the case of a sharp downturn in traffic levels lack the ability to recover all costs from airline tenants. Although their business models were once very disparate, the past few years have seen a convergence between the practices of network carriers and LCCs. Network carriers have worked to reduce personnel costs, shave expenses and increase efficiencies to compete with LCC models. LCCs have arrived in major-market airports and have seen their route structures, personnel costs and overall expenses rise. The impacts and potential benefits of airport privatisation in the US are unclear at this point. Moody’s recognises that it has the potential to bring additional funding to the airport sector, but also notes that significant risks are present. Although the private airport model is not common in the US, it has worked in a number of other countries including the UK and Australia. The continued growth of the FAA’s pilot programme should further the industry’s understanding of the benefits and risks associated with the private model.

Chapter 35: Maria Matesanz and Joshua Schaff of Moody’s explain that the recent privatisation of several toll roads in the US has attracted considerable interest among public
toll road operators and investors, but privatisation in the US is still in its infancy compared with Europe, Latin America, Australia and Canada. This chapter covers the recent trends in toll road privatisation in the US and why privatisation may gain momentum as a public policy initiative. The chapter also explores the benefits and risks to governments of the privatisation of public assets. The development of a robust privatisation trend in the US will depend on a number of factors, including whether or not the political and financial climate in the state or local jurisdiction favours the privatisation of public assets, and the ability of a private operator to achieve a sufficient rate of return on a privatisation investment. In Moody’s opinion, likely candidates for privatisation may have the following characteristics: established toll roads that have political limits on toll raising ability; roads owned by governments that are short of capital to fund government programmes; roads with a significant number of non-resident users, such as truckers or tourists, who may be less able to protest effectively against privatisation; roads that are in a good state of repair, as concessionaires may have limited resources to pay for capital improvements after making a large upfront payment to win a concession; and new or ‘greenfield’ projects that lack sufficient government funding. Moody’s expects that state and local governments will carefully review the economic and political benefits and costs of the various privatisation arrangements being proposed by the private sector. Although it is premature to predict which, if any, privatisation models will be most widely adopted—and what credit impact they might have on government-owned toll facilities in the US—Moody’s believes that the benefits and risks are most likely to drive the privatisation debate. Benefits include substantial up-front cash payments from concessionaires, which may bolster a government’s credit quality; the transfer of most toll-raising decisions to the private sector, which may insulate the toll road from political interference; and potential efficiencies in toll road operating costs and services through the introduction of private sector discipline. Risks include potential undervaluing of concessions by government; potential political backlash as private operators set tolls to maximise revenues; and exposure to substantial default or termination payments as a result of public displeasure with the concession terms that could pressure a government to modify or undo a privatisation agreement. The rising interest in privatisation of toll roads in the US appears to be the result of three fundamental trends.

1. The US has a very large—and growing—need for transportation funding owing to ageing infrastructure, increasing traffic congestion and lack of adequate funding sources.
2. The global capital market for financing and purchasing public transportation assets is burgeoning, providing a new source of funding.
3. There is a growing perception at different levels of government that the privatisation of facilities may not only enhance service delivery and promote customer satisfaction but also provide access to a new source of capital.

The US has only a few examples of long-term concession sales. As the market for toll road assets evolves, Moody’s expects that there will be a period of adjustment among governments
as they learn how best to structure concessions and other operating agreements. Not all governments will decide that privatisation is the best route. Moody’s expects that future concessions may include partial privatisations and more provisions for revenue sharing for the government. The agency's assessment of the credit risks and benefits of privatisation will evolve as more deals are done and concessions mature.

Chapter 36: Maria Matesanz and Joshua Schaff of Moody’s explain Moody’s rating methodology for state and local government-owned toll facilities in the US. Moody’s fundamental analytical framework includes five key rating factors and a total of 18 sub-factors:

1. market position (scope of operations, competition, service area characteristics, demand);
2. governance and management (governance, regulatory framework, management);
3. financial position and performance (operating performance, debt service coverage, revenue diversity, budgetary flexibility, financial reserves);
4. debt and capital plan (capital needs, capital planning and funding); and
5. covenants and legal framework (security pledge and flow of funds, rate covenant, additional bonds test, debt service and other reserves).

Summary of principal conclusions
Among the many conclusions that can be drawn from the foregoing chapters are the following.

Worldwide infrastructure needs in both developing and developed countries are beyond the combined capabilities of governments, multilateral donors, and the private sector. A country’s investment in infrastructure has economic growth, competitive and humane dimensions. Sustainable economic growth over the long term requires investment in new infrastructure and maintenance of existing infrastructure assets. A strong factor in a country’s ability to attract foreign direct investment is how prospective investors perceive the quality of its transport, energy, housing, and information- and communication-technology infrastructure. But in both industrialised and developing countries, actual investment in infrastructure lags behind the amount required for generally acceptable levels of safety, living standards, economic growth and country competitiveness. Although demand for infrastructure has risen, government spending on infrastructure has fallen, and the private sector has not been able to make up for the difference; hence, the infrastructure investment gap. Recognising their need to fill that gap despite budgetary pressures, governments have become more interested in tapping private funding through PPPs and PFIs. And as opportunities have increased for private investment in infrastructure, institutional investors have begun to recognise infrastructure as an asset class that has low correlation with other asset classes such as equities, bonds, emerging markets and cash. For investors, infrastructure projects have a number of appealing characteristics including inelastic demand, high barriers to entry, inflation-linked cash flow and a high degree of regulation.

Although the private sector can help finance infrastructure, it ultimately provides only about 20 per cent of the total funding required. Government institutions remain central to infrastructure sector strategy, investment and expenditure priorities, regulation and risk management.
Private parties considering participation in infrastructure investments should consider local conditions (for example, legal framework, political risk, macro-economic factors), modalities (for example, fully private, fully public, concession, joint venture) and risk mitigation instruments (for example, political risk insurance, credit enhancement, local currency financing).

Experience has demonstrated that the best way to attract private capital into infrastructure is to provide a sustainable and credible policy and regulatory framework. The key to the success of PPPs is risk allocation. PPPs can be effective risk transfer mechanisms if risks are appropriately allocated between the public and private sectors and allocated to the parties best able to manage them. Attracting private investment requires a well-developed framework for private participation in infrastructure, including a body of law covering contracts, corporations and SPVs, security and mortgages; bidding and contract award processes; concession design; availability of third-party guarantees; exit policies to benefit investors; and government communication and transparency. To attract private investment to its infrastructure, a country should encourage the development of local capital markets, the use of innovative financial instruments, and the investment by local institutional investors in infrastructure instruments.

In recent years many European countries have looked at the UK’s experience with its PFI, borrowing the legal devices and instruments successfully tested in that market over the past 15 years, passing bills of law or regulations that are aimed at establishing a legal framework for private financing of public infrastructure; setting up dedicated task forces devoted to the promotion of the PFI initiatives in their respective countries; and monitoring certain pathfinder projects.

A large infrastructure financing today might include a commercial loan tranche, a bond tranche, a metals tranche, an ECA tranche, and an Islamic tranche, among others. It may also be completely Sharia’ah compliant. A significant number of Islamic and conventional multinational banks, investment banks, and financial institutions, as well as western asset managers, lawyers, accountants and other professionals, are developing capabilities in the field of Islamic finance.

Asset securitisation has become an attractive financing method for governments that seek private-sector involvement to fund pressing infrastructural investments at times when budgetary deficits and fiscal restraint limit financing options. Financial institutions that originate infrastructure loans can use CDOs to free up capital for additional lending activity and lower their regulatory capital requirements. For investors, CDO structures are efficient vehicles for diversifying the risks inherent in individual project loans or bond investments.

The infrastructure sector has experienced continued rating stability and a limited default record, with the various structural and contractual risk mitigants established within the PPP structures operating successfully. The credit track record of the sector is therefore positive. Three recent trends, however, have been increasing leverage in infrastructure projects, retention by projects of lifecycle and major asset maintenance risks, and increasing prices paid by liquid infrastructure funds in search of suitable assets.

Recent industry trends in infrastructure financing include the following: debt for health care facilities raised largely on the basis of property value; privatisation of toll roads and
airports as an opportunity for governments to raise funds needed for other public purposes; and commodity price, environmental, regulatory and political challenges faced by power companies as they try to build new generation facilities to keep up with growing demand.