

A COMPARISON OF PFI, BOT, BOO, AND BOOT PROCUREMENT ROUTES FOR INFRASTRUCTURE CONSTRUCTION PROJECTS

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ABSTRACT: The emergence of public-private sector initiatives, such as DBFO, BOT, BOO, BOOT for procuring infrastructure facilities provides governments with option of satisfying their infrastructure needs and demands by alternative means. Generally, such means involve a user-pays concept, which invariably can be implemented by governments, yet many governments have preferred to execute the concept through the private sector so as to minimise their financial liability (Russell and Abdelhamid, 1997). The procurement of infrastructure projects using those methods requires both the public and the private sectors to change their existing mindsets and adopt new skills, roles, responsibilities and risks so that all the phases of a project's life-cycle can be managed effectively. This article will study and compare these concession forms and will draw conclusions for infrastructure projects.

Keywords: Concession, Infrastructure, Private Project Finance, Procurement.

1.0 INTRODUCTION

There is a widespread assumption and believe that the public sector is responsible for delivery of basic services through infrastructure construction is deeply anchored in many countries all over the world. But there are different methods by which these services are created, procured and delivered.

There is a broad range of options for involving the private sector in the financing, construction and operation of infrastructure projects traditionally the domain of the public sector.

In Fig.1 it is arrayed different procurement routes including the public-private partnership approaches across a spectrum. At one end of the spectrum, the public sector retains all responsibility for financing, constructing, operating and maintaining assets, including the responsibility for assuming all associated risk. At the other end of the spectrum, the private sector assumes all these responsibilities. The vast majority of the public-private approaches fall in the middle of spectrum with risks and responsibilities shared between parties in accordance with their ability and strength.

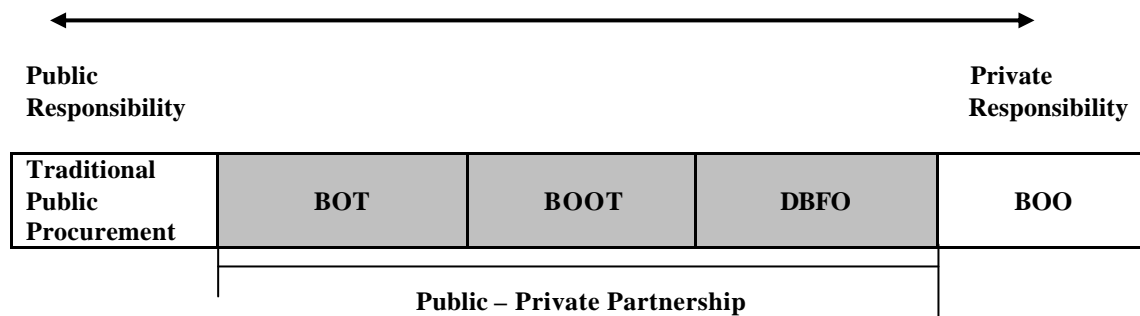


Fig. 1 Schematic scale of the public procurement classification
(Adapted from European Commission, 2003)

The public-private partnerships are mainly driven by limitations in public funds for investments but also by efforts to increase efficiency of spending and the quality of public services. The ultimate purpose of the collaboration between public and private sectors is added value; a qualitatively better product for less cost, better accountability and promotion of private sector innovation.

The emergence of public-private sector initiatives, such as Build-Operate-Transfer (BOT), Build-Own-Operate-Transfer (BOOT), Design-Build-Finance-Operate (DBFO) and Build-Own-Operate (BOO) for procuring infrastructure facilities provides governments with option of satisfying their infrastructure needs and demands by alternative means. Generally, such means involve a user-pays concept, which invariably can be implemented by governments, yet many governments have preferred to execute the concept through the private sector so as to minimize their financial liability (Russell and Abdel-Aziz, 1997 in Confoy et al, 1999).

The procurement of infrastructure projects using those methods requires both the public and the private sectors to change their existing mindsets and adopt new skills, roles, responsibilities and risks so that all the phases of a project's life-cycle can be managed effectively.

Each of the above mentioned concession form in turn is examined.

2.0 CONCESSION FORMS

Build-Operate-Transfer (BOT)

BOT is a private sector participation model in which a project company (Promoter) is established to finance, design, construct and operate a facility for a concession period before it is transferred to the government (Özdoğan and Birgönül, 2000). Project sponsors arrange necessary financing for the realization of the project through equity contributions and loans (debt service). The BOT entity undertakes financing, design and construction as well as operation and so the Client (Principal) is taking no direct cost risk other than the possibility that the facility does not meet its needs or that the concession agreement is unsatisfactory (Smith et al, 1994 in Walker and Hampson, 2003).

Financing of BOT projects is different from conventional systems because they are financed on a project finance basis with no or limited recourse, which means that the parent companies of project company members do not incur liabilities on their balance sheets, and only the revenue generation capacity of the project, serves as a guarantee for the lenders. Non-recourse financing is viable only when a project clearly is capable of generating revenues and the lenders can be satisfied with the cash flow of the project a unique guarantee for the repayment of the debt service.

The project company has responsibility for all contracts including the construction contract. After the construction period is over, the facility is operated by the project company and services are either bought by the government (in case of energy projects) or sold to the public (in case of toll roads). The operation should be long enough to cover debts, expenses, equity contribution and an agreed profit through the collection of toll or tariffs. At the end of the concession period, the facility transferred to the government free of charge and in good operating condition.

The acronym BOT was first used in the early 1980s by Turkey's Prime Minister Turgut Özal (Grimsey and Lewis, 2002). The first project to be announced as an official BOT project was Akkuyu nuclear power project in 1984. Officially, the Turkish government had two main reasons for trying this approach:

- The wish to have a single organization responsible for initiating and building the project and the belief that there might be efficiency gains from having the project performed by the private sector;
- A wish for foreign investment to be brought into Turkey without upsetting borrowing restrictions.

Even though more similar projects were proposed in Turkey, progress was very slow and eventually the project was abandoned (Morris, 1994; Lam, 1999).

According to Özdogan and Birgönül (2000) the major objective of the Government in the implementation of BOT model is the realization of urgent infrastructure projects with minimum possible financial burden and without affecting its minimum borrowing capacity. In their research Birgönül and Özdogan (1998) of the Turkish BOT projects they list the following as the major reasons of low realization rate of BOT projects in Turkey:

1. Unwillingness of the Government to provide guarantees against country risks;
2. Lack of adequate legislation;
3. Inexperience of the Government in packaging BOT projects;
4. Ineffective tendering and award mechanism; and
5. High level of bureaucracy resulting in delays.

BOT requires that contracted parties must accept the conventional wisdom that risk should be assumed by the party within whose control the risk most lies. The major function of the BOT arrangement is, therefore, to recognize and provide a mechanism for the assignment and management of those risks (Walker and Smith, 1995).

The BOT project procurement procedure starts with the Government. The Government usually commissions a team of leading engineering, financial, legal and environmental consultants to conduct a multidisciplinary study, in order to assess a project's suitability for BOT type procurement. If found feasible, the Government prepares a Project Brief as part of the tender documents to:

1. Explain the Government's general requirements with respect to the project and concession, and to provide relevant information;
2. Provide guidance in the preparation of tenders and explain the tender evaluation criteria; and
3. Set out in detail the Government's requirements in design, construction, operation and maintenance (Lloyd, 1996; Zhang & Kumaraswamy, 2001a in Akintoye et al, 2003 p.275).

The principal tender evaluation in selecting BOT concessionaire includes:

1. The level and stability of the proposed toll regime;
2. The proposed methodology for toll adjustments;
3. The robustness of the proposed work program;
4. The financial strength of the bidder and its shareholders;
5. The structure of the proposed financing package;
6. The proposed corporate and financing structure of the franchisee;
7. The quality of the engineering design, environmental issues and construction methods;
8. The ability to manage, maintain and operate effectively and efficiently; and
9. Benefits of the Government and community (Kumaraswamy and Zhang in Akintoye et al, 2003 pp.263-28).

Phases of a typical BOT project according to Tiong and Alum (1997) is given here below.

Phases the Promoter must go through:

1. Pre-qualification;
2. Tendering; and
3. Detailed negotiation and selection.

Evaluation of proposals:

1. Conceptual proposal during pre-qualification;
2. Evolving to the conforming proposal at tendering stage (if Promoter is invited to tender); and
3. Winning proposal after detailed negotiation in the credit structure and the security package (if the Promoter is short listed).

In Fig.2 below phases of a typical BOT project is shown.

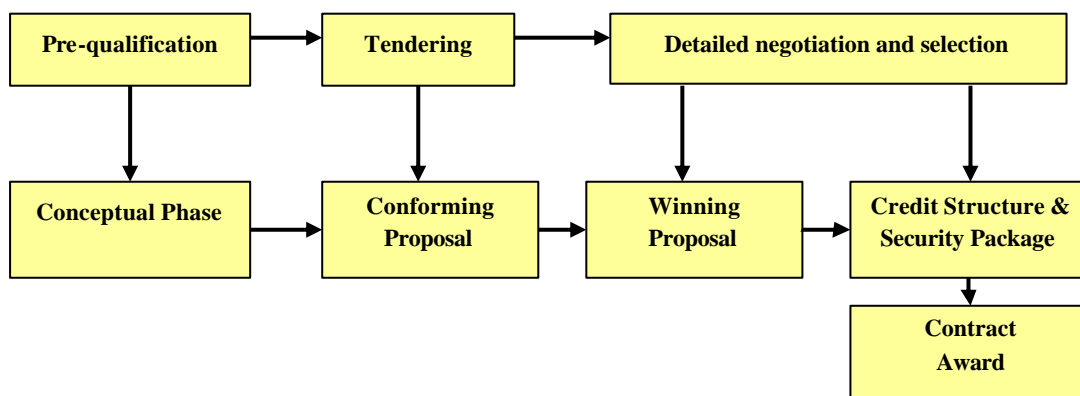


Fig. 2 Phases of a Typical BOT project

(Source: Tiong and Alum, 1997)

Build-Own-Operate-Transfer (BOOT)

This concept according to according to McDermott (1999) was established more than a century ago to construct canals and railways, was sought and encouraged by governments as a means of obtaining private sector finance for projects, such as infrastructure projects, which in modern times have been a drain on the finances of the public sector.

Merna and Smith (1994) define a BOOT project as,

‘ A project based on the granting of a concession by a Principal, usually a government, to a Promoter, sometimes known as the concessionaire, who is responsible for the construction, financing and operation and maintenance of a facility over a period of the concession before finally transferring the facility, at no cost to Principal, a fully operational facility. During the concession period, the Promoter owns and operates the facility and collects revenues in order to be able to repay the financing and investments costs, maintain and operate the facility and make a margin of profit’.

Barnett (1997) provides a comprehensive definition of BOOT as,

‘Government granting to a private sector organization a concession of franchise to build a specific facility, to own it for a specified period, to operate it and to take the revenue from it, and ultimately to transfer it back to the Government’.

McDermott (1999) stated that the reliance on a future stream of income as a reward to the investors led the BOOT procurement to be advocated mainly for schemes for which there was a clearly defined income source, for example a tolled road, bridge or tunnel. However, Merna and Smith (1991) argued that it is appropriate even where there is no direct revenue source, such as public sector schools and hospitals and sheltered housing.

Tiong (1990) has described a typical contractual structure for a BOOT project. Normally at the centre will be a joint venture or project company legally constituted in the host country. The project company will need to establish contractual relationships in the length of the concession. In addition to the concession agreement with the host government, loan agreements with the banks, shareholder agreements with investors, offtake agreements with the users of the facility, operation agreements with the operators and construction contracts with the constructors all need formulating.

The vehicle for BOOT project as mentioned above is the project company (Promoter) which is a consortium. The consortium has the responsibility to construct, operate and take revenues from the running of the amount borrowed has been repaid or when the concession period expires (Confoy et al in Ogunlana, 1999).

A typical structure of a BOOT project is shown in Fig. 3 below.

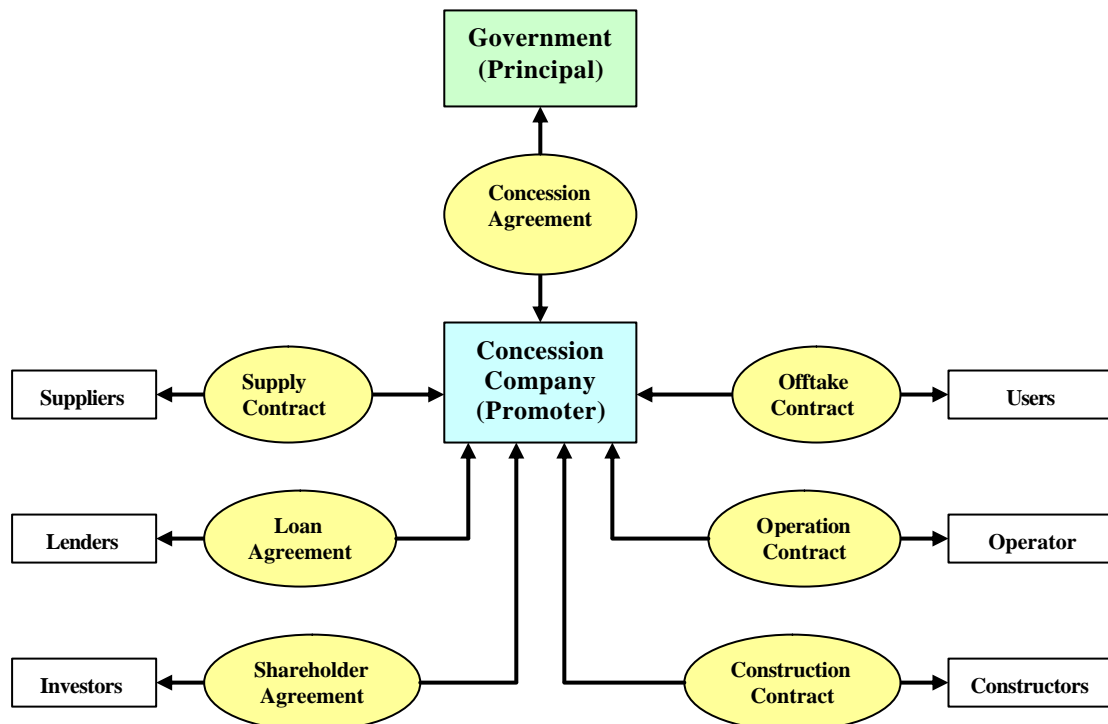


Fig 3 Typical Structure of BOOT project
(Source: McCarthy and Tiong, 1991)

Build-Own-Operate (BOO)

There are many similarities between BOOT and BOO concessions. In the BOO concession arrangement ownership does not generally transfer back to the government at the termination of the concession agreement.

The major difference between financing projects of BOOT/BOO arrangement and the more conventional approaches is that lenders have only the project's expected cashflows to indicate its viability (Woodward, 1995).

The structure of a BOO can be the same as the one shown in Fig.3 above. The only major difference relates to the offtake contract. The BOO projects employ a particular form of structured financing. Such projects are complex by way of number of parties involved and the corresponding number of contracts, which must all interlock (Confoy et al, in Oganluna, 1999).

Under a BOO the private sector designs and builds the infrastructure, finances its construction and owns, operates and maintains it over the concession period. Traditionally BOO projects provide for the infrastructure to be transferred to the government at the end of the concession period.

3.0 PRIVATE FINANCE INITIATIVE ARRANGEMENTS

HM Treasury (1993) distinguished three types of PFI projects:

3.1 Design-Build-Finance-Operate (DBFO)

In DBFO contracts the private sector provides assets, arranges debt financing from commercial banks for a high share of the cost of the asset and equity for the balance of the funding requirement and on-going operation and maintenance services in respect of the assets but the public sector pays for the asset on completion and for the services when provided. The private sector gets paid on completion by the banks while the public sector pays a capital charge over the contract life which is used to repay the banks and to remunerate the equity.

DBFO is an output focussed contract and it sets out a functional specification. In an output based contract specification the public sector specifies the requirements – the what, and leaves the private sector to determine and decide the best way – the how, to meet the specification. This arrangement increases the scope for the private sector to innovate in designing solutions to meet the output specification.

A DBFO contract is a long-term contract usually entered into between a Government Agency or Local Authority (public sector) and a Contracting Vehicle – a Special Purpose Vehicle (SPV) which consists of a design and build (asset) provider (DB) a finance provider (F) and an operation and maintenance (service) provider (O).

A Special Purpose Vehicle (SPV), a limited liability company, is created to undertake the contracted services, to own the assets and to be the contracting party with the public sector. The SPV enters into the primary contract with the public sector which typically involves providing both assets and services over the contract duration. The SPV then enters into matching back-to-back contracts with a construction contractor for the provision of the built asset often on a fixed price contract, and an operation and maintenance contractor for the provision of services. Once the back-to-back contracts are established, the funding requirement of the SPV can be determined. The SPV funding requirement is met with a high proportion of project debt, up to 90%, and the balance of the funding is achieved as equity or subordinated debt by the SPV shareholders. The public pays no up-front payments during the construction of the asset. All the design and build expenses are borne by the private sector and through debt and equity financing. The financial institution (bank, insurance company, etc.) makes the monthly payments to the works contractor as per the financial agreement between SPV and the lenders. These payments are drawn down from the loans given to SPV. The public sector starts its payments to private sector if the performance of the services specified in the Output Specification of the public sector is satisfied. The project debt advanced to the SPV depends for the repayment on the payments made to the SPV by the public sector.

The banks and the equity providers put the SPV in funds to pay the asset provider on completion the asset and the service provider as the services are provided. The public sector contract with the SPV finances an annual capital charge to pay over the contract life for the asset and an annual operation and maintenance (O&M) charge to pay the service provider. The total cost to the public sector of the DBFO contract is the present value of these contract payments.

The terms of contract between the SPV and the public sector are set to cover the total costs of the SPV, including the capital charges and service and transaction costs (legal and financial advisory fees).

The contract with DBFO Company in road projects determines (British Highway Agency, 1997):

- The outline road design;
- The core client and environmental/planning requirements forming the output specification;
- The operational performance of existing and new roads consequent upon or affected by the project;
- The requirements for the operation of construction works and maintenance;
- Change mechanisms to deal with project variations;
- Default and no-default events;
- Performance guarantees that are released on the satisfactory completion of the construction phase covered by the guarantee;
- Step-in rights.

It also details payments to the DBFO Company based on volume and type of use coupled to the contract terms on lane availability and safety performance over the concession period.

The objectives for utilising DBFO in road projects in the UK (ibid; House of Commons – Forty-Seventh Report, 1998):

- To ensure that the project is designed, maintained, and operated safely and satisfactorily so as to minimise any adverse impact on the environment and maximise benefit to road users;
- To transfer the appropriate level of risk to the private sector;
- To promote innovation, not only in technical and operational matters, but also in financial and commercial arrangements;
- To foster the development of a private sector road-operating industry in the UK; and
- To minimise the financial contribution required from the public sector.

The primary lessons learned from the first eight DBFO projects completed in the UK (British Highway Agency, 1997):

- DBFO contracts have accelerated the introduction of cost efficiencies, innovative techniques and whole-life cost analysis into the design and construction of road schemes and in the operation of roads;
- The full potential of efficiencies, innovation and whole-life cost analysis inherent in the PFI is likely to be fully unlocked only when the private sector is involved in the outline design of the road scheme, which they are then obliged to construct, operate and maintain under a DBFO contract. This requires the private sector to assume some planning risk. Some of the DBFO projects announced introduce the concept of planning risk and will test the proposition that this will deliver better value for money ;
- The risk allocation on DBFO contracts has been encouraging. Two areas where transfer of risk to the private sector has delivered good value for money are *protestor action* and *latent defect risk*. The Agency will continue to look for risk transfer to ensure that DBFO contract remains off-balance sheet;

- DBFO contracts have delivered Value for Money, VFM. Cost savings, compared with the Public Sector Comparator, PSC, have ranged from marginal to substantial and the average cost saving is 15%;
- Use of a Model Contract as the basis of negotiation for each DBFO contract saves bidders time in preparing their bids and provides significant efficiencies for the Agency, both in negotiation and in operating the contracts. The updating of the Model Contract is welcome, as it will reflect changes to provisions arising from negotiation;
- Training in negotiation for project teams and dissemination of accumulated knowledge on DBFOs and the PFI, generally, within the Agency continues to improve the quality of BFO projects delivered;
- When devising the payment structure, the contracting body should determine what its objectives are for the service being provided, and the payment mechanism should be designed to incentivise the private sector to achieve those objectives; and
- With eight contracts let and expressions of interest received for further projects, it is clear that a road-operating industry is developing. The same consortia have appeared as bidders on projects within each group.

Contractual Model of PFI

The general mechanism and contractual structure of PFI project is shown in Fig. 4

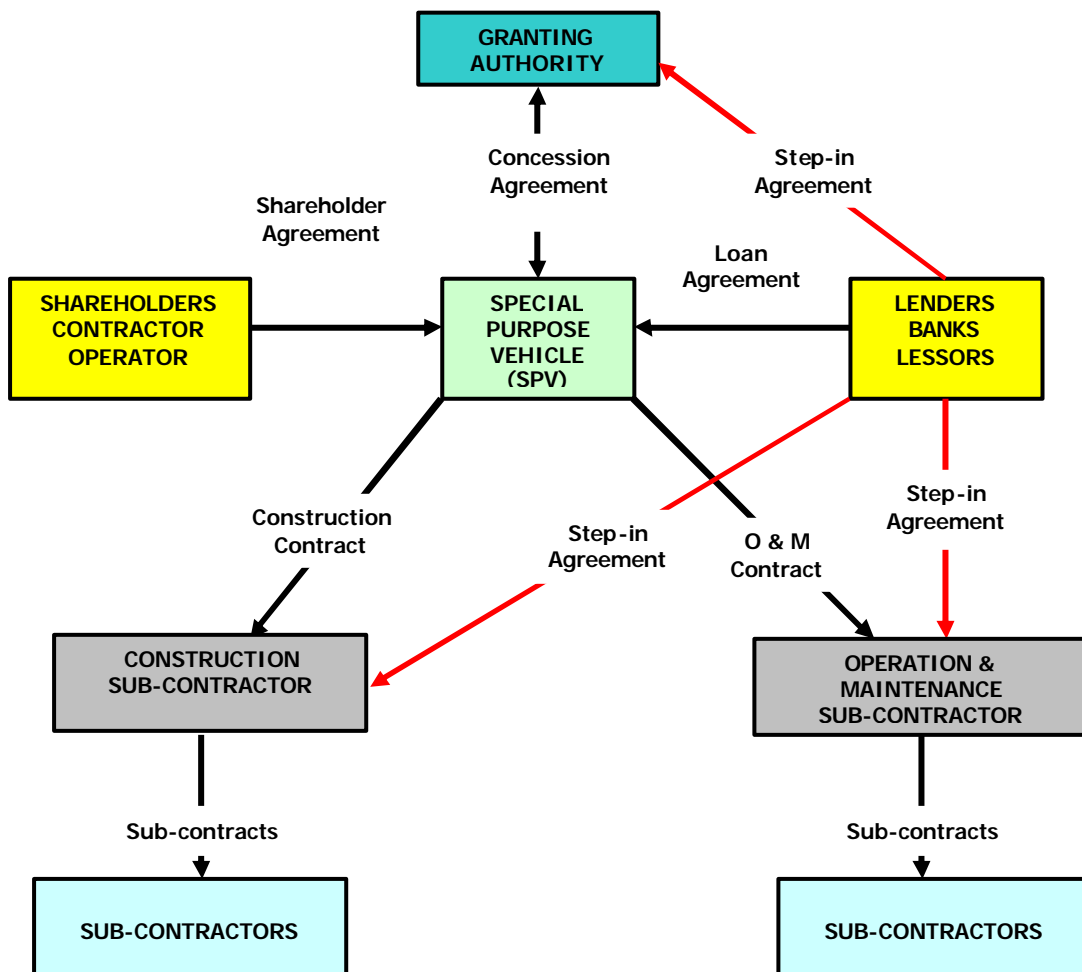


Fig. 4 Typical PFI Contractual Structure

The main participants and contracts between parties in a PFI project will now be explained.

All the participants in the PFI procurement of projects have to adjust their approach away from the traditional contracting strategies to a somewhat wider view. Under PFI the private sector is no longer required simply to construct an asset but, the private sector are required to finance, build and operate a particular asset, providing a service to the public sector.

The structure of PFI deals often involves a complex web of contracts, linking a variety of different parties all with varying interests and involvement in the project (Payne, 1997). The structure of the Contract will define the basis for the future long-term operational and managerial relationship between the Authority and the Concession Company-Special Purpose Vehicle (SPV) (HM Treasury Taskforce, Technical Note 6, 1999).

The public sector changes roles from *service provider* to *service specifier* and the private sector changes from *asset provider* to a *service provider*. Service provision for a 30-40 year concession period entails a change in both public and private organisational cultures. Both public and private have to adjust to the move to the service sector, and to the commitment to a long - term relationship. Within this organisational structure a partnering concept is created which provides a framework for the establishment of mutual objectives among the public and private parties which enthruses good relations, honesty, openness, trust, integrity and co-operation. This process of partnering in PFI attempts to establish working relationships among the stakeholders (public sector, construction contractors, maintenance and operation contractors, investors and finance providers, sub-contractors, etc.) through a mutually developed, formal strategy of commitment and communication. The key to success is the effective communication of project objectives by the stakeholders and it requires a process of change, which must first be brought to the respective organisations and then incorporated into the team performance of the main stakeholders in PFI project organisation.

The main objective of a PFI is a service provision (de Lemos *et al.*, 2000). The private sector is not any more in a traditional construction project but moves into a new and diverse and pluralistic business culture in a consortium. Fig.5 shows project objectives in PFI projects.

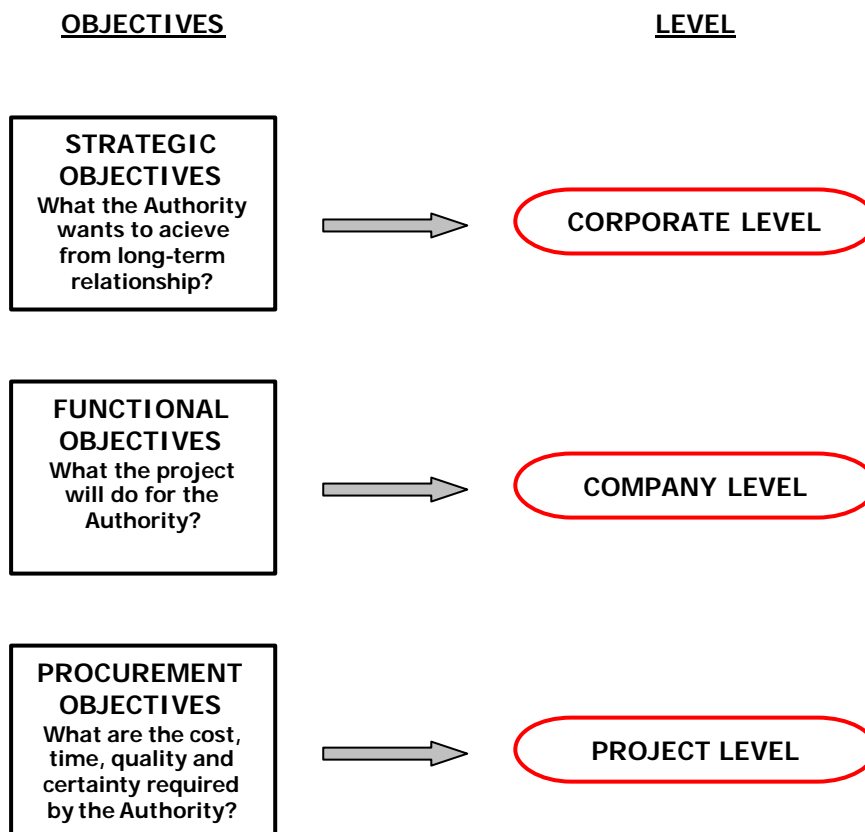


Fig. 5 Project objectives of a consortium in a PFI project

Long-term contractual relationships

The PFI Concession Company (Consortium) is an autonomous legal unit. All contractual relationships of the Concession Company with other parties involved in the PFI have to provide for the extended life of the contract and establish measures to control it and establish dispute resolution procedure. The Private sector must adjust their organisational cultures and structures to a long-term involvement instead of the traditional short-term and related temporary multi organisations of the construction projects. The Public Sector too must change its role from service producer to monitor the performance and effectiveness of the service. Grant (1996) found that PPP's (and therefore PFI's) are most successful when four pre-conditions occur, namely:

- The partners are financially strong and organisationally stable;
- The partners are willing to commit their best human resources to the project;
- The project provides opportunities for all partners;
- There is shared authority and responsibility.

The PFI Contracting Parties and their Obligations

A PFI is a free contractual relationship among the parties.

The main parties in the PFI contracts are:

- *Granting Authority:* Is the Public Sector who buys the service. It can be a department of Central Government, a Local Authority (Council) or a separate legal entity established under statute (e.g. NHS Trust). The Authority is not concerned with the means of production of any activity to produce any particular asset. The Authority must prescribe clearly and unambiguously the outputs of that activity. Although the Granting Authority is purchasing a service, it is very much concerned with the physical asset being created because at the end of the concession period, the risks and responsibilities of ownership will necessarily revert to the Granting Authority. The Awarding Authority's objectives will always be: (1) to transfer risks to the private sector, (2) to achieve VFM for any public sector contribution, (3) ensuring early completion of the project, (4) maximising its future flexibility through the contract, (5) ensuring ongoing service provision to the required standards, and (6) ensuring that the project is off balance sheet for the Granting Authority.
- *Contractor:* Is the Private Sector party who supplies the service. It is designated as SPV (Special Purpose Vehicle), which is an autonomous legal entity totally independent of the companies that own it. SPV is the only entity that can establish contracts with the Granting Authority. The SPV's objectives are: (1) minimizing bid costs, (2) delivering profit, (3) risk transfer to sub-contractors and third parties (insurers), and (4) limitation of recourse.
- *Design and Build Contractors:* Is the Private Sector entity performing the construction/development obligations.
- *Operations, Maintenance and Service Providers:* Is the Private Sector entity performing the operations/maintenance services.
- *Equity Investors and Lenders:* Are those providers of finance to the Contractor under a financing agreement. There is no shareholder or affiliate of any shareholder in the SPV. They are financiers. The key objectives of equity investors and lenders are: (1) ensure that as many as possible of risks undertaken by SPV passed down to sub-contractors of acceptable financial standing, (2) limiting certain risks, that cannot be passed down to others, in SPV, and (3) appoint technical experts to monitor the project through each of its phases to take control early when things go wrong.

3.2 Joint Ventures (JVs)

Joint ventures are arrangements where the public sector provides the PFI contractor with a subsidy to reflect the social benefits of a project not reflected in cash flow. Joint Ventures involve a partnership whereby a Public Authority may not take more than 50% of the capital funding. The public and private sectors will receive a proportional share of any profit. The revenue comes principally from third parties. These projects have a positive cost-benefit analysis, but would not be financially viable if funded by private finance alone (congestion relief roads are typical examples).

3.3 Financially free-standing projects

Financially free-standing projects are delivered by private sector contractors who will finance the whole project by recovering their costs and profits from governmentally agreed ser/toll charges. The public sector plays a facilitating role but no public money is involved. The public sector's role is:

- To plan, license and award work concession;
- Assume a statutory role to ensure public interest is being maintained.

Toll bridges are typical examples.

A summary of the private sector involvement in concessions is given in Table 1 below.

	Design	Build	Finance	Operate	Own	Transfer	Payment Mechanism
DBFO Design Build Finance Operate	Yes	Yes	Yes	Yes	Yes In Fixed Term	Yes	Government pays only for services delivery
Joint Venture	Yes	Yes	Partially	Yes		Yes	Third Party Users + subsidies from Government for social services
Financially Free Standing Objects	Yes	Yes	Yes	Yes	Yes In Fixed Term		Only Direct By Users

Table 1: Private Sector and Concession Arrangements

4.0 THE CURRENT STATE OF PFI IN THE UK

PFI has been widely developed in the UK. New facilities in schools, prisons and roads have delivered substantial benefits, but UK policy makers are continuing to learn lessons in how PFI can be delivered more effectively.

PFI capital expenditures are an addition to traditional governmental capital expenditure (Kee and Forrer, 2002). According to Research Paper 03/79 (Allen, 2003), public sector capital expenditure is projected to rise from £23.0 billion in 2000-01 to £38.2 billion in 2004-05. As a proportion of Gross Domestic Product (GDP) public capital expenditure will rise from 2.5% of GDP to 3.4% over this period.

It is expected that the rise in public sector capital expenditure under the PFI will increase total publicly sponsored capital expenditure from £26.5 billion in 2000-01 to £42.3 billion in 2004-05 as shown in Table 2.

Departmental estimates of capital spending by the private sector (signed deals) for the financial years 2003-04 to 2005-06 are shown in Table 3 below.

£ Billion

	Outrun 2001/02	Projections		
		2002/03	2003/04	2004/05
Total public sector capital expenditure (as % of GDP)	23.0 2.2%	26.0 2.3%	33.4 2.8%	38.2 3.1%
Estimated capital expenditure under PFI (As a % of total public capital expenditure)	3.5 13.2%	3.7 12.5%	4.8 12.6%	4.1 9.7%
Total publicly sponsored capital expenditure (As % of GDP)	26.5 2.5%	29.7 2.7%	38.2 3.3%	42.3 3.4%

Table 2: Public Sector Capital Expenditure

(Source: Allen, 2003 - House of Commons, Research Paper 03/79)

£ Million

	Projections			TOTAL
	2003-04	2004-05	2005-06	
Education and Skills	0	0	0	0
Health	338	210	89	637
Transport	6,624	552	370	7,546
Local Government	1,940	2,330	2,700	6,970
Home Office	186	150	46	382
Lord Chancellor's Department	52	6	11	69
Defence	175	0	0	175
Foreign and Commonwealth Office	5	5	5	15
Trade and Industry	6	2	0	8
Environment, Food and Rural Affairs	3	0	0	3
Work and Pensions	14	22	0	36
Scotland	381	330	1	712
Wales	43	34	0	77
Northern Ireland Executive	13	3	0	16
Chancellor's departments	49	24	11	84
Cabinet Office	12	4	0	16
TOTAL	9,841	3,672	3,233	16,746

Table 3: Departmental estimate of capital spending by the private sector

(Source: Allen, 2003 - House of Commons, Research Paper 03/79)

By November 2003, 617 projects had been signed under PFI with a capital value of over £56 billion. While there were a few projects in the early 1990s, including a large contract of £4 billion for the Channel Tunnel rail link in 1996, most have been signed since 1997, typically at least 70 each year with total value of deals, excluding the Channel Tunnel and London Underground (LU), in the range of £2.5 billion to £5 billion each year. Overall, PFI has accounted for about 15% of public sector capital investment since 1996, with the remainder being carried out through conventional forms of procurement. The annual number of contracts has fallen from a peak of 113 in 1999 to 43 in 2003. This has been accompanied by an increase in the average size of the contract, as procurement costs on smaller deals have come under greater scrutiny (IFSL, 2003). PFI in Government

Departments is shown in Table 4 and the largest PFI contracts as a cumulative total between 1990-2003 are shown in Table 5 below.

	Number	£ m	% share
Transport	44	37,972	66.9
Defence	59	4,011	7.1
Health	152	3,596	6.3
Scottish Executive	29	2,217	3.9
Education	102	2,028	3.6
Home Office	52	1,976	3.5
Work & Pensions	7	961	1.7
Welsh Assembly	17	508	0.9
Northern Ireland Executive	29	395	0.7
Environment	14	1,000	1.8
Others	112	2,060	3.6
TOTAL	617	56,724	100.0

Table 4: PFI in Government Departments (Cumulative Total, 1990-2003)

(Source: IFSL, 2003)

	Capital value £ m	Government Department
London Underground (LU) PPP	28,381	Transport
Channel Tunnel rail link	4,178	Transport
National Air Traffic Services (NATS)	800	Transport
Skynet 5 military satellite communications	750	Defence
National police digital radio service	500	Home Office
M6 Toll Road	485	Transport
LU Ltd Northern Line trains	409	Transport
East Sussex & Brighton Waste Management	400	Environment
LU Ltd communications	355	Transport
Second Severn River crossing	331	Transport
Royal Navy Fleet Communications Service	280	Defence
University College London – New hospital	267	Health
Armed Forces Personnel Administration Agency	264	Defence
Section of A1(M) road	245	Transport
Glasgow Schools Project	225	Education
Nottingham light rail	220	Transport
Employment Service IT Partnership	217	Work & Pensions
Defence main building refurbishment	209	Defence
London Regional Transport Croydon Tramlink	205	Transport

Table 5: Largest PFI Contracts of signed deals in the UK

(Source: IFSL, 2003)

5.0 THE FUTURE PROSPECTS OF PFI IN THE UK

In *PFI : Meeting the Investment Challenge* published by the Treasury on 15 July 2003 (Treasury, 2003) as well as reviewing the progress of the PFI in the UK, the document outlines the Government's commitment to the PFI in England to 2005-06 (Allen, 2003; Jackson, 2004).

The future of PFI in the UK seems certain. As stated in Jackson (2004):

'It is fairly certain that PFI is here to stay, though its precise form will evolve over time'.

The majority of increase according to the Treasury (2003), on a capital value basis, is expected in the health and defence sectors in the UK. The Department of Health (DoH) projects 55 deals by the end of 2005 with an estimated capital value of £6.5 billion while the Ministry of Defence is expected to sign 14 deals with a similar capital value.

PFI will no longer be used for IT projects and it will not be used for projects costing less than £20 m (Treasury, 2003), because of the high transaction costs. There is also to be increased investment in secondary schools through programmes such as the 'Building Schools for the Future' programme (Treasury, 2003).

New areas for the PFI will include social housing, urban regeneration, and waste recycling (Treasury, 2003; Allen, 2003; Jackson, 2004).

5.1 PFI Construction and Operational Performance in the UK

5.1.1 PFI Construction Performance in the UK

Evidence from two studies in the UK about the PFI performance is shown in Table 6 here below.

PERFORMANCE FEATURES	National Audit Office (NAO, 2001)	HM TREASURY (2003)
1. Delivering on time	76% (PFI) 30% (Non-PFI)	88%
2. Delivering to budget	79% (PFI) 27% (Non-PFI)	79%
3. Quality of design	The consortia in PFI projects: Invested in good design and construction at start of the contract; Achieved better quality buildings and reduction in maintenance costs while maintaining the assets to the standards agreed in the contract; Placed more emphasis on aesthetics of design than before.	

Table 6: PFI Construction Performances in the UK
(Source: NAO, 2001 and HM Treasury, 2003)

5.1.2 PFI Operational Performance in the UK

Evidence from the same studies in the UK about the PFI operational performance is shown in Table 7 here below.

Full assessment of the operational performance of PFI will only be possible at a much later stage in the contracts.

A NAO (2001) study of 98 projects and HM Treasury (2003) study of 61 projects has provided initial indications of overall project performance through seeking the view of public sector PFI managers on achievement of expectations and VFM.

PERFORMANCE FEATURES	National Audit Office (NAO, 2001)	HM TREASURY (2003)
1. Achievement of expectations	N/A	35% "as expected" 25% "far surpassing" 16% "surpassing"
2. Value for Money (VFM)	6% "excellent" 46% "good" 29% "satisfactory" 15% "marginal" 4% "poor"	N/A
3. Overall performance of the private sector matching up to expectation at the time of contract close	N/A	51% "as expected" or "better" 25% "far surpassing" 18% "less than expected" 6% "much less than expected"

Table 7: PFI Operational Performance in the UK
(Source: NAO, 2001 and HM Treasury, 2003)

6.0 CONCLUSION

The authors in this paper attempted to enlighten the innovated public-private partnership type of procurement approaches for infrastructure projects. It is explained that there are a number of factors, relating to public sector cash constraints and the underlying principles of these innovated procurement approaches, which might cause governments to consider the introduction of these deals.

The principal roles of the private sector in these approaches are to provide additional capital, to provide alternative management skills, to provide value added to the end user and the public at large and to provide better identification of needs and optimal use of resources.

These output-based innovated procurement routes by no means can be seen as a panacea for a cost cutting or failing government. It has to be remembered that these schemes are complex to design, implement and manage and should be considered if it can be demonstrated that they will achieve additional value compared with other approaches.

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