Principles of Public-Private Infrastructure Delivery

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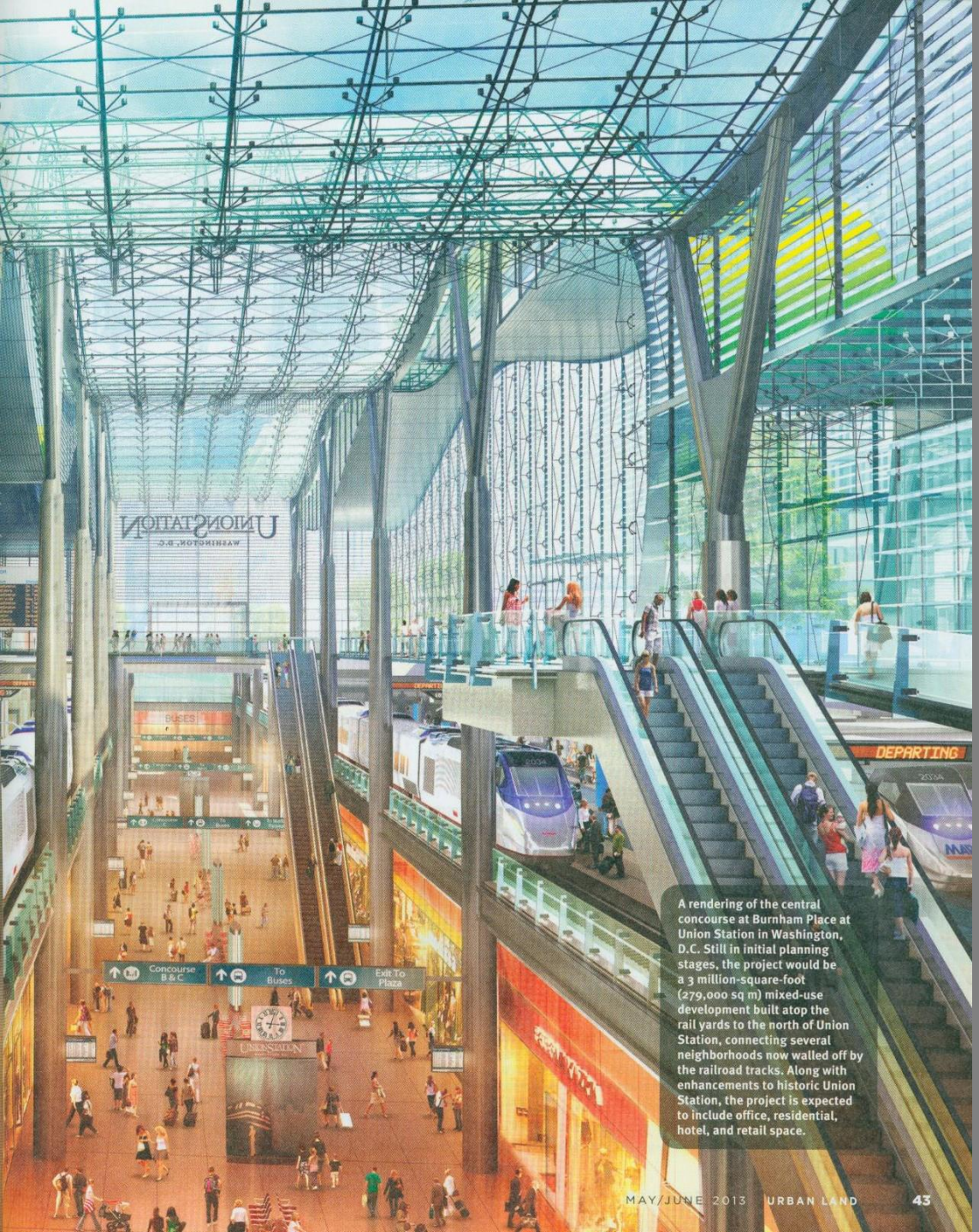
Course Objectives

- **First, an examination of how P3s are being applied in different regions and continents and how the market for P3s is being shaped globally;**
- **Second, an understanding of the different business models being utilized and how these models evolved;**
- **Third, an understanding of the basis risk-sharing and financial structure that underpins the generic P3 model;**
- **Finally, a look at such issues as technical innovations, risk assessment, management structures, pricing, and payment mechanisms. No investigation of P3s would be complete without a discussion of the influence of political factors, many of which reflect deep–seated ideological views.**

Course Outline

- Infrastructure: A Global Perspective
- Experience with P3s World-Wide
- The P3 Model
- Risk Transfer
- Payment Structures
- Project Finance
- Infrastructure as an Asset Class
- Issues and Challenges.



A rendering of the central concourse at Burnham Place at Union Station in Washington, D.C. Still in initial planning stages, the project would be a 3 million-square-foot (279,000 sq m) mixed-use development built atop the rail yards to the north of Union Station, connecting several neighborhoods now walled off by the railroad tracks. Along with enhancements to historic Union Station, the project is expected to include office, residential, hotel, and retail space.

What distinguishes infrastructure from real estate?

1. Infrastructure: A Global Perspective

Use of PPPs to deliver capital projects

Aerial view of a typical wastewater treatment plant

A favorite PPP

Millau Viaduct, France

2.46km long

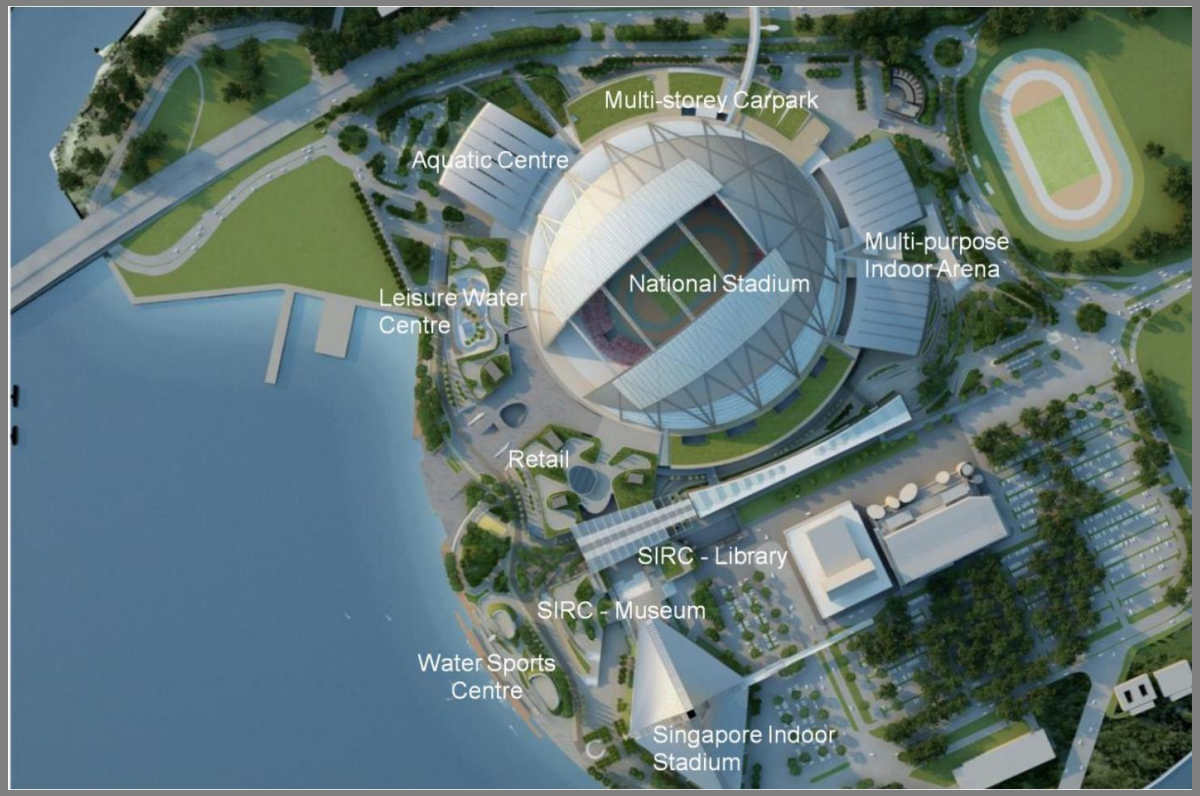
7 Piers

270m above Tarn River

Total height: 343m

Built in 3 years

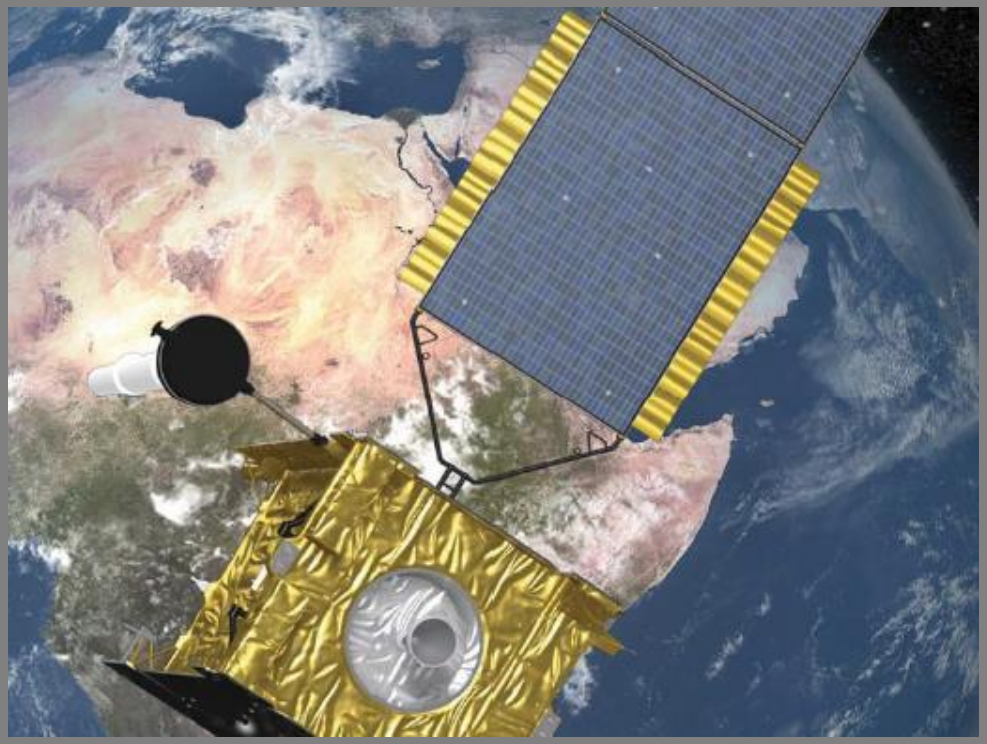
Singapore Sports Hub (hybrid model)



- 55,000-seat national stadium
- Retractable roof
- 6,000-capacity indoor aquatic centre
- 3,000-capacity multi-purpose indoor arena
- 41,000 square metres of commercial space

- Tendered as a PPP based on design build finance and operate (DBFO)
- 25 year concession period
- Government authority make availability payment through the life of the concession
- Private sector takes availability and performance risk
- Private sector is incentivised to achieve objectives as returns based on availability payment + Third Party Revenue (TPR)

Skynet 5 –pay per use model



- Skynets 1 to 4 – Public Initiatives
- Skynet 1 – Failed within a year
- Skynet 2a – Launch vehicle failed
- Skynet 2b – Successfully launched
- Skynet 3 – Canceled due to budget restrictions
- Skynet 4 – Successful but past design lifespan

- Combined military high security world-wide communications with commercial satellite users
- First PPP infrastructure delivery in space
- Largest single space contract for UK MOD
- Military pays on a per use basis and non-committed time can be sold commercially

New Oakville Hospital, Ontario – AFP/PFI model

DBFM 30-year term concession

1.5 million ft^2 acute care hospital serving the Halton region near Toronto with:

- Ambulatory and Emergency Care
- Diagnostic and Therapeutic Services
- Outpatient clinics
- Surgical Care and Inpatient Units
- Rehabilitation Services
- Complex and Continuing Care

Early Works began in June 2011, Financial Close on July 29, 2011

Carillion led the developer consortium, invested $45m equity, participates in construction, and leads the FM/lifecycle service provider

Approximately $1 billion in debt financing in the form of a hybrid bank/bond financing

- $450m bank facility by a club of 8 Canadian/int'l banks, $540m widely marketed bond
- $113m total equity committed

ARLANDA EXPRESS PPP

STOCKHOLM, SWEDEN

+

- Project opened **ahead of schedule**
- Reduced initial government financing by **$270M** CAD plus $160M CAD future repayments
- Significantly reduce government risk

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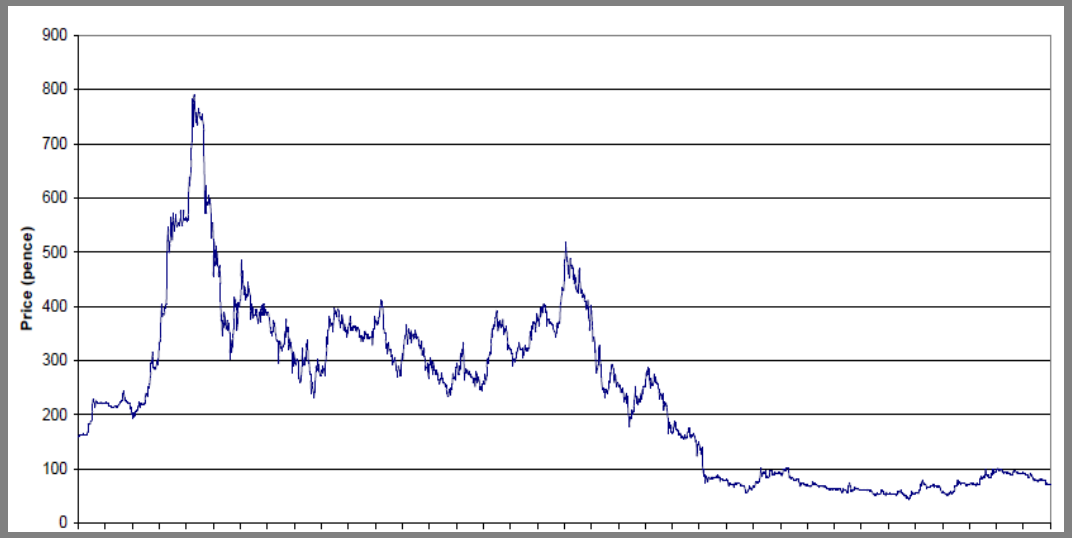
- **Low train usage** - economic recession, competition, inaccurate forecasting, high user fees
- Emission targets not met
- A-train nearly bankrupt
- Poor system integration

Channel Tunnel -Value for Money and Project Benefits



1988 ***1999***

Shareholder value destruction in project

- Underestimated costs
- Overestimated revenues

140% *final financing cost overrun*

66% *traffic estimation error*

• Multiple Financial Restructurings • Inability to service debt • Poor S&P ratings (C or D)

Potential Benefits?

Economic:

-Travelers: Alternate fast and effective transportation means

-Freight transfer: Very competitive to the water transport mediums

Social: Project totally privately financed, tax payer completely shielded

Global Infrastructure and Financial community:

-Management of large multi-nationality PPPs

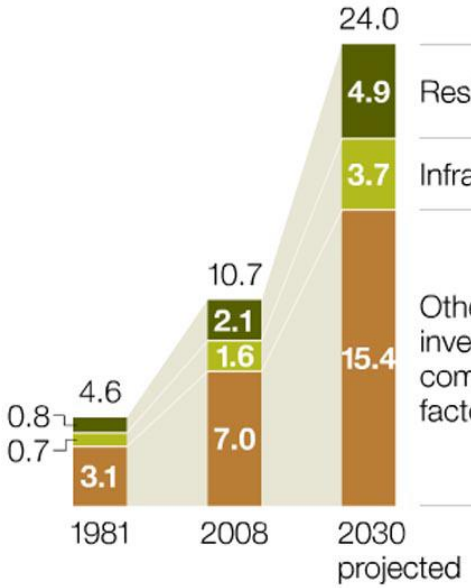
The daunting challenges facing infrastructure around the globe

- **Providing the basic necessities of life in may developing countries including India, part of Africa and China, and elsewhere – potable water, wastewater treatment, and electricity.**
- **Building multi-modal mass transit systems that include light rail, subways, and surface routes through and under densely populated areas in efficient networks that connect neighbourhoods and commercial centers to other transportation terminals**
- **Converting from coal and oil to less polluting, lower greenhouse gas-producing energy sources**
- **Anticipating the next wave of communications technology to empower businesses and commerce.**
- **Overhauling, maintaining, and replacing existing infrastructure.**
- **Convincing cash-strapped governments and weary taxpayers to accept more taxes and user fees**

Growth in a capital constrained world

In 2030, global demand for investment is expected to reach $24 trillion.

Global investment[1] for selected years, $ trillion



	Compound annual growth rate (CAGR), %	
	1981–2008	2008–30 projected
Residential real estate	3.8	3.8
Infrastructure	3.3	4.0
Other productive investment—eg, commercial buildings, factories, and machinery	3.0	3.7

[1] At constant 2005 prices and exchange rates; forecast assumes price of capital goods increases at same rate as other goods and assumes no change in inventory.

Source: Economist Intelligence Unit; Global Insight; Oxford Economics; World Development Indicators, World Bank; McKinsey Global Institute analysis

In several scenarios of economic growth, global investment demand could exceed 25 percent of GDP by 2030.

To support growth in line with the forecasters' consensus, global investment will amount to $24 trillion in 2030, compared with about $11 trillion in 2008

McKinsey Quarterly, 2011

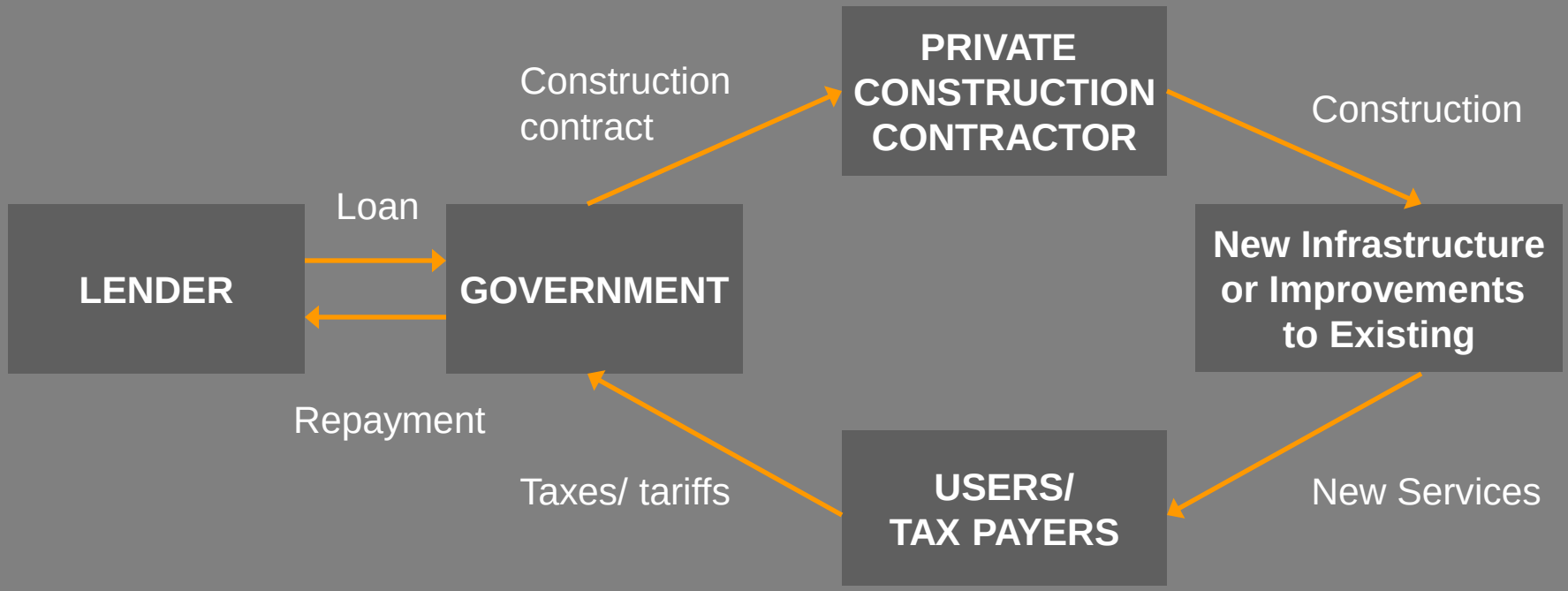
2. Experience with PPPs World-Wide

Typical public financing and development of public infrastructure asset

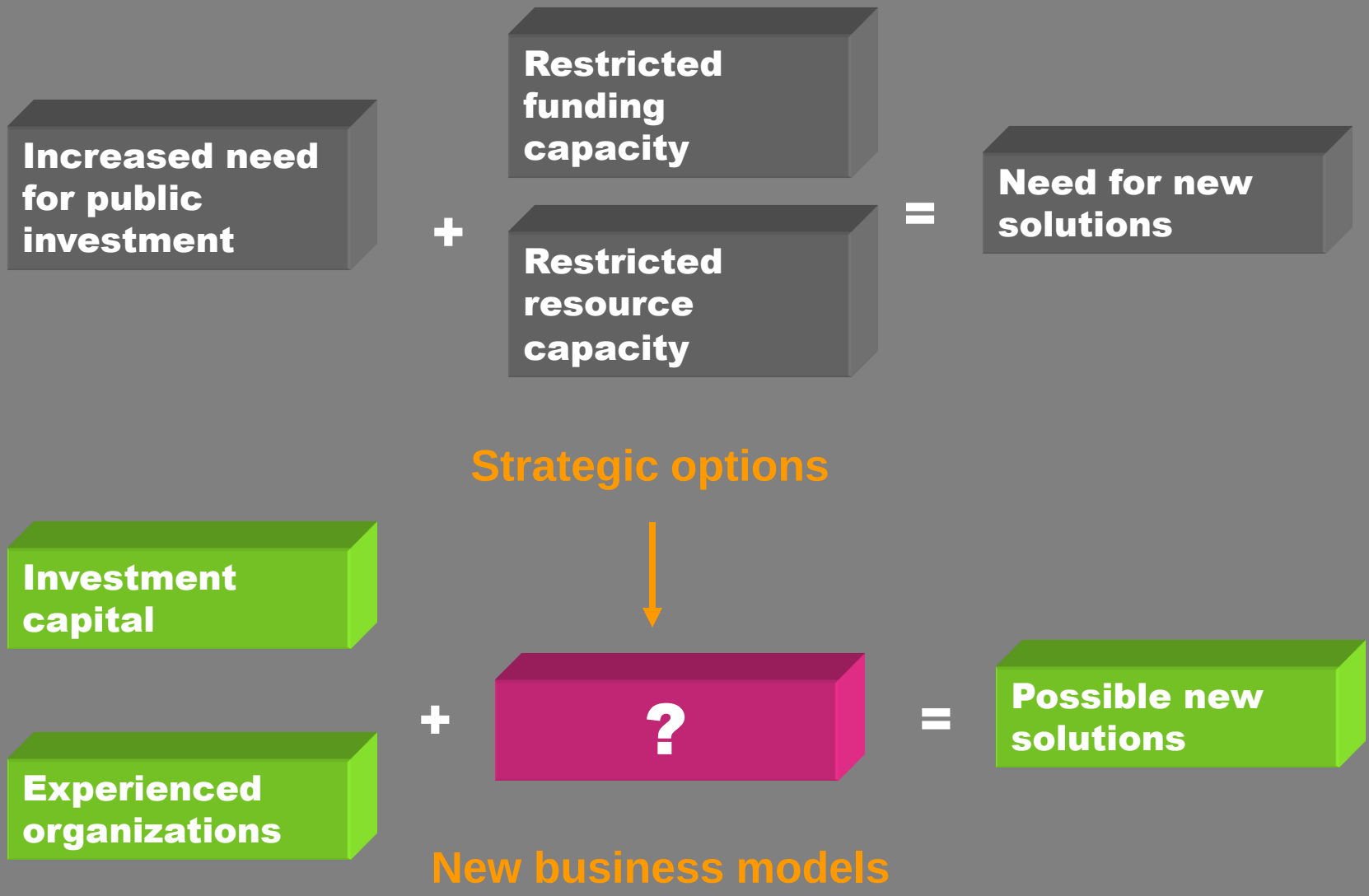
Public authority borrows funds and gives a sovereign guarantee to repay all funds

May contribute its own equity in addition to the borrowed funds

Lenders analyze authority's total ability to raise funds through taxation and general public enterprise revenues, including new tariff revenues from the project



Challenge for governments today



The recent shift to private involvement in infrastructure

Until recent times, government became the provider of infrastructure, over the past decade this position has begun to change due to:

- **Rapid pace of urbanization across the globe**
- **Budgetary constraints**
- **Pressure to expand and improve public facilities**
- **History of chronic overruns in time and money with public sector projects, plus the issue of capital versus operating costs (two different budgets)**

Result is a shift to long-term contracts to construct/manage public sector facilities at all levels from national to local governments, and across many countries

Australian benchmark Study (Colin Duffield)

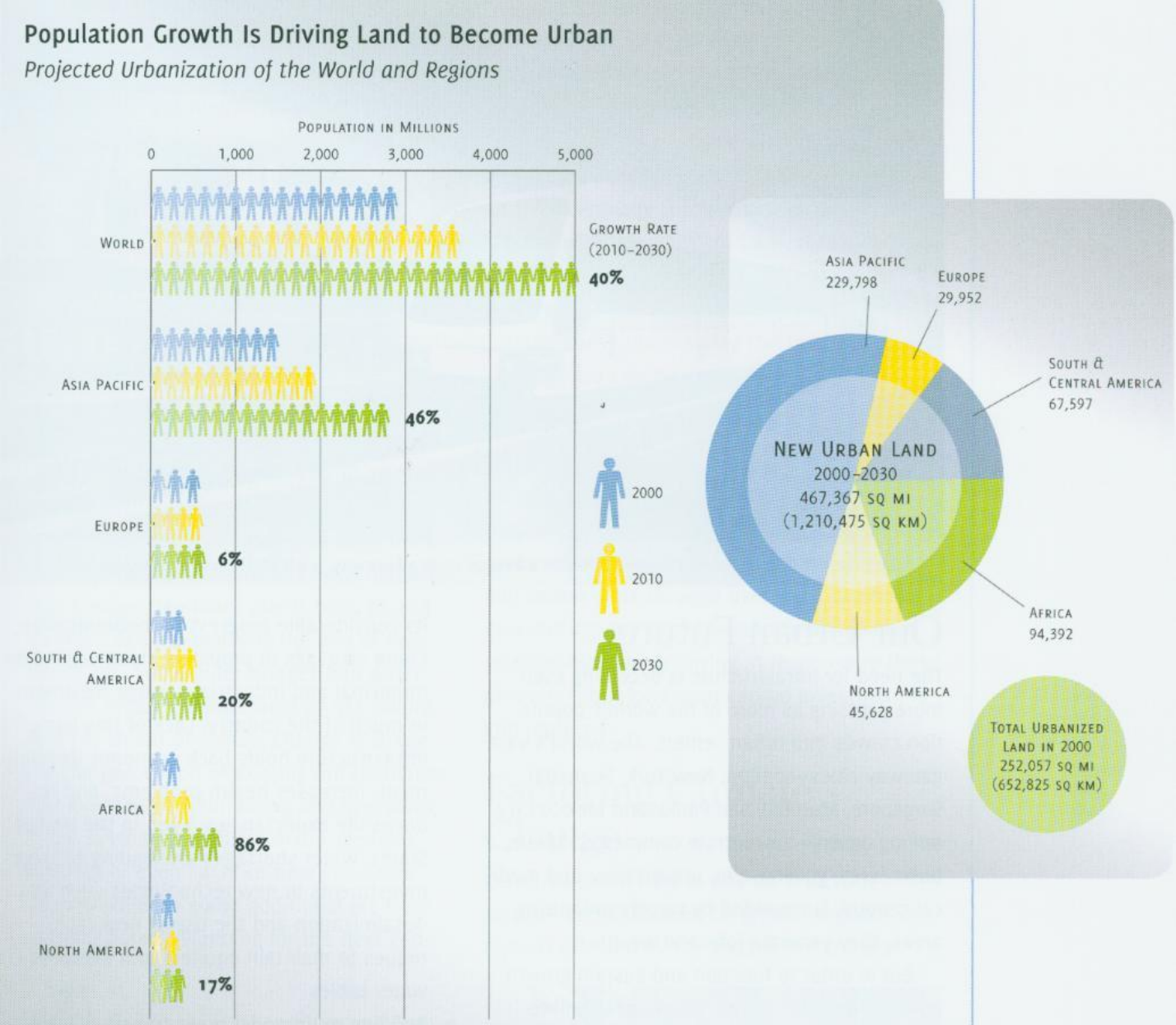
Over all time periods considered in this study, PPPs delivered projects for a price that is far closer to the expected cost than if the project was procured in the Traditional manner. Based on the inter-quartile percentage for the period from initial project announcement to the actual final cost, PPPs were 31.5% better than traditional projects.

PPP contracts had an average cost escalation of 4.3% post contract execution compared to Traditional projects that had an average cost escalation of 18.0% for the same period.

During the period prior to project execution, PPP projects are frequently delayed (average 14.8%). However, once PPP projects reach financial close there was only, on average, a further 2.6% delay to these projects. This indicates that PPP contracts are well developed prior to release to market and changes after financial close are minimal

An average delay of 25.9% occurs during the construction phase of Traditional contracts when compared to the actual final outcome. These delays may be due to: the initial optimism and/or required changes after contract signing to achieve Government's requirements, and/or due to uncertain contractual terms or risk allocation.

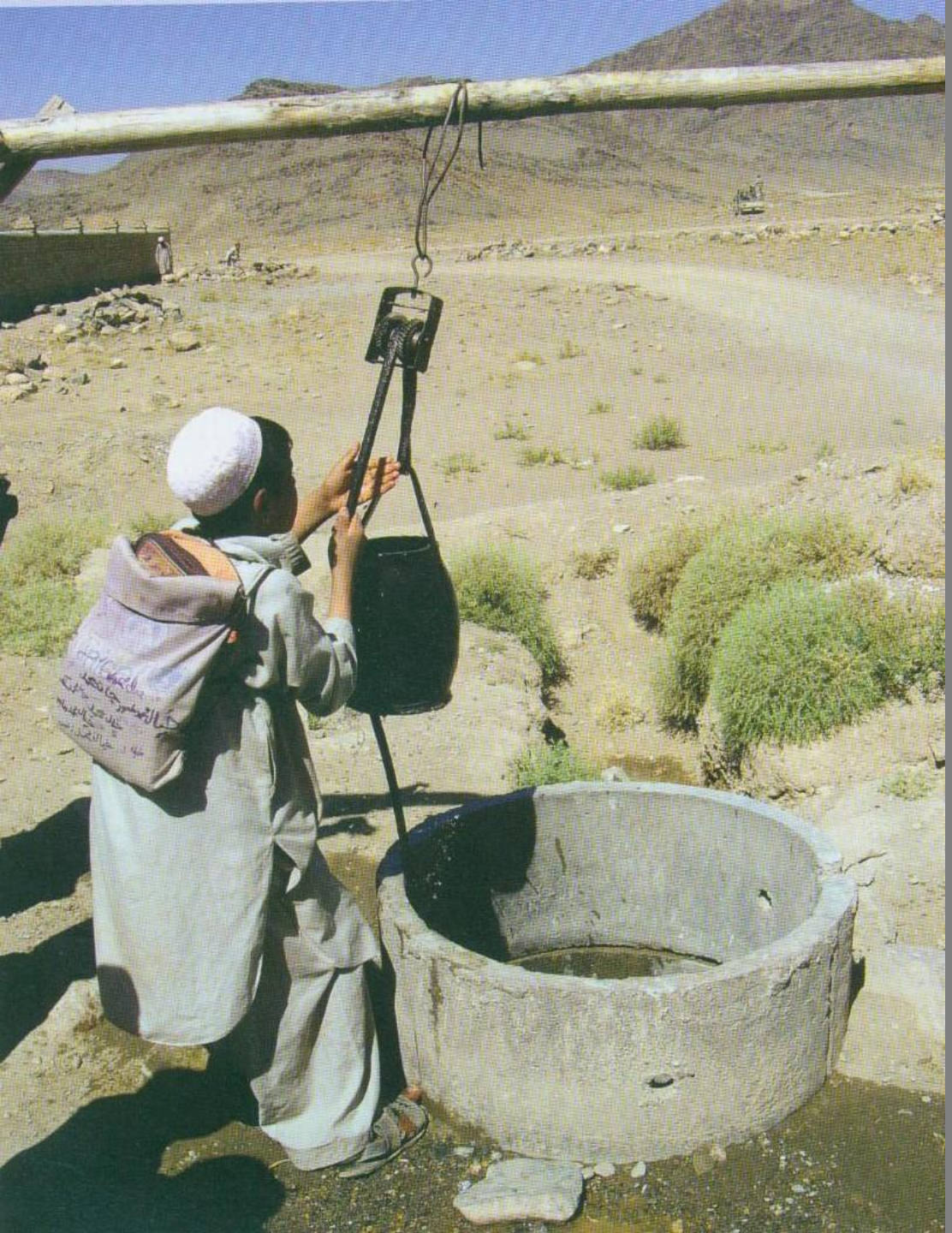
http://www.urbanobservatory.org/compare/index.html



Sources: United Nations, *World Population Prospects, 2011*. Karen C. Set, Burak Guneralp, and Lucy R. Hutyra, "Global forecasts of urban expansion to 2030 and direct impacts on biodiversity and carbon pools," proceedings of the National Academy of Sciences of the United States of America, Vol. 109, No. 40, 2012.

An urban future

In order to function and sustain growth in the decades ahead, urban areas will require novel approaches to infrastructure, tied to land use concepts, that can foster mobility, limit congestion and pollution, deliver water and power, provide communications "connectivity", support economic activity, and promote a desirable quality of life



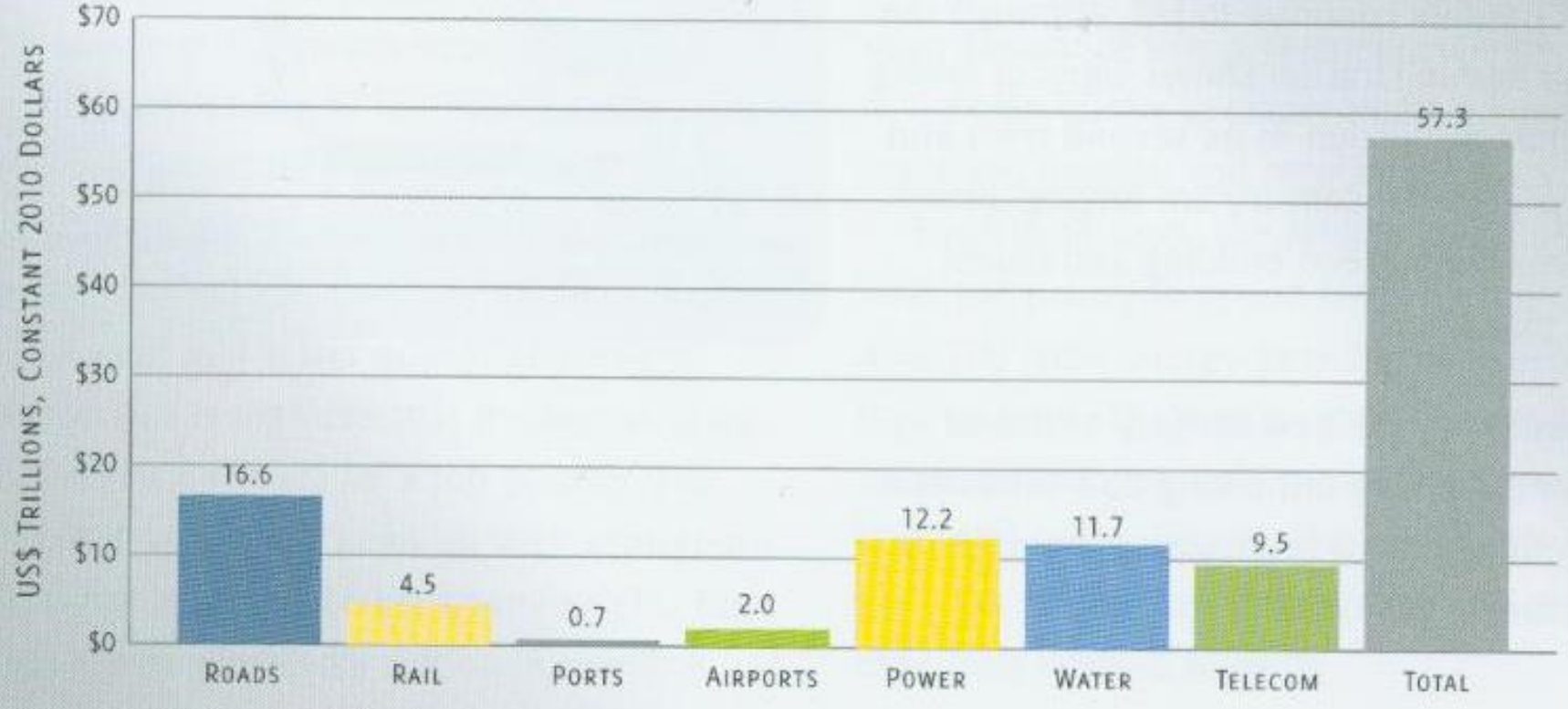
Factoring in Climate Change

Rising sea levels, more destructive storms, enduring droughts, susceptibility to storm surges, natural disasters, forest fires, melting glaciers

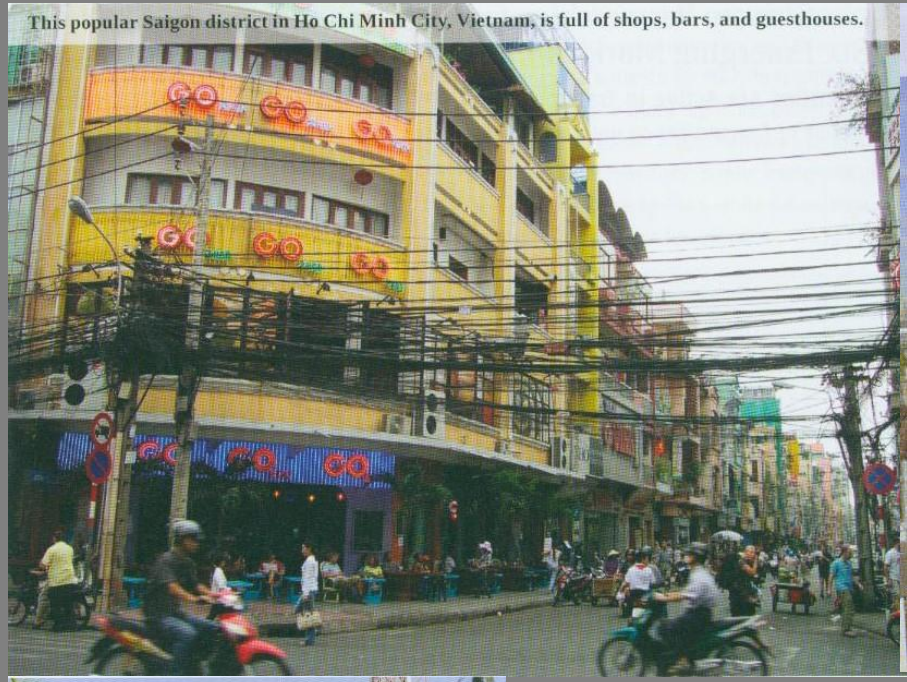
Problems that require solutions with no potential income stream

Global Infrastructure Demand Requires $57 Trillion in Investment by 2030

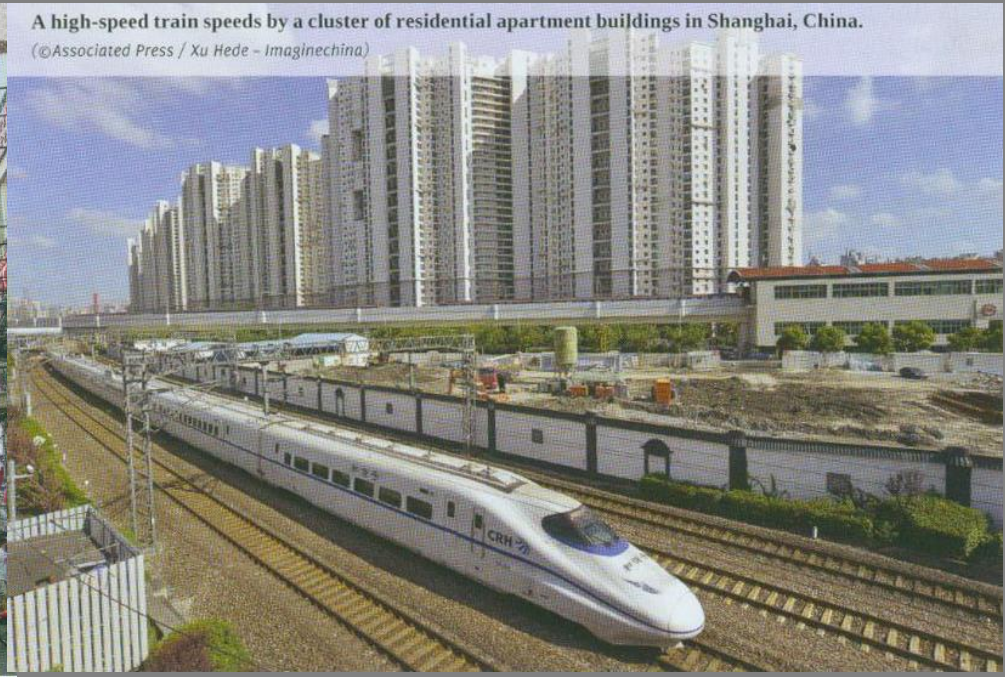
Based on projections of demand equaling 3.5 percent of global GDP, 2013–2030



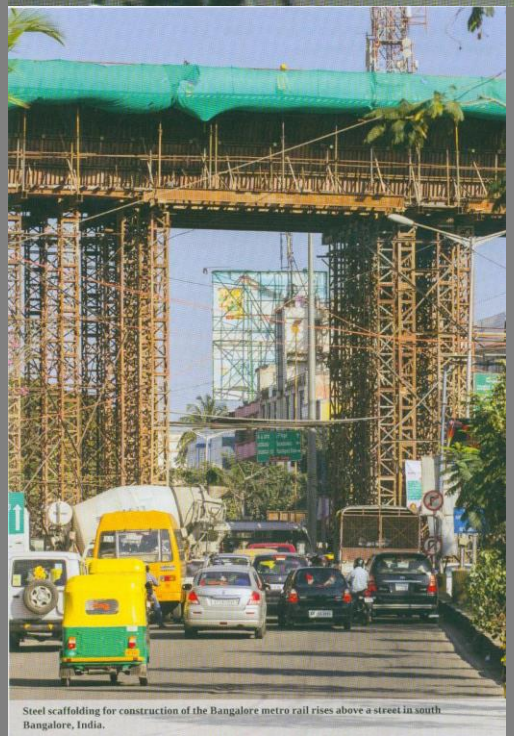
Source: McKinsey Global Institute, *Infrastructure Productivity: How to Save $1 Trillion a Year*, January 2013.



This popular Saigon district in Ho Chi Minh City, Vietnam, is full of shops, bars, and guesthouses.



A high-speed train speeds by a cluster of residential apartment buildings in Shanghai, China.
(©Associated Press / Xu Hede - Imaginechina)

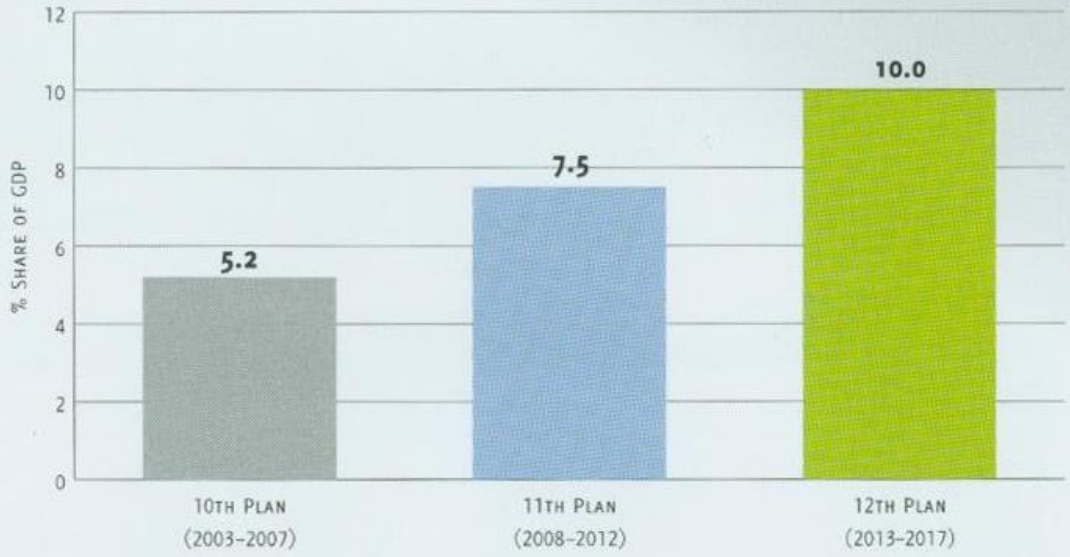

Steel scaffolding for construction of the Bangalore metro rail rises above a street in south Bangalore, India.

- **Financing is a major source of worry in India as international funding is drying up, as is water**
- **Water availability and quality is a major concern in China**
- **Energy and power are key areas of need in India and China**
- **Current infrastructure investments in Asia seldom address sustainability issues**

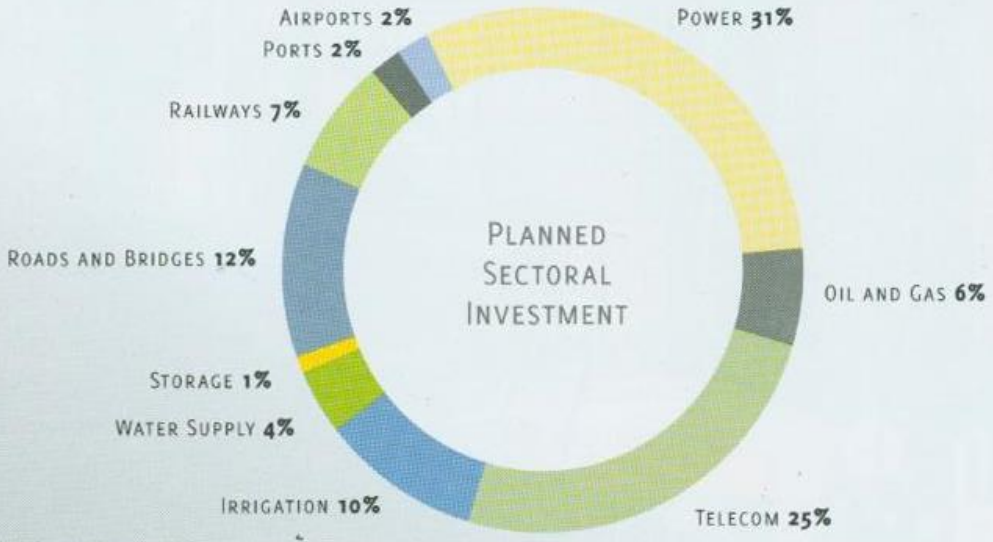
India Plans to Increase Investment in Infrastructure

Energy and Telecom Lead the Way

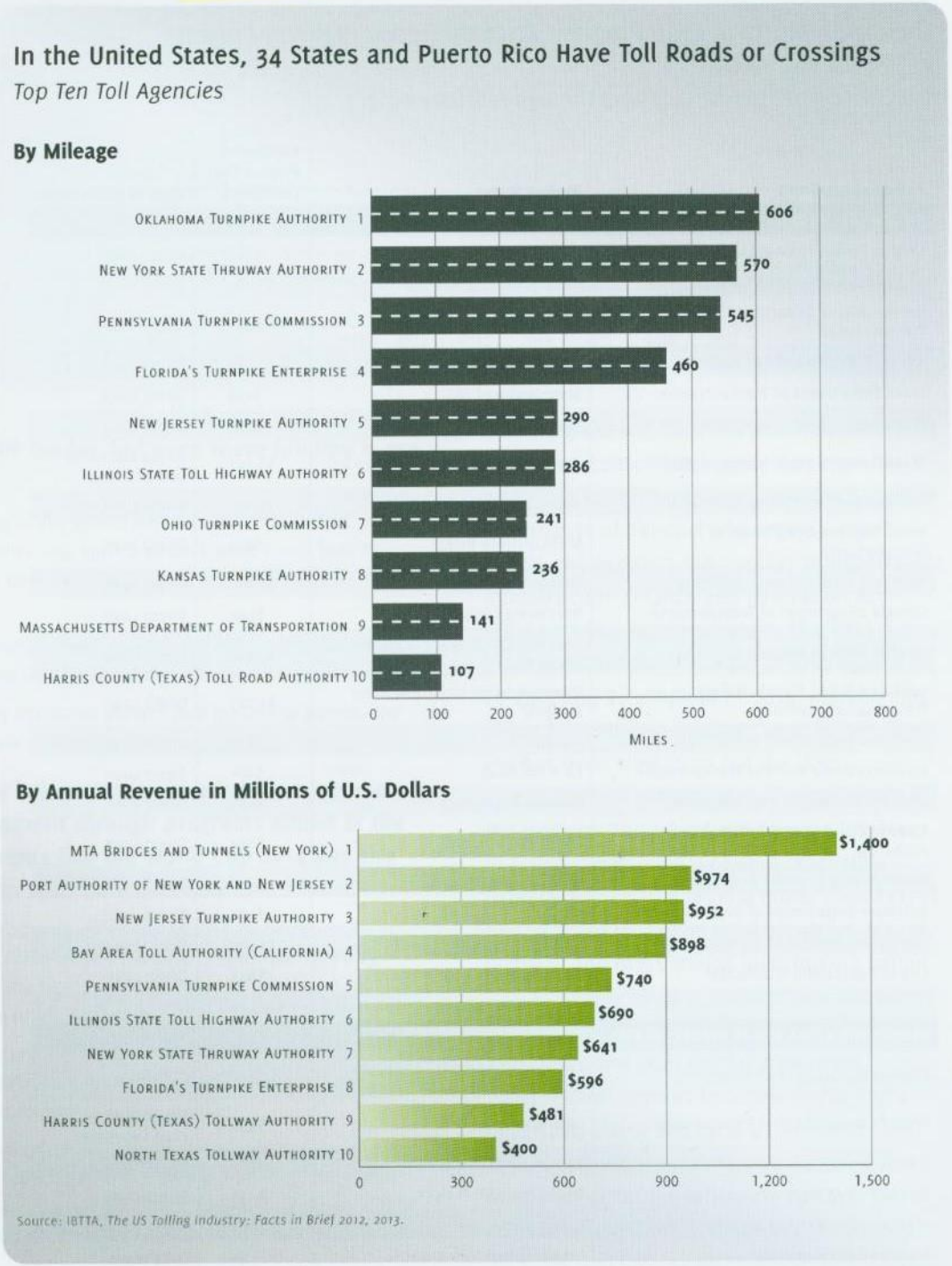
Infrastructure Investment in India as a Share of GDP



Sectoral Investment Planned in 12th Five-Year Plan



Source: Ernst & Young, India Infrastructure Summit, 2012.



The US experience

Funding is uncertain and PPPs remain challenging with various approaches across the country

Most projects are at the state and local level

Emphasis appears to be on highway construction with the new federal legislation TIFIA Program

Push within several states for new gasoline taxes, increased tools and user charges

PPP business models remain murky due to governance and tax-exempt finance complications

Some other countries

- **Australia: despite 20 years of progress with PPPs, a recent slow down linked to weaker growth in China is curtailing infrastructure spending**
- **Indonesia: opportunities are attracting PPP investors from Japan, India, South Korea and the Us in power, water, and rail projects**
- **United Kingdom: government has a top down National Infrastructure Plan (NIP) that must rely on private capital, however, the parliamentary review of the PPP program, the PFI, has caused a big pause for many projects**
- **France: a cash-strapped government has limited ability to fund major projects and is looking more to PPPs – still moving forward with the world-renowned high-speed rail line system**
- **Spain: the infrastructure building binge has hit a wall and EU bail-outs are keeping the government afloat**
- **Italy: government lacks the funds to undertake upgrades of existing infrastructure – roads, rail, energy and water – years of under investment**
- **Russia: emphasis is on infrastructure for the 2014 Sochi Olympics, but lack money for high-speed rail projects**
- **Africa: substandard infrastructure continues to constrain growth and most governments lack the resources – must depend on foreign capital**
- **China: Infrastructure a key growth driver of the economy – modern urban transit, highways, high-spedd rail, airports a,d ports, much of which is built with debt**

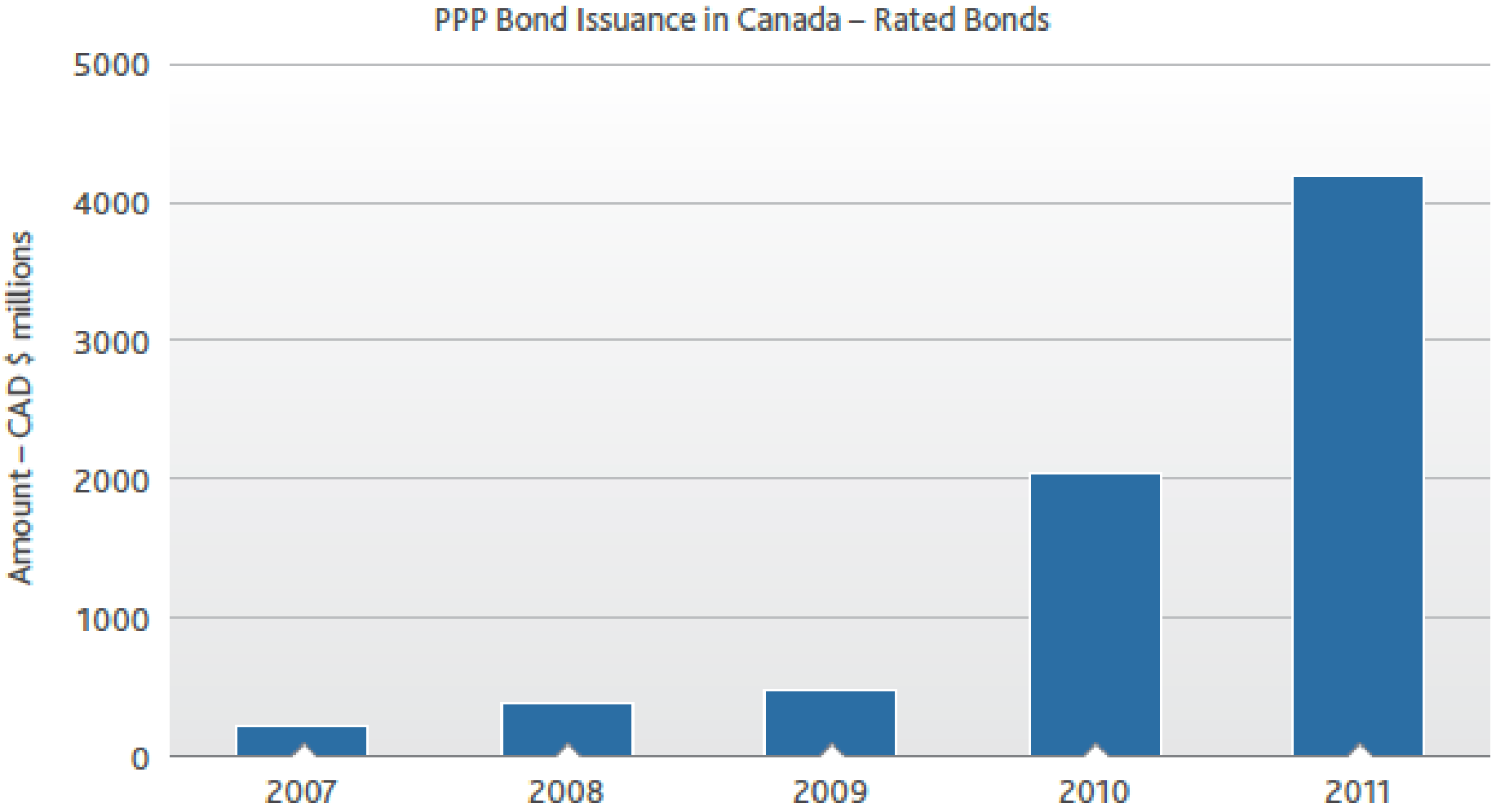
Canada – a recognized world leader in PPPs

- Canada is at the top of the PPP list and this approach appears to be increasingly embraced by all three levels of government – most action is at the provincial level
- Challenge will be to maintain momentum as funds begin to get scarce
- Canada is heralded as setting “best practices” and having governments with a sophisticated understanding of the PPP model
- Canada has developed a robust infrastructure bond market and is home to some of the largest institution investors in infrastructure world-wide
- PPP model is characterized by “certainty of process”

Canada - reasons for success

1. **Adoption and refinement of the universally recognized P3 risk-transfer model and particularly the use of DBFM.**
2. **Standardization of documentation, bidding contracts, and agreements across the country at all levels of government.**
3. **Almost all P3 deals close and are void of political interference.**
4. **Canada has developed a strong bond market (not municipal bonds-we don't have tax free bonds in Canada) to fund P3s.**
5. **Cooperation among Provinces and the federal government to standardize, share, and assist each other.**
6. **Governments in Canada are still driven by their obligation to deliver a service.**
7. **Canadian governments prefer the availability-based P3 model (DBFM) with a significant payment at substantial completion (50% for social infrastructure and 85% for transportation).**

The evolution of the Canadian PPP bond market



As at December 31, 2011

The last 20 years have seen the rise to power of public-private partnerships (PPPs) as a means of attracting investment and expertise from the private sector for the delivery of public goods and services.

PPPs now widely utilized because of their purported advantages in off-budget funding - they are a mechanism that modern governments are beginning to turn to to fulfill some of their responsibilities for public infrastructure and services.

Trend is likely to continue following the 2007–2008 global financial crisis that saw many jurisdictions strapped for cash and seeking alternative methods of meeting the increasing demands for investment in public sector development.

Governments around the world are increasingly turning to public-private partnerships (PPPs) and other public concession models to help build and finance infrastructure initiatives

Large sovereign funds, institutional investors and private equity funds are warming to the potential for long-term reliable returns from infrastructure that exceed current bond performance and offer inflation-hedging potential

Still a worry about the reliability of private partners, deal structures, and long-term viability of some investments based on recent experiences with toll roads in Spain, the UK, and India

In the end, taxpayers still carry the freight

3. The PPP Model

What's wrong with conventional procurement?

- Poor record in design and construction of capital works
- Time delays and cost overruns
- Revenue shortfalls
- Appraisal optimism

Project type	All regions		Europe		North America	
	Number of projects	Average cost escalation (%)[a]	Number of projects	Average cost escalation (%)[a]	Number of projects	Average cost escalation (%)[a]
Rail	58	44.7 (38.4)	23	34.2 (25.1)	19	40.8 (36.8)
Fixed-link[b]	33	33.8 (62.4)	15	43.4 (52.0)	18	25.7 (70.5)
Road	167	20.4 (29.9)	143	22.4 (24.9)	24	8.4 (49.4)
All projects	258	27.6 (38.7)	181	25.7 (28.7)	61	23.6 (54.2)

Notes:
[a] Figures in brackets are the standard deviation of the cost inaccuracies.
[b] Fixed-link projects consist of tunnels and bridges.

Difference between actual and estimated costs in large public works transportation projects in the UK

Project type	Works duration[a]	CAPEX[b]	OPEX[c]	Benefits shortfall[d]
Standard civil engineering	34	44	No info	No info
Non-standard civil engineering	15	66	No info	5
Standard buildings	4	24	No info	No info
Non-standard buildings	39	51	No info	1
Equipment development	54	214	No info	No info
Outsourcing	N/A	N/A	41	No info
All projects	17	47	41	2

Notes:
[a]The percentage by which the time taken for the actual works programme exceeds the estimate for time allowed in the business case.
[b]The percentage by which the actual capital expenditure exceeds the expenditure expected in the business case.
[c]The percentage by which the actual operating expenditure exceeds the expenditure anticipated in the business case.
[d]The percentage by which the delivered benefits fall short of the benefits expected in the business case.

Estimates of average "optimism bias" for conventional public procurement in the UK by type of projects

Most significant factor appears to be the failure of the business case

- inadequacy of the business case (58%)
- environmental impact (19%)
- disputes and claims incurred (16%)
- economic influences (13%)
- late contractor involvement in design (12%)
- complexity of contract structure (11%)
- legislative and regulatory changes (7%)
- degree of innovation (7%)
- poor contractor capabilities (6%)
- project management team (4%)
- poor project intelligence (4%).

Variety of reasons can be cited for these problems:

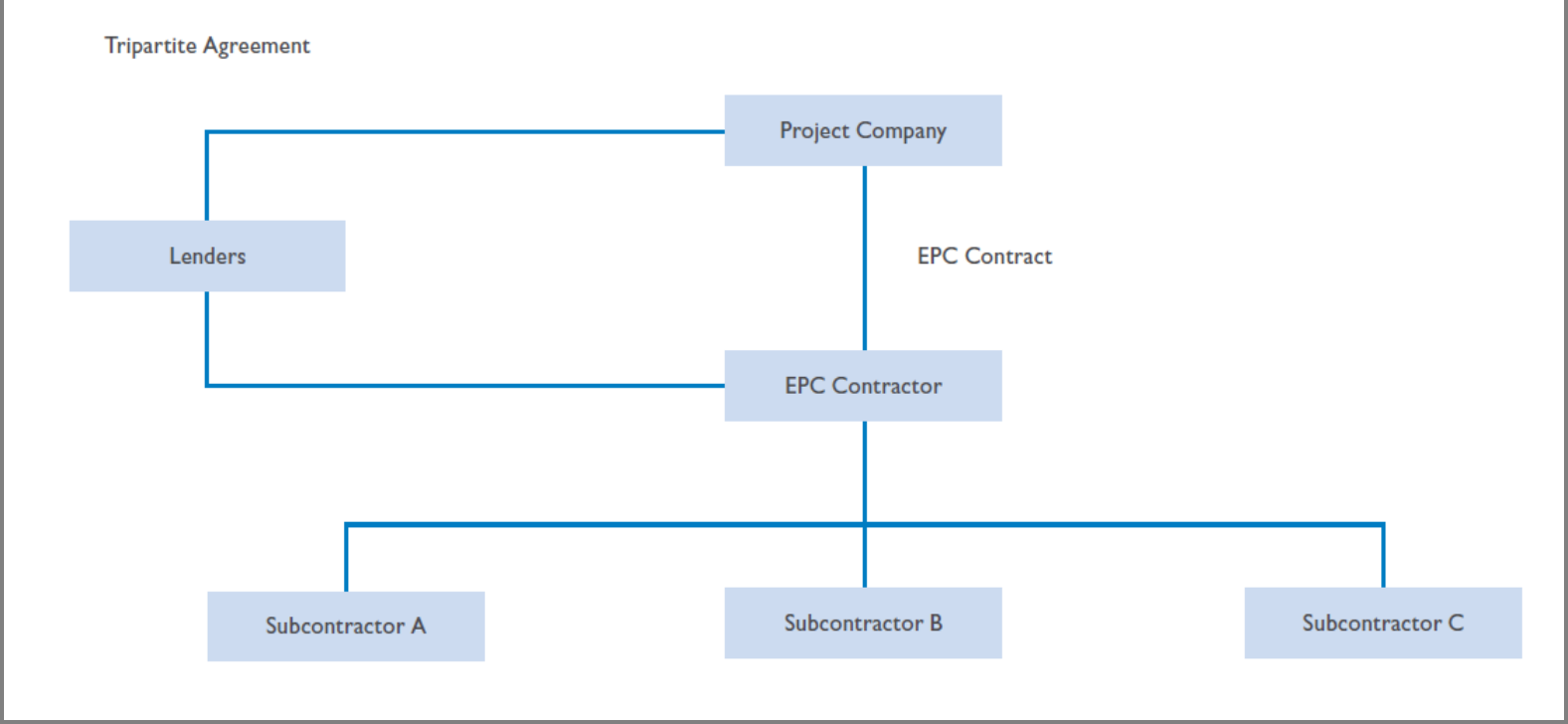
- Failure to clarify objectives at the outset
- Political commitment at too early a stage
- Inability or unwillingness to get good data
- Difficulties in defining the catchment area
- Failure to consider alternatives
- Over-engineering or “gold-platting”
- False planning assumptions
- Overestimating external factors
- Forecasting errors and incorrect assumptions
- Underestimating consequences of competition
- Forgetting about start-up problems
- Over estimating market life in view of new technologies
- Ignoring cot/benefit studies
- Difficulties in estimating environmental impacts
- Difficulties in weighting economic, non-economic and political consequences
- Double accounting of benefits
- Ignoring the hidden costs of incentives and inducements
- Downplaying certain risks
- Systematic appraisal optimism

Three significant factor contributing to risk of failure:

- **Short political tenure – politicians who start projects often not around to finish them**
- **Rent-seeking behaviour – special interest groups promote projects in which they have no risk but taxpayers are on the hook in the form of guarantees**
- **Putting on a good spin – cost and risks are often underestimated in tenders only to surface when construction gets underway**
- **Deception and delusion - project promoters often rely on a degree of deception and delusion to get projects underway, aided by consultants with a "monument" complex and by "empire building" politicians with access to public funds**

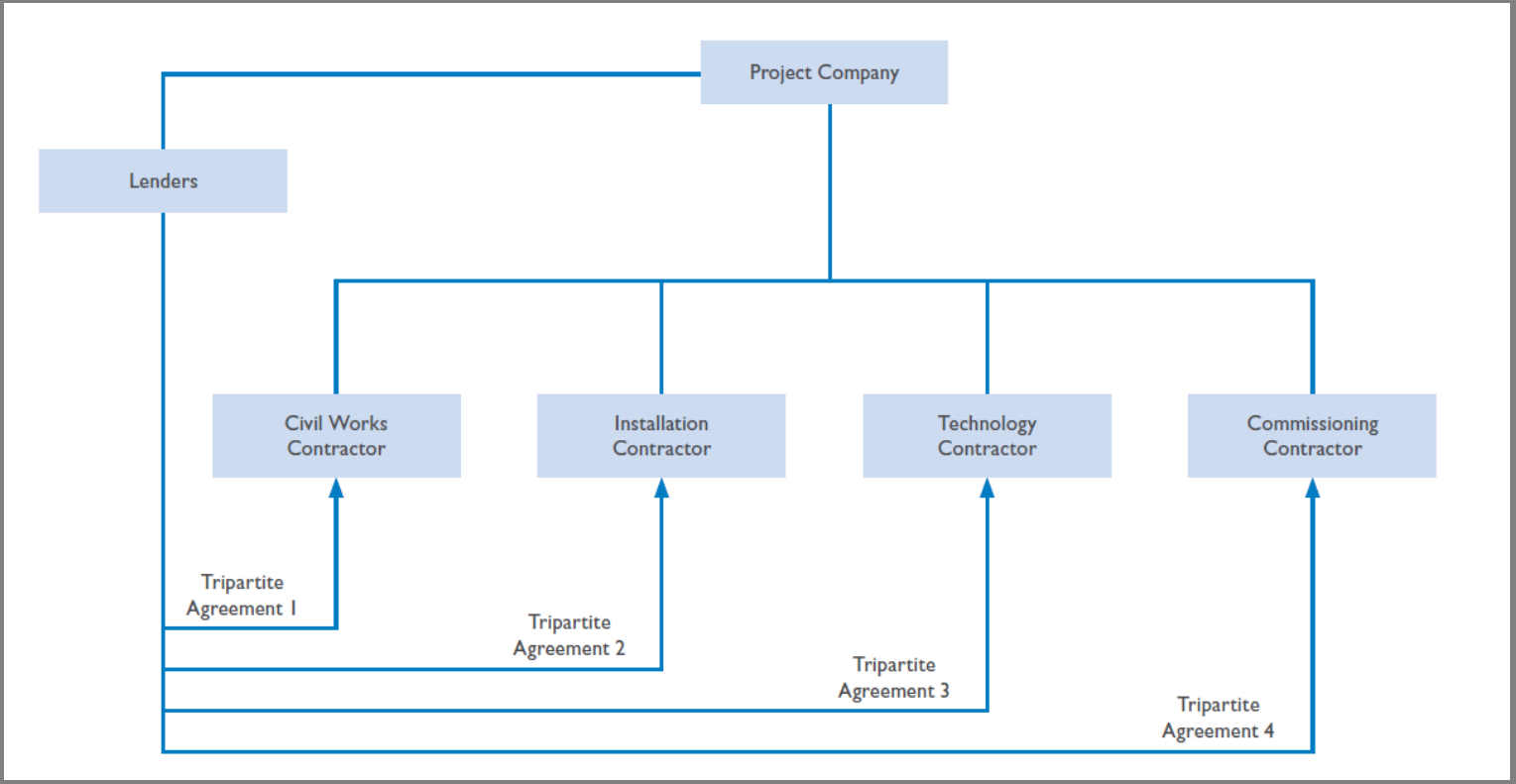
Procurement 1 – EPC structure

The EPC structure will be most familiar to project sponsors. Under this structure, the project company enters into a contract with the EPC contractor which will then enter into various subcontracts with its sub-contractors for performance of discrete portions of work. The EPC contractor provides the project company with a single point of responsibility for ensuring the project is completed on time and meets the performance requirements.



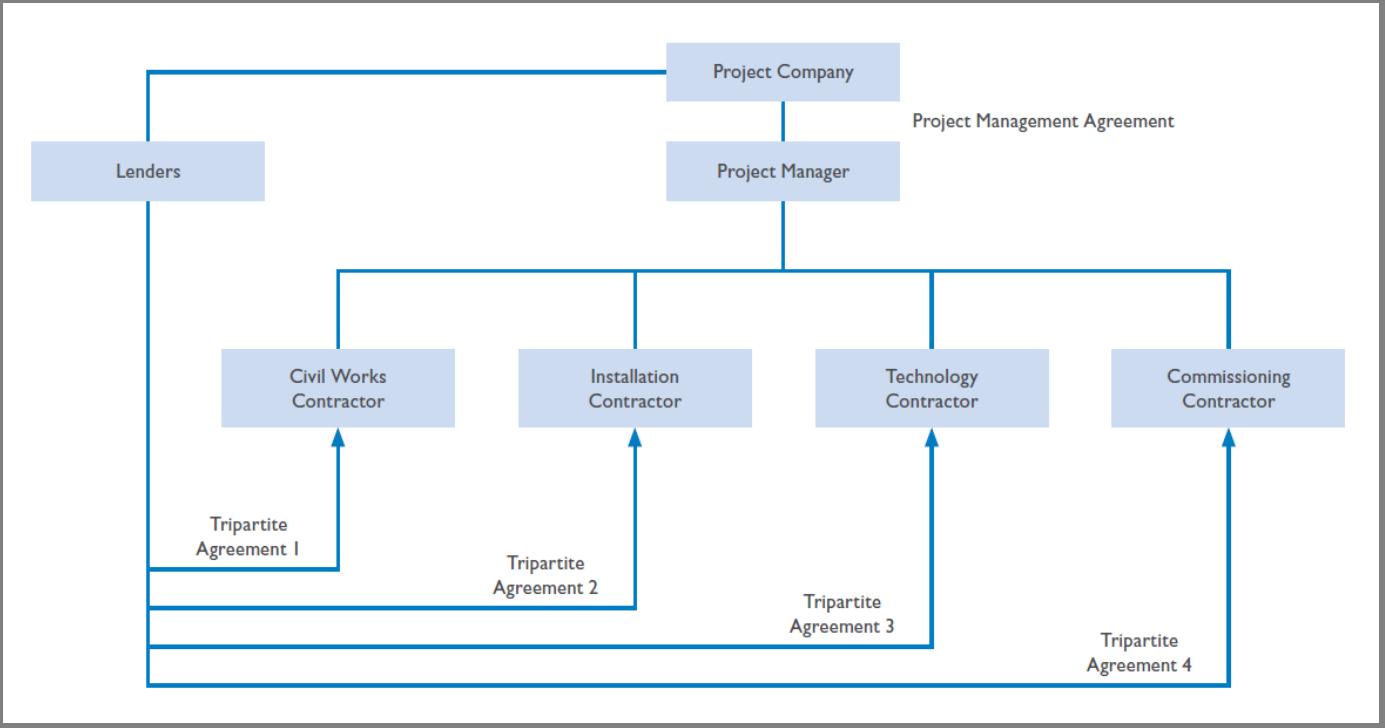
Procurement 2 – work packages structure

Under the work packages structure, the project company enters into separate contracts with expert contractors for each type of work or package. This structure allows the project company to have more involvement and greater control over performance of the works than under the EPC structure. For this reason, it is most appropriate when it is necessary for the project company to closely monitor or control at least one critical part of the works. It is common for the contractors to be minority equity participants in the project company but it is rare for majority shareholders to also be a contractor.



Procurement 3 – project management structure

The project management structure is a compromise between the EPC structure and the work packages structure. Under this structure, the project company can take advantage of the expertise of each contractor while making the project manager responsible for much of the risk. The role of project manager is to negotiate and let contracts and manage the performance of the works. If the project manager assumes an appropriate level of risk this structure is probably more bankable than the work packages structure.



Structure of PPPs - Power Purchase Agreement (PPA)

Began after the 1978 *Private Utility Regulatory Policies Act* in the US which encouraged the construction of co-generation energy plants

Developments in the US in the 1980s set the template for the modern PPP

Arrived in Europe in early 1990s with the privatization of the British electricity industry

Under a PPA, investors are paid a "tariff" split between:

- An availability charge (capacity charge) to cover the capital expenditure and fixed operating costs – power station
- A usage charge (variable charge) for the marginal cost of materials/resources require to deliver the service (gas/coal)

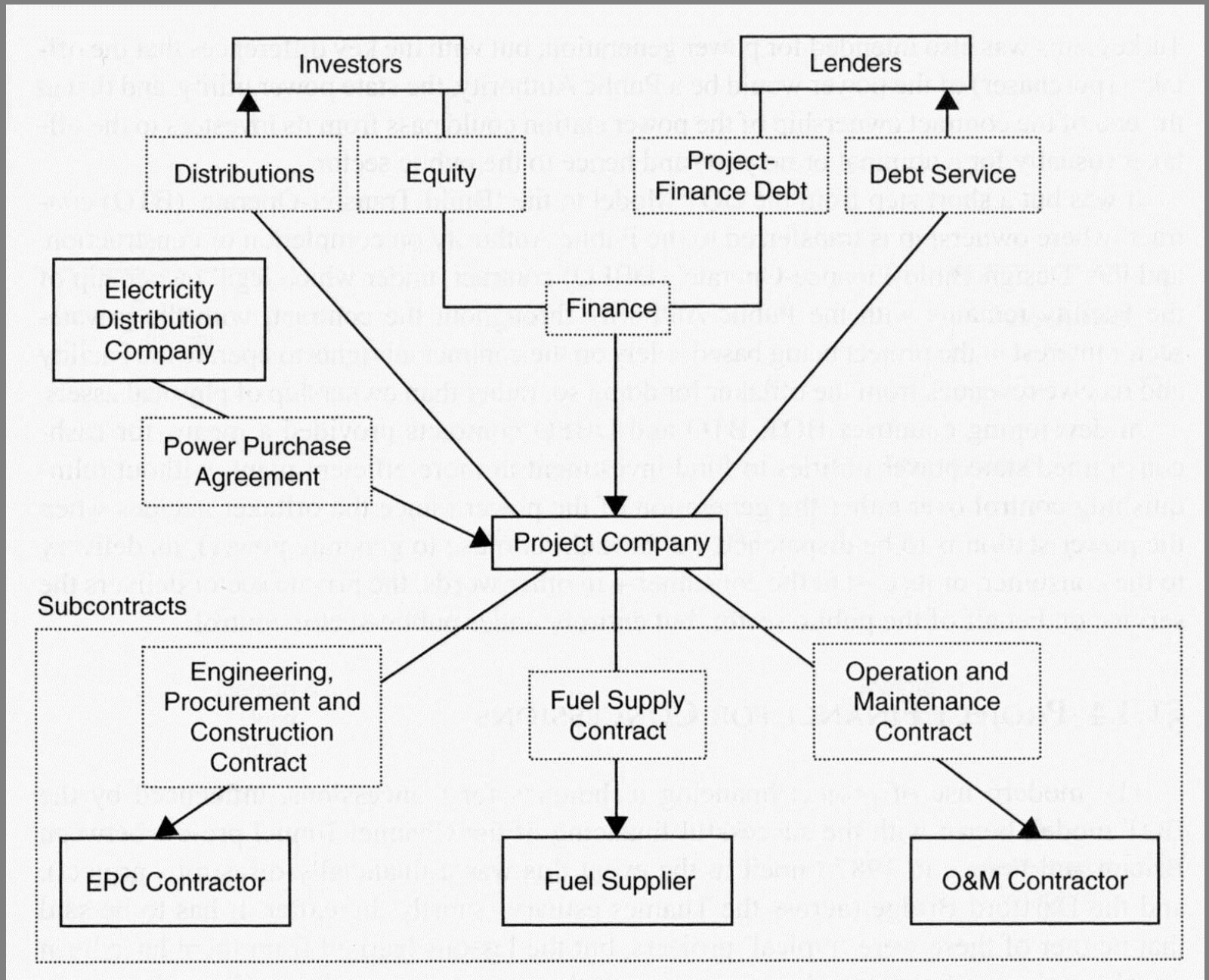
The PPA led to the refinement of "project refinancing" which addresses the need for high ratio of long-term debt financing required for such projects

PPPs involve sophisticated forms of risk transfer to the private sector and calculated pricing of the risks that are transferred

Main components of the PPA structure for a power station

- **Project company owned by private investors**
- **Financing of the project's capital cost through shareholder equity and project-finance debt**
- **Engineering, procurement, and construction contract – turnkey to required specs at a fixed price and schedule**
- **A fuel supply contract**
- **An operating and maintenance contract**
- **A PPA with an electricity-distribution company with payments based on availability and use**
- **Availability of surplus cash flows to retire debt, cover operating/maintenance costs and reward investors**

Project Finance for a Power Purchase Agreement



PPP contracts

World-wide experience with PPP suggests there is no *'one-size-fits-all'* principle that might simplify the design of a PPP contract for a given objective and sector. However, the empirical evidence suggests that some factors heavily influence the likelihood of performance failure in a PPP agreement (though these factors are not specific to PPPs).

The first three factors listed below could be considered as *'external'* to the contract; and the fourth factor as *'internal':*

i. the characteristics of the targeted sector and the market structure

ii. the degree of macroeconomic instability

iii. the country's regulatory and institutional framework

iv. the contract design and management, in particular the payment mechanism and the risk allocation built-into the contractual terms

The characteristics of the sector targeted by a PPP contract and the prevailing market structure help in explaining PPP performance.

Role of contract design

PPP contracts are based on an *output specification* approach: the public-sector party defines the basic standards of service whilst the private-sector party chooses how to meet and possibly improve upon these basic standards.

This approach *incentivizes innovative solutions*, allowing for private sector's skills and knowledge to feed into public service provision, but comes at the cost of greater risk of contract misspecifications for the public sector.

Mistakes at the contract drafting stage can then be very costly for the public-sector party because of the long-term nature of most PPP contracts.

A challenge for the public sector has been to rapidly build up the capacity and knowledge to devise and implement PPPs, and to manage the PPP contractual relationships over the long-run. The public sector's progress on this front has generally not kept pace with that of private sector partners.

Bundling into a single contract

The *bundling* of project phases into a single contract is the main characteristic of a PPP contract.

If we consider the different stages of a project as comprising the *design (D),* the *building (B),* the *finance (F)* and the *operation and management (O),* PPPs basically differ in terms of which of these four stages are delegated to the private sector.

However, the term PPP is generally used to indicate a substantial involvement of the private sector in at least the building (or renovation) and operation of the infrastructure for the public-service provision.

The bundling of project phases encourages the private-sector party (typically a consortium of firms) to think about the implications of its actions on different stages of the project (from the building to the operation) and thus favours a *whole-life costing approach*.

Long-term risk assignment

PPP contracts are characterized by a relevant level of *risk transfer* to the private-sector party, although the specific risk allocation varies with the form of PPP used for the project, as different is the scope of activities delegated to the private sector.

For each type of PPP contract, risk is allocated to the private-sector party through contractual incentives and penalties incorporated within the payment mechanism, and through the activities for which the private-sector party is responsible.

PPP contracts are generally *long-term contracts* with duration increasing with the level of financial involvement of the private sector in the provision of investments.

Upon contract expiry, the public-sector party regains possession of the assets and can re-tender aspects of the service provision to other providers or take the provision in-house.

What are PPPs?

There is no one single, concise definition of PPP. Accurately defining a PPP is problematic because by nature it is a context and responding to the institutional, legal, investment and public procurement settings of different jurisdictions, whilst also considering the nature of individual agreements.

Although in a constant state of flux, PPPs can generally be said to include:

- ***long-term contracts/agreements/relationships***
- ***a private funding component***
- ***provision of services or infrastructure through the private sector***
- ***significant transfer of risk to the private sector, such as investment, design, construction, or operational risks***
- ***complex contractual responsibilities and deliverables that vary over the contract period as the project moves through its phases, such as from finance to construction and operation***
- ***the return of infrastructure/services to the control of the State at the end of the contract term or;***
- ***the provision of services by the private sector on behalf of the State following the fulfillment of design and build responsibilities***

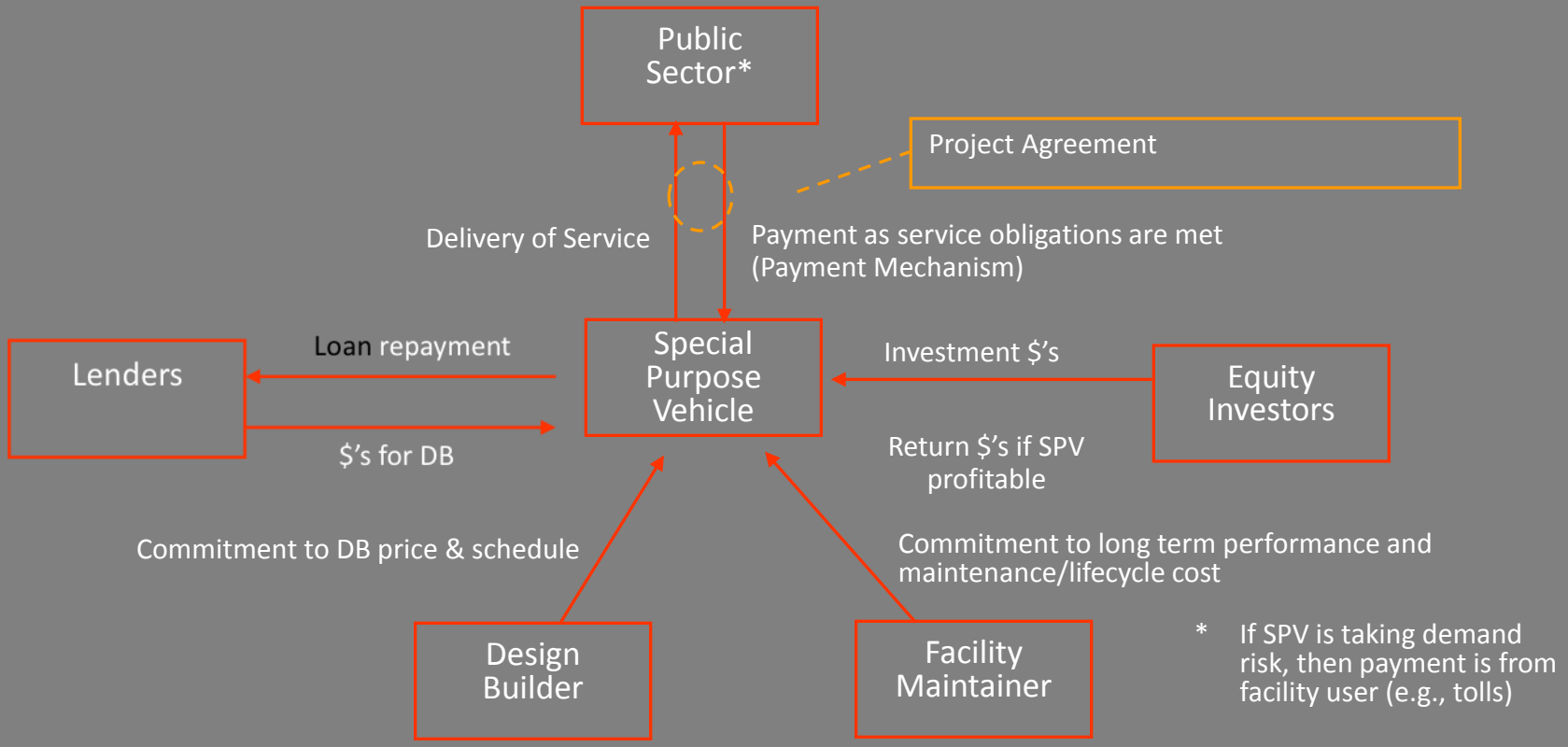
PPP Model

PPP model has evolved in UK, Australia, Canada and Europe, and to a lesser extent in the US largely driven by three factors:

- **Changing market for public services** – reflects changing attitudes to the way public services are produced and delivered – the "new public management" or "marketing" of public services (as opposed to monopoly control)
- **Private finance** – refinement of the private finance model and the development of project finance techniques to suit PPP structures
- **The concept of partnering** – first developed in the engineering construction industry that lie on the border between engineering and management – partnering concept provides the intellectual backdrop to support PPPs

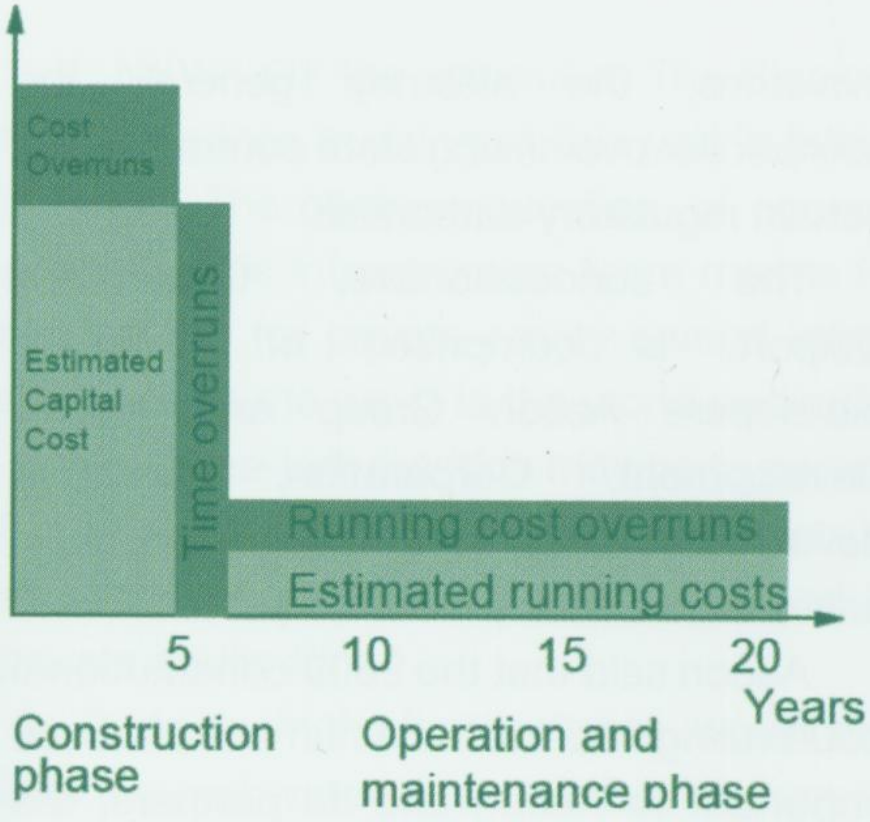
PPP contract structure uses capital market discipline to confirm appropriate risk allocations

- **A Special Purpose Vehicle is created as a focal point for costs, revenues, and risk allocations. SPV's obligations "flow down" through back-to-back subcontracts**
- **Private lending enforces discipline into risk pricing and capacity of all participants. Loan repayment is not "guaranteed" … SPV can only repay debt if project is successful!**



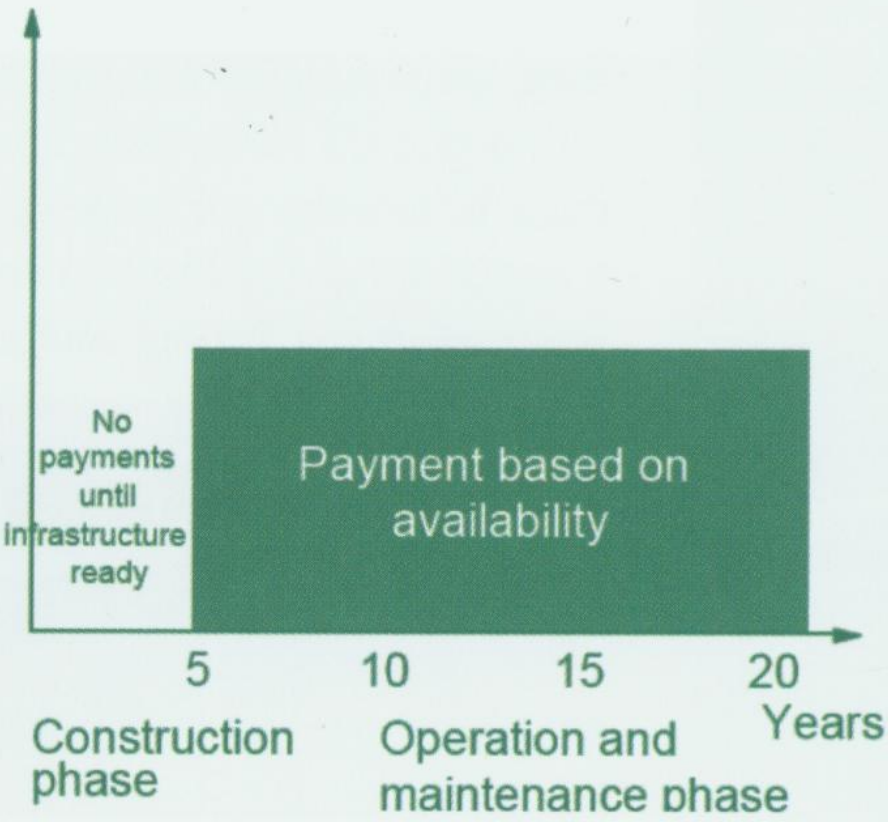
Traditional Government Procurement

Payment profile - traditional



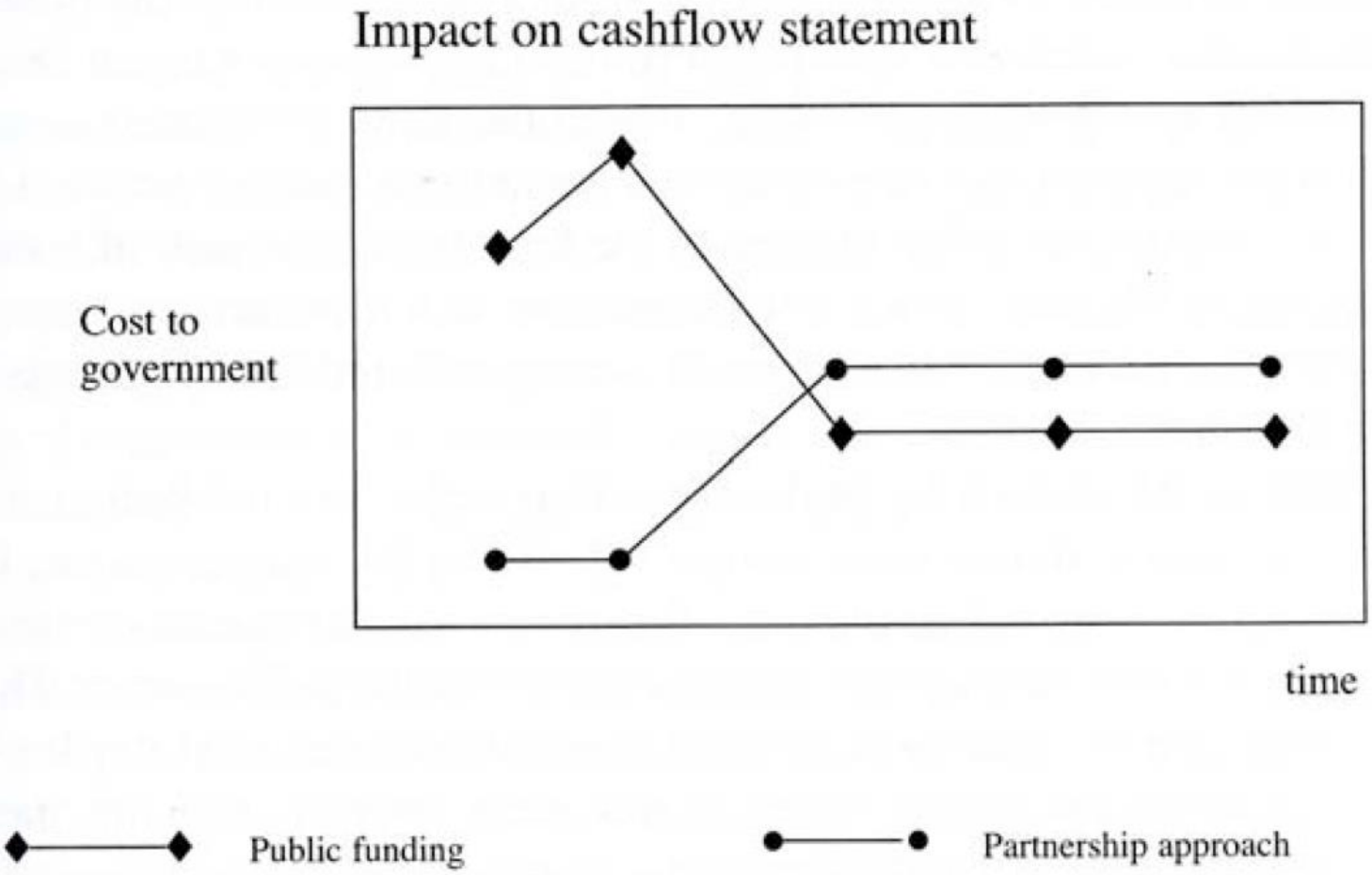
PPP Procurement

Payment profile for the public sector



Source: PriceWaterhouseCoopers

Comparison of Public Funding and Partnership on Cash-flows



Key aspects of the PPP arrangement

Close control of the operational phase to ensure security of the cash flow needed to repay financing

Appropriate strategies for appraising and managing the risks

No single "model" of a partnership - PPPs should be thought of as a process designed to ensure that all risks are valued and taken into account in a meaningful way

Framework for any PPP model revolves around *rights, obligations, and liabilities*

public rights related to possession (land, property etc) ceded to a private partner in return for taking on certain obligations

access to revenues ceded by the public during the operational stage in return for the private partner taking on certain responsibilities

risks related to actual or potential liabilities shared or assumed by parties under an agreement, including general liability (torts, third party and facility damages), liability for taxation, and risk liabilities

The (PPP) Partnership Arrangement

Major difference is that the public sector plays a significantly role in providing resources - in effect becoming an actual development "partner", rather than a "client"

PPP works as follows:

- **Parties commit to a more cooperative relationship with the expectation that they will each contribute something to the value of the project**
- **Public sector retains command of assets such as land, property, or rights-of-way**
- **Private sector brings access to outside capital, technical expertise and an incentive structure to develop projects in a most effective and cost efficient manner**

Concessions and Concession PPPs

- There is some confusion on the delineation between ***concession contracts*** and ***concession PPPs***. Concession contracts and the term "concessions" as utilized within PPP are, however, the two terms are separated by subtle points of difference.
- ***Concessions Contract*** describe a contract for the private sector to have exclusive rights to operate, invest in and maintain a public sector responsibility or utility, whereby the private company derives part or all of its income from the operation of the service (e.g garbage collection)
- As distinct contract types, a concession agreement's main point of difference from a PPP is the reduced emphasis on large private finance components and the fact that ownership remains with the public sector during the concessions period.
- ***Concession PPP*** refers specifically to the manner in which the private sector generates its income or is paid for its services, which is generally through the assignment of revenues (tolls, utility usage, or availability of space)

Availability-Based PPP

In *availability-based PPPs*, the private sector partners derive their income from government payments. The public authority makes payments to the private company based on pre-arranged contractual conditions relating to when, how, and to what extent a public service is provided or made available.

This may be found, for example, in the provision of power, where the public sector will make payments according to the plant's output capacity, regardless of whether that output is utilized or not.

Availability-based PPPs are also more common in soft infrastructure such as education or health care where there is no clear user fee or self-funding ability.

A further limited application of availability payments are the so-called "shadow tolls," where the private sector will not collect real tolls, but will receive payment from the public authority based on infrastructure usage.

Privatization

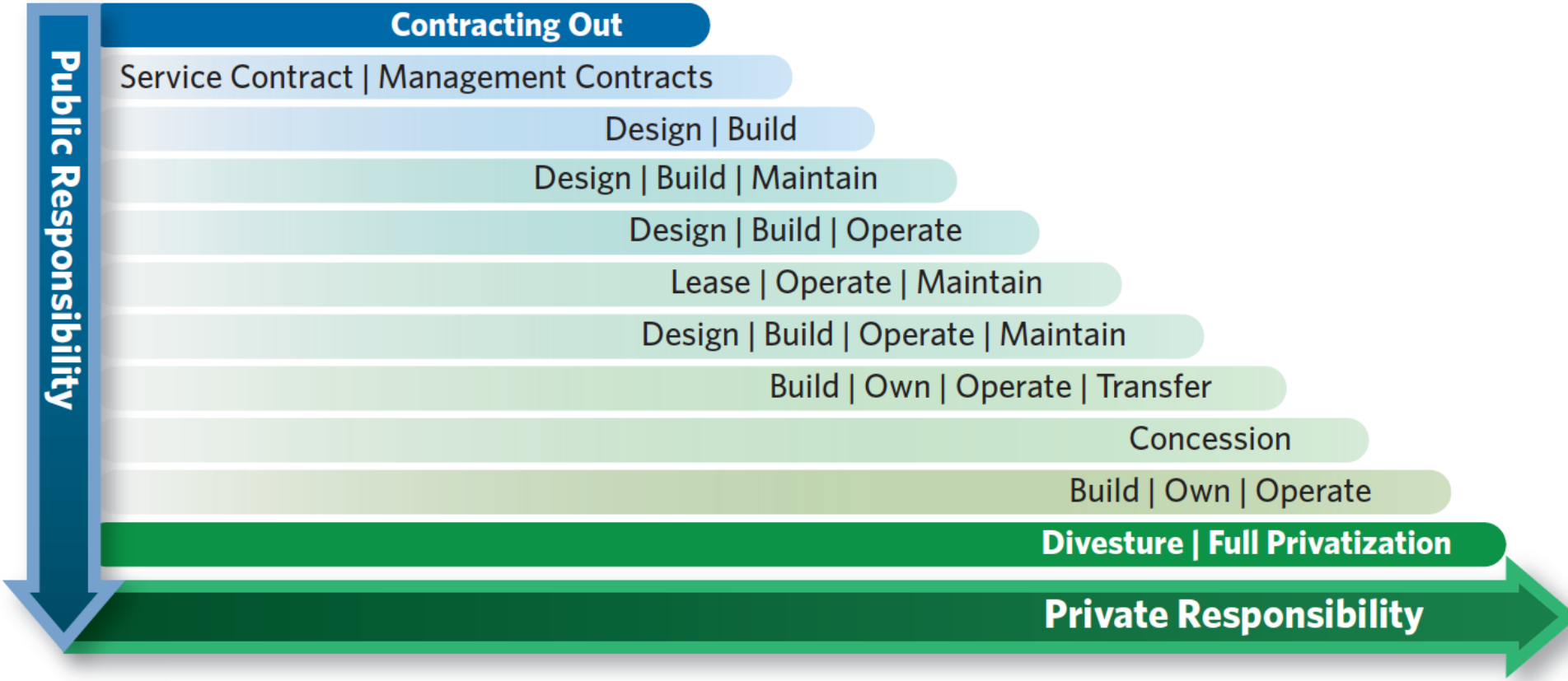
***PPPs are not to be confused with privatization*, where a service or facility is fully transferred to the private sector by sale/disposal, including all the associated assets and liabilities, for operation according to market forces (eg. airports).**

PPP sees the *temporary transfer* of a service or facility to the care and responsibility of the private sector through a long-term lease agreement, with the service or infrastructure is usually returned to the government at the completion of the contract term.

The extent to which the government regains ownership at the completion of a PPP depends on whether the facility or service was, in fact, originally owned by the public sector and the terms of the PPP agreement.

PPP agreements may see the private partner operate services according to market forces, but it is generally within a protected framework of minimum incomes and thresholds guaranteed by the public sector, and minimum services or supply demanded of the private partner.

FIGURE 1: PUBLIC-PRIVATE PARTNERSHIPS CONTINUUM



Source: Adapted from Palmer, G. (2009)

Design-Build-Finance Model

Traditional

Public Sector Risks

- Functional Program
- Design
- Financing
- Maintenance
- Lifecycle
- Facility Availability, Performance & Asset Value

Private Sector Risks

- Construction
- Construction Schedule

- The Output Specifications provide design requirements
- As Project Co is not responsible for Maintenance, the Owner must ensure requirements are outlined in the Output Specification

IO-AFP: Design-Build-Finance (DBF)

Public Sector Risks

- Functional Program
- Output Specs
- Facility Maintenance
- Lifecycle
- Facility Availability, Performance & Asset Value

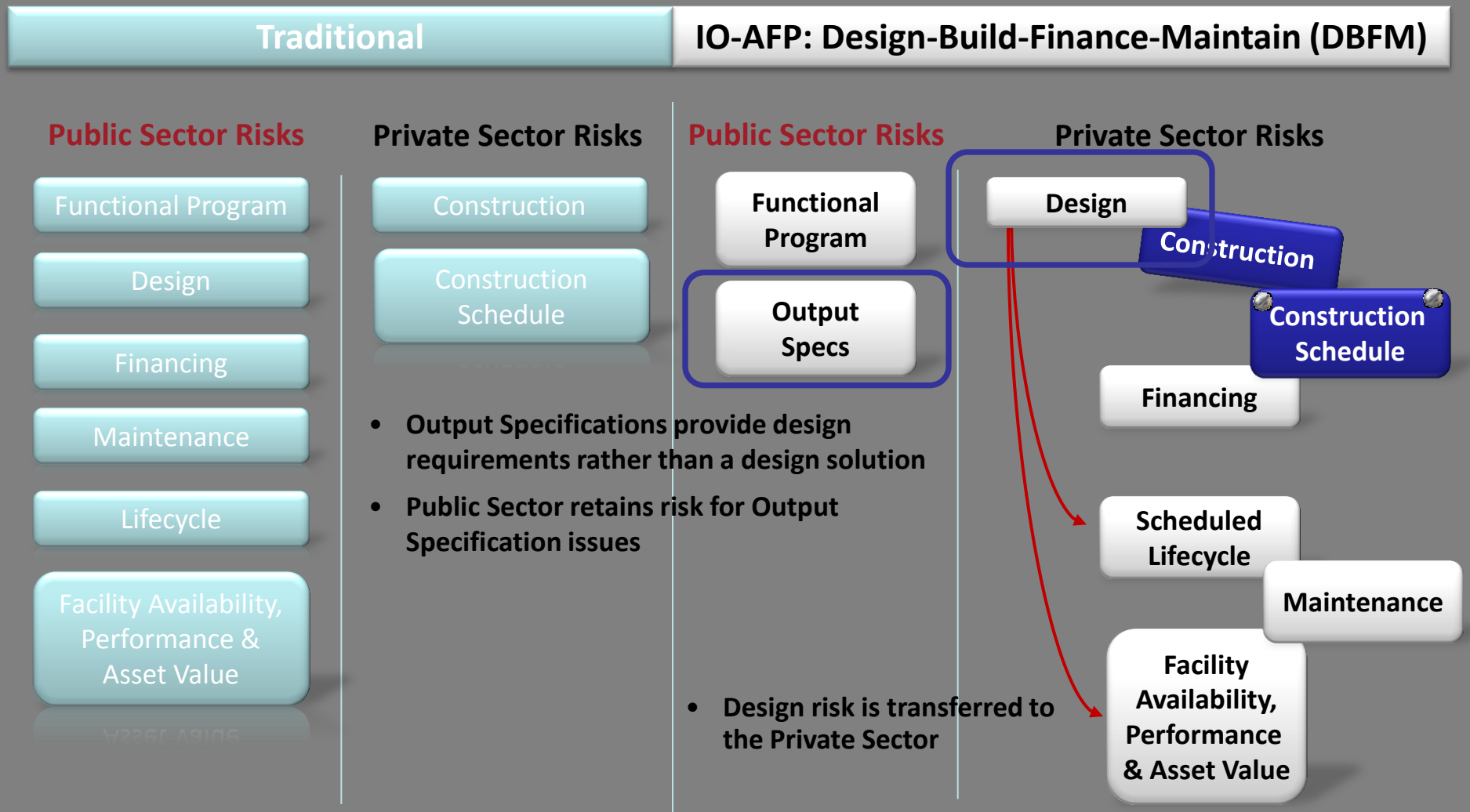
Private Sector Risks

- Design
- Construction
- Construction Schedule
- Financing

- Design risk is transferred to the Private Sector

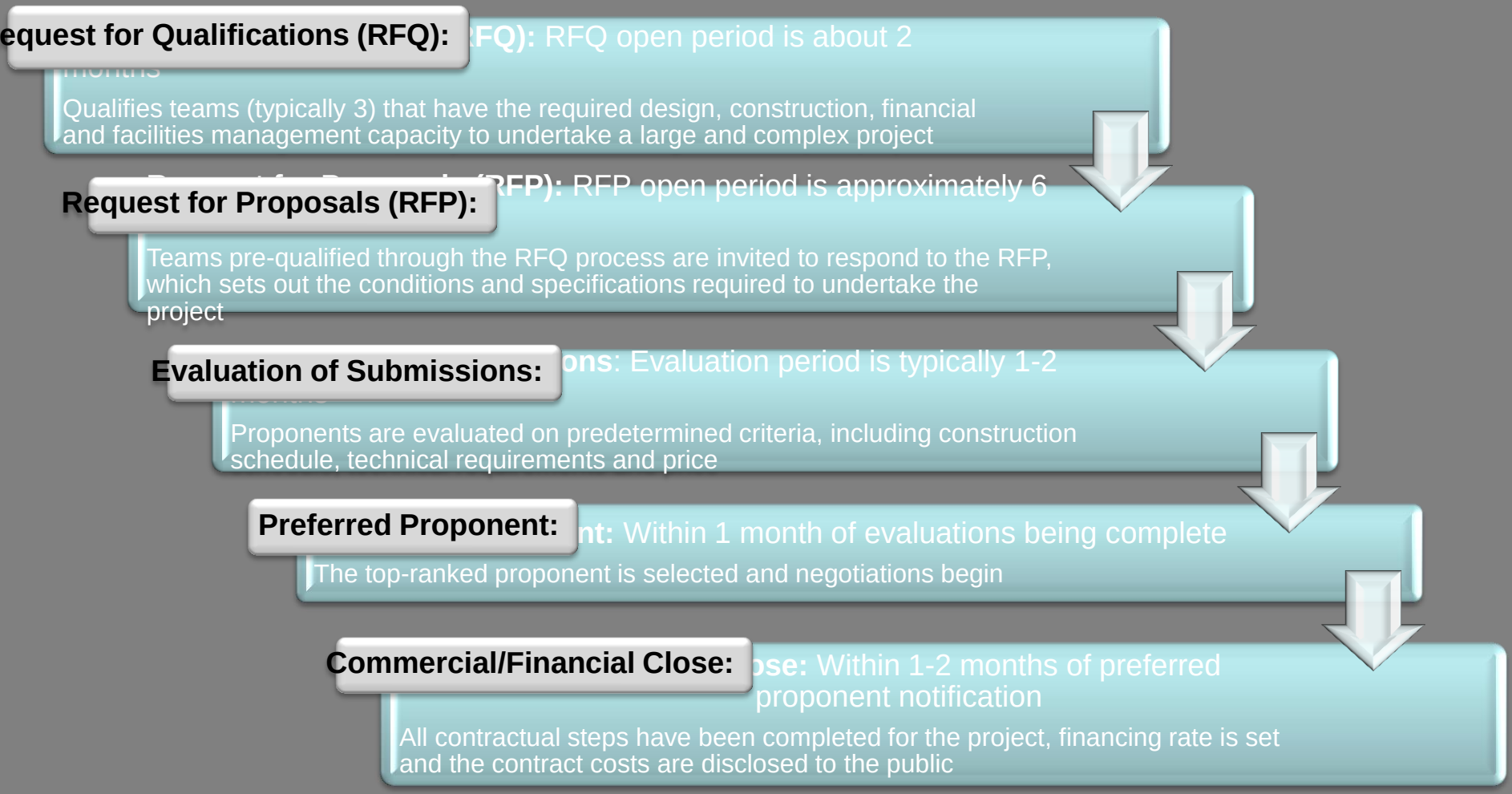
Source: Infrastructure Ontario

Design-Build-Finance-Maintain Model



Source: Infrastructure Ontario

Procurement Process



Source: Infrastructure Ontario

Infrastructure Ontario

➢ Major Projects (to September 2013)

- RFPs issued: Nine AFP projects including:
  - East Rail Maintenance Facility
  - Eglinton LRT / Scarborough RT
  - St. Michael's Hospital
- Construction starts: 3 AFP projects including:
- Substantial completion: 12 AFP projects including:
  - Ottawa LRT
  - Humber College Learning Resource Commons
  - Niagara Health System
  - Forensic Services and Coroner's Complex
  - Waterloo Regional Courthouse

➢ Projects in the Pipeline - the most new projects since 2005

- 20 projects assigned over three years to maintain a project pipeline
  - 13 hospitals,
  - 3 colleges,
  - 2 children's treatment centres,
  - 2 transportation projects

– *60+ projects valued at over $23 billion in the market*

Potential Benefits -1

Value for money: Utilizing private sector skills and technology to deliver projects in a more efficient manner, resulting in either lower costs or a superior product for the same investment.

Optimization of the design and operation: Using outputs based specification allows room for innovative solutions from the private sector in the design, operation and maintenance aspects of the project, with the intention of improving effectiveness whilst reducing costs over the whole life cycle.

Quicker delivery of project: Private sector capacity and flexibility are seen to be superior to the public sector - PPPs allow projects to be finished more quickly and on schedule than those attributed to public sector provision.

Risk transfer: Project risks (e.g., finance, timeframe, planning permits, community consultations) are transferred to the party best equipped to deal with it, both in terms of expertise and costs, to the stability and benefit of the project.

Increased investment in public infrastructure: Governments are able to implement projects more frequently and on a larger scale because the private sector finance element - reduces the need to raise or budget additional funds, as is the case in standard procurement.

Potential Benefits - 2

Increased budget/financing certainty: The transfer of responsibility (and risk) to the private sector for some of the project elements shields governments from unforeseen financial liabilities following cost overruns, delays, or operational difficulties that would otherwise impact upon the budget bottom line. Project finances are secured for the length of the contract and not subject to cyclical political budget adjustments, allowing for greater investment planning and efficiencies throughout the management, operation, and maintenance phases of the project.

Improved service delivery: Allows both sectors to operate within their sphere of expertise, the government in policy and governance, the private sector in the technical aspects of design, construction, operation, and management. Payments that are linked to performance targets or requirements provide an incentive to perform that is too often absent in public provision of services.

Whole of life cycle approach: Because the design, construction and operation are often undertaken by the one consortium there is a greater integration of the different elements and more coherence to the final product, unlike standard procurement options which may see several different subcontractors operating in loose cooperation.

Potential Benefits - 3

Access to additional capital/off-balance sheet financing: Because all or a large percentage of finance in PPP is provided by the private sector, the government is not responsible for raising funds from within its own coffers or adjusting budgets to allow for large infrastructure spending. International and national accounting standards do provide some guidance as to what and how PPPs are recorded on balance sheets, but the issue is far from secure.

Political advantage: There is political leverage to be gained from PPP agreements in terms of public perception and financial management credentials, as projects are delivered on time with less impact on the budget and provide superior quality infrastructure or services.

Private sector growth and stability: PPPs provide the private sector with access to reduced risk, secure, long-term investment opportunities that are underwritten by government contracts. Such agreements ensure private capital flows, provide investment opportunities, and stimulate local industry and job markets.

Potential Disadvantages - 1

Higher cost:

- **The borrowing rates given to the private sector may be higher than those available to governments with sound credit ratings.**
- **An expensive tender and negotiation process, including higher contract transaction costs paid to legal and accounting firms, can neutralize any savings made in design and construction phases.**
- **Transferring risk from one party to another has its price, and the private sector will expect guarantees of income proportionate to its risk burden.**

Reduced competitiveness:

- **High tender and transaction costs, along with complicated and long-term contracts reduce the pool of private sector companies with the capacity to apply for certain projects, reducing the government's choice and competitive tender processes.**
- **Exclusivity agreements awarded to winning companies lock them into guaranteed profits and, in reality, creates monopoly markets, reducing competitive pressure to reduce costs and enhance services.**
- **Complicated and lengthy tender process: PPP contract and negotiation periods are often more complex and protracted due to the nature of the multi-party, financially intricate, and long agreement terms inherent in the relationship**

Potential Disadvantages - 2

Lack of capacity:

- It is necessary for both the public and private sectors to possess PPP-specific capacity for an agreement to be signed and administered successfully. Such capacity is absent from many jurisdictions, both at a national and regional level, and it takes both time and experience to establish it.
- An over-reliance on external consultants also leads to an expertise flight, where any knowledge gathered throughout projects is not retained by public bodies or private companies, but rather lost to external sources, making it difficult to build knowledge and lessons for the future.

Rigid/inflexible/long contracts:

- In order to provide stability and security over time, long contracts can become rigid and inflexible, reflecting point-in-time circumstances and then locking them in over the contract period.
- It remains difficult for governments to adequately structure contracts that take into account future unforeseen events or circumstances, and it is often difficult to adapt and change contractual responsibilities as the context changes.
- Future generations cannot respond to their individual circumstances but must adhere to outdated operations from previous decades.
- Building flexibility into contracts is an expensive proposition because as the investment become less secure it may become necessary to further incentivize the private sector.

Potential Disadvantages -3

Delays and holdups:

- **The private sector is not impervious to project stoppages, and the complicated nature of the agreements between PPP partners can increase delays, as disputes take longer to be settled and any unforeseen eventualities that takes place in future years involve a lengthy renegotiation of the contract.**
- **The start of projects is also delayed by complex partner negotiations, sometimes further exacerbated by the political debate and public opposition that can surround PPP projects.**

Higher consumer prices:

- **Driven by a need to cover high levels of cost plus make a return on investment, market-driven pricing can see services cost the consumer more than if delivered by the public sector.**
- **The issues of competitiveness and monopolies also mean there is potential for abuse in regards to user fees.**

"Double taxation:"

- **The general public may perceive user fees as a form of "double taxation" whereby they are paying for services they feel their taxes should be providing or already have paid for. This will be noticeable in the case of toll ways, for example, where tolls have not existed under previous public sector provision and where there was no tangible cost to the user**

Potential Disadvantages - 4

Less accountability/transparency:

- **Project transparency is weakened under the PPP model because of the difficulty in accessing private sector information, now considered of commercial value or commercial-in-confidence by the consortium.**

- **Whole of project evaluation becomes problematic for similar reasons, as data is spread over numerous sources, compiled differently, and not always available for public scrutiny.**

PPP Applications

- transport – roads, ports, rail, airports
- fixed links – bridges and tunnels
- water resources – filtration plants, irrigation, sewage treatment, pipelines
- tourism – facilities
- health – hospitals and specialized facilities
- specialized accommodation – courts, police and fire
- education – schools, museums, libraries
- correctional services – prisons, remand and detention centres
- arts, sport and recreational facilities
- conventional centres
- government accommodation
- social housing

Three criteria to evaluate efficacy of a PPP

1. **Which if any part of the proposal should government itself deliver *(core services question)?***

2. **For all aspects of the services and supporting infrastructure, what project model delivers the best value for money *(value for money question)?***

3. **Do the outcomes of the value for money question satisfy the public interest criteria articulated in the policy and if not can the public interest be satisfied with other safeguards in the contract (*public interest question)?***

Role of Participants - Public Sector

- Defines the business and services required and resources that are available
- Specifies priorities, targets and priorities
- Executes the procurement process
- Determines the performance regime
- Governs the contract
- Manages community expectations
- Provides the enabling environment
- Reacts, with the private sector partner, to changes in the project environment

Role of Participants

Financiers

Substantial up-front, non-recourse debt is required – financiers must be assured that the participants are likely to work together over the long-run and capable of resolving issues without putting the project at risk

Subcontractors

Usually includes construction, supply of equipment, operations and maintenance, each with a separate agreement

Advisors

Provide legal, financial, technical and other advice to both public/private sectors – public require independent verification – sponsors may rely on in-house advice or outside advisors – financiers rely on their own group of advisors

Rating Agencies

Required when financing involves public issues/paper – typically involved at very early stages so that credit concerns can be addressed

Insurers

Provide risk enhancement in project financing irrespective of whether the risks are commercial or political - “monoline” insurers are involved in credit risk arbitrage that can create value for project financing where market generally would overestimate the risk

Role of Participants - Private Vehicle Company

- Produces and delivers the defined services
- Designs, builds and upgrades the infrastructure asset
- Raises funds for the capital needs of the project
- Focuses on the governments' objectives
- Returns the asset in specified condition at the end of the contract

Costs of Finance

Government money will always be priced below private money – what then are the advantages of PPPs?

- **Can the private sector deliver sufficient cost savings to offset the premium?**

- **PPP route builds the true cost of risk into the cost of funds – traditional model masks the risks because government can fund the project at a risk-free rate independent of the actual risk position**

- **Why can government borrow at a risk-free rate?**

No perceived risk of default – government is seen as risk free in the eyes of investors since risk is transferred to taxpayers – taxpayer takes on a contingent liability for which they are not compensated – this residual risk should be priced and accounted for in any cost/benefit analysis

It can be argued that the cost of capital should be assumed to be the same for both and public sectors, subject to three conditions

- **risk associated with a specific project (variance in return) are mainly "commercial" rather than policy-related in character.**
- **the private capital markets is reasonably efficient**
- **private sector transaction costs (being on the smaller scale) are not overwhelmingly large relative to those usually incurred in the public sector**

Project risk depends more on a project's design than on specific financing mechanisms

The Business Case

Three main issues must be examined

1. **Capacity – assessment of private sector's capability and reliability focuses on observable strengths and weaknesses – must set our specific requirements in advance to protect the public interest.**
2. **Motivation – private sector's willingness to participate primarily revolves around two aspects – a) whether the risk and rewards create a viable business opportunity, and b) whether the banks and financial markets will support the proposal – this leads to whole host of commercial issues (are the risks insurable, taxation matters, competition, etc).**
3. **Value for money – on a whole-life-cycle basis are the services delivered at less cost than by traditional approach – can be contentious and some will argue that PPPs as currently structured can never be good value for money – attribute to this two factors "bundling" and "cost of capital".**

Bundling Argument

Defined characteristic PPPs is the integration within the private sector of all (or mist) functions of design, building, financing, operating and maintenance, likely through a SPV (a virtual company)

Hart (2003_ - theoretical model to examine the efficiency of bundling – argues that the choice between bundling and unbundling turns on whether it is easier to write contacts on service provision than on building provision

Issue of incentive is crucial to the argument on bundling versus unbundling

May view this argument as one between hiring a general contractor to build/renovate your house versus hiring subcontractors yourself

“Value for Money” Argument

“The optimal combination of whole life costs and quality (or fitness for purpose) to meet the user’s requirements”

UK experience – six main determinants of value for money, namely:

- **risk transfer**
- **long-term nature of contracts (including whole life costing)**
- **use of output specifications**
- **competition**
- **competitive performance measures and incentives**
- **private sector management skills**

What is required to achieve value for money?

Projects are awarded in a competitive environment

Economic appraisal techniques, including proper appraisal of risk, are rigorously applied and that risk is allocated to public and private sectors so that expected value for money is maximized

Comparisons between public and private finance options are fair, realistic and comprehensive

Competition

Competition encourages innovation among bidders

Must encourage private sector to think beyond the bounds of the construction phase and build in features that will facilitate operations and maintenance

Risk

Identification, allocation and management of risk an essential part of the PPP process

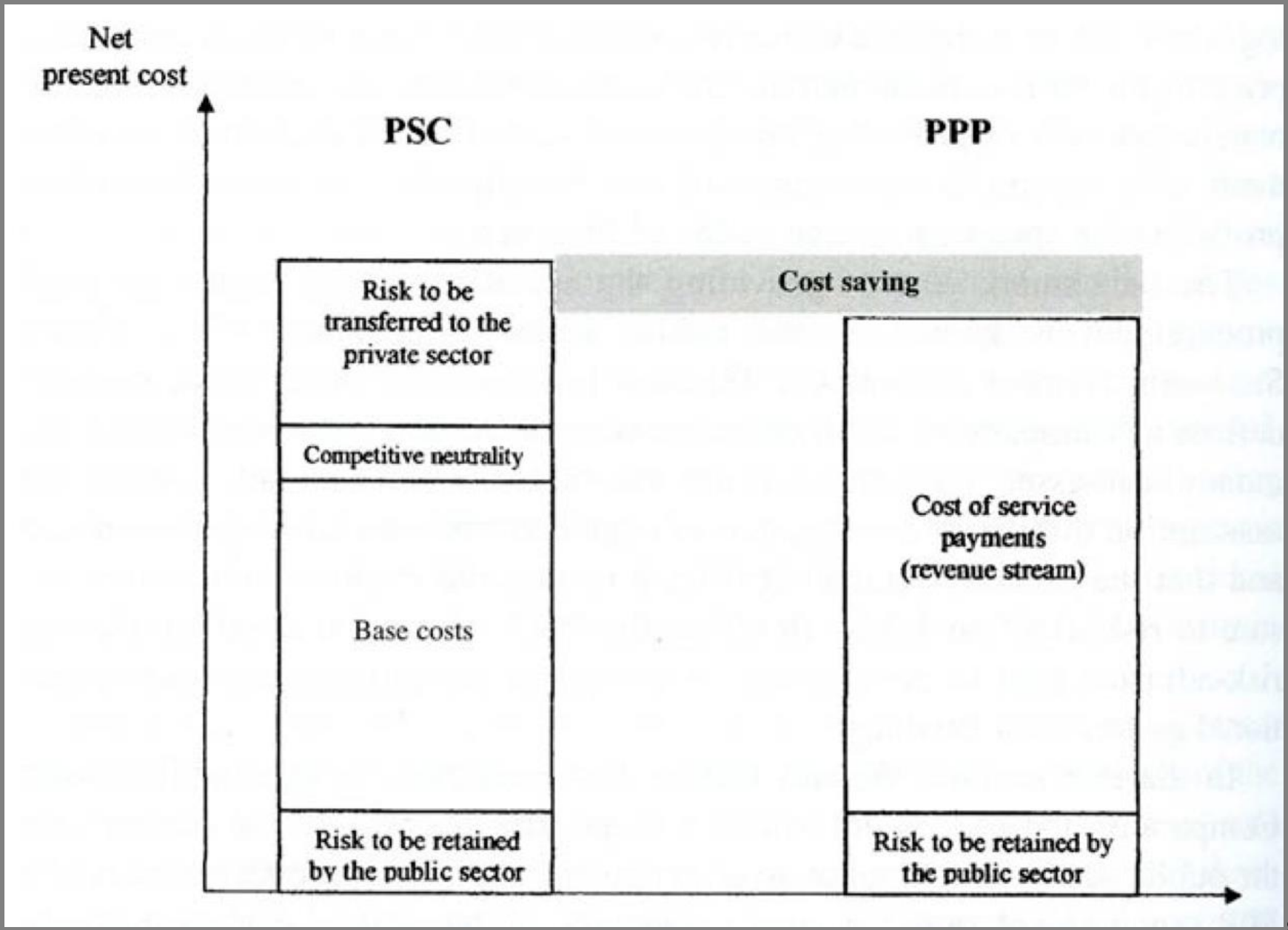
Optimum, rather than maximum risk transfer is the objective of the PPP arrangement

Public Sector Comparator (PSC)

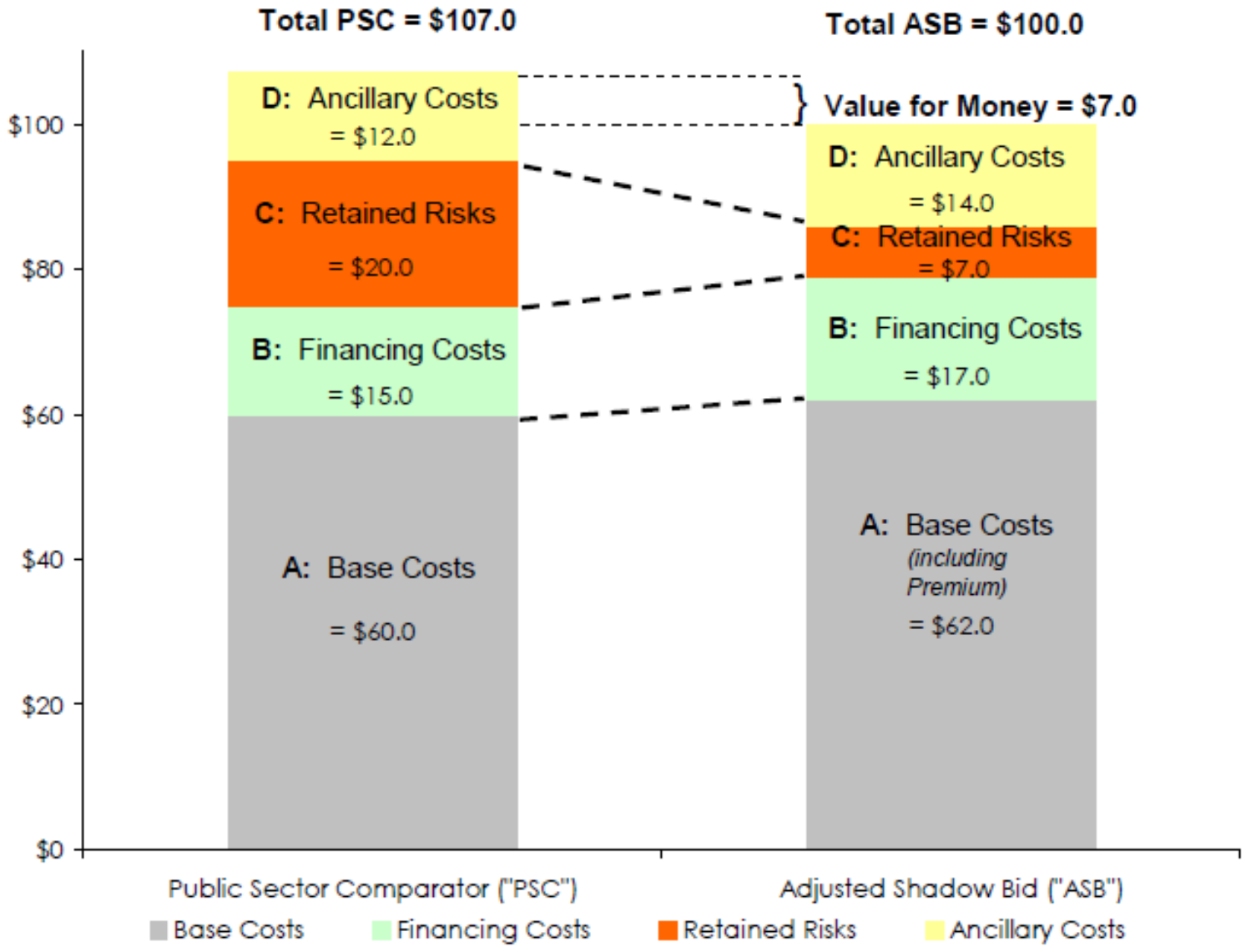
Assuming all things equal (quality and risk allocation) value for money is demonstrated when the total present value of private sector supply is less than the net present value of the base cost of services, adjusted for: costs of risks retained by the government, cost adjustment for transferable risk, and competitive neutrality effects

- **Base or raw cost – cost of providing the services e=required by the public sector – what government would have to spend to build and maintain the facility and provide the services over the useful life of the asset**
- **Retained risks – risks that always rest with the public sector**
- **Risk adjustment – for transferable risks that reflect the probability those services may not be delivered at the costs shown in the base cost projection – cost overruns, technical problems**
- **Competitive neutrality – public sector should be competitively neutral with the private sector – public sector must include all the costs of taxes, insurance, etc that the private sector would be subject to**

Public Sector Comparator (PSC) and Value for Money



Illustrative BF VFM ($'s millions):



The Organization of PPPs

Main participants

- Public sector procurer
- Sponsor who as an equity investor normally creates a special purpose vehicle through which they contract with the public sector
- Financers
- Sub-contractors
- Other involved parties such as advisors (legal, financial, technical), insurers, rating agencies, underwriters

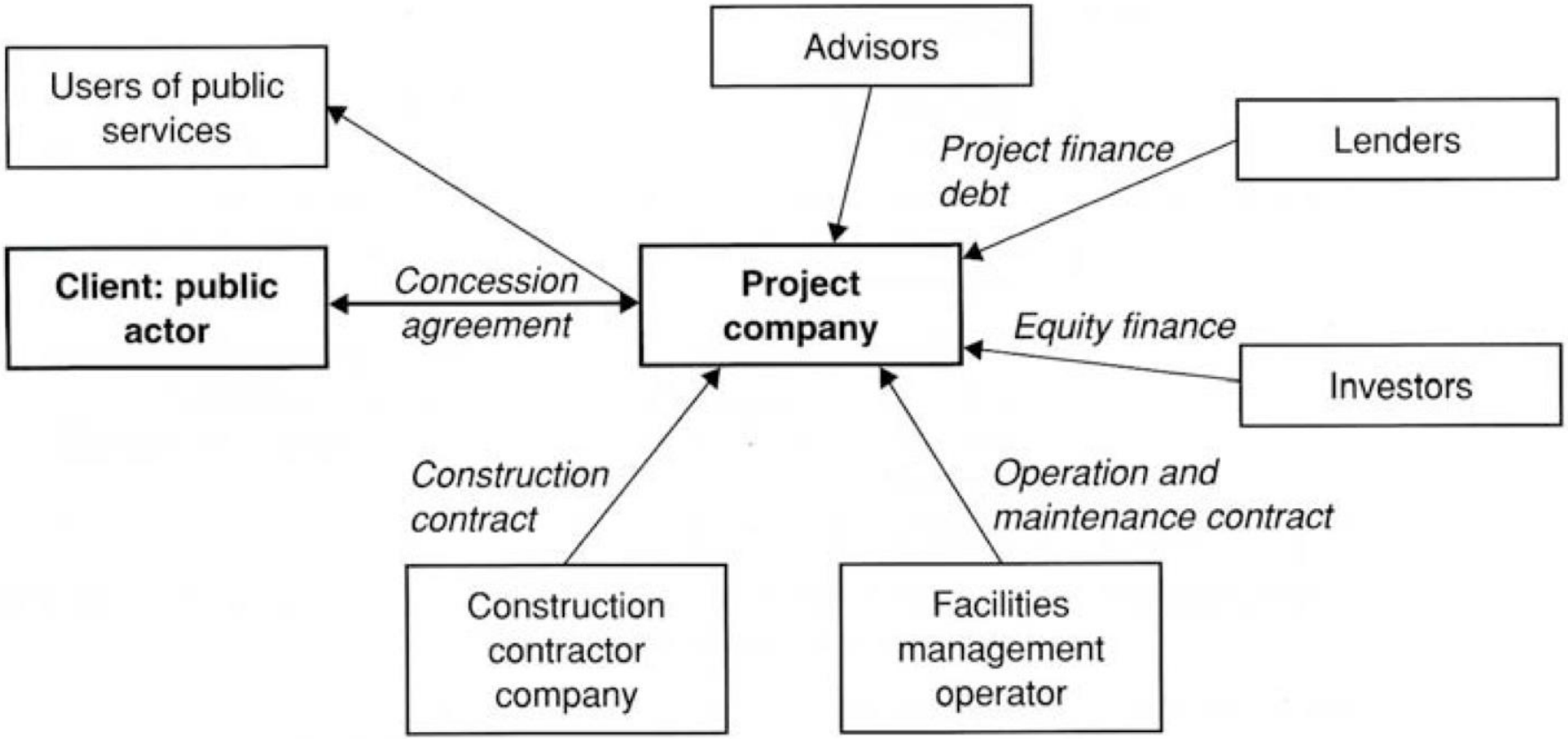
Special Purpose Vehicle (SPV)

A separate legal entity established to undertake the activity defined in the contract between the SPV and the public client

Used for the following reasons:

- **Allow lending to the project to be non-recourse to the sponsors by virtue of limited liability nature of the SPV**
- **Enable the assets and liabilities of the project not to appear on the sponsors' balance sheets, by virtue of no sponsor having more than 50% of shares in the SPV and normal consolidation principles when preparing group accounts**
- **For the benefit of the project lenders, to help insulate the project from potential bankruptcy of any sponsor**

Relation of Consortium Participants to the Special Purpose Vehicle



Two types of SPVs

- **Service-Provider Approach – typically used in the UK – contractors and service providers sponsor the SPV and take an equity stake as a sign of their commitment to the project – financers may take a minority stake and as long-term investors may increase their involvement in the operational stage**

- **Financier-Led Approach – typically used in Australia – specialized investment banks take an active role in managing the SPV from the outset – invest equity, manages the bid, decides on pricing, guarantees the commercial revenues, underwrites senior debt and sun-contracts to contractors and operators**

Driving Change: The new financial frontier for PPPs

Institutional funds are seen as sources of long-term capital (private) with an investment horizon tied to long-term liabilities (public)

Fig. 26: Largest Infrastructure Investors - Global

Rank	Investor	Currently Committed to Infrastructure ($bn)	Investor Type	Investor Location
1	OMERS	15.5	Public Pension Fund	Canada
2	CPP Investment Board	8.6	Public Pension Fund	Canada
3	Corporación Andina de Fomento (CAF)	8.4	Government Agency	Venezuela
4	Ontario Teachers' Pension Plan	8.1	Public Pension Fund	Canada
5	APG - All Pensions Group	7.2	Asset Manager	Netherlands
6	TIAA-CREF	6.5	Private Sector Pension Fund	US
7	CDP Capital - Private Equity Group	5.9	Asset Manager	Canada
8	AustralianSuper	5.3	Superannuation Scheme	Australia
9	PGGM	3.5	Asset Manager	Netherlands
10	QIC	3.5	Asset Manager	Australia

Source: Preqin Infrastructure Online

4. Risk Transfer

Risk Transfer

Treatment of Risk – big difference between the underlying theory of risk transfer and what happens amidst a complex set of arrangements

- **Theory is that risk is transferred to the party best able to manage this risk at the lowest price – private sector dose not bear risk cheaply**
- **Unloading inappropriate forms of risk will drive up price – government may have retain risks for which the private sector may charge too much – should ony transfer what it considers to be a an "efficient" level of risk**

Whole-of-Life Cycle Contracts - From a government perspective, risk transfer more effective if there is a "whole-of-life cycle" contract with a single private entity

- **From a private sector perspective, risk can only be accepted if it can be appropriately priced, managed and mitigated and this may require transfer to a third party – use of consortium to deliver services over the long-term**

Some Common Risk Transfers

Risk	Party	Reasoning
Design / Technical Risk	• Private sector	• This is a core skill of the private sector proponents.
Land Assembly Risk	• Public sector	• The private sector may be unable to secure some land
Environmental Approval Risk	• Public sector	• Environmental approvals are public sector approvals
Construction Risk	• Private sector	• This is a core skill of the private sector proponents.
Operating Risk	• Private sector	• This is a core skill of the private sector proponents.
Demand Risk	• Mostly public sector	• The private sector does not control the factors that control demand risk
Financial Risk	• Mostly private sector	• The private sector's financiers will fully account for the risks inherent in the project
Environmental Risk	• Private sector	• This is a core skill of the private sector proponents.
Regulatory Risk	• Public sector	• The private sector does not have any control over these elements

Conventional Procurement Approach to Risk

- **Major infrastructure projects are inherently risky due to long planning horizons and complex interfaces.**
- **Unplanned events are often not accounted for, so contingencies are inadequate.**

UK National Audit Office, February 2003

- **In 1999, 73% of UK public construction projects exceeded the price agreed at contract and 70% of the projects were delivered late.**

Cost Overrun Data (Flyvbjerg)

- **90% of projects have cost overruns.**
- **Overrun is found in the 20 nations and 5 continents studied.**
- **Overrun is constant for the 70 year period of the study – results have not improved over time.**

Conventional Procurement Approach to Risk

Cost Overrun Data (Flyvbjerg)

Misinformation about costs and risk is the norm:

- **58 rail projects showed an average 44.7% cost overrun**
- **33 bridge projects showed an average 33.8% cost overrun**
- **167 road projects showed an average 20.4% cost overrun**

Cost Overrun Examples (Flyvbjerg)

- **Boston's Big Dig: 275% or $11 billion over budget**
- **Pentagon Spy Satellite: $4 billion over budget**
- **Denver International Airport: $200% over budget on $5 billion project**
- **Channel Tunnel: 80% over budget for construction and 140% over for financing (compare with 10% contingency assumed by lenders)**
- **Sydney Opera House: 1,400% over budget**

Conventional Procurement Approach to Risk

Project Benefits Overstated (Flyvbjerg)

- **Benefits (patronage / traffic risk forecasts) are often inaccurate.**
- **90% of rail projects overestimate traffic.**
- **25 rail project traffic forecasts had average inaccuracy of -51.4% with SD of 28.1.**
- **50% of road project traffic forecasts are wrong by >20%.**
- **183 road project traffic forecasts had average inaccuracy of 9.5% with SD of 44.3.**
- **Inaccuracy in traffic forecasts in 14 nations and 5 continents studied.**
- **Inaccuracy is constant over 30 years of study – forecasts have <u>not</u> improved over time.**

Conventional Procurement Approach to Risk

Capex and Opex Costs are Poorly Integrated

- **Very little available historical data on lifecycle cost / quality.**
- **History of patch and repair, not maintain.**
- **2 – 4% annual maintenance would ensure full life span of assets.**
- **“Design Build Forget” model (common to conventional procurement) reduces life of a typical infrastructure asset (Mizra):**
  - 2% maintenance: 60 years life span
  - 1% maintenance: 50 years life span
  - 0% maintenance: 35 years life span

PPP/AFP Procurement Approach to Risk

Canadian Experience to Date

- **20 year history of PPP / AFP.**
- **180 projects completed or underway with a value of ~$60 billion.**
- **Generally see 8 – 15% VFM on social infrastructure projects.**
- **Generally see 20 – 30% VFM on civil / economic infrastructure projects.**

The Risk Matrix – Identifying and Allocating Risks

			Allocation					
			Traditional			*PPP / AFP*		
Risk			Public	Private	Shared	Public	Private	Shared
Design	–	planning approvals	x				x	
	–	design / construction interface	x				x	
	–	misinterpret spec.	x				x	
	–	functionality	x					x
Build	–	construction cost	x				x	
	–	construction schedule	x				x	
	–	change of spec.	x			x		
	–	geotech / environ / land acquisition	x					x
	–	protest	x					x
Finance	–	availability of finance	x				x	
	–	cost (fixed / floating)	x				x	
	–	inflation	x					x
	–	currency	x				x	
Maintain	–	labour cost	x				x	
	–	lifecycle cost	x				x	
	–	energy efficiency	x				x	
	–	residual value / handback condition	x				x	

The Risk Matrix – Identifying and Allocating Risks

	Allocation					
	Traditional			*PPP / AFP*		
Risk	**Public**	**Private**	**Shared**	**Public**	**Private**	**Shared**
Operate – labour disputes	x					x
– demand risk	x			x		
– service pricing	x			x		
Political – change of government	x					x
– change of law	x					x
– appropriation	x				x	
– expropriation	x			x		
Unforeseen Events – delay events	x					x
– compensation events	x			x		
– relief events	x					x
– force majeure	x					x
– variations	x			x		
– change of law	x					x

The Risk Matrix - Valuing Risks

Expected Value of Risk Transfer

EV = cost base x probability x impact

Probability can include a statistical distribution of the risk arisen

Risk Category	Cost Base		Design Build Finance Maintain Model						Traditional Model					
			Probability	Impact			Risk Quantified		Probability	Impact			Risk Quantified	
	Portion of DBFM	Value	%	10th percentile	Typical	90th percentile	Province	Shared	%	10th percentile	Typical	90th percentile	Province	Shared
Design Coordination /Completion	Design & Construction	$240,000,000	90%	0.50%	1.00%	5.00%	$0	$0	90%	0.50%	2.00%	5.00%	$4,320,000	$0

- **In the above example, for a $240 million infrastructure project, the government would retain $4.3 million of design co-ordination / completion risk under a traditional procurement model, but no such risk under a DBFM model.**
- **Conventional public sector procurement too often assumes 0% probability of risk occurring.**
- **Empirical evidence shows much higher probability that risks will actually occur, particularly if no measures are taken to manage and mitigate the risk.**

* Source: Infrastructure Ontario

The Risk Matrix - Valuing Risks

INFRASTRUCTURE ONTARIO
Design, Build, Finance & Maintain Risk Analysis and Risk Matrix

Appendix B: Risk Matrix Template Summary

	Risk Category	Cost Base (Portion of DBFM)	Risk Retained by Province at Average Impact	
			Design Build Finance & Maintain Model	Traditional Model
1.00	Policy / Strategic	Total Contract	5.6%	20.4%
2.00	Design & Tender	Design & Construction	1.7%	19.4%
3.00	Site Conditions/Environmental	Design & Construction	1.1%	1.1%
4.00	Construction	Design & Construction	1.4%	16.6%
5.00	Equipment Risk (F.F.&E.)	F.F.&E. (outside of contract)	0.0%	0.8%
6.00	Permit and Approvals	Design & Construction	0.0%	0.2%
7.00	Completion Commissioning	Design & Construction	0.1%	0.7%
8.00	Life Cycle and Residual Risk	Maintenance	46.1%	132.8%
9.00	Operational	Operations	0.3%	51.5%
10.00	Project Agreement	Total Contract	1.0%	0.0%
	Total Risks Retained by Province	Total Contract	16.2%	76.5%

Notes:

1. The value of each risk category shown in the matrix above is a summation (or 'roll-up') of the values of multiple sub-categories of risk. The percentage shown is the value of risk against the cost base for that risk category. For an explanation of the risks under each category and sub-category, please refer to the definitions section.
2. The total risks retained by the Province for each model has been arrived at using the total contract value.
3. The above matrix evaluates risk for a project at Cabinet approval stage
4. The Operational risks are based upon a 30-year agreement
5. Financing has been excluded
6. The cost base is the Net Present Value
7. The risk values represent the true mean impact, calculated by statistical simulation calibrated to the 10th, Most Likely and 90th percentile impacts for each risk.

In the above example, applied to a $100 million infrastructure project, the Province would retain $76.5 million of risk on a traditional procurement model, but only $16.2 million on a DBFM model.

* Source: Infrastructure Ontario / Altus Helyar DBFM Risk Analysis

Case Study – Niagara Health System

Niagara Health System is Ontario's largest multisite hospital amalgamation, comprising six hospital sites and an ambulatory care centre that serve the 12 municipalities that make up the Regional Municipality of Niagara.

The C$759 million, 1 million square-foot project – Ontario's first DBFM concession since the credit crisis began – was Infrastructure Ontario's first full DBFM transaction and established the "template" for other social infrastructure transactions.

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Case Study – Niagara Health System

Project Status or Outcome

Construction commenced in April 2009. Financial close was reached on March 27, 2009. Substantial completion was November 2012.

Project Structure

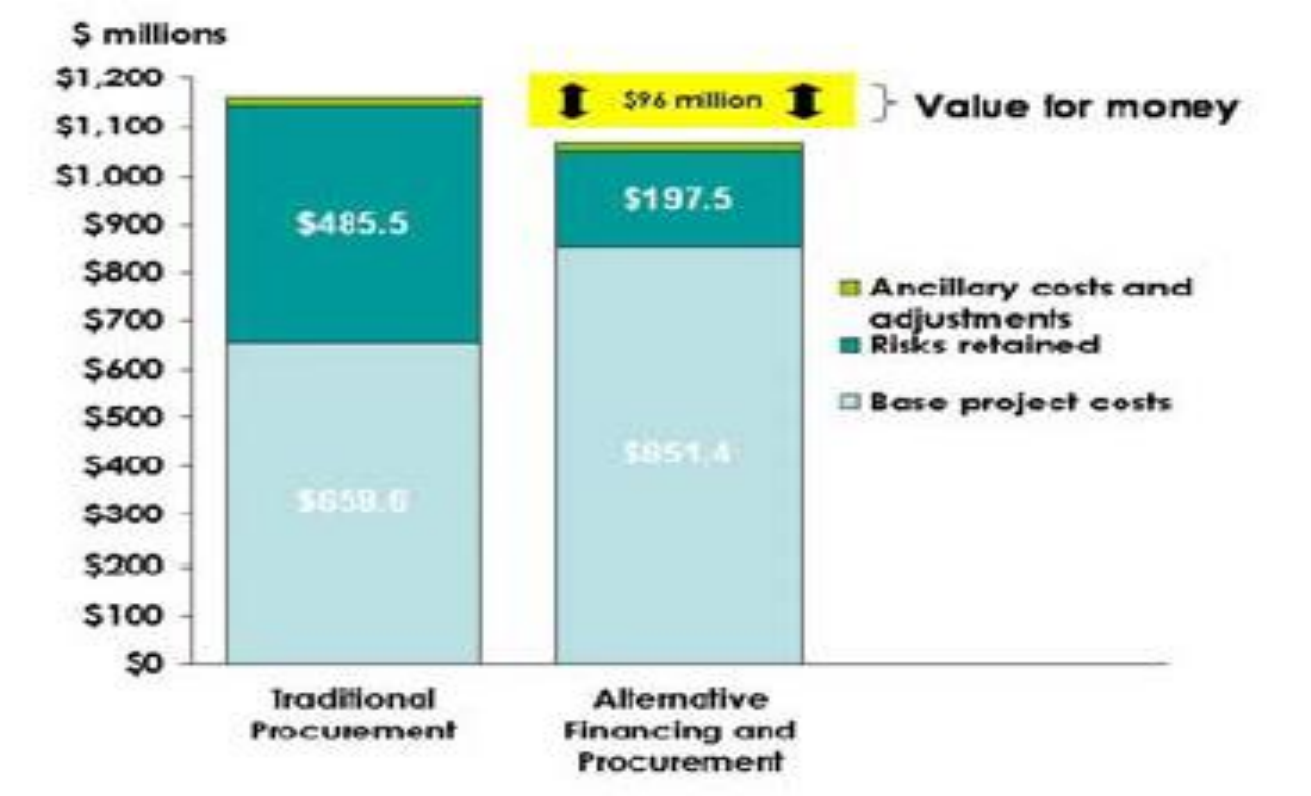
DBFM

Value for Money

$96 million (8.3%)

Project Value

Approximately C$759 million (NPV)



Case Study – Niagara Health System

Transferred Risks *

- construction price certainty
- scheduling, project completion and delays
- site conditions and contamination
- development approvals
- mechanical and electrical systems
- construction financing
- commissioning and facility readiness
- activity protocols
- change order protocol
- lifecycle repair and renewal

* Source: Infrastructure Ontario VFM Report

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Group Negotiation – Windsor Essex Parkway

The Windsor-Essex Parkway will be a below-grade, 11-kilometre, six-lane highway with 11 tunnels and a four-lane service road that will connect Highway 401 to a new international crossing proposed for construction over the Detroit River to Interstate 75 in Michigan. The Windsor-Essex Parkway will be the most significant single highway investment made in Ontario to date. It represented Infrastructure Ontario's first DBFM road project.

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Group Negotiation – Windsor Essex Parkway

*Transferred Risks**

- construction price certainty
- scheduling, project completion and delays (phased completion)
- site conditions and contamination
- development approvals
- construction financing
- commissioning and road readiness
- activity protocols
- change order protocol
- lifecycle repair and renewal

* Source: Infrastructure Ontario VFM Report

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Group Negotiation – Windsor Essex Parkway

Risks to Discuss / Allocate

1. environmental
2. endangered species
3. protest
4. traffic / revenue
5. integrate road project with tolled DRIC bridge
6. change of law

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Case Study – Windsor Essex Parkway Windsor, Ontario

Actual Risk Allocation	Allocation of Risk		
Risk	**Province**	**Project Co**	**Shared**
Environmental			
Endangered Species			
Protestors			
Traffic Volume / Revenue			
Interaction with Tolled DRIC Bridge			
Change of Law – Works Change of Law			
– Relevant Change in Law			
– General Change of Law			

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5. Payment Structures

Payment mechanism is at the heart of the PPP contract, as it puts into financial effect the allocation of risks, particularly operational risks and responsibilities of the of the private sector operator to service performance and availability of facilities

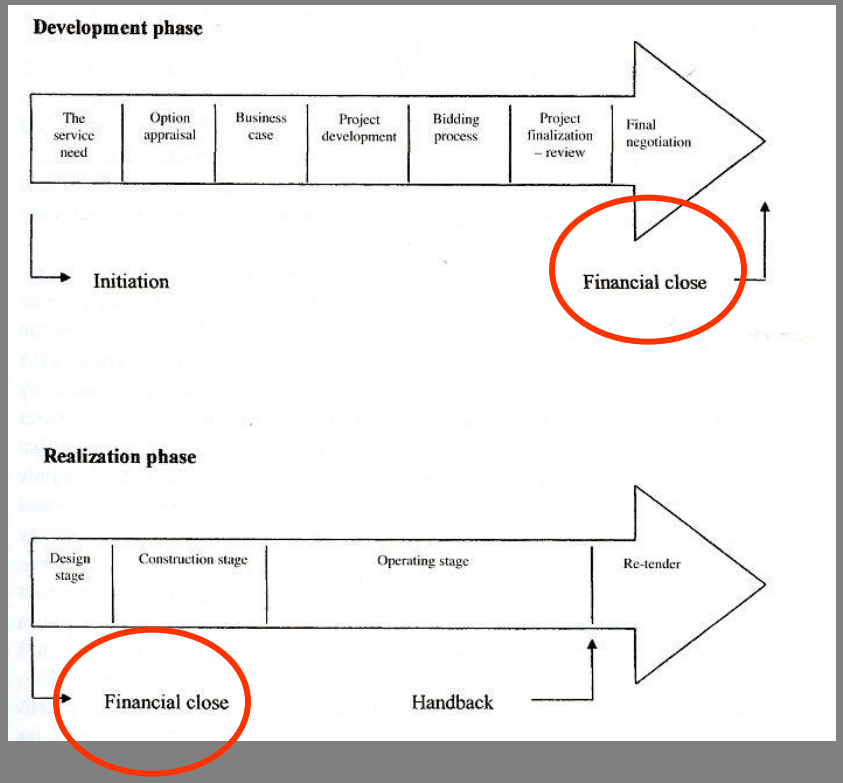
Public perspective of PPPs

Two basic phases in a PPP transaction:

1) Development Phase and
2) *Realization Phase*

They are divided by the Financial Close
(Commercial Close is a prerequisite to reaching the Financial Close)

Most of the focus to date has been on the development phase – now turn to the post-Financial Close stages and concentrate on Contract Management

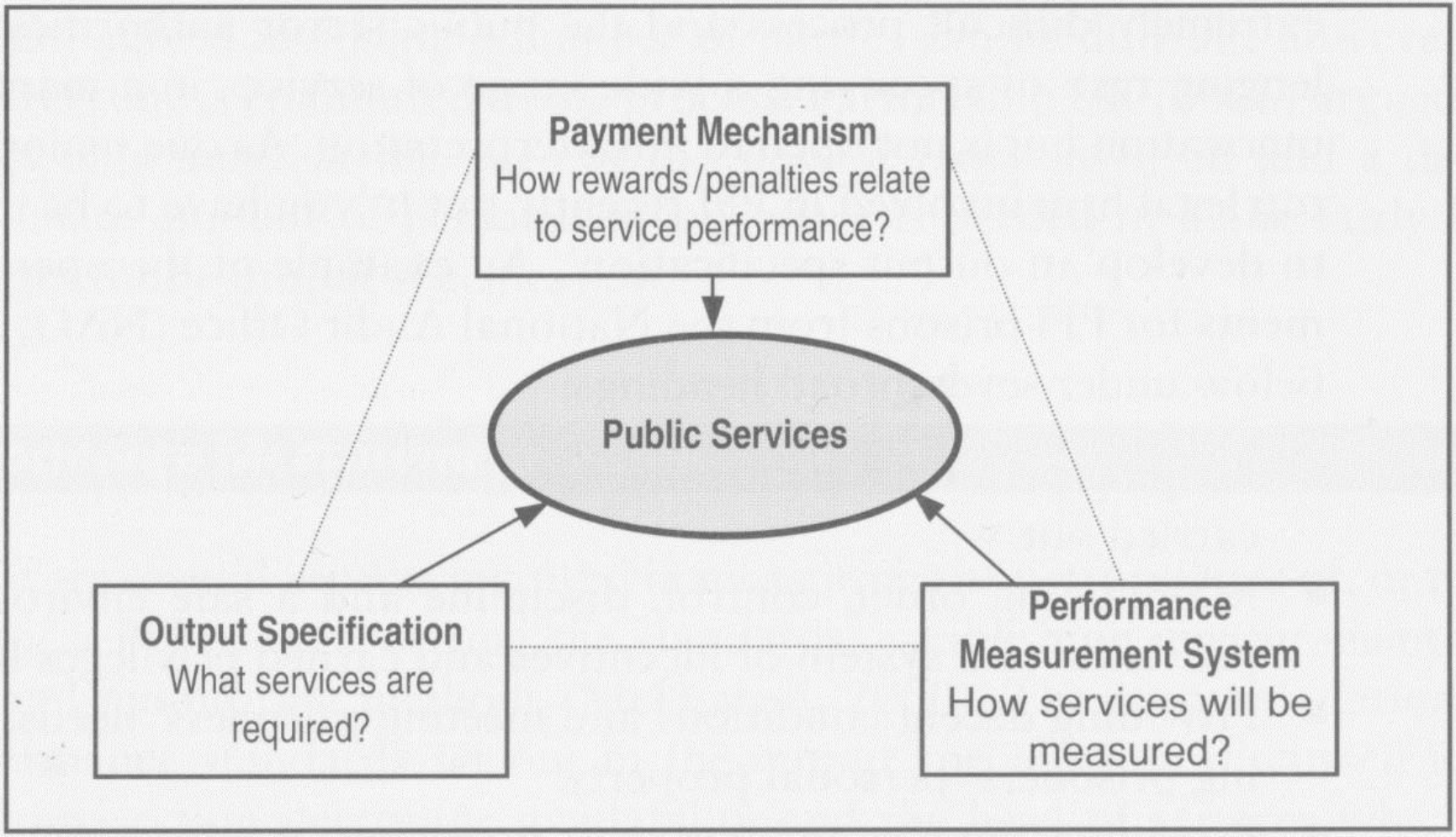


Realization Phase

- Detailed design, construction, and operations – costs in this phase are normally met by the equity investors, costs of construction covered by equity and debt
- Once commissioned and services are being delivered, the payments flow (or unitary charge) by the public body provides funds that are expected to cover the cost of delivering the services and debt service obligations, while providing a return on risk capital
- Unitary charge unusually split between volume and performance criteria and availability – both usually apply with the addition of benefits-based incentives geared to safety or efficiency improvements
- Concessions periods can vary, typically from 10-50 years with hand back at the end based on predefined technical parameters
- All this assumes that nothing goes wrong in the interim – government needs to create and maintain a monitoring system to ensure that specified services are delivered to a guaranteed, measurable standard within scheduled payment bands
- (Continued)

- **Must set out scope and qualitative of the services – payment mechanism sets out precisely how the SPV receives payment for these services**
- **Performance measures and payment mechanisms are central to the success of PPPs since they provide the commercial incentive for the private sector to manage risks properly**
- **Mechanisms must be built in to rectify underperformance – for PPPs disputes are normally settled without explicit reference to potential legal sanctions – all long-term contracts depend on a level of cooperation – there are elements of *irreducible uncertainty* in any PPP agreement**
- **Contracts will depend upon forbearance and with deference to prevailing customs and practices if collaborative relationships are to be maintained**
- **Governance requires an open-ended approach that leaves substantial ground for variation or complete renegotiation of prior commitments**
- **Negotiation is by far the most commonly used approach to dispute resolution and the most effective in terms of costs, use of resources, speed of resolution and maintenance of open lines of communication.**

Interdependence of the key components affecting public services



Contract Management

Process by which the integrity of the contract is maintained and to ensure that roles and responsibilities demarcated in the contract are fully understood and carried out to the specified standard

Procedures require ongoing oversight of project delivery, contractual variations, monitor service outputs, and detection of problems at an early stage

Some of the problems include:

- **Service delivery problems – must distinguish between 'major' and 'minor' breaches**
- **Availability – a key issue for government – lack of availability strikes at the very heart of the arrangement, particularly when payment is based on availability rather than usage**
- **Public risk – government must retain the risk for ensuring the safety, and well being of consumers and workers – may need to exercise its right to "step in" to prevent or mitigate a serious risk to the public**
- **Asset risk – can arise for a number of reasons from *force majeure* to shorter than expected technical life, or default and early termination at which point the value of the asset may be in doubt**

(Continued)

- **Operating risk – relate to operating and production procedures, availability and quality of inputs, quality and efficiency of project management and maintenance, and upgrade requirements**
- **Sponsor risk – usually arises when the SPV and/or its subcontractors are unable to meet their contractual obligations and the government is unable to enforce performance remedies – government may seek sureties from the sponsor – also the issue of the sponsor transferring ownership**
- **Financial risk – financial parameters may change, financiers may withdraw funding, financial structure may not be sufficiently robust to withstand certain stresses – may have the added risk of refinancing**
- **Default risk (breach of contract) – occurs when the contracting enterprise is unable to perform its contractual obligations including inability to meet deadlines, to perform to specified standards, or continue loan repayments – must distinguish between material (giving rise to termination) and non-material defaults (an obligation to rectify but not on their own allowing the other party to terminate contracts – government may exercise the right to "step-in"**

A Governance Framework

Contract reporting and monitoring framework lies at the heart of contract management – information gathering is essential to this process

Framework embraces the following constituents:

- **Measures to assess on-going business viability of the contractor to meet requirements for the term of the contract and the major areas of risk**
- **Suggestions as to how these indicators should be reported, monitored and assessed**
- **Indicators of reporting quality standards to ensure the contractor is meeting performance requirements**
- **Aspects that should be periodically audited and/or reviewed**
- **The structure of the reporting requirements**

Shareholder Agreement Issues

Governance

- Election of Board of Directors, appointment of officers
- Appointment of advisors
- Voting rights: Majority (50%), super majority (75%) or unanimous decisions (100%)

Accounting / Reporting Obligations

Equity Commitment

- Structure / Timing (LoC, sub-debt)
- Further capital contributions
- Pricing (pre/post income tax, WHT, committed/cash on cash)

Transfers

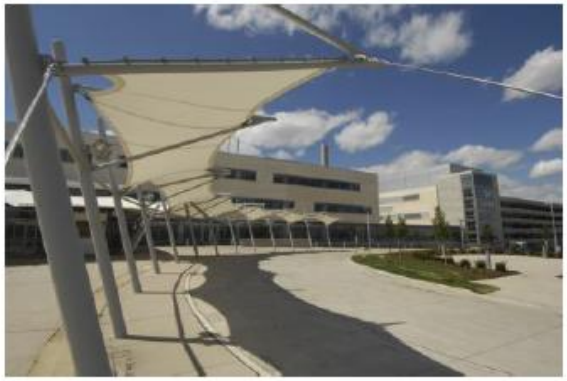
- ROFRs, ROFOs, Tags/Drags
- Approval of new shareholders
- IPO

Minority rights

Shareholder/Supplier Issues

- Administration

- To deliver this…..



Brampton Civic Hospital – Largest PPP hospital in Canada

PROJECT AGREEMENT

- Primary contract between Public and the Private Sector
- Defines project scope, price, timetables, service levels and payment mechanism

DROP-DOWN CONTRACTS

- Construction
- Services

FINANCIAL AGREEMENTS

- Shareholders
- Lenders

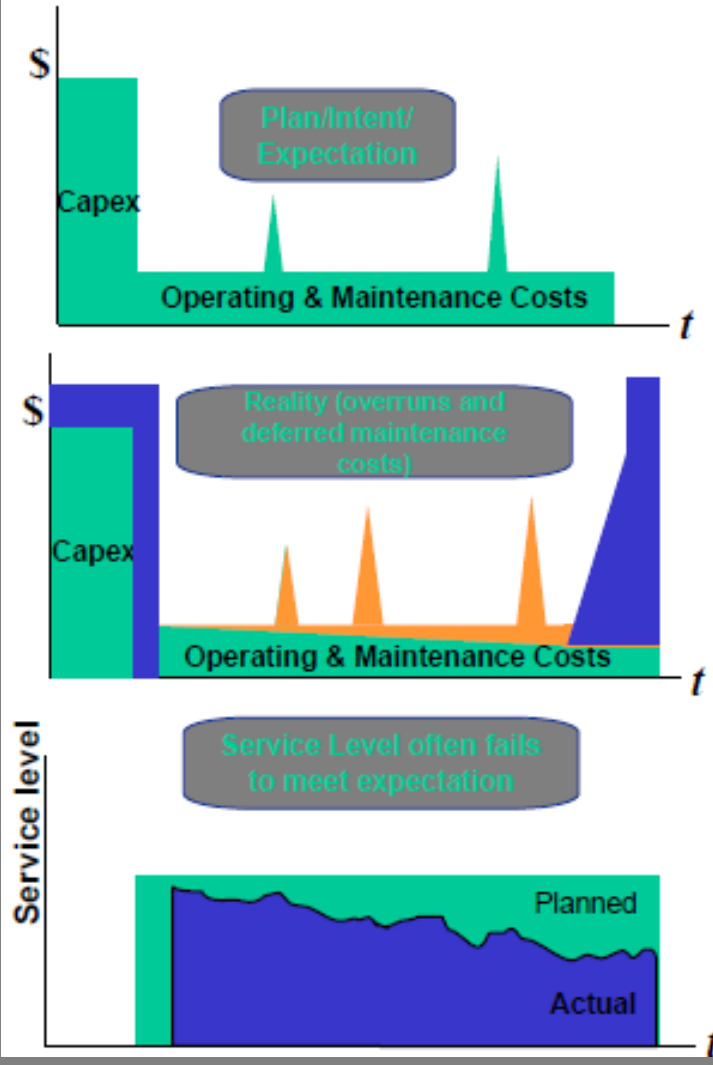
- **Project Agreement:**
  - Primary contract between Public and Private Sector
  - Defines project scope, price, timetable, services levels and payment mechanism
- **Drop-Down Contracts:**
  - Construction
  - Services
- **Financing Agreements:**
  - Shareholder
  - Lenders

You need this!

6-8 feet of legal contracts that define the project scope and risk allocation

Contracts ensure Accountability

Contracts



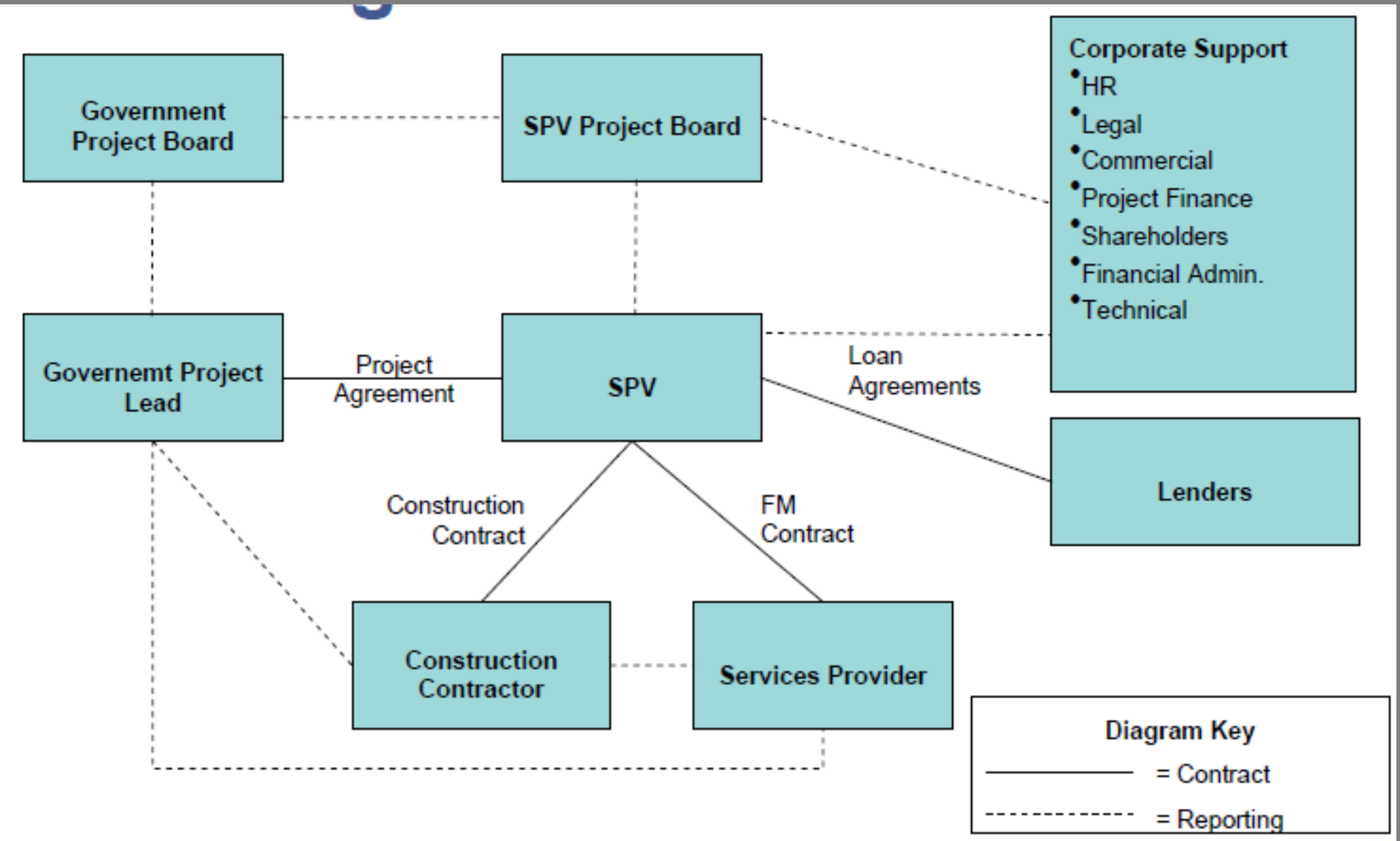
Challenges with Traditional Procurement (No long-term contract)

- Lacking tools and incentives to manage risks:
  - Design risks
  - Construction schedule and cost risks
  - Operating cost risks
  - Maintenance and lifecycle risks
  - Demand risks
  - Technology performance risk
- **PPP contract solves this by defining fixed-price and service level over long-term**

Construction

- Construction Period commences upon Financial Close – funds available to commence.
- Construction Period concludes upon Substantial Completion – Government has accepted that asset is available for use.
- Construction Phase is financed by debt and equity from SPV
- Construction Period is typically 2-5 years.

Management/Governance



Roles and Relationships

- **SPV Roles:**
  - 'Official' Management Contact with Government
  - Contractual Oversight
  - Lender management:
    - Bondholders
    - Banks
    - Rating Agencies
    - LTA
  - Variation Integration:
    - Construction leads, however SPV ensures FM, Equity and lender interests addressed.
  - Payment Processing, including LTA management

Solution Integration - Overall responsibility for ensuring Design-Build-Finance-Maintain scope is delivered according to PA

Roles and Relationships

- **Construction Roles:**
  - Lead Management Contact with Government on Design-Build ("DB") matters
  - Managing design, engineering and other DB consultants
  - Managing all DB subcontractors
  - Ensuring compliance with Design-Build contract, and awareness of broader Project Agreement context to know when to engage SPV (e.g. Variations)
  - Lead Management Contact with Government on Variation enquiries:
    - Need to liaise with SPV & FM to ensure Carillion Services, equity and lender issues addressed
  - Preparation of documentation required for SPV to process payments to Constructor.

Roles and Relationships

- **Services Company Roles:**
  - Lead Management Contact with Government on FM & Lifecycle matters
  - Managing all Services subcontractors
  - Ensuring compliance with FM contract, and awareness of broader Project Agreement context to know when to engage SPV (e.g. Variations)
  - Lead Management Contact with Government on Variation enquiries during Operating Periods:
    - Need to liaise with SPV & Constructor to ensure Constructor, equity and lender issues addressed

Delivering FM & Lifecycle scope to meet Output Specifications

Roles and Relationships

- **SPV Project Board Roles:**
  - Strategy Strategic Contractual Oversight
  - Senior Client Contact
  - Dispute Resolution
  - Equity Risk/Return Management:
    - Third Party
    - Direct

Ensuring Government and Shareholders strategic needs are met

Services

- Services Period commences upon Substantial Completion – Government has accepted that asset is available for use.
- Services Period concludes upon termination of Project Agreement.
- Services are paid monthly through term of contract via Payment Mechanism.
- Services Period is typically 20-30 years.

Services

Hard FM

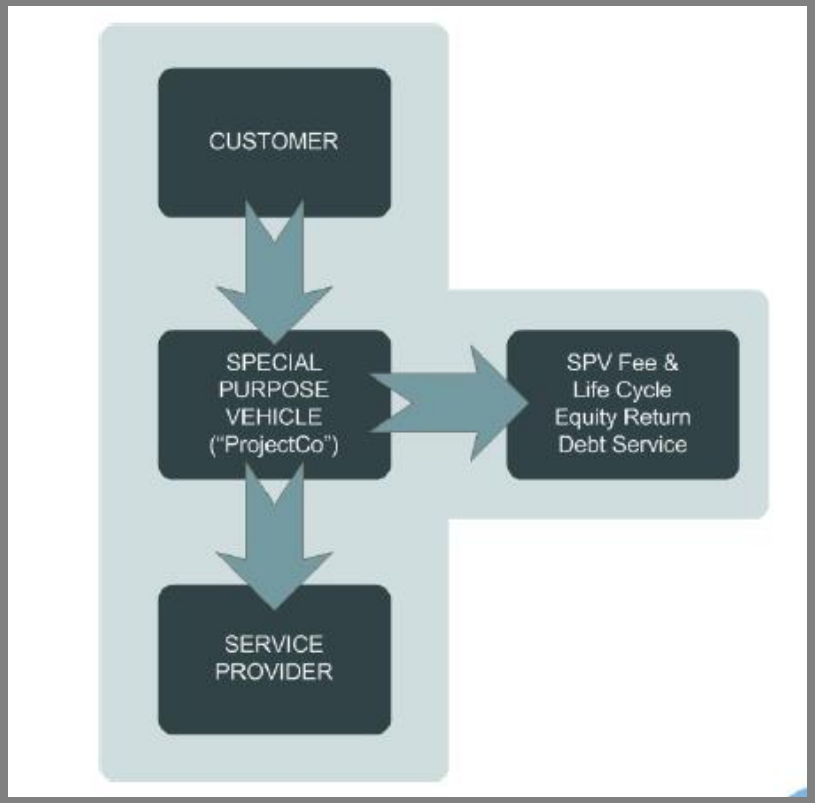
- Building Systems, Facilities and Equipment Maintenance Services
- Plant Management
- Utilities Management
- Life Cycle Renewal
- Property Management
- Environmental Management
- Contract Management
- Grounds Maintenance
- Construction Management

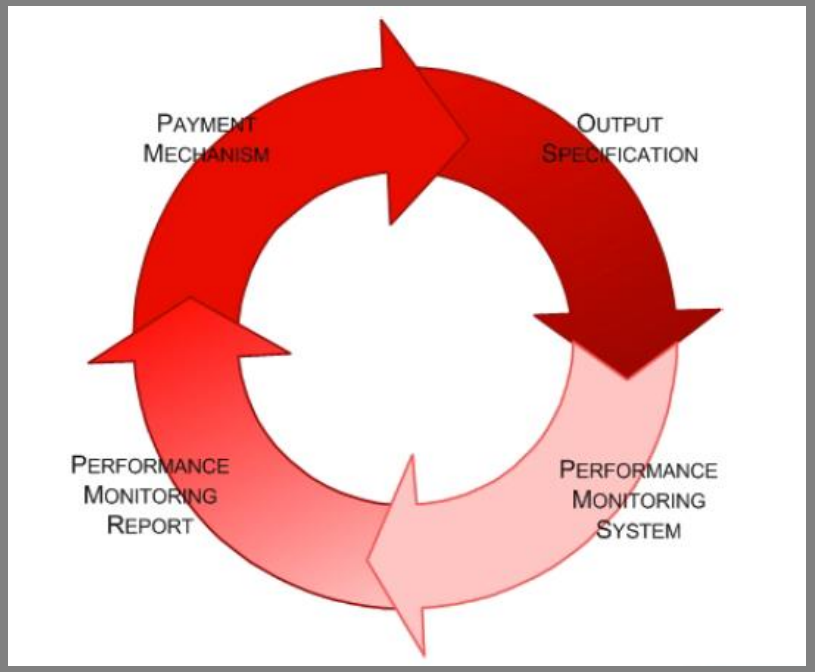
Soft FM

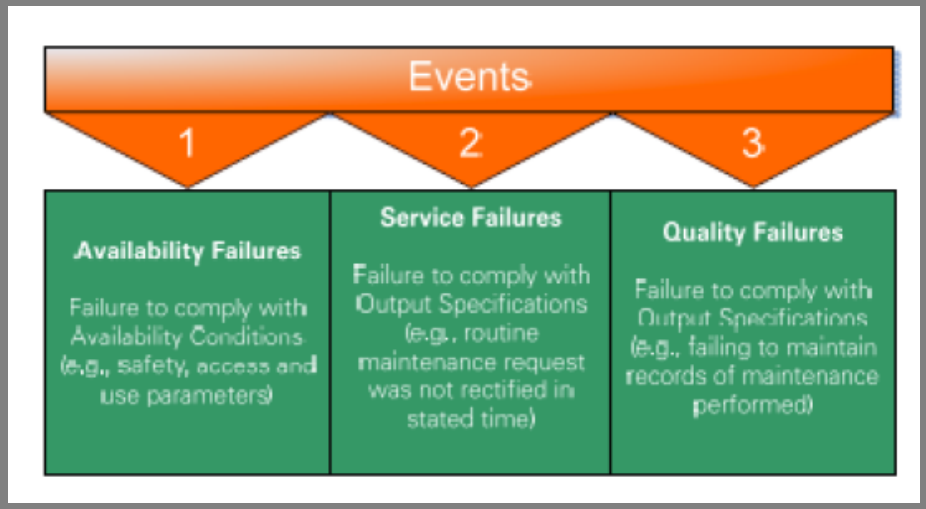
- Food Services
- Housekeeping and Waste
- Security
- Portering Services
- Parking
- Logistics
- Integrated Call Centre
- Life Safety and Emergency Preparedness
- Linen and Laundry
- Information Technology
- Space and Conference Room Management

Services Management Structure

Payment Mechanism







The output specification

The output specification has two elements: accommodation; and service performance standard of the contractor, both in terms of availability and standard of service

- Keeping prisoners in custody, e.g. the number and type of searches to be carried out.
- Maintaining order, control, discipline and a safe environment, e.g. the provision of a system of incentives and earned privileges for prisoners.
- Providing decent conditions and meeting prisoners' needs, e.g. safeguarding prisoners' personal property.
- Providing positive regimes, e.g. provision of education and counselling services.
- Preparing prisoners for their return to the community, e.g. pre-release courses.
- Delivering prison services, e.g. selection and recruitment policies of prison staff and provision of probation and healthcare staff.
- Community relations, e.g. facilitating access to the prison for invited members of the community.

PFI Prisons, NAO, 2003, UK

Performance Measurement System (PMS)

Percentage scale is applied to individual FM service areas. Minimum service standard is required for service provider to be paid in full in each service area is 95%. Developing a robust performance measurement system with appropriate metrics to facilitate the monitoring of service performance is very challenging (NAO, 2003).

- Estates and maintenance, grounds and garden
- Domestic, window cleaning and pest control
- Portering, transport and internal security
- Linen and laundry
- Catering
- Switchboard and telecommunications
- External security
- Car parking

Can penalize for a prisoner escaping, but more difficult to measure how the prison contributes to reducing the likelihood of re-offending

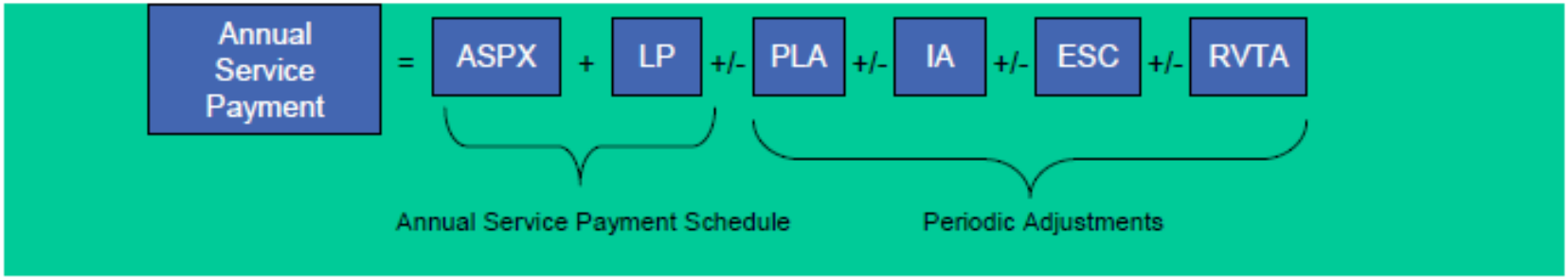
Payment Mechanism

- **The Performance Monitoring Program ("PMP") enables the SPV to monitor its performance on a continuous basis**
- **The PMP enables the Customer to:**

  "Determine whether Project Co has met the Performance Service Standards"

- **The PMP will include:**
  - Records of maintenance
  - Trend logs from the building automation system
  - Response and rectification times
  - Records of any non-conformances against agreed protocols with the Customer
- **PMP drives the Performance Monitoring Report issued to Customer and supports the extent (if any) of payment deductions**

Payment Mechanism



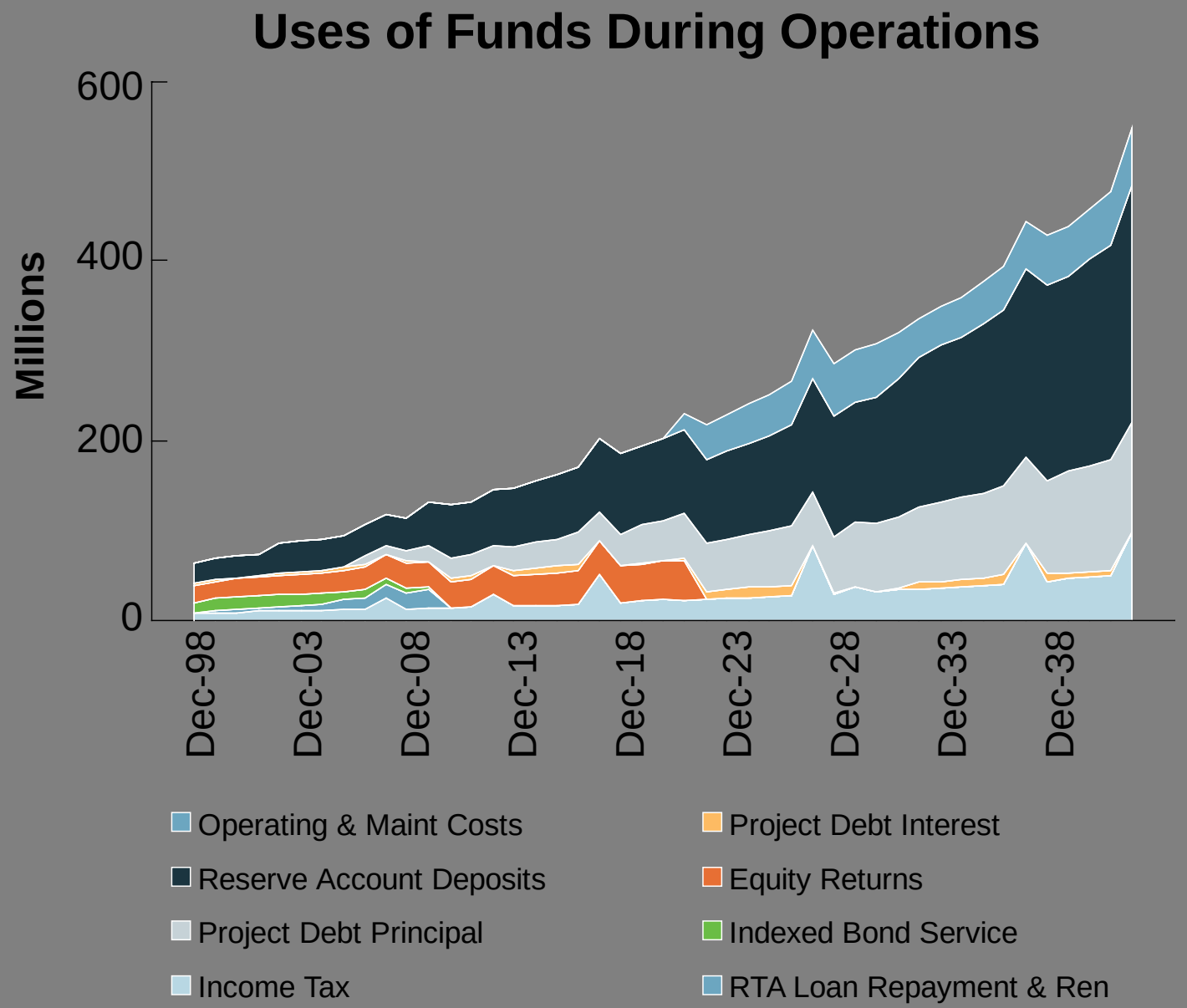
ASPX – Annual Service Payment (fixed amount which includes capital cost, finance, Fees, and service costs)
LP – Lifecycle Payment
PLA – Periodic Labour Adjustment (unionized labour rate adjustment)
IA – Insurance Adjustment (benchmarked insurance)
ESC – Escalator Factor (inflation adjustment)
RVTA – Adjustment for Market Tested Services (an adjustment following market tested services)

Monthly Service Payment = $\frac{\text{Annual Service payment}}{12}$ – Payment deductions ± Energy

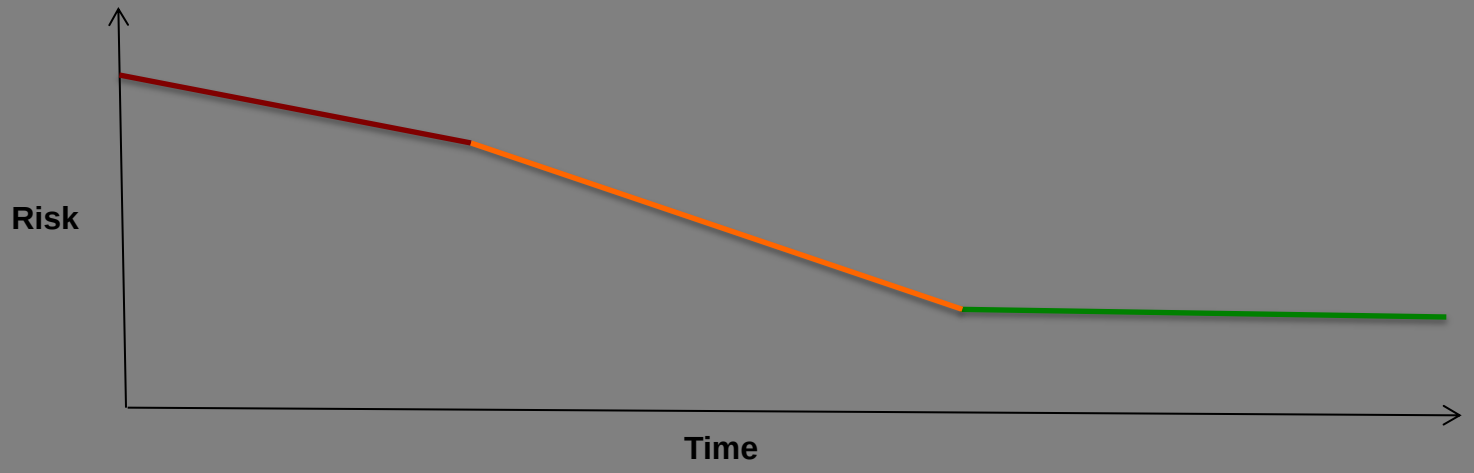
6. Project Finance

The financial structure of PPP projects; funding alternatives, investor profiles, and the criteria investors consider before and during implementation and operation of a project; strategies for financing both debt and equity contributions.

Private sector- cash flow and risk profile

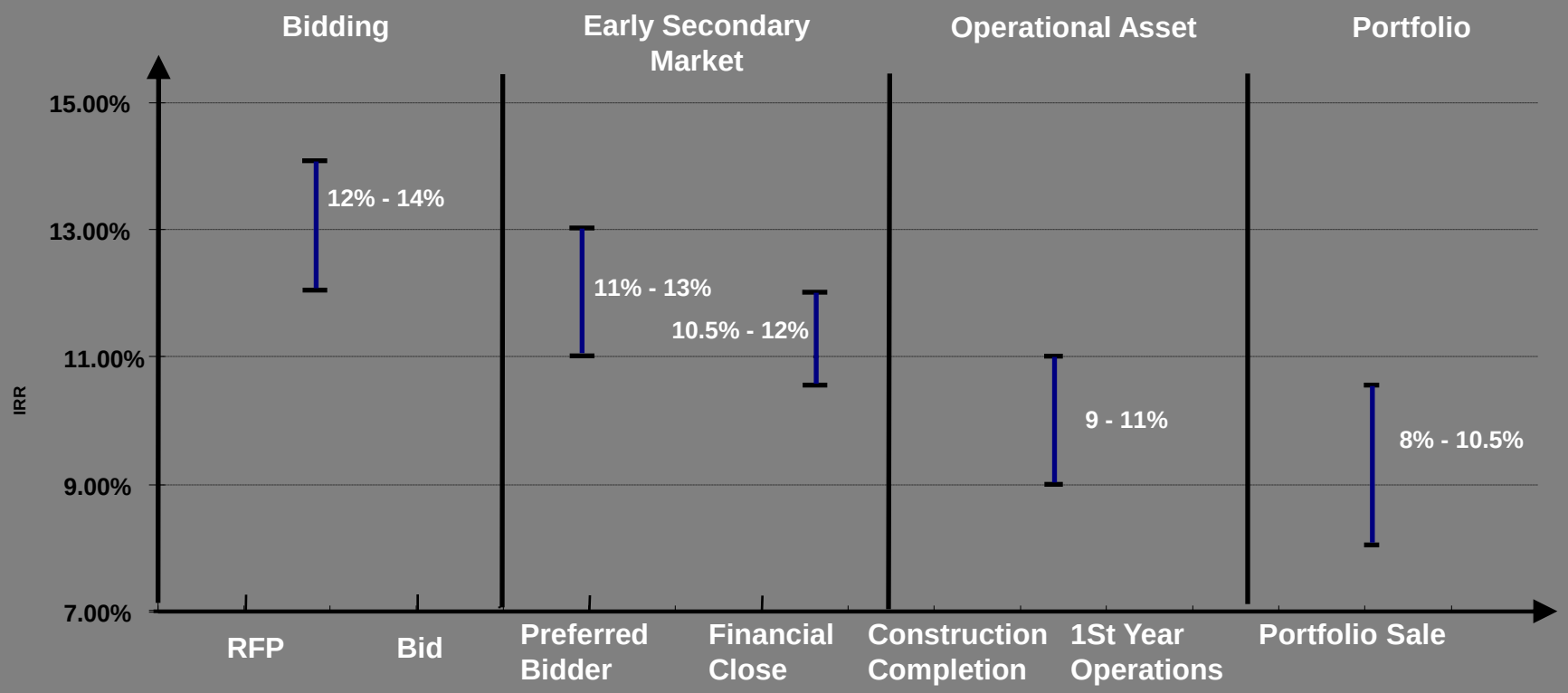


Project Development



- Development period
  - Project conception
  - Economic feasibility
  - Planning and design
  - Contracts negotiated
  - Permits obtained
  - Capital arranged
- Construction period
  - Project construction
  - Capital is drawn to fund costs
  - Project commissioned and ready for commercial operation
- Operation period
  - Project produces operating cash flow
  - Debt receives interest and principal repayments
  - Equity receives residual

Typical Equity Return Profile



What is Project Finance ?

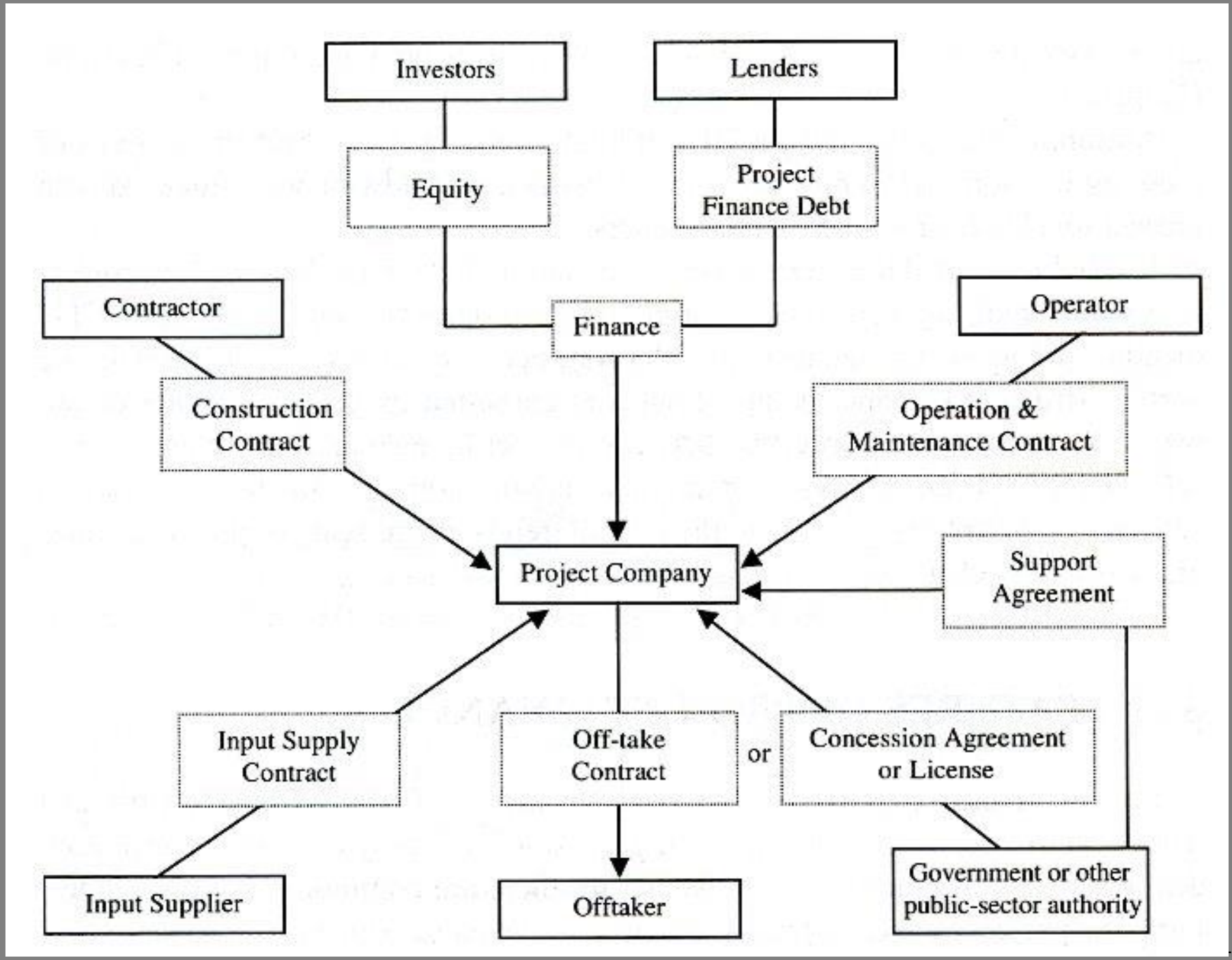
- **Raising funds on *a limited-recourse* or *non-recourse basis* to finance a legally and economically separable investment project in which lenders look primarily to the cash flow of the project as the source of funds to service debt and provide a return to investors.**

- **Growth of Project Finance over the past 20 years largely driven by worldwide process of deregulation of utilities and privatization of public-sector capital investments, in both the developed and developing world**

- **Also promoted by the internationalization of investment in major projects**

Features of Project Finance

- **Provided to a *"ring-fenced"* project which is legally and economically self-contained through an SPV whose sole business is the project.**
- **Usually raised for a project rather than an established business (although Project Finance may be refinanced).**
- **High ratio of debt to equity (leverage), as high as 70%-90% of project costs.**
- ***Non-recourse* – no guarantees from investors.**
- **Lenders rely on future cash flow to repay interest and debt.**
- **Main security for lenders is the project company's contracts, licenses, or ownership rights (assets may not be worth much if sold off).**
- **Project has a finite life (defined term).**


Investors
Lenders
Equity
Project Finance Debt
Contractor
Finance
Operator
Construction Contract
Operation & Maintenance Contract
Project Company
Support Agreement
Input Supply Contract
Off-take Contract
or
Concession Agreement or License
Input Supplier
Offtaker
Government or other public-sector authority

Simplified Project Finance Structure

Project Finance **differs from** ***corporate finance*** **in which money lent against a company and its balance sheet**

Finance involves two basic elements

- **Equity, provided by the main investors.**
- **Project Finance-based debt, provided by one or more lenders.**

TABLE 1-1 Main Differences Between Corporate Financing and Project Financing

Factor	Corporate Financing	Project Financing
Guarantees for financing	Assets of the borrower (already-in-place firms)	Project assets
Effect on financial elasticity	Reduction of financial elasticity for the borrower	No or heavily reduced effect for sponsors
Accounting treatment	On balance sheet	Off-balance sheet (the only effect will be either disbursement to subscribe equity in the SPV or for subordinated loans)
Main variables underlying the granting of financing	Customer relations Solidity of balance sheet Profitability	Future cash flows
Degree of leverage utilizable	Depends on effects on borrower's balance sheet	Depends on cash flows generated by the project (leverage is usually much higher)

Project Finance versus Privatization

Privatization *EITHER*

- **conveys the ownership of public-sector assets to the private sector (debt may be raised corporately), *OR*,**

- **arranges to provide services by a private company that had previously been supplied by the public sector - may not require any financing as no assets involved (outsourcing).**

Project Financing comes into the picture when a private firm requires financing to construct public infrastructure on the basis of a contract or license

Project Finance versus Structured Finance

- **No precise boundary between Project Finance and other types of financing in which a relatively high level of debt is raised to fund a business**

- **Distinctions even more blurred when a project is completed and refinanced**

- **Lenders tend to distinguish between the two based on convenience rather than theory, based on the skills of the lending officer – often assign Project Financing to their structured-finance operations, however, due diligence process much different (risk assignment is very different in the case of assessing risk assignments for a given project)**

Why investors use Project Finance

High leverage – projects are often long-term but do not offer high returns to investors – leverage can increase ROE – debt is therefore cheaper than equity, but this emphasizes the need to be accurate on the level of risk involved.

Benefit of leverage on investors' return

		Low leverage	High leverage
	Project cost	1,000	1,000
(a)	Debt	500	900
(b)	Equity	500	100
(c)	Revenue from project (*p.a.*)	75	75
(d)	Interest rate on debt (*p.a.*)	5%	6%
(e)	Interest payable [(a) × (d)]	25	54
(f)	Profit [(c) – (e)]	50	21
	Return on equity [(f) ÷ (b)]	10%	21%

Characteristics of Project Finance

- "Ring-fenced" project
  - Project undertaken via special purpose entity ("SPE")
  - Establishment of a Project Company ("Project Co") to undertake Project
  - Bankruptcy remote
  - Negative covenants
- "Greenfield" project
  - Typically involves new construction
  - Single asset rather than multiple assets
  - "Brownfield" project finance also exists through refinancing of original capital
- "Non-recourse" financing
  - Lenders seek repayment of debt exclusively from project cash flow and assets
  - No guarantees from equity sponsors
- High "leverage"
  - Debt-to-equity ratio of 1.5:1 (60:40) or greater
- Reliance on forecasted cash flow and contracts
  - Usually no historical cash flow
  - Little reliance on physical assets
  - Revenue provided through off-take agreement
- Project has finite life
  - Project debt repaid during life of the project
  - Term of the off-take or concession agreement
  - Life of oil and gas resource

Requirements for Project Financing

- **Technical feasibility – feasible commercial application on the scale contemplated – capable of output at its design capacity.**
- **Economic viability – ability of the project to operate successfully and generate the cash flow projected – must be sufficiently robust in the face of adversity.**
- **Availability of raw materials and capable management – factors of production must be available in quantities needed for successful operation over the life of the project and secured under long-term contracts (contracts should match the term of the debt) – project must also be capably managed with experienced personnel.**

Advantages of Project Finance

- **Tax benefits – interest is tax deductible, whereas dividends to shareholders are not, also the benefits of accelerated depreciation can accrue to shareholders.**
- **Off-balance sheet financing – a financing structure may allow the investor to keep the debt off of the consolidated balance sheet, but only if the investor is a minority shareholder in the project – however these liabilities could show up as notes to the financial statement.**
- **Borrowing capacity - Project Financing can increase the level of debt that can be borrowed against a project: non-recourse finance raised by the SPV is not normally counted against corporate credit lines – corporate finance may allow an investor to undertake several projects simultaneously.**
- **Risk limitation – project is not normally required to guarantee repayment of the debt – risk limited to amount of equity invested.**

Advantages of Project Finance (continued)

- **Risk spreading/joint ventures-** can spread risk and limit risk to each investor (since the debt is non-recourse) through a JV.
- **Long-term finance** – Project Finance loans typically have longer terms than corporate finance – typically 20 years and longer, but telecommunications are shorter because of the relatively short life of the technology involved.
- **Enhanced credit** – If Off-Taker has a better credit rating than the investor, this may enable debt to be raised for the project on better terms than the investor can access corporately.
- **Equal partnerships** – a Project Finance structure could permit a developer to put together a project with good ideas but limited cash – the structure may require less equity and allow the developer to have an equal partnership.

Disadvantages of Project Financing

- **Complexity of the various contracts.**
- **Indirect credit support – credit support for Project Financing is provided through contractual commitments rather than a *direct* promise to pay – requires a yield premium to compensate for this risk.**
- **Higher transactions costs – reflect the legal costs id designing the project structure and researching project-related tax and legal issues and preparing contacts and documentation.**

Project Finance Tools

- **Net Present Value analysis – must have positive NPV**
- **Capital structure choice – what is the value-maximizing capital structure (mix of equity and debt)**
- **Dividend policy choice – what portion of cash flow is available for distribution as cash dividends to the equity providers**
- **Negotiated debt contracts – crafting of bank loan agreements and bond agreements to suit the project**
- **Fundraising – raising of debt and outside equity by financial advisors**
- **Agency theory – how the principal-agency relationships affect decision-making – through project financial engineering must minimize the agency costs that grow out of these principal-agency relationships**
- **Contingent claims analysis – real options analysis, derivative instruments, swaps and other instruments to hedge risks**
- **Resolving financial distress – restructuring of claims by debt holders**

Project Finance Sectors

Power

- Described by fuel source: gas-fired, coal-fired, hydro, wind, solar, bioenergy
- Utility status of offtakers and presence of power purchase agreements ensure cash flow
- Capital expenditure (capex) and operating expense (opex) efficiencies with gas-fired plants
- Fuel cost and opex efficiencies from renewable power

Transportation infrastructure

- Mass transit, rail, toll roads and airports
- Undertaken through long-term concession agreements of 50+ years (privatization)
- Natural monopoly status, often regulated

Social infrastructure

- Hospitals, prisons, administration buildings, courthouses
- Undertaken through a long-term contract of 20+ years with public sector entity
- Design, build, finance, maintenance services in return for service payment (rent)

Water supply and water treatment

- Water supply and sewage treatment
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Project Finance Sectors

Telecommunications

- Satellite/ broadcast, where pre-leased commitments ensure cash flow
- Fixed line telephones
- Fibre-optic cable services with pre-committed revenue
- Cellular depending on the number of concessions issued in market
- Often found in developing markets resulting in foreign exchange (FX) risk

Natural resource mining (oil, gas, metals)

- Upstream (production from ground) where income is in US$
- Production payment financing based on reserve estimation (proven reserves)
- This is a form of commodity lending

Pipelines

- Gas and oil pipelines with monopoly status
- Capacity contracts with oil and gas marketing firms

Role of Leverage in Project Finance

- "Leverage" or "gearing" is the ratio of debt to total capital
- Other measurement of leverage is the debt-to-equity ratio
- Primary role of debt:
  - Increase return to equity
  - Provide more competitive pricing for Project Co's output or service
- Debt is cheaper than equity because lenders accept lower return due to lower risk
- Lower risk because lenders rank in priority to equity in respect of project assets, including cash flow
- Infrastructure and power projects do not have an inherently high return, i.e., project WACC and leverage is used to enhance equity returns
- With leverage comes risk, as payment of debt service is not negotiable
- Lenders have contractual rights, including foreclosure
- Developers must find the right balance of risk and reward when using debt
- Use of leverage is very industry specific
- Project financiers are experts at determining the optimal balance of risk and reward when using leverage

Project Finance Markets

Equity Capital

- Represents the margin of safety for debt providers by providing a financial cushion between operating cash flow and debt service
- Provides lenders the comfort that investors that cannot easily walk away and will see project through to successful conclusion
- Equity providers receive the free, or residual, cash flow of the project
- Developers are usually equity providers (but not always)
- Equity providers include:
  - Equity fund managers, i.e., Fengate, Innisfree, KKR, GIP, Archlight
  - Pension funds, i.e., CPP, OMERS, OTTP, CDPQ
  - Industry sponsors, i.e., EllisDon, Carillion, OPG, Enbridge, GE Capital

Mezzanine debt

- Further leverage of equity cash flow
- Long-term, fixed-rate investment with an interest rate
- Mezzanine debt providers include:
  - Specialty fund managers
  - Life insurance companies and pension plans

Project Finance Markets (Continued)

Debt Capital

Bank Loans

- Commercial banks are largest providers of project finance at circa 80% of volume
- Multi-laterals and export development banks are also providers of bank loans
- Majority projects have a credit profile of “BBB” and “BB” and banks are best at pricing low investment grade/ high non-investment grade debt
- Construction loans, term loans and working capital loans documented through a credit agreement
- Ideal for greenfield projects and acquisition finance due to flexible nature of bank loans
- Highly flexible, natural floating rate, terms of 2 to 15 years

Bonds

- Institutional investors are largest purchasers of project finance bonds, such as, life insurance companies, pension funds, university endowments – fits well with their investment mandates and timeframes
- Usually private placements (but also possible through a public offering)
- Bonds are typically investment grade credit profile in range of “A” to “BBB”
- Commonly used in refinancing of term loans and acquisition finance
- Documented through a trust indenture or note purchase agreement and intended to be a tradable instrument
- Not very flexible, natural fixed rate, terms of 10 to 40 years

Equity Providers & Products

There are generally two types of equity products:

1) Ordinary Shares
- **Receive "dividend" distributions**

2) Shareholder subordinated loan
- **Issued in conjunction with shares**
- **Equity distributions are made by way of interest and principal payments**

- **Equity providers will receive distributions during the O&M phase**
- **Equity distribution conditions (to be negotiated with debt providers):**
  - **No equity payments before final construction completion**
  - **No Events of Default or Step-in-Events subsisting**
  - **No drawdown on debt service reserve accounts**
  - **All SPV bank accounts fully funded**
  - **All other higher ranking payments in cash flow waterfall have been paid in full**
  - **Potential min DSCR lock-up**

Financial Structuring – The Financial Model

Model inputs and outputs

1. **Macro-economic assumptions – background assumptions that affect long-term interest rates and inflation (CPI)**

2. **Capital expenditures – (*CAPEX* budget) includes costs during bidding, development and construction phases (hard and soft costs), advisory fees, and administration.**

- **Biding and Development Costs (pre-Financial Close costs) – normally reimbursed at time of Financial Close, if within budget – over budget costs may be assigned against equity.**
- **Development Fees - cover up-front costs and make a profit.**
- **Project Company Costs – costs after Financial Close such as staff and admin, continuing advisory costs, construction phase insurance.**
- **Construction Subcontract Price – normally a fixed-price "turnkey" arrangement, plus applicable taxes (VAT, HST)**
- **Working Capital – sufficient to make up the difference between payment of the Project Companies *OPEX* and receipt of revenues in cash.**
- **Reserve Account – normally funded as part of *CAPEX* rather than from operating cash flows**
- **Interest during Construction and Funding Drawdown**
- **Contingency - to cover unexpected events**

3. Operating and Maintenance Costs (*OPEX*)

- Project Companies own direct costs
- Subcontract payments
- Insurance
- Taxation

4. Revenues

Revenues

- **Financial model must first identify the cash flow components of the project and determine the difference between inflows and outflows *before* taking financial items into account (principal, interest, reserve account contributions and dividends to sponsors**

- **Difference is called *Operating Cash Flow* (waterfall structure in Figure 5.1)**

- **Weight of each category of items will differ depending on the project's current phase – at the outset CAPEX is considerable but drops to zero when operations underway**

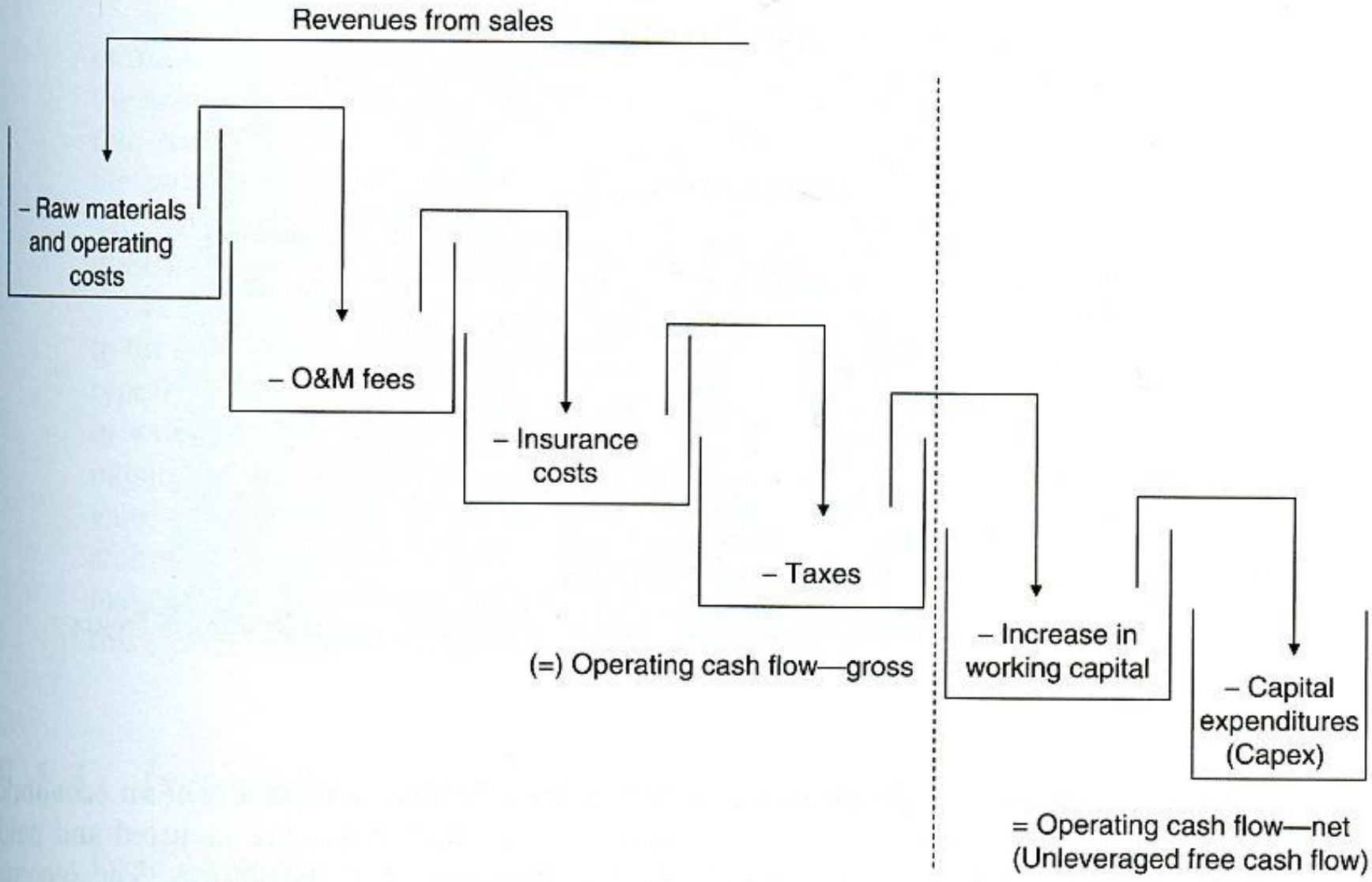

FIGURE 5-1 Waterfall Structure of the Operating Cash Flow

Dynamics of operating cash flows

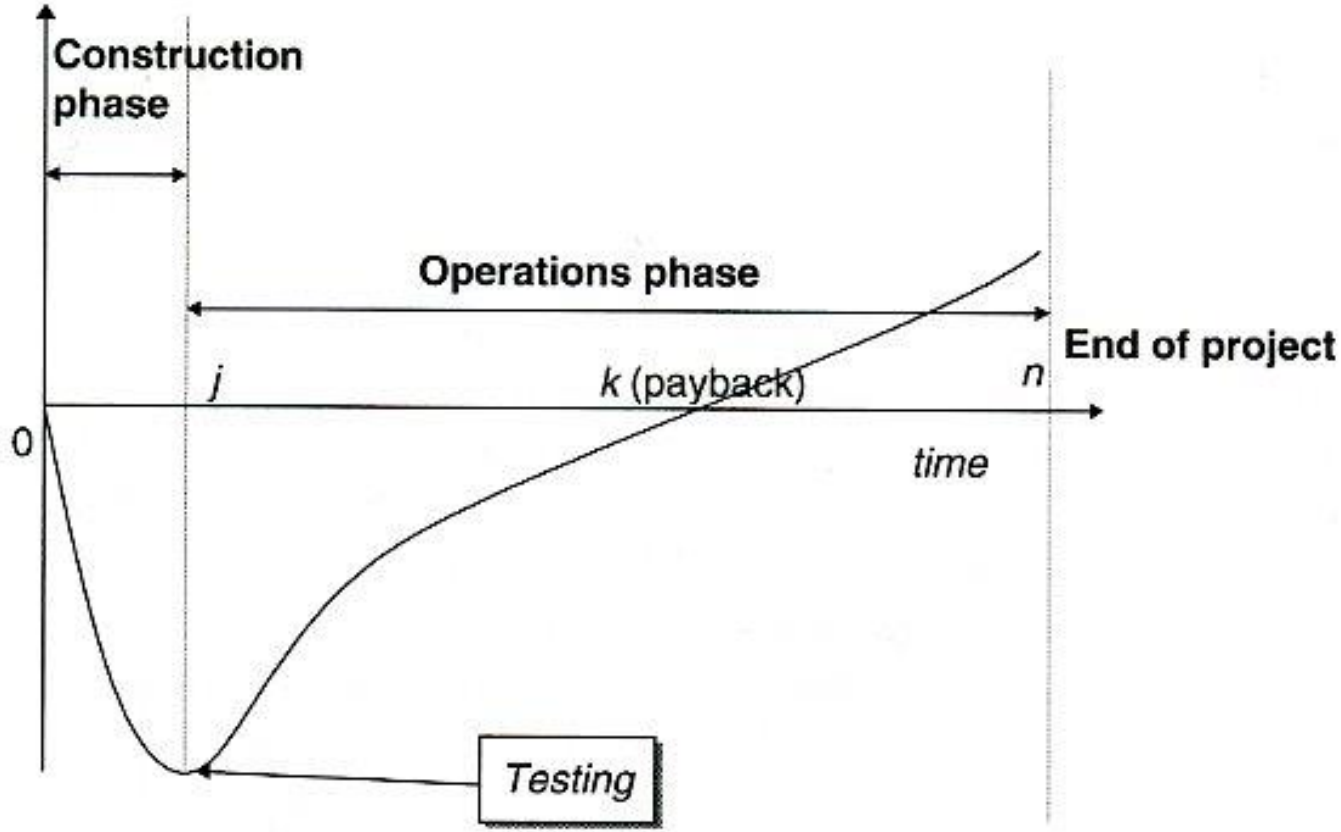

FIGURE 5-2 The Dynamic of Cumulative Operating Cash Flows for an Investment Project

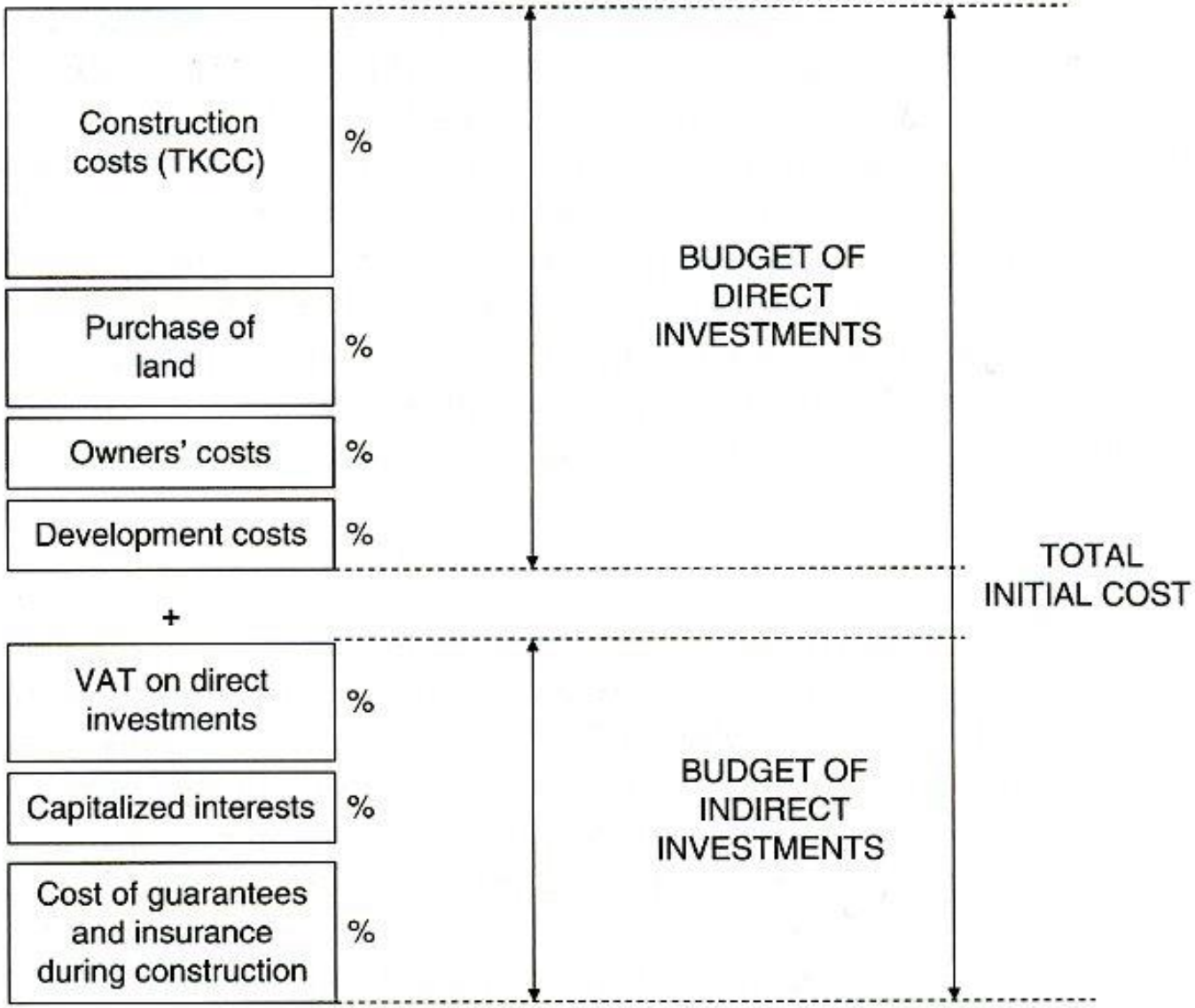

FIGURE 5-3 Items Included in the Construction Cost

Figure 5.3 shows the logic behind the capital budgeting of the initial investment cost of a project finance initiative

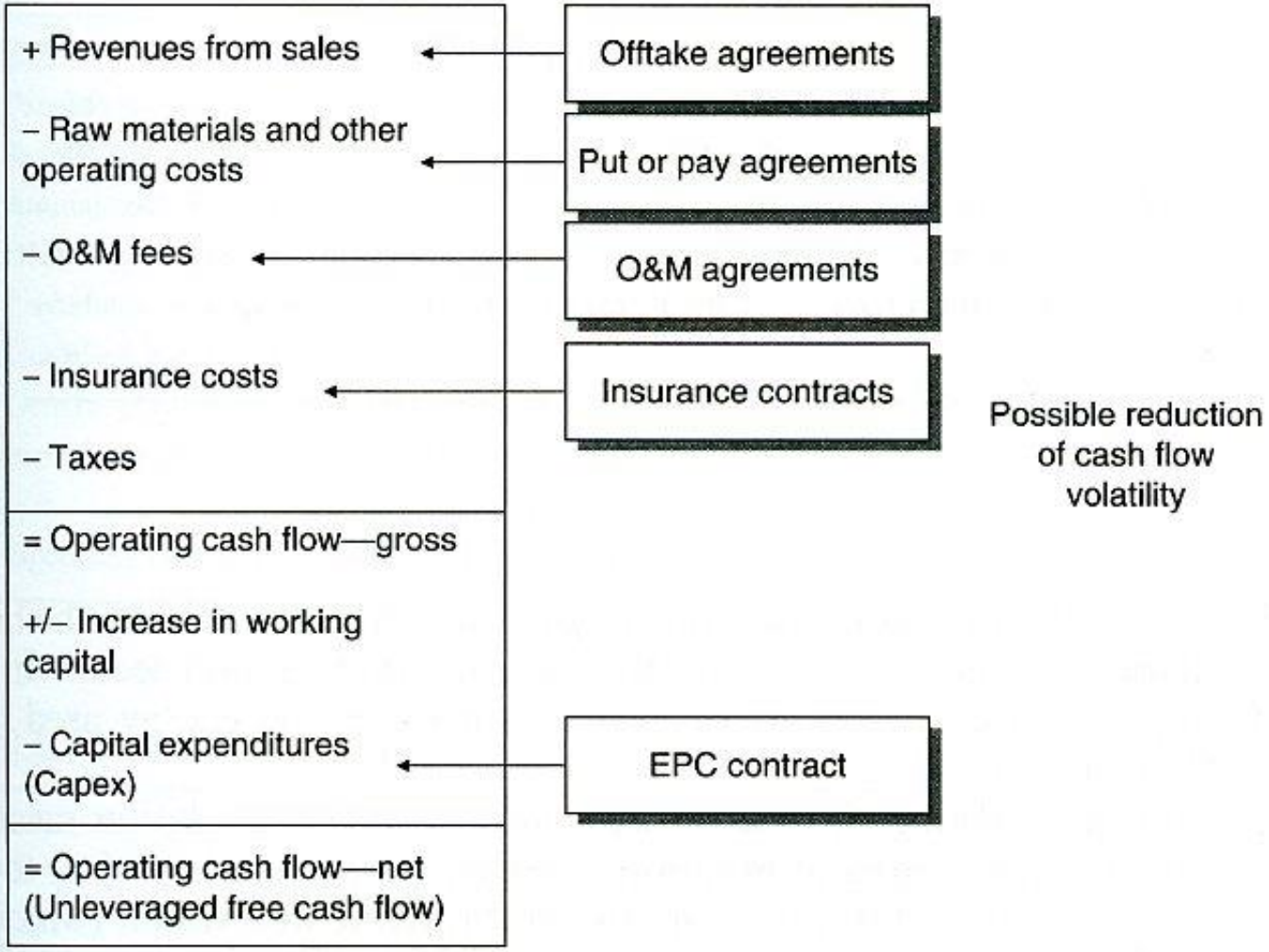

FIGURE 5-4 Operating Cash Flows and Contractual Agreements

Figure 5.4 indicates operating cash flows along with the major forms of coverage for project risk

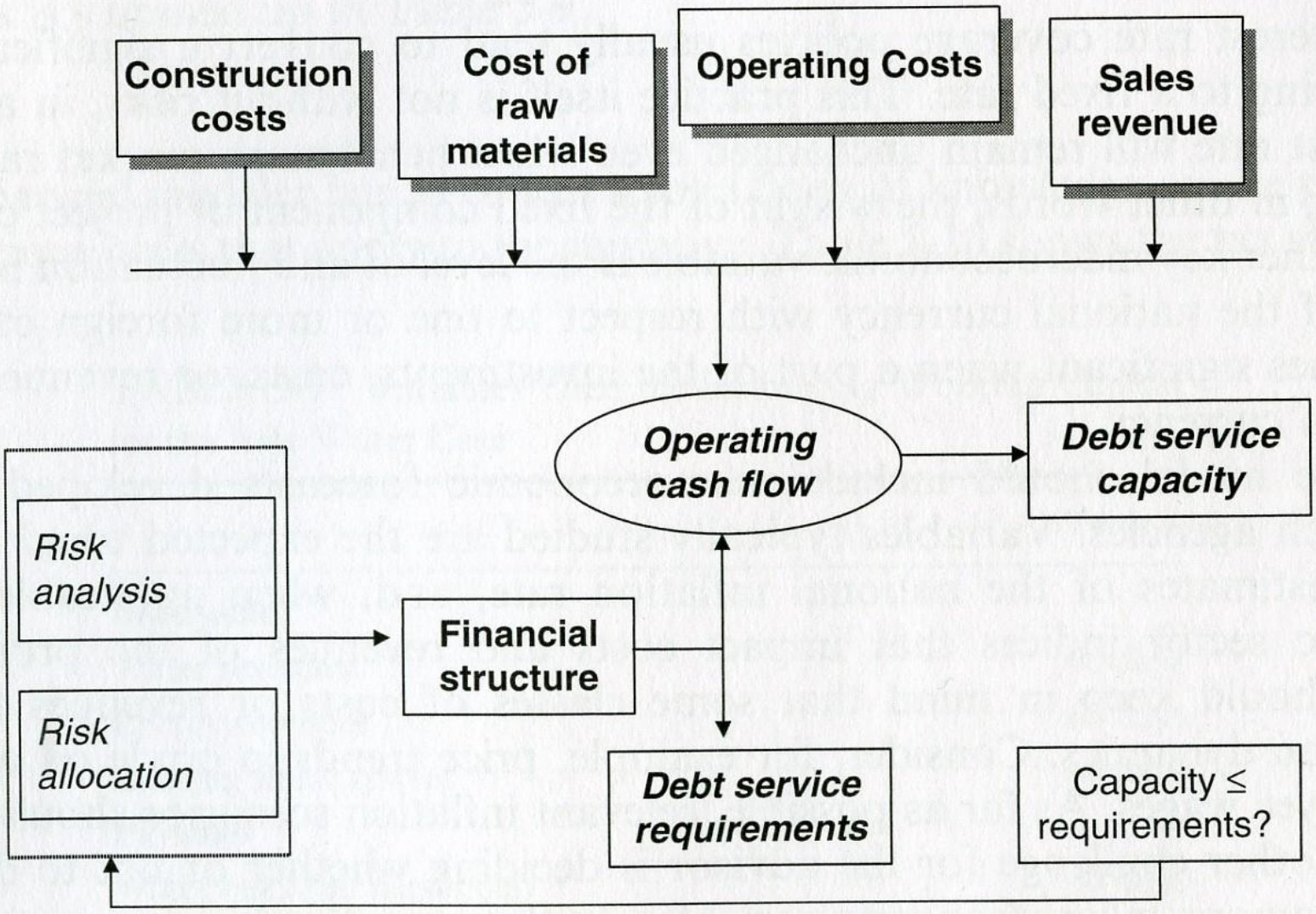

FIGURE 5-5 Process for Defining a Project's Capital Structure

Process for Defining a Project's Capital Structure

The two factors for setting up an optimal capital structure are at the center Figure 5.5 – operating cash flows during the operating life represents cash available for debt service, while the financial structure and assumptions regarding the loan repayment define the cash requirement.

During construction operating cash flows are negative financial arrangements must be covered by both share capital from sponsors, and bank loans

During operations, cash flow becomes positive and must support debt service, maintain a reserve account, and reimburse investors

If residual flows remain then they are made available to sponsors as dividends, see waterfall structure of operating cash flows, Figure 5.6.

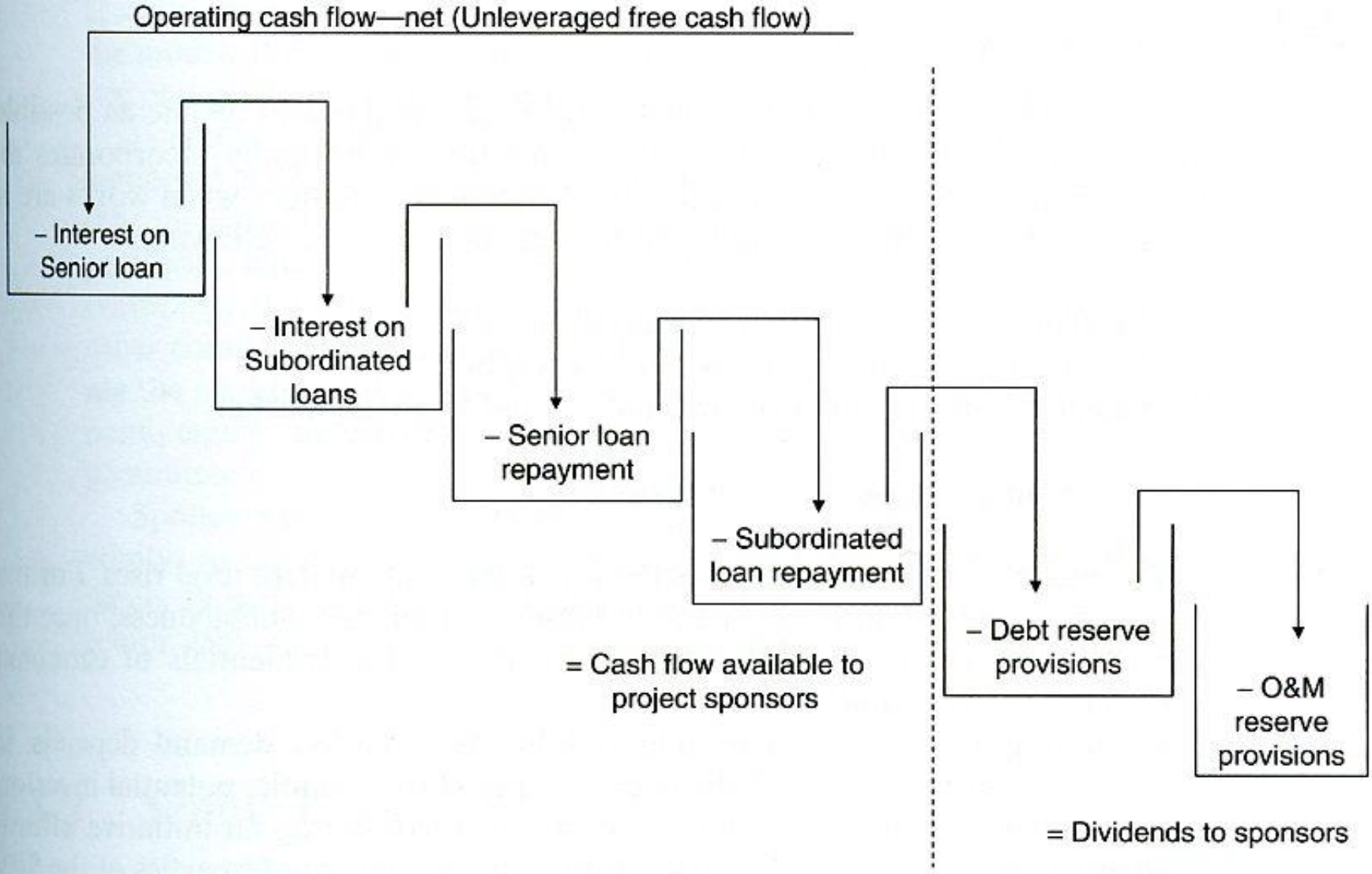

FIGURE 5-6 Waterfall Structure of the Possible Uses of Operating Cash Flows During Operations

Project Finance Sectors

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Project Finance Sectors (continued)

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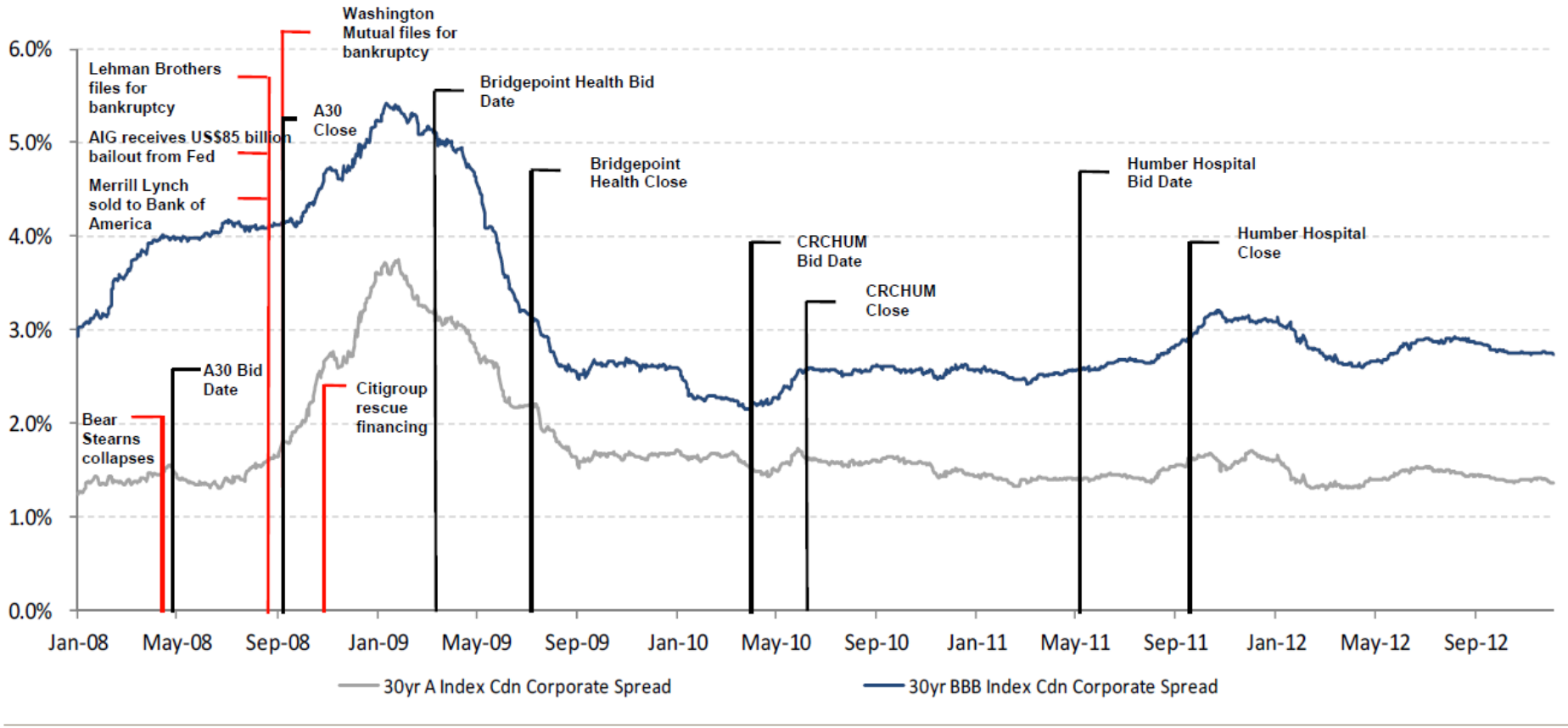
Pipelines

- Gas and oil pipelines with monopoly status
- Capacity contracts with oil and gas marketing firms

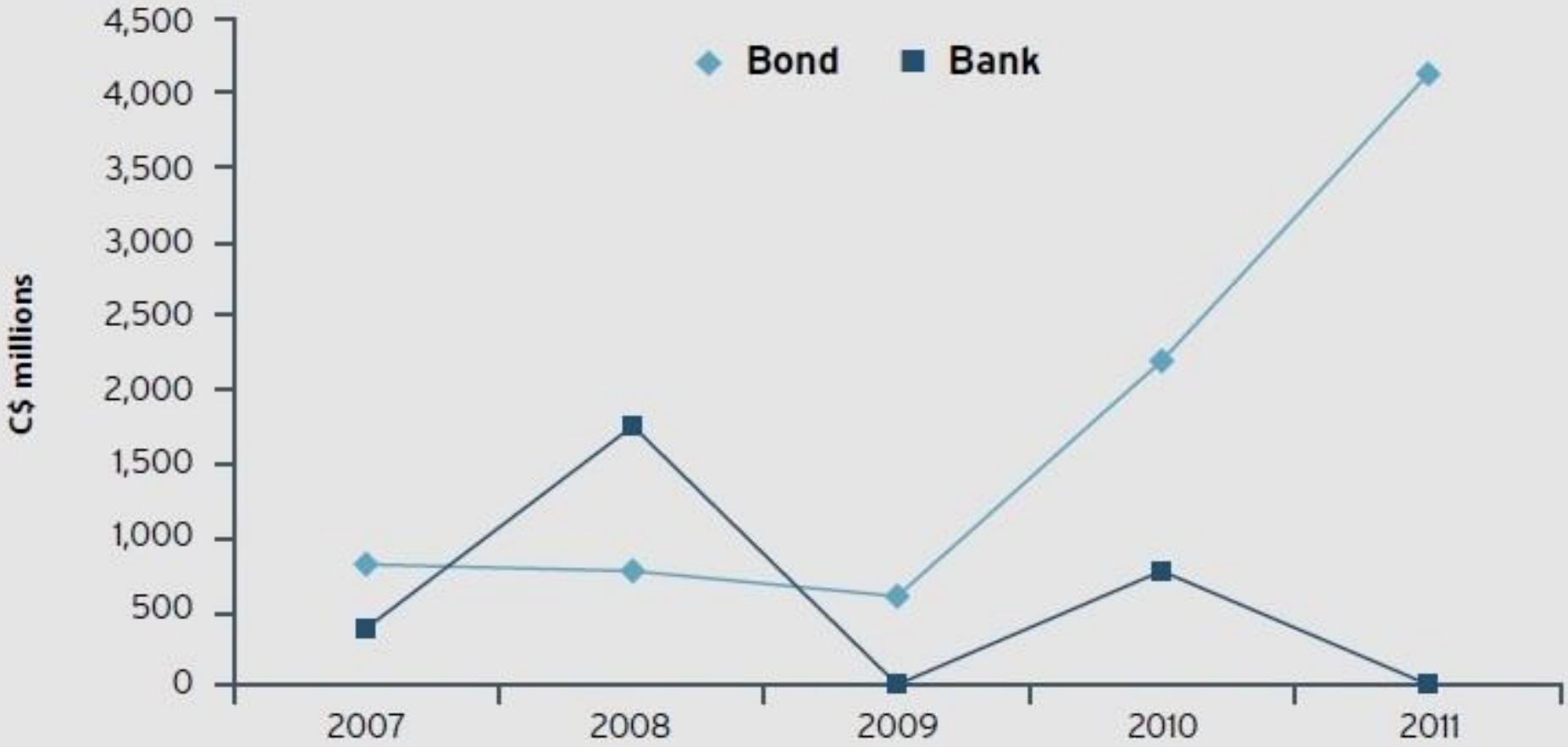
7. Infrastructure as an Asset Class

Bond market for PPPs in Canada



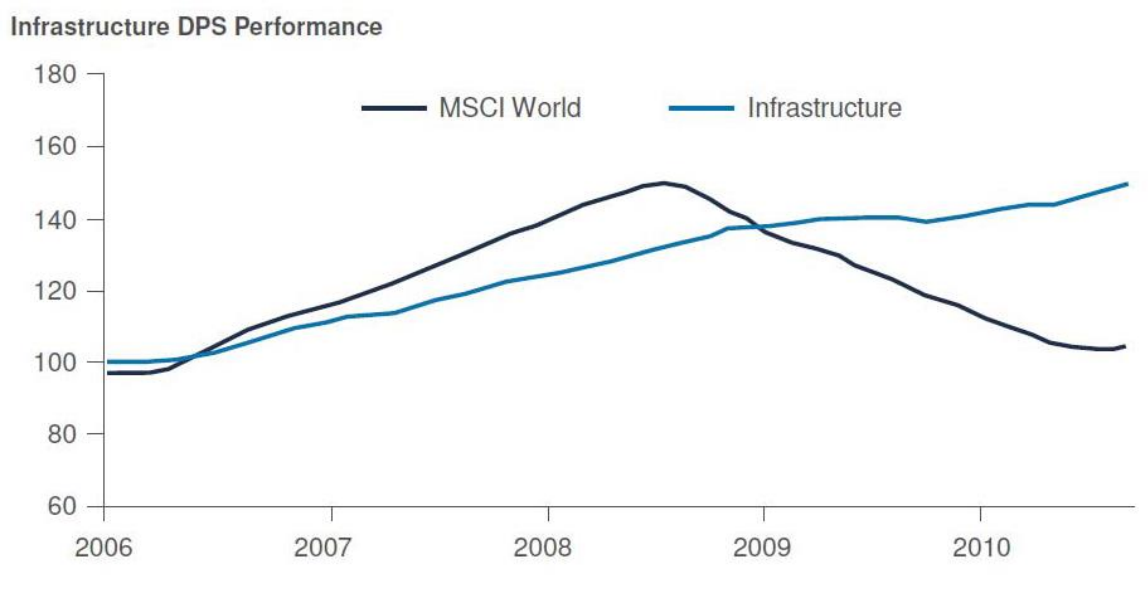
RBC Capital Markets

Long-Term PPP Debt Financing



Source: PPP Canada

Infrastructure - dividends/share (DPS) performance

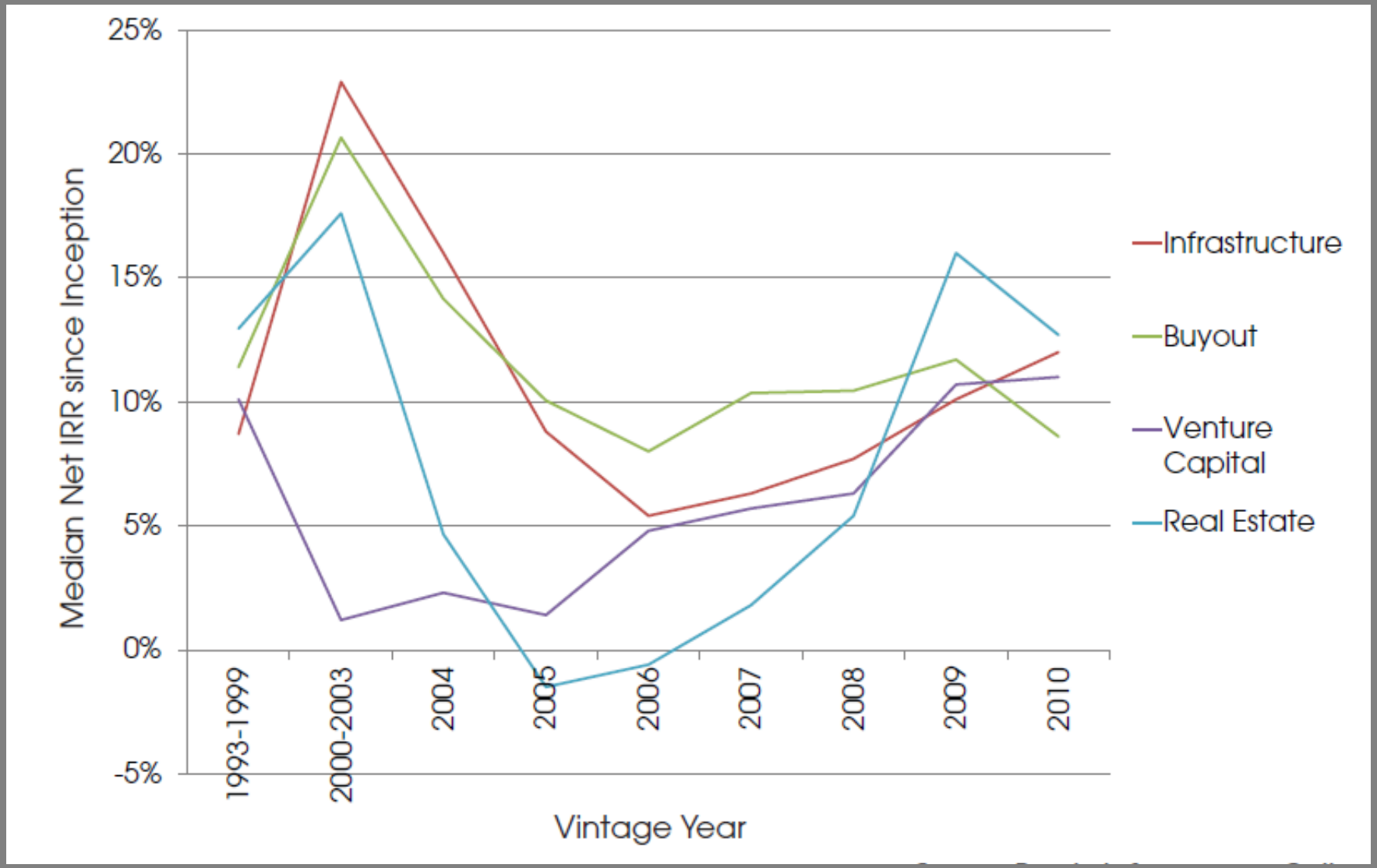


Resilience in uncertain times

During the continuing economic uncertainty, infrastructure has been one of the few asset classes that has performed in line with expectations. In many respects, infrastructure is in better shape to face an uncertain future than before the 2008 global financial crisis. This crisis played a valuable role in encouraging investors to de-lever and strengthen the balance sheets of privately held infrastructure assets. The result is that both listed and unlisted infrastructure are entering the calendar year 2012 in relatively good health.

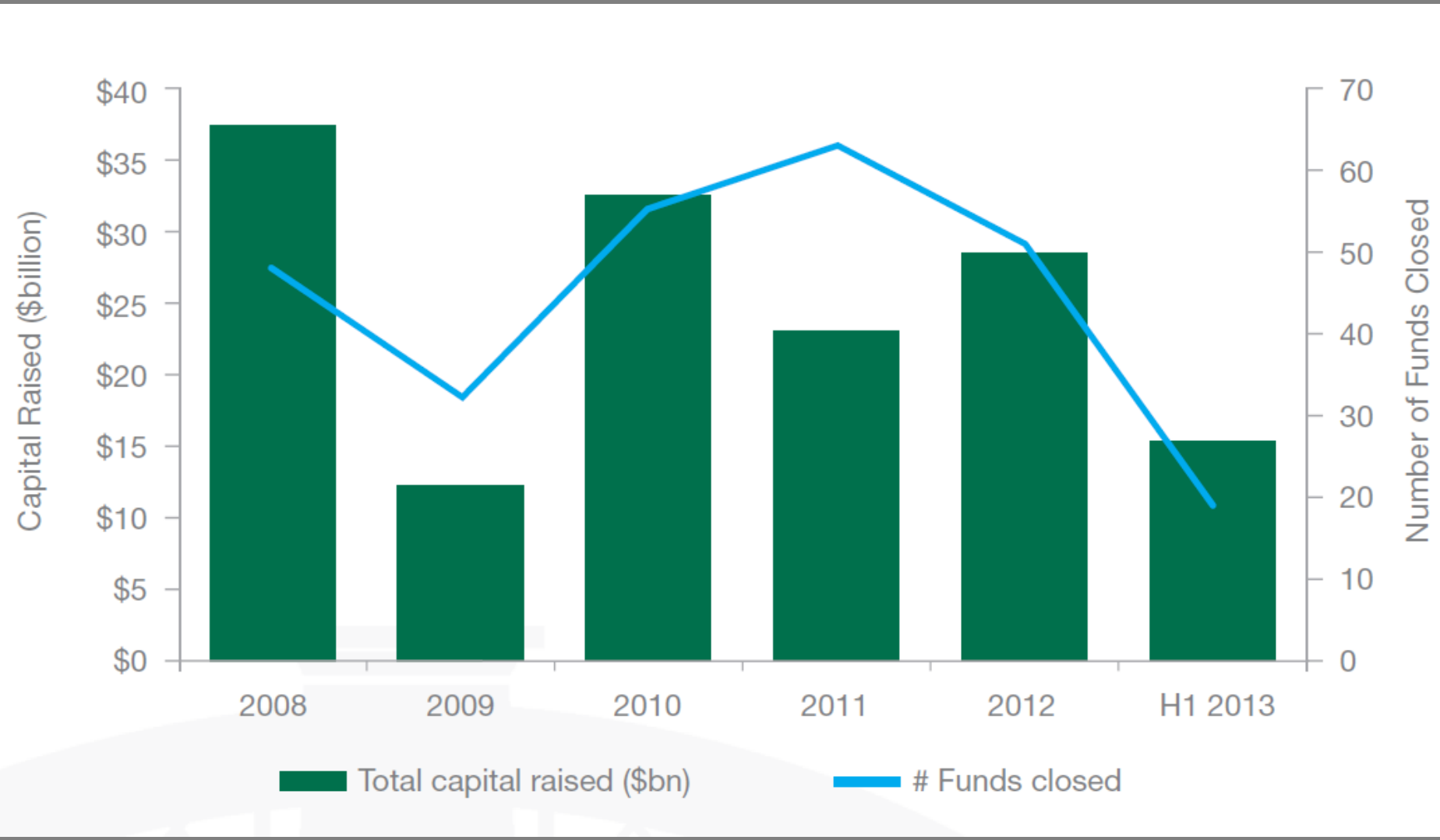
Infrastructure has continued to deliver secure and stable cash flows, as can be seen from the following graph comparing the growth of dividends per share of listed infrastructure versus broader equity markets.

Infrastructure vs other private equity strategies – median net IRR by vintage year



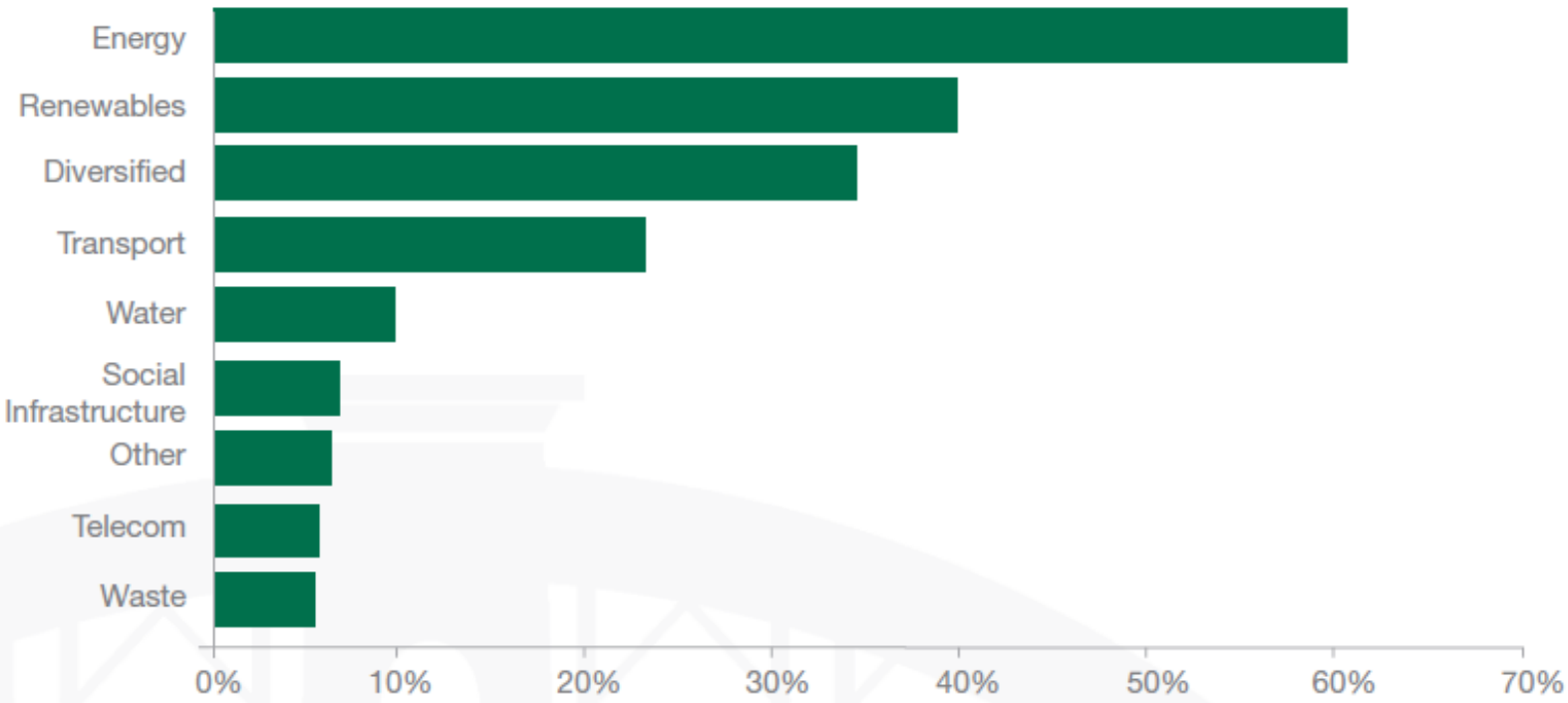
Pregin Infrastructure online, 2013

Global infrastructure fundraising 2008-2013 YTD



Infrastructure Investor Half-Year Review, 2013

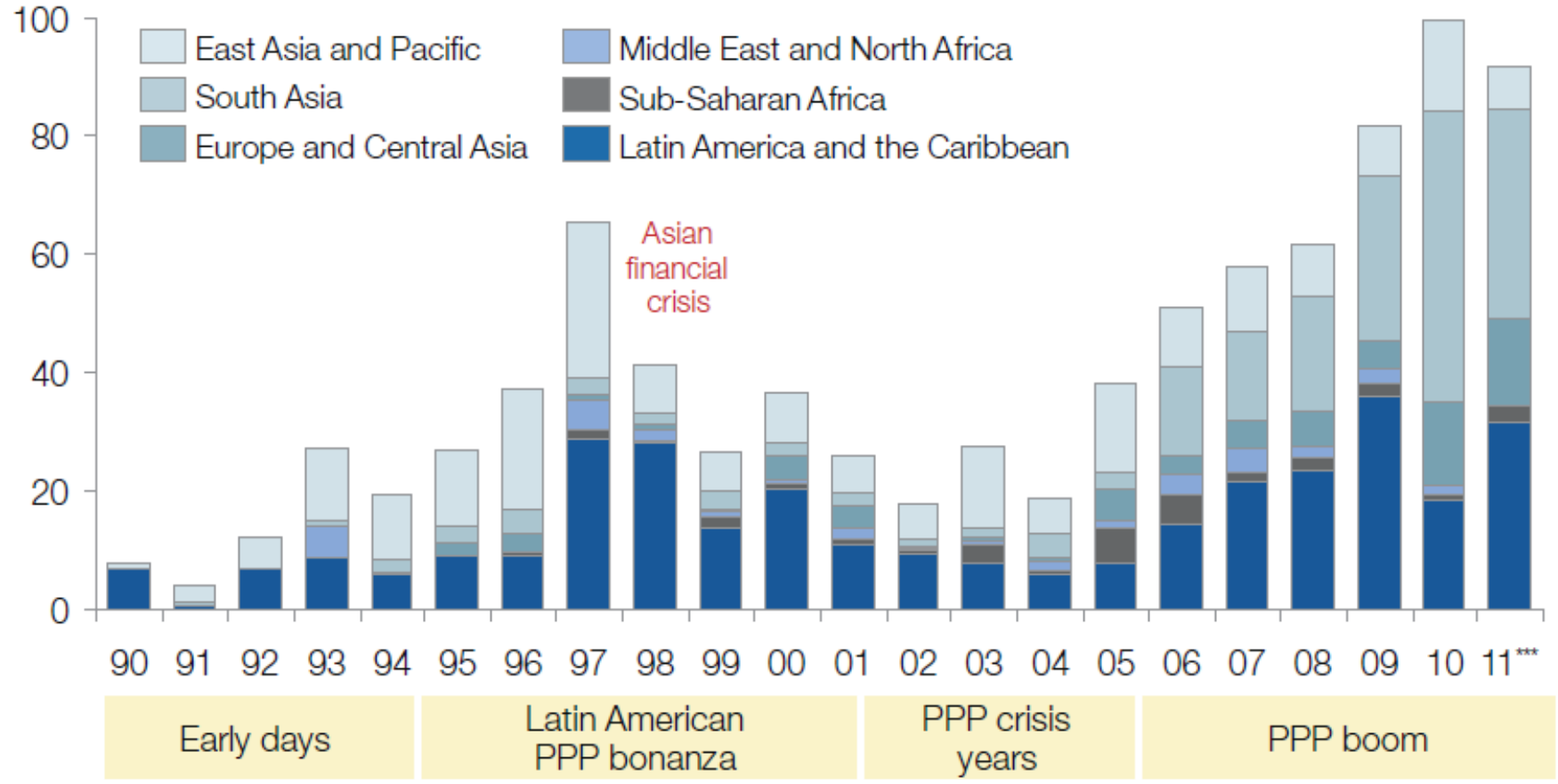
Funds in market by sector



There are more funds in market targeting energy and renewable investments than any other sectors, representing 57.5% and 40.9% of all funds respectively. 34.3% of the funds deploy diversified strategies or have no sector preference. Transport is the third most preferred industry in the market, with approximately one-quarter of funds listing it as a focus for investment.

Infrastructure Investor Half-Year Review, 2013

Total PPP investment commitments in current $US billion in low/middle income countries

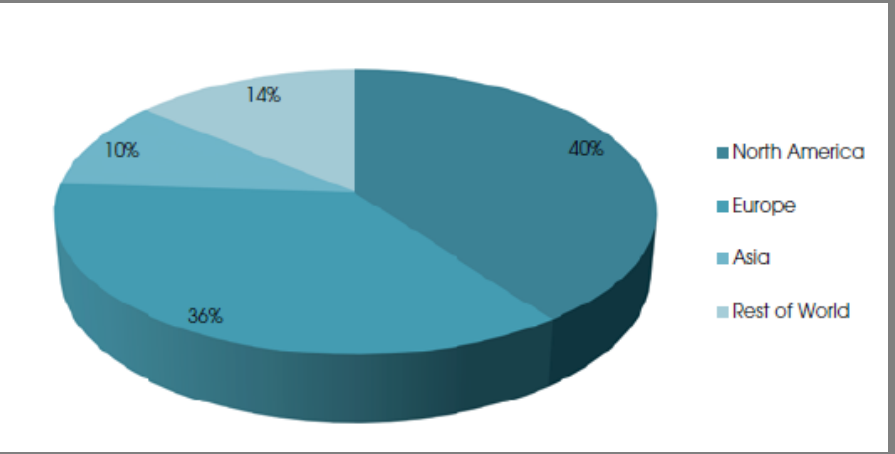


* This includes management and lease contracts, concessions (or management & operation contracts with major private capital commitments), and greenfield projects (excl. merchant contracts), but excludes divestitures/privatizations. ** Following the World Bank definition *** Data as of December 2012. Sometimes projects are included in the database later, hence 2011 figures may be downward biased.

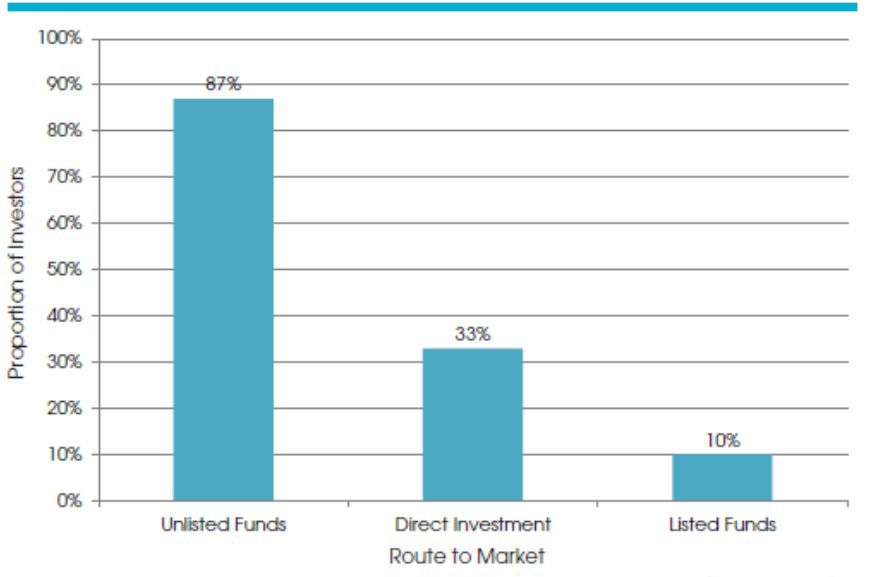
Source: The World Bank and Public-Private Infrastructure Advisory Facility (PPIAF). Private Participation in Infrastructure Database, 2012. http://ppi.worldbank.org/index.aspx.

Private sector pension funds are the most prominent type of investor active in the infrastructure asset class, representing 18% of the total universe. The various different types of pension fund, including superannuation schemes, account for 38% of all investors active in the space. Insurance companies represent 10% of the infrastructure investor universe, while foundations (8%) and asset managers (7%) are also prominent players. North America and Europe are home to 76% of active infrastructure investors, with 10% based in Asia and 14% located outside these core regions.

A significant 74% of institutional investors have less than 5% of total assets invested in infrastructure, while almost half (49%) of investors have a target allocation of above 5%. This demonstrates that many investors have capital available to invest in infrastructure opportunities going forward. Unlisted funds remain the primary route to market for the majority of investors, with 87% favouring this route.



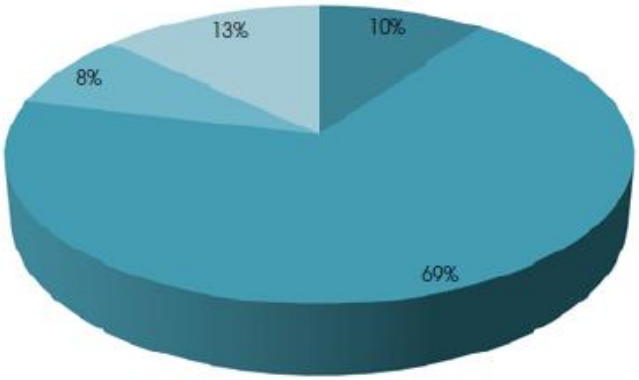
Breakdown of investor universe by investor location

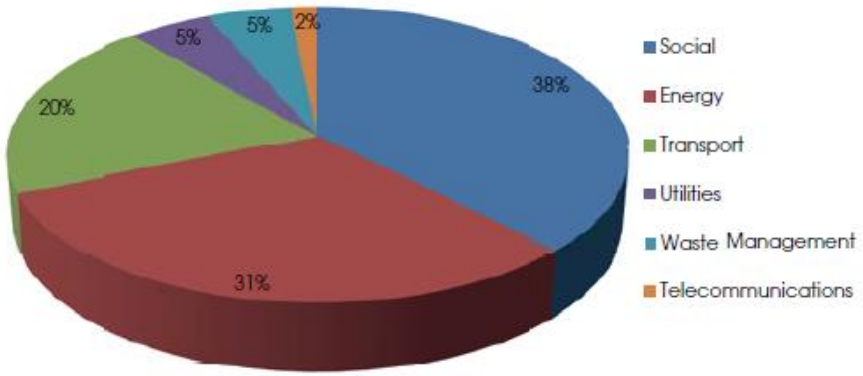


Infrastructure investors preferred route to market

Private sector pension funds

Pregin Infrastructure online, 2013





Breakdown of infrastructure deals by region, Q2, 2013

Breakdown of infrastructure deals by industry, Q2, 2013

Pregin Infrastructure online, 2013

8. Issues and Challenges

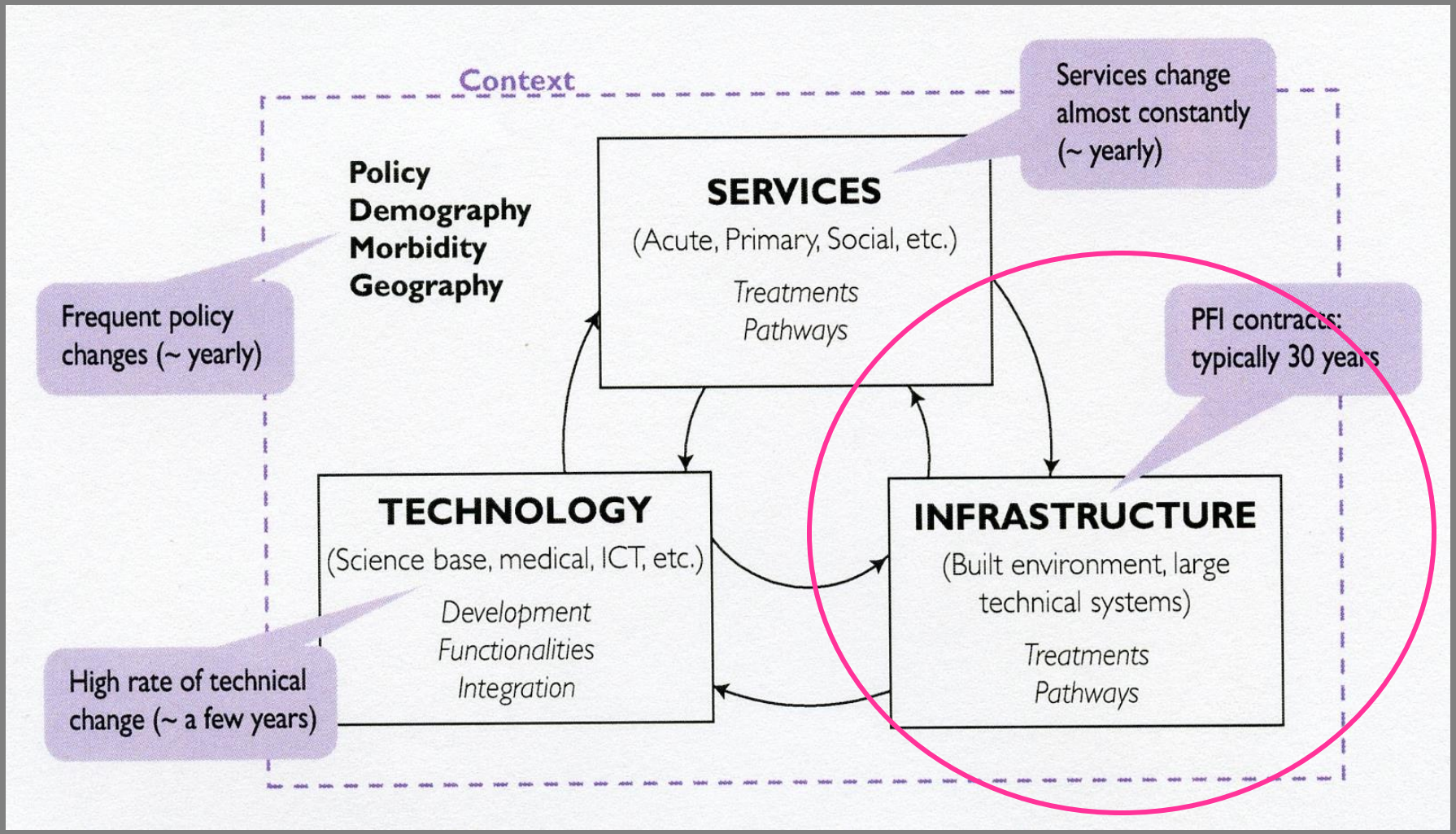
Issues in Public Private Partnership

- **Is the fully integrated or 'bundled' PPP structure an efficient solution?**
- **Can PPPs be good value for money when the government can always borrow more cheaply than the private sector?**
- **What is the basis of the "value-for-money" test used for implementing PPPs?**
- **Should the discount rate used for value-for-money tests be a risk-adjusted rate or a riskless rate?**
- **Does the available evidence suggest that PPPs have delivered value for money?**
- **How is uncertainty to be handled?**
- **In what ways should PPPs be accounted for?**
- **Can PPPs adequately provide for the public interest?**
- **What factors make for a successful PPP?**

Challenges

- Still significant opposition in many countries to opening public infrastructure to competitive market provision despite the fact that some infrastructure is privately owned and operated (natural monopoly and high sunk costs suggests that a competitive supply is unlikely to emerge)
- Also the issue of strategic supply (essential services)
- Of late, government monopoly of infrastructure activities has come under increasing scrutiny and mounting political pressure for change resulting in growing commercialism of infrastructure

Some final questions around the PPP model



- Who take on the long-term demand risk over the course of the next 30 years?
- Will the asset still represent best value for money 30 years from now?
- Where does the real innovation occur?