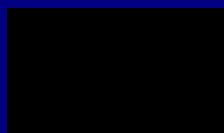




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**TRANSPORT DIALOGUE AND INTEROPERABILITY
BETWEEN THE EU AND ITS NEIGHBOURING COUNTRIES
AND CENTRAL ASIAN COUNTRIES**

TRACECA INVESTMENT MANUAL



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List of abbreviations

ADB	-	Asian Development Bank
BOT	-	Build-Operate-Transfer
BOOT	-	Build-Own-Operate-Transfer
DBFO	-	Design-Build-Finance-Operate
DBOOT	-	Design-Build-Own-Operate-Transfer
BTbOOT	-	Build-Transfer berth-Own-Operate-Transfer
CPI	-	Consumer price index
DSCR	-	Debt service cover ratio
EBITDA	-	Earnings before interest, taxes, depreciation and amortisation
EBRD	-	European Bank for Reconstruction and Development
ECA	-	Export Credit Agencies
EIB	-	European Investment Bank
IFC	-	International Finance Corporation
IFS	-	International Financial Statistics
IMF	-	International Monetary Fund
IPO	-	Initial Public Offering
IRR	-	Internal rate of return
KfW	-	Kreditanstalt für Wiederaufbau
LCC	-	Life cycle costing
LLCR	-	Loan life cover ratio
M2	-	Money supply
NPV	-	Net present value
O&M	-	Operation and maintenance
PFI	-	Project Finance Initiative
PPI	-	Producer price index
PPP	-	Public Private Partnership
PRG	-	Partial risk guarantee
PSC	-	Public Sector Comparator
ROE	-	Return on equity
SPC	-	Special Purpose Company
SPV	-	Special Purpose Vehicle
WPI	-	Wholesale price index

1. Introduction

1.1. Background and purpose of the TRACECA investment manual

During the past years TRACECA countries have taken serious efforts to improve transport infrastructure. Even though transport infrastructure will always be ultimately paid by the Government, the users or a mix of both, countries embarking on massive construction programs are unlikely to find the required funds from their budget. In such cases the private sector can contribute to advance the necessary capital, thus making possible the construction of infrastructure in the short term. International finance institutions as well as the EU might support the countries in infrastructure procurement. This is possible if the projects are prepared in suitable structures which are confirm to IFI and EU policies.

The financing requirements to bring transport infrastructures up to the standards might be supported by the private sector in terms of additional capital and in terms of alternative management and implementation skills. The frameworks to achieve private sector funding are also complex to design, implement and manage. Especially the public sector has to adapt to commercial needs of the private sector not at least to control and manage the infrastructure. Most importantly public interest should be protected by choosing the most effective type of procurement method measured on the maximized value added to the society and the economy.

Private participation in transport infrastructure comes in many forms which must be adapted to the individual needs and characteristics of each project, mode and country. Key problems in assessing the most effective procurement method for a given project with appropriate parameters are a balanced distribution of risks, appropriate duration to finance the projects and clarity of responsibilities within the various regulatory environments. To achieve these preconditions the TRACECA investment manual explains the different main areas of infrastructure procurement. The trade-off between the certainty of revenue and credit margins depends on a set of fulfilled preconditions. The TRACECA investment manual shall help to increase awareness for these preconditions based on the experiences made during the last years of infrastructure procurement.

To structure bankable and financially sustainable projects it requires a true understanding of the needs and objectives by the parties involved and affected by the project. The TRACECA investment manual is written to assist the TRACECA countries in the preparation and implementation of transport infrastructure projects with private financing. It is written to illustrate a set of different procurement approaches and key issues affecting the development of successful projects with private sector financing.

The main focus of the TRACECA investment manual is to provide a knowledge base for procurement, financing and funding of infrastructure. The manual also shall assist public officials with knowledge to successfully implement infrastructure projects with private financing. The choice of financing source and means of channelling funds into infrastructure is not intrinsically linked to the model employed for the provision of infrastructure. However, the means of financing will have a profound impact on how each model functions. Thus, choosing which mix of taxes and user charges to employ is a

fundamental sovereign task and must be undertaken by governments in advance of designing the model by which the infrastructure will be provided. Therefore, the TRACECA investment manual aims to act as a practical guidebook for designing sustainable infrastructure projects to implement private capital and opportunities to raise financing for infrastructure funding. The examination of case studies and examples within this TRACECA investment manual illustrate a number of key principles for private sector financing.

The TRACECA investment manual is presented in seven chapters as shown by Figure 1-1.

<p>Chapter 1: Introduction</p> <ul style="list-style-type: none"> • Background and purpose of the investment manual • Infrastructure characteristics and minimum requirements by investors and financiers
<p>Chapter 2: Transport policy objectives and frameworks for decision-making</p> <ul style="list-style-type: none"> • Organisational forms of infrastructure provision (Formal, functional and material privatization) • The toolbox for decision support by governments • Provisions that make project financing possible
<p>Chapter 3: Risk sharing schemes in the different procurement models</p> <ul style="list-style-type: none"> • The risk management process • Main types of general risks and project specific risk
<p>Chapter 4: Funding of infrastructure</p> <ul style="list-style-type: none"> • Revenues • Sources of capital • Providers of debt capital
<p>Chapter 5: Infrastructure investment and budget concerns</p> <ul style="list-style-type: none"> • The impact of infrastructure investment on the state budget • PPP and statistical accounts
<p>Chapter 6: Cost efficiency and life cycle costing</p>
<p>Chapter 7: Methods and tools for project development</p> <ul style="list-style-type: none"> • Project development tools • Cash flow calculations • Key performance indicators and sensitivity analysis
<p>Appendix A:</p> <ul style="list-style-type: none"> • Social, political and macroeconomic data of the TRACECA member countries • Private sector investment and project finance trends

Figure 1-1: Structure of the TRACECA investment manual

Chapter 1 “Introduction” gives an overview of transport infrastructure characteristics. A list of minimum requirements by investors and financiers shows criteria which are important for bankable project structures. Supplementary to the chapter 1 macroeconomic preconditions of the TRACECA countries, the global project finance market and private sector investment as well as future trends in infrastructure finance are summarized in Appendix A.

In chapter 2, “Select the framework for the provision and financing of transport infrastructure” presents three broad categories of organizational forms for infrastructure provisions. The chapter shall provide structures for transport infrastructure procurement

methods which are currently applied in the transport sector. Each of the provisions has certain alternatives to mobilise financial resources. The options vary from infrastructure procurement by public agencies, state owned corporations until functional outsourcing or material privatization. However within the privatization path several contracts are available such as service contracts, management contracts, concessions or joint ventures. The flexibility to finance and manage projects varies within the procurement structures. Generally several techniques are used to assess the different options and to achieve value for money for the society. They are listed in the toolbox for decision support and briefly explained.

Chapter 3 "Risk sharing schemes in the different procurement models" contains a detailed description of the material risks relating to project finance and their coverage and optimal allocation among the project participants. The degree and nature of risk shared between partners are fundamental defining elements in the nature and costs of any alternative financing mechanism.

Chapter 4 "Funding of infrastructure" introduces the different sources and characteristics of funding and their advantages and disadvantages. The instruments of funding infrastructure are limited to income from taxation, user charges, borrowing and revenues generated from services. Financing of infrastructure can be shared with different parties. The chapter delivers an overview of the options to generate revenues from the project and the general sources of financing. Providers of debt capital and their potential contributions within the project are explained.

Chapter 5 "Infrastructure investment and budget concerns" are an essential consideration in the choice of whether and how to carry out transport infrastructure projects. Decisions regarding investment should be based on overall consideration of long-term macro-economic stability, and instruments should be in place to impose this discipline, including rules regarding deficit spending. Any model of providing and financing infrastructure should aim to aggregate efficiency.

For testing the effects of the project on the state budget, cost efficiency and life cycle costing is of major concern considering the long live cycle of transport infrastructure. The construction of infrastructure assets will generate future maintenance needs and places financial burdens on future governments. The aggregated maintenance and construction needs of transport infrastructure are characterised by cycles spanning up to several decades. The need for future maintenance funding can therefore be planned and justified on the basis of asset management systems. More spending during the investment phase may save on future maintenance costs (chapter 6).

Finally, chapter 7 "Methods and tools for project development" gives an introduction to the methods and tools used for project financial appraisal. The cash flow of an infrastructure project is the primary focus when evaluating and developing an appropriate financing solution. The chapter addresses the various kinds of tools used in project financial appraisal and provides an introduction to how cash flow calculations and sensitivity analyses required for financing are determined and prepared. Cash flow models contain all relevant parameters affecting the project, including the various risks identified and quantified in advance, and are used to calculate key performance indicators.

The frameworks discussed in the TRACECA investment manual are based on scientific concepts and practical experiences and allow to draw generalized conclusions of what might be necessary to attract private sector financing as well as to maximize value added to the society and economy. At the same time the Manual takes in due account the

specificities of the Traceca countries for instance in respect to the current legal framework and regulation of the transport sector.

At the end of each chapter a case study presents important aspects which do not allow to generalize but illustrates the concepts discussed on an individual case. Chapter 2, 3 and 4 include a detailed case study where project specific problems, their solutions and lessons learned are discussed.

1.2. Infrastructure characteristics

Adequate infrastructure is essential for the functioning of any economy or society and is a basic prerequisite for economic growth, prosperity and quality of life. Infrastructure improves the standard of living by giving access to essential resources and markets. Inherently, governments play a key role in developing infrastructure systems in order to underpin externalities of correlated economic and social activities, such as economic development, regional equality, social cohesion, safety, security, and environmental sustainability.

The key characteristics of transportation infrastructure can be described as follows:

- (i) Infrastructure projects have long service lives
- (ii) Infrastructure projects operate in a quasi-monopoly situation with high barriers to market entry and little or no competition
- (iii) Regulatory authorities, when in place, perform a corrective function on the market (fixing prices or providing minimum payments guarantees)

The process of choosing how to provide infrastructure should ultimately be decided by the option that ensures the greatest possible benefits to society and that allows the infrastructure to be built and operated for the lowest possible cost during its life cycle.

In providing this infrastructure, governments face the following five key issues, which are interrelated:

- (i) The level of resources dedicated to the task of developing, operating and maintaining transport infrastructure and consequently who will be responsible for the tasks/functions and for how long
- (ii) Who will provide the construction funds and who will arrange the financing
- (iii) Who will hold legal title to the projects assets and for how long
- (iv) Who will be responsible for each source of project revenue
- (v) Whether and to what extent the users will be expected to pay directly for the infrastructure they consume

1.3. Minimum requirements by investors and financiers

According to the Asian Development Bank (ADB, 2009) to attract private capital the following main reports must be available as a precondition to the implementation of international financing and equity:

1. Project Description:
 - a. Clear demonstration of benefit in terms of economic, social and environmental importance of the project to the country
 - b. Support by the government, lending institutions and other investors
2. Feasibility Study establishing the Technical, Financial, Economical and Environmental Viability of the Project
3. Background on Sponsors including
 - a. Discussion on ownership and management structure
 - b. Description of sponsor's experience in project development in home country or abroad with emphasis on projects in developing countries, if any
 - c. Financial history, include audited financial statements for the last three years, financial plans and projections and copies of any recent filings with securities commissions
4. Project Ownership Structure including
 - a. Discussion of the proposed ownership and management structure of the project
 - b. Description of the legal, tax, and other advantages of the proposed structure
 - c. Description of cost and incentive structure for contractual arrangements with any separate management company
5. Project Implementation Arrangement including
 - a. Presentation of the implementation and contractual arrangements for the project, including construction and supervision methodology
 - b. Draft construction contracts
 - c. Bar chart showing major scheduled achievements and completion for each of the main components in the project
 - d. Detailed description of liquidated damage provisions and performance bond requirements
6. Project Operation including
 - a. Description of the operational arrangements
 - b. Copies of the contractual agreements
 - c. Discussion of availability and training of operational staff, expected efficiency levels of operation, incentive and penalties for performance, maintenance plans and reporting systems
7. The Market
 - a. Description of the market and marketing arrangements

- b. Draft off-take concession and/or purchase agreements
 - c. Discussion of price sensitivity and market risks
 - d. Current and projected markets
 - e. Discussion of credit-worthiness of customer(s)
8. Environmental Aspects including
- a. A site-specific environmental impact assessment report highlighting environmental impacts and mitigating measures, prepared by an acceptable consulting firm
9. Cost Estimates
- a. Analysis of cost estimates according to: a) major cost category and, b) local and foreign currency cost.
 - b. Detailed taxes and duties, development expenses, working capital requirements and interest payments during construction.
10. Financing Plan
- a. List of the various sources of financing of the project, and include amounts, currency, terms of the debt and equity investments, security arrangements and status of financing commitments
 - b. Description of the source of finance for contingencies and cost overruns
 - c. Discussion of escrow and retention arrangements
 - d. Presentation of the dividend policy as well as any proposed restrictions on payout
 - e. Discussion on how you want multilaterals to assist the project (propose an equity, debt, guarantee or co-financing arrangement)
11. Financial Model
- a. Presentation of financial projections for the project covering the period from financial closing through final maturity of the proposed multilateral financing
 - b. Balance sheet, profit and loss statement, cashflow statement and detailed assumptions
 - c. Calculation of the economic, financial rates of return and return on equity investments
12. Risk Analysis
- a. Analysis of the risks in implementing and operating
 - b. Discussion of the mitigating measures that will be undertaken and identify the party that will bear and/or pay for the mitigating measures
13. Permits and Licenses
- a. List of all permits and clearances required for implementing and operating the project, the issuing authority and the date of issue or expected date of issue

The TRACECA investment manual focuses on the preparation and implementation of infrastructure projects, the procurement options (point 4-6), funding schemes (point 10)

and risk analysis (point 12). The manual shall provide a knowledge base for procurement, financing and funding of infrastructure.

Furthermore, appendix A includes information about social, political and macroeconomic data for TRACECA countries as well as future trends in infrastructure finance. It illustrates the macroeconomic preconditions of TRACECA countries and the necessary minimum requirements by investors and financiers. The main multilateral and bilateral development agencies, as well as international private sector finance institutions and their volume, are introduced.

2. Select the framework for the provision and financing of transport infrastructure

Funding of the transport sector is fundamentally a sovereign task. However, the financing of specific initiatives can be an operational task, in that responsibility for raising funds can be shared with different parties. In chapter 2, international experience in infrastructure provision is reviewed. The findings are explored and any raised issues contribute to the design of the frameworks for the provision and financing of transport infrastructure. Chapter 2 comprises of an introduction of goals and organisation and management of infrastructure projects. The models for organising infrastructure provision are discussed in detail.

2.1. Introduction

As far as transport services are concerned, private operation is often considered a more viable solution than public sector supply, if markets are competitive and if the regulatory framework protects public interests from any misuse of market power.

The arguments for either public or private provision of transport infrastructure are less clear-cut as fully private ownership or free-market operation of transport infrastructure is in general perceived as problematic. There are several reasons for this:

- (i) transport infrastructure either has attributes of natural monopoly (such as rail and waterway networks) or creates significant market power for those who control the prime site (this is the case for many ports or airports);
- (ii) in some cases, such as roads, it is difficult to recover infrastructure cost directly from user charges, and in general user charges do not recover for the full infrastructure costs;
- (iii) financial returns of transport infrastructure are in many cases very long term and, therefore, risky. These risks are often not attractive to private investors without some public funding or public risk-taking, or government policy guarantees;
- (iv) where transport infrastructure costs are not recovered directly, there are distributive consequences which may be politically significant; and
- (v) transport infrastructure involves major planning, environmental, safety or social issues.

As a consequence public ownership and operation of transport infrastructure is a common policy, and in most parts of the world the public sector owns and operates most of the basic transport infrastructure (nearly all roads, inland waterways, navigable airspace and shipping channels, most of the basic port and airport infrastructure, metro and tram networks, and a large part of railway infrastructure). However, the private sector is not ruled out. On the contrary the private sector is widely involved as designers and contractors, for both construction and maintenance. Therefore, if a government decides to pursue a policy of increased private participation in transport infrastructure there are favorable areas of transport infrastructure for full different forms of private sector participation under the condition that the investment is financially attractive to the private sector.

The various elements of infrastructure provision may be carried out by public, quasi-public or private entities, resulting in a myriad of different models. But the degree of risk transfer to the private sector tends to increase progressively through these categories.

Any complex mix of public and private interests poses some specific issues which need to be considered. These issues are related to the objectives, the possibility to involve the private sector.

Projects that see the participation of private investors need to meet the same criteria as fully public ones. They should maintain or improve transport accessibility. They must meet environmental and safety criteria. They should be economically justified. And finally it is important to underline that a private involvement can never turn a poor investment into a good one.

The following section discusses the most important forms of infrastructure provision and the options of revenue and financing structures.

2.2. Organisation forms (models) of infrastructure provision

The different types of new public management philosophy follow a privatisation process with access to different financing structures. The level of privatisation varies and several options on each path are possible.

The distinction is made between:

- (i) **Functional privatisation:** includes the outsourcing of simple functions to the complex, cross-lifecycle public private partnership (PPP) model with contractual variations
- (ii) **Formal privatisation:** governments create entities to form a legally and economically independent entity
- (iii) **Material privatisation:** is generally via bundling functions within a public law institution and subsequent to formal privatisation.

The key characteristics used to distinguish between these forms of organisation and management are:

- (i) The nature and extent of the transfer of functions to the private sector
 - a. Distinction between sovereign functions and transferable functions
- (ii) Allocation of the "provision function"
 - a. Responsibility for determining where and when capacity should be established and maintained and what its dimensions and quality should be
 - b. Quality of the functions
- (iii) Ownership interests
 - a. Legal and constitutional decision (prohibition on sale)
- (iv) Duration of privatisation
 - a. Privatisation is often limited to a defined period of time

The models for organising infrastructure provision vary in the transfer of assets and/or the transfer of functions from the public sector to the private sector. This may involve a simple procurement process, such as the purchasing of planning, consulting, construction or facility management services that were previously performed in-house in "force account". Various degrees of privatisation in entire service providers is also possible (Figure 2-1).

Type of privatisation	Transferred tasks					Provision function	Ownership		Duration
	Design	Financing	Investment	Build	Operation		Public	Private	
Formal privatisation: “public entities in private clothes“									
legally ...	private business model					public	100%		unlimited
financially	private financing (company)					public			
Functional privatisation: “The private partner as the assistant of the public”									
outsourcing of single delegable tasks / services					public	100%		limited
	... of comprehensively integrated services						x%	x%	
Materially privatisation: transfer of ownership / provision function									
partial material privatisation	joint venture					public/private	x%	x%	unlimited
full material privatisation	sale of shares to private investors					private		100%	

Figure 2-1: Formal, functional and material privatization

Source: Alfen Consult GmbH

Figure 2-2 illustrates functional tasks between the public and private sector. In general infrastructure, projects can be designed so that the public sector fulfils sovereign tasks and the private sector participates in the implementation.

	Public Sector	Private Sector
Sovereign Tasks - needs assessment, public inquiry and approval - establishment/control of standards (technical, safety etc.) - organisation of financing of and competition in the sector - tendering and contracting out of works and services - contracts management and performance control - regulation (e.g. of user charges) - others	○ sovereign tasks	
Design	○	○
Construction/Rehabilitation	○	○
Finance and/or Investment	○	○
Operation - management (traffic flow, information flow, traffic interfaces) - maintenance (routine and periodic) - toll collection - others	○	○

Figure 2-2: Effective distribution of tasks for infrastructure procurement.

Source: Alfen Consult GmbH

Whatever the models chosen for providing and financing infrastructure the government will retain key responsibilities, particularly with regard to establishing the policy frameworks under which financing and regulating occurs.

The sovereign tasks related to infrastructure projects in functional, formal and material privatisation include:

- (i) Establishing policy directions
- (ii) Deciding how much of the public's resources should be dedicated to the transport sector, to particular modes and to specific projects
- (iii) Choosing and designing models for infrastructure provision
- (iv) Deciding on the balance of user charging and tax-based subsidies that will be employed and how this money will be channelled to the initiative
- (v) Organising tendering
- (vi) Designing and negotiating contracts
- (vii) Creating required legislative and regulatory frameworks
- (viii) Ex post monitoring

However, the nature of the government's role will likely be fundamentally transformed by the use of alternative financing and the government must develop appropriate structures to manage the process.

Whenever there is a fear of market distortion or even market failure in an economic sense, e.g. natural monopolies or other forms of restriction on competition in the case of common assets (as is always the case in the transport sector), the government can and must intervene in the form of regulation. Market regulation therefore describes the body of all rules and regulations used by the government to this end. This is achieved through a suitable degree of regulation and through the employment of correct systems and methods. Regulation is particularly important in line- or network-based sectors in which the creation of parallel networks is either undesirable or economically unfeasible.

Responsibilities of regulatory authorities include the determination of competition policies such as:

- (i) Instruments of ex ante control
- (ii) Price and product approvals

At a global level, a distinction is made between various regulation systems based on their impact:

- (i) Volume regulation
 - a. Regulation of the number of competitors in the market
 - b. Regulation on the production volume
 - c. Service obligations and prohibitions on activities
- (ii) Price regulation
 - a. Regulation of specific price levels

- b. Fixed prices, price floors and caps
 - c. Cost tariffs that specify the relevant price calculation procedures
 - d. Imposition of individual prices that cannot be changed without the approval of the responsible regulatory authority
- (iii) Rate of return regulation
- a. Limits on the return on capital

2.2.1. Financing of infrastructure with formal privatisation: "The state in the private dress"

In global terms, formal privatisation is probably the most widespread form of privatisation in the infrastructure industry and can be found in all infrastructure sectors. The objective is usually to outsource departments responsible for a specific infrastructural task from the public authority in order to form a legally and economically independent entity.

In formal privatisation governments create entities for the task of delivering infrastructure, under varying degrees of independence from political leaders in their decision-making.

Degrees of devolution include:

- (i) Government agencies
- (ii) State-owned companies
- (iii) Companies with mixed public and private ownership
- (iv) Private, not-for-profit organisations
- (v) Fully private owner-operators

Formal privatisation describes the transformation of an administrative entity into a private law company, typically in the form of a corporation and sometimes known as an infrastructure operating company.

In contrast to pure special purpose companies, infrastructure operating companies have an unlimited scope in terms of timing and location. They are established as permanent entities and generally own at least those infrastructure assets that they are permanently responsible for operating. Rather than concentrating on a specific project, they focus on infrastructure sectors in general. These purely private or mixed-ownership companies invest in infrastructure assets and perform comprehensive infrastructure services independently.

Legal privatisation is often preceded by bundling in the form of public law institutions (e.g. special public agencies or other strictly public law company structures). However, formal privatisation often also serves as the precursor to a more extensive material privatisation, whether in part or in full, by way of an Initial Public Offering (IPO) and/or the sale of shares to strategic or financial investors.

Privatisation is often driven by the need for additional capital to renovate or expand a company's existing infrastructure assets. The involvement of private investors also seeks to achieve a more efficient structure and improved performance on the part of the

company. If the company obtains finance from non-public sources it is also described as financial privatisation. These companies are in direct competition with other similar companies in the market. Where monopoly situations exist they are subject to regulation with regard to their pricing policy at the very least as is the case for the majority of the transport infrastructures. The following project example shows the formal privatization in the North-South Armenian Road corridor. The \$500 million Multitranches Financing Facility is implemented by state owned companies.

Project example: North-South Armenian Road corridor (Armenia)

The objective of the North-South Armenian road corridor is to develop a sub-regional and national road transport network in Armenia with the purpose to (i) facilitate efficient sub-regional road transport transit, (ii) increase trade flows and competitiveness, (iii) lower transport costs, (iv) increase mobility and accessibility to markets, jobs, and social services, and (v) improve governance (ADB, 2010)². The corridor runs 556 km from the border with Georgia at Bavra via Gyumri, Ashtarak, Yerevan, Goris, Kapan to the border with Iran at Meghri. The road is 2-lane except Yerevan–Ashtarak and the Yerevan–Ararat section, which are dual 2-lane (ADB, 2010)².

In 2009 ADB approved a \$500 million Multitranches Financing Facility to finance the improvement of the road corridor, to modernize border and customs infrastructure and facilities and implement the road subsector strategy in Armenia. Tranche 1 of the MMF includes reconstruction of an 18,4 km 4-lane section of the Yerevan-Ashtarak road to improve road safety. Tranche 2 includes the widening from 2-lane to a 4-lane standard of the 40km Ashtarak-Talin section and 44km Talin-Gyumri section. All subsequent tranches are expected to include the upgrade and/or rehabilitation of the remaining parts of the north-south road corridor (ADB, 2010)².

The project's implementing party is the North South road corridor investment program SNCO on behalf of the government of Armenia. Implementation of the project requires meeting the requirements of handbooks and the regulatory methods of ADB. The implementing authority is the Ministry of Transport and Communication and the Armenian Roads Directorate (ADB, 2010)³. The proposed structure of project implementation is shown in Figure 2-3.

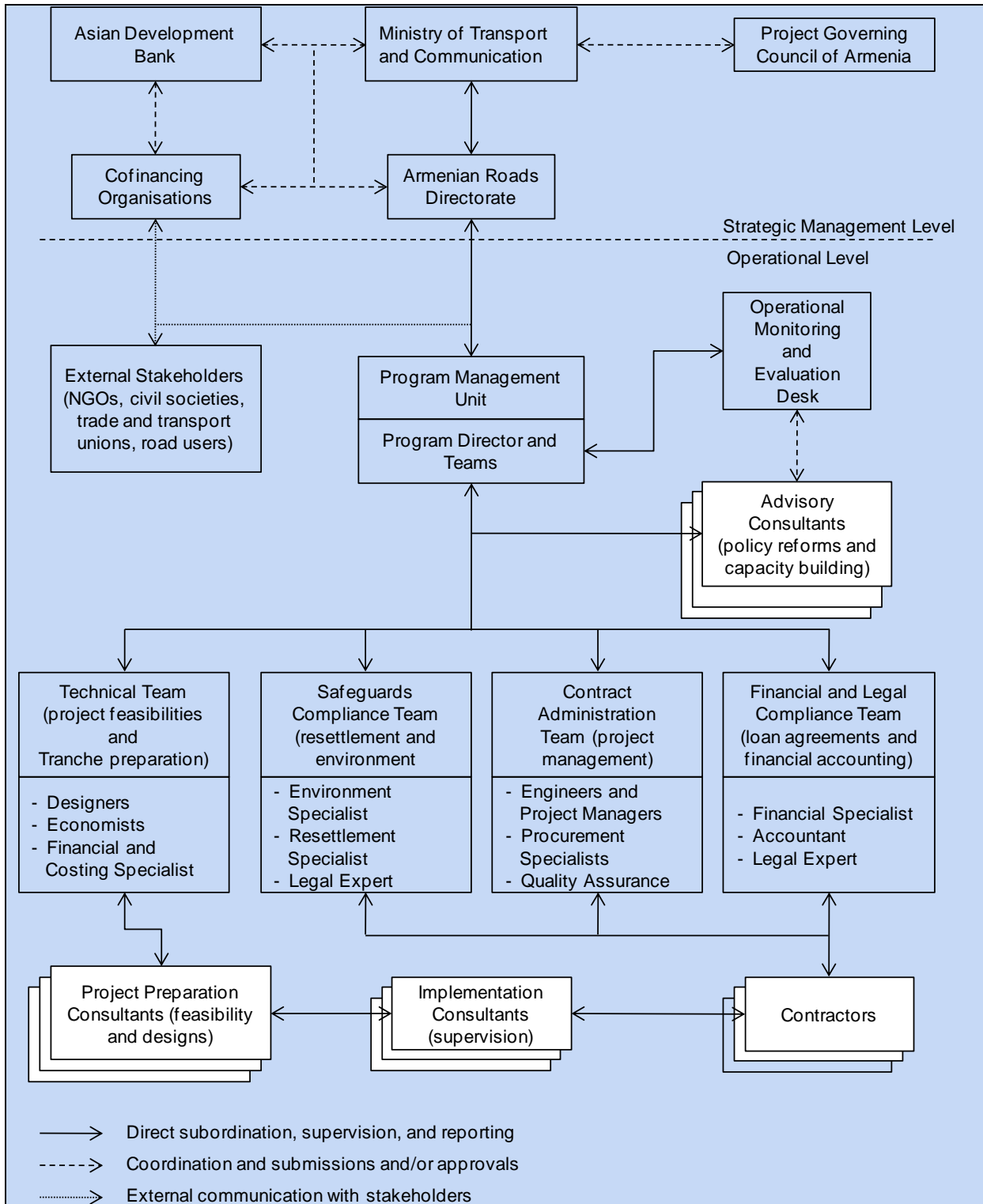


Figure 2-3: Program implementation chart, Source: ADB (2009)⁴

Armenia has a strict environmental protection policy for implementing and managing projects. The communication line of monitoring and reporting is outlined in Figure 2-4.

The Executing Agency is the Ministry of Transport and Communication. The ministry will be monitored by the sub-project governing Council of Ministers, whose other key functions include guiding the overall policy and strategic direction of the Multitranchise

Financing Facility program, reviewing and evaluating its performance, and coordinating with other external aid agencies. For project implementation the ministry has set up a Project Management Unit. The unit is responsible for the implementation and monitoring of the project.

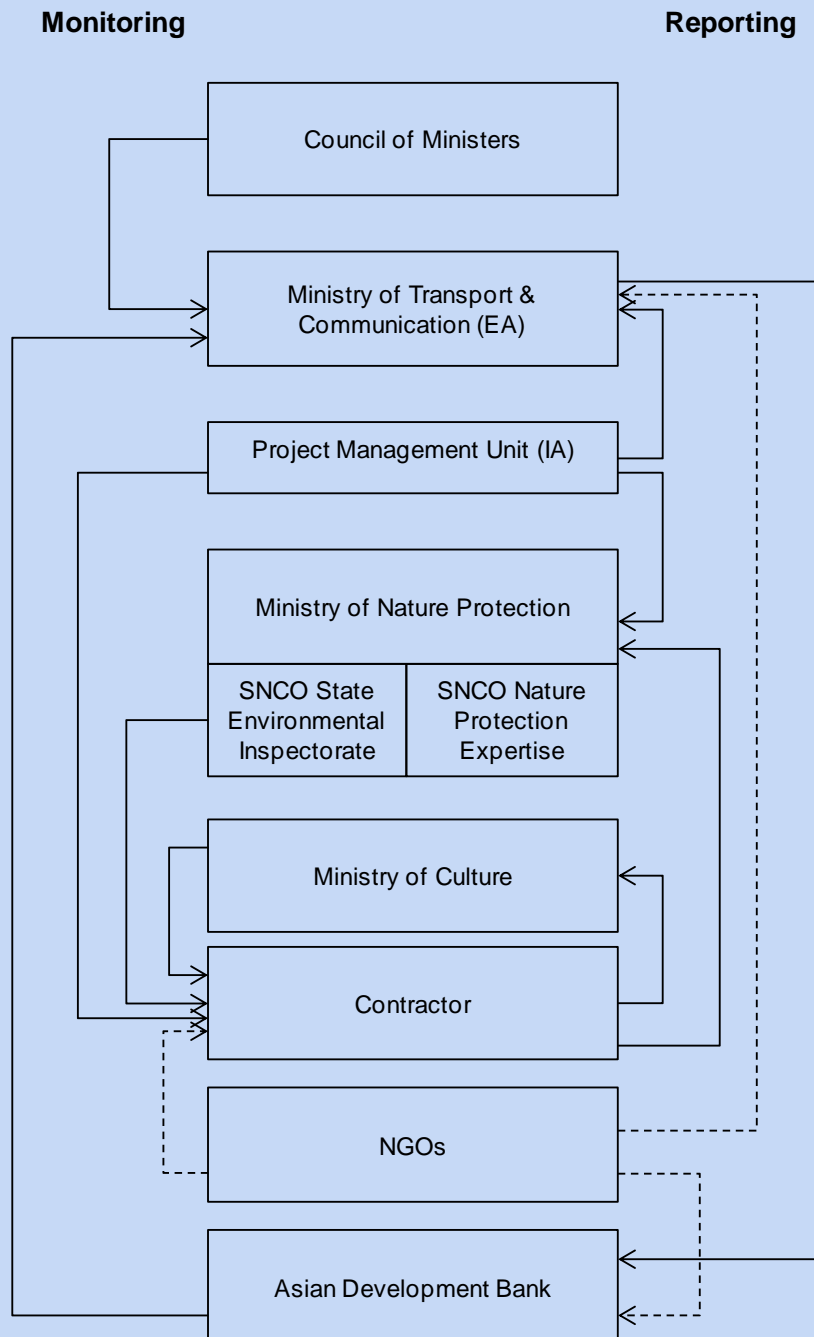


Figure 2-4: Monitoring and reporting relationships, Source: ADB, 2010³

2.2.1.1 Financing opportunities in infrastructure procurement by public agencies

Public agencies responsible for infrastructure procurement retain a relatively high degree of public control because they are accountable to elected officials but also represent a step towards greater autonomy.

Structural key characteristics of public agencies are described as follows:

- (i) A public agency has its own management board with a level of autonomy
- (ii) The agency is dedicated to a single task, such as the supply of road infrastructure
 - a. The agency has control over how resources are allocated for investment and how maintenance purposes are employed

Generally public agencies have separate accounts from the ministry for financing infrastructure. Therefore, agencies determine the design of investments. However:

- (i) Borrowing or funding might require approval by the ministry
- (ii) Ministries set annual budgets and define borrowing powers and limits

Furthermore, in some countries, agencies have the authority to collect user charges and apply them directly to the infrastructure they are responsible for.

2.2.1.2 Financing of infrastructure by state-owned corporations and mixed companies

Internationally, many motorways, railways, ports, canals and airports are operated and financed by state-owned corporations.

The government's role is:

- (i) To establish their legal basis
- (ii) To set their annual budgets
- (iii) To define borrowing powers and limits

Thus, the government is typically an enabler, customer, subsidy provider and, in some cases, regulator and arbiter.

State owned corporations are usually operated on a commercial basis and are incorporated as private companies.

The characteristics are described as follows:

- (i) The company must balance their budgets with revenues
- (ii) Given autonomy with regard to attracting financing from external sources
- (iii) Usually given autonomy of raising revenues – such as user charges, tolls, fares, etc.
- (iv) Degree of independence in decision-making
- (v) The corporations are not subject to the same restrictive labour relations regimes that characterise the public sector

The relative independence does not necessarily imply complete financial autonomy. State-owned companies mostly receive government subsidies in combination with revenues from user fees.

2.2.1.3 Financing of infrastructure by private, not-for-profit organisations

A private, not-for-profit organisation is free from the political control that would result from government ownership. Rather, they report to stakeholders, such as users and communities, who are represented on their management boards. However, government may also be represented on the board meaning that the organisation's activities may be determined by current legislation.

The organisations are characterised as such:

- (i) Full borrowing powers
- (ii) The organisation can accumulate surpluses from their operations, but do not distribute the revenues to shareholders
- (iii) All surplus funds must be reinvested

2.2.2. Functional Privatisation: "The private as an assisting agent of the public body"

In functional privatisation the government organisation retains overall responsibility for the provision of infrastructure but selectively contracts out aspects of the task to private entities. Organisations, named as special purpose companies (SPC), are specifically created for this task. The company is closely linked to a specific project in terms of location, timing and function and thus is independent in its decision-making from political leaders, to a certain extent. SPCs are becoming increasingly common around the world with examples found in practically all infrastructure sectors. Companies may have an exclusively private-sector shareholder structures or may have both public- and private-sector shareholders.

Therefore, functional privatisation describes the transfer of functions that were previously performed by the public sector. In recent times, the term "outsourcing" has also established itself as applicable in this form of privatisation. It is a task sharing and „outsourcing“ of delegable tasks to private companies, as client-/ client relationship, timely limited and without transfer of ownership. The following example of Poti New Port development illustrates the development of a functional privatisation for financing, construction, operation and maintenance over a concession period of 49 years.

Project example: Poti New Port Development (Georgia)

The Sea Port of Poti (Georgia) is expected to have a significant transition impact and represents a crossroad in the Caucasian corridor. In 2008 Ras-Al-Khaima Investment Authority (RAKIA) current operator of the existing Poti port through 100% ownership of Poti Sea Port Corporation (PSPC) purchased 400 ha of land adjacent to the existing Poti Seaport. 100 ha are planned for future port expansion and 300 ha will be developed to a

free industrial zone. The concessionaire generates income by collecting all the port duties and other fees (ENVIRON, 2010). The Government does not participate in project implementation and management and does not undertake any project risk (Poti, 2011). Private sector participation will mobilize funds to develop the new port and will develop a new and experienced management team together with training programmes facilitating the transfer and dispersion of skills (EBRD, 2010). The concession of Poti Sea Port is for 49 years.

Legal framework

The existing port and zone area can be developed jointly by one operator or by separate operators according to a mutually agreed master plan (Poti, 2011). The agreed master plan between operator and the government is part of the concession contract and serves as basis for monitoring fulfillment of commitments by RAKIA. The operation of the free industrial zone will be regulated according to new laws on industrial zones recently adopted by the Georgian Government. The law provides tax exemption for enterprises in the free industrial zone, exemption from VAT payment and property tax exemption. The Government shall provide the simplest possible administrative and other procedures necessary for corporate management (Poti, 2011).

Stakeholder engagement plan

A stakeholder engagement plan has been developed in accordance to the EBRD policy. The plan describes how to maintain a constructive relationship with stakeholders on an ongoing basis through meaningful engagement during project implementation. People or communities that are or could be affected by the project, as well as other interested parties are identified and addressed on the stakeholder engagement plan (ENVIRON, 2010).

Figure 2-5 shows responsibilities for stakeholder engagement activities throughout the concession period of the project.

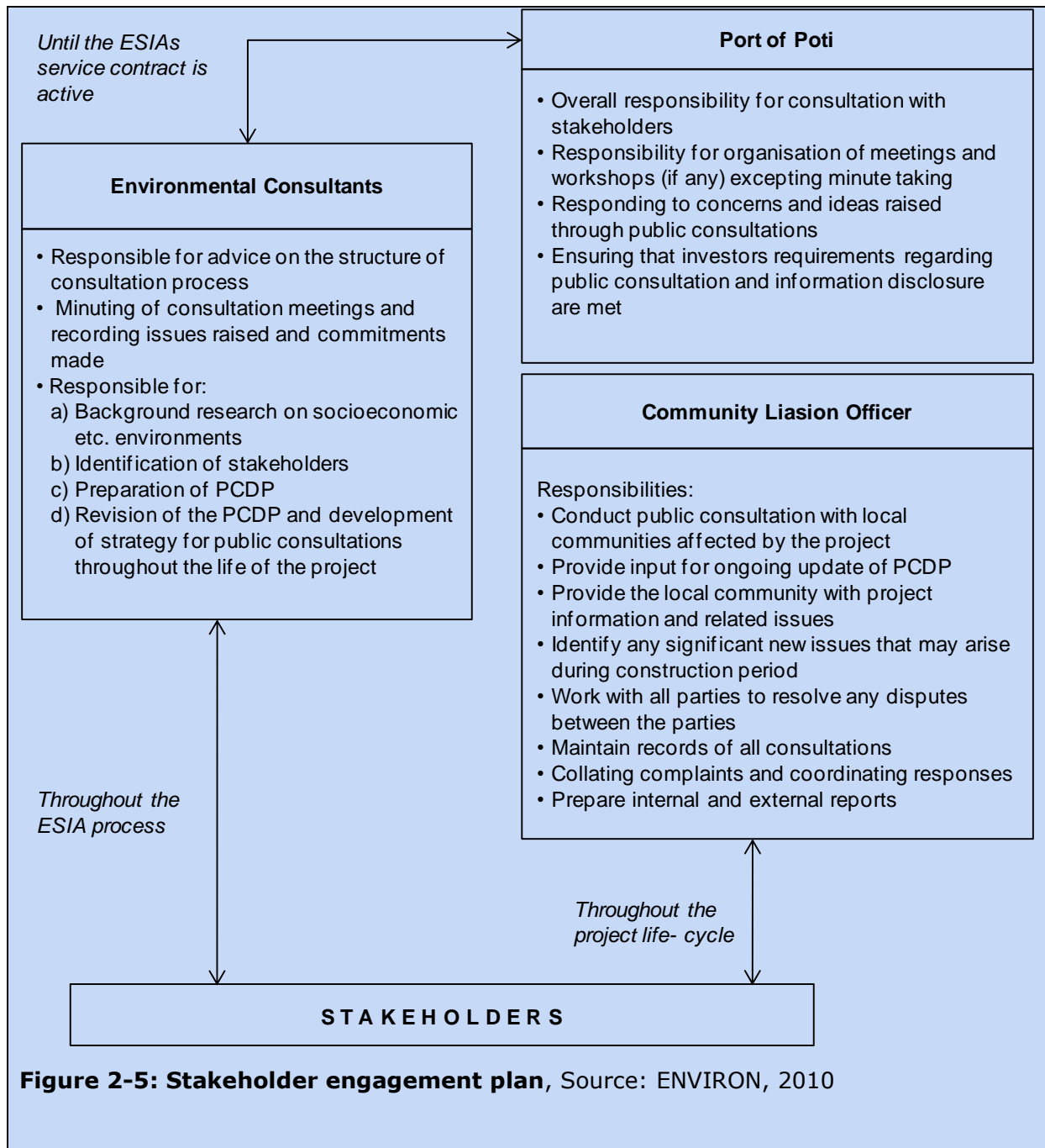


Figure 2-5: Stakeholder engagement plan, Source: ENVIRON, 2010

The highest level of outsourcing occurs in Public Private Partnerships (PPP). This involves contracting out a complete and extensive package of responsibilities, which includes the associated risks, to a single partner for a long period of time.

Functional privatisation includes PPP models whose services are “comprehensively integrated”, bundled and awarded through a PPP contract for a long, individually defined term (lifecycle approach). Accordingly, a limited form of functional privatisation always occurs when the provisions function and, typically, the ownership of the physical structure remains with the public sector. One exception is the Build Own Operate and Transfer (BOOT) model, under which ownership is transferred to the private operator during a limited contractual term, mostly for tax reasons.

2.2.2.1 Infrastructure procurement with a Public Private Partnership PPP

The term “PPP” was first used in the USA in the 1960s to refer to typical urban development projects involving private investors. PPPs then became known globally as a method of procurement for the public sector, among others, in the area of social infrastructure and infrastructure management. Initially developed into a standardised form as a result of the Private Finance Initiative (PFI) in the United Kingdom in the 1990s, it was taken up throughout the world in various forms and is becoming increasingly popular both as an alternative procurement option for the public sector and as a good investment opportunity for private investors.

The key characteristic of this kind of PPP is the transfer, for a limited period of time, of integrated services relating to the planning, construction, financing, maintenance and operation (in a lifecycle approach) of public infrastructure that were previously performed by the public sector to private bidders. The main objective is to generate efficiency gains in the provision of services. However, another stated aim (with varying priority) is to bridge liquidity bottlenecks on the part of the public partner when performing urgent construction or modernisation tasks involving infrastructure that is needed by members of the public and other users.

The European Union (EU) noted the following elements of PPP projects that distinguish them from more basic contracting out:

- (i) Lifecycle approach through relatively long concession contracts (usually 15-30 years)
- (ii) Generation of efficiency gains through the appropriate assignment of functions
 - a. The private partner fulfils the task of economic operator in aspects such as design, completion, implementation, funding etc. The public partner’s responsibility lies in defining objectives in terms of public interest, quality of services provided and pricing policy and on oversight
- (i) Real risk transfer with balanced risk allocation
- (ii) Creation of incentive structures and leveraging of innovation potential through results-oriented performance, description and remuneration
- (iii) Use of private expertise and capital
 - a. Project finance includes complex arrangements between the various partners
- (iv) Long-term relationships on a partnership basis and, in particular, governed by contractual provisions.

The box below briefly describes a number of typical examples of companies which underwent different degrees of privatisations in different countries:

Project example: British Airport Authority

A first example is the privatisation of the British Airports Authority. Formed in 1965, it has been the owner of Heathrow, Gatwick, Stansted and Prestwick Airports since 1966. The Airports Act 1986 saw the formal privatisation of the British Airports Authority as a public limited company. Since then, the new company has been known as BAA. As part of its subsequent continuing privatisation process, BAA went public a year later, in 1987. In 2006, the company was taken over by Ferrovial and delisted from the stock exchange.

Project example: Asfinag

Founded in 1982 as a 100% subsidiary of the Austrian Federal Republic the ASFINAG took over from the responsible administration the design, financing, construction, maintenance, and operation on the whole Austrian highway network with a length of approximately 2.100 km. In 1997, the company got the usufruct right of all properties and assets of the primary road network that continues to be owned by the Federal Government as well the right to collect tolls on this network. Since ASFINAG does not get any financial support from the public budgeted the aim of the transfer of these additional rights was the companies' credit worthiness and off balance sheet treatment in the national budget.

Project example: Brisa – Autoestradas de Portugal S.A.

With the formation of the government-owned corporation Brisa – Autoestradas de Portugal S.A. – in 1972 (formal privatisation), Portugal initiated a range of major investment projects for the expansion of its high-end road network. Since then, Brisa's privatisation process continued and it has been contracted with the construction, financing, maintenance and operation of the Portuguese highway network. To this end, it was given the right to collect tolls from road users. By the end of 1981, the formally privatised BRISA (Autoestradas de Portugal S.A.) was granted its first concession involving the construction of around 390 km of highways. The government held 90% of the shares of the company directly and a further 10% indirectly, with CGD (a state-owned bank) and IPE (a government institution) each holding 5%. Between 1997 and 2001 the state-owned shares were sold in four tranches. The government sold 35% of its shares in 1997, 31% in 1998, 20% in 1999 and 4% in 2001 (totalling 90%). Currently, the main shareholders of Brisa – still being a concession company - are José de Mello, Abertis, and the Arcus European Fund I (former Babcock & Brown European Infrastructure Fund). Around 35% of the shares are freely traded on the open market (Brisa, 2009)

Project example: Arlanda Express (Sweden)

In order to create a high-speed rail link between Stockholm Central Station and Arlanda International Airport, a functional tender process was conducted for the construction, operation and maintenance of the line, around 40km in length, in 1993. Construction started in 1995 and the line was commissioned in late 1999. In addition

to private capital, the public sector provided significant funding for the necessary start-up investments. The concessionaire (A-Train AB) finances its operations through the sale of tickets, meaning that it bears the revenue risk, among other things. The original shareholders of the project company A-Train AB were the construction firm NCC/Siab (44%), GEC-Alstom (29%), Vattenfall (20%) and Mowlem (7%). Since early 2004, A-Train AB has been owned by the Australian Macquarie Group. The concession agreement has a term of 45 years and expires in 2040 (Arlanda Express, 2009; Källenfors, 2005).

Project example: SANEF, ASF and APRR

In 2005, the French government pursued a similar strategy with the previously state-owned highway companies SANEF (Société des autoroutes du Nord et de l'Est de la France), ASF (Autoroutes du Sud de la France) and APRR (Autoroutes Paris-Rhin-Rhone), selling the shares it still held in the concession companies after the IPO to private – in this case, strategic – investors. In recent years, the French government had reduced its shares in the French highway companies SANEF (to 76%), ASF (to 54%) and APRR (to 70%). The sale was conducted in several tranches, most of which were implemented via the stock exchange. Hence, most of the non governmental shares were in free float. In late 2005, the French government decided to sell its remaining shares in form of a public tender procedure to strategic and/or financial investors. The successful bidders were Albertis for SANEF (1743 km), Vinci for ASF (3124 km) and a consortium comprising Eiffage SA, MIG and Macquarie European Infrastructure Fund (Eiffarie) for APRR (2260 km). The transaction generated total revenues of €15 billion for the French government.

Similar transactions had already been conducted in Italy (e.g. the privatisation of Autostrade) and in Spain.

2.2.2.2 Specifics about PPP infrastructure concessions

PPPs can take on many forms and are typically known through acronyms describing the tasks that are transferred to the private partner, such as:

BOT	Build Operate Transfer
BOO	Build Own Operate
BOOT	Build Own Operate Transfer
DBFO	Design Build Finance Operate
DBOOT	Design Build Own Operate Transfer

The tasks transferred can include design (D), building (B), financing (F), operation (O), maintenance (M) and ownership (O). The definitions about the transferred tasks and responsibilities vary for different infrastructure types. Each project has different characteristics with different tasks and responsibilities might be shared.

A typical example would be a PPP project under which the construction, financing/investment and operation of a road project between points A and B is transferred to a company that is specially formed for this purpose for a period of, for example, 30 years. The project would be subject to the terms of an agreement with the

characteristics of a contract for work and services, with ownership returning to the public-sector principal at the end of the contractual term.

The following gives more detail regarding what the various PPP models might entail:

Build-Operate-Transfer (BOT) arrangements involve the transfer of construction, operation and maintenance responsibilities for a facility to a private partner. The bundling of building and operations allows for “life cycle” design efficiencies. Under this scheme, the asset eventually reverts to public ownership.

Design-Build-Finance-Operate (DBFO) means that the private sector partner is also asked to supply resources to have the project built, and is remunerated over the life cycle of the project. The contractor’s future revenue streams may be based on tolls, lease payments, shadow tolls, vehicle registration fees etc. These may be supplemented by public sector grants in the form of money or contributions in kind, such as right-of-way.

Design-Build-Own-Operate-Transfer (DBOOT) involves the transfer of asset ownership for the duration of the agreement, as occurs in many motorway concessions.

Figure 2-6 shows that there are essentially two different development trends with regard to privatisation. One is based on forms of functional privatisation and is characterised by increasing private sector involvement in the various functions and steps in the value chain within the lifecycle of a physical infrastructural facility. As such, this can be seen as a growing “privatisation of functions”.

The other path is initiated by a public-sector institution that performs specific functions relating to a physical infrastructural facility and seeks to involve private partners as shareholders and providers of capital. As this form of privatisation ultimately leads to material privatisation, when ownership is transferred, it can also be seen as “organisational privatisation”.

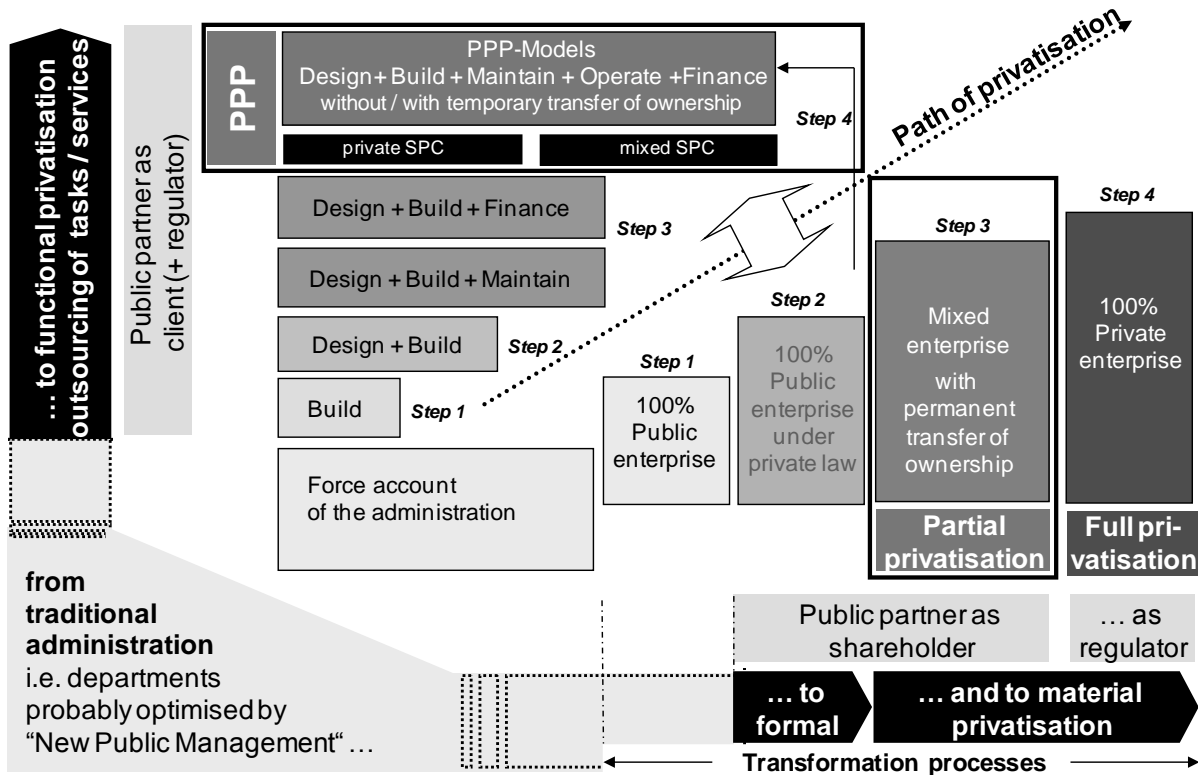


Figure 2-6: Paths of privatisation, Source: Alfen Consult GmbH

Project example: Athens International Airport S.A.

One prominent example of a DBOOT model is the new Athens Airport. The Greek government holds a majority interest of 55% in Athens International Airport S.A. (primarily in the form of land), whereas the private shareholders with a combined interest of 45% are responsible for planning, construction and operation as well as financing the necessary investments until escheat for a concession term of 30 years (including the five-year construction phase). The concession was granted in 1996. Due to the success of this project, the Greek government is interested in the partial sale of its shares via the stock exchange. However, a date for the IPO has yet to be determined.

2.2.3. Material Privatisation: Transmission of ownership and provision

The key characteristics of material privatization are:

- (i) A comprehensive functional transfer
- (ii) Ownership of the assets necessary to perform those functions is also transferred on a permanent basis
- (iii) The provision function is also generally transferred from the public to the private sector, i.e. the capacity and prices of infrastructure provided are subsequently determined primarily on the basis of the interaction between demand and supply

In this scenario the government withdraws to all practical extents from an entire infrastructural function that it previously performed. This means that, in contrast to functional privatisation, material privatisation always involves the formation of a new private company (as is the case in formal privatisation as well), if only to clearly demarcate the privatised operations.

A distinction is made between full and partial privatisation based on the extent to which a public partner retains an interest in the company after privatisation.

Partial privatisation can be further broken down into majority and minority interests depending on the interest held by the public sector in the jointly owned private company. As full privatisation means that there are no longer any public partners, only partial privatisation results in a “horizontal” partnership with the private sector.

As evidence of market failure often exists for infrastructure (an indicator/reason for the state having to remain involved in some way) – genuine cases of full material privatisation (i.e. 100% privatisation on a permanent basis) rarely occur in the public infrastructure sector.

In the event of full material privatisation, the government can and must exercise an influence in the form of legislation, regulation or similar whenever public interests, such as those of users, are threatened.

Transfer of formerly publicly undertaken tasks or public companies through partial (PPP) or full privatisation to the private sector include strategic or financial investors, through sale or stock-market flotation (IPO), with timely unlimited transfer of ownership.

2.2.3.1 Financing through a fully private owner-operator

The fully private owner-operator is the most extreme deviation from the ministerial model. The infrastructure is owned, developed and maintained by private, profit-maximising companies.

In this case:

- (i) All direct influence over the infrastructure is removed from the hands of elected officials
- (ii) The public sector must resort to regulation to influence outcomes regarding the management and use of this infrastructure

The box below briefly describes a selection of examples of material privatisations.

Project example: Deutsche Bahn AG

(DB AG, DBAG or DB) is the German national railway company, a private joint stock company (AG) that is 100% owned by the Federal Republic of Germany. Based on the “Bahnreform”, it came into existence via (i) outsourcing to “Deutsches Eisenbahnvermögen” and the subsequent (ii) formal privatisation in 1994 as the successor to the former state railways of Germany, the Deutsche Bundesbahn of West Germany and the Deutsche Reichsbahn of East Germany. After several further steps of internal reform between 1999 and 2007 a long term goal of the company and the shareholder was a partial material privatisation by a going public, which has been always subject of a highly controversial political discussion in Germany. One of the main questions is whether privatisation should be carried out with the railway system

(integrated model) or without (split model). The previous Federal Minister Wolfgang Tiefensee suggested selling 25% of DB beginning in 2008. Currently the privatisation process is on hold for different political reasons.

Project example: German Autobahn Tank&Rast GmbH

German Autobahn Tank&Rast GmbH is the operator of almost 90% of the service areas along the German Autobahn. After having been part of the Federal Ministry responsible for transport and traffic, the state owned public limited company was established in 1994 as a formal privatisation with the German government being the sole shareholder. In 1998, a consortium of the two private equity houses Apax Partners and Allianz Capital Partners and Deutsche Lufthansa AG acquired the company for a price of around € 600 million after a EU-wide tender procedure. End of 2006, the three shareholders sold the company to the British private equity company Terra Firma after having cancelled an envisaged stock market flotation. Only half a year later the European Infrastructure Fund of RREEF, a subsidiary of the Deutsche Bank AG, purchased 50% of the shares of Tank&Rast.

Since having been materially privatised in 1998, about € 500 million were invested in the modernisation and extension of service and rest areas as well as in better service quality. With approx. 340 petrol stations and around 370 service areas (including 50 hotels) Autobahn Tank&Rast is still the leading provider of services on German Autobahns. In recent years, Tank&Rast started cooperations with well-known food services brands such as Barilla, Burger King, Nordsee, Mc Donald's, Segafredo and Lavazza.

Project example: British Rail

The state owned British Rail was responsible for the railway infrastructure as well as for the operation (the carriage of passengers and goods) until 1994. In 1993, the Railway Act required the following reorganisation of the railway industry in UK i) the separation of transport operation from railway infrastructure; ii) the introduction of a franchise system for regulated passenger rail transport; iii) the privatisation of the freight rail transport business; and iv) the privatisation of the infrastructure. As a first step the new infrastructure manager Railtrack became the sole owner and manager for the entire railway infrastructure including tracks, signalling, electrification, stations, depots and shops and was listed on the London stock exchange. Subsequently, since 1995 the freight rail transport was completely privatised and taken over by four private freight train operators that had to buy operating licences for this purpose. They own their own rolling stock and operate in a competitive market environment. In parallel, 25 private passenger train operating companies established regulated under a franchise system. Particularly the (separate) privatisation of the infrastructure and Railtrack as the private infrastructure provider turned out to be a major problem of the whole privatisation process. After three big serious train accidents mainly caused by cutting maintenance costs for reasons of economic viability of the company Railtrack had to replace hundreds of kilometres of damaged track and had to pay compensation to train operators. Both, compensation and investments led to a financial crisis and Railtrack declared bankruptcy in October 2001. Subsequently, the government replaced Railtrack by Network Rail in March 2002. Network Rail is a not-for-profit company limited by state guarantee and took over the ownership and management of the rail

infrastructure. Hence, the railway infrastructure in the UK is de facto re-nationalised.

Project example: Airport Düsseldorf

Flughafen Düsseldorf GmbH was formed in 1927 and now is the third-largest airport in Germany. Following the fire disaster in 1996 which affected the terminal building, the NRW state government resolved to sell its 50% share in the airport company to a private investor due to the significant investment volume required. In an EU wide tender process in 1997, the Airport Partners GmbH consortium, consisting of Hochtief Airport GmbH, HTA (60%) and the Irish state owned airport operator Aer Rianta International (40%), acquired the shares for €180 million (City of Dusseldorf, 1997). Under the terms of the acquisition, the strategic investor was required to return the airport to full functionality in a short space of time as part of the "airport 2000 plus" project. Between 1997 and 2003, Airport Partners GmbH invested around €390 million in extensive construction measures at the terminals and gate areas A, B and C, as well as the construction of an underground car park with 800 parking spaces and a new drop off area in front of the terminal building. The partial privatisation allowed the airport to return to normal operations rapidly. The 50% private interest in the airport is now held by HTA (20%), HTAC (HOCHTIEF AirPort Capital, see below; 10%) and Aer Rianta (20%). The remaining 50% is still held by the City of Dusseldorf. Non aviation services currently account for 42% of the airport's total revenue (Hochtief AirPort, 2009)

2.2.4. Vertical or horizontal structures

In this classification/categorisation, a distinction is made between horizontal and vertical partnerships in structural terms. Hence, in the case of functional privatisation, reference is also made to contractual and institutional PPPs.

Accordingly, Figure 2-7 illustrates the structural differences between these two functional partnership models and the horizontal partnership arising from partial material privatisation. It should be noted that the latter sometimes is called "Institutional PPP" (or "Institutionalised PPP" as it is sometimes called, e.g. in the EU Green Paper on PPP) too.

In both cases of PPPs, i.e. contractual (vertical) and institutional (vertical/horizontal), a principal/agent relationship is entered into with a special purpose company (SPC) formed specifically for the respective (project) purpose under the terms of the PPP contract, which functions as a contract for work and labour or as a service agreement. A highly varied range of contract models may be used.

In contrast to (purely) contractual PPPs where the agent is a (purely) private project company, the public sector retains an interest in the project company in the case of institutional PPPs, whether in the form of the public-sector principal itself or another public-sector institution.

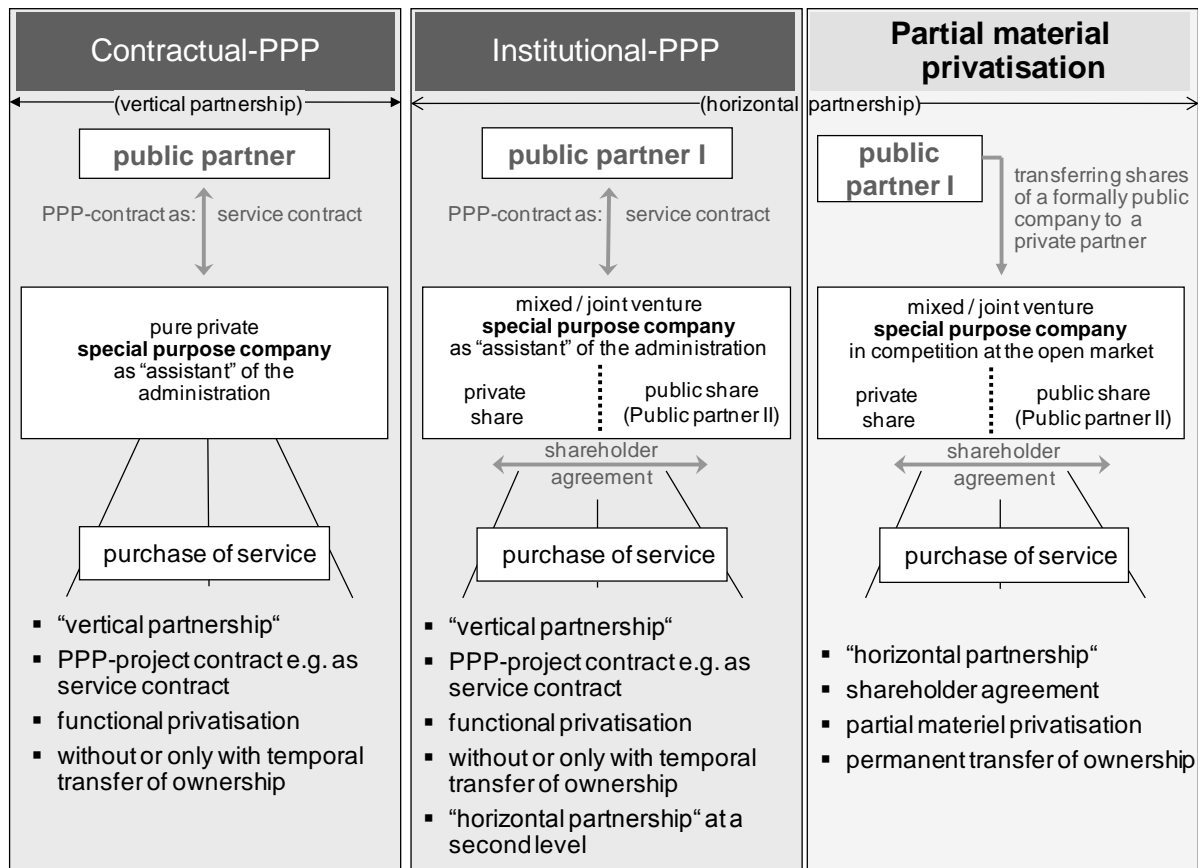


Figure 2-7: Structures of partnerships models, Source Alfen Consult GmbH

The horizontal partnership shown on the right-hand side of the diagram (Figure 2-7), as a partial material privatisation, describes the participation of public-sector and private-sector partners as co-shareholders of an infrastructure project company that design, build, finance, maintain and/or operate an infrastructure project.

With horizontal partnerships the public sector is able to control the degree of its influence over the provision function in the wider sense and the transfer of functions on the basis of its shareholding as set out in the partnership agreement. However, the business risk also remains with the public sector to the same extent. If the aim is to achieve a clear separation of risks between the public and private partner entering into a vertical partnership is achieved more effectively.

There are two main ways in which this type of partnership is realised:

- (i) An infrastructure project is put out to tender as a BOO contract (Build Own Operate)
 - a. The tender conditions specify that the public sector intends to participate in the project company.
- (ii) A (already existing) project company fully owned by the public sector is seeking a private investor as a shareholder
 - a. Shares are then sold either to a private strategic partner by way of tender or auction, or widespread by way of IPO
 - b. Often motivated by the fact that capital is required for the expansion or renovation of an infrastructural facility

- c. Or motivated by the desire to integrate the expertise of a private operator into the existing organisational structure and transfer some of the risks to the private partner

2.2.5. Case Study: M1-M15 Motorway (Hungary)

The M1/ M15 motorways connect three capitals: Budapest, Vienna and Bratislava. The 35-year concession project has a length of 43 km on the M 1 and 14 km on the M 15. It was expected that the interconnection of the Austrian and Hungarian motorway systems would significantly improve speed, reliability and safety of travel. The road section was expected with the highest traffic volumes among all the motorway projects under consideration in central and Eastern Europe (Berger, 2009).

Estimated project costs were around \$210 million US. The Hungarian government covered the land acquisition costs of about 5% of the total investment cost. In 1991, the Bureau for Motorways in Concession was looking for a concessionaire who uses his own funds to finance, build, own, and operate sections of the M1 and M15 toll motorways and connected secondary developments, filling stations, shops, restaurants and hotels on rest areas of the motorway (Berger, 2009).

Procurement and structured finance

The aim of the project was to structure a limited recourse project with extensive risk transfer and minimum government involvement (Smith, 2006). The financing structure of the M1/M15 was mainly focused on the highest possible involvement of international investment capital in order to pass the risks of the project to the private sector (Smith, 2006). The total cost of the project was \$310.8 million.

The Hungarian Bureau for Motorways issued the invitation for prequalification with the purpose to select consortia which are able to design a bid which includes planning, financing by using their own funds, construction, operation and maintenance for sections of the M1/M15. Beside the motorway secondary developments like filling stations, shops, restaurants and hotels on rest areas where part of the terms of reference. Principal advisors to the Ministry were BCEOM French Engineering Consultants, Morgan Grenfell and Co Ltd., UK and the New York law firm Stroock & Stroock & Lavan. The tender documentations with a draft of the concession agreement were issued to the selected tenderers in mid March, 1992 (Smith, 2006). Four selected consortia had 150 days to prepare their final tenders. Based on the criteria announced in the tender documentation two preferred tenderers were selected mid November 1992 and the final negotiations began in December (Smith, 2006). In April 1993 the 35-year concession was awarded and signed by the Hungarian Euro- Expressway Consortium (HEEC) led by Transroute International of France as operator, with nine other equity partners who founded the SPV Elso Magyar Koncesszios Autopalya (ELMKA). After the concession contract was signed with the ministry the SPV ELMKA negotiated the secondary agreements such as construction contract, operation and maintenance contract, credit agreements, security and insurance agreements.

Financial institutions Banque Nationale de Paris (BNP) and Caisse des Depots et Consignations of France and OTP Bank and Kereskedelmi Bank (OKHB) of Hungary were made full members of the bidding consortium in order to develop creative financing solutions (Wright et al., 1995). They provided both debt and equity. The consortium provided 18% equity and 82% debt. The debt portion included loans from

the European Bank for Reconstruction and Development. Principal and interest repayments were to be fully financed from toll revenues.

Banque Nationale de Paris, was the leading bank in the foreign debt syndication, during the whole tendering procedure. The international debt was based in deutschmark and US dollars from 11 commercial banks. The Hungarian Forint debt financing of HUF 12,000 million was co-financed by the national bank of Hungary the Nemzeti Bank and EBRD. The participation of EBRD was crucial to securing the foreign financed debt given that most of the revenues would be collect in Hungarian Forints which at that time were non-convertible (Smith, 2006).

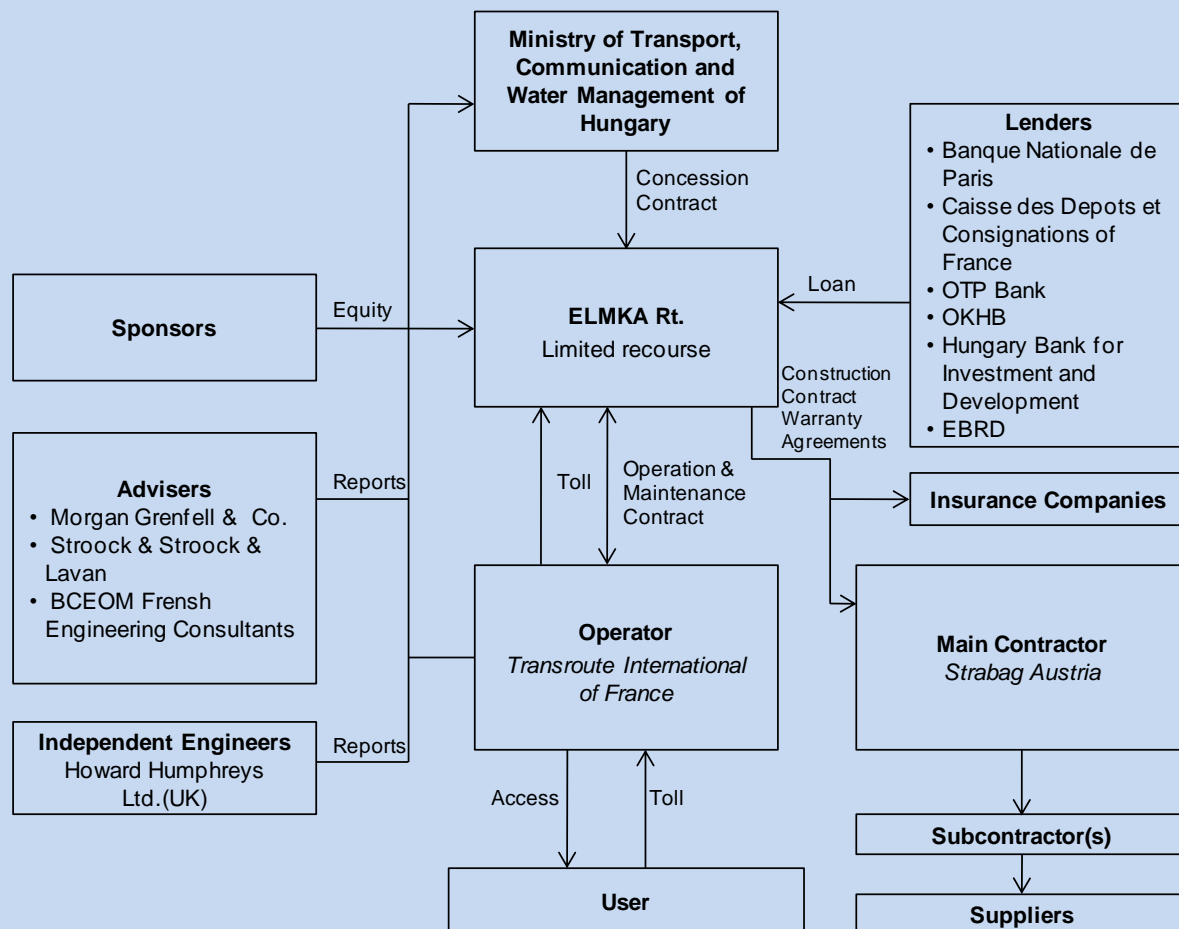


Figure 2-8: Organizational chart, Source: Smith (2005)

The EBRD led the syndications for two tranches of 15-year commercial loans priced at 300 bp over Libor initially, dropping to 250 bp in the first five years after construction and 200 bp thereafter (Wright, 1995). The local debt finance came in three tranches, all with refinancing guarantees to create maturities of 15 years (Wright, 1995):

- an OKHB loan for HUF 3,000 billion;
- a serial bond for issue for HUF 3 billion underwritten by OTP and OKHB;
- two EBRD bond issues for a total of HUF 3 billion by the EBRD in the Hungarian market.

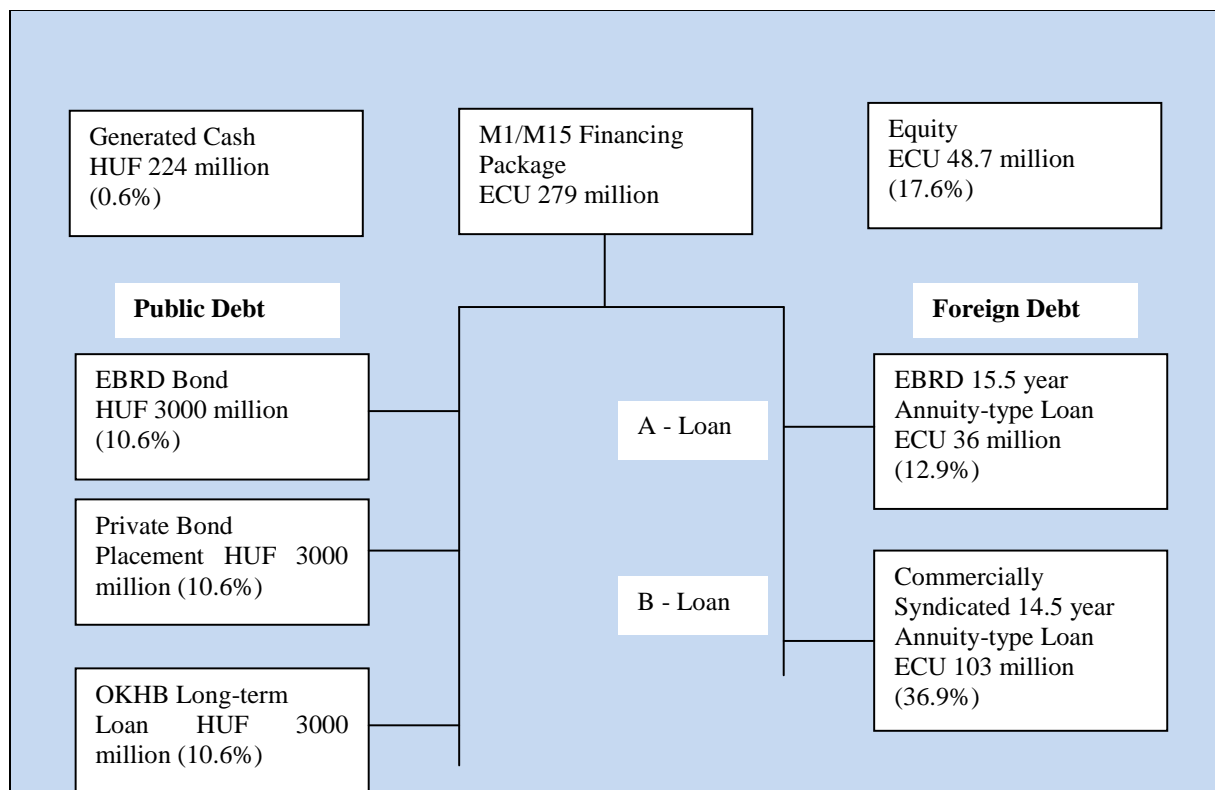


Figure 2-9: Debt structure, Source: PPP Centrum, (2005)

Re-nationalisation

Construction of the sections of M1/M15 started in January 1994. In 1995 Hungary experienced economic difficulties with inflation rates reaching 30%. Despite the economic difficulties and additional unexpected weather conditions construction could be finished in 1996. However the traffic on the corridor was only half of what was projected by independent traffic forecasts in 1996 and 1997. Initially the traffic between the connection Budapest, Bratislava and Vienna was expected to increase by 8% annually. Furthermore it was expected that after the ramp up period of 2-3 years 70% of traffic in this corridor will choose to use the road.

Siposs (2005) summarized the main reasons for the traffic shortfall as follows:

- Traffic shortfall as a result of worse than estimated macroeconomic environment
- Increase in inflation rates and robust drop of real incomes in Hungary between 1994 and 1996
- The length of tolled section (less than 40 km, easy to divert, time saving was limited to only 15-20 minutes)
- The location of the project is close to border with long waiting time for trucks
- The structure of traffic on the motorway is mainly by long distance traffic of West-European users, passenger cars
- 80% of buses and trucks diverted the toll road

The SPV applied a revenue maximisation policy with the result that toll rates were about double the average European rate and in comparison extremely expensive for Hungarian citizens. According to the concession agreement the initial toll rates were defined by vehicle categories and automatically increased (without any prior consent of the Government) on the basis of the domestic consumer price index and/or the exchange rate differential in proportion to the currencies of the loans (USD and DEM) (Berger, 2009).

As consequence of the high toll levels the Hungarian Automobile Club started a litigation procedure against Elmka by arguing that the extremely high toll levels were socially unjustifiable. Elmka lost the case and was obliged to pay back about one third of the toll revenue but they were not required to reduce its tariffs (Smith, 2005). In 2001 the Highest Court in Hungary overturned this ruling. The lenders immediately reacted and declared an event of default.

Considering the traffic shortage and the difference between actual traffic and toll revenues because of inability of raising tolls at the frequency and amount allowed by the concession contract the special purpose company was nearly bankrupt and required restructuring. Negotiations started between the shareholders, lenders and the ministry in 1998. The preliminary aim of the negotiation was to achieve a lower average toll rate. The idea was to extend the collection road section to 90 km. But after the general elections negotiations have changed towards a buying out of the whole insolvent private company Elmka. In 1999 the parties implemented a substituted entity clause and Elmka was superseded by a fully state owned SPV the West Hungarian Motorway. Elmka's debt was transferred into sovereign debt and the sponsors lost their equity. The functional privatization through a concession contract turned into a formal privatization. The state cut the tolls by 50% with the result of 30% traffic increase but an income reduction of 35% compared to previous terms (Siposs, 2005). In 2000 the government of Hungary replaced the toll system by a vignette system for the whole state-owned motorway network (Kosztzyo, 2005).

Lesson learnt

Siposs (2005) summarizes the consequences of the project as mainly political driven and professionally unfounded decisions. Berger (2009) argues that the public was not prepared to fully accept and understand new financing techniques to develop motorways and consequently to pay for the newly developed higher level of services. Often the expected standard would not have been possible without the participation of the private sector. Furthermore the case study showed the high level of regulatory risk in Hungary. The private sector has built and financed the infrastructure and subsequently became exploitable by the government or the regulatory authorities (Kasztzyo et al., 2005). If the regulatory framework is weak and the project does not have the government commitment investors experience a very weak bargaining power. The case study shows the importance that governments offer enough safeguard against such behaviour and full and sustained support. Smith (2005) speculated that the fact that the project had been 100% financed with private funds without any recourse to the State allowed the government of Hungary to take a slightly ambivalent attitude towards the project.

The case study further illustrates that tolling of motorway sections is highly sensitive. The traffic forecasts were much too optimistic. Elmka had to bear the cost of lower-traffic which directly led into financial distress as a consequence of revenue shortfall. Berger (2009) argues that extensive public relations action is needed well in advance of starting toll collection in order to “sell” the idea. High emphasis should be taken on the information provision in the implementation process. Tender criteria might influence overestimation of traffic forecasts if emphasis is taken on the lowest possible tariff (EC, 2004).

Local governments should be involved from the early phase and reliable impact studies are required. The case studies showed that the public felt unfairly treated because of the high toll rates, which led to two court cases against Elmka. If users have to pay a larger share of the cost where road use had been largely free it is likely that users switch to parallel roads. It is important that the level of tolls reflects a socially acceptable level. Similar examples of projects which failed of lower than expected traffic include the Czech Republic D5 motorway in 1993, the Pitesti–Bucharest–Constanza motorway in Romania, the A4 Zagreb–Gorican motorway in Croatia or the Warnowquerung in Germany.

However, despite the large differences in the traffic consultants’ forecasts and the over optimistic projections of macro economists, neither of these discrepancies would invalidate the viability of the concession (Smith, 2005). The financial structure by the lenders and promoters was proved relatively robust and would have allowed sufficient time to put a financial rescue package in place in the form of new cash from the shareholders and reductions in margins and increases in grace and maturity periods.

2.3. The toolbox for decision support by governments

Once a given infrastructure need has been identified, the search for the highest possible efficiency should guide the model structure to deliver this need. The choices are supported by a tool box of analytical instruments, national level aspects, transport sector specific aspects and project or initiate specific aspects.

The reasons to assess the efficiency of different models and initiatives are:

- (i) To consider the best possible use of society’s resources
- (ii) To define the most efficient means to meet the need

Both factors must be considered together, because how a project is to be carried out has important implications for its costs and the choice if the project should continue.

The toolbox of assessment methods relies on scientifically based and practically proven methods.

Methods employed as part of the tool box include, but are not limited to:

- (i) Economic appraisal methods, such as cost-benefit and cost impact analysis
- (ii) Development of a Public Sector Comparator (PSC) to structure the business case and to compare the options
- (iii) Risk analysis techniques
- (iv) The costs and benefits of different financing techniques, instruments and tools (e.g. equity, mezzanine capital, loans, bonds, etc.)
- (v) Project management techniques and tools
- (vi) Different techniques for regulation (price caps or rate-of-return regulation, administrative restrictions, etc.).

2.4. Provisions that make project financing possible

Infrastructure sector is subject to institutional and organisational conditions. Such conditions vary significantly from country to country. In addition, the structural, regulatory and contractual characteristics that may be specific to the transport sector or sub-sector and, in particular, the project- and transaction- specific characteristics must be considered. Country, sector and project specific characteristics can be further broken down (Figure 2-10).

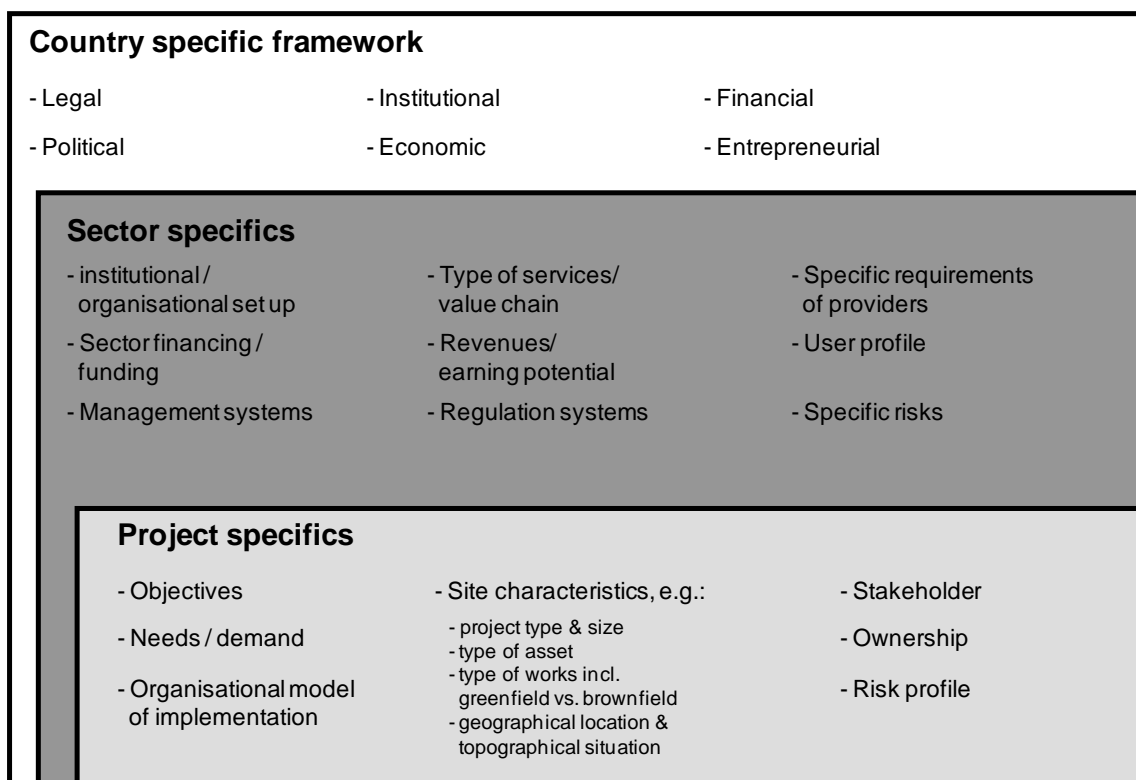


Figure 2-10: Country, sector and project specific characteristics

Source: Alfen Consult GmbH

Country-specific characteristics generally include the legal, political, institutional, economic, financial and entrepreneurial framework. A key element of country, sector and project specifics is the full set of policy objectives established in each country, which relate to the creation and maintenance of inland transport infrastructure.

Also inherent to national-level consideration are political issues like what is the public willing to accept, financial restrictions on affordability as well as legal elements and permissions. The infrastructure sectors and projects revert to the available systems and structures.

Political will and public acceptance are fundamental to the success of any financing scheme. While these will be based on a variety of considerations, ultimately they will only be obtained by way of solid *ex ante* analysis showing clear efficiency gains in comparison to other options, backed up by *ex post* analysis of the true results.

Under any financing mechanism, transport infrastructure investment requires a solid legal and regulatory framework. The purpose of a legal arrangement is to protect the interests of all partners, public and private, by ensuring that public policy objectives and contract provisions are met and by providing a stable business environment.

This does not imply a need for interventionist government policy. However, legislation must enable the existence of infrastructure providing entities, allow for the transfer of public assets, establish the responsibilities of different partners, outline corporate governance standards, consider any specific required provisions and establish the terms of tendering and contracting processes.

Sector and project specifics have many common characteristics across countries.

The major transport sector- and sub-sector-specific characteristics include:

- (i) The institutional and organisational structure of the sector or sub-sector and the distribution of responsibilities and administrative functions
- (ii) The nature and extent of existing public financing/funding within the sector
- (iii) The competitive situation and existing regulation and management systems
- (iv) The value chain and its individual elements, the nature and extent of their integration and the related revenue or earnings potential, user profiles, specific requirements of providers of the corresponding infrastructure services and specific risks.

Considerations to sector specifics include the organisation of the sector, how it is financed, which modes take precedence and which levels of government are responsible for its different elements. Government policies, national transport plans and priorities established for transport in general and government funding are considered at this level.

Furthermore, modal considerations also play an important role. For example, an important consideration is whether a proposed rail system is focused primarily on passenger or freight and whether service and infrastructure are vertically integrated. Road infrastructure related questions could include whether tolling is common and accepted, the levels of fuel taxes paid, earmarking of revenues and whether infrastructure is already operated by non-government entities, among others.

Key questions on project specifics include whether it is new or established infrastructure or if it is a specific link or a larger network. The projected levels of demand and geographic considerations, for example, are specific from project to project.

Notable project- and transaction-specific characteristics include:

- (i) The objectives and the demand situation
- (ii) The site characteristics

- (iii) The composition of the stakeholders and their specific expectations
- (iv) The ownership interests in the project
- (v) The overall risk profile
- (vi) The overall organisational model applied to the implementation of the project.

In addition, investors must examine the infrastructure elements or value the components to be privatised in terms of their consistency with the investors' overriding investment strategies, the corresponding revenue and earnings potential and the compatibility of the interfaces with other potentially non-privatised components within the integrated value chain.

The following provisions are important aspects when raising private financing for infrastructure projects:

- (i) The legal possibility to establish a project company
- (ii) Securing of revenue flows to the project company
- (iii) Direct agreement between the contracting authority and financiers to provide step-in-rights under certain conditions
- (iv) The power of the project company to chose sub-contractors on its own terms
- (v) Clear rules regarding the revocation of the project agreement and related compensation to owners of the project company
- (vi) Provisions that enable governments to provide financing, including those that:
 - a. Enable government to provide subsidies where relevant
 - b. Enable government to make long-term commitments of public expenditure
- (vii) A precise definition of the allocation of functions, responsibilities and risks, mutual requirements and interfaces.

Potential investors should also be aware of the specific competitive structures in the respective sector, including any regulatory systems that may be in place.

Important points for private investors could be listed as follows:

- (i) The economic potential, i.e. the likelihood that forecast revenues will be sufficient to meet the return expectations of the providers of equity and debt capital with a suitable degree of risk
- (ii) The risk profile of the project, i.e. the likelihood of achieving the balanced risk profile
- (iii) The scale of the project or the financing requirements

All criteria may be positively influenced by the project developer during the development process

3. Risk sharing schemes in the different procurement models

The following section contains a detailed description of the material risks relating to project finance, including their coverage, and optimal allocation among the project participants. Differences between the procurement and project finance methods are described. The degree and nature of risk shared between partners are fundamental defining elements of the nature and costs of any alternative financing mechanism. Risk should be assigned to the actor most capable to manage it. Some risks may be difficult for non-public entities to manage and should therefore not be transferred. The circumstances surrounding each project will determine the exact division of risks.

The scope of the contract and type of procurement are essential in establishing the division of risk. The transfer of risks and responsibilities requires incentives and monitoring mechanisms to ensure that the infrastructure is kept in a reasonable condition. Given the long life-span of infrastructure the parties should retain flexibility for managed renegotiation processes.

3.1. Introduction

Infrastructure projects are subject to a large number of different risks. They are different from project to project and evolve in nature and intensity (and usually tend to lessen with time). The main risks associated with the provision of infrastructure are (1) technical risks related both to the construction and operational phases; (2) economic and financial risks; (3) commercial risks resulted from the application of user tariffs and their impact on traffic levels.

A risk comes from the uncertainty of the assumptions on which estimates of a project's future revenue and costs have been based and also from adverse or favorable conditions. A risk is characterized by its two main components: the probability of its occurrence and its magnitude.

In each procurement model the risks are managed differently, thus creating important implications for the efficiency of each model, its potential costs and the governance regime required. An optimal risk structure seeks to allocate the individual risks to the project participants based on their ability and readiness to assume the respective risk. The aim is to ensure that each participant ultimately bears the risks that it is best able to manage or control, thus ensuring the greatest possible benefit for the project as a whole. The potential costs arising from risks as a result should be minimised.

In general adequate risk allocation is performed by integrating the project participants into a network of complex contractual structures. In order to achieve the optimal structure the knowledge obtained from the technical, operational, economic and legal assessments (performed as part of the due diligence process) must first be combined and evaluated in terms of both the individual risks arising as a result and the overall risk situation. The aim of this procedure is to identify and quantify the potential effects of each risk on other areas and, ultimately, the future cash flows from the project in order to determine the overall risk and guarantee financing to an adequate extent.

Risks can generally be distinguished by the terms of their allocation to the contractor or the principal, i.e. the party by which they are borne. The transfer of risks from the public to the private sector not only optimise the operation of the project, but also open up the possibility of additional efficiency gains by giving the public sector access to the benefits of private risk management.

Efficient management can further reduce the project costs and hence improve the bankability of the project (for banks: greater certainty that debt will be serviced, i.e. the required principal repayments and interest payments will be made; for investors: increased return on equity). In general, the greater the risks transferred to the private partner, the more expensive the financing of a project becomes, as risk premium are higher for the private sector.

3.2. The risk management process

Risk is a fundamental feature of any public-private partnership and it substantially influences the overall project cost. A detailed analysis shall be conducted by the project players.

Initial considerations with respect to the various structuring options for risk limitation may take place as early as the project planning phase. The risk management process is a rotating process based on a technical, economic, operational and legal/tax assessment. Even if the final allocation of all risks can only be performed following comprehensive due diligence, it is important to start the process in the project planning phase.

The process can be broken down into multiple steps (Figure 3-1):

- (i) identification,
- (ii) analysis and evaluation,
- (iii) allocation; and
- (iv) monitoring.

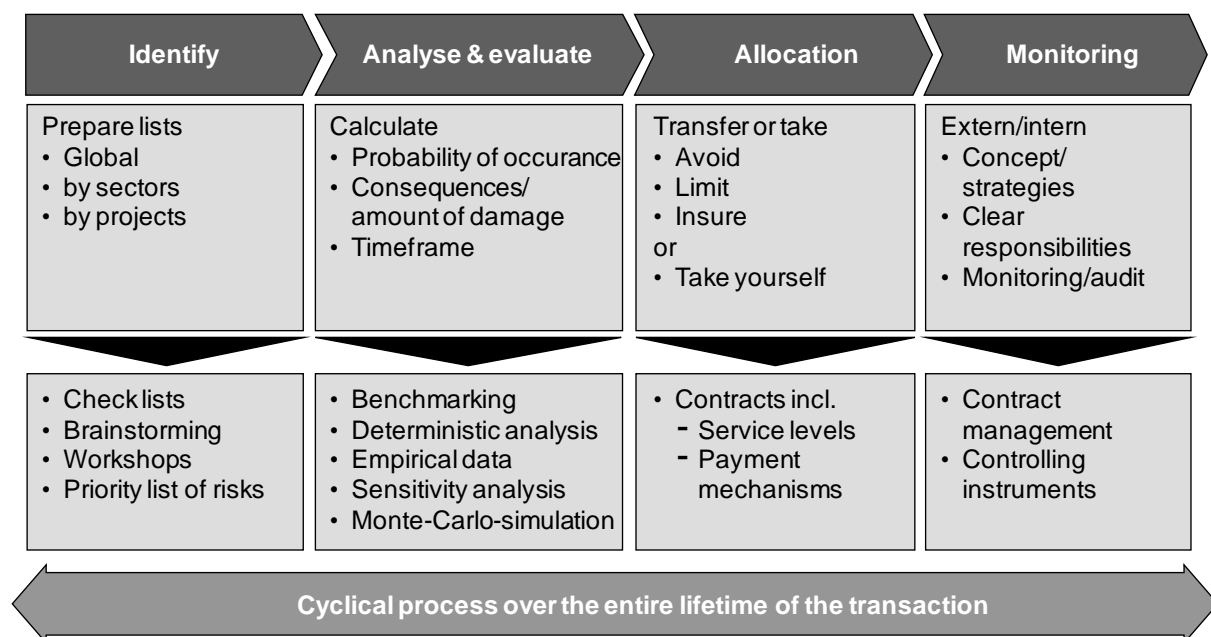


Figure 3-1: Risk management process, Source: Alfen Consult GmbH

The project-specific risk profile, which includes the individual risks, is compiled in conjunction with experts, e.g. on the basis of checklists during the first identification phase.

In the second phase, the risks are analysed and evaluated. This is performed using various instruments including deterministic analysis, sensitivity analyses, stochastically analysis or stochastically processes.

In phase 3, the risks are allocated individually as part of the structuring of the project. The risk value calculated in the previous phase is relevant in order to obtain the best possible price/risk relationship.

Irrespective of the characteristics of each individual case, however, it can be noted that in infrastructure projects the public sector usually bears the legislative risk (e.g. risk of plan alterations) and the political risk. In PPP models the private sector generally bears all of the remaining risks that relate to planning, technology, construction, operation and financing of the project. Risks due to force majeure are generally borne jointly by both parties.

Ultimately, it is not sufficient to merely evaluate and identify the risks arising from a project – they must also be controlled. Accordingly, risks are systematically tracked as part of contract management in phase 4. If the risks are defined and clearly allocated in the project agreements, it is the responsibility of the party bearing the respective risk to limit, prevent or transfer them or to conclude adequate insurance. To this end, the contractual partners must develop appropriate strategies and control instruments. A prerequisite for the incentive system, which is crucial to the overall success of the project, is that the risks must have been clearly allocated and contractually fixed in advance. A systematic implementation of risk management has a high potential of handling unforeseeable risks that are particularly difficult to calculate.

Each contractual partner adjusts the expected rate of return based on its own criteria. The key partners will be the government which through its project preparation stage will assess risk and make a preliminary estimate of the likely private sector reaction to risk and the private sector bidders themselves who will estimate risk and its impact on its return on equity (including the risk premium) required for the specific project.

This is done in an iterative way through project preparation and procurement.

Within the risk management process multilaterals generally require an environmental impact assessment. The following example illustrates the components which have been prepared in the Poti New Port Development.

Project example: Poti New Port Development (Georgia)

The project includes the rehabilitation of the existing Berth 14 for the use as a container terminal. The rehabilitation program includes dredging, paving and replacement of part of the top end of the quay, together with the purchase of mobile harbour cranes, reach stackers and an empty container handler.

The EBRD is considering the financing of the rehabilitation with a senior loan of up to EUR 8 million for Phase 1 of the port development plan. The remaining project costs will be financed by the borrower JSC Poti Sea Port Corporation, a private company which owns and operates Poti Sea Port. The Project is supported by Ras Al Khaimah Investment Authority, a public authority incorporated in emirate of Ras Al Khaimah (United Arab Emirates).

Environmental impact assessment by EBRD

EBRD places high priority on environmental procedures as well as ethical behaviour and transparency. The assessment includes:

- Initial environmental screening to identify potential environmental issues

- Environmental assessment and/or audit undertaken by the sponsor
- Development of an Environmental Action Plan to document key environmental issues and the action to be taken to address them adequately
- Incorporation of environmental conditions into legal documentation
- Environmental monitoring and evaluation of projects

The format of environmental assessment by other multi-lateral financial institutions is similar. Additional categories could include:

- Brief description of the operation
- Preliminary environmental information
- Environmental issues apparent at screening (e.g. regulatory compliance, risks and liabilities, global and regional environmental impacts, such as biodiversity and climate change)
- Environmental opportunities apparent at screening (e.g. energy efficiency improvements, clean production)

EBRD screened the Poti rehabilitation project as "B" category under the Bank's Environmental and Social Policy 2008 (EBRD, 2011). The "B" category has been achieved because operation can be readily assessed and mitigated and is within the boundaries of the existing Poti port and not in a sensitive environmental setting. The due diligence confirms that anticipated impacts are mainly associated with dredging, dust related to loading and unloading of bulk cargoes, and potential spills from vessels or onshore operations. An Environmental and Social Action Plan, including monitoring requirements, is being prepared to reflect mitigations and will be implemented by the Project sponsor (EBRD, 2010)

Main mitigation measures include:

- The preparation of a spill and emergency response plan
- Treatment of waste and runoff water
- Solid waste management
- Dust management during on- and off-loading of bulk cargoes.
- The development of an Environmental Management System in the perspective of certification.

The following project example on the Zvartnots Airport (Armenia) shows how the risk management process has been implemented in a monitoring framework. On this basis the risks can be quantified and mitigated.

Project example: Zvartnots Airport (Armenia)

The Zvartnots International Airport (ZIA) was originally built in 1961. EBRD provided a sovereign guaranteed loan to the former Zvartnots Airport Company (ZAC), a state-owned airport entity, to construct a new air cargo terminal. After completion in 1999, ZAC was obliged under the terms of the EBRD loan, to tender for a private sector manager to take over its cargo operations. The tendering process was conducted in 1998, but failed to receive any meaningful offers. After reviewing the overall situation EBRD proposed that the most feasible option would be to involve a private investor to run the entire airport area, combined with additional development opportunities to be provided by the creation of a free trade zone. In December 2001 the government negotiated a concession agreement with Corporacion America, an Argentinean company (ADB, 2010)¹.

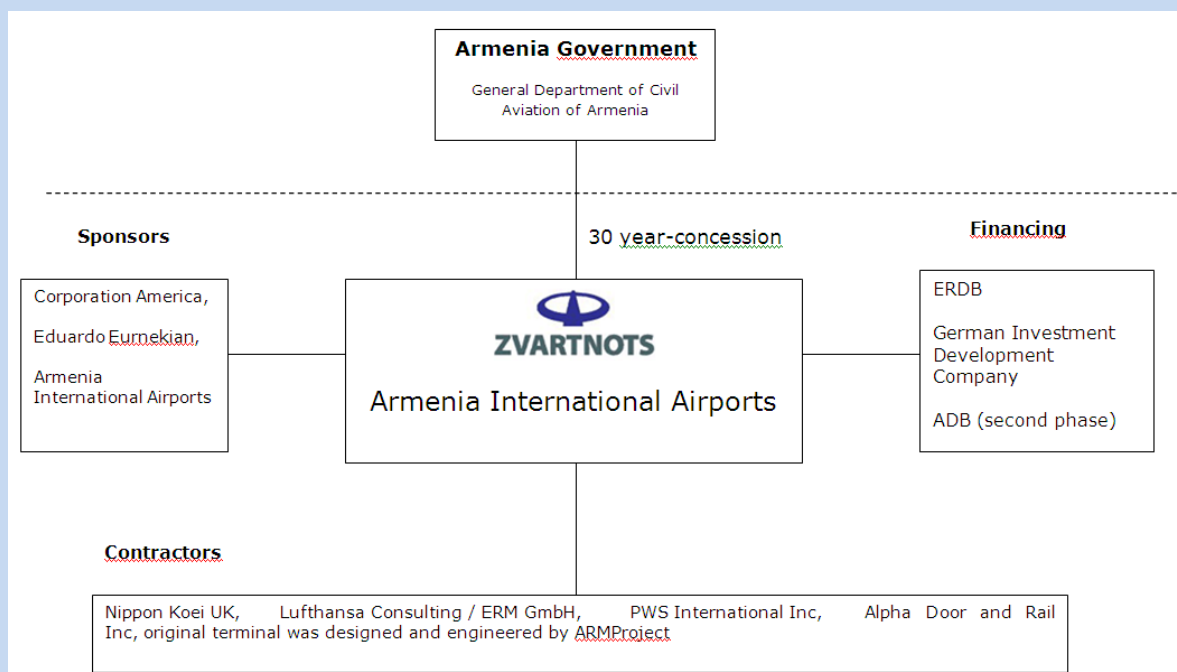


Figure 3-2: Key facts expansion of Zvartnots International Airport, Source: Airport technology (2011)

In order to implement this concession agreement, ownership of the airport assets was transferred from ZAC to full state ownership to Corporacion America. Armenian International Airports CJSC is a closed joint stock company which received a 30 year concession to manage the operations at the Zvartnots Airport in form of a functional privatization. The project also includes the completion of the construction of a new international passenger terminal, the upgrade of airside facilities and the procurement of new terminal equipment.

Corporacion America transferred the concession rights to Armenia International Airport (ArIA), its affiliate and a special purpose Armenian company. Subsequently EBRD, along with DEG (Deutsche Investitions-und Entwicklungsgesellschaft), financed the modernization of ZIA. American International Airports LLC is the sponsor of the project and controls the concessionaire (ADB, 2010)¹. Table 3.1 illustrates the key facts of the

project.

Table 3-1: Key facts expansion of Zvartnots International Airport, Source: Airport technology (2011)

Key Data:	
Start Year	2001
Project Type	Airport expansion
Location	Yerevan, Armenia
Estimated Investment	\$220m (€164m)
Completion	2007 (ongoing work until 2010)
Key Players:	
Sponsors	Corporation America, Eduardo Eurnekian, Armenia International Airports
Operator	Armenia International Airports (30 year-concession granted from the Armenian Government)
Financing	ERDB, German Investment Development Company
Contractors	Nippon Koei UK, Lufthansa Consulting / ERM GmbH, PWS International Inc, Alpha Door and Rail Inc, original terminal was designed and engineered by ARMPProject
Traffic:	
Passengers	2 million a year target
	2006 – 1,125,700 passengers, 2005 – 1,111,400 passengers
Movements	20 to 30 a day

ArIA has the right under the concession agreement to propose adjustments to adjust tariffs. The tariff adjustment mechanism is related to costs and the agreed minimum internal rate of return under the concession. Any tariff revision requires approval by the government, as determined by an intergovernmental committee comprising representatives of various government agencies. The process of approval of aeronautical tariffs is closely coordinated by the General Department of Civil Aviation (ADB, 2010)¹.

ADB design and monitoring framework is illustrated in the following table ADB, (2010)¹:

Table 3-2: Design and monitoring framework with major risk assumptions,
Source: ADB (2010) ¹

Design and monitoring framework			
Design Summary	Performance Targets/ Indicators	Data Sources/ Reporting	Assumptions and Risks
<p>Impact Increased air connectivity between Armenia and other countries</p> <p>Demonstrated development of the transport sector in Armenia through the construction and operation of a modern airport providing world-class services</p>	<p>Number of destinations having direct air connections with Armenia increases to at least 50 by 2015 (2009 baseline: 40)</p> <p>Number of airlines operating in Armenia increases to at least 28 by 2015 (2009 baseline: 22)</p> <p>Armenia is served by a world-class international airport with a minimum C level IATA service standard by 2013</p>	<p>Annual performance monitoring reports of the borrower</p> <p>Reports published by the GDCA</p>	<p>Assumptions Government continues efforts to further liberalize the civil aviation sector and encourages fair competition</p> <p>Necessary investments are made in related areas such as new runways, air control facilities, and fleet modernization</p> <p>Sound construction and operational management practices are followed by the borrower, supported by a stable and consistent regulatory policy by the government</p> <p>Risk Prolonged economic crisis may lead to destabilization in the region</p>
<p>Outcome Reduction in operational bottlenecks in aviation passenger movement between Armenia and other countries through successful implementation of a public–private partnership based concession</p>	<p>International passenger traffic between Armenia and other countries increases to 1.7 million in 2015 (2009 baseline: 1.4 million)</p> <p>Aircraft movements at ZIA increase to about 18,800 by 2015 (2009 baseline: 16,300)</p> <p>Annual contribution to government revenue from the airport operations reaches \$4 million by 2019</p>	<p>Quarterly and annual performance monitoring reports of the borrower</p>	<p>Assumptions Timely completion of the project</p> <p>Risk Macroeconomic outlook may deteriorate, leading to decline in cross-border tourism and passenger traffic</p>

Table 3-3: Design and monitoring framework with major risk assumptions,
Source: ADB (2010) ¹

Design and monitoring framework			
Design Summary	Performance Targets/ Indicators	Data Sources/ Reporting	Assumptions and Risks
Outputs			Assumptions
Increase in airport capacity	Passenger-handling capacity increased to 3.2 million a year by 2012 (2009 baseline: 1.8 million–2.0 million)	Construction progress reports provided by the borrower and lenders' supervisor Borrower website	The borrower has adequate managerial and technical expertise to manage project implementation and ZIA operations, and is able to attract and retain qualified personnel for airport operations.
Enhanced safety standards	Airport is in compliance with ICAO and EASA safety standards by 2012		The sponsor is able to infuse the requisite equity for implementing the project.
Improved environmental performance	50% reduction in gas use and 30% reduction in electricity use per sq. m. by 2013 (baseline year: 2010)		Risk Cost and time overruns in project implementation
Increase in activity in the local construction and engineering industry	Goods and services purchased locally for the project amount to \$70 million by 2012		
Resettlement of affected persons	506 affected persons relocated to new residential buildings by November 2012		
Increase in employment generation	Number of people employed by concessionaires and retail businesses increase by 500 (2009 baseline: 1,150)		

The following key risk mitigation approaches have been implemented in the project (ADB, 2010):

Traffic Risk

- Volatile Traffic but largely mitigated by robust, well-defined and historically regular tariff adjustment process.

Regulatory Risk

- Regulatory intervention has been transparent over the last 8 years.
- However, regulatory framework needs further streamlining, leading ultimately to the establishment of a functional, independent regulator.

Long Term Political Risk

- Remains - although somewhat mitigated through robust, provisions under the concession
- Underscores role of multilaterals critical in transition economies (ADB, 2010)

The following section divides the risk categories into two groups based on their content:

- (v) general risks, and
- (vi) project-specific risks.

General risks are largely independent of the respective project and cannot be directly influenced by the project participants. General risks may occur at any point in the project lifecycle. Project-specific risks can be directly influenced by the participants and, in some cases, may be assessed separately for the various project phases.

3.2.1. The main types of general risks

The main types of general risk are listed in Table 3-4.

Table 3-4: General risks

General risks		
1	Market risk	<ul style="list-style-type: none"> - Reduction in sales (demand risk) - Change in the price of the product/service offered (price risk) - Increase in the cost of production factors, e.g. raw materials (price risk) - Existence or supply of raw materials/primary products (supply risk)
2	Interest rate risk	Risk of changes in interest rates in the case of variable-interest rate agreements
3	Exchange rate risk	Changes in the exchange rate between the local currency generated by the project and the currency in which the project costs/loans are denominated
4	Environmental risk	<ul style="list-style-type: none"> - Change in environmental regulations - Receipt of government approvals
5	Force majeure	<ul style="list-style-type: none"> - Strikes - War - Terrorism - Earthquakes and other natural disasters
6	Political/country risk	<ul style="list-style-type: none"> - Changes in legislation - (De)regulation - Nationalisation - Seizure

General risks

- Expropriation
 - Breach of contract/concession
 - Currency transfer
 - Currency conversion
 - Changes in tax rates and tax legislation
 - Public acceptance
- 7 Legal and contractual risk
- Failure to receive approvals, licences and concessions
 - Effectiveness and enforceability of contracts and agreements
 - Poor functionality of the judicial system

Source: Alfen Consult GmbH

Several of the general risks are insurable as defined by the Multilateral Investment Guarantee Agency (MIGA). They cover expropriation, breach of contract, political violence and currency inconvertibility and non-transfer. Expropriation is described as any legislative or administrative action by the host government which has the effect of depriving the investor of ownership or control of a substantial benefit from its investment, with the exception of non-discriminatory measures of general application. Breach of contract is defined as any repudiation or breach by the host government where there is: (i) no recourse to a judicial or arbitral forum to determine the claim, or (ii) a decision made by such form that it is not rendered within a reasonable period of time, or (iii) a decision which cannot be enforced. Political violence is any form of war and insurrection/civil disturbance, terrorism and sabotage, strike, riots or disturbance by landowners and/or indigenous peoples. Restrictions on the transfer of currency outside the host country, or the failure of the host government to act within a reasonable period of time on an application for such a transfer attributable to the host government, are classified as risk of currency inconvertibility and transfer.

Legal, regulatory, and bureaucratic risks refer to risks within administrative processes that cannot be directly attributed to the above categories. They include the legal enforceability and execution of laws, conflict of authority, corruption, transparency, issuing of approvals and consents, change of government causing changes in law, policy, taxation, and obstruction during arbitration process.

3.2.1.1 Market risk

Market risks cannot be influenced by the project company and are classified as general risks. These risks are the decisive factor in the financial success or failure of a large number, if not the majority, of projects.

Market risks can be partially transferred to the private sector. These risks relate to the sale of the goods produced and the services provided in the forecast volume (demand risk), at the planned price (price risk), and the adequate supply (supply risk) and

purchase prices of raw materials and other production factors (price risk). With this in mind, it is particularly important to control market risk to the greatest possible extent. This is made possible through both careful analysis and market studies prior to the start of the project and through the conclusion of long-term minimum purchase and supply agreements at an early stage.

Based on past experience, calculations of market risk often fail to fully take into account the alternative options available to potential customers or to correctly assess the future behaviour of customers, including their price sensitivity. This means that forecast demand is often too optimistic, e.g. through failing to recognise the extent to which potential users could for instance avoid toll roads or tunnels by using existing alternative routes or means of transport.

The transfer of market risk to a private partner may be reduced by purchasing guarantees with the public principal in connection with the payment of fixed performance fees. For example, the public sector may make compensation payments to the operators of toll road projects if traffic fails to reach the agreed volume or it may pay the operator on an availability basis, this way eliminating the market risk for the operator altogether. Agreeing a minimum purchase volume or minimum utilisation level and fixing prices within a specific range serves to provide the project operator with a reliable basis of calculation prior to the start of the project. As well as significantly reducing the demand risk inherent in the project, this provides customers and consumers with assurance as to the long-term availability of the goods offered, which also prevents the need for risk premiums on the part of the provider. Projects involving pure user-based payments involve a significantly higher degree of market risk for the project company. This is reflected in higher performance fees. For the purposes of risk structuring and allocation, this risk may remain with the private sector in full, or it may be shared by the private and public sectors in various forms as outlined above. One of the reasons for having private operators is that they know the market, they are market oriented and therefore mostly more efficient. If the market risks are transferred back to the public authorities this advantage might be lost. In this case performance criteria and penalty structures are necessary to control quality and costs.

The extent to which the retention of individual market risks by the principal (risk sharing) is more appropriate from a macroeconomic perspective must be examined on a project-specific basis and discussed with all parties. Studies performed by independent advisors in the course of the due diligence process provide the banks and the providers of equity capital with a basis for their assessment of market risk.

Notwithstanding the above, in the context of risks and government guaranteed payments it needs to be stated that the extent to which governments entail a political risk of defaulting on their contracts, will have to be seen in view of the heavy indebtedness of most governments and the corresponding state of their budgets since the sub-prime crisis.

In the same way as for customers, it must be ensured that the project has sufficient access to the necessary resources from its suppliers (physical availability of raw materials; price risk). For investment projects whose procurement volume largely comprises of raw materials, this means guaranteeing an adequate supply of the necessary material. This not only requires evidence of a sufficient volume of e.g. raw materials or waste but also their availability, quality and geographical or geological location (if applicable) and the extent to which, based on these factors, they can be obtained and delivered at a reasonable price over a specified period of time.

The availability of an adequate infrastructure and logistics for the delivery of raw materials also requires a corresponding examination, which should include the question of supplier and customer creditworthiness.

3.2.1.2 Interest rate risk

Interest rates consist of two components: (i) the basic interest rate, i.e. the costs payable by the banks to refinance loans on the capital markets, which is based on the headline rates as determined by the central banks. Depending on the currency in which the loan is denominated and (ii) the interest margin, i.e. the interest rate corresponding to the banks' evaluation of the project risks, which usually declines as the project progresses and predefined key financial indicators are achieved, thereby reflecting the gradual reduction in project risk. Whereas the interest margin is fixed and can therefore be calculated in advance, the basic rate varies depending on developments on the global capital markets. This means that the project may be exposed to significant additional costs, i.e. the risk that the project cash flow will be adversely affected due to higher than planned interest payments, in periods of rising interest rates in particular.

In order to control the interest rate risk, borrowing rates can be fixed for the entire term of the loan. Alternatively, they can either be fixed for a specified period (this implies though that the interest rate needs to be renegotiated at the new market rate when this period expires) or hedged using interest rate derivatives. Either measure enables the project company to fix its interest payments in the medium to long term, thereby ensuring the planning security of future cash flows.

The interest rate risk is generally transferred to the private sector and borne by the project company in PPP procurement model. However, in the case of a PPP the sponsor may also agree in advance with the principal that the cost of this potentially more expensive follow-up finance should be passed on directly to the public project developer, either in full or in part, via a corresponding increase in the performance fee. This serves to spread the interest rate risk of the project across several parties. In exchange, the project company may offer to negotiate improved interest rate conditions with a corresponding positive effect on the level of the principal's performance fee. In traditional project financings, sharing the interest rate risk of refinancing between the parties is possible but less common.

3.2.1.3 Exchange rate risk

Foreign exchange rate risks exist if there is a difference between the currency of the loans provided and the currency of the project revenue and operation and maintenance costs. This applies in particular to projects in countries with soft currencies, e.g. if the project revenue is denominated in local currency due to the nature of the project but the external finance and operating costs are provided, or incurred, in hard currencies such as the USD or EUR.

One way of reducing exchange rate risk is by matching currencies between the costs and the revenue. The drawback of currency matching with local currency is that the availability of capital on the local markets is often extremely limited due to a lack of liquidity, and/or the weak external value of the local currency means that interest rates are extremely high. Governments have implemented several risk mitigation instruments such as tariff adjustment mechanisms or guarantees for exchange rate risk. While governmental guarantees provide the greatest possible protection, it is itself subject to political risk in the form of the creditworthiness of the government and the relevance of

the project for the host country. Exchange rate is generally borne and hedged by the private sector in PPP procurement models.

3.2.1.4 Environmental risk

Recognition of environmental and social considerations has become an increasingly important factor in the investment process. A growing number of supranational, public and private banks have now incorporated their own guidelines for contributing to sustainable development into their by-laws as a response to pressure from the public and lobbying by NGOs. The growing body of environmental requirements in a number of countries represents a new challenge for project finance that must be examined in detail prior to the start of the project. For major international products, the environmental standards issued by the World Bank are recognised as the accepted framework. A number of financiers no longer fund projects that fail to meet these requirements.

Environmental risks contain all environment-related matters that could potentially lead to additional costs or delays or prevent the completion of a project, e.g. changes in environmental regulations or conditions or the failure to receive government approvals. Environmental studies are generally performed by experts in respective specialist areas. The primary objective is to perform detailed examinations in order to ensure that potential environmental risks are minimised prior to the start of the financing and construction phase. Obtaining government approvals is an essential part of this process.

Depending on the extent to which it can be limited (e.g. the approval process can be controlled by the public partner), environmental risk is usually divided between the private and the public sector.

3.2.1.5 Force majeure risk

Force majeure risks cannot be influenced by the project participants. It describes risks such as war, terrorism, earthquakes or other natural disasters and strikes. During the project analysis phase, these risks are considered to be highly relevant as they often result in the total loss of the capital employed. As such, it is now essentially impossible to implement project finance in problem regions, such as war-torn countries. In some cases, force majeure risks may be covered by private and, to a lesser extent, public insurers.

3.2.1.6 Political and legislative risk

Political risk arises from the extent to which local governments and jurisdictions are able to affect the development of a project through significant changes in legislation, deregulation, nationalisation, seizure and expropriation, breach of concession, restrictions on currency movement (conversion and transfer risk), payment freezes and payment holidays, changes in tax rates and breach of contract by government bodies.

A number of procedures may be followed in order to prevent or contain political risks in emerging economies. The involvement of multilateral banks (such as (i) the European Investment Bank (EIB); (ii) the European Bank for Reconstruction and Development (EBRD); (iii) the World Bank and its subsidiary operations) in the financing of a project offers a de facto umbrella, albeit in relative terms. This umbrella function is more about the political relevance of these banks in financing local projects. Any impairment of the credit rating of the host country due to political risk could dramatically reduce its future access to sources of finance.)

In addition to these multilateral banks, a project may also seek to involve governmental and private export credit agencies (ECAs), which support export transactions of national companies by providing export loan guarantees as part of the (indirect) promotion of exports. Depending on the respective export transaction, the assumption of economic and political risk by these insurers may differ in terms of the type of goods being insured, the definition of the insured event and the amount and structure of the cover provided.

Insurance of direct foreign investments offers specific protection against political risk. This relates to long-term investment guarantees for non-commercial risks, which are offered by all industrialised nations, by some large private insurance groups, as well as the World Bank subsidiary Multilateral Investment Guarantee Agency (MIGA).

Including this form of risk cover in a project structure serves to increase political security, thereby improving the basis of calculation for the investment project. Accordingly, private banks involved in project finance often demand an investment guarantee alongside claims from the cover provided assigned to the banks as security for the loans extended.

In summary, it can be concluded that political risk is a multifaceted and wide-ranging risk category. Depending on the qualities of the individual project participants, these risks are spread between the various parties (public sector, project company, credit and investment insurers, multilateral organisations, export credit agencies) during the structuring process in order to ensure the best possible protection and the continuation of the project in the case of a risk event occurring. An alliance involving a number of strong partners, including international guarantors, increases the possibility of being able to influence the authorities in the respective country in the event of growing political uncertainty. The involvement of local banks and the timely application for and receipt of all necessary approvals can also help to limit political risk at an early stage.

In addition to the risks outlined above, public political acceptance is an important factor in the successful implementation of any investment project. This is influenced by considerations such as environmental protection, noise pollution, protection of historical buildings or the often unjustified fears of the population that the involvement of private investors will result in inferior product quality, price increases, job losses or a higher degree of dependency in general. From a capital provider (equity or debt) perspective, a lack of public acceptance may endanger a project. This is particularly painful when significant preliminary work has already been performed but the adequate operation of the project proves impossible. The early involvement of the public sector and a targeted and open information policy is advisable in order to at least minimise any objections, which are often unsubstantiated and the result of a lack of knowledge.

3.2.1.7 Legal and contractual risk

In general, legal risk arises from the possibility of changes in legislation and the failure to obtain the necessary approvals or licences. The functionality of the court system (judiciary) and the unenforceability of contracts and agreements (executive) may also lead to significant problems.

Contractual risk primarily describes the risk of inadequately structured agreements and a failure to observe the basis of legislation or legal loopholes that could result in the invalidity or differing interpretations of contracts and agreements. Potential contractual risk due to counterparty risk is borne by all of the parties involved in accordance with their respective agreements. In a PPP structure the project company invariably bears the greatest risk due to its role as the central contractual partner.

3.2.2. The main types of project specific risks

Project-specific risks can be influenced by some or all of the project participants and can be hedged or insured in most cases, whether through the conclusion of specific insurance guarantees or the involvement of suitable project partners. Whilst general risks can occur throughout the entire term of the project, project-specific risks may be allocated to the various project phases to a varying extent depending on the level of project-specific risks and the likelihood of their occurrence. As a matter of principle, project contracts should be structured in such a way as to ensure that the party that is best placed to assess, control and manage a specific risk is given responsibility for its minimisation.

The most significant project-specific risks during the project lifecycle are listed in the perspective of the financiers in Table 3-5.

Table 3-5: Project specific risks

Project-specific risks		
1	Construction and completion risk	<ul style="list-style-type: none"> - Planning amendments by the principal - Excess costs due to delays in the planning or construction phase - Construction overruns not attributable to planning errors - Existence of transport/infrastructure
2	Technical and performance risk	<ul style="list-style-type: none"> - Use of tried and tested technology from known manufacturers that is adequate for the operating process - Suitable climate or soil quality (for the construction of large plants)
3	Financial risk	<ul style="list-style-type: none"> - Changes in contractual conditions between the signature date and the provision of financing
4	Syndication risk	<ul style="list-style-type: none"> - Ability to syndicate/place loans
5	Operational risk	<ul style="list-style-type: none"> - Excess operating/maintenance costs - Interruption of operation - Selection of operator/partner
6	Realisation risk	<ul style="list-style-type: none"> - For projects to be transferred back to the principal
7	Counterparty/credit risk	<ul style="list-style-type: none"> - Ability of contractual partners to provide products, services or payments

Source: Alfen Consult GmbH

3.2.2.1 Planning, construction and completion risk

The planning phase of a project requires significant preliminary organisational and engineering work in order to ensure the timing and the logistical and technical realisability of the project. From the perspective of the financiers, the project cost analysis should include in particular all potential excess costs arising in the construction phase or as a result of delays in completion. All of the risks affecting the realisation period of a project must be examined in detail. Financing banks should negotiate any resulting obligations to make additional payments/contributions separately with the providers of equity capital.

Planning, construction and completion risk is generally only relevant for development projects (greenfield). In the case of (brownfield) projects that are already operational,

they are either irrelevant or of only secondary importance, e.g. in the case of capacity expansion or significant replacement investments for existing project assets.

The contract for the construction of a project is typically awarded to a general contractor, which transfers individual elements of the project to subcontractors but itself bears all of the completion risk for the project as a whole with respect to the project sponsors and financiers. Accordingly, the experience and reputation of the general contractor are important factors when assessing overall risk. The creditworthiness and financial resources of the general contractor may also play an important role if it is held responsible for defects or delays in the completion of the project or if it is required to provide preliminary finance during the construction phase. The analysis of construction and completion risk should also encompass aspects such as future capacity expansions or additional infrastructure measures, such as access roads, power lines or pipes for the supply of electricity, gas, water or other primary products.

In order to evaluate construction and completion risk, the sponsors and other providers of project capital require independent appraisals prepared by specialist engineering offices. The main objectives are to ensure:

- (i) A reliable forecast on project costs
- (ii) A reliable estimation on the completion time
- (iii) The project fulfils the requirements to operate after completion
- (iv) Any capacity expansions or increased utilisation can be implemented as planned

The risk of failing to meet the required performance standards or cost increases due to changes in internal planning is borne by the general contractor, as it is in a position to control and manage this risk. As a rule, all lenders expect the general contractor or the project developer to provide a guarantee of completion.

The (public) principal retains the risk of changes in planning or additional costs due to delays in the approval process caused by the principal.

3.2.2.2 Technical risk

Technical risk analysis requires extensive preliminary work in order to prevent a scenario where the project assets fail to reach the planned level of performance or, in extreme circumstances, are unavailable. When selecting the appropriate partners, it should generally be ensured that tried and tested technologies from known manufacturers are used rather than new, untested technologies unless this is an essential aspect of the project. An analysis is also performed to determine the extent to which the chosen technology has already been used successfully in similar projects and whether potential changes in geographical or climactic conditions could affect its functionality and effectiveness.

Equipment that has been used successfully in cool, dry regions may no longer meet the relevant requirements in a warm, humid climate. New or rarely used technologies offering cost or efficiency benefits should be tested in prototype and pilot projects before being used operationally. In principle, a test phase should be conducted for all technologies. In this context, it is also important that the technologies used offer the necessary operating performances to facilitate planned capacity expansions. All of these risks are borne by the project company or, depending on the supply guarantees provided, the manufacturer of the equipment used.

The manufacturer guarantees the contractual performance of the technology supplied and assumes responsibility for any defects or inefficiencies and resulting costs to the extent required under a standard guarantee. However, this manufacturer guarantee does not cover the incorrect use or maintenance of the equipment supplied; the corresponding liability lies with the operator. With these considerations in mind, the establishment of an experienced operating team that is intimately familiar with the technology is vital.

For PPP procurement projects it is in the interest of the operator to determine the most cost-effective technology solution for long term use. It may be more feasible for operators to use new technologies when considering the long term cost savings of the project. From the perspective of the financing banks, however, using a new technology with limited testing history increases the risk of operational downtime, and hence the insolvency risk. This in turn increases the lending costs for the project.

Instead of higher failure rates, a sensitivity analysis may instead simulate this technology risk by assuming lower efficiency on the part of the technologies used. Either one serves to reduce the expected cash flow, and hence the available amount of debt provided by the banks. Alternatively, the providers of equity capital may undertake to make additional payments in the event of the cash flow from the project being insufficient to service the debt.

3.2.2.3 Financial risk

Financial risk occurs when one of the parties involved is no longer able or willing to meet its assurances or contractual obligations with the result that the investment project is underfinanced. In the case of greenfield projects, financing risks mostly occur during the planning and construction phase, whereas projects that are already operational may encounter problems when negotiating purchases or shortly thereafter. In PPP models loan agreements generally contain a clause that states the project sponsors must contribute their capital to the project company in full before any funds can be drawn down under the credit agreements. The creditworthiness of the project sponsors and the general contractor is relevant for all lenders, i.e. their ability and/or willingness to make additional payments for debt service in the event that the project fails to generate the amounts required.

The general contractor may be one of the sponsors or a subsidiary thereof. This allows the sponsor to reliably assess the quality of the services provided, which may be beneficial for the other providers of equity and debt capital. Although this is often assumed to be the case, the grouping does necessarily mean that all sponsors, including the general contractor, share the same interests. Under certain circumstances, e.g. if the sponsors change the construction plans the general contractor can charge rather high prices and since it is in a monopoly position in the company at this stage, it can benefit from significant additional revenue.. Thus, while all sponsors bear the costs, the general contractor has the benefit.

Loan disbursements are often also tied to the achievement of specific milestones. These may be physical, e.g. construction progress in the construction phase, or financial, such as revenue or the meeting of EBITDA targets. Loan agreements typically contain assurances on the precise utilisation of the funds provided, which is subsequently controlled by the banks. If these assurances are not fulfilled, the banks are entitled to terminate the loan agreements. There is a speculation as to whether this move is actually employed in any given case or whether banks merely use the threat of termination as a tool for facilitating the assertion of their claims with respect to the project sponsors. Termination may trigger a genuinely critical situation and seriously endanger the project.

Banks often offer bridge loans to cover temporary financing bottlenecks, providing that repayment is guaranteed by a third party or the timely commissioning of the project. In order to control the cash flow set out in the repayment schedule, the loan agreements contain clauses on the achievement of defined key financial indicators, the breach of which may also result in the termination of the agreements. If a covenant is breached but the bank does not consider this as evidence of the borrower's inability to repay the loan in the long term, this generally "only" results in the renegotiation of the financial agreements. The business plan may be revised but the loan will not be terminated. Similar key financial indicators or milestones may be used by financial investors, including financial sponsors, to control and monitor the project development.

For the project sponsors, the most critical moment in the financing process is the period between the signing of the credit agreements and the financial close, i.e. the date on which the funds are actually made available and can be drawn out. These two dates are usually separated by several weeks. The finance must be available to the project sponsors at the earliest possible date, but at the same time, the banks demand evidence of the necessary approvals and the initial progress in the construction of the project. The requirements to be fulfilled by the borrower are compiled in a catalogue of disbursement conditions. Loans may only be disbursed when all of the requirements set out in the catalogue have been met. For the period between signing and closing, credit agreements contain a Material Adverse Change (MAC) clause that requires the project to progress without sustained impairment between the signing date and the fulfilment of all disbursement conditions in order for the loans to be provided. The risk for the project company and the sponsors lies in the interpretation of the term "sustained impairment". This may result in project delays, the withdrawal of one of the parties from the project, or negative developments on the capital markets or in the host country (for example, there has been some debate as to whether the sub-prime crisis constitutes a MAC event). The project sponsors should aim to define the term "impairment" as closely and specifically as possible and assign certain events in order to ensure that the success of the project is not dependent on general trends or short-term market developments. Accordingly, depending on the terms of the contract, financial risk is primarily borne by the project company and the sponsors (due to potential obligations to make additional payments), but also by the banks.

3.2.2.4 Syndication risk

Syndication risk, which usually is borne entirely by the banks, describes a scenario where it is not possible to sell loans on the market at the conditions at which they were concluded. Major financial transactions such as loans or bonds are typically initially negotiated and, in some cases, signed by one bank or a small number of banks. The banks are then permitted to sell a predetermined portion of their interest in the loans/bonds to other banks (syndication). In this case, the banks would have to keep a greater portion of the respective loans on their books than desired. The private equity market immediately following the outbreak of the sub-prime crisis in summer 2007 is a case in point. Until the crisis, major leveraged buyout transactions were met with euphoria and financed by banks in increasingly aggressive conditions. Shortly after the onset of the crisis, however, it became clear that the banks would no longer be able to syndicate the transactions (~some of which had already been signed) at the conditions originally negotiated. The banks attempted to trigger the MAC clause in order to negotiate new conditions. When this failed, some of them were prepared to pay high break-up fees rather than exposing themselves to the risk of taking the loans onto their books under the conditions originally negotiated, as they were aware that they would be

unmarketable under those terms, at least in the nearer future. It was particularly illuminating to observe that some banks were able to transfer a portion of the risk to their equity investors and the respective companies in question due to their strong bargaining position, although legally the syndication risk was borne solely by the banks. This was achieved through a combination of various measures, such as the renegotiation of conditions for debt capital, lower leverage, the transfer of portions of the loans to private equity houses, etc.

3.2.2.5 Operational risk

Operational risk, such as interruption of operation and excess operating and maintenance costs, cover the operation, management, servicing and maintenance of a project/company and is generally borne by the operator. The ability to operate a project efficiently is a key element in ensuring its economic feasibility. Accordingly, the associated risk (which consists of interruption of operation, excess operating and maintenance costs, etc., and is also known as operational risk) covers the same areas mentioned above.. When analysing these operational risks, the experience and creditworthiness of the future project operator is the primary consideration. In PPP projects the operator is usually a company with a connection to the sponsors or the general contractor; it is less common for an external operator to be commissioned to manage a project. An operation agreement is concluded between the operator and the project company. Among other things, this sets out the rights and obligations of the management with regard to the project company and its shareholders, including assurances and assumptions of liability. The project operator should be familiar with the available technology, all operating processes and related products, as well as other internal and external conditions. The long-term efficiency of the technology and primary products used must be guaranteed by the manufacturer and facilitated through appropriate servicing and maintenance. Regular maintenance serves to significantly reduce the potential risk. Accordingly, suppliers must ensure the availability, efficiency and absence of technical defects of the equipment used by concluding corresponding maintenance agreements. Risks arising from the nature of the raw materials and primary products used and their provision in sufficient quantities may be passed on to the manufacturer or the supplier, if applicable.

The operator must also be able to ensure not only the technical operation of the project, but also its economic operation, i.e. at least within the parameters of the project plan. Operational risk may be covered through insurance for operational downtime. The creditworthiness and professionalism of the operator is also essential in case of an emergency.. In order to assess the quality of the operator, the providers of equity and debt capital must first obtain references, perform evaluations of the management team and analyse their past experience. As the operator is often a subsidiary of one of the sponsors prior knowledge of its quality and experience is usually available. A common interest between the sponsors and the operator (in terms of the successful implementation of the project) means that the other providers of capital also benefit. Warranty claims against the operator for non-fulfilment of the agreed performance standards may take the form of contractual penalties. For example, the operator shall be held liable if incorrect calculations or a failure to perform certain steps result in higher infrastructural or technical operation/management costs, price and/or volume adjustments or deviations from performance standards in future.

3.2.2.6 Realisation risk

Realisation risk relates to the residual value of the project assets (buildings, equipment, etc.) that can be achieved through their disposal, transfer or further utilisation at the end of the project term. The risk is that the market value or the functionality of these assets at the end of the term may be lower than previously assumed or forecasted.

The residual value of marketable assets depends on a number of project-specific factors, the most important of which are:

- (i) The age of the assets and their general condition
- (ii) The need for repairs or future investment
- (iii) The up-to-datedness and efficiency of the technologies used
- (iv) The management expertise of the operator and, in particular, the existence of long-term concessions, licences and supply and purchase agreements
- (v) General factors, the overall economic and capital market environment

The residual value is not usually taken into account when calculating loan repayments; instead, loans must be repayable from current project income. Although unimportant for calculation purposes, the realisability of the project assets may be relevant for the banks in the event of payment arrears or insolvency on the part of the project company.

From the perspective of equity investors, the resale/residual value of the project company including its assets is generally a key factor in their project return. The relevance of the residual value initially depends on the nature of the project. A distinction is made between projects where the project assets remain in the hands of the equity investors and projects where the project assets are only licensed/ concessioned but ultimately remain in the possession of the government.

Depending on the contract model, any realisation risk may be transferred to the private partner at the end of the contractual term, as in the case of the PPP hire-purchase model; alternatively, the private partner may have no realisation risk at the end of the term under a PPP owner model as the property remains in the ownership of the public principal throughout the term of the concession or licence contract and beyond. For instance, when realising road infrastructure projects, the private operator is generally not exposed to any realisation risk as the road constitutes a common asset and is not transferred to the private partner.

3.2.2.7 Transport sector specific risks

The transport sector has typical risks in addition to the general and project specific risks. Table 3-6 contains some examples of these risks for selected sub-sectors of the transport and traffic, supply and disposal as well as the public construction industries. In addition to the modes specific ones mentioned in the Table 3-6, the transport sector specific risks include also modal competition, changes in fuel prices and charges, regulatory policies on environmental externalities (noise, emissions, etc.).

Table 3-6: Sector specific risks in the transportation sector

Sector	Sector-specific risk	Notes
Transport and traffic		
Roads/motorways	<ul style="list-style-type: none"> • Cost side 	e.g. higher maintenance costs due to increased wear and tear
<input type="checkbox"/>	<ul style="list-style-type: none"> • Revenue side (forecast risk) 	e.g. due to deviations in traffic volumes or toll development
<input type="checkbox"/>	<ul style="list-style-type: none"> • Capture, charging and collection 	Risk that not all users are correctly captured and hence cannot be made to pay
<input type="checkbox"/>	<ul style="list-style-type: none"> • Unforeseeable parallel infrastructure affecting traffic volumes (see above) 	e.g. additional non-toll river crossing or parallel route to a toll motorway
<input type="checkbox"/>	<ul style="list-style-type: none"> • Changes in toll road access affecting traffic volumes 	e.g. road works, closures, etc.
<input type="checkbox"/>	<ul style="list-style-type: none"> • Capacity 	Risk that the available road cross-section will be insufficient
<input type="checkbox"/>	<ul style="list-style-type: none"> • Amendments to the Highway Code of the respective country affecting the volume and composition of traffic 	e.g. axle loads, emission limits, etc.
Rail	<ul style="list-style-type: none"> • Volume of 	Depending on the structure of the PPP project as a concession/availability fee

Sector	Sector-specific risk	Notes
	traffic/revenue	model, etc. and the line or sub-network as applicable
<input type="checkbox"/>	• Interface between network and operation	Depending on the structure of the concession (integrated, route only or operation only)
<input type="checkbox"/>	• Development of wheel/rail technology	Relatively innovative sector with rapid technological development and developmental breakthroughs
<input type="checkbox"/>	• Development of high-tech system elements	e.g. control and signal technology
<input type="checkbox"/>	• General network development affecting volume of revenue, etc.	Difficult to estimate, interdependencies within the network as a whole
<hr/>		
Airports	• Volume of traffic/revenue (intermodal, national, international)	Complex global competition for landing rights, slots, landing fees, etc.
<input type="checkbox"/>	• Technological development (operators, users)	Relatively innovative sector with rapid technological development and developmental breakthroughs
<input type="checkbox"/>	• Interface between operators, airlines, airport security, passengers, etc.	Complex and volatile interface problems between the various stakeholders
<input type="checkbox"/>	• Utilisation/dimensioning of buildings/equipment	Passenger volumes have a highly diverse effect on spatial planning, the construction of technical equipment, retail areas, connection concepts, etc.
<input type="checkbox"/>	• Transport connections	e.g. road and rail connections
<hr/>		
Ports	• Volume of traffic/revenue (intermodal, national, international)	High level of international and national competition, particularly between the small number of seaports
<input type="checkbox"/>	• Utilisation/dimensioning	e.g. risk that ports will no longer be

Sector	Sector-specific risk	Notes
	of buildings/equipment	able to process certain ships due to their size
□	• Transport connections	e.g. road and rail connections

Source: Alfen Consult GmbH

3.2.3. Risks involved in greenfield and brownfield projects

The distinction between greenfield and brownfield projects (otherwise known as development and operational projects) reflects the specific (project) risks associated with the different stages. Investors tend to assume that the risk of a greenfield investment is always higher than that of a brownfield investment.

The risks of greenfield projects primarily relate to:

- (i) Planning and development,
- (ii) The receipt of approvals and environmental permits
- (iii) Construction and operation risk
- (iv) Demand and price uncertainty
- (v) Public acceptance

However in specific cases greenfield investments can have a level of risk similar to that of brownfield investments.

For example, toll roads in comparatively undeveloped areas are considered to be significantly more risky than comparable projects that replace existing road connections with proven high volumes of traffic. Even in the case of the latter, however, the acceptance/usage and price risk remains fixed if the previous road was toll-free and there is a corresponding lack of historical data with regard to price sensitivity. In the case of greenfield projects, whose revenues are covered partially or entirely by public funds and/or guarantees from trustworthy institutions in one form or another, the revenue risk should ideally also be eliminated by way of the project (contractual) structure.

By contrast, brownfield projects relate to existing, operational assets that have already gone through the greenfield/development phase. This means that all of the risks arising from the development, the approval process, commissioning, technology, and initial demand are usually already resolved. The main residual risk types are operational risk, regulatory risk and market risk, neglecting geographical, political and legal risk etc. for the time being. However, some of the typical greenfield risks may return if extensive replacement or expansion measures become necessary, e.g. the demolition and reconstruction of an existing facility.

As a matter of principle, existing assets are comparatively easy to evaluate (e.g. in terms of demand, operation and maintenance) on the basis of historical data and past experience. However, other risks must be taken into account; contamination or hidden defects may be highly relevant for this type of project, for example.

A further important difference between greenfield and brownfield projects is that investors in greenfield projects do not generally turn a profit on their investments in the first years of the construction phase, but instead are required to make payments. Initial capital is only returned when the respective facility is operative (making for a "J curve", which is typical of cash flows from private equity investments). Investors accept this J curve and the higher risk associated with greenfield investments because the growth potential of an asset is at its highest in the start-up phase, meaning that they can participate in the value growth of projects in this phase and possibly generate higher returns as a result.

By contrast, conservative brownfield projects in a good condition will ideally offer stable, predictable current cash flows from the very start in the form of dividends or interest payments in a similar way to real estate or fixed-income products. In other words, such conservatively structured brownfield projects tend to be suitable for yield-driven investors, while greenfield projects are more appropriate for capital gain- or growth-style investors.

However, it would be a mistake to conclude from this that every brownfield investment has low risk and bond-like returns. The risk profile of brownfield assets that are in a poor condition, e.g. due to their age, inadequate maintenance, weak management, heavy usage and/or financial distress due to factors such as high leverage, may be quite high and the return/cash flow profile very unpredictable and unstable. In this case, the aim is to generate value added through various operational improvements, such as: repairs and capacity expansions, new forms of use, or financial renegotiations and restructuring.

3.2.4. Case Study: Perpignan – Figueras Rail Concession (France & Spain)

The Perpignan-Figueras rail line is a 44 km long PPP project with a 50 year concession period under the European TEN-T network between France and Spain. The project will allow trains to travel between France and Spain without stopping resulting in an improved flow of freight and passenger traffic. The project includes 50 km of rail line incorporating 5 bridges and an 8 km long tunnel. The total investment is around € 915 million construction cost of which 32% is related to the tunnel (EC,2004). The expected impact of the project is on the demand for rail usage. Estimated reduction for freight is 10 to 12 hours and for passenger traffic 2 hours by eliminating the rail gauge difference between the two countries. The project was tendered as defined by the EEC Directive 93/37 under the supervision of the French and Spanish States. The tender was launched in May 2003. The procedure imposed bidding on the basis of a non negotiable contract, not allowing any alternative technical options and imposing a tight response schedule. Bids were received by October 2003 and by November 2003 negotiations begun with the 2 leading consortia. A concession contract was signed on February 17, (EC,2004).

The key project feature remains responsibility of project design with the states while construction and financing of the project will be the sole responsibility of the private party. Construction costs were supported by a Euro 540 million state subsidy shared equally between France and Spain including EU grant paid to the private party in 10 semi-annual payments (EC,2004). The private party is expected to invest its own equity (estimated at Euro 103 million) and will have to finance the project by private bank loans.

The concessionaire will receive revenues from fix rates for operation and management of the infrastructure. The payment structure has stringent requirements on maintenance and availability performance (>99.9%) and sets penalties for non-performance. Toll rates which are collected from the train operators have to be publicly approved and indexed according to usage type. The maximum tolls are defined in the contract and for the first three years of operation the tolls will be imposed on a flat rate basis (EC, 2004). After the period of 50 years the assets revert back to the States. Figure 3-3 illustrates the organizational structure of the Perpignan – Figueras Rail Concession.

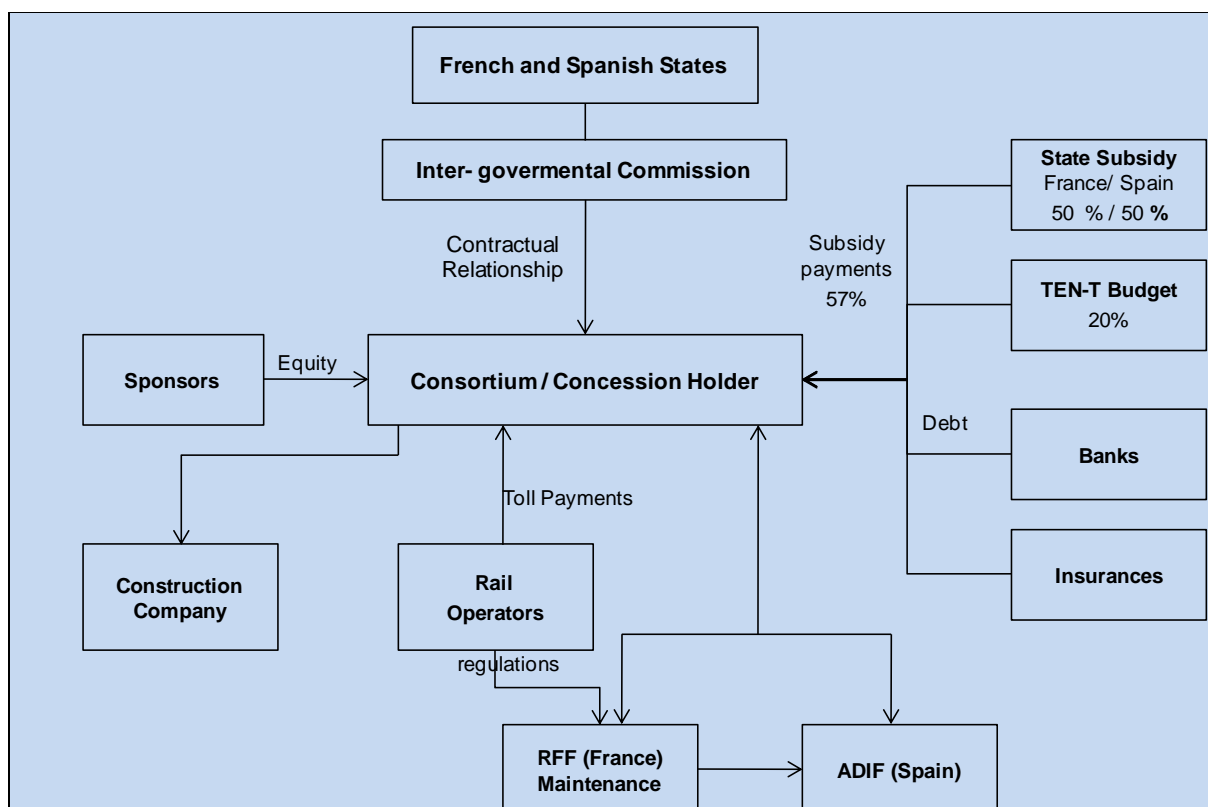


Figure 3-3: Organizational structure Perpignan – Figueras rail, Source: EC, 2004; Vieillescazes, 2008

Table 3-7 summaries the key project features.

Table 3-7: Key project features

Project	Perpignan – Figueras Rail Concession – France & Spain
Rationale/Objectives of the PPP procurement	Provides link between French and Spanish rail systems, reduce travel times and transport bottleneck
PPP Actors	State of France & Spain, Private consortium
Financial Structure	State subsidies, EU grant, concessionaire equity, loans
E.U. Support	EU grant
Contract Agreement between Parties	PPP agreement over 50 year concession
Risk Allocation	Construction and operational risk borne by private party
Institutional/Managerial Structure	Inter-government Commission regulates contract with Concessionaire
Tariff Setting	Publicly approved indexed fee levied on rail operators. Maximum fee set in contract
Strong Points	Clear performance incentives to private party, clear legal and performance structures
Weak Points	Possible over-reliance on private party

Project risk analysis

Most of the construction and operating risk is allocated to the private party within the concession contract (EC,2004). However, the public side supports the project with a state subsidy of 57% of the total construction costs. Therefore successful implementation does require an effective coordination and a good working relationship

between the private party and the existing infrastructure managers (RFF and GIF) / rail operators and most importantly an effective inter-state cooperation. The concessionaire will build and finance the project at its own risk. In return the concessionaire will receive tolls from the train operating companies.

In most of the countries, governments provide the majority of funding on investments while rail infrastructure companies are responsible for service and maintenance which is primarily funded by freight and passenger tolls. The following Figure 3-4 shows the differentiation of value-added services and investments in the rail sector. The functional transfer of tasks within those components impacts the risk transfer.

Railroad network	
Value-added services	Investments
Provision and management of infrastructure	Infrastructure substructure - Track network - Signaling - Electrification Substructure infrastructure - Embankments - Bridges/ tunnels/ retaining walls - Other secondary infrastructure
Operation	
Trains operation - Passengers - Cargo	Rolling stock - Locomotives - Carriages
Services	
Gateways	Railway stations Cargo handling stations
Tetail/catering	Facilities
Other services	

Figure 3-4: Differentiation of value-added services and investments in the rail sector

Financing, design, construction, operation, maintenance and demand risk are clearly allocated to the concessionaire in the Perpignan – Figueras Rail Concession. While demand risk is allocated to the private sector there is a clear motivation on the private party to maximise the rail users. Forecasted traffic assumptions are thought to be very realistic providing an apparent stability in the financial model (EC,2004). Provisions of efficient penalties and the ability to use a real threat of contract termination can be used by the public sector in case of non-performance of the private sector.

The suitability of risk transfer and consequently main factors with impact on project development and economic viability have been defined in the resource book on PPP case studies by the EC (2004). The following categories have been tested in the Perpignan – Figueras Rail Concession.

- Investment Value
- Contract duration

- Responsibility transfer
- Demand risk
- Availability risk

Value of investment defines the capital cost of the project as a stand-alone investment exclusive of the income stream or operational costs. The contract duration is dependent on the relationship between the size of capital invested and the potential revenue as well as maintenance cycles during the concession period. The concessionaire should be able to repay the investment and to realize an equity return. Responsibility transfer is the degree to which the private party is involved in the project. Involvement refers to the contractual model and obligations, ownership of assets or operating rights and the project operational structure. Demand risk describes the variations in market demand, competition or technological obsolescence are passed onto the private party. Availability risk is the degree to fail delivering contractual specifications or to meet standards and quality levels as well as delivery of services or agreed volumes.

Table 3-8 shows the rating scale in the evaluation of the projects.

Table 3-8: Rating scale, Source: EC (2004)

<i>Criteria / Scale</i>	<i>1</i>	<i>2</i>	<i>3</i>	<i>4</i>	<i>5</i>
<i>Investment Value</i>	Under 10 m	10 - 50 m	50 - 100 m	100 - 150 m	Over 150 m
<i>Contract Duration (years)</i>	5	10	15	20	Over 20
<i>Responsibility Transfer</i>	Fully Public	70 / 30	50 / 50	30 / 70	Fully Private
<i>Demand Risk</i>	Under 20%	20 - 49%	50%	51 - 80%	Over 80%
<i>Availability Risk</i>	Under 20%	20 - 49%	50%	51 - 80%	Over 80%

The following spider diagram (Figure 3-5) highlights the qualitative conclusions of key criteria with impact on project development and application in the Perpignan – Figueras Rail project (EC, 2004). Given the scale of the rating Figure 3-5 illustrates an ambiguous risk allocation to the concessionaire. Demand risk and availability risk are transferred to the highest magnitude on the rating scale. Tolls are regulated and publicly approved. Despite indexation to toll rates a maximum toll rate is defined in the contracts.

The large investment volume of around one billion Euro is exceeding the maximum criteria set in the rating scale. Both governments provide Euro 540 million state subsidy including EU grants. The remaining part of the investment volume is financed by the concessionaire including 103 Euro equity (22%). A sufficient concession duration shall provide the opportunity to repay loans and interest.

Responsibility transfer is transferred in terms of operation and management of the infrastructure. The infrastructure must be available for the rail operating companies. Penalties for non-performance assure stringent requirements on maintenance and availability performance. However the states remain responsibility for the design of the infrastructure.

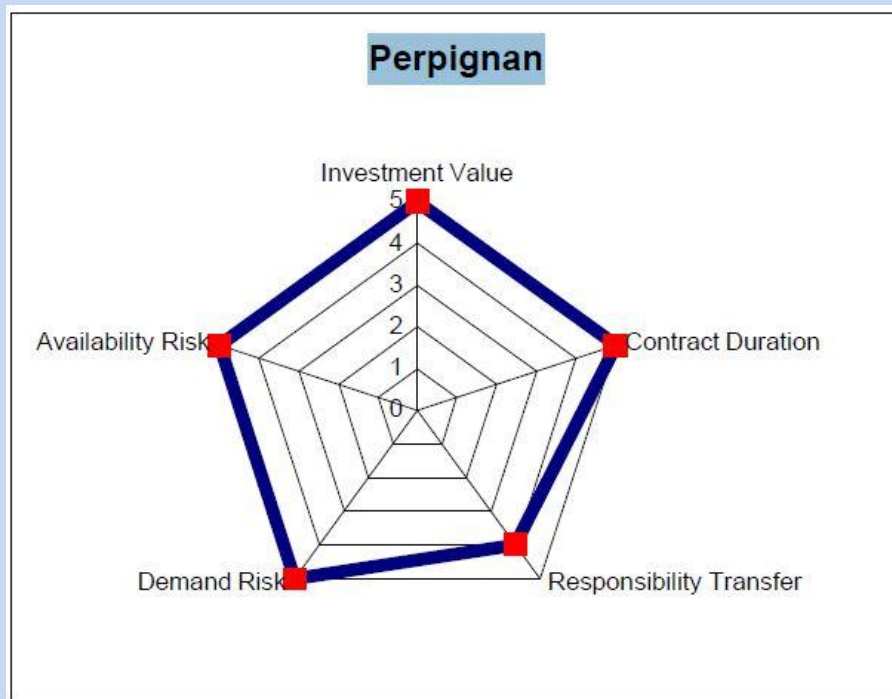


Figure 3-5: Key criteria with impact on project development and application,
Source: EC, 2004

As a large scale project, the Perpignan – Figueras Rail concession shows high rating scales on all criteria defined as key drivers for project development and application in the EC (2004) report. Figure 3-6 shows that within the transport infrastructure sector a variety of different structures are possible. Thereby the following projects are compared on the defined factors:

- M1-M15 Motorway, Hungary
- M5 Tolled Motorway, Hungary
- Beiras Litora Alta shadow toll road, Portugal
- International airport Hamburg
- Local airport Kassel-Calden, Germany
- International Airport Warsaw, Poland
- Wijkertunnel Randstad, The Netherlands
- Channel Tunnel rail link, UK

All projects show a large investment value (>150 mio) and except the Channel tunnel rail link a long term contract duration too. However the Channel tunnel is exceptional since the project was originally designed for 90 years as design, build, operate and finance project. After renegotiations the project was sold to Network rail and redesigned into a design, build and finance concession. Depending on the structure of the project availability risk, demand risk and responsibility transfer largely varies within the project structures.

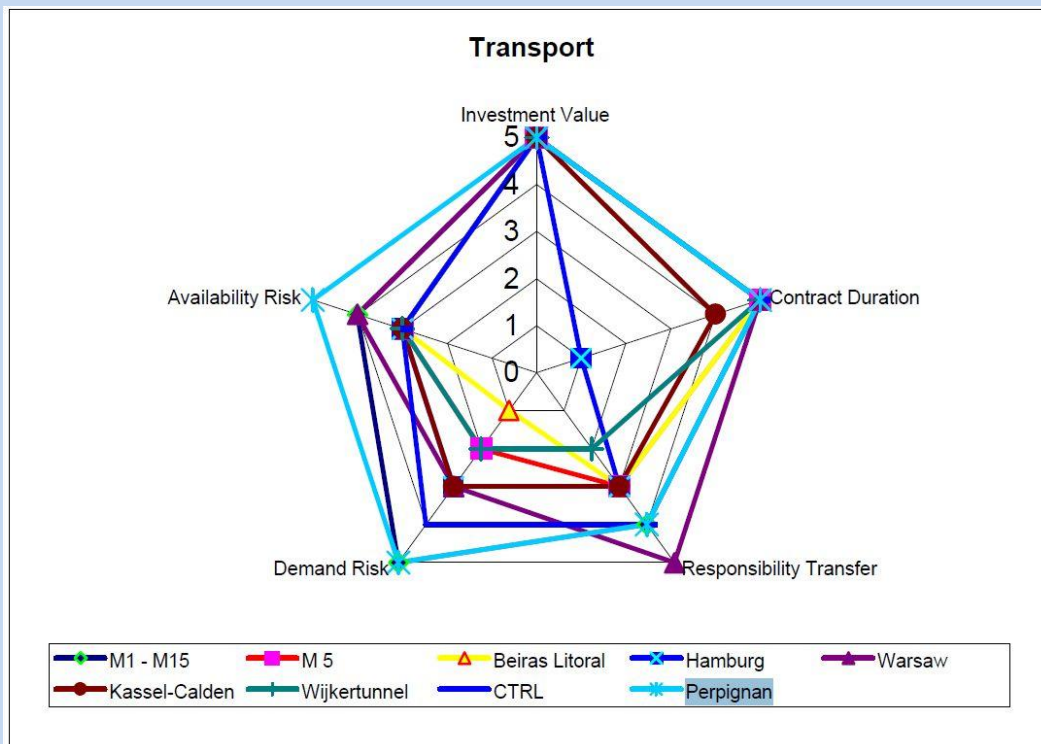


Figure 3-6: Comparison of transport infrastructure sector key design criteria,
Source: EC, 2004

3.2.5. Lesson Learned

The project shows that a substantial risk transfer to the private sector is possible if the risk can be quantified. Especially demand risk requires clarity and reliable demand forecasts to structure an economically viable project. The concessionaire will levy tolls on operating freight, passengers and high speed trains. Demand risk and availability risk is effectively linked to the compensation system. The aim is to design a sustainable system in meeting the needs of all parties.

The risk allocation profile shows that the concessionaire has to build and finance the project at its own risk. On the financial side the concessionaire receives a state subsidy which covers 57% of the construction cost. Furthermore a robust financial structure has been created by strong support with bank guarantees of external financiers (EC, 2004).

All operation and maintenance risks are fully transferred to the private sector. After 50 years the rail link will be transferred to the states in the exact shape as it was at the opening.

The project benefited from strong political support which helped to structure the project, to translate the structure into a concession contract and to organize the bi-national tender process.

4. Funding of infrastructure

The instruments of funding infrastructure are limited to taxation, user charges, borrowing and revenues generated from services. The financing of operational tasks can be shared with different parties. This chapter introduces the different sources and characteristics of funding and the advantages and disadvantages. The various kinds of capital and financing instruments that are used in infrastructure procurement are addressed.

The financing of specific initiatives can be shared with different parties. For example, independent entities may be tasked with raising capital for specific projects, or with collecting and employing user charges. Each financing mechanism has its inherent costs and benefits. Various financing mechanisms (public borrowing, private borrowing, tax revenues, user charges, input from third parties) can be applied to each model in different combinations for the provision of infrastructure.

4.1. Revenues

This section presents the sources of revenue available to fund projects, the economic agents from whom those resources will be collected, either toll payers/road users or tax payers or a combination of the two groups.

4.1.1. Sources of revenues

The instruments used are fundamentally limited, and are largely reduced to the following means:

- (i) General taxation
- (ii) User charges and availability fees
- (iii) Borrowing
- (iv) Revenues generated from ancillary services and third part contributions

4.1.2. Taxation and budget finance

Tax revenues augmented with global government borrowings are the most common instruments used to finance infrastructure.

General taxes will obviously not be exclusively used to finance infrastructure facilities. Consequently, financing transport investments from the general budget is somehow discriminating for non users who contribute to financing an infrastructure they do not directly benefit from. The general public might indirectly benefit from lower consumer prices resulting from reduced transport costs but have to share negative effects from the environment.

Public funding for transport as opposed to other policy priorities is established via policy decisions. Direct public financing may also be subject to negotiation between different levels of the government. For example, in a federal system taxes may be collected by the central government, although responsibility for infrastructure development and maintenance may be at the state level. Therefore, direct public financing is often seen as being inflexible and subject to political considerations. It may, therefore, be difficult to address the life-cycle costs of a given infrastructure and to prioritise accordingly.

As a matter of principle, government revenue/expenditure systems are based on the rule of general budget appropriation, meaning that all sources of revenue are initially aggregated in the form of the public budget. The allocation to the individual area-specific budgets is subject to corresponding negotiations. However, some countries earmark revenues directly for a specific sector. This applies to taxes, duties or users charges which then remain in the same sector and are not allocated to the general public budget. A typical example is road funds, which are generated from fuel duty, motor vehicle tax and, where applicable, toll revenue, i.e. without being fed into the wider public budget at any point.

4.1.3. User charges and fixed or variable availability fees

Future sources of revenue may include user charges and availability fees. Availability fees are paid regularly by the public partner based on the level of service provided. User charges vary according to the different transport modes.

In the road sector a distinction is made between mileage based tolls and time based charges (vignette).

For airports the distinction is between:

- (i) landing fees;
- (ii) air navigation charges;
- (iii) park charges;
- (iv) terminal handling charges.

Of these components the air navigation charges, the park charges and the terminal handling charges are clearly linked to a specific service, and hence to specific costs the operator has to make. The landing fee however, is a more general fee that pays for the infrastructure and the general operation of the airport.

For ports the distinction is between

- (i) harbour dues;
- (ii) quay and service charges;
- (iii) stevedore charges;
- (iv) commodity charges;
- (v) waste disposal charges
- (vi) pilotage charges

As in the case of airports, also for ports most charges are related to specific services. Only the harbour dues are a general fee each vessel has to pay to cover the general infrastructure and operation of the port.

Revenues from user charges naturally entail the greatest risk for private investors since they are exposed to demand risk:

- (i) Demand is a source risk because it is difficult to estimate and subsequently control;
- (ii) There is a negative correlation between tariffs and traffic levels. Tariffs influence the travel choices of the transport users: high fares for a transport mode could lead an user to chose another mode or route for his trip.
- (iii) The same transport demand may, at least partially, be met by various transport modes and therefore these modes may compete for the same demand. Competition may not only occur between modes but even within the same transport mode, for example between roads or between nodes, like ports or airports.
- (iv) The more links there are in a network, the greater the risks of alternative routes being used by the users.

Thus, it is important to make an accurate estimate on:

- (i) Future volumes and demand, also in relation to
- (ii) Future prices and charges.

Both demand and user charges may be influenced by a number of macroeconomic, economic and policy factors or changes in legislation over which private infrastructure investors naturally have little or no control.

Very often the demand risk may be cushioned to a greater or lesser extent by government guarantees, but this depends on the respective circumstances. User revenues rarely allow to recover total infrastructure costs, An alternative is to separate pricing from the rewards of the private sector operator. In such a situation the operator is paid according to a performance based payment, but prices are set and received by the regulator. Hence the reward of provision is separated from the income from charges.

The government hence pays the private party in a PPP according to its performance. The private party does not receive any income from pricing; these will flow to the government. The private party will provide its services to the user. It is also possible that the private party collects the charges; but these are then passed on to the government.

Fixed or variable availability fees are paid by the public budget depending on the performance of the contractual services. In this case, the relevant factors are the operator's performance with respect to the:

- (i) Contractually agreed standards
- (ii) Creditworthiness of the public principal
- (iii) Ability and willingness of the public-sector principal to meet its payment obligations

Payments made by the public-sector principal are generally governed by a complicated set of funding instruments that varies significantly from country to country. However, it is sometimes difficult or impossible to reconcile the specific subsidy conditions associated with the respective "pots" with private investment. This naturally creates risks for the operating investor that must be identified and actively managed to the greatest possible extent. In some cases, it may even be necessary to amend legislation or administrative regulations in order to enable the required compatibility.

There are already many PPPs that have a revenue component of performance based payments. Performance criteria can be included in any procurement structure to assure quality standards and to control costs. In road infrastructure there are many instances of PPPs with performance based payments based on shadow tolling, in which the public authority pays the operator on behalf of the individual user. While demand risk is transferred to the private side the performance based payment mechanism is an additional element to control quality. In addition, net cost contracts are not uncommon in public transport. Fares are then set centrally and operators remunerated according to levels of service provided. The public authority has information on the components of costs and sets prices accordingly; the incentive for the operator is to make efficiency gains to maximise the margin over and above the Social Marginal Cost.

Project example: Rijkswaterstaat

The standard DBFM contract of Rijkswaterstaat (Highways Agency, Netherlands) project is based on a payment mechanism based on availability. From the moment the road is operational until the end of the contract period, the private operator receives an availability payment every quarter of a year. This availability payment is a fixed payment of which a reduction is subtracted depending on whether lanes of the road can be (fully) used or not during the reporting period. The following conditions can apply: a lane needs to be closed, a lane needs to be narrowed, or the speed is limited for a lane. For each of these categories a fee applies which also depends on whether the closure, narrowing or reduction of speed causes much inconvenience to road users. This latter is determined by the traffic intensities for different moments for each day in the week. When a lane is closed during a point in time that traffic is normally very intensive the fee is a high, when the speed on a lane is only reduced at a point in time that traffic is normally very slow the fee is low. These fees are multiplied by the number of hours this condition holds. In this way the total amount of reduction to the fixed amount is calculated for the period. In addition to the reduction due to diminished operation of lanes, the payment may also be reduced because of a failure from the part of the operator that leads to a traffic accident or a hazardous situation, or an observed non-conformity to the contract (e.g. in the reporting demands). (Source: *ENACT, 2008*)

4.1.4. Borrowing

Borrowing is a rationale decision that accounts for the huge construction costs and very long life spans, but it also means that payment is deferred to future tax payers or users. However, most infrastructure projects could not be built based on governments' immediate resources.

As introduced in chapter 2, borrowing can be undertaken by independent infrastructure providers through a variety of organisational models. Arrangements where financing is the responsibility of the private sector typically involve raising resources through a combination of equity and loans.

4.1.5. Revenues generated from ancillary services and third party contributions

In addition to tax-payers or user revenues, resources may come from ancillary services. This might be renting space to service stations or third party contributions e.g. land owners' contributions to having new infrastructure built. Third party contributions might provide new revenues without necessarily adding "new" costs where the user or taxpayer is concerned.

The following project example illustrates the process of refinancing in a project with insufficient traffic and socially unviable toll levels. The revenue structure has been adjusted from user charges to an availability fee structure. Syndicated loans have been refinanced during the project phases and equity has been partially repaid during refinancing.

4.1.6. Case study: M5 tolled motorway (Hungary)

The M5 motorway connects Budapest to Belgrad. The concession includes rehabilitation, upgrading and further completion of 157 km. In 1992, based on positive results of a feasibility study the government issued an international tender to finance, build and operate the motorway for a period of 35 years in 1992. The project was structured in three phases. The first Phase included upgrading and rehabilitation of existing roads and the construction of a 97 km new highway. Phase 2 included and 45 km extension and phase three a further 15 km extension.

In February 1994, the contract was signed with Alfold Koncesszios Autopalya Rt. (AKA). The main stakeholders were Bouygues S.A. and Strabag Bau Holding AG as contractors. Operating and maintenance companies in the consortium were Maygar Intertoll Rt owned by the South African toll road operator Intertoll (Dinham, 2005). Figure 4-1 illustrates the organizational chart of the M5 concession.

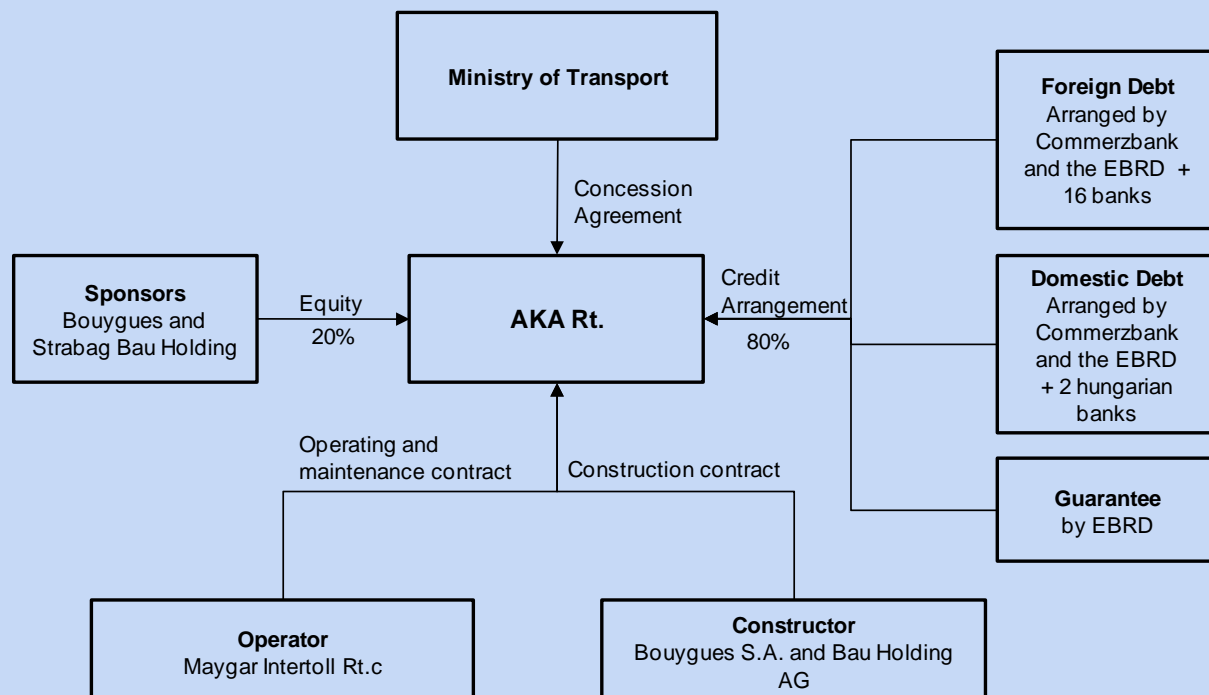


Figure 4-1: Organizational structure of the M5 concession

The structure of funding was based on a 20% 80% equity/debt ratio. AKA raised h260 million of debt for Phase 1. The majority came via an EBRD A/B loan. The B loan was jointly underwritten by Commerzbank and ING with margins of 312.5 bp over Euribor (Dinham, 2005). Repayments were structured as a ballooning structure, where a large part of debt will be repaid at expiry of the loan duration. The lenders had the option to get 50 per cent of loan amortised by 2008, or to "put" the remaining debt onto the EBRD (Dinham, 2005).

Furthermore, a minimum return guarantee as subsidy from the governmental road fund for case of revenue shortfall was implemented for AKA. A contingent operational subsidy

as standby facility was structured to compensate shortfalls in toll revenues.

After opening of the tolled section traffic increase on the parallel road network was very high. Inhabitants of villages and cities along the parallel national road began protest movements. In order to convince AKA to decrease the toll rates, the Ministry offered cash support by the governmental road fund to the company for compensating the loss of revenue as a consequence of not commercially based toll rates. The project became a partial shadow tolling. In case of dividend payments the road fund would receive in return dividends as revenue share.

The revenue structure was set by initial toll rates defined in the concession contract. Toll rate indexation is linked to domestic consumer price index and the exchange rate on the foreign currency loans. The concessionaire has the right to adjust rates without prior consent of the Hungarian authorities.

Phase I construction works were completed in May 1998 on time and within budget. However, traffic was below base case in the early years and operational subsidies were required up to 2002 (Dinham, 2005). The road fund paid substantial subsidies as shown in Table 4-1.

Table 4-1: Subsidies and toll revenues (€ million), Source: Veress (2005)

Year	Subsidy	Revenue
1998	3	0
1999	10	21
2000	12	28
2001	15	25
2002	6	32

In 2001 the traffic was still below the original 1995 forecast however a stable pattern of traffic had emerged. Discussions about refinancing the A/B loan into a conventional syndicated loan started in 2001 and were approved in early 2003. BES, CIB, WestLB and EBRD were mandated jointly to underwrite the refinancing of the existing A/B loan (Dinham, 2005). At this stage the EBRD umbrella was no longer deemed necessary. The refinancing comprised an h205 million, 20 year facility with margins of 120 bps (stepping up eventually to 160 bps) (Dinham, 2005). This was a significant reduction compared to the original loan margins of 312.5 bps.

Further negotiations about construction and financing of the 46 km extension of the motorway (Phase II) started in 2003. Citizens along the toll free roads were suffering the effects of heavy vehicles. Negative press put political pressure on the government. In 2004 AKA and the Government reached an agreement in which the government would acquire a 40 per cent stake in AKA and remove the M5 tolls, replacing them with the National Vignette System (Dinham, 2005). An interim term loan from MFB, the Hungarian Development Bank was put in place to allow the construction of Phase II to commence immediately (Dinham, 2005). The interim loan was structured until end of 2005.

To refinance the interim loan in a long term debt the availability payment mechanism had to be developed. This included a major corporate restructuring of AKA to satisfy the Statistical Authorities as to the level of risk transfer and its off-balance sheet status.

In August 2004, West LB syndicated the loan of h750 million over 20 years. The facility

was over-subscribed by 20 invited banks. Equity from Phase I has been partially repaid out of the loan to AKA shareholders in return for removing the tolls and implementing an availability based mechanism.

Early 2005, Phase III was financed with a value of h150 million. The involved banks sold the syndicate and EBRD underwrote together with 24 banks the funds of h900 million (Dinham, 2005). The project went though fundamental changes despite the fact that construction was completed on time and within budget. Figure 4-2 summarizes the main changes between the original structure 1994 and the renegotiated concession structure in 2004.

Hungary M5 motorway (Budapest-Szeged)	Original concession structure (1994)	Renegotiated concession structure (2004)
Type of concession	Original concession structure (1994)	BOT concession for M5 motorway including a 47 km extension
Concession period	35 years	35 years
Structure	Toll road (Toll: €0.07/km/car)	Availability payment scheme
Concessionaire	Private consortium (incl. Bouygues, Strabag)	40% government stake in consortium with private partners
Traffic levels	35-40% below projections AADT 8.400-14,700 (2002)	Significant increase
Government support	<ul style="list-style-type: none"> • Minimum revenue guarantee through stand-by operational subsidy from Road Fund in case of traffic shortfall • Subsidy amounts capped on a six-monthly basis for first six years • Dividends to be paid into Road Fund • Government in-kind and financial contribution = 45% of total cost 	<ul style="list-style-type: none"> • Annual availability payment of €80 million • Monthly performance payments based on average coverage ratios and agreed return • In case of non-performance, deductions from payments based on penalty point system
Total project cost	€ 370 million	€ 919 million
Financial structure	Debt/equity: 80/20% Syndicated bank loan of ECU204 million with EBRD guarantees	Debt/equity: 82%/18% €750 million syndicated bank loan 20-year maturity Pricing: LIBOR + 120-160 bps
Other	Strong public resistance against high toll levels	Highly successful refinancing and syndication to 24 banks (incl. EBRD)

Figure 4-2: Refinancing in the M5 motorway, Source: Berger (2009)

Lessons learned

The M5 project illustrates that the government tried to successfully finance the project by private capital while not sufficient budget resources were available. They managed to do so but this advantage was undermined by the fact that the project had traffic on much lower amounts than expected. It also shows that tolling of existing motorway sections is a sensitive issue especially when parallel roads get upgraded.

The private partner had the right to determine toll levels while toll levels are generally regulated by the government. At the same time a minimum returns guarantee protected principal and equity. In case of the M5 project heavy protests and political pressure

forced the government to adjust to renegotiate the concession structure. The toll rates should reflect marginal costs or social marginal costs which include externalities like accidents, pollutions etc. In any case the toll rates should be at a socially acceptable level. Socially toll levels are dependent on the macroeconomic country condition. Expectations about acceptable toll levels have been estimated wrongly. To overcome the problem the government bought a 40% stake in the special purpose company and adjusted the payment mechanism to availability based structure. Because of the renegotiations the risk profile and financing structure changed completely.

4.2. Sources of capital

The main distinctions in the financing structure are equity, mezzanine and debt capital. Equity and debt finance may also call upon national, regional public-sector development banks or multilateral institutions such as the World Bank Group. It is also possible to benefit from indirect subsidies by involving state-owned or private export credit agencies (ECAs), which support the export transactions of companies by providing export credit guarantees. Instruments such as asset backed securities and sale and leaseback transactions may also be included in the financing structure. The various forms of capital differ in terms of their risk profile. Figure 4-3 illustrates the expected return on different financial instruments.

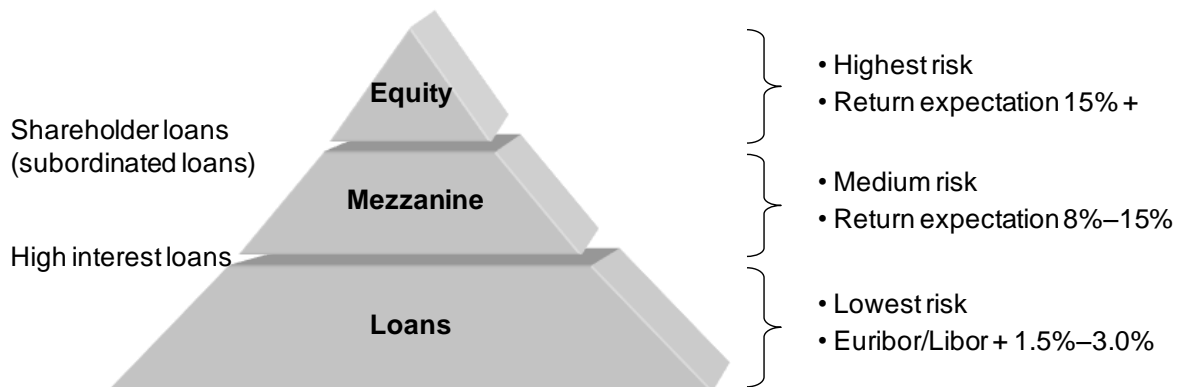


Figure 4-3: Risk profile of financing instruments

Source: Alfen Consult GmbH

Privately financed infrastructure projects employ a range of financing instruments to ensure optimal structuring. Figure 4-4 illustrates the main distinctions and proportions between the financial instruments.

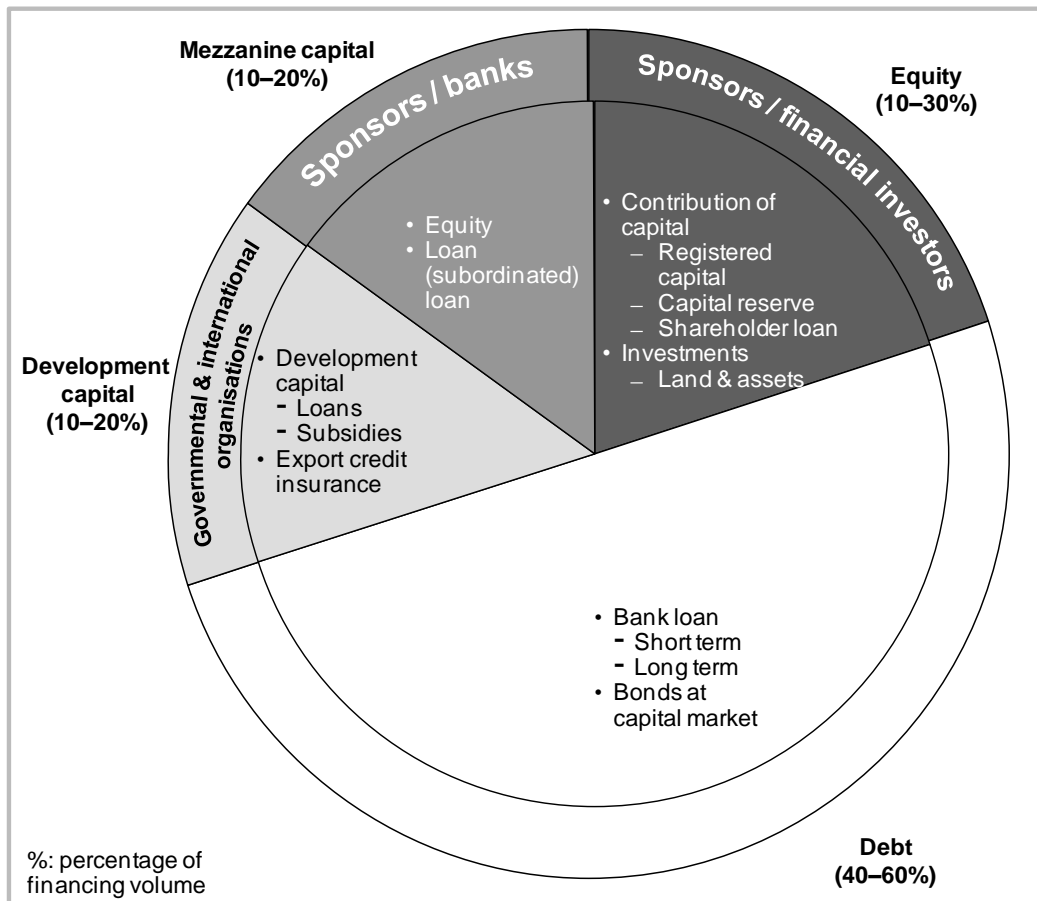


Figure 4-4: Financing instruments

Source: Alfen Consult GmbH

The application, structure and volume of financing instruments depend largely on:

- (i) Projects
- (ii) Amount and sustainability of the available cash flows
- (iii) Preferences and requirements of the sponsor or principal
- (iv) Risk/return expectations of the providers of equity capital
- (v) Risk and collateral structure of the project
- (vi) Political and economic conditions in the (host) country
- (vii) Creditworthiness of the sponsors

All criteria will be evaluated in a detailed Due Diligence.

4.2.1. Equity

Private investors generally invest in infrastructure via companies that offer infrastructure services, which operate as self-contained entities. As such, they are primarily interested in the profits generated by such companies and the risks to which they are exposed.

Strategic investors examine additional value added to their own core operations in addition to return on capital employed. Strategic investors become involved in projects in

order to pursue financial objectives as well as long-term strategic business development targets such as the generation of internal growth, the extension of their value chain, foreign expansion, the sale and distribution of their own products and services, together with the development of new markets and segments and new sources of raw materials. Furthermore, strategic investors use the opportunity to diversify their asset portfolio and risk structure.

Investors can be broken down into pure:

- (i) Strategic investors (sponsors)
 - a. Invest in sectors that are strategically relevant for financial objectives as well as long-term strategic business development targets
 - i. E.g. generation of internal growth
 - ii. The extension of their value chain
 - iii. Foreign expansion
 - b. Diversify their asset portfolio and risk structure
- (ii) Financial investors (e.g. insurance companies, pension funds and investment funds)
 - a. Generally invest when the project is structured and has successfully overcome the high-risk ramp-up phase
 - b. Primarily interested in the return on the equity capital
 - c. Generally not involved at the operational level
 - d. Invest across various sectors
 - e. Primarily driven by risk and return opportunities

Strategic investors, such as construction groups or infrastructure operating companies, expect to generate a profit from their core operations in addition to the pure return on their capital.

Financial investors can be distinguished as long-term oriented financial investors such as insurance companies, private and corporate pension funds, charitable foundations and primarily short to medium term oriented infrastructure and private equity funds investors. Financial investors often invest after the ramp-up phase, replacing the strategic investors in part or in full. Ownership of the infrastructure assets commonly remains with the public-sector principal or is transferred to the company for the term of the contract.

In both cases, investors are characterised by the fact that they provide significant volumes of equity capital and jointly assume part/full responsibility for the organisation and implementation of the project. When making infrastructure investments, strategic and financial equity investors generally pursue one of two overriding financial objectives or a combination of the two:

- (i) ensuring the greatest possible return on equity and/or
- (ii) ensuring a stable, high level of current income

Equity capital is usually provided to a company for an unlimited period of time. It may be contributed in various forms:

- (i) as a cash contribution in the form of cash and cash equivalents, or

- (ii) as a non-cash contribution, i.e. project assets such as land and equipment

Cash contributions may also take various forms and be structured by a range of components. The share capital corresponds to the subscribed shares in the project company combined with voting rights in relation to the respective shareholding.

4.2.2. Mezzanine capital

Typically, mezzanine finance is subordinate to traditional loans, tax-deductible, terminable and flexible with respect to terms and conditions, and has a wide range of potential uses. In infrastructure projects, mezzanine capital usually bears a portion of the project risks and hence assumes a certain liability function. Mezzanine capital may be an appropriate solution when liable capital cannot be obtained in the required volume or is too expensive and conventional commercial loans can only be granted to a limited extent.

Accordingly, mezzanine capital is comprised of

- (i) Equity capital
 - a. Interest-bearing instruments including a share in the value growth of the project
- (ii) Debt capital
 - a. Interest only, often divided into a cash relevant, i.e. current interest paying portion and a capitalised portion

Innovative mezzanine structures such as payment in kind (e.g. movable and immovable assets) are growing in importance.

Similar to the providers of debt capital, issuers of mezzanine capital base their decisions on expected project cash flows and covenants issued by the borrower, which grant certain rights of information, participation or control.

4.2.3. Capital market finance

For larger transactions a bond may be issued instead of, or in addition to, obtaining loan finance. Bonds have a specific term and a specific form of interest and principal repayment. The term and the interest rate of a bond depend not only on the quality and requirements of the project, but also on the current state of the capital markets. Placement is usually performed via one or more banks. Foreign bonds are sold in another country's bond market or Eurobonds are sold simultaneously in a number of foreign countries by an international syndicate of underwriters. Bonds are graded into investment grade bonds if rated Baa or above. Bond ratings reflect its default risk while low-rated bonds usually promise higher yields to attract investors with shorter maturities.

Compared with syndicated/bank loans, bonds are advantageous in that they generally have longer terms, partially extending to as long as 50 years, and superior interest rate conditions which depend on the respective ratings.

However, bonds offer little to no flexibility in the event of a change in project conditions that requires adjustments to the available debt finance, for example an unexpectedly severe fall of projected revenues, early redemption or amendments to the interest and repayment structure.

Among other things, this lack of flexibility may be due to the broad distribution of the bond in public, and hence the large number of bondholders. By contrast, in the case of loan finance, the limited number of syndicate banks means that the providers of debt capital tend to have a personal/direct relationship to the borrower and hence can be contacted directly to initiate negotiations.

A further drawback may be the fact that the bond capital is provided in a lump sum at a fixed point in time (e.g. at the start of the construction phase) even if the capital is only required at a later date depending on the progress of the project. This means that the interest burden for the borrower is higher, as interest must be paid on the full amount of the bond from the start, whereas loan interest is only payable incrementally based on the amount drawn down.

For infrastructure there are two types of bond:

- (i) Fixed-interest bonds
- (ii) Variable-interest bonds

A bond may be placed privately or on the open market.

- (i) Privately placed bonds:
 - a. Private placements are primarily offered directly to institutional investors such as insurance companies and pension funds
 - b. Lower costs compared to listed bonds in terms of initial listing, prospectus preparation, rating, placement on the market and ongoing capital market communications
 - c. Funds can be generated more quickly in comparison to listed bonds
 - d. Private placements currently require larger financing volumes of at least €50-100 million
- (ii) Listed bonds
 - a. The daily liquidity and pricing provides a high level of transparency

The buyers of bonds are primarily insurance companies and private and corporate pension funds. In emerging markets, and many developed markets, only a few bonds of this type have been issued to date, meaning that no real corresponding market exists. However, bond finance is also expected to become increasingly important globally.

4.3. Providers of debt capital

Long-term debt capital is the most important source of finance for infrastructure projects. Depending on the volume and risk profile of the project, the debt component of a financing structure accounts for 70% to 90%. Commercial banks are the biggest source of financing of project financing. 70% to 90% of the total project finance investment volume is provided by banks (including development banks) in the form of debt capital, meaning that they also adopt the majority of the project's risks. This group is composed of:

- (i) Commercial banks
- (ii) Development banks
- (iii) Financial investors

While loan terms are generally based on the duration of the project there is a limit to what banks are prepared to offer:

- (i) The average term of a traditional project finance loan is between seven and twelve years
- (ii) Irrespective of the loan term, lenders insist on repayment approximately two to five years before the end of the project but at last after ten to twelve years

Bank loans have the lowest level of risk on the risk scale. They are secured to a sufficient extent by way of standard collateral, such as:

- (i) Assigning all present and future claims of the project company arising from the material project agreements
- (ii) Pledging the shares in the project company held by the sponsors and the balances on the project accounts
- (iii) Ensuring sufficient capitalisation
- (iv) Maintaining reserve and liquidity accounts (e.g. debt service and/or maintenance reserves)
- (v) Achieving defined financial covenants
- (vi) Granting defined rights of subrogation to the financing bank

In the case of larger transaction volumes, a distinction is also made between senior and junior (or subordinated) debt. The difference primarily relates to the order (priority) of capital repayment. Subordinated debt generally has a greater likelihood of default and therefore requires a higher interest rate in order to reflect this increased level of risk.

In contrast to bonds, the terms and conditions of bank and syndicated loans as well as club deals can be determined on an individual project basis to a large extent. Most importantly, the interest and principal payments can be adjusted to reflect the requirements of the project, i.e. the cash flows required and/or generated.

The interest rate for debt capital is determined on the basis of a reference interest rate (e.g. Euribor is applied for euro-denominated loans and Libor for dollar-denominated ones) and a project-specific margin. The level of the margin is based on current market and industry trends and the risk profile of the respective infrastructure project (project- and sponsor-specific risks), as well as the yield expectations of the banks. It generally amounts to between 80 and 140bp. but margins can easily rise to 300bp and more. The interest rate for the term of the debt capital may be variable, fixed, or tied to a specific corridor (interval). Fixed interest rates are generally refinanced on the part by the banks using swap transactions.

Bank loans for infrastructure are arranged as syndicated loans or club deals.

4.3.1. Syndicated loans

Syndicated loans are made available by a group of banks and then placed on the wider banking market by this syndicate in order to diversify credit risk. Syndications are commonly chosen if individual banks are likely to be temporarily overextended or if potential cluster risks can arise.

Several banks may form a syndicate under the management of one bank (known as the lead arranger or the lead manager) to structure and arrange financing on the basis of the order issued by the borrower.

Similar to the traditional bank loan, the structure is tailored to the respective project, particularly with regard to the achievement of future cash flows, debt service and options for flexible loan disbursement.

In the financing offer, the lead arranger indicates the loan amount to be kept on its own books after syndication is complete (final take). This is usually around 10% of the total volume but the share can partially get down to 0%. From the borrower's perspective, but also from the banks' perspective which ultimately participated in the loan, the final take is relevant as it reflects the long-term commitment of the arranger to the project being financed as well as its conviction of its long-term sustainability.

The lead arranger forms the aforementioned arranging group in conjunction with other banks (co-arrangers or managers) whose participation primarily depends on:

- (i) The attractiveness of the respective transaction
- (ii) The structure of the finance and the commission/fee structure offered by the lead arranger

Syndication is achieved in two steps:

- (i) Phase 1: Underwriting
 - a. With the underwriting, the individual banks participating in the syndicate commit to underwrite defined amounts of the overall loan (underwriting commitment).
 - b. Until the underwriting commitment by the syndicate banks, the lead arranger is contractually obliged to provide the full amount of the loan to the borrower itself. From the lead arranger's perspective, this is important to obtain as underwriting partners are usually prestigious banks that can syndicate (place) the loan on the banking market in a broader form after the underwriting process is complete.
- (ii) Phase 2: Banks are offered smaller tranches of the overall loan that are usually less than the final take of the lead arranger and the managers, and hence offer a lower level of commission. When placing loans for foreign projects, it can be extremely important to ensure that local banks are involved alongside international banks due to political considerations and other issues.

4.3.2. Club deals

In a club deal, several banks form a syndicate during the structuring phase. The role of the syndicate includes these aspects:

- (i) They mutually agree on the terms and the structure of the financing and together underwrite the entire original loan amount in the role of arranger/co-arrangers.
- (ii) After the credit agreements are signed, the agent for the settlement and administration of the loan is brought into the transaction, while the tasks of the lead arranger are largely complete. The agent primarily acts as a clearing house for the parties of the loan agreement, examining the regularity of all cash flows and coordinating the interaction between the syndicate partners. The agent always acts in the name of the banking syndicate and often comes from the same institution as the lead arranger.

4.3.3. Development banks

Development banks normally place greater value on aspects such as promoting the economy in specific geographical areas and industries or social considerations when making lending decisions. The interest margins on loans from development banks are generally lower than those offered by retail banks.

4.3.4. Government support schemes

In addition to equity, debt and mezzanine capital, the financing of infrastructure projects may also draw on government economic development schemes. A wide range of development capital may be available depending on the nature of the project and a number of additional factors. This capital may be incorporated into the overall financing structure in various ways. Repayable grants, low-interest loans and guarantees are particularly relevant in the context of infrastructure projects.

Support programmes are offered on a national level by state-owned development banks such as Kreditanstalt für Wiederaufbau (KfW), the Japanese Bank for International cooperation (JIBC) in Japan, or the Overseas Private Investment Corporation (OPIC) in the US, to name just a few. The European Investment Bank (EIB), and the European Bank for Reconstruction and Development (EBRD) as well as the European Union (EU) make capital available at European level.

Global organisations or organisations in different continents comparable to the EIB or EBRD on a European level primarily include multilateral institutions such as the World Bank Group and its subsidiaries, such as:

- (i) International Finance Corporation (IFC),
- (ii) International Bank of Reconstruction and Development (IBRD),
- (iii) International Development Agency (IDA),
- (iv) Interamerican Development Bank (IDB),
- (v) Japanese Bank for International Cooperation (JIBC),
- (vi) Asian Development Bank (ADB)

It is also possible to utilise indirect support programmes by involving state-owned or private export credit agencies (ECAs), which support the export transactions of domestic companies by providing export credit guarantees. In the same way, support programmes for direct foreign investments are offered by the respective national governments as well as the Multilateral Investment Guarantee Agency (MIGA), for example.

National development banks may support general administrative projects, urban and rural development, social infrastructure (hospitals, nursing homes, kindergartens, schools, etc.) or the municipal transport infrastructure. Subsidies take the form of low-interest, long-term loans (with a maximum term of 20–30 years) with fixed interest rates and a maximum of three to five repayment-free start-up years.

Services might include:

- (i) Export Loans - provide funds to support exports of equipment by foreign companies and overseas transfer of their technologies
- (ii) Import Loans - provide funds to support imports

- (iii) Overseas Investment Loans - provide funds to support overseas investment projects undertaken by Japanese companies for manufacturing, resource development, and other business ventures
- (iv) Untied Loans - provide funds to support improvements in the overseas business environment to facilitate foreign trade
- (v) Bridge Loans - provide short-term financing for developing country governments facing balance-of payments difficulties to enable them to ride out temporary strains in foreign currency management
- (vi) Equity Participation - equity investment in overseas joint ventures involving foreign companies, or funds in which foreign companies participate
- (vii) Studies and research activities

Other than loans, national development banks financing operations utilise their guarantee facility to complement and encourage private financial institutions. Specific examples include:

- (i) Performance bond guarantees: in cases where an overseas trading partner is unable to accept the guarantees of a foreign company's bank due to ratings or other factors
- (ii) Product import guarantees: for debt incurred when a foreign company borrows funds necessary for the import of products
- (iii) Guarantees for corporate bonds issued by foreign companies overseas: to provide support for corporate bonds issued by local foreign companies in overseas markets
- (iv) Guarantees for overseas syndicated loans /Government bond guarantees: to cover foreign currency remittance and exchange risk, country risk and other risks when a private financial institution provides financing in developing countries
- (v) Acquisition of loan and bonds: to promote private-sector lending in international finance and encourage smooth funding by foreign companies in international capital markets

4.3.5. Asset backed securities

Asset backed securities (ABS) are financing instruments that seek to generate additional liquidity through the sale of company assets. This primarily relates to current assets of the same type (particularly receivables) that can demonstrate a sustainable cash flow. Generally speaking, any asset with a regular cash flow can be securitised, this includes: loan receivables (companies, project finance, mortgages, consumers), lease agreements, credit card transactions, licence and franchise agreements and all forms of goods and services.

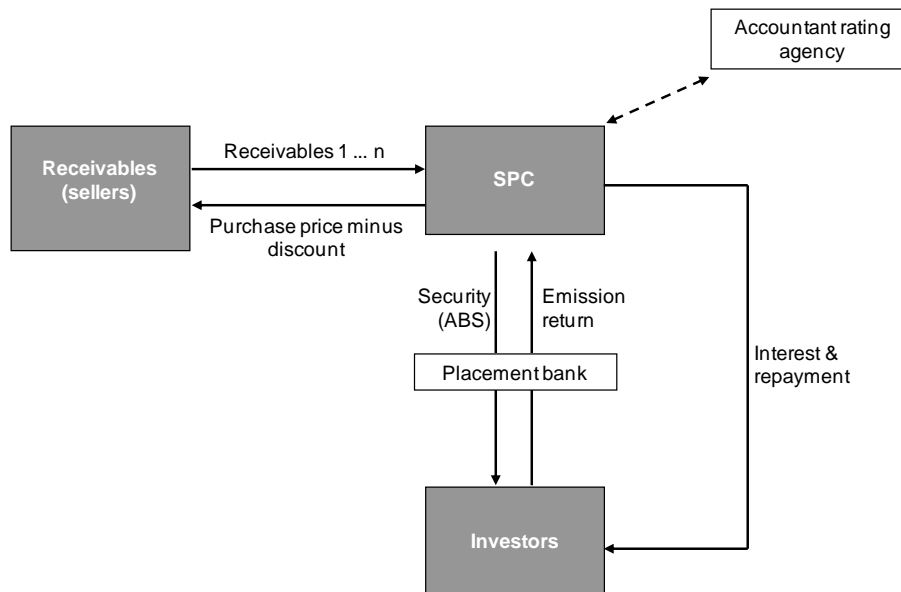


Figure 4-5: Asset backed securities, Source: Alfen Consult GmbH

The assets are sold to an SPC (special purpose company) that bundles them and refinances them on the credit or money market by issuing securities that are backed by the assets acquired. In other words, asset backed securities serve to secure future amounts due from the cash flows of the underlying receivables. The seller receives a direct cash injection, minus a discount, the moment the assets are sold, while the buyer receives security with broad risk diversification and usually a guaranteed minimum return. The purchase price of the receivables is often settled in more than one instalment. The first instalment corresponds to the present value of the receivables purchased, which is reduced by the discount rate and a risk discount calculated on the basis of the historical default rate. Subsequent instalments are paid when the cash receipts of the debtor exceed the first purchase price instalment. ABS structures are a highly flexible instrument.

Rather than merely securing and selling assets on a single occasion, the SPC can constantly incorporate new, bundled receivables, which results in a continuous liquidity effect for the seller and the long-term receipt of interest and principal payments for the buyer of the securities. Forms of collateral in ABS transactions include the cash flow structure of the transaction (e.g. overcollateralisation via the quantitative and qualitative selection of receivables, subordinated funds of the SPC, reserve funds), collateralisation by the seller of the receivables (limited recourse, letters of comfort) and collateralisation by third parties (letters of credit, warranties/guarantees, insurance, assignment of contributions).

4.3.6. Short-term finance

Working capital facilities

In addition to long-term finance, banks also provide short-term funds for the financing of day-to-day operations. These take the form of flexible working capital facilities and are primarily used for the advance financing of stocks and inventories as well as customer receivables.

Supplier and customer loans

Traditional supplier and customer loans should also be mentioned for the sake of completeness. The suppliers or customers of the project company may choose to grant it more favourable payment terms. This form of credit is normally comparatively expensive and should only be used to resolve temporary liquidity bottlenecks.

5. Infrastructure investment and budget concerns

Decisions regarding investment should be based on the overall considerations of long-term macro-economic stability, and instruments should be in place to impose this discipline, including rules regarding deficit spending. Any model for providing and financing infrastructure should add to aggregate efficiency. Budgetary concerns have no direct relationship to this observation.

An essential consideration in the choice of whether and how to carry out transport infrastructure projects is precisely how it will impact public finances. Striking the right balance of budget implementation in infrastructure funding is a core element of the political decision-making process, as well as a question of good governance. Ultimately, appropriate decision-making regarding public infrastructure requires an all-of-government approach, because the issues at stake fundamentally involve employing large capital amounts to meet specific needs.

5.1. The impact of infrastructure investment on the state budget

The impact of infrastructure investment on the state budget can be seen in terms of:

- (i) Limitations on the ability to spend on other priorities
- (ii) Incurred debt with consequences on overall macroeconomic stability and interest rates

The following example shows the development and decision process on federal roads in Germany.

Country example: Overview of the decision process on federal roads in Germany

The project development process for federal highways and roads can be categorized in four phases (Figure 5.1). The process is initiated from state level with the involvement of regional and local governments.



Figure 5-1: Development process for federal highways in Germany

The requirement planning includes the preparation of an investment proposal in federal roads and a federal road master plan. Preliminary investigation will be carried out based on the Federal Transport Network Plan (FTNP). The FTNP is a perennial general

investment program and planning tool for transport infrastructure, which is based on a macroeconomic assessment of three main criteria: efficiency, regional effectiveness and environment impact. The "Scope" represents the general preliminary requirement investigation. The plan is published every 10 to 15 years. Projects will be ranked and prioritized according to traffic forecasts and traffic need. The "Scope" will be adapted to changes in current traffic forecasts based on a five-year plan alignment. The "Statement of Need" will be approved by the parliament and becomes the legal framework for federal infrastructure development including new routes or upgrading of existent routes.

Following the "Statement of Need", the second stage "Route Management" is devoted to the particular route of the anticipated road line. Therefore different options will be elaborated by a regional analysis. The alternatives will be reviewed during the "Regional Planning Procedure" (RPP) under consideration of environmental aspects, traffic and costs. The potential options are discussed publicly and interests of public and private stakeholders will be considered through involvement of different committees of residents, environmental activists and public agencies. The RPP is held with responsible State level authorities. The "Route Management" phase until "Route Determination" takes around one year.

The "Preliminary Design" focuses on the project costs and comprises the development of different plans such as floor plan, gradient diagrams, and cross sections, and investigations such as acoustics, air pollution, water management. Each of the investigations must fulfill the technical requirements and norms. If the costs are more than € 10 million the study needs to be approved by involved federal ministries. The "Approval Concept" is the mandatory agreement for any further planning and development. In average the whole process takes around one year for completion of the phase.

The "Plan Approval Procedure" is the final step before detailed planning and tendering and takes around nine months in average. During the phase public interests will be considered. Stakeholder will be identified and involved by public organized hearings and through presentation and discussion of the proposed road plans. Opponents have the opportunity to claim against the project. The "Approved Plan" is the official legislation for tendering and construction of the project.

Infrastructure investment can be achieved through a variety of procurement methods. Two basic distinctions are made between infrastructure investments: on an upfront basis using existing resources, or by using long term concession agreements such as PPP contracts. Each option has different budgetary consequences. The overall logic of these decisions is that costs and revenues should balance; there must be resources available to pay for the activities that are undertaken.

When using existing resources both the investment in new infrastructure facilities and ongoing maintenance have to be treated as if they were consumed during the year of the expenditure.

An implication of this approach is that:

- (i) New investments depend on the availability of financing from the government's overall budget
- (ii) Ongoing spending on future upgrading and maintenance of projects is not guaranteed, as it must be approved in future budgets
- (iii) The overall investment is inherently consolidated with the state budget which makes it difficult to commit to a life-cycle approach to infrastructure spending

An alternative is to borrow in order to pay for the investment. This means that the government pays back the loans over the life span of the project or some other period of time. In this way, it is feasible to spend more than the annual budget. The golden rule of debt finance says that a public budget deficit is acceptable as long as the value of the resulting public asset increases at least proportional and the public net asset value does not degrade.

If current spending is substituted for a long-term commitment to service a loan or to make payments to a PPP company it is important to recognise the long-term budgetary consequences of such a transition. The total volume of all PPP commitments must be affordable, in the sense that resources will be available to make required payments without excessively limiting a government's ability to meet other needs.

Under some circumstances there is no accounting difference between treating investments as current spending or as assets delivering services over a series of years. Under a scenario with constant investment spending year after year both accounting models result in identical consequences for the public budget. However, during the first few years the budget load is reduced. The budgetary implications of postponing the payments will be not equal during periods when investment spending increases or is cut back.

A government that is not aware of this may therefore wrongly assume that it has a too wide a scope for investments. A country with large debt relative to its productive capacity may run into problems with respect to the ability to service its annual costs. Lenders may require higher interest rates from such countries than from countries with smaller debt/production ratios. Another motive for spending more during a budget year than is raised in tax revenue is to use the budget as a tool for counter-cyclical policies. Borrowing today to initiate project resources may be productive in reducing unemployment rates. Further concerns in public budgeting arise when a country spends significant funds on infrastructure during an upward phase of the business cycle or if spending is funded by printing money. In this case extensive public sector investment might crowd out or displace private investments.

Borrowing can potentially be considered on or off budget. For example, a PPP procurement model may be established, whereby a private partner finances the project, and is compensated by the government and/or directly by users over the project's life-cycle. In a typical project finance structure the government makes down payments not directly to the original lender, but rather to a project company that assumes the debt.

5.2. PPP and statistical accounts

There are also rules of the same nature to establish whether PPP projects should be reported on or off the budget. The key issue here lies on the classification of the assets involved in the PPP contract – either as Government assets (thereby influencing Government deficit and debt) or as the private's assets.

In the US, the Congressional Budget Office has established six points as criteria for recognising PPP projects as not part of the public sector (US Congressional Budget Office, 2003). These are as follows:

- (i) The fixed asset serves a general purpose (it is not specified by the government)
- (ii) The fixed asset also has a market in the private sector
- (iii) During the term of the contract, the private partner has the ownership title to the asset, which is not subsequently transferred to the government
- (iv) The contract does not stipulate a bargain-price purchase option
- (v) The contractual term does not exceed 75% of the estimated economic life of the asset
- (vi) The present value of the minimum rent payable during the contractual term may not exceed 90% of the fair market value at the beginning of the contractual term

The European System of Accounts (ESA 95) Manual on Government Debt and Deficit published in August 2004 established the following general principle on the accounting treatment in national accounts of contracts undertaken in a PPP framework: in National Accounts, the assets involved in a PPP can be considered as non-Government assets only if there is strong evidence that the private partner is bearing most of the risk attached to the specific partnership. Therefore, the analysis of risks borne by the contractual parties is the core element to ensure the correct accounting of PPPs on the Government Deficit sheet. The accounting treatment therefore depends on the following three main categories of "generic" risks:

Construction risk: the construction risk entails events such as late delivery, non-respect of specified standards, additional costs, technical deficiency, and external negative effects of the construction phase.

Availability risk: the private partner bears the availability risk if it is not in a place to meet the required volume and quality standards of the contracted service, even if it is in a position to avoid the occurrence of this risk. This is generally reflected in performance indicators, which can be for instance, the minimum number of lanes of a motorway opened to traffic.

Demand risk: the demand risk is the volatility of demand (higher or lower than expected when the contract was signed). This risk only includes shifts in demand not resulting from inadequate or low quality of the services provided by the partner or any action that changes the quantity/quality of services provided. Instead, others factors can influence the variability of demand, such as the business cycle, new market trends, direct competition or technological obsolescence.

In summary PPP projects can be considered to be off the public books only if there is strong evidence that the partner is bearing most of the risk attached to the specific partnership.

The lessons learned are:

- (i) The choice between paying for investment directly or by taking up loans makes a difference for the public budget only when total spending goes up or down. In a steady state, the ongoing budget costs will be identical
- (ii) Placing investments off budget might slightly increase budget costs compared with the government taking up the same loan itself
- (iii) Off-budget loans are not registered in any public sector accounting. However, in reality, they represent the same liability as if the government would take up the loans itself

It is essential that any investment in infrastructure is based on a full understanding of the implications for future government spending. There are some potential benefits to off-budget financing, from the perspective of freeing up governments' budgets for other spending and spreading expenditures on infrastructure over the life-cycle of the asset. However, this will only bear fruit if overall spending is carefully balanced to take into account available resources in the long term, as well as other priorities.

6. Cost efficiency and life cycle costing

The construction of new assets will generate future maintenance needs and places financial burdens on future governments. The aggregate maintenance and construction needs of transport infrastructure are characterised by cycles spanning up to several decades. The need for future maintenance funding can therefore be planned and justified on the basis of asset management systems. More spending during the investment phase may save on future maintenance costs. A cost efficient project design is therefore one that delivers the lowest life-cycle costs.

The life cycle budget of an infrastructure project is defined as the total cost of that asset over its operating life, including initial acquisition costs and subsequent running costs. Cost efficiency and life cycle costs can be generated through the use of techniques such as life cycle costing (LCC).

With the transfer of the responsibilities of design, build, operate and finance of infrastructure the private sector will be able to seek an optimal balance between upstream investment costs and downstream maintenance and operational costs. Thereby, the life-cycle cost management might require long contract periods to generate cost savings over the life cycle of the project. A project company that is made responsible for all aspects of an asset over a long time can safeguard future maintenance volumes. Provided that the contract is appropriately designed, the project company is rewarded through making decisions that create better results in the long run. In particular, it would balance the costs for different construction methods against costs for future maintenance in order to establish the appropriate initial design.

Insufficient maintenance in the short term might translate into more expensive maintenance in the long term and thus increases the need for funding in the coming years. Therefore, life cycle costing is essential in effective decision-making in four key ways:

- (i) It identifies the total cost associated with any asset, rather than merely concentrating on the initial capital costs. The initial capital cost may represent less than half of the total cost
- (ii) It facilitates an effective choice between alternative methods of achieving a stated objective, e.g. choosing between procurement methods and technological options. It takes full account of the probability that various options are likely to exhibit somewhat different patterns of capital and running costs
- (iii) Life cycle cost approach is a management tool that details the current operating costs of assets so that the asset can be monitored well
- (iv) Life cycle costing identifies the opportunity of reducing operating costs, either by changing the operating practice or by changing technology or resources

The LCC framework is a powerful tool used to compare alternatives and options during the design stage and operational stage. From a management application the framework is essential for monitoring and benchmarking as well as in establishing Key Performance Indicators to formulate performance-based maintenance strategies. The following 7 steps can be used as the basic framework for applying LCC to infrastructure projects:

Step 1: Establish the objective

The single most important step in the analysis is the definition of what the proposed project is intended to achieve. It is essential that the wording of the objective is unbiased, in that it imposes no prior judgments on the best method for achieving the objectives.

Step 2: Choice of procurement method

After formulating an unbiased statement of objective, the next step is to determine the range of feasible methods for achieving that objective. Since the ultimate purpose of the

life cycle cost process is to assist in making resource allocation decisions, it is essential that all realistic possibilities are considered. Occasionally, pre-conceived ideas or administrative constraints (such as an upper limit on initial funding) will tend to exclude certain choices.

Step 3: Formulate assumptions

LCC deals with future expenditure and thus involves elements of uncertainty. A complete factual picture may be impossible to construct and certain assumptions will be necessary in order to proceed with the analysis. For example, it may be necessary to forecast an escalation of energy, labour and materials costs. These assumptions must be clearly identified. It must be emphasised that estimates should never be used if historical data are available.

Step 4: Identify the costs and the life cycle

For each possible choice, the life cycle of the project and of individual components of that project, and all costs occurring during the entire period of life cycle must be determined.

Step 5: Compare costs and rank the alternatives

This step is the most important element of the LCC approach. Various techniques are available for ranking alternatives, for example, net present value, savings-investment ratios, internal rate of return or annual equivalent value.

Step 6: Sensitivity analysis

When the results of step 5 are not demonstrably in favour of one choice, it is advisable to test the sensitivity of the analysis to certain dominant cost factors and assumptions in order to give a complete picture to the decision-maker. For example, if the discount rate increases from 3% to 5%, the ranking of the alternatives may also change their order.

Step 7: Investigate capital cost constraints

Procedures for life cycle costing should include a step in which the initial costs of all recommendations are aggregated to ensure that they do not exceed the total funding available. If this constraint is exceeded, trade-off evaluations should be made until the optimum combination of lowest life cycle cost within available funding has been reached. As part of this process, the sponsor should be sufficiently flexible to adjust capital budgets where significant life cycle cost savings are indicated.

After building up the framework for LCC, the derivative LCCM is produced. LCCM is a controlling instrument that identifies areas in which operating and maintenance costs might be reduced, either by a change in operating practice, or by changing the relevant system. LCCM is one of the most important areas for the application of LCC techniques. Infrastructure projects may be expected to be used for many years, during which operation and maintenance decisions may need to be changed and new options considered.

Figure 6-1 illustrates the LCC methodology for financial management with impact on long term LCC operation, maintenance and major replacement costs. In a period of inflation, and perhaps stagflation, the bottom-line is very much affected by the top-line cost and revenue parameters. Life cycle costing and cost estimates are of paramount importance

as they could significantly impact financial ratios of EBITA, the earning per share, EPS(\$/share) and dividend yield (%).

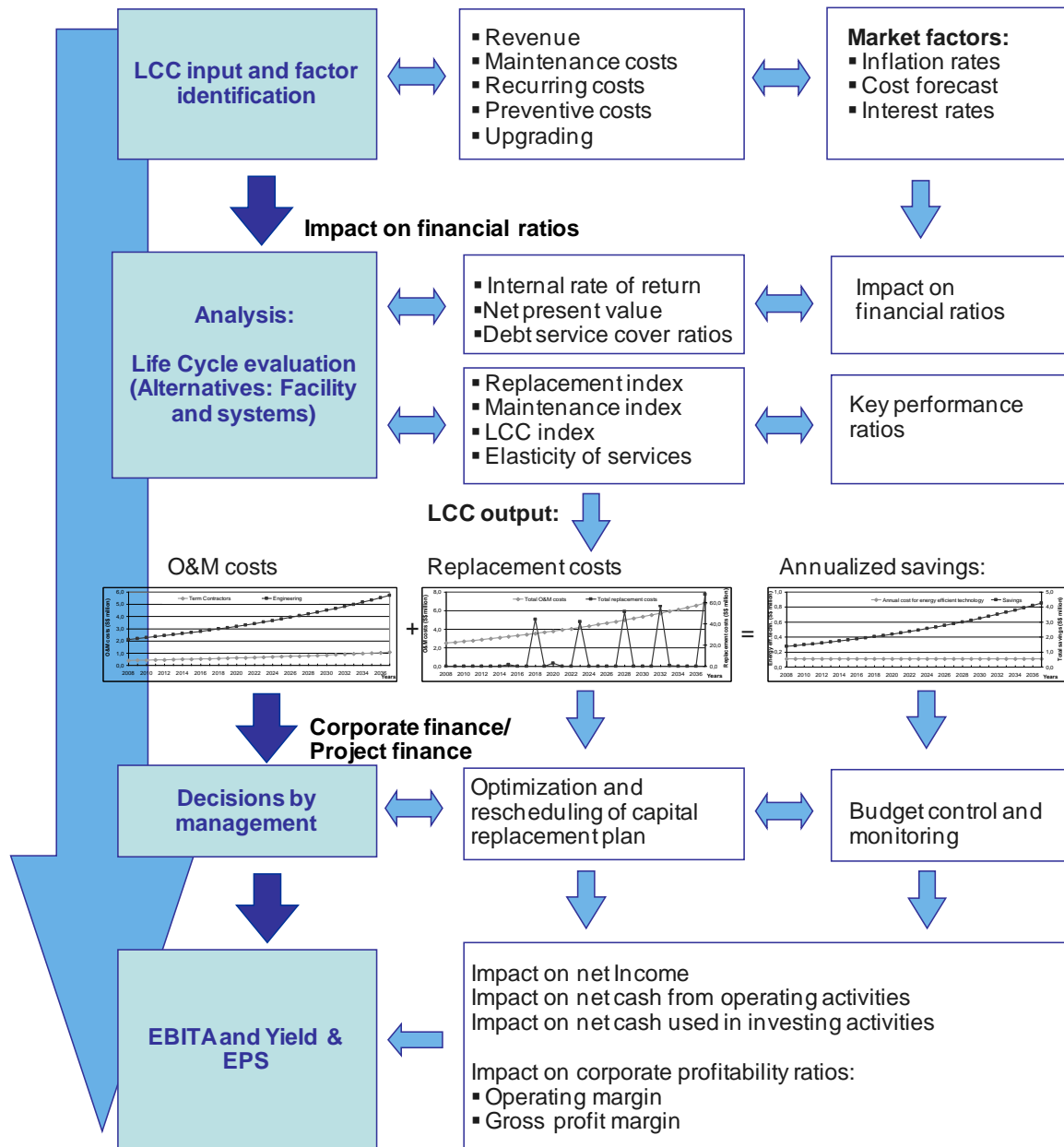


Figure 6-1: Life cycle cost management, Source: Alfen Consult GmbH

7. Methods and tools for project development

The future cash flows of an infrastructure project or project company, and in particular its economic feasibility, are the primary focus when evaluating and developing an appropriate financing solution. The chapter briefly addresses the various kinds of tools for project development and provides an introduction of how cash flow calculations and sensitivity analyses required for financing are determined and prepared. Cash flow models contain all relevant parameters affecting the project including the various risks identified and quantified in advance and are used to calculate key performance indicators.

7.1. Project development tools

The key objective of project development tools, such as a Public Sector Comparator (PSC), is to ensure value for money when delivering improved infrastructure services and to identify which party will provide the greatest share and productive efficiencies. The following fundamental principles should be followed and achieved with the development of a PSC:

- (i) Projects are awarded in a competitive environment
- (ii) Economic appraisal techniques, including a proper appreciation of risk, are applied rigorously
- (iii) Allocating material risks to whoever is best able to manage them at the least cost
- (iv) Maximising the level of infrastructure spending through responsible use of the resources and skills of both the public and private sectors
- (v) Establishing long-term mutually beneficial partnerships with the private sector
- (vi) Protecting the public interest, including retaining responsibility for the delivery of core services
- (vii) Ensuring value for money is obtained
- (viii) Encouraging the rigorous application of financial evaluation techniques
- (ix) The net present cost (NPC) to government is minimised
- (x) Ensuring that comparisons between publicly and privately financed options are comprehensive, realistic and consistent

Efficiency is taken to mean some combination of reduced costs and/or increased benefits.

More specifically, this translates into either of the following:

- (i) Reducing inputs (i.e. money, people, and assets) for the same outputs.
- (ii) Obtaining more output or improved quality for the same inputs.
- (iii) Obtaining proportionally more outputs or improved quality in return for an increase in resources (ODPM, 2005).

To quantify the efficiencies a comprehensive business plan has to be developed. It is the basis to structure the project and subsequently the input for the tendering process. The cash flow model is a practical and most common tool to develop the project.

The following example illustrates the justification of the BTbOOT model obtained from the feasibility study.

Project example: Illichevsk new container terminal (Ukraine)

The port of Illichevsk is one of the largest ports in Ukraine located on the coast of

Sukhoy Liman. The Port is divided into three cargo terminal complexes. The main products handled include: metal products, grain, fertilizers, cement, coke, coal, and containers. Part of the proposed project is an extensive modernisation programme, including berth reconstruction, procurement of the cargo handling equipment and dredging works in order to increase operational reliability and efficiency of the port's services (EBRD, 2011). Furthermore a corporate development programme aims to strengthening the Port's in-house capacity in strategic development and management of its relationships with the private operators (EBRD, 2011).

The total proposed project costs are estimated as \$185 million including the Port's own funds of \$11 million. The proposed capital costs for the project are listed in Table 7-1.

Table 7-1: Estimated Capital Costs, Source EC (2010)²

Item	Stage 1	Stage 2	Stage 3	Total
Engineering, investigations	5 999 493	0	0	5 999 493
Dredging	11 146 676	3 176 108	9 677 445	24 000 229
Berth structure	9 754 737	6 620 703	8 034 737	24 410 177
Reclamation, crane tracks, Paving	42 889 535	19 544 587	38 515 603	100 949 724
Buildings	10 041 138	0	522 605	10 563 743
Utilities	8 457 770	1 368 879	687 798	10 514 447
Railway	2 090 586	0	698 307	2 788 893
External access road	0	0	3 465 195	3 465 195
Subtotal infrastructure	90 379 936	30 710 276	61 601 689	182 691 901
Equipment	45 654 840	15 606 544	42 726 968	103 988 351
IT	2 451 030	107 258	360 528	2 918 816
Furniture, fittings	264 507	23 884	35 875	324 265
Subtotal equipment	48 370 377	15 737 685	43 123 370	107 231 432
Contingencies	2 418 519	786 884	2 156 169	5 361 572
Subtotal equipment	48 370 377	15 737 685	43 123 370	107 231 432
Total	138 750 312	46 447 961	104 725 060	289 923 333
The above includes ICSP costs:				
Dredging	9 383 251	1 713 793	7 800 811	18 897 855
Net cost to terminal Operator	129 367 061	44 734 168	96 924 249	271 025 478
Total Stage 1 and Stage 2				174 101 229

The project shall be funded by 100% external funding under a 30 year PPP concession. Two privatisation models were considered in a feasibility analysis in order to evaluate the financial viability: a BOOT (Build, Own, Operate and Transfer) and a BTbOOT (Build, Transfer berth, Own (remaining), Operate (all) and Transfer (all) option.

Assumptions in the feasibility study included an 100% external funding 60:40 Debt: Equity. The loan interest rate was set at 2% LIBOR + 2% margin with a 12 years repayment period. The revenue structure included the current tariff applied from Constanta port tariff for transshipment (TRACECA, 2010).

The feasibility analysis estimated a Financial Internal Rate of Return (FIRR) and identified project related risks based on the sensitivity of FIRR. Factors for the sensitivity analysis include a 10% change in the costs, and revenues. The estimated FIRR under BOOT option is 8.4% p.a. and under BTbOOT option is 9.3% p.a. for the

base case with tax as shown in Table 7-2. EC (2010)². The table also illustrates the sensitivity of FIRR under both these options.

Table 7-2: Financial Internal Rate of Return of NCT Project (% Per Annum), Source: EC (2010)²

Scenario	BOOT		BTbOOT	
	No tax	With tax	No tax	With tax
Base Case	10,3	8,4	11,5	9,3
Sensitivity				
10% reduction in revenue	9,0	7,0	10,0	8,0
10 % increase in all costs	9,1	7,1	9,1	8,0
Both the above combined	8,4	6,5	9,2	7,3

The weighted average cost of capital is estimated at 6.8% p.a. Thereby the FIRR is higher than the WACC, which justifies the project as considered viable. Between both options the BTbOOT model delivers the higher FIRR and is therefore recommended as preferred option. The model can be implemented under the PPP Law and Concession Law of Ukraine that would minimise the period of project implementation.

The feasibility study illustrated the economic viability from Ukraine point of view. Lower shipping costs for containers benefits Ukraine. The Port of Illichivsk earns revenue from port dues and handling charges of transshipment and transit containers (EC, 2010)².

7.2. Cash flow calculations

Cash flow models contain all relevant parameters affecting the project (including the various risks that have been identified and quantified in advance) and are used to calculate key performance indicators. Investors must seek to verify the extent to which the available project cash flows will be sufficient to service interest and principal payments, O&M costs and dividends. Therefore, the future cash flows of an infrastructure project are the primary focus when evaluating and developing an appropriate financing solution.

From the lender's perspective, this means that the cash flow *before* debt service, i.e. the liquidity generated in one financial year before deduction of all operating items and investments, is the most important variable when analysing the debt service sustainability of a project. By contrast, the free cash flow *after* debt service is the relevant financial indicator for the providers of equity capital. In both cases, however, the taxes payable in the respective country must first be deducted.

In order to be able to better record the potential economic effects of existing project risks on the future cash flows of a project and adequately present its financing structure, the project cash flows are examined as part of a sensitivity analysis based on a number of theoretical scenarios. Starting from the base case of the project various worst case scenarios that are based on pessimistic assumptions about the market and the project

are computed. This conservative analysis is intended to both determine the maximum amount of debt a project company can sustain given its future earnings power under worst case assumptions and to ensure that the project company will be able to meet at least its contractual debt service obligations even in the event of adverse developments.

This initial project analysis by the project owner and finally the sponsor, including a feasibility study and a long-term business plan, then forms the basis for the cash flow and earnings analyses performed by the banks.

The calculation of the cash flow in general, and the cash flow before debt service in particular, takes into account all changes in income statement and balance sheet items during the period under review that embody a direct cash inflow or outflow. A change in liquidity is not always the same thing as a change in the income statement. For example, certain income statement items such as depreciation and amortisation or outstanding receivables and invoices, which have a positive or negative impact on a company's net profit/loss for the year, do not result in a direct change in liquidity.

A PPP procurement process employs a different cash flow modelling procedure in comparison to traditional project finance. In the case of the latter, the cash flow model performed via the income statement and the balance sheet results in a liquidity analysis and the definition of the cover ratios. By contrast, the sponsor of a PPP transaction prescribes the required cover ratios to be achieved by the invited banks during the tender phase. These are used to calculate the performance fee that forms the basis for its own offer. In the subsequent cash flow analysis, the predefined/agreed upon performance fee is included in the model as a fixed variable. Beyond this point, the cash flow analysis is completed in the same way as for traditional project finance.

The cash flow before debt service is derived as is shown in Table 7-3: the basis of the calculation is the company's net profit/loss for the year or, depending on the method of calculation, EBITDA (earnings before interest, taxes, depreciation and amortisation). All non-cash income statement items (e.g. depreciation and amortisation) and all cash balance sheet items (e.g. working capital) are re-added. In addition to the depreciation of tangible assets and amortisation of intangible assets, net interest income/expense is included in the cash flow before debt service despite being a cash item. This is because net interest income/expense is an element of debt service that must be serviced using the available cash flow.

Table 7-3: Derivation of cash flow before debt service

Source: Alfen Consult GmbH

Income statement	Cash flow
Revenue	Net profit/loss for the period
- Cost of materials	+ Taxes
= Gross profit	+/- Net interest income/expense
- Staff costs	+ Depreciation and amortisation
- Other operating costs	
- Other costs	
+ Other income	- Taxes
= EBITDA	+/- Changes in working capital
- Depreciation and amortisation	+/- Changes in other assets
= EBIT (operating result)	+/- Changes in other liabilities
+/- Net interest income/expense	= Operating cash flow
= Pre-tax profit	- Investments
- Taxes	= Cash flow before debt service
= Net profit/loss for the period	- Interest
	- Repayment of principal
	= Free cash flow

7.2.1.1 Cash flow modelling

The creation of more complex cash flow models requires solid accounting knowledge as well as practice and cannot be learned from a book alone. However, there are a number of fundamental issues and common errors that should be mentioned at this point to make it easier to get started. In addition to the derivation of the individual cash flow items as described above, the following points should be observed when preparing a cash flow model:

- (i) **Coherent model structure:** The sum of total assets and total liabilities in the year-end balance sheet must be identical. If this is not the case, this shows that errors have occurred in the reconciliation of the individual balance sheet items. Common errors include the incorrect treatment of income statement items affecting equity, the delineation of payments received or made, changes in inventories, as well as additions to and depreciation and amortisation of fixed assets.

- (ii) **Analysis at the balance sheet date vs. dynamic analysis:** Whereas the balance sheet provides a snapshot of the position at the end of the financial year, the income statement and cash flow present a dynamic analysis over the course of the year. All changes in balance sheet items between two periods and the result reported in the income statement must be reflected in the cash flow statement.
- (iii) **Determination of the nominal interest rate:** The determination of the nominal interest rate (Euribor, Libor) for the calculation of annual interest payments can significantly affect the interest payable. Accordingly, future changes in the nominal interest rate over the term of the project must be taken into account (via the interest rate swap rate, which reflects the future expectations of the market) or the costs of interest rate hedging must be included in the model.
- (iv) **Repayment structure:** In order to correctly calculate the debt service, the repayment structure during the course of the year as set out in the credit agreement must be taken into account. Loans are generally repaid on a half-yearly basis, with interest payable in the same pattern. However, some structures require quarterly payments. The date and frequency of payment may impact the subsequent debt service.
- (v) **Future tax burden:** Tax assumptions must be examined in detail and evaluated with respect to potential future changes in tax legislation.
- (vi) **Relevance of inflation:** Depending on the country in which the project is taking place, both the income and cost side may be affected by inflation. For example, annual inflation of 2.0 % would see an increase in prices of around 22 % over a period of 10 years. The possibility of a deflation scenario also needs to be considered and modelled.

7.3. Key performance indicators

Financial covenants based on available liquidity, the debt-to-equity ratio or debt services are set out in the credit agreements. These key performance indicators are based on the cash flow development described in the business plan, taking into account the worst case scenarios developed by the lenders. The failure to achieve these financial covenants results in a formal event of default under the terms of the credit agreements. In practice, however, it is extremely rare for a formal event of default to lead to the actual termination of the contractual relationship, i.e. the revocation or accelerated settlement of the loan. Normally, the (project) company and the lender first examine the reasons for the deviation from the agreed financial covenants. If these reasons are short-term in nature and can be adequately explained, new financial covenants are then agreed and the loan proceeds as planned. Real problems only occur when the deviation is due to a sustained deterioration in the company's business performance that requires the fundamental restructuring of the loans extended.

Key financial covenants for the purposes of cash flow analysis include:

- (i) Debt service cover ratio [DSCR]: the extent to which the annual available cash flow before debt service [CFS] exceeds the annual debt service [S]:

$$DSCR_{tn} = \frac{CFStn}{Stn}$$

- (ii) Interest cover ratio [ICR]: the extent to which the annual available cash flow exceeds the annual interest payable [I]: $ICR_{tn} = CF_{Stn}/I_{tn}$
- (iii) Life of loan cover ratio [LLCR]: ratio of the present value of the net available CFS over the remaining loan term at the measurement date [PV] to the outstanding loan amount [L]: $LLCR_{tn} = PV_{tn}/L_{tn}$

A DSCR of 1.0 means that the available cash flow would exactly cover the outstanding debt service. In practice, a DSCR of at least 1.2 to 1.3 would normally be the target in order to provide the lenders with a certain degree of security and comfort. Similarly, an ICR of 1.0 means that the CFS would only be sufficient to cover the interest due on the outstanding loans, but not the repayment of principal. A project's ICR is usually in the region of 3.5 to 4.0, otherwise the repayment of the loans would not be guaranteed. Accordingly, an LLCR of 1.0 means that the cash flows generated over the entire term of the loan would exactly cover the principal and interest payments.

7.4. Sensitivity analysis

Sensitivity analysis should be performed on the project business plan (base case) to test sustainability of the available cash flow before debt service on the basis of various worst case scenarios. The sensitivity of certain parameters that are material to the economic success of the project is then increased, i.e. the parameters are varied. The risks previously identified and quantified are incorporated into the analysis based on a heightened risk profile. Thereby sensitivity analysis is different from the risk analysis. The risk analysis represents a the change from the expected values and is included as costs in the financial models. Sensitivity analysis a technique to test the robustness of the business case by changing key variables.

Variables that are typically analysed using sensitivity analysis include:

- (i) Length of the project (both the construction and concession periods)
- (ii) Periodic inflation rate
- (iii) Construction costs, schedule and completion dates
- (iv) Selling prices
- (v) Cost increases
- (vi) Total service demand
- (vii) Total operating costs
- (viii) Third-party revenue
- (ix) Residual value

Sensitivity may be determined as a percentage, e.g. assuming a price increase of 5% or 10%, or in absolute terms e.g. assuming a price increase of € 10 per unit.

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Glossary Project Finance

- A**
- A-Loan:** Loan given by a multilateral agency, e.g. International Finance Corporation (IFC) where it is the lender of record and administers the entire loan. The loan is booked on its own account.
- Amortisation:** Process of decreasing of principal or capitalised expenses over a period of time.
- B**
- Balance of Payments:** Accounting record of all monetary transactions between a country and the rest of the world. It is typically broken into capital and current account.
- Basis Point (bp):** Unit related to the change in an interest rate, 1/100th of a percentage point (1 bp = 0.01%).
- Bilateral Agency (BLA):** Governmental agencies in a single country which provide aid to developing countries, e.g. export-import company or export credit agency (ECA).
- B-Loan:** A loan syndicated by a multilateral lender (e.g. IFC). The multilateral agency is acting as the lender of record on behalf of the funding participants (commercial banks, other institutional investors).
- Build-Own-Operate-Transfer (BOOT):** Private owner designs, builds, owns and operates an infrastructure facility (e.g. airport, power plant, seaport) and transfers the asset to another entity (government or partner) at a previously agreed-upon or market-price after a specific period.
- Build-Own-Transfer (BOT):** Private owner designs, builds, owns and then transfers an infrastructure facility to another entity, often at no cost, after a specified period.
- Build-Transfer-Operate (BTO):** Private owner designs, builds an infrastructure facility, transfers it to another entity and then operates it on a contractual basis for a specified period.
- C**
- Capital Expenditures (CapEx):** Long-term expenditures for property, infrastructure construction and equipment.
- Civil Law:** System of law based on the Corpus Juris Civilis (Roman law). Primary feature of civil law is that laws are written into a collection, codified, and not determined by judges.
- Cofinancing:** Two or more banks and other lending institutions agree to fund under the same documentation and security packages financing the same project, however, they may have different interest rates, repayment profiles and terms.
- Collateral:** Specific assets pledged as security by a borrower or guarantor under a loan to assure repayment of debt obligations.
- Commercial Risks:** Various risks that can affect a project during operations (e.g. changes in input and output prices, fluctuations in demand).
- Common Law:** Developed by judges through decisions of courts. Law is based on custom or general principles that serves as a precedent or is applied to situations not covered by statute.
- Completion Guarantee:** Form of guarantee by project sponsors or the turnkey contractors that a project will achieve physical and/or financial completion. Performance bonds and/or penalties in the form of liquidated damages normally secure the guarantees.

Concession Agreement: Agreement made between a host government and a project company or sponsor permitting tasks like to develop, to construct and to operate and maintain a project.

Consumer Price Index (CPI): Measure of changes in the purchasing-power of a currency and the rate of inflation. Statistical estimate constructed using the prices of a sample of representative items whose prices are collected periodically.

Counter-Party: Other participant in a project agreement.

Country Risk: Risk of loss due to economic and/or political instability in a given country.

Credit Enhancement: Key part of securitisation transaction in structured finance. Often as guarantee issued by a third party assuring the payment or performance obligations of a major project participant, e.g. by using personal property as collateral.

Current Account: Sum of the balance of trade (export minus imports of goods and services).

D Debt Service: Payment of principal and interest due on an existing debt.

Debt Service Coverage Ratio (DSCR): Defined as the cash available for debt service divided by the total amount of debt service for any given debt service period. This quantitative measure is used by lenders to determine an entity's ability to produce enough cash from operations to cover its debt payments.

Debt Service Reserve Account (DSRA): Reserve account ensuring the timely payment of principal and interest.

Developing Countries: Defined by the World Bank in terms of gross national income per capita as follows: low-income (U.S.\$755 or less), lower-middle income (U.S.\$ 756 – 2,955) and upper-middle income (U.S.\$ 2,966 – 9,625).

Development Bank: Financial institutions funding new and upcoming businesses and economic projects by providing equity capital and/or loan capital in developing countries.

Discount Rate: Annual percentage rate used to determine the present value of future cash flows.

E Event of Default: Any event which entitles the lender to cancel a debt facility and to demand repayment of the loan in advance of its normal due date.

Export Credit Agency (ECA): Organisation acting as an intermediary between national governments and exporters to issue export financing through the use of direct loan and guarantee mechanisms provided to importers.

F Financial Close: Stage in a financial agreement where all project contracts and financing documentation are signed and conditions have been satisfied or waived.

Financial Viability: Being able to generate sufficient income to provide acceptable returns to equity holders and to service its debt on time and in full.

Fixed Exchange Rate: Foreign exchange rate is set and maintained at a fixed rate through government support.

Floating Exchange Rate: A currency's value is determined by the interplay of the market focus on demand and supply.

Forward Contract: Binding contract between two parties under which a commodity is bought or sold at a set price on a future date. Forward contracts are not over the counter and entail counter party risk.

Free Cash Flow (FCF): A measure of financial performance. It is computed as earnings before interest payments adjusted for taxes plus depreciation, amortisation and other non-cash charges less capital expenditures less changes in net working capital.

G Grace Period: Additional period of time a lender provides for a borrower to make payment on a debt without penalty interest or other charges. Usually it occurs after start-up, commissioning and completion in a project financing.

Guarantee: Agreement to repay a loan or ensure performance mostly limited in time and amount.

H Hurdle Rate: Required rate of return (IRR). If a project generates returns in excess of the corporate hurdle rate, it is a viable candidate for implementation.

I Information Memorandum: Document describing technical, economical, legal and financing details.

L Letter of Credit (L/C): Binding document that a buyer can request from a financial institution in order to guarantee that money will be transferred to the seller upon demand or upon the occurrence of specified events. This financial instrument gives the seller reassurance.

Loan Amortisation: Repayment of a debt over a specific period of time. A schedule specifies the amounts of principal to be repaid and the dates on which repayments are to be made.

Loan Life Cover Ratio (LLCR): Net present value of cash available for debt service from the calculation date to the final maturity of the debt facilities divided by the principal outstanding on the calculation date.

M Margin: Amount above the interest rate basis or cost of funds.

Monte Carlo Simulation: Analytical technique in which a large number of simulations are run using random numbers for uncertain variables. Used to quantify the effects of uncertainty in a financial model.

P Partial Credit Guarantee (PCG): Instrument covering lenders against all risks during a specified period of the financing term of debt. The objective is to extend maturities and improve commercial terms.

Partial Risk Guarantee (PRG): Instrument covering private lenders against the risk that a government or government-owned agency fails to perform its contractual obligations in terms of a private project.

Performance Bonds: Generally issued by commercial banks to guarantee the implementation of a contract according to predefined performance guidelines.

Political Risk: Risk of loss when investing in a given country caused by changes in a country's political structure or policies, such as currency convertibility, expropriation, war and insurrection, terrorism, environmental activities as well as legal and bureaucratic approvals.

Project Company: Special-purpose entity created to develop, own and operate a project.

Project Life Cover Ratio (PLCR): Net present value of a project's cash available for debt service over the project's defined life cycle divided by the amount of principal outstanding at the time of calculation.

Purchasing Power Parity: Theory that, in the long run, the ratio between domestic and foreign price levels should be equal the equilibrium exchange rate between domestic and foreign currencies.

R Refinancing: Repayment of an existing debt and substitution of new debt on more attractive terms (e.g. longer maturity, lower cost, less restrictive covenants).

S Secondary Market: Financial market where previously issued securities and financial instruments are bought and sold between investors.

Senior: Receiving priority in claims, rights or interests (e.g. repayment).

Sensitivity Analysis: Analysis in a financial model on how a change in input variables can affect the value or performance of a project.

Shadow Tolls: Toll payments are made by government or other contracting authority to the private sector operator based on the demand.

Sovereign Guarantee: Government's guarantee of its obligations under project documents.

Sovereign Risk: Risk that the government of a country will default in its contractual undertaking with the project or another project participant, e.g. under guarantees, indemnity agreements, input and offtake contracts).

Special Purpose Vehicle (SPV): Legal entity established solely for a particular purpose.

Sponsor: Party supporting the development and financing (equity) of a project.

Syndicated Loan: Large loan arranged by two or more banks to provide a loan to the borrower and to share the risks involved.

T Term Sheet: Outlines the basic terms and conditions under which an investment will be made.

A. Appendix

A.1 Social, political and economic data of the TRACECA countries

Social and political country facts influence private sector financing and investment decisions. Table A-1 shows the social and political data, which indicates the development level, the living conditions, access to clean water and life expectation.

The United Nations human development rank provides a rating of health, education and income across 174 countries. The rank ranges from 1 (high) to 174 (low).

The corruption perceptions rank by Transparency International shows how one country compares to others. The corruption perceptions rank is based on 13 independent surveys. The scale is from zero to 180, with 180 representing the highest level of corruption.

The Institutional Investor table orders the world's countries by their credit ratings. The scale is from zero to 100, with 100 representing the least chance of default. The data are based on information provided by senior economics and sovereign-risk analysts from leading global banks and money management and security firms.

Table A-1: Social and political data

Source: IMF; CIA: The World Factbook; Internationals Financial Statistics, Transparency International; Institutional Investor.

Country	Social and political variables							
	Population	Life Expect.		Access to Improved Water Sources	Unemployment rate	United Nations Develop. Rank	Corruption Perception Rank	Institutional investor credit rating
Date	2008	2009		2006	Q4 2009*/ 2008	2009	2009	Sep 07
Unit	(Mil.)	male (years)	female (years)	(% of pop.)	(%)			
IFS position	99z				67r			
Armenia	3.077	69.06	76.81	98	7,0*	84	120	35.1
Azerbaijan	8.731	62.53	71.34	78	n.a.	86	143	46.4
Bulgaria	7.593	69.5	76.9	99	5.6	61	71	61.2
Georgia	4.307	73.41	80.45	99	13.3	89	66	29.8
Kazakhstan	15.521	62.58	73.47	96	6.6	82	120	61
Kyrgyzstan	5.414	65.43	73.64	89	n.a.	120	162	20.6
Iran	73.312	69.65	72.72	94 (2000)	n.a.	88	168	36.1
Moldova	3.633	67.1	74.71	90	4.0	117	89	21.4
Romania	21.361	68.95	76.16	88	7,5*	63	71	59.3
Tajikistan	6.836	62.29	68.52	67	n.a.	127	158	12.5
Turkey	73.914	70.12	73.89	97	13,4*	79	61	51.7
Turkmenistan		64.94	70.95		60	109	168	26.4
Ukraine	45.992	62.37	74.5	97	6.4	85	146	47.9
Uzbekistan		68.95	75.15	88	1.1	119	174	25.9

Table A-2 and Table A-3 list the current statuses of major macroeconomic variables and the developing indicators of the TRACEA countries. The data indicate solvency and liquidity and play a major role in the evaluation of infrastructure finance by the private sector. The domestic economy is described by the gross domestic product (GDP) and the GDP per capita.

Table A-2: Economic variables (1)

Source: IMF, International Financial Statistics

Country	Economic variables								
	GDP	GDP	GDP per Capita (\$)	GDP Growth (%)	Export	Import	National Currency per USD	International reserves	Claims on public sector
<i>Date</i>	2008	'09 forecast	'09 forecast	2008				2009	2009
<i>Unit</i>	(\$ mil.)			(%), 12 month	(\$ mil.)	(\$ mil.)		(\$ mil.)	(\$ mil.)
<i>IFS position</i>	99b				70	71	ae	11	32an, 32b, 32c, 12a
Armenia	11,887	8,683	4,915	-27%	1,057	4,427	377.89	2,161	86
Azerbaijan	46,378	42,510	9,352	-8%	30,586	7,200	0.80	5,624	2,229
Bulgaria	48,917	44,780	11,760	-8%	21,435	35,377	1.36	18,439	n.a.
Georgia	11,390	10,980	4,747	-4%	1,507	6,066	1.67	2,055	772
Kazakhstan	109,841	107,000	11,369	-3%	77,192	39,011	148.46	48,220	6,238
Kyrgyzstan	4,196	4,681	2,226	12%	1,618	4,072	44.09	1,585	116
Iran	344,820	331,800	11,201	-4%	116,350	57,230	9,984.00	77,554	9,108
Moldova	5,108	5,328	2,766	4%	1,335	4,081	12.30	1,241	255
Romania	168,086	160,700	11,755	-4%	49,539	82,965	2.94	45,424	7,608
Tajikistan	4,029	4,577	2,082	14%	1,406	3,270	4.37	185	69
Turkey	637,265	593,500	12,339	-7%	132,027	201,964	1.49	77,122	151,213
Turkmenistan	18,269	30,730	5,983	68%					
Ukraine	118,956	115,700	6,460	-3%	66,954	85,535	7.99	27,739	20,031
Uzbekistan	27,918	30,320	2,805	9%					

Growth of export and import as well as growth of Money Supply (M2) are solvency indicators. Growth of foreign reserves, domestic debt, M2 to foreign reserves and foreign assets to foreign liability describe liquidity.

Table A-3: Economic variables (2)

Source: IMF, International Financial Statistics

Country	Economic variables							
	FX reserves	M2	Foreign assets	Foreign liabilities	Product producer index	CPI ALL ITEMS CITY AVERAGE	Money market rate	Bank prime rate loan
<i>Date</i>	2009	2009	2009	2009	2009	2009	Nov 09	Nov 09
<i>Unit</i>	(\$ mil.)	(\$ mil.)	(\$ mil.)	(\$ mil.)	(%), 12 month	(%), 12 month	(%)	(%)
<i>IFS position</i>	1d.d	59mb	21	26c	63	64	60b	60p
Armenia	1,879	1,156	543	n.a.	31.43	6.50	4.77	18.66
Azerbaijan	5,126	6,943	1,426	n.a.	n.a.	-0.60	n.a.	21.12
Bulgaria	16,117	34,249	5,204	12,069	-5.84	0.56	0.55	11.33
Georgia	1,825	1,174	542	1,374	-4.41	2.97	n.a.	22.86
Kazakhstan	20,180	32,530	24,249	29,712	11.81	6.20	n.a.	n.a.
Kyrgyzstan	1,332	852	204 ²	231 ³	8.93	n.a.	1.00	22.43
Iran	n.a.	n.a.	37,132	34,522	17.22 ⁴	7.36	n.a.	n.a.
Moldova	1,477	0	413	n.a.	0.46	n.a.	5.42	18.88
Romania	40,758	62,736	3,503	33,157	2.15	4.75	8.70	16.57
Tajikistan	270 ¹	n.a.	41	187	2.00	0.20	n.a.	21.83
Turkey	69,178	316,518	46,861	50,718	5.93	6.53	6.50	n.a.
Turkmenistan								
Ukraine	25,493	0	10,119	29,037	0.98	0.87	6.39	20.59
Uzbekistan								

A.2 Private sector investment and future trends in infrastructure finance

Private financing in public infrastructure projects have gained worldwide popularity as an opportunity to use private sector resources in terms of capital, skills and management for infrastructure development in various sectors. Figure A-1 illustrates the market size in terms of total value and number of transactions. Western Europe has the largest value but Asia Pacific and North America, where investment volume doubled between 2007 and 2008, are also worth noting.

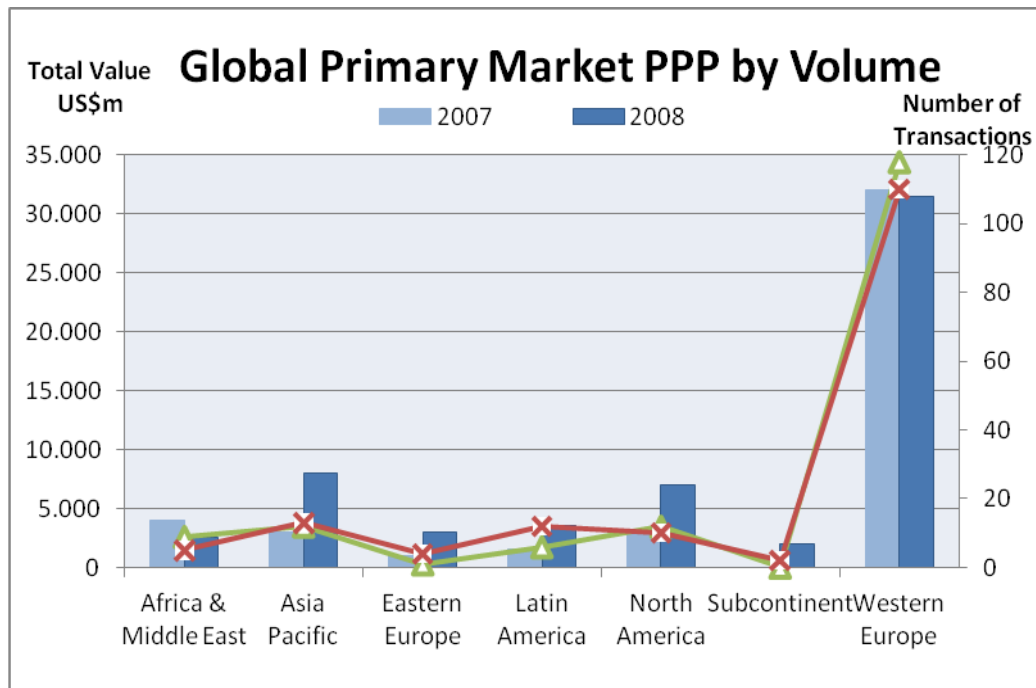
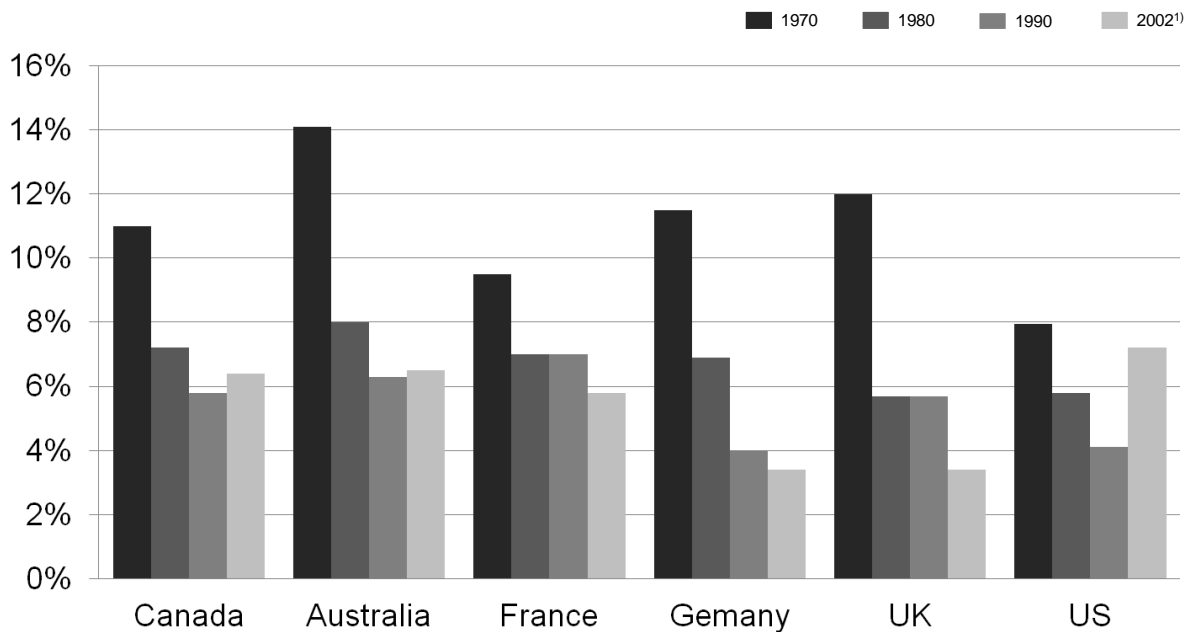


Figure A-1: Global PPP market by volume and number of transactions

Source: IJ research & analysis

According to the OECD study (2007), government spending on all types of infrastructure in OECD countries reached up to 14% of GNP during 1970. Figure A-2 illustrates this development broken down by a selected number of OECD countries over a period of 30 years, from 1970 until 2002. With the exception of the USA, the ratio of government infrastructure spending to total spending in the respective countries declined or stagnated over the same period.



1) Note: 2002 Data for 2002 in the US are not available

Figure A-2: Government infrastructure investments as a % of total outlays in OECD countries

Source: OECD, 2007

The trend of infrastructure investment shows that there has been a substantial downward trend in public investment in the European Union (EU) since 1970, not only in relative but also in absolute terms (Figure A-3).

According to the study, the 30 OECD member states are expected to have to invest more than US \$500-600 million a year in electricity, road, rail and water infrastructure over the next 25 years. Infrastructural improvements in the energy sector alone are forecast to total around US \$4 billion over the next 30 years. The modernisation and expansion of water, electricity and transportation systems in the cities of Western Europe, the USA and Canada is expected to cost some US \$16 billion. In developed countries, there will also be a need to completely replace certain existing facilities and make additional new investments to account for rising demand.

The private sector can decide in which countries and in which projects they want to invest. Social, political and macroeconomic variables are important decision criteria. Therefore, infrastructure projects must be well prepared to receive fair and competitive offers.

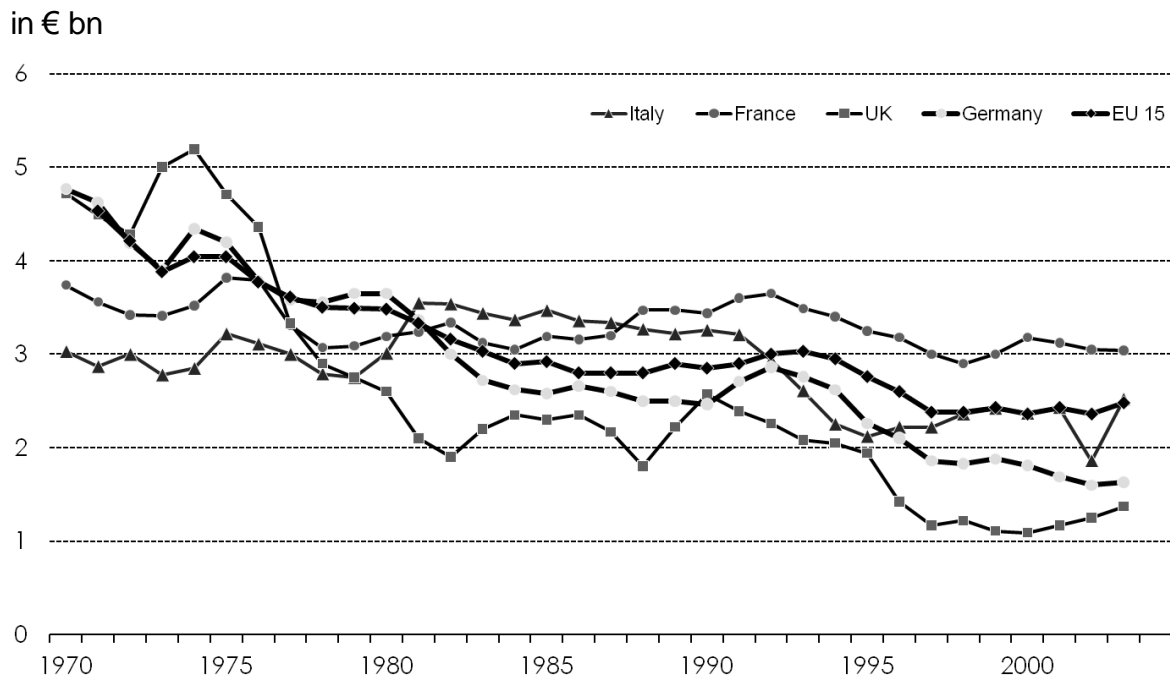


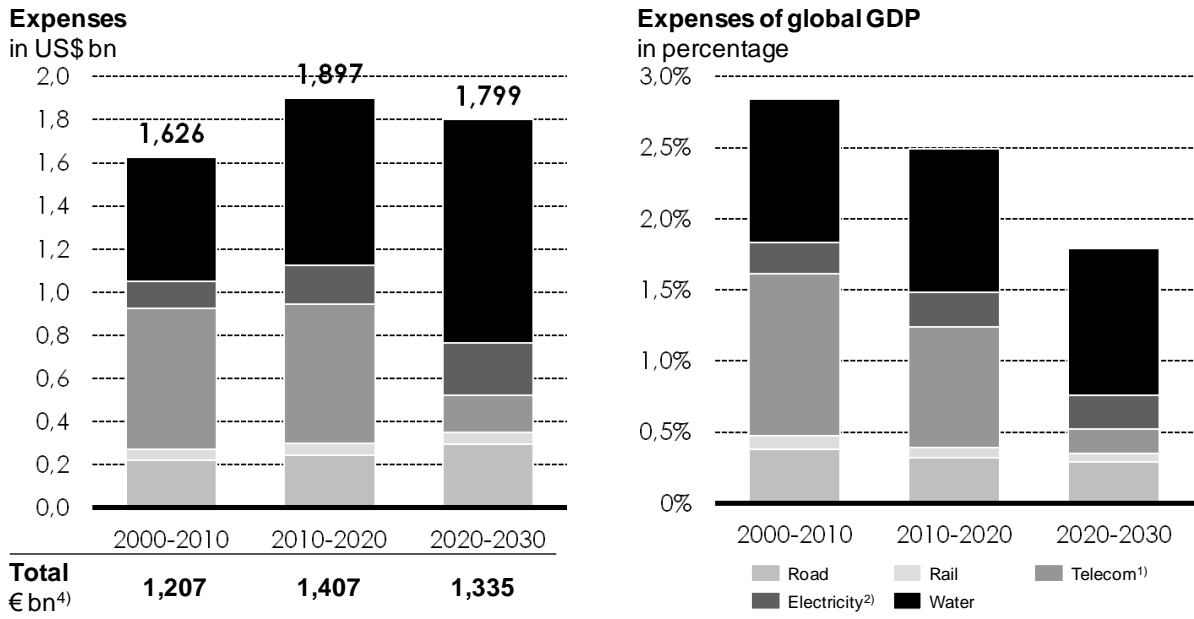
Figure A-3: Infrastructure investments of EU governments

Source: OECD, 2007

According to the rough estimates of the OECD study (2007) the need for infrastructure investments, including additions, renewals, and upgrades, has increased so significantly at a global level that investments totalling some US \$60 billion will be required between now and 2030 in order to improve the key infrastructure facilities around the world in line with requirements. At the time of the study this corresponded to around 3.5% of global GNP annually.

In high-growth countries the imbalance between capital supply and demand is many times greater. Estimated annual investments of 5-9% of GDP would be necessary to maintain the projected growth in these countries and facilitate the estimated investments of US \$460 billion over the coming years. In China alone the infrastructure investments required to maintain the high level of economic growth are expected to total US \$130 billion p.a. for the period from 2006 to 2010 (at the time of the OECD study, this represented around 6.9% of GNP). This would mean that China accounted for some 80% of all infrastructure spending in the East Asia region. According to the OECD, none of the countries concerned will be able to implement these measures without the support of the private sector.

Figure A-4 presents the estimated global spending on infrastructure over time and is broken down into selected sectors:



1) Estimates are related to the years 2005, 2015, 2025
 2) Only transmission and distribution

3) Only OECD countries, Russia, China, India, and Brasil are considered here
 4) Exchange rate US\$ to € (30. June 2007): 0.742

Figure A-4: Estimated average annual global infrastructure spending (new and replacement investments) in selected sectors (2000-2030) in US \$ billion as a % of global GNP

Source: OECD, 2007

Over recent years the volume of private investments in infrastructure in general, and especially in variants of Public Private Partnership models (PPPs), has increased across all regions (see Figure A-5), which illustrates the investment commitment to infrastructure projects with private participation according to PPIAF (Private Participation in Infrastructure Project Database, 2009).

Privatisations of state assets have been an important driver of this development. Since the 1980s, more than US \$1 trillion of assets have been privatised in OECD countries and infrastructure has consistently taken centre stage. Aggregated figures for the period from 1990 to 2006 demonstrate that almost two-thirds of all privatisations in the OECD area related to utilities, transport, telecommunications or oil facilities. Over a similar period, some US \$400 billion of state-owned assets were sold in non-OECD countries, approximately half of which were infrastructure-related (OECD, 2006 and OECD, 2007).

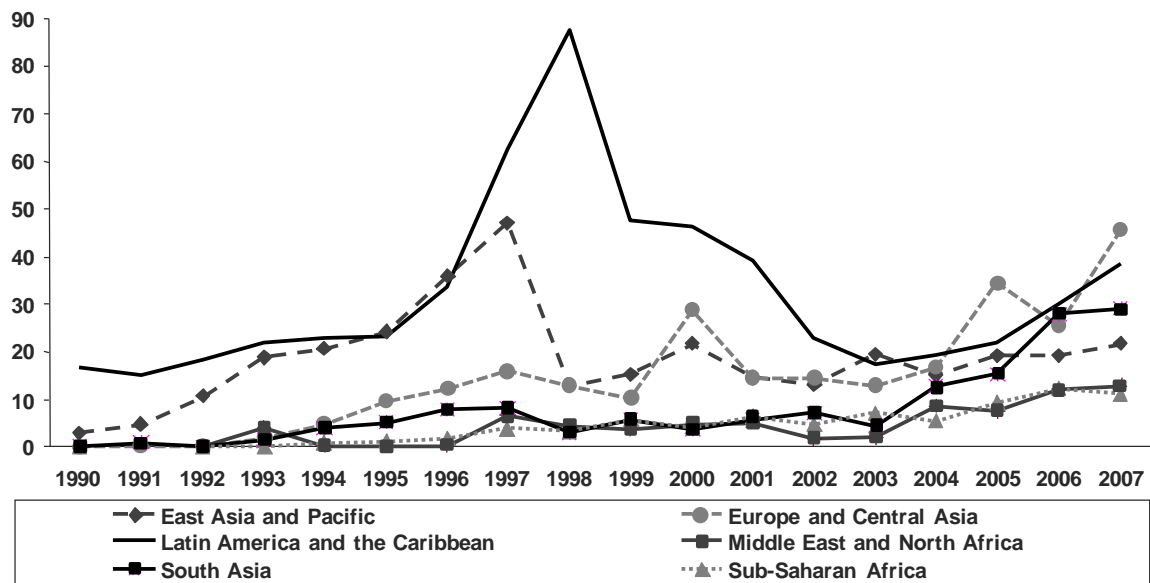


Figure A-5: Investment commitment to infrastructure projects with private participation in developing countries by region, 1990–2007

Source: Private Participation in Infrastructure Project Database, 2009

Table A-4 identifies the major multilateral, bilateral and export credit financial institutions. The development financial institutions try to support economic development. The export credit agencies try to help domestic firms export their goods and services into international markets.

Table A-4: Major multilateral, bilateral and export credit financial institutions

Type Name	Acronym	Country
Multilateral Development Agencies		
Asian Development Bank	ADB	Regional, based in Manila
European Bank for Reconstruction and Development	EBRD	Regional, based in London
European Investment Bank	EIB	Regional, based in Luxembourg
Inter- American Development Bank	IDB	Regional, based in Washington, DC
The inter-American Investment Corporation	IIC	Regional, based in Washington, DC
Nordic Investment Bank	NIB	Regional, based in Helsinki
International Finance Corporation	IFC	International, Washington, DC
Bilateral Development Agencies		
Agence Francaise de Development	AFD	France
Commonwealth Development Corporation	CDC	United Kingdom
Deutsche Entwicklungsgesellschaft	DEG	Germany
Finnish Fund for Industrial Cooperation Ltd.	Finnfund	Finland
The Netherlands Development Finance Company	FMO	Netherlands
The Industrialization Fund for Developing Countries	IFU	Denmark
The Investment Fund for Central and Eastern Europe	IO	Denmark
The Investment Fund for Emerging Markets	IFV	Denmark
Kreditanstalt für Wiederaufbau	KfW	Germany
Overseas Economic Cooperation Fund	OECF	Japan
Overseas Private Investment Corporation	OPIC	United States
Swedfund International AB	Swedfund	Sweden
Export Credit Agencies/ Export Financing Institutions		
The Export-Import Bank of the United States	USEXIM	United States
The Export-Import Bank of Japan	JBIC	Japan
Compagnie Francaise d'Assurance pour le Commerce Exterieur	COFACE	France
Export Credits Guarantee Department	ECGD	United Kingdom
Export Development Corporation	EDC	Canada
Hermes Kreditversicherungs AGS	Hermes	Germany
Kreditanstalt für Wiederaufbau	KfW	Germany
Sezaine Speciale per l'Assicurazione del Credito all'Esportazione	SACE	Italy

Table A-5 shows the exposure of guaranteed loans and the total debt by multilateral agencies.

Table A-5: Multilateral developing loans and guarantees, Source: Pfi, Thomson Reuters, 2010

Multilateral Developing Loans and Guarantees			
	IDFI	Exposure	Total debt
1	JBIC	4,867	6,798
2	US Ex-Im	3,200	3,609
3	KEIC/Kexim	2,226	4,661
4	SACE	2,125	2,739
5	China Eximbank	1,500	1,664
6	IADB	1,331	2,840
7	KfW/DEG/Hermes	901	1,983
8	IFC	824	2,109
9	EBRD	570	1,352
10	GIEK/Eksportfinans	544	1,292
11	EDC	500	786
12	EFIC	500	555
13	OPIC	298	298
14	Proparco/AFD	238	238
15	EIB	231	231
16	EKF	230	260
17	IDC/ECIC	199	344
18	FMO	59	69
19	IsDB	50	50
20	CAF	38	38
21	BSTDB	31	31
22	EAIF	29	58
	Total	20,491	32,005

The amount of developing guarantees by multilaterals is listed in Table A-6.

Table A-6: Multilateral developing guarantees, Source: Pfi, 2010

Multilateral Developing Guarantees		
	IDFI	Guarantees
1	KEIC/Kexim	1,679
2	JBIC/NEXI/DBJ 938	938
3	SACE	625
4	GIEK/Eksportfinans	407
5	KfW/DEG/Hermes	235
6	EKF	230
8	EBRD	110
9	IDC/ECIC	110
	Total	2,657

The global mandated lead arrangers of infrastructure in 2009 are listed in Table A-7. The table shows the increase in local private financing institutions. Some countries can finance infrastructure without recourse to international commercial banks.

Table A-7: Global mandated lead arrangers, Source: Pfi, 2010

Global initial mandated lead Arrangers			
	Mandated arrangers	US\$(m)	No of deals
1	StateBank of India	19,944.9	37
2	Calyon	7,359.6	80
3	BNP Paribas SA	5,836.1	63
4	SocieteGenerale	4,283.7	51
5	SumitomoMitsui FinlGrp Inc	4,025.1	40
6	IDBIBank Ltd	3,989.2	11
7	MitsubishiUFJ FinancialGroup	3,875.6	52
8	BBVA	3,641.3	54
9	Santander	3,344.4	55
10	Mizuho FinancialGroup	2,819.4	26
11	Standard Chartered PLC	2,805.9	21
12	Natixis	2,755.9	33
13	WestLBAG	2,753.9	40
14	UniCreditGroup	2,647.2	27
15	InfrastructureDev Finance	2,390.5	16
16	NationalAustraliaBank	2,381.4	29
17	AxisBank Ltd	2,049.4	8
18	RBS	2,036.9	24
19	Dexia SA	2,015.0	32
20	ING	1,877.2	28
21	Banco Espirito Santo SA	1,818.1	21
22	CommonwealthBank ofAustralia	1,815.9	19
23	CaixaGeral deDepositos	1,813.4	21
24	ANZBankingGroup	1,801.5	19
25	HSBCHoldings PLC	1,706.6	20
26	LloydsBankingGroup	1,609.6	15
27	Barclays Capital	1,442.5	22
28	Intesa SanPaolo	1,308.9	12
29	WestpacBanking	1,286.8	16
30	CajaMadrid	1,261.2	31
31	Nord/LB	1,161.7	20
32	KfWBankengruppe	1,031.4	15
33	NIBC NV	976.2	13
34	Caixa d'Estalvis y Pensions	964.2	16
35	Turkiye IsBankasi AS	921.7	4
36	Bank Negara Indonesia PT	903.3	6
37	Bayerische Landesbank Giro	843.3	10
38	KBC Group NV	804.7	12
39	Garanti Bank	730.8	2
40	Bank of Ireland	708.9	8
41	Landesbank Hessen-Thuringen	699.2	13
42	DnBNORBANKASA	666.7	7
43	Credit Mutuel SA	649.1	6
44	Korea Development Bank	637.2	8
45	Banco Comercial Portugues SA	618.5	6
46	Deutsche Bank AG	617.2	6
47	Banco Portugues Investimento	610.7	6
48	Rabobank	585.4	10
49	Attijarawafa Bank	578.9	1
50	Banque Marocaine du Comm Ext	578.9	1

The risk return profile within the sub-sectors depends largely on the range of sector, the contractual structure and transaction-specific structures. The profile changes with the various stages of investment, geographies and project specific risks. During empirical

studies Peng and Newell (2007) developed a risk/return profile broken down by sub-sectors (Table A-8).

Table A-8: Illustrative sub-sector risk/return profiles – not taking into account the concrete transaction structure

Asset Type	Risk	Cash yield	Average equity IRR	Capital appreciation
Power generation	High	4-12%	12-25%	Yes
Power transmission/distribution	Medium	4-10%	10-20%	Yes
Existing toll roads	Low-medium	4-9%	8-12%	Limited
PFI/PPPs	Low-medium	6-12%	9-14%	Limited
Regulated assets	Low-medium	6-10%	10-15%	Limited
Rail	Medium	8-12%	14-18%	Yes
Airports	Medium	5-10%	15-18%	Yes
Toll roads (greenfield)	Medium-high	3-5%	12-16%	Yes
Broadcast networks	Medium-high	8-10%	15-20%	Yes
Average	Medium	5-9%	10-15%	Modest

However, a risk analysis of the individual projects is always necessary. The table is just an indication but the sector alone does not allow any conclusions to be drawn about the risk/return profile of an asset. Projects that look identical on the surface might have entirely different risk/return profiles, depending on the project. Figure A-6 shows that projects in the same sectors can deliver an Internal Rate of Return (IRR) ranging from around 6% to well above 15% depending on the stage, the contractual structure in which it is embedded and the risks that the private partners take on.

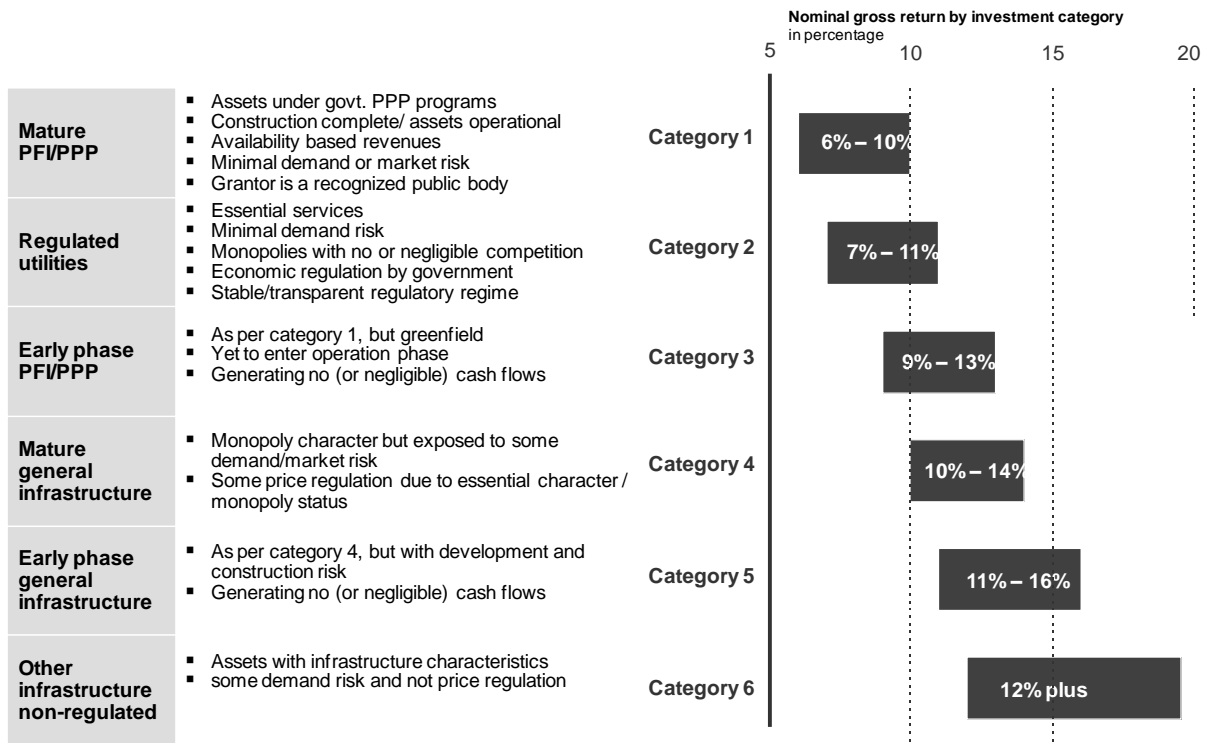


Figure A-6: Different risk and return profiles – same asset