

PPP Skills and Competency Development

ONLINE TRAINING PROGRAMME

Module III: Project Finance and PPP Investment Analysis

Module Overview and Learning Objectives

This module will provide participants with an understanding of the techniques for conducting financial analysis of PPP investments and the requirements for raising finance needed for private infrastructure projects, especially methods for structuring “limited recourse project finance”.

By the end of the session, participants will:

- Understand the sources of funding for PPP investments and the implications on project costs;
- Recognise the relationship between cost of funds and risk;
- Know the three fundamental forms of lending to infrastructure projects;
- Know the difference between Corporate and Project Finance;
- Know what Project Finance is and why to use Project Finance; and
- Understand the key fundamentals of Project Finance.

Introduction: Characteristics of Infrastructure Investments

In this session we discuss the financing needs of infrastructure projects, whether it comes from the private sector (ie through a PPP) or from the public sector as a traditional, Government-financed project.

It is important to first establish a clear understanding of what makes infrastructure special from an investor’s perspective. How does infrastructure compare to other sectors that an investor or lender could choose, such as cyclical industries (like automobiles and durable goods), commercial real estate, or even service sectors like tourism, etc. Compared to other investment opportunities, infrastructure investments are characterized by:

- **Capital-intensive:** The initial investment costs such as civil works, construction, and equipment installation are very large, while the operating & maintenance costs (although still quite large in absolute terms) tend to be smaller by comparison. A good example is hydro-electric dam, which is very expensive to construct, but have much lower operating & maintenance costs.
- **Economies of Scale:** Most infrastructure projects exhibit decreasing marginal costs as the quantity of their output is increased. This means that per unit costs fall (and efficiency levels increase) as the project gets larger. As a result of this, infrastructure investments tend to be much larger than most investment projects in commercial businesses and even in most industries. This means that the developer of any new infrastructure project (whether a Government or a PPP Project Company) must raise much larger levels of new funding, and it is not unusual that projects can either run out of money or fail to reach financial closure.

- Part of a Network & Long-Term Development Plans: Infrastructure investments cannot simply be located wherever one wants. They must fit into the existing network of infrastructure assets, including interconnections with other utilities. This must be guided by a long-term development plan. This characteristic limits the flexibility of infrastructure investments, compared to other sectors of commercial activity. It also means that key needed investments often cannot occur until Governments finalize their sector development plans, and approve proposed projects. Examples of this include the challenges in siting the right of way for roads, or the location of electricity transmission lines.
- Single-Purpose Assets: The assets of an infrastructure project cannot be converted to another use. Unlike some sectors where buildings may change between commercial or residential clients, a new road or a new water treatment plant cannot be converted to another use (at least not without a tremendous loss). This places more risk onto lenders and investors. If they cannot earn their money back through providing the project's original single-purpose (such as collecting tolls for a new road, delivering potable water, etc.), then they have almost no other options with their investment.
- Long-Term Assets that Require Long-Term Financing: The civil works, construction, and equipment assets of most infrastructure project are expected to last 20-30 years or more. This means that the term of any loans should match the life of these assets, so long-term loans and financing instruments are a requirement. If, for example, a 30-year project was financed by 7-year term loans, then the revenues and tariffs required to meet all the costs of the project would be unaffordably high for the project's first ten years. Therefore, whoever is financing a new infrastructure project (whether a public or a PPP investment) must be able to raise long-term financing (12-15 years minimum). Many traditional, local commercial banks and local capital markets (ie bond markets) are not able to provide the long-term financing instruments that infrastructure investments require.
- Stable Levels of Demand: In general, the demand for services like energy, water, transport, communications, health care, education and other public services are relatively stable and predictable over time – compared to other sectors, like cyclical industries. Whereas demand for automobiles and durable goods can fluctuate greatly, depending on if the local economy is expanding or contracting, demand for public services changes less. This is partly due to the fact that most infrastructure investments are natural monopolies (electricity distribution networks, water distribution networks, regional airports, regional ports, etc.). For investors and lenders, this can be a source of great comfort and confidence in financing a new infrastructure project, knowing that the demand for project's energy or water services, etc. will still be there throughout the 20+ year life of the project.
- Subject to Public Regulation: Because many infrastructure projects are natural monopolies, they are typically subject to economic regulation of their tariffs, prices, and end-user fees by Public Utility Regulatory Bodies. Effective infrastructure regulators should be *independent*, making their decisions based on ensuring the sustainability of the given sector and public service, and not based on what political leaders might want at a given point in time. In reality, many recently-established infrastructure regulators are not yet independent. While monitoring of the performance of a private infrastructure monopoly is needed, especially to protect consumers, many private investors and lenders are unwilling to take the political risk of entrusting key decisions about what prices they may charge and revenues they may earn to a non-independent local body.

Taken together, these key characteristics of infrastructure investment produce a mixed picture. While infrastructure investments can look attractive to investors and lenders because of their near monopoly status and the stable, long-term demand for their services, they can be large and unwieldy to manage for both Governments and private firms.

Financial Sustainability for Infrastructure Investments

Often the principal reason for undertaking a PPP is to attract new investment into either the construction of a new public facility – such as a new urban bus & taxi station; the expansion of an

existing infrastructure network – such as making new household water connections; or the rehabilitation of an asset/network that has fallen into disrepair – such as rehabilitating an ailing railroad line. But, in order to be sustainable, these investment-oriented PPPs, such as concessions and BOO/BOT projects, must clearly demonstrate how their estimated revenues over 15 – 30+ years will repay these enormous initial investment costs as well as cover the regular operating and maintenance costs of the new project.

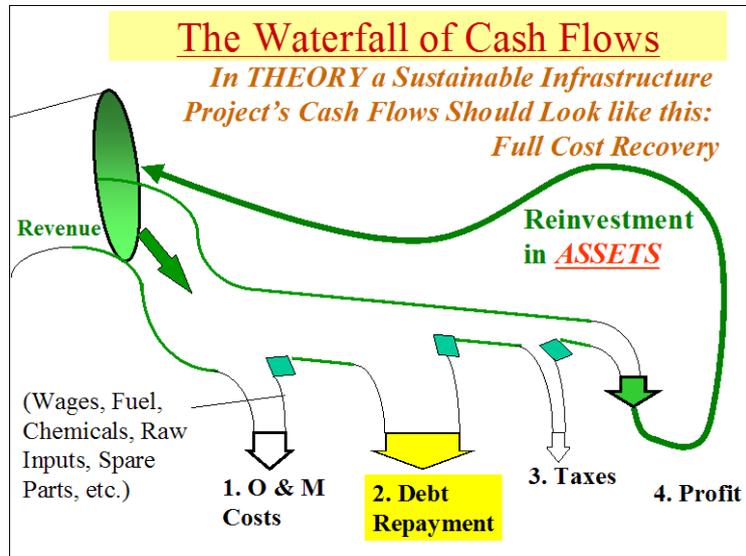


Figure 3.1 – The “Water Fall Model” of Cash Flows for Full Cost-Recovery of an Infrastructure Project or Utility

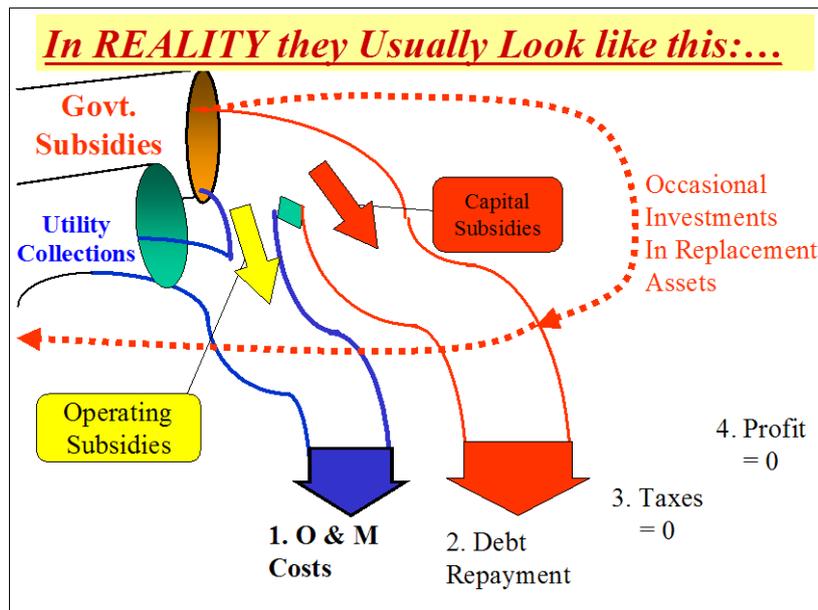


Figure 3.2 - Water Fall Model of Cash Flows for Typical Publicly-Subsidized Infrastructure Projects & Utilities

Infrastructure projects can be financed either by the public sector, or by the private sector through concessions and project financing. Regardless of the source of finance, such projects need to be sustainable. Privately funded projects must repay interest and principal to private commercial lenders as well as produce acceptable dividends to owners. Publicly-financed projects, in order to remain sustainable, must also repay lenders as well as generate a surplus adequate to meet the costs of continuously rehabilitating and replacing its aging assets, as shown in Figure 1 above. However, a

major reason for seeking PPP and private financing solutions is that all too often publicly-financed projects have not recovered their full costs and have become drains on the public coffers, requiring larger and larger capital and operating subsidies without clear results, as shown in Figure 2 above. Therefore, these requirements of financial sustainability for both private and publicly funded projects can have important impacts on the affordability of these services to users as well as the overall value for money it provides over the long-term life of the project.

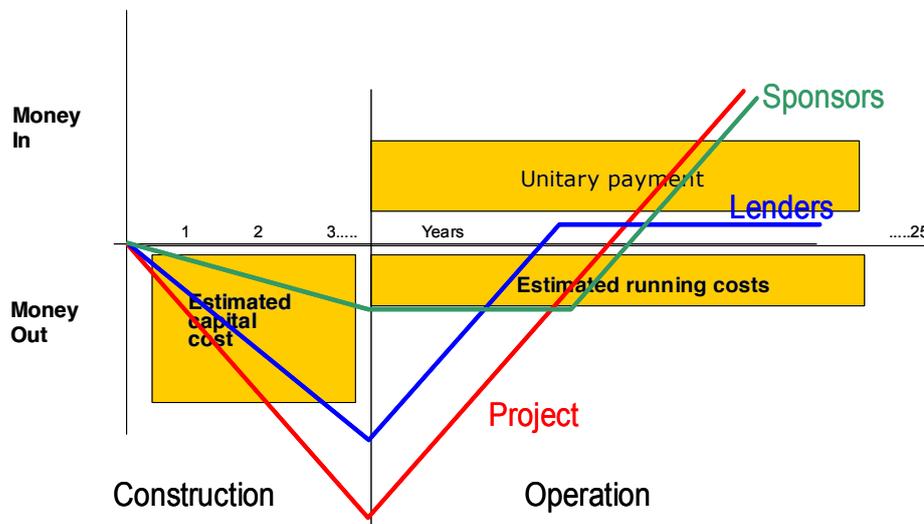
Private sector financing can come from either private investors in the form of equity or from banks in the form of commercial debt. Public-Private Partnerships, being a particular form of business, have over the years developed a form of debt financing termed “project finance”. Project finance, while being a form of debt financing, differs materially in several aspects from more “traditional” forms of lending.

Application and Sources of Funds

Funding Requirement

Figure 3.3 below illustrates how the capital investment requirements of a PPP, such as for example a new Government office building contract, creates a funding requirement as a result of the construction cost (capital cost).

Figure 3.3 - Funding Requirements for PPP



Sources of Funds

The funding need, for projects like the office building, is met, by drawing on equity (provided by private investors, termed “sponsors”) and the debt provided by lenders. Once construction is complete the PPP starts to incur operating costs but is also able to start earning revenue. In the example of an office building PPP, the revenue comes in the form of a “unitary payment” of rents collected from tenants. This revenue stream, net of the operating and maintenance costs, provides the cash flow to repay firstly the lenders’ debt (interest and capital) and secondly the returns on the equity investment (dividends). The sequence and way in which monies flow into and out of a project like this is termed that “Water Fall Model of Cash Flows” and is depicted earlier in Figure 3.1 above.

In the above diagram, the two primary private sector sources of funds, namely debt and equity, have been illustrated. There is another funding source, namely funding from the public sector. Such funding could take the form of “normal commercial” finance such as debt and equity, but could also be contributed in the form of “grants”. Public sector grants can play an important role in infrastructure PPP’s where sole reliance is being placed on user revenue streams and where, either because of low

demand, low tariffs or the economic characteristics of the infrastructure assets (e.g. airports) the project would not be financially viable if funded solely by commercial finance. In such instances the public sector grants, in effect a once-off capital subsidy, are provided for financial viability purposes and to meet socio-economic objectives.

Examples of such public sector grants, could include the provision of the land on which the new project or building is sited. In many cases it is less expensive and easier for governments to acquire the land needed for public projects than it is for the private sector.

However, the decision of whether to make such public contributions available to PPP projects as free grants or instead to sell them to private developers at their market value, or even to treat these contributions as public investments in PPP in exchange for a share of the project's equity – this is a decision that must be carefully analyzed for its full impacts upon limited public fiscal resources as well as upon the public's ability to afford the PPP project's tariffs and price levels. Increasingly, in PPP financing, public sector participation is being focused on reducing the overall riskiness of projects by committing to specific terms and conditions of concession contracts and off-take agreements, rather than developing options for public sector financial grants to private infrastructure projects. As noted earlier, a primary reason why PPPs are considered and pursued in the first place is because public sector financial resources are increasingly limited and are in higher and higher demand in social services sectors such as health care, fighting HIV/AIDS, education, and environmental services.

Public v. Private Finance

- Public sector funding costs lower than private sector – private funding makes project more expensive
- Availability of public finance
- How are risk transfers made effective if private sector's finance is not at risk?

Public versus Private Sector Funding

The arguments are often made that PPP's should use public sector financing when possible (such as through lease-type structures). Government's cost of borrowing is lower than that of the private sector, especially a private sector's rate of return on its equity investments. While public sector-provided finance could reduce the funding costs in many jurisdictions, especially in developing economies, such public sector funding is scarce and often better applied to more pressing social services needs, such as in health care and education, etc. Indeed one of the key objectives for governments to pursue PPP's is to access to a greater potential pool of finance to meet key infrastructure needs.

Another perspective on this issue of whether private or public sector finance should be used is that of how to make the envisaged risk transfers from the public to the private sector (a key PPP objective) effective. When private sector sponsors are investing significant amounts of their own capital and when third party lenders are providing even larger portions there is a much more thorough due diligence exercise that truly tests the project viability. Risks are identified and analyzed much more thoroughly, and more rigorous structuring is done to allocate (and often share) specific risks between the parties in order to get the best value for the public's money. and the private sector is less likely to abandon the project when things go wrong. Too often in the past, publicly financed and operated infrastructure projects have been completed over-budget, late, and have not operated as efficiently or effectively as planned. As a result, the public sector has had to bear this risk by "bailing out" these projects through on-going subsidies, and users have had to bear the costs of poor or inadequate performance, such as unreliable water or electricity supply, travel delays, increased vehicle operating costs, etc.



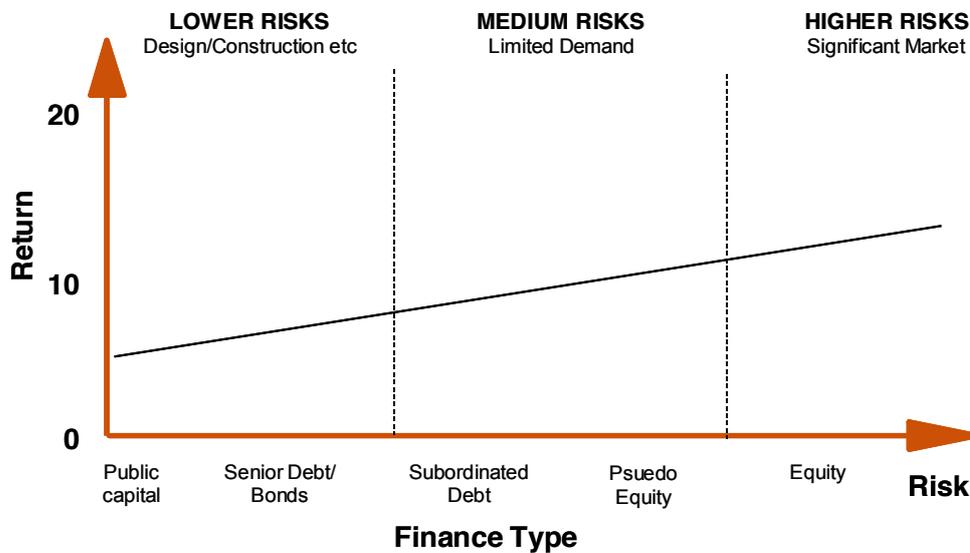
For More Information

The following websites provide useful information about Project Finance:

- International Project Finance Association (IPFA): <http://www.ipfa.org/>
- Project Finance Portal, by Harvard Business School: <http://www.people.hbs.edu/besty/projfinportal/index.htm>
- World Bank Private Sector Development (Rapid Response Unit) Homepage: <http://rru.worldbank.org/>

Finance/Risk/Return Relationship

A fundamental principle that underpins modern finance theory is that there is a positive correlation between risk and cost of finance (expressed as return). The higher the risk that a reasonable investor or lender is asked to take, the higher the return on this investment that the investor/lender will require. When risks are not appropriately priced, as with most Government financed projects, risks do not get



managed. This is illustrated below – funds lend to governments (public capital) such as Government bonds and Treasuries generally have the lowest risk and hence the lowest cost or interest rate. At the other end of the scale, however, private sector equity, ranking last and hence being required to nearly all of a given project’s risks, requires the highest return.

Understanding & Allocating PPP Risks

Risk is a key concept in PPP contracts and it is an especially important determinant of the structure of PPP financing. While governments typically believe that they bear more risk than any other party in most infrastructure projects, in project financing it is the private lenders and equity investors who have the most at risk. In the event of project failure they stand to lose their entire investment (tens or hundreds of millions of dollars). Lenders refer to this as “credit risk”: the overall risk that they bear of not being repaid. From the private lender’s perspective, any risk of completion delay, technology failure, non-payment of tariffs, decreased demand, foreign exchange depreciation, O&M cost inflation, etc. would likely mean that not enough cash will be available to repay lenders on time and in full.

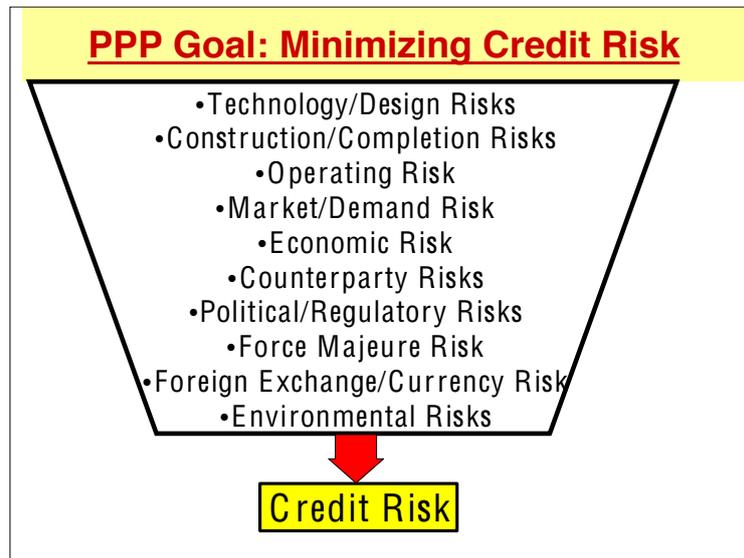


Figure 3.4 - Determinants of PPP Credit Risk

The first step is to identify all possible material risks to an infrastructure project. These will vary from sector to sector and from project to project. During this first step, it is important to be very specific. Rather than using broad terms like “market risk,” you need to be more specific using phrases such as, “the risk that users will choose to continue to use other service providers rather than purchase services from the new project.”

The second step is to categorize these risks into either areas of “Commercial Risks” or “Political Risks.” Political risks are those risks that are the result of governmental actions, policies, and which governments have the greatest ability to control and to determine. Commercial risks are those events that business managers typically have the greatest ability to control and determine. For example, controlling the operating costs of a business is a common commercial risk that business owners and the managers they hire are best able to control. Passing new laws or regulations that forbid the prices of public services, such as tolls and tariffs of a PPP project, from being increased to achieve full cost-recovery, is an event that government itself controls.

The third step is to allocate these risks between the parties, as shown in Figure 3.5 below.

PPP & Project Financing Risk Identification & Allocation

Project Risks	Private Sector	Government
Technology & Design Risk		
Construction & Completion Risk		
Operating Risk		
Market or Demand Risks		
Economic Risk		
Political & Regulatory Risks		
Force Majeure Risk		
Foreign Exchange & Currency Risk		
Environmental Risk		

Figure 3.5 - Identifying and Allocating Common Categories of PPP Risks

This allocation forms the basis for developing the security package of project agreements and contracts that best mitigate risks and maximize the long-term success and viability of the PPP project.

This dynamic is evident in PPPs where lenders contractually secure their rights against the cash flows generated by the project ahead of those of the equity investors. Lenders also require more certainty than equity investors about the future prospects – preferring a much narrower band of risk event outcomes, than the equity investors.

Table 3.1: Debt vs. Equity

	Debt	Equity
Ownership	X	√
Form of return	Interest	Dividend/Growth
Risk born	Lower	Higher
Return	Lower	Higher

Equity investors, being fully exposed to the downsides in the event of things going wrong, seek the full benefit of the upsides when things go right and better than planned.

Typical Funding Example

PPP's that are financially viable and fully funded by the private sector reflect a funding mix not typically found in normal business corporations. The funding structures usually reflect a very high level of gearing – that is a high proportion of debt (often 75-80%) relative to equity finance (often 20-25%).

This unique financing structure of most infrastructure projects reflects the key characteristics of infrastructure:

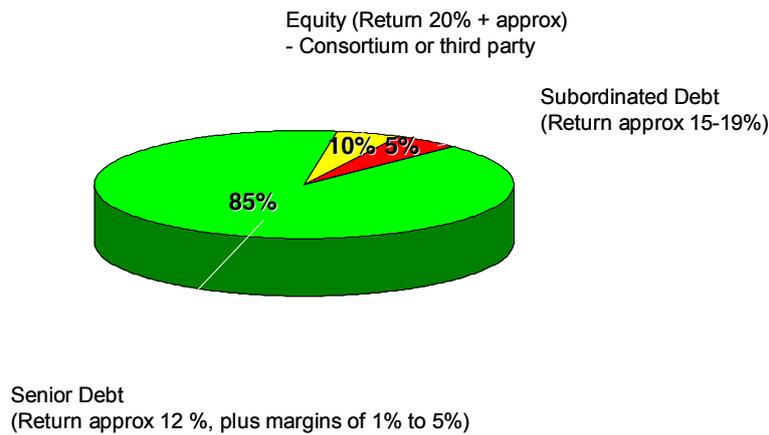
- **Long-lived Assets:** Unlike many typical commercial businesses whose assets last 3- 10 years, infrastructure projects usually last a minimum of 20 years and usually more than 30 years.
- **Generally Stable Demand:** unlike demand for most private consumer goods, such as durables, local economies tend to consume about the same level of water, and to a lesser extent energy & transport, whether the economy is growing or contracting
- **Natural Monopolies:** many, although not all infrastructure projects are subject to economies of scale, and therefore only make economic sense when they are the only local provider of the given service, therefore the projects and their investment needs tend to be very large.

As a result of the key economic characteristics of infrastructure projects, they require long-term debt financing of 12 – 15+ years, they are generally fairly stable performers and seen as relatively lower risk investments (compared to typical private sector investments in commercial enterprises).

Therefore, the best way to ensure long-term affordability of tariffs for users is finance as much of the project as possible with lower-cost debt and to use relatively little high-cost equity. Hence infrastructure projects generally have high debt to equity ratios, known as the “gearing ratio.” This is also referred to as being “highly leveraged,” because a small amount of equity (15% - 25%) is being used to attract or to leverage a high amount of debt (75% - 85%).

However, commercial lenders are only willing to provide these higher leveraged financings when their credit risks are low due to things like strong commitments and guarantees supporting the demand for the life of the project and things like exclusive rights that protect their natural monopoly status. Because a key goal of PPPs for Governments is to transfer project risks onto new private sector contracts and their financiers, and because lenders want to minimize their credit risk by getting contractual commitments from governments to ensure project demand and protect their near-monopoly status – we can see that making PPPs effectively is a challenging negotiation process between the public and private sectors centering around which parties will bear which specific risks.

The effect of this high gearing is to reduce the cost of private sector capital significantly. In the illustration below, the equity investors contribute 15% of the funding requirement (requiring a return of say 20%), while lenders who are prepared to take some equity type risks, provide “subordinated”



debt, which earns a higher than normal interest rate. Senior debt, namely debt that ranks first in terms of access to cash flows, makes up the bulk of the funding requirement (85%) and earns a margin of 1% to 5% over the base lending rates (illustrated at 12%).

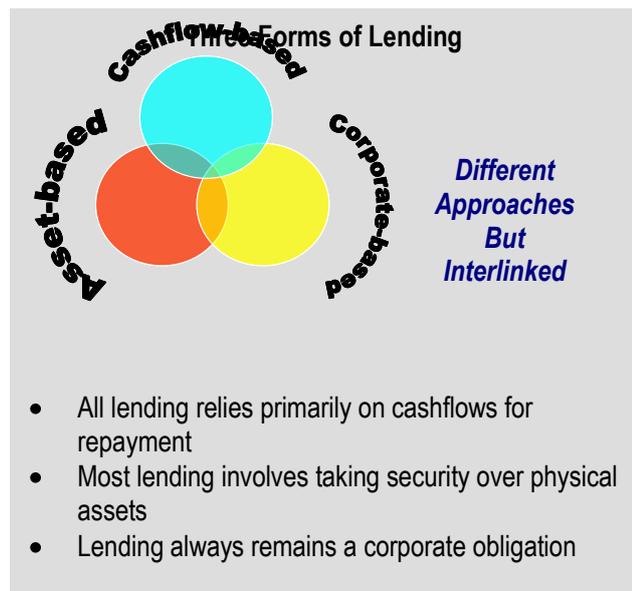
The Four Fundamental Forms of Lending

There are four fundamental forms of lending for infrastructure projects that reflect different approaches but which remain ultimately interlinked.

These are:

- Public, Sovereign-Guaranteed Financing
- Private, Asset based lending
- Private Corporate based lending, and
- Private, Project Cash-flow based lending (“Limited-Recourse Project Finance”)

It should be noted that all lending looks to future cash flows as the primary sources of paying the required interest and repaying the capital amounts advanced. However, where financing agreements differ, is on the issue of what happens if the new project does not work, or if the borrower is unable to repay lenders. Additionally most lenders will seek to secure their rights by taking some form of security over the physical assets and the responsibility to repay the debt remains an obligation of the legal entity that has entered into the lending agreement, regardless of any reliance on cash flows or securities taken over assets.



Public, Sovereign-Guaranteed Financing

Traditionally, most infrastructure projects have been financed by Governments. Governments have borrowed nearly all of the funds necessary to develop and construct these capital-intensive investments (see Figure I.2), and only occasionally contributed their own capital as public equity. The lenders who provided these funds, for developing economies usually multi-lateral development banks (MDBs), have required, and have been given, sovereign guarantees by the host government to repay all monies borrowed to finance these large infrastructure projects. Even if the project fails to generate the planned cash flows to contribute to the repayment of these loans, the Government must still repay these funds to lenders.

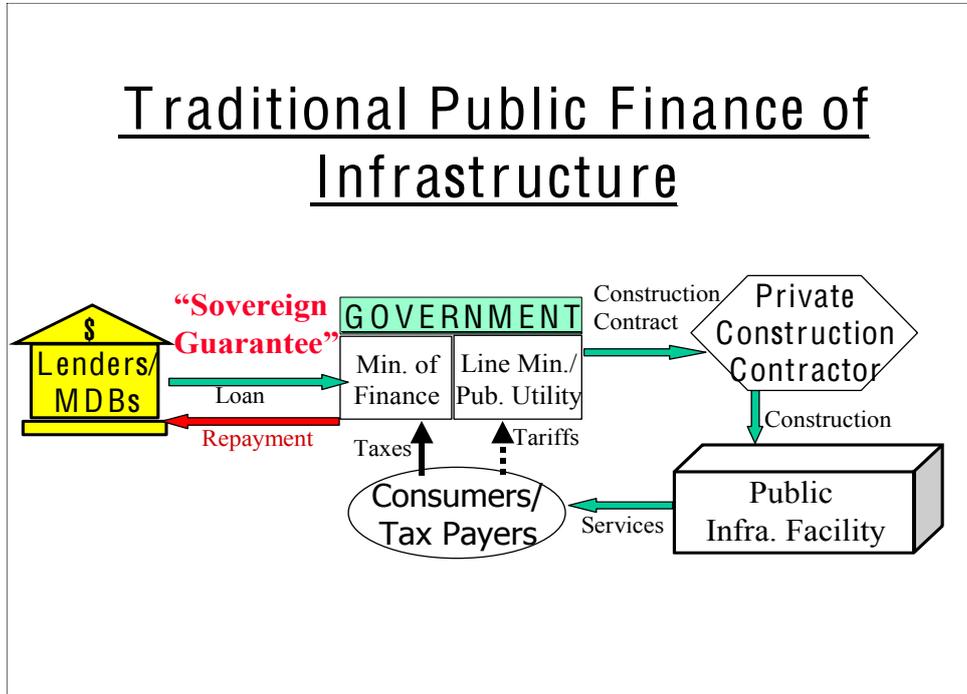


Figure 3.6 - Sovereign Guaranteed, Public Finance

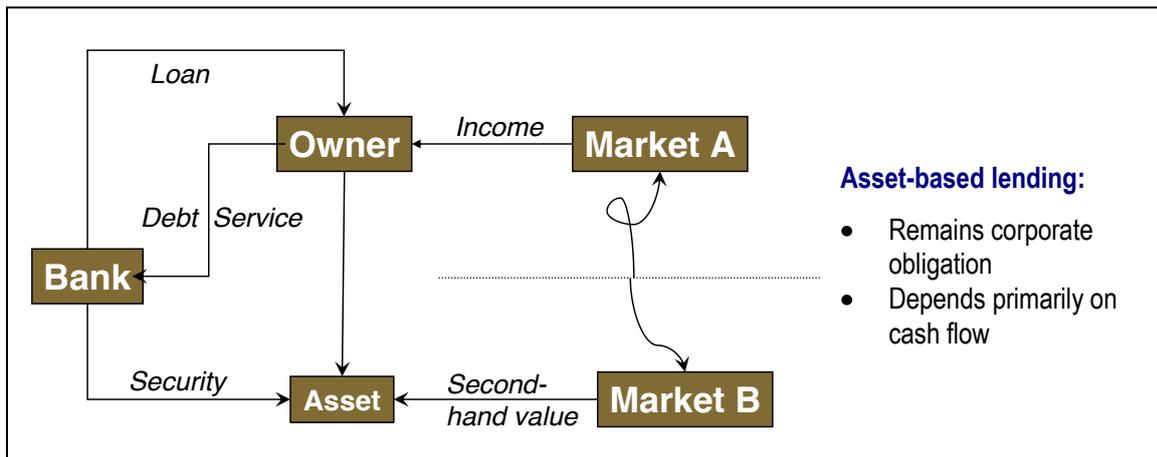
While this traditional policy of “public financing” of infrastructure has attracted substantial investments into many countries’ infrastructure sectors over the past 50 years, the results have often not been satisfactory. Worldwide, in developing as well as industrialized economies, there have been shortages of public infrastructure projects: as demand for key public services has accelerated, supply has been unable to keep pace with demand, services have become intermittent, inaccessible, inefficient, over-budget, over-due, and not transparent. A key factor that explains most of these chronic disappointments has been the over-reliance on sovereign guarantees, placing too much risk onto governments that governments and public corporations have not had the incentives to manage well.¹

Private Asset-based Lending

In asset based lending the borrower, being the owner of an asset used in the generation of income, raises finance through providing the asset as security. The borrower remains responsible for servicing the debt, but in the event of default, the lender will look, in addition to the legal rights he has against the borrower, to repossessing the asset to recover the debt obligations.

¹ With the possible exception of Singapore...

Figure 3.7: Asset-Based Lending Principle



Typically the assets that qualify as security are moveable assets for which there is a ready market – i.e. the lender, after having taken security over the asset in the event of default by the borrower, will sell the asset in the market, generating the cash required to service the outstanding debt obligations. Should there be a shortfall, the borrower remains liable to the lender for such amounts. While this form of financing is commonly used for immovable assets like buses, trucks, railway engines, cars, as well as aircraft and certain classes of movable equipment, this cannot be relied upon for large, long-term, immovable infrastructure projects.

Corporate-based Lending

In corporate based lending, the banks when advancing finance, look to the overall cash flow generation potential of the corporate business to get the necessary comfort that the debt obligations will be met.

They analyse all of the business activities of the corporation and the markets that such businesses operate in and from this form a view of the likelihood of default. There is thus no direct reliance as under asset based lending on the market value of any specific assets to cover the debt obligations in the event of default. There is nonetheless still a reliance on the underlying value of the various corporate businesses – in the event of default (i.e. liquidation / receivership) the various business units (as opposed to individual assets) would be sold off to generate as much funds as possible to cover the debt obligations.

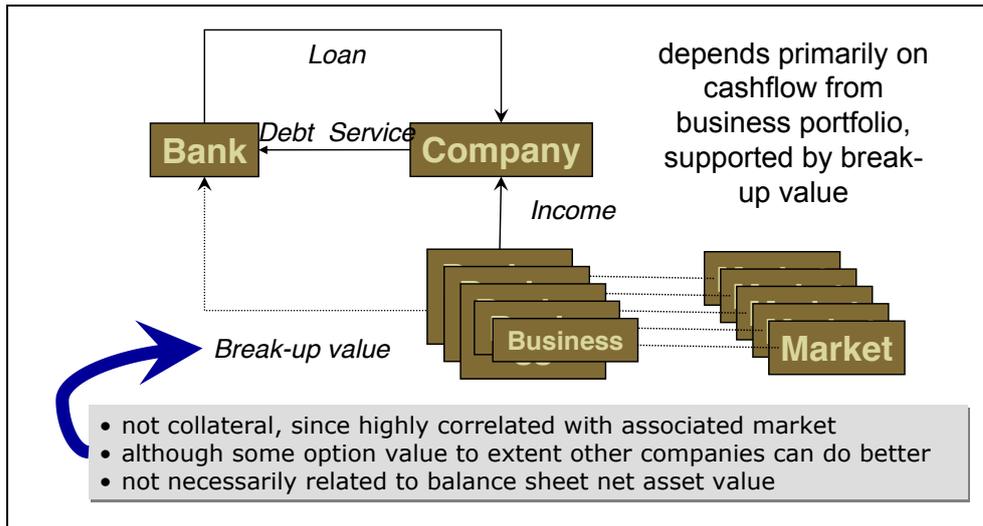


Figure 3.8: Corporate-Based Lending Principle

The Rationale for Asset-based and Corporate-based Lending

Asset and corporate based lending have many similarities and are essentially based on the same underlying rationale. These are:

- Both rely primarily on the cash flows of the private borrower to service the debt obligations
- Both potentially exploit clear collateralized assets (security) to the extent that there are markets for:
 - Assets are not correlated with the business's market or performance
 - Businesses is not correlated with the business's performance
- Both also apply prudent lending limits, based on:
 - A multiple of income
 - A proportion of asset value

It should be noted that where correlation exists, apparent collateral can lead to complacency - it cannot insulate lenders from systemic market problems – as any lender to real estate assets during the 2008-2010 global financial crisis know first-hand. But collateral does potentially mitigate the impact on lenders of the poor performance of an *individual* company.

While commercial lenders understandably prefer the security and comfort of either asset-backed financing or of corporate-guaranteed financing, private corporations are reluctant to simply add more and more debt to their balance sheets. Private corporations are especially uncomfortable doing this for larger and larger projects. If a sufficiently large corporately financed project fails, it could lead to the insolvency of the entire corporation. Therefore, for large new, stand-alone projects, like infrastructure, private corporations will usually seek to finance these off of their own balance sheets.

Project-Backed Finance – “Limited Recourse Project Finance”

Having described the principles of corporate asset-based lending, we now turn to project financing (also termed “limited-recourse project financing”) and illustrate how this is similar and different to the more traditional forms of lending.

Project financing, as the name implies, is usually applied to fund specific new projects, as opposed to just individual assets used in an existing business activity (asset based lending) or the total operations of a corporation providing many different products and services (corporate lending).

Given that PPPs are for specific (ie “single purpose”) new projects for defined durations (e.g. toll road concession) project financing can be ideally suited to providing the kind of funding needed for large, new, long-term, single-purpose infrastructure projects.

Characteristics of Project Finance

Lenders in project financing rely almost completely on the future cash flow that the project generates to service the project’s own debt obligations. The underlying assets of the project provide only limited collateral support because the assets are usually single-purpose and immobile (e.g. for a toll road or a power station). There is generally no alternative use for these assets other than as the original toll road, power station, or water network, or other purpose for which they were constructed. Given the nature of the assets and the revenue stream it generates there is often little chance that any new owner or operator could do any better.

Project Finance

- Relies completely on cash flow
- Has no collateral support because:
 - Assets are usually special-purpose and immobile
 - There is little chance that anyone else can do any better
- (Although lenders invariably insist on taking security regardless)
- It applies prudent lending limits, based on:
 - multiples of cash flow (clearly sensible)
 - proportions of asset value (not sensible)
- However, unlike either asset or corporate lending, it frequently relies on corporate credit support of the cash flows

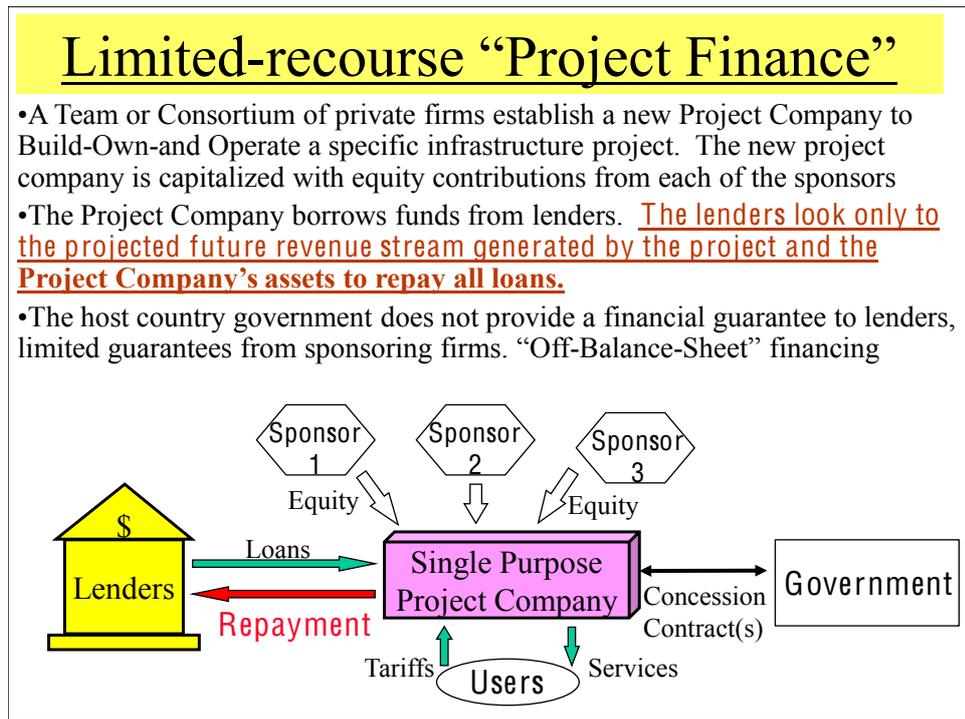


Figure 3.9 -Organization & Structure of Limited Recourse Project Financing

It should be noted that while the project’s assets generally do not provide sufficient collateral support for lenders, the right to use those assets, however, provides the only way for private investors to receive a revenue stream to recover the costs of developing, constructing and operating the project. Therefore, project lenders will still invariably insist on “step-in” rights to take security over the project’s assets. This means that in the event the project goes bankrupt, lenders will have the right to take over ownership of the project, appoint a new management team, and continue to operate the project to repay its debt obligations.

Lenders, when assessing the level of project-backed loans they are willing to provide, pay particular attention to the amount of free cash flow (Revenues minus operating expenses) that is available to pay debt service obligations. This ratio is called the “Debt Service Coverage Ratio” (DSCR).

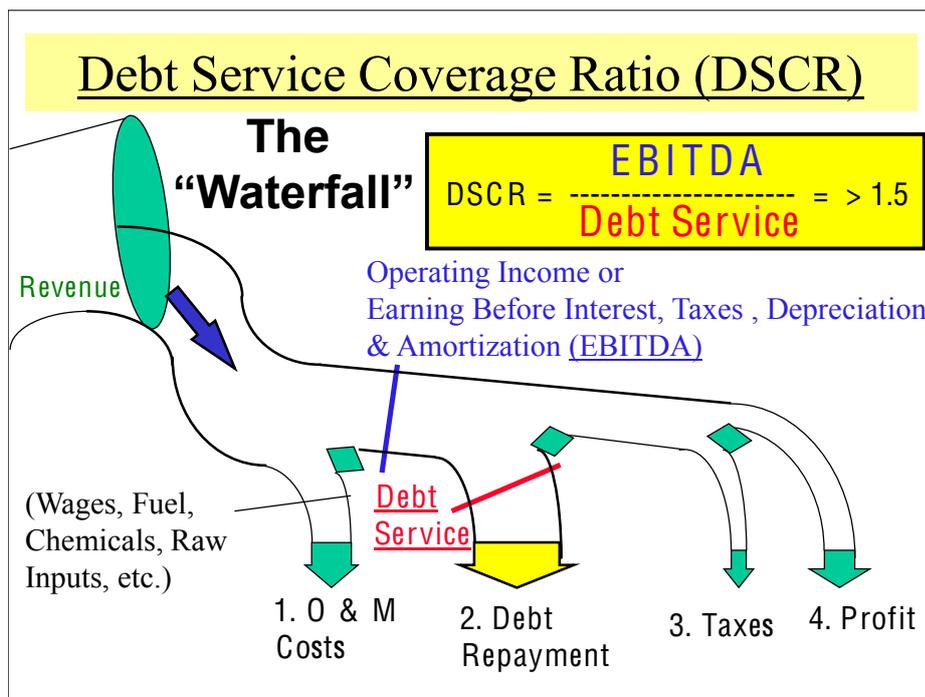


Figure 3.10 - The Composition of the Debt Service Coverage Ratio (DSCR)

This DSCR shows how much cash is available in the project to repay each \$1 (or 1 Euro or Rand or other currency) of debt service payments (principal and interest) that are owed to lenders. As a general industry benchmark, project finance lenders typically require a minimum DSCR of 1.5x for the life of the loan. Their reason for requiring 1.5x instead of just 1.0x is not out an altruistic concern that an extra margin should remain to pay taxes to Governments and profits to owners. Rather, the answer is *risk*. What if conditions change such that either revenues decrease, or operating costs increase, or debt service payments increase? – Will this project *still* be able to repay lenders on time and in full for the next 12, 15 or even 20+years of the project loan?

In practice, however, once a project risks are allocated, and clear, enforceable contracts are prepared placing risks clearly onto the other parties (i.e. NOT the lenders) that are best able to control and manage those risks, lenders may be willing to accept a slightly lower DSCR, if the project has strong fundamentals. For example, for PFI-type projects, where the Govt. or public sector off-taker bears all demand level risks, lenders may be willing to accept DSCRs of just 1.2-1.3x. However, for most international project financings, lenders usually abide by the guideline figure of 1.5x.

While lenders look primarily to future cash flows, they may also frequently rely on additional credit supports from the private sponsors of the project company. This means that lenders will require that

the corporate sponsors commit to provide additional investments of cash in the project, up to specific levels, if they are needed during the life of the project. This is why it is referred to as “limited recourse” finance rather than as purely “non-recourse” project finance.

Corporate and Project lending compared

The table below summarises the differences between corporate based and project based lending:

Corporate Lending	Project Finance Lending
<ul style="list-style-type: none"> ➤ Low debt:equity ratios << approx. 1:1 ➤ Profits most important ➤ Annual to 3 year horizon ➤ Exposed to range of commercial risks ➤ Balance-sheet debt ➤ Assets continually refreshed ➤ Many activities in many places ➤ Usually quoted ➤ Few constraints on management action ➤ No ownership in customers/suppliers 	<ul style="list-style-type: none"> ➤ High debt:equity ratios >> approx. 4:1 ➤ Cash flows most important ➤ Lifetime perspective ➤ Restricted risk exposure ➤ Non-recourse debt ➤ Single asset not usually replaced/renewed ➤ Usually single activity in a single place ➤ Not usually quoted ➤ Tight constraints on the freedom of action ➤ Sponsor involvement in key subcontracts
Equity Driven	Debt Driven

When & Why to use Project Financing

As stated above, project financing is most appropriate to very large business activities that can be organized and undertaken as a single “project.” In PPPs a special purpose vehicle company (“SPV”), also referred to as a “Single Purpose Project Company” is specifically incorporated and registered to undertake the PPP activities.

Project financing is suitable where the specific projects are large in relation to the sponsoring investors own size. Historically, the first project financings were undertaken for the development of large new mining projects as well as large oil & gas development projects. As an industry, project financing received a big boost in the late 1970’s, when following the twin oil price spikes, Governments in North America and Western Europe sought to generate electricity more efficiently through Independent Power Projects (IPPs) using new technologies such cogeneration (selling steam). In developing economies, the first Build-Operate-Transfer (BOT) project proposed was for a large power project in Turkey in 1984. Since 1990 this global market for project financing, especially in developing economies, has grown dramatically, as show in Figure 3.11 below.

Why Use Project Finance?

- Where project = company
- Where project is large relative to company
- Cheap political risk insurance
- To mobilise export credits
- To provide an additional discipline on investment appraisal
- To regulate a weak JV partner

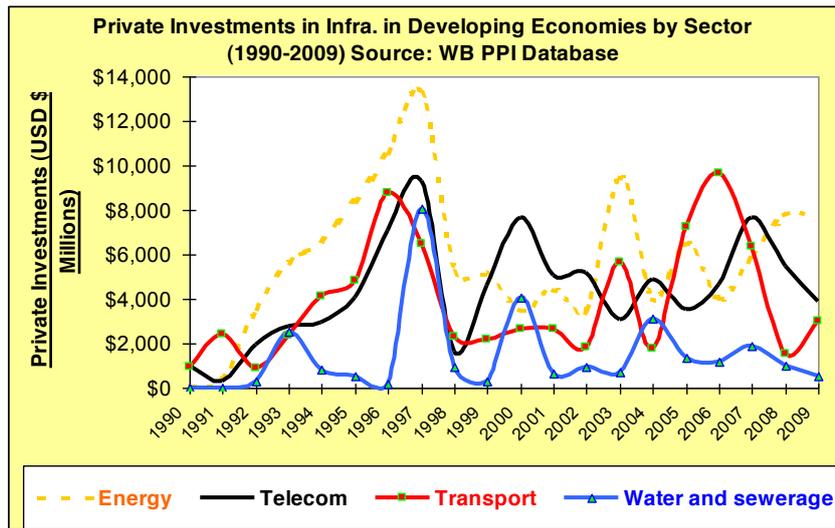


Figure 3.11 - The Global Record of Project Finance in Developing Economies, 1990-2009

In the context of PPPs and especially in developing markets, commercial lenders to project financings usually require political risk insurance (thereby reducing borrowing costs) as well as, where there are imported equipment components (for example an Independent Power Producer type of PPP), to access export credit financing.

Because there are no full guarantees of repayment being provided to lenders (unlike sovereign-guaranteed finance or corporate finance), lenders need to make sure the project itself will be able to repay all loans. This means that lenders, as well as equity investors, will insist on a more rigorous due diligence done all aspects of the projects. As noted previously, this means that project financings typically require more analysis, more studies, and more detailed contracts in the project preparation phase compared to other forms of financings. However, the reason for all of this is to end up with better infrastructure projects that perform as they are intended to: projects that are not over-budget, not over-schedule, that do not fail during their operations, and that do not require “bailing out” by subsidies from the public fiscus.

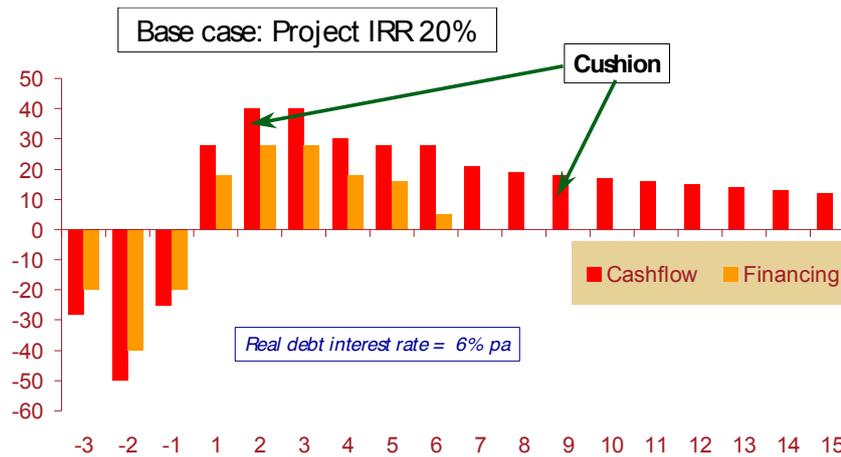
In summary a Project Finance Definition:

Project Finance is where:

- Lenders can look solely to the cash flow generated by the project for repayment;
- The assumptions used to forecast the cash flow can be independently verified, and
- Risk analysis can demonstrate that there is a very high probability of repayment (> 95%)

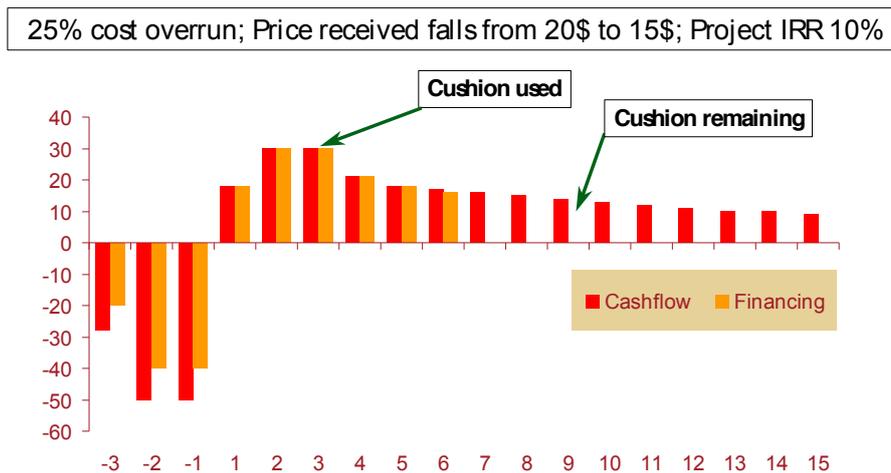
Cash Flow Based Approach Illustration

The cash flow forecasts are developed, based on the capital investment requirements, the operating costs forecasts and the revenue forecasts. In the illustration below cash flows are negative in the first three years reflecting the capital investment in the underlying asset (the road, power plant, office accommodation, etc.). These funding requirements are met by equity investment (not shown) and by debt financing (the second bar columns).



During the operating years positive cash flows are generated. These are then used to meet the debt repayment obligations. As illustrated there is a “cushion” both in the periods during which debt is serviced as well as in the remainder of the project term, when debt has been repaid. [These margins are the debt service coverage, loan life coverage and project life coverage ratios previously mentioned.]

The diagram below illustrates how this cushion absorbs risk events. In the example, capital costs over run by 25% and revenues fall. The funding required increases, necessitating more debt (and equity) to be drawn down, which results in higher debt service obligations. Simultaneously, revenues fall. Notwithstanding this there is just sufficient cash flow to service the debt obligations and a cushion remains after debt has been repaid. The effect however has been to reduce the project returns from 20% to 10% and this is absorbed by the equity investors, whose equity return drops even more.



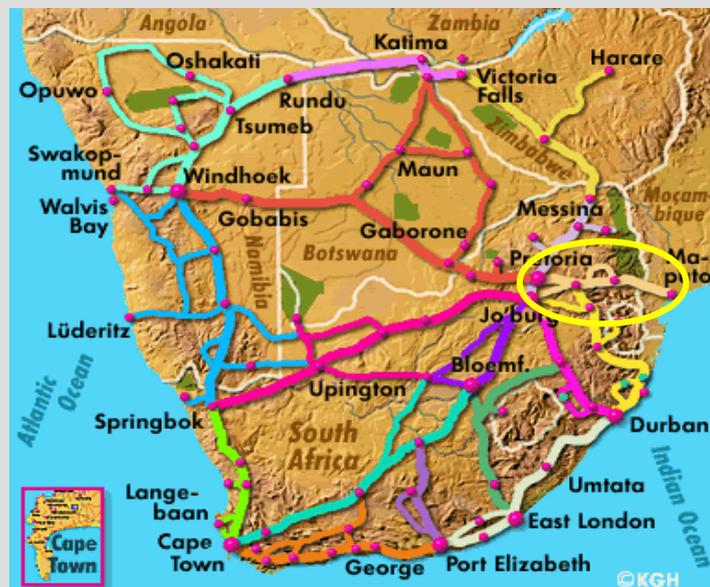
Sectors Suitable for Project Finance

As stated previously, project financing is often associated with PPPs, including concessions. The principles of project financing have been developed over many decades – for example explorers’ expeditions, canal developments, including the Suez Canal, and most early railroads North America and Europe featured forms of project financing. Within Sub-Saharan Africa there have been a number of important recent infrastructure project financings, including:

- South Africa's \$400 million N4 Toll Road Expansion, 1997
- The (Malawi-Mozambique) \$40 million Nacala Corridor Railway Rehabilitation, 1999
- The Nelspruit, South Africa \$45 million Water Distribution Concession, 1999
- The Dolphin Coast, South Africa \$40 million Water Distribution Concession, 1999
- Uganda's \$65 million UMEME Electricity Distribution Concession, 2004
- The West Africa Gas Pipeline Project, \$974 million, 2003
- Numerous Independent Power Projects (IPPs) in Cote d'Ivoire, Ghana, Cameroon, South Africa, and elsewhere.

Project Finance: The Case of the N4 Toll Road Maputo Corridor

One of first major project financings in Southern Africa in the transport sector was for the expansion and upgrading of the N4 Toll Motorway from South Africa's populous and industrial Gauteng Province to the port of Maputo in Mozambique. The concession contract, signed in September, 1997 granted the Trans-Africa Concession Pty (TRAC) consortium a 30-year concession to both expand, construct and operate 525 km of toll motorway. After decades of apartheid and disrupted economic links between SADC countries, this new "Maputo Corridor" would not only provide access to the nearest seaport to South Africa's Gauteng economic center, it would also provide important growth and investment opportunities for the port city of Maputo.



TRAC's lead sponsors were a consortium of French and South African transport infrastructure developers and investors. Additionally, TRAC attracted minority equity investments from South Africa's and Mozambique's leading private investors. The majority of the project's total cost of Rand 2,041,000,000 (approx. \$350 million) was spent on constructing new sections of motorway inside of Mozambique. The project relied on a typical, highly leveraged gearing ratio of 80% debt and 20% equity. The project lending syndicate featured project-backed loans ranging from 15 to 20 years maturity. Most of these loans, such as the Rand 200 million loan from the Development Bank of Southern Africa (DBSA) included significant grace periods ranging from 4 to 10 years. These features allow transport projects to "ramp up" their traffic and revenues during the critical early years and to repay debt obligations later, after project revenue patterns are more established. The fact that all of the project's debt is denominated in the same Rand-based currency as the majority of the project's revenues significantly reduces the project's exposure to foreign exchange risk.

Conclusions

In this module we have not only discussed the key requirements for PPP financing, but also the major forms of financing available to PPPs. We have reviewed the requirements of traditional sovereign-guaranteed public finance as well as its major weaknesses. By contrast, we reviewed the forms of financing available for PPPs including asset-backed financing, corporate financing, and especially project financing. Uniquely, project financing requires that lenders accept more risk than they typically are exposed under other forms of financing, and this is why lenders insist that as many risks as possible are placed onto other parties first through the security package of project agreements and contracts. Often this features requests that Governments provide broad guarantees that go against the kinds of risk transfer that are the very goal of PPPs. Therefore, one of the most critical challenges in project financing is to develop and negotiate a risk-allocation framework that is ultimately acceptable to all project stakeholders, not only lenders, investors, and Governments but to consumers, labour and other stakeholders as well.

While project financing in developing countries showed dramatic growth from 1990-1997, it has faced some very important challenges in the past 12 years. The 1997-1998 financial crises in Southeast Asia, in Russia, and in Brazil reduced international investor interest in project financings, especially when revenues would be collected in local currency and debt service payments needed to be made in dollars, Euros, yen or other hard currencies. Additionally, the dramatic collapse of the Enron Corporation in 2001 reduced the interest of many investors and lenders in pursuing project financing for infrastructure. Moreover, the recent global financial crisis of 2008-2010, saw many commercial banks choosing to hold on to their precious cash while they continue to deal with their “toxic” real estate assets. As a result, there have been several major PPPs that have been unable to reach financial closure in the current market. Today, the project financing picture presented is a challenging one, in which all of the players (private developers, private lenders, and governments) have grown more selective, more discriminating, and more demanding about how infrastructure projects should be identified, analyzed, and structured before they can be found to be acceptable.

Module 1: Content Assignments

In order to successfully complete your work on the Content component of this Module, you must complete the following:

- Read this Module I Content piece
- Read the required background reading materials:
 - Rating Criteria for Infrastructure and Project Finance, by Fitch Ratings, September, 2009. <http://www.finance-quebec.com/Fitch%20Rating%20Criteria%20project%20finance.pdf>
 - Review of Risk Mitigation Instruments for Infrastructure Financing and Recent Trends and Development, by Tomoko Matsukawa and Odo Habeck, World Bank & PPIAF, 2007. <http://www.ppiaf.org/ppiaf/sites/ppiaf.org/files/publication/Trends%20Policy%20Options-4-Review%20of%20Risk%20Mitigation%20Instrument%20-%20TMatsukawa%20OHabeck.pdf>

- Answer the following question (with the answer posted to the Discussion Board of the online learning platform) relating to the Content piece:
 - Project financing usually requires public support in the form of credit enhancements, such as:
 - commitments to raise tariffs in the future according to agreed formulas,
 - guaranteed minimum levels of demand for a project,
 - contributions of land,
 - guarantees against political risk (Partial Risk Guarantees), and other techniques.

Evaluate the relevancy and usefulness of these credit enhancements to your own country environment. Which one do you think would be most valuable to facilitating project financing closures in your country or your infrastructure sector? Explain why. What do you think the government or public sector would need to do to enable these public sector credit enhancement techniques?

- Read other participants' postings to the Discussion Board and provide substantive comments (in the Discussion Board) on two other participants' answers to the Content question. Optional Readings: Participants may find the following on infrastructure project financing useful:
 - Standard & Poor's Global Project Finance Yearbook, 2008.
http://www2.standardandpoors.com/spf/pdf/fixedincome/Project_Finance_2008.pdf