CHAPTER-III

PRIVATE SECTOR PARTICIPATION: DESIGN OF CONCESSION & INTERNATIONAL EXPERIENCE

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3.1 INTRODUCTION:

Regardless of strength of economy of any nation, private investments on long term partnership basis seems surfacing in the Private Sector Participation policy of all nations from 1990s for investment in development of infrastructure and highways in particular. The pathetic financial condition of every country not meeting with growing road sector requirements and political *cul-de-sac* on raising taxes has compelled the government world over to spread red carpet for private sector participation on the financial front *per se*. In fact it is the private sector who really builds services in any case.

Narrowing to road sector, every country has its own public body made of Engineers, planners & designers but real execution always vests in private contractors/builders who produce the goods and get paid off on predetermined terms for the finished product either at various milestones or at completion under state control. Now the public body is expecting that private parties shall make all upfront investments and earn return on investments like a manufacturer sets up production unit and sells his product/services. It is not a case of delayed payment to private sector since the amount of payment is not linked with production of goods. This is also not a case of privatization where public body divests from assets for ever but this is partial application of market based approach. The public sector is not losing eminent domain and the property rights are maintained by them. Rather it is risk-reward relation between public sector and private sector and their common client is Public (road users). The public sector is buying services during partnership period instead of buying assets for the users and users are paying directly to private sector or through public sector for actual usage of services. It shall be clear that it was public who had paid for infrastructure in absence of PSP/PPP (may be inequitably) & now under the guise of PPP, at the instance of sovereign, private sector is encountering public directly on use point.

In this chapter, international practices of PSP in general & PPP (i.e. where long term private financing is involved and contractually concessions are granted) in particular

are explored. Many countries have chalked out programmes for PSP and their experience for viability of such programmes & innovations are useful guide to design concession for a road project

3.2 SPECTRUM OF PSP:

There are some PSP models where no financial leverage of private funds is involved e.g. plans/estimates/designs/ tenders are got prepared from private consultants; supervision is handed over to third party private independent engineer; testing is got done through private Quality Assurance firms. This is like trusting private sector in job works and availing independent witnesses to the contractor of cash contract for providing fair conditions of contract administration. In India, State Public works departments & National Highway Authority of India are using consultants for project formulation, Site supervision and quality assurance/audits in case of EPC. For toll projects also, they use such consultants as required with restricted scope. But world over, financial constraints are converging PSP into PPP wherein like Government, a private party invests in the road project and aspire to win financial returns whereas economic returns are anticipated by Government. Now to meet such different goals through a **common platform**, a contractual commitment is exercised between Government & private entrepreneur which safe guards diversifying interests of both these parties. The spectrum of PSP modalities in increasing order of risk transfer to the private sector is practically found taking forms as below and same are explained for Indian practices:

a) Maintenance Contracts — The private sector repairs an existing road under performance specifications, to the extent directed by State representatives for which it receives payments from the government. In Indian context, this is routine periodical patch work or resurfacing work generally taken up in piecemeal manner within available funds, may be starting from few thousands to few lacs of rupees. It is a routine contractor's job of a week or maximum a month. Practically, the contractor invests upfront and is paid after the State's representatives certify the quality & quantity. A practice of yearly maintenance contract/annual maintenance contract on performance specifications basis is yet to be established.

b) Turnkey Contracts — the private sector designs and constructs a new road, to government specifications, and receives a fixed payment on completion. It is a cash contract on larger scale getting up to crores rupees. The designs though done by private sector, it is to be approved by concerned government body. The construction also needs time to time certification for quantity & quality from concerned government body to its satisfaction. If the design involves technical risk & construction involves high costs, (not yet defined by Indian Government at any level but generally above Rs. 5 crores) government now a days generally thinks of appointing Independent Design Consultant to prepare estimates/designs/bid documents etc preparatory work (hitherto this job was performed by employees of public body) and then to verify & approve designs of selected private party; separate Independent Engineer to oversee and certify the work; Independent Quality Auditors for quality assurance though quality & quantity are to be ensured as per contract by private party which is awarded the job. These kind of large turnkey projects are also candidates of toll projects (toll may be collected by state or private party).

c) Operation (tolling) and Maintenance (O & M) Contracts— the private sector maintains the road to agreed standards, and collects tolls from users which finance the maintenance. This is common practice followed by NHAI on completed four lanes and permanent bridges; contract is mostly on yearly basis.

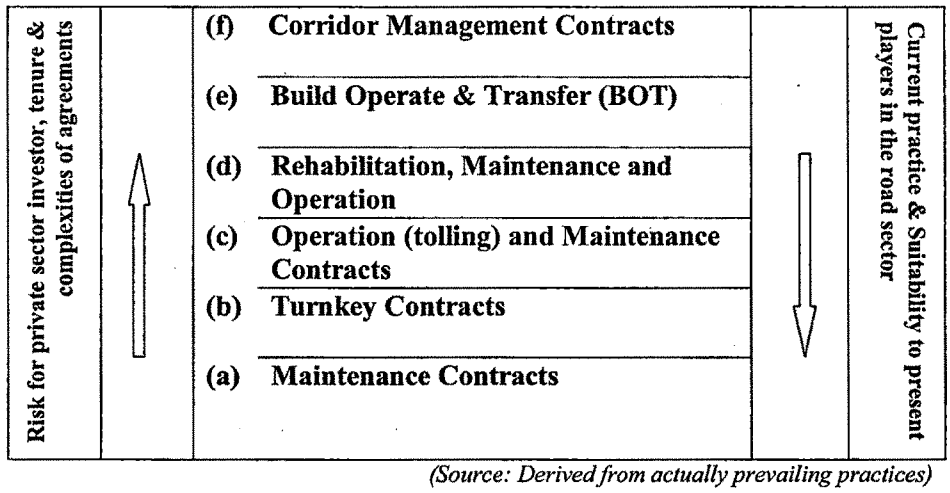
d) Rehabilitation, Maintenance and Operation — the private sector undertakes major rehabilitation works (like full depth repairs to road crust or major repairs to bridge/ drainage structures etc.) to bring the existing road to agreed standards, maintains it to those standards, and collects tolls to finance both rehabilitation and maintenance. This is a variant of O & M contracts but its costs can be in multiple.

e) Build Operate & Transfer (BOT) — the private sector undertakes and finances design, construction, tolling, and maintenance, usually of large infrastructure projects. The private sector can also bear much of the risk — depending on the negotiated concession agreement. This is though very slowly adopted but thought of major source of financing NH and state highway projects in India. As per project specific variations, Build Own Operate & Transfer (BOOT), Build Transfer & Operate (BTO) etc. forms are in practice for highway projects. In the practice & literature, PPP stands for BOT/BOOT form of agreements where original construction (other than

maintenance) is involved and hence it has huge project cost and longer tenure. The BTO is very rare and not yet entered India, so BOT/BOOT is relevant contract forms for study under PPP. Though financially it is quite diverging, BOT/BOOT projects are also awarded on annuity basis where in India, 15 years of annuity is offered in bid document and bidder shall bid for lowest annuity. Since such projects are taken up where no investment potential is foreseen by private sector, it is basically a cash contract with deferred payment.

f) Corridor Management Contracts — the private sector undertakes new construction and the maintenance (or rehabilitation) and operation of existing facilities. It allows government and the private sector to consider the roads on a corridor or network basis. This is very costly derivative and now GOI is thinking developing busy corridors like Delhi- Vadodara- Mumbai. On a smaller scale, Expressway project between Vadodara- Ahmedabad is doing it for safe guarding smooth flow of main traffic by network of interchanges at major junctions. It is matter of area planning and requires development & encouraging other allied commercial activities on corridor; may be allowing leasing of huge land around the highway. This is in fact giant version of modality (e).This form of PPP can also be visualized as comparable to Special Economic Zone (SEZ) and yet to break the ground in India.

Figure: III -1
Spectrum of PSP



(Source: Derived from actually prevailing practices)

In above spectrum, as the option traverses from (a) to (f), the magnitude and extent of private investments increases and hence the agreements are also found elaborative however, the present players in road sector (contractor, employing public body,

planners, consultants etc.) are yet novice to more involvement of private sector in the project. Among these (i.e. from (a) to (f)), it is the BOT/BOOT which has become cynosure as a contractual form among spectrum of PSP wherein a private sector is really investing on long term basis in the road sector like Sovereign and seeking commercial benefits under a contract. In the undertaken study, BOT/BOOT agreement (these are widely practiced in India) based PSP is equated as PPP.

3.3 PUBLIC-PRIVATE PARTNERSHIP: A CHANGING DELIVERY SYSTEM:

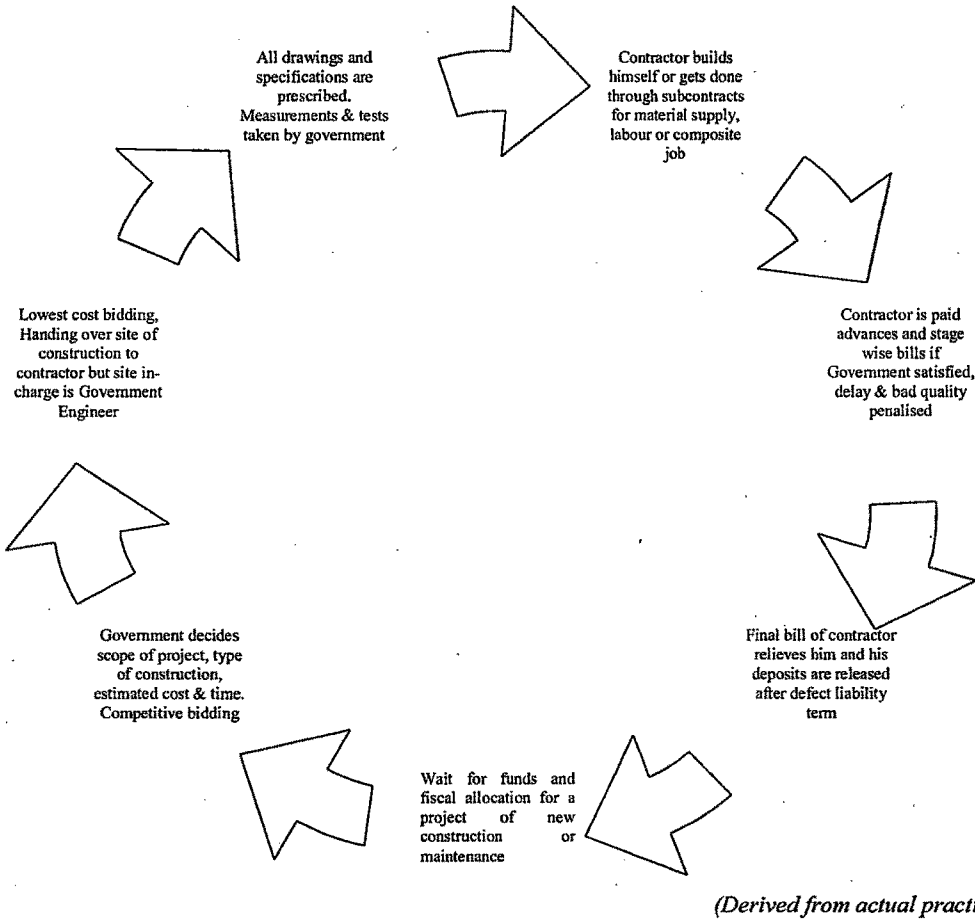
Concentrating on PPP mode of delivery system, the PPP is very significant study area as it involves aspects of traditional turn key projects (for type of products involved like- complete construction of a road / bridge), it covers aspect of maintenance contract (because maintenance including rehabilitation during for tenure of agreement is assigned to private entrepreneur) and it also covers aspect of operations during maintenance once facility is built and opened to traffic. Hence, PPP mode covers all variants of PSP over the tenure of a single project.

Among the present spectrum of PSP, the traditional way of delivering in road sector is referred to turn key projects and maintenance works and to distinguish, the traditional way of functioning of highway project life cycle in India at state or national level is depicted in generalized fashion in figure III-2 based on researcher's actual experience in this field. This is more referred to in literature as Engineering Procurement Contract (EPC) or cash contract. Here Government hires contractor (it may be conveniently stated that contractor is employed by the Government) for construction of a project in prescribed manner subjected to financial constraints. Of course, the need is well established and mostly project is approved much after proving its eligibility owing to financial constraints. The priority in getting approval some times is driven by influential capacity of local public leaders. However, proposal for approval narrates significance of project in terms of traffic and linkages. The project is first approved for financial aspect mentioning head of funds under which expenditure will be booked. After actual allocation in yearly budget the bid process starts. Bidding is done among a category (eligibility of category of contractor for bidding is based on scope of work and estimated cost) of contractors generally registered with state or central Public Works Department (PWD). The bid documents

are typically bulky and are scrutinized at various levels as per cost of work. The bid documents are full of what are rules to be followed and describe powers of Engineer in charge (representative of government), accommodating full specifications. Generally bidders get time of two weeks to four weeks to purchase and fill in the blanks in bid documents and submit it with earnest money. The work is awarded within a week based on lowest cost bidding criteria (least cost to State).

Figure: III-2

Traditional Delivery of road works



(Derived from actual practice)

Any conditional bid is outrightly rejected because it is a dictated procurement process. The contractor selected is awarded the work and he can start work immediately if he pays security deposit generally at the rate of 10% of estimated cost of bid. The contractor can avail mobilizing advance and machinery procurement advance (both are interest free) at rate of 10% & 5 % respectively of his bid offer if he submits same

amount of bank guarantee. This advance is recouped from his due payment in subsequent bills payable. The execution starts as per instruction of government engineer's instruction. The work is measured and recorded by this engineer for payment and it is paid after site checking of higher officers (state) in prescribed percentages of work.

The contractor can be paid only and to the extent the site engineer from government (called Engineer in charge) certifies it. Now, this is the key in hands of Government representatives. The low cost bidding criteria itself inspires the contractor to save as much he can. The Engineer in charge satisfies himself for quality in terms of "ok" test results and quantities as per plan/ tender document before certifying so. The material testing is done in a government laboratory (now major testing is allowed in certified private test laboratories but under eye of government). The contractor is paid as per progress of work and is relived of obligations after paying him final bill. Now a days, defect liability period is implemented after physical completion of work. During this period some money/deposits are held by government for use in case of contractor fails to repair damages. The above contract frame work is more biased in empowering State officers and hence contractor can be easily dragged to desired end product at every stage of execution. This mode of delivery system is now getting through a sea change under PPP. However, in the traditional delivery system, following points are noteworthy.

- The Government is single handed attempting to achieve efficient use of public money mainly through inviting competitive bids for lowest price in a formatted transparent manner. Hence, the contracts are carefully drafted in length to see that contractors do not underperform or impose extra costs to the Government. The innovations are possible only if Government itself initiates & stipulates at bidding stage. After entering bidding stage, contractor has defined entry & exit point.
- The powers to make payments for assigned work creates duress factor and hence the cases of misappropriation and wastages are linked with this type of execution.
- Since the contract is not linked with major punishment to party (Government or Contractor), time control & cost control (within budgeted limits) are not

stringent. There are also cases when paucity of public funds had delayed the progress of works.

- A major flaw is, the project is undertaken on economic criteria and it has no oversight mechanism except the executing public body itself .Also, a project may be selected on the basis of sheer political choice. In all cases, the contractor has no jurisdiction to comment on need for the project or type of project.
- The contractor is liable to this product up to very short period as compared to expected efficient life of the product. A bridge is supposed to last for atleast 30 years without major repairs and it may last for total 50 years or more whereas the contractor is liable for only first five (generally five years for some parts only) years of construction. Hence, to avoid the future failures, Government tends to overbuild for creating permanent structures, technically to state that factor of safety[1] will be very high. This is major point where a private sector can score high if long term maintenance is vested to the contractor of original work himself.
- Any subsequent recurring expenditure is termed maintenance and due to delayed periodical maintenance or deficient original work, maintenance of assets so far created is a major issue in allocating scarce public resources.
- The crowding of highways (or any public assets) is not viewed other than maintenance or need for capacity expansion perspective in above delivery system. Hence, efficient use of assets is not purview of traditional delivery system.
- The traditional functioning of public bodies is assessed in terms of spending capacity of budgeted outlays which may tend the representative of Government to actually spend the resources in place of alternative efficient recourses.
- A contractor may get exposed to international practices in the run of his business whereas Government decision makers are likely to lag in this aspect. Hence, the efficiency, economy and innovations are likely to lag in terms of international practices when Government designs and executes a project.

Under changing delivery system, implicit planning consideration is resolving above referred shortcomings of traditional approach by assigning almost every thing to

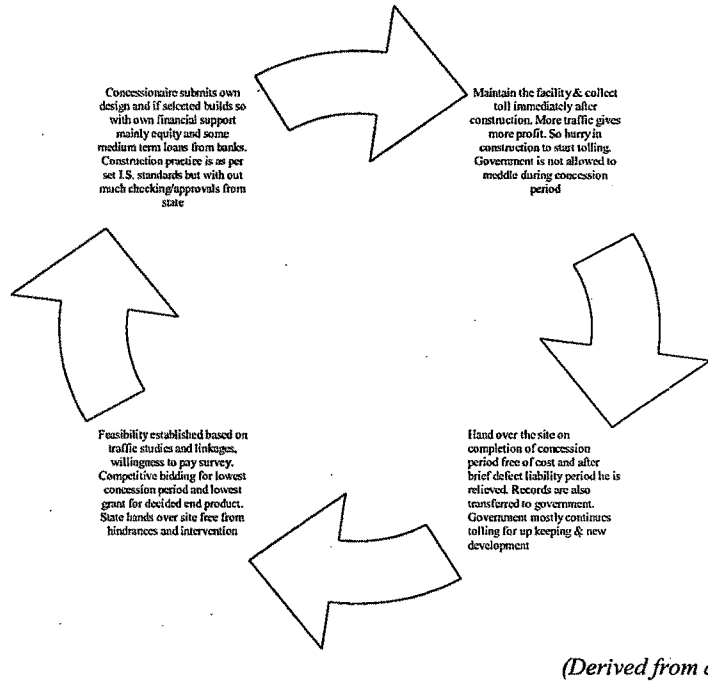
private entrepreneur. Hitherto, private sector was cultivated to supply building materials, large plant- machineries, skilled/unskilled manpower or finished civil engineering product (a highway lane or bridge) for pre-decided cash payment in stipulated time frame(generally 1 to 5 years at most). Now it is expected that private sector will hold the asset created by own money for decided term (called concession period, generally 15 to 30 years) and will daily collect user charges (better termed as Toll) by attracting traffic on his built facility to recuperate his investment with returns. The private party shall bother about all the maintenance (reducing drain on public exchequer) and service standards (including crowding). The optimum design, cost control and timely completion of project are linked to viability of toll project and hence private entity is forced to minimize these problems. Additionally, during whole project, traffic adequacy (macro economic purview) and strength of financial cash flow (financial manager purview) are most important parameters for commercial success of project. This is definitely not a Civil Engineer's job, a most responsible entity for development of state and national highways. The private sector so far is accustomed to invest upfront and earn upfront being mainly engineering firms. What an engineering firm will do with stream of revenues (which may be stable or erratic) with out in-depth financial plan for maximizing returns? Perhaps, they can think of paying back outstanding debts as per strength of cash flow; that is all. Notwithstanding this, the public sector is expecting many other things under the label of allocation of risks. These risks are nothing but financial implications of events/hindrances affecting timely completion of construction or cost overruns; events affecting flow of traffic and present value of future cash flow etc. All these aspects are not really engineering considerations that can be tackled by a typical construction firm. The idea of private sector participation is in fact asking to look into all such non engineering (as shall be termed traditionally) aspects which have impact beyond usual 2 to 3 years of construction period.

A conceptual diagram prepared below for this changing paradigm of PSP is narrating simplicity over lengthy traditional option as far as interface with Government is concerned. However, it is in fact more complicated owing to inherent host of uncertainties. Here, the private sector is mostly given free hand to design (some general arrangement drawing & typical cross sections are given), build, ascertain quality and maintain the asset for time as decided by competitive bidding for given

rate of toll. The role of State is limited to clearing the site from utility hurdles and acquisition of land while supervision and related proof checking of design is given to independent private parties with varying role as per case of contract. The asset is handed over to government free of cost at the end of concession period. Here, the bidder submits technical and financial proposal and shortest concession period based bidding is generally followed. Recent concession documents ask to declare at bidding stage financial support sought by bidder from government (within 40% of bid amount) or the negative grant bidder proposes to pay to government.

Figure: III-3

Changing Delivery of road works



(Derived from actual practice)

Often the civil cost of project is small subset of total project cost considering discounted net revenues (or interest charges imputed by bidder over the concession period). For earning returns on investments, the private sector is left to mercy of traffic in terms of toll in such projects. Though traffic is perceived as an equation of economic growth and pattern of spatial development (land use pattern) in the region, Government is not engaged in resolving this important aspect but often gives binding to minimize disturbances by allowing "non-compete" conditions in the bid. Over & above, technology risk (viability of selected design/technology/materials for next 15 to 30 years to withstand forces like overloading, change in vehicle technology,

excessive floods or frost etc.), financial risk (interest rate and inflation fluctuations) etc. is borne by private sector. All these complex factors are simply beyond the control of traditionally operating construction firms making their role most vulnerable. The role of State in ensuring quality and quantity is replaced by handing over long term maintenance at cost of concessionaire and the concessionaire is allowed to minimize costs under prevailing set of standards without approval of government. The demand for services (traffic level) is supposed to respond to level of services offered and thus establishing self control on service standards. Of course, this statement often goes wrong when users have no other choice than a single toll road where charges are imposed irrespective of level of services. The minimal role of State authority and maximum freedom to the concessionaire for better service to users is the crux of this modality.

3.4 PUBLIC-PRIVATE PARTNERSHIP AND CONCESSION DESIGN:

Sometimes it seems that researchers and planners flexibly use PSP & PPP interchanging manner. Of course, all the forms of PSP mentioned under above spectrum (figure III-1) will be implemented under some contractual agreement. But PPP agreements (BOT/BOOT) are special agreements where other than routine maintenance, original work (or heavy rehabilitation) is involved like turn key works but not on cash contract basis. Since it will be an original construction work, it will require larger sum and hence larger tenure of contract. The PPP term has converged essence of spectrum of PSP which is legally labeled as **Concession Agreement**. The concept of Concession is new to India but is more than century old in Europe. Before getting into structure of Concession Agreement, it is necessary to understand and define the literary term- PPP which is contractually transformed in to a concession agreement.

3.4.1 Definition of PPP:

No legal definition of PPP is so far coined by any country though PPP shall mean a contract under PSP in roads development. But it is observed that "Public" connotes Sovereign in all definitions of PPP. In its *December 2004* Report to Congress on Public-Private Partnerships, the US Department of transportation (USDOT 2004)

broadly defines a PPP as "a contractual agreement formed between public and private sector partners, which allows more private sector participation than is traditional."

The briefing note (Renda & Schrefler 2005) produced by Center for European Policy Studies for European Parliament agrees that no overarching definition of PPP persists currently. Hence, PPP is a sort of umbrella covering a broad range of agreements between public institutions and the private sector aimed at operating public infrastructures or delivering public services.

The European Commission has published Guidelines for Successful Public – Private Partnerships (European Commission 2003) wherein it is defined that "A PPP is a partnership between the public sector and the private sector for the purpose of delivering a project or a service traditionally provided by the public sector. PPPs recognize that both parties have certain advantages relative to the other in the performance of specific tasks. By allowing each sector to do what it does best, public services and infrastructure can be provided in the most economically efficient manner."

KPMG (Hong Kong), an international consultant for PPP Advisory Services writes[2] that "Public Private Partnership (PPP)/Public Finance Initiative (PFI) can be defined as the design, build, finance and operation, by the private sector, of assets and services that the government has traditionally procured and provided to the community and which have been funded by taxpayers. In return, the private sector generates revenue either from the levying of tariffs on users or the receipt of periodic service payments from the government over the life of the PPP agreement." The above literature lightly comments that a public –private partnership is a partnership between the public & private sectors in which risks and benefits are shared. Of course, the risks are more left for private sector & benefits are truly shared by public sector.

Oxford University Press writes[3] for PPP as-"an agreement between Government and the private sector regarding the provision of public services or infrastructure. Purportedly a means of bringing together social priorities with the managerial skills of the private sector, relieving Government of the burden of large capital expenditure, and transferring the risk of cost overruns to the private sector. Rather than completely transferring public assets to the private sector, as with privatization, Government and

business work together to provide services." The Press specifies that British Government initiative to involve the private sector in the provision of public services is more known as Private Finance Initiative (PFI) and is part of the public-private partnership programme. The British system encourages public authorities to join with private companies in long-term contracts involving financing, building, and running infrastructure projects. The model is spreading other countries including European countries & US under broader name of PPP. The Press observes that it is part of a wider reform program for the delivery of public services which is driven by the World Trade Organization, International Monetary Fund & World Bank as a part of their 'deregulation' and privatization drive (Liberalization-Privatization-Globalization process).

HOCHTIEF (a German PPP solution provider working international) in its Corporate Communications (HOCHTIEF 2006) elaborates a study by the National Audit Board in the United Kingdom. The study has revealed that placing public infrastructure projects in the hands of private enterprise produces efficiency gains averaging 17 percent. This savings effect is due above all to the lower investment costs. This is because the private partner takes the entire life cycle of asset into account when realizing a PPP project. This enables him to optimize costs on an end-to-end basis – over service life periods of 20 to 30 years. Other known benefits are shorter planning and construction periods and improved project operation and maintenance.

Standard & Poor's definition (Standard & Poor's 2005) of a PPP is any medium-to-long-term relationship between the public and private sectors, involving the sharing of risks and rewards of multi sector skills, expertise, and finance to deliver desired policy outcomes. PFI is stated as a subset of PPP that typically involves concessions, or franchises, of public sector assets contracted with the private sector to provide long-term services.

Cesar Queiroz (2006), the leading Road and Transport Infrastructure Consultant for World bank defines PPP for World bank research as a partnership between the public sector and the private sector to deliver a project or a service traditionally provided by the public sector which allows each sector to do what it does best & risks are borne by those best able to manage them. This definition is mostly used world wide by policy

makers and researchers because it leads to study project specific characteristics while preparing a PPP agreement.

ADB (2000) explains PPP for two types of countries. In first and most prevailing case- when the government's obligation to do something is not matched by the reality of the public finances the private funding is the only option & it leans to PPP contracts. Often it is seen as the easy option, and therefore the obvious course to follow. As most people seem to think that infrastructure makes money the PPP is supported. In second but mature case, PSP or PPP is seen as the better way, leading to sector efficiency, and funding its natural consequence - but not necessarily its principal objective. ADB observes, today most countries fall into the first category. In Europe, the United Kingdom (UK) has come out of this thinking, and in Asia, Hong Kong, China are the examples. Worldwide, the development banks are leading the argument and assisting client developing countries in the transition to the second category recognizing true rationale for Private Sector Participation. ADB notes that PPP is more seen as a BOT technique for highway projects in Asia.

Government of India states PPP as an active involvement of private sector keeping in view galloping resource requirements and concern for managerial efficiency exposed to consumer responsiveness.(Economic Survey: 2006-2007) Frankly, it means nothing more than larger role for private sector and no combined effort (partnership) in achieving common goal is in vision. No business fashioned approach is envisaged for private partner in any policy documents of State or Union Government of India. The Indian PPP is synonymous with Build-Operate-Transfer (either toll based or annuity based) type of agreements as emerges from Economic Survey or official web site of NHAI or Ministry of Shipping Road Transport & Highways under Government of India.

Summing up, the definition can be accepted for undertaken study as – "**PPP is a contractual binding between representative of Public interest and representative of capable private interest who together produce assets/services for public purpose essentially financed by private interests but to safe guard private interests with due cost to public.**" As noted above, here, the agreement is the governing key to achieve benefits of PPP for both the parties. Hence the agreement which is mostly referred as concession agreement shall address both- the public

interest and private interest. The concession agreement holds prime importance notwithstanding any loud claims made by sovereign in its invitation for private sector participation. Of course, as made clear in above discussions, character of PPP agreement shall vary project specific and hence role of both parties shall vary as per requirement of each project. This will also depend upon type of risks public sector wants to transfer on private sector & who does best basis.

Essentially all these quotations imply PPP is a changing delivery system as discussed in earlier sections. Now the private sector is not hired or employed rather made partner of the project to achieve those goals which were not achieved by Government single handed. Since, the private partner has single agenda of maximizing profit, the project has to be designed in financial format specifying expenses and income from project. It requires many changes in contract document of traditional delivery system when a contract (i.e. a concession agreement) is designed and offered for bidding under PPP.

3.4.2 Concept of Concession for Road Sector- A Deliberate Monopoly:

The concept of concession was in use in Europe for infrastructure since more than two centuries. In 1777, for example, the French government gave the Perrier brothers a 15-year concession to collect and distribute water to households in parts of Paris. They took the water from the Seine using pumps, transported it through pipes of wood and steel, and then delivered it in barrels. In few years they ran into financial trouble and their firm was nationalized (Benzancon 1995 quoted by Kerf et al. 1998). Hence, the concept has roots in Europe and many countries in Europe have exhibited range of innovations under PPP.

It is really interesting to note that concessions are deliberately allowed monopolies in the sectors where public goods are the subject matter with generic monopoly value. Like, one can not allow many expressways to be built between Vadodara-Ahmedabad to create competition for lowering the prices. Hence, the competition within the field of transportation between two points can not be allowed similar to consumer goods owing to huge sunk costs and scarce resources of land. Similarly, transporters can not be allowed to construct own individual routes for carrying out businesses. Hence, it is the competition for the field of transportation between say

Vadodara- Ahmedabad that is to be ascertained and once it is awarded, it will carry significant market power for long term to attract the consumers of this service. Though the commercial value of a road is well exploited by transporters, no example is yet found in the records that any transportation company or consortium has offered bid for construction of any route. Hence, the Government has to either provide the road directly from public funds or through PPP route for such interest groups atleast on the principles of welfare economics. When a Government is opting for PPP route, it is basically a construction firm (rarely specialist financial institution like Infrastructure Leasing & Financial services, IL&FS) that bids for the project who has business principle to earn assumed return on investments and it has no other utility of the project. Hence, the agreement between Government and bidder (i.e. concession agreement) shall be explicit about expenses and revenues not only for construction period but for 15 to 30 years of toll period. Again, though Government is opting PPP route mainly to invite private funds from bidder of the project, the bidder seldom invests own funds fully. The bidder resorts to leverage on his funds and arranges debts from formal institutions like banks etc. and hence the concession agreement shall be bankable with adequate recourse to lenders. Since the concession is offered by Sovereign, the lenders see implicit guarantees if concession agreements are not overt about lender's recourse. The concession is framed based on revenues from users of facility (except annuity type of projects where concessionaire is not allowed to charge users himself) and users are not at the discretion of Sovereign (i.e. users can not be dragged to facility by the Sovereign) which complicates the design of concession. The prevailing practice leaves this aspect of uncertainty of traffic unanswered under the bracket of risks allocation as a part of concession agreement though Government and bidder both satisfy themselves for adequacy of traffic at bidding stage through feasibility studies.

3.4.3 Concession Agreement: Structure and Design Issues

Unlike PPP, definition of Concession is not discussed by various interest groups with an understanding that it is only right to collect tolls on a public asset by an entrepreneur for making available that facility. Kerf et al. (1998) reiterate the same conceptual understanding as –"a firm obtains from the government the right to provide a particular service under conditions of significant market power." A

concession is thus a legal device that can be used to create competition for a market, when competition in the market is not operating. According to this definition, concessions need not involve the private sector, since governments can award concessions to public enterprises also. If the finance is to be procured from leveraged debt sources, in fact Government could be the best candidate to avail loans from any market at lower cost. This is more appealing when concessions are awarded on public roads. Going back to the rhetoric argument of efficiency of private sector then drives the public body to keep itself away from any project where performance is inevitable. Practically in India, all PPP projects are awarded to private parties[4].

Regarding objectives of concession, the WB Technical Paper No. 399-1998 produced by Kerf et al. quotes the famous nineteenth century economist **Alfred Marshall** for concessions as follows:

"A public authority may be able to own the franchise and, in some cases, part of the fixed capital of a semipublic undertaking, and to lease them for a limited number of years to a Corporation who shall be bound to perform services, or deliver goods, at a certain price and subject to certain other regulations ... the special point of the proposal is that, where possible, **the competition for the franchise shall turn on the price or the quality, or both, of the services or the goods, rather than on the annual sum paid for the lease**." Hence, the focus of concession shall be either pricing (in the public interest) or service standards. Kerf et al. touch this issue under article 3.8: Duration, termination and compensation (World Bank Technical Paper No. 399-1998 page 79-84). The argument is put for rebidding of agreement to introduce competition (especially for projects started with unsolicited proposals) but it is more in terms of terminating the agreement with compensation and deciding term of concession as compared to efficient lifespan of asset created. Though such mechanism is not yet in practice but user's perspective emphasized by Marshall can be a good design aspect of concession if the agreement is written considering financial aspects of the project in detail which is not in scope of above WB report. The guidelines discussed by Kerf et al. are for infrastructure but world over, the concession agreements for roads have been influenced by these guidelines till today. The WB guidelines on concession are more of legalization of economic principles but they are very silent on financial performance of the concession. Hence, the concession

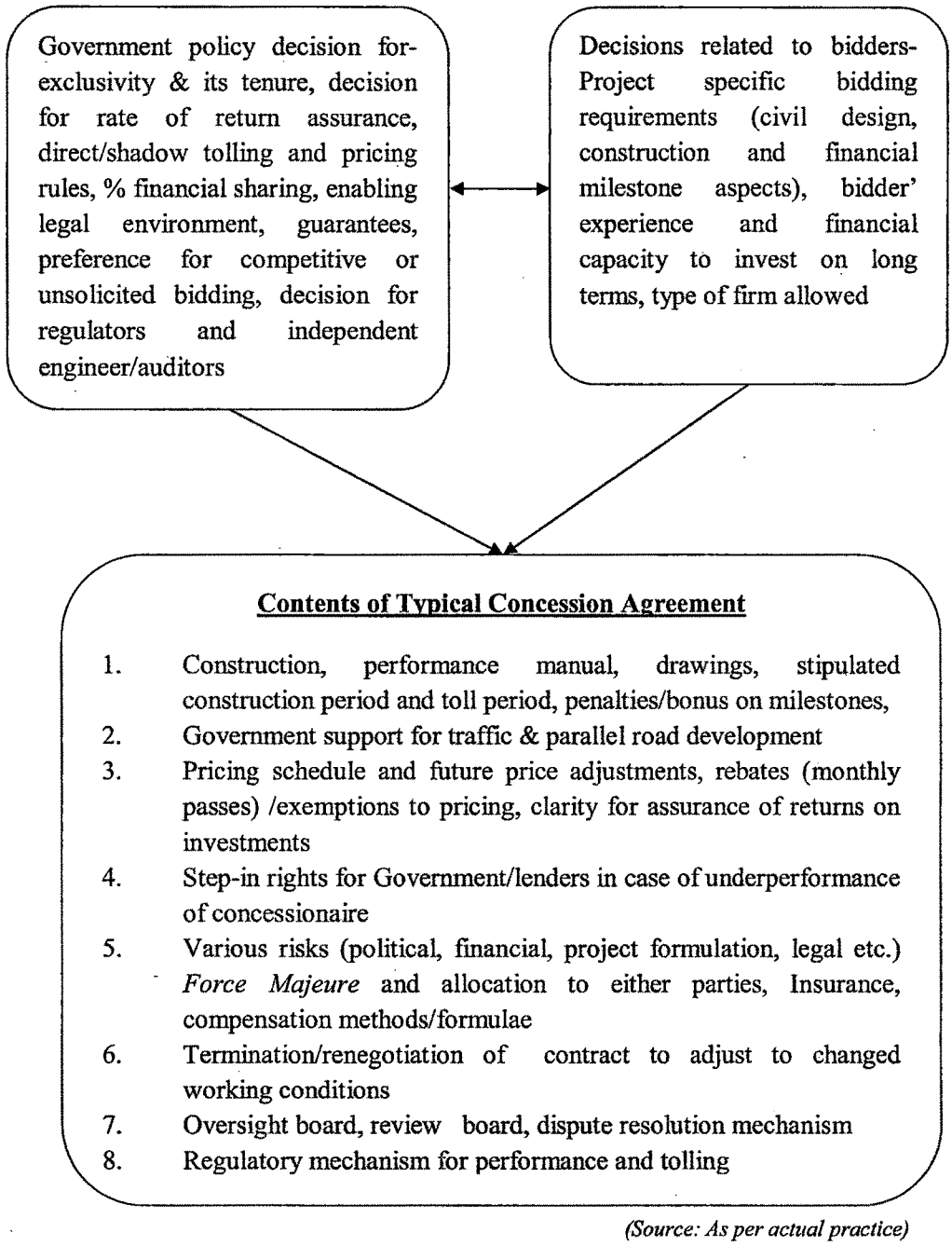
agreements of that period also did not touch financial aspects keeping them under prerogative of concessionaire.

Historically, the whole genesis of concession is based on economists' suggestion that competition be used for choosing the single supplier of a natural monopoly market, before granting the monopoly for a fixed term. The suggestion, originally made by **Chadwick** (1859) and developed by **Demsetz** (1968), was to organize bids by which firms, competing for the right to serve a monopoly market, would compete away all monopoly profits, thus eliminating the need for ex-post regulation. In the words of Chadwick, who originally proposed the idea in 1859, **competition for the field** shall substitute for **competition in the field**. However, the whole doctrine is well known as **Demsetz's auction**. The road sector is using competition for the field while awarding concession but then after user's interests are not observed what Marshall expected. The Demsetz's auctioning may suggest exposing the natural monopoly again to market forces by inviting competition under such conditions. This is the same what Kerf et al. have suggested in World Bank Technical Paper No. 399-1998.

Structurally, a concession can be expected to have elements of a turn key project for original or new construction, maintenance, traffic regulation at tolling point (toll plaza) because physically these activities are involved in a full fledged BOT (or BTO, DBFO) project. But concession agreement is typically complex document as compared to traditional cash contract since investments are to be recouped with out harming public interest and investor's commercial interest. Since it is basically a contract between two parties, it starts with offer to award concession, instruction to bidders, award criteria, agreement to build-operate –transfer, a general construction requirement, list of applicable standards, construction manual, maintenance manual, transfer stage requirements and most importantly, renegotiation/termination related covenants for keeping the investor good under untoward circumstances (or punishing if he has underperformed) etc. A conceptual picture of typical concession agreement (CA) for roads based on actual practices in the field is depicted under Figure: III-4. The aspects of Government decision to go for PPP route and contents of CA are very briefly pointed out in this Figure.

Figure: III-4

Conceptual Structure of Concession for Roads



(Source: As per actual practice)

Practically, ascertaining willingness to pay and (politically) willingness to charge the users by direct tolling or by increasing indirect taxes is a major decision making under PPP route. Economists may prescribe marginal pricing for a toll road; it may not help the investor to recover the costs within given toll period if traffic does not ply in adequate volume on selected road. A tolled road faces public resistance on first day of tolling and then at every revision of toll rates since the benefits envisaged by the planners are not realized by the users (atleast by local users) under complex multiple tax regimes. The investors are keen to recover the financial stake at fastest and they may prefer shorter toll period, the price capping followed by public bodies may tend to lengthen the toll period which exposes the concessionaire to more variants of problems. Since Governments world over are opting for PPP merely to alleviate pressure on public exchequer, there is full chance that once the paucity of funds is overcome, toll resistance may lead to discourage tolling of roads. There is no bench mark yet established in India (and many such countries) to decide actual gains from PPP route *vis-à-vis* traditional cash contracting. Under such circumstances, PPP route is seldom to sustain over long term of CA. Any CA is inherently a risk and reward mechanism and the concessionaire passes through wide range of risk factors that decides fate of concessionaire if not properly attended under CA. The classification of risk is well elaborated by Kerf et al. (1998) which are quite elaborative but allocation of risk is generally decided by individual Government may be project specific and hence often differ from WB guidelines. Following Table: III-1 is summary of risk identified by WB for an infrastructure project with allocations in their view.

Table: III-1

Identification and Allocation of Risk in Designing Concessions as Recommended by World Bank

What is the risk?	How does it arise?	How should it be allocated?
Design / development risk Design defect	Design fault in tender specifications	Public sector to bear risk if design is provided by public sector.
	Contractor design fault	Liquidated damages to be paid by constructor; once liquidated damages are exhausted, erosion of project company's returns
Construction risk Cost overrun	Within construction consortium's control (inefficient construction practices, wastages, and so on)	Contractor to bear risk through fixed-price construction contract plus liquidated damages; once liquidated damages are exhausted, erosion of project company's returns
	Outside construction consortium's control: a) changes in the overall legal framework (changes of laws, increased taxes, and so on)	Insurer risk if insurance is available; once insurance proceeds are exhausted, erosion of project company's returns
	Outside construction consortium's control: b) actions of government that specifically affect the project (delays in obtaining approvals or permits, and so on)	Public sector to bear risk
Delay in completion	Within construction consortium's control (lack of coordination of subcontractors, and so on)	Liquidated damages to be paid by constructor; once liquidated damages are exhausted, erosion of project company's returns
	Outside construction consortium's control (*Force Majeure*, and so on)	Insurer risk, if risk was insured; once insurance proceeds are exhausted, erosion of project company's returns
Failure of project to meet performance criteria at completion	Quality shortfall, defects in construction, and so on	Liquidated damages to be paid by constructor; once liquidated damages are exhausted, erosion of project company's returns
Operating cost risk Operating cost overruns	Change in practice of operator at project company's request	Project company to bear risk
	Operator failure	Liquidated damages to be paid by operator to the project company; once liquidated damages are exhausted, erosion of project company's returns
Failure or delay in obtaining permissions, consents, and approvals	Public sector discretion	Public authorities to bear risk

What is the risk?	How does it arise?	How should it be allocated?
Changes in prices of supplies	Increased prices	Allocation of risk to the party best able to control, manage, or bear it (supplier, project company, or users)
Non-delivery of supplies on the part of public authorities	Public sector failure	Public authorities to bear risk
Revenue risk Changes in tariffs	In accordance with the terms of the contract (for example, indexation of tariffs leads to reduced demand)	Project company to bear risk
	Government breach of the terms of the contract	Public sector to bear risk
Changes in demand	Decreased demand	Project company to bear risk
Shortfall in quantity, or shortfall in quality leading to reduced demand	Operator's fault	Liquidated damages to be paid by the operator; once liquidated damages are exhausted, erosion of project company's returns
	Project company's fault	Liquidated damages to be paid by the project company to public authority
Financial risk Exchange rates; interest rates Foreign exchange	Devaluation of local currency; fluctuations	Project company to bear risk (hedging facilities might be put in place)
	No convertibility or no transferability	Public sector to bear risk; in case of contract termination, compensation to be paid by government
Force Majeure risk Acts of God	Floods, earthquakes, riots, strikes, and so on	Insurer risk, if risk was insured; otherwise, risk to be borne by project company
Changes in law	Changes in general legal framework (taxes, environmental standards, and so on)	Normally, project company to bear risk (public sector could bear risk when changes are fundamental and completely unforeseeable; for example, switch from free market to central planning)
	Changes in legal or contractual framework directly and specifically affecting the project company	Public sector to bear risk
Performance risk Political force majeure	Breach or cancellation of contract; expropriation, creeping expropriation, failure to obtain or renew approvals	Insurer's risk, if risk was insured; otherwise risk to be borne by public sector; in case of contract termination, compensation to be paid by government
Environmental risk Environmental incidents	Operator's Fault	Liquidated damages to be paid by the operator; once liquidated damages are exhausted, erosion of project company's returns
	Pre-existing environmental liability	Public sector to bear risk

Source: Kerf et al. (1998)

The above framework of CA (associated with risk matrix) is very basic and has seen varying modifications as per country specific experiences. Before narrowing to Indian perspective, international experience of concessions and other innovations of PSP are explored as below.

3.4.4 PPP Development across the Continents:

The world over, nations are implementing PSP programmes but the basic tenets are-failure of State administered road sector to cope up rapidly growing transport needs and financial crunch, political will to create assets urgently and to charge the users and finally in turn boost the economy by investing at unprecedented scale by inviting PSP supported by public funds.

International Public Works Financing Projects (PWF2004) has produced comparable database of PSP road projects world wide taken up at regional scale (programme level) for period 1985-2004.

Table: III-2

Regional Road Projects Planned or Completed since 1985 by Contract Type*

(1985-2004)

Region	Contract Type	Number	Percent	US $ Billion	Percent	% of PPP by cost
Africa & Middle East	Concession	1	8%	$0.0	1%	65%
	BOT/BTO	5	42%	$1.5	31%	
	DBFO	3	25%	$1.6	33%	
	Other PSP	3	25%	$1.7	35%	
	Subtotal	*12*	*100%*	*$4.8*	*100%*	
Asia & Far East	Concession	49	40%	$21.8	26%	**80%**
	BOT/BTO	61	50%	$34.9	42%	
	DBFO	5	4%	$9.8	12%	
	Other PSP	7	6%	$16	20%	
	Subtotal	*122*	*100%*	*$82.5*	*100%*	
Europe	Concession	69	34%	$61.7	45%	**81%**
	BOT/BTO	53	26%	$31.4	23%	
	DBFO	45	22%	$18.3	13%	
	Other PSP	34	18%	$27	19%	
	Subtotal	*201*	*100%*	*$138.4*	*100%*	
Latin America & Caribbean	Concession	45	44%	$11.6	44%	**96%**
	BOT/BTO	50	49%	$12.4	47%	
	DBFO	3	3%	$0.7	3%	
	Other PSP	5	4%	$1.7	6%	
	Subtotal	*103*	*100%*	*$26.4*	*100%*	
North America	Concession	81	50%	$29.1	41%	49%
	BOT/BTO	14	9%	$4.3	6%	
	DBFO	5	3%	$1.1	2%	
	Other PSP	61	38%	$35.7	51%	
	Subtotal	*161*	*100%*	*$70.2*	*100%*	
Worldwide	Concession	245	41%	$124.2	39%	75%
	BOT/BTO	183	31%	$84.4	26%	
	DBFO	61	10%	$31.5	10%	
	Other PSP	110	18%	$82.3	25%	
	Total	**599**	**100%**	**$322.4**	**100%**	

* Omits projects included in PWF database that lack sufficient information to determine cost and are insignificant

(Source: Summarized from International Public Works Financing Projects (PWF2004))

A category of BTO (Build-Transfer-Operate) is found existing in database given under Table: III-2 which means asset is handed over after construction (before tolling)

but tolling rights are given to concessionaire. Under BTO, State will have right to manage asset like it is a public asset. Similarly, Design –Build-Finance-Operate (DBFO) category is found in this database which is variant of BOT with a difference that here design is kept under purview of bidder for such projects. This modification helps to avoid claims based on design adequacy/suitability issues. The essence of the summarized data under Table: III-2 is, PPP projects are world over dominating since last two decades. In this data, PPP projects are projects involving long term financial partnership from private party which are total of projects under - Concessions (here PWF takes it as a long term lease, may be on existing asset); DBFO and; BOT/BTO type of projects. Region wise, Latin American countries are found patron of long term private financing of road projects followed by Europe and Asia as per this statistics. The BOT/BTO format of contract is most favoured mode by Latin American countries and Asia. As per this database, Europe is not favouring handing over of construction to private sector like BOT/DBFO/BTO contracts but allows concession for tolling operations to private and public body as well. The Europe however applies many innovative practices of contracting as explained below.

3.5 INTERNATIONAL EXPERIENCE FOR PSP PROGRAMMES-EUROPEAN INNOVATIONS IN CONTRACTING PRACTICES UNTAPPED IN INDIA:

The European countries have maintained network of superior roads from 1998 to 2004 mainly through concessions but the concessionaires could be private and public companies as well. The data presented under Table: III-3 gives country wise picture of PSP in Europe as on 1-1-98 and as on 1-1-2004 with percentages of concessions in total road network. As evident from Table: III-3, total network of this leading countries grew from 48938 km to 54299 km in 6 years @ 2% per year but the concessions grew @ 4.5% per year. This shows tendency of handing over more stretches under concessions by this countries. Whole Europe has maintained important roads through public administration except few by private concessionaires. The share of private km was @ 9% of total network as on 1-1-98 which got doubled of now total network as on 1-1-04 where as public company run concession km got reduced over this time. The share of public concessions in total concession reduced from 73% to 51% in this period while share of private concession km almost double

in this period. This could be result of leasing out public concessions and these are all indicators of growing preference for PPP.

Table: III-3

Europe Road Network & Concession of Roads* (selected countries)

Europe As on 1-1-1998 / Europe as on 1-1-2004	Motorway Network	Motorway Network Under Concession	Concessionaire Companies			
			Public(Km)	Private(Km)	No. of Public	No. of Private
Germany	11200	0	0	0	0	0
	12000	**4**	**0**	**4**	**0**	**1**
UK	3300	580	0	580	0	3
	3476	**580**	**0**	**580**	**0**	**3**
Austria	2000	180	180	0	1	0
	2000	**2000**	**2000**	**0**	**3**	**0**
Belgium	1800	6	6	0	1	0
	1729	**5**	**5**	**0**	**1**	**0**
Spain	8200	2255	405	1850	3	14
	10500	**2619**	**118**	**2501**	**1**	**28**
France	8923	6705	5905	800	8	1
	10383	**7840**	**6940**	**900**	**10**	**4**
Italy	6500	5600	5420	180	26	1
	6840	**5659**	**1261**	**4398**	**7**	**17**
Netherlands	2300	4	0	4	0	2
	2300	**4**	**0**	**4**	**0**	**2**
Portugal	1422	990	0	990	0	2
	2271	**1771**	**0**	**1771**	**0**	**11**
Sweden	1437	0	0	0	0	0
	1450	**16**	**0**	**16**	**0**	**1**
Switzerland	1856	0	0	0	0	0
	1350	**93**	**93**	**0**	**1**	**0**
TOTAL	48938	16320 (100%)	11916 (73%)	4404 (27%)	40	23
	54299	**20591 (100%)**	**10417 (51%)**	**10174 (49%)**	**23**	**67**

Note:

For every country, first row is for status as on 1-1-1998 & second row (BOLD letters) is for status as on 1-1-2004

* Omits projects included in PWF database that lack sufficient information to determine cost

(Source: Compiled from Bousquet & Fayard (2001) & Fayard (2004))

The favour for private concessionaire at the cost of public concessionaire is evident for Spain and Italy. But continued inclination for public administration is visible for France and Austria. These European countries have central government body for

development and maintenance of main network. A central government body administrates National Highways in England (Highways Agency), Scotland (Department of Enterprise, Transport, and Lifelong Learning), Netherlands (Ministry of Transport, Public Works, and Water Management) & Finland (Finnish Road Administration). This is like FHWA & Department of Transportation for US. India has Ministry of Shipping, Road Transport & Highways(MOSRT&H) & autonomous set up of NHAI (created from MOSRT&H) to administer national highways. How ever, it is to be noted that US & India both largely depend upon State governments (like Germany) for construction management of national highways and not really awarded concessions so far on larger scale.

The European countries have not favoured for BOT/BTO or DBFO type of PPP contracts for development of superior road network as seen above. But soft forms of PSP are practiced and concessions are awarded after managing constructions through public administration. To harness efficiency of private sector under PSP, the European countries have exercised many innovations beyond typical lowest cost bidding approach for turn key and PSP projects which involve elements of best value procurement (i.e. emphasizing other aspects like service standards over price of bid), early contractor involvement, confidential discussion for value based procurement etc. The below discussed innovations are based on a US scan team observations for European practices for contract administration (Cox et al. 2002) and the innovations pointed out are almost untapped in Indian case and hence are described in subsection **3.5.1.** to **3.5.5**. The innovations discussed under subsection **3.5.6** to **3.5.9** are based on another US Scan team observations for construction management practices in Canada and Europe (DeWitt et al. 2005).

3.5.1 Best Value Procurement:

In Europe, like India (and US) the price based low bid method does exist but is limited to some simple projects. The EU directives recommend "most economically advantageous tender" which is in fact best value offer selection & it is used in varying nature.

Portugal looks in to schedule and quality of technical proposal, but qualifications of proposers are reviewed on a pass-fail basis.

In Netherlands for most construction projects, combinations of contractors (consortiums) compete for the contract. Depending on risks for the government, they prefer shortlisting of contractors establishing the contractor's capability of performing the contract, competence, resources (experienced staff, special equipment, process certificates, etc.), experience and achievements, work quality in previous projects, approach to project and execution plan plus price. The Swedes are like Netherlands. They typically employ a 70 percent price weighting with 30 percent weighting of past experiences, schedule, QA system, traffic safety, environmental issues, etc.

For best value, single contract for design & construction are also prescribed. State loses powers for design approval and construction administration in such case. Design-build contracts are typically awarded with less than 30 percent complete designs. The countries with expertise in design administration has taken the role of "reviewing" design rather than "approving" design after award of the design-build contract.

In design-build projects of UK, the initial contracts were awarded based on 20 percent quality, 80 percent price basis. Changing over a time, weighting of 60 percent quality and 40 percent price is more standard, and sometimes quality is given an even higher weight. For example in some long-term maintenance contracts in UK, a weighting of 90 percent has been placed on factors other than price.

The French have a best-value system resembling the low-bid system. Though price is not the top criterion, the French Ministry of Transportation states that the lowest bidder is selected in 95 percent of the cases. Some prequalification of proposed work is done annually to screen the bidders.

The United States has begun to employ best-value selection, but primarily in design-build contracts. FHWA's draft design-build rules consider that no less than 50 percent of the selection is based on price & price is most often the highest weighted factor.

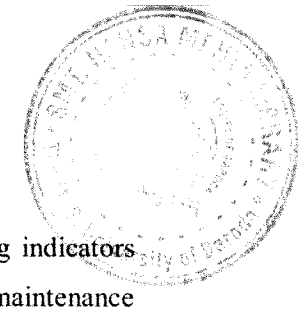
The shortlisting of contractors is like two cover bidding system of procurement in India. India also uses one form (offer cover) for evaluating contractor's capacity & only after passing through this test, the second cover offering price is considered for evaluations. India calls both covers at a time in most of the works but does not give weightage to first cover as it is only for qualifying purpose for getting in to low price bidding.

3.5.2 Performance Contracting:

Performance contracting is in its infancy in the US but is well established in Europe. Performance contracting involves some performance specifications that must be met, by employing whatever means the contractor determines most economical. These performance specifications are then continuously measured against a set of performance indicators as a basis for payment. The performance contracting can be summarized into the categories of performance specifications, performance indicators, warranties, and Quality Assurance /Quality Control (QA/QC). Performance contracts are envisaged to allow much more room for innovation through creative construction methods— lowering the overall price of a given project. The performance contracts in Europe are applied for term maintenance, design-build, DBFO, and concession contracts.

The Netherlands and the United Kingdom are opting for performance contracts for term maintenance contracts, but France and Portugal employ concessions for long-term maintenance agreements. Earlier United Kingdom started with 3-year maintenance contracts for a limited scope of work. Currently, the term is 5+1+1 (5 years as a base plus two 1-year options) if the contractor is achieving the performance indicators successfully. In UK generally performance contracting for term maintenance is done through Managing Agent Contractor (MAC) under secondary auditing of Performance Review Improvement and Delivery (PRIDe). The first auditing is managed by MAC. The British have created a definitive set of performance indicators for measuring the performance of maintenance contractors. They have created a Performance Review Improvement and Delivery (PRIDe) group to audit and ensure the integrity of the system. The managing agent is responsible for carrying out all design work, asset inspections, network maintenance management, and supervision of the term maintenance contractors. The term maintenance contractors are responsible for all routine, cyclical, and winter maintenance; and small capital maintenance and improvement works.

Dutch have developed a method of performance specification using five levels of specifications, which are- road-user wishes; Performance Requirements; Construction Behavior; Materials Behavior & Requirements for Basic Materials and Processing. They use various levels as per case of contracting. These levels are linked with



performance indicators like key performance indicators and target setting indicators are developed. The aspect of warranties is now taken care by assigning maintenance to same contractors. Regarding Quality Control, it is here in hands of contractor and State can be doing minimal Quality Assurance. In Netherlands, a unique process for quality audits in lieu of stringent owner inspection is done through a system of penalty points. Just like referee in a soccer match, the State gives the contractor yellow or red cards for quality violations. One yellow card is a warning; two yellow cards, or one red card, mean that the contractor must stop work until the violation is remedied.

The performance outcome based contracting is far away for Indian highways. However, since last five years, a performance indicator called surface roughness is being checked before & after treating the road surface. In such case all traditional QA/QC is also carried out by public bodies.

3.5.3 Scope for Confidential Discussions:

Alternative Designs and Alternative Bids are privately discussed with bidders and atmosphere for bidders is very conducive to encourage them with confidence in public bodies for not losing comparative commercial interests in this process. The out come is, the contractors are both innovative and cost-conscious. The negotiation process enables contractors to negotiate before award of work from innovations they propose without concern that their ideas will be shared with competitors. This will however require longer bid review time.

3.5.4 Europe Financing Highways:

Unlike India and US no dedicated funds for highway financing exists in Europe, taxes on fuels etc. revenues from highways go to general revenue of states and as per political priority some funds are allocated for highways. More over, tax exempted bond financing is not possible in Europe and hence competitive private financing is possible for highways as compared to public financing. The basic funding mechanism in Europe is similar to the traditional US pay-as you-go system. Major national investment in surface transportation infrastructure is funded through the annual budget allocation process, like United States. For example, in the United Kingdom money is budgeted on a 3-year cycle and is appropriated annually. The United

Kingdom also was found the only country visited that has a tax dedicated to highways as per an act of 2000. But it is unlikely to be trend for UK because, use of concessions or PPPs using bank financing are now peaking up. The European Investment Bank has special focus on Public-Private Partnerships and provides loans for it to all member countries. The EIB are seen more serious in financing infrastructure projects than parallel US state infrastructure banks. Europe highways use bonds & bank loans as an alternative mode of financing.

Sweden has been found practicing much different approach to alternative finance and contract management. The Swedish Government places (sells) its general debt (including debt used for transportation projects) in Japan. Sweden benefits from very low long-term interest rates currently being paid in Japan (less than 1 percent) and protects itself against currency risk with an appropriate hedging strategy. Sweden also facilitates local governments to accelerate approved transportation projects by arranging their own financing, and simply credits the localities' investment, without calculating interest, in the year that the project would have been completed without local government financing. This practice effectively allows local governments to make an interest-free loan to the central government if they wish to accelerate their projects.

3.5.5 Payment Mechanisms In Case Of Concessions:

Generalizing for Europe, shadow tolling, direct tolling and Active Management Payment Mechanism (AMPM) are practices of payment mechanisms for maintaining the networks under concessions. Regarding Shadow tolls in UK, payment is made for the provision of the road service. The Highway Agency pays an amount, which is based on the number and type of vehicles using the road, with adjustments made for lane closure and safety performance. The shadow tolls increase over time in accordance with an indexation formula. Shadow toll payment is based on the following three criteria: Usage/Demand, Extent of availability of services & Performance in terms of safety performance payments and lane closure charges.

In shadow tolling, different payments are considered payable for traffic within different traffic bands and dependent on the length of vehicle (long or short). Bidders bid for the parameters of traffic levels for a maximum of four, and a minimum of two

bands, with the provision that for the top band—anything exceeding say X vehicle kilometers per annum must have toll levels set at zero to ensure that the maximum liability of the Highway Agency under the DBFO contract is capped. Within each traffic band the bidders specify a toll for long vehicles (over 5.2m which includes heavy vehicles) and short vehicles (less than 5.2m). Bidders quote the bands and tolls from their own assessment of traffic levels. Most bidders found opted for four bands while for lowest band tolls within that band set at a level that would cover debt service requirements (but would not provide a return on equity).

If concession involves construction under DBFO contract and project is opened to traffic before actual completion, toll rates are kept at fraction (about 80%) and reaches full on issue of completion certificate. In most cases the toll payments step down again at the time when it is anticipated that the third party debt will have been fully repaid. Because revenue in excess of operating and maintenance costs at that stage is solely return on equity. The payment to DBFO company also gets affected by performance standards like safety results & lane closures.

In UK, present shadow tolling does not differentiate for service standards of roads, hence an innovative Active Management Payment Mechanism (AMPM) is introduced by UK. The AMPM consists of three main parts: congestion management, safety management, and service management. From bidding data of DBFO contractor, estimated per km lane per hour traffic is verified with flow of actual traffic for payment under this mechanism. The details of stipulations are:

- ✓ At all levels of traffic full payment will be made if speeds are above 90 Kmph.
- ✓ Full payment will be made if traffic exceeds the deemed capacity of the road section, even if the speed falls below 90 Kmph.
- ✓ There will be graduation of the level of deduction for both speeds between 60 and 90 Kmph and between 80 and 100% of capacity.
- ✓ A bonus will be paid if flow exceeds 110% and speeds exceed 60 Kmph.
- ✓ The maximum bonus that can be earned is 20% of the payment for the hour and road section, if flow exceeds 120% of capacity and speed exceeds 90 Kmph.

India has shadow tolls in existence & under execution in NHDP but sophistication of AMPM is not achieved.

3.5.6 Outsourcing Based Government Agencies:

The construction management practices followed in India and like countries impose a host of responsibility on government body for qualitative and quantitative checks on the contractor. This is a reason why a typical State body needs full fledged staff for a highway project. Under PSP there is an attempt to trust the contractor and facilitate him in relieving from undue compliance of many prevailing construction practices. The construction management practices in Canada & Europe are worth exploring to see the acceptance of consultants as an extension of Sovereign representation in PSP process. The extent of outsourcing of Government highway agency is presented below which is in fact extent of duress removed from contract administration imparting equitable playing field to the takers of PSP. When a consultant is assigned job of measuring the work done, it is real indicator of trusting consultants for the outcome. Here, Germany and United States are not found divesting their employees of this capacity.

Table: III-4A

Shrinkage in Role of Highway Agency in Europe, US and Canada

Contract Administration	Use Of Consultants Replacing Government Employees as a contract administrator	Measuring Work & Reporting Progress divested of government employees	Approval of government for Subcontracting & extent of subcontracting allowed	Contractor allowed to develop* own quality plan (ISO is base for ✓ marked countries.)
Canada	✓	✓	✗ (60%)	✓
Germany	✗	✗	✓ (30%)	✗
England	✓	✓	✗ (100%)	✓
Scotland	✓	✓	✗ (100%)	✓
Netherlands	⏩	⏩	✗ (100%)	✓
Finland	⏩	⏩	✗ (100%)	✓
US	✗	✗	✓ (100%)	✗

Note: ✗ = NO (or Rare) ✓ = YES (or Major) ⏩ = UNDER TRANSITION

* = All countries including US allow the contractor to perform quality tests but some counties prescribe state quality plan.

(From observations of US Scan team led by DeWitt et al. in 2005)

Table: III-4B

Shrinkage in Role of Highway Agency in Europe and Canada

Outsourcing Activity	Ontario	Germany	England	Scotland	Netherlands	Finland
Design	80-90%	30-100%	100%	100%	70%	100%
Testing	100%	50%	100%	100%	100%	100%
Construction	100%	100%	100%	100%	100%	100%
Construction Contract Administration	95%	0%	90%	100%	50%	0%
Maintenance	100%	0%	100%	100%	100%	100%

(From observations of US Scan team led by DeWitt et al. 2005).

The Table: III-4B is summarizing level of consultancy involvement in the traditional role of highway agency. The case of England seems to be most eye-catching knowing the fact that UK has total main highway network of 3476 km and it is almost totally managed by UK Highway Agency (Table-III-3). UK has merely 580 km under PPP concessions and it has low tendency to accept private toll road based network. But UK has divested contract administration to the private consultants. In contrast, Germany most closely resembles the United States in that it manages its highway

networks through government employees. The network of 12000 km of important highways in Germany is managed by Government bodies and concessions are avoided as a policy matter. Unlike UK, Germany is not allowing consultants to enter contract administration.

Europe seems believing that honest outcome is also hindered by public employees. The idea is if you can trust few quality oriented contractors for execution then why do not some more contractors for the role of highway agency? The construction is any way executed through private contractor then why not other activities too. If some care is taken in contract design for achieving expected performance it results in to saving a lot on government & contractor's overheads & time in execution of projects. Only fear is, will this concept work when Government has many such contracts to offer and few such honest operators? Experience of one or two failures of such services will attract government gradual involvement what has been established traditionally so far. In India, tight checks are advocated time to time on the contractors acknowledging contractor's tendency to maximize profits at any cost. Under this environment, Indian administration does not believe that freedom given to contractors (except for high skilled jobs done by established contractors) will produce honest outcome. But recently taken up ADB and WB funded projects on State and National Highways in India are imposing restrictions on Government involvements in such projects. Hence, consultants are allowed to record measurements of work and certify the payments in India for such projects that limit the role of State to make available utility/hurdles free land for construction.

3.5.7 Concept of Early Contractor Involvement (ECI) in UK:

Under Early Contractor Involvement (ECI) award, the successful contractor prepares a preliminary cost estimate. This gives an early indication of potential problems in the scheme and its estimates. The Highway Agency (HA) of UK is already having probable cost estimates from own quantity survey data bank but uses contractor's figure as the base for its key performance indicator (KPI) monitoring of Cost Predictability. Estimates at this stage are mainly on outline design basis only. At this stage, options of value engineering are often tried so as to reduce contract budgets. Contractors then prepare an Initial Target Cost at the Draft Orders stage. This cost has no contractual significance but it is expected that this Initial Target Cost is

subsequently affected only by any revision in scope owing to the Public demands and by delays arising from the time taken for approvals. The Final Target Cost is then mutually agreed after Public Inquiry/demands. Now this is the Target cost from which the pain/gain incentivisation operates under the ECI contract. The detailed design takes place after the agreement of the Final Target Cost, except some cases wherein detailed design commences prior to agreement of the Final Target Cost. This mechanism provides good accuracy of the estimate at this final stage before construction commences. The final stage is now not an estimate but the record of actual cost and will determine the amount of pain/gain and possible final bonus to be awarded to the ECI contractor. ECI has been found with potential to enable projects to be delivered in time and budget in the construction phase. But it has no coverage to maintenance cost. There may be significant cost savings in future road maintenance if more capital is invested for improved or better pavement design. The trade-off between capital spent and operating cost is observed by private contractor while bidding for Private Finance Initiative (PFI i.e. UK version of PPP) and DBFO arrangements. However, in case of no incentive for the contractor to do this in ECI for routine and Design and Build contracts, this aspect is missed. Hence whole life cost considerations are covered in the business case for the investment and then incorporated in the initial brief or design standards by HA.

ECI is basically a partnering approach in which the contractor is appointed at an early stage of project development to assist in planning, assessing buildability and cost estimating in advance of route development and the statutory process. The contractor is then incentivised to design and construct the scheme within an agreed Target Price, based on a pain/gain share formula. Contractors are benefited from reduced tendering cost (as they no longer need to carry out design for competitive pricing), lower contract risk and slightly enhanced margins through the incentive formula - although the profit potential is less. Some of the principles of ECI contracting are commonly used in the water industry and other sectors, as well as in Highway Maintenance Framework contracts. But it is yet a new concept with limited cases.

Following benefits / disbenefits are observed for ECI in UK (Nichols 2007).

Benefits:

- enables the contractor to influence planning decisions and design development at the most beneficial time
- potentially reduces preparation time for projects by 30-40%, by carrying out some parts of the development process simultaneously rather than consecutively (reducing time from programme entry to start of works from 10 or more years down to around seven)
- gives HA access to detailed cost data to improve future estimates and output measures
- provides greater cost certainty, once the Target Price is agreed
- increases innovation which was being lost on D&B contracts; and facilitates value management and value engineering which can result in major cost and time savings
- enables tenderers, in the procurement phase, to prepare budget commentaries on the cost level which should lead to more accurate budget estimates
- requires the preparation of outturn estimates at key stages throughout the project cycle. This leads to greater cost control during the construction phase, especially as the incentive formula is based on the Target Price, set before start of construction
- provides a team/alliancing spirit which leads to an open and honest process so that the real costs are highlighted early, before Ministers make a commitment.

Disbenefits:

- ECI was adopted as a preferred procurement option and applied to most of the schemes, after only limited piloting. The ECI process is still being refined. There currently have been only five schemes completed using ECI fully as the method of procurement
- there is a significant difference between the culture needed to achieve a successful ECI contract from that for a D&B contract. Typically, the contractors have gone through successful change management processes but

the Highway Agency still need more recruitment and training to embrace fully the cultural needs of ECI.

- since ECI was introduced, there has been very little training provided resulting in a lack of commitment from HA staff at all levels. This has resulted in HA lacking the ability to set sensible budgets, challenge Target Prices and manage the process effectively
- some duplication of costs is occurring in early design, especially where HA's consultants feel disconnected from the process and do not totally enter into the team culture
- the initial incentivising mechanisms have not worked well in a number of ways. Firstly, the pain/gain incentive formula operates properly only if the early cost estimate is reasonably robust, but it has tended not to be. Hence the design bonus (paid only if design attains cost lower than Target Price) has not yet been earned on any scheme. Secondly, the ability for contractors to earn any significant construction bonus in addition to their tender margin (of 2.5%) is severely limited.

The ECI is yet a new development evolved in UK and no much database is available for scrutiny. But its evolution is through practical considerations and sounds sensible if the implementing agency is sound in assessing proposals of contractors in public interest. Otherwise, the contractors can drive the projects to their end on commercial front.

3.5.8 Prequalification Criteria in Europe:

Regarding procurement of contractor, prequalification practice has wide impacts. **Netherlands** do prequalify contractors on a project basis (for complex projects), but they do not take past performance into account because they are restricted by law from doing so. **Germany** has no formal or annual prequalification processes. The prequalification is also employed by Canada and US for better PSP.Ontario Ministry of Transportation in **Canada** has developed a system to prequalify consultants and contractors called the Registry, Appraisal, and Qualification System (RAQS). An annual contractor prequalification system similar to many US systems is used, but it is a little more reliant on past performance. All contractors are prequalified on a basis of

financial status, performance appraisals, and infraction reports at the end of each project establishing an overall performance rating. The rating is maintained on a 3-year rolling average. All contractors must have a financial rating, which is based on assets and cash. Contractors can bid only up to their available financial rating & other factors like penalty adjustments, and work on hand. In **England,** they maintain a "long list" or general prequalification of contractors on the basis of financial standing and technical capability, and then selectively produce a project-specific "short list" to distribute work to multiple contractors in the marketplace to maintain a healthy level of competition. In preparing short list, each company is assigned a "vendor rating" on the basis of its capability, past performance, and other strategic data. Contractor prequalification & use of past performance information is not common in most US State highway agencies. Only a few States, however, use contractor prequalification on individual projects as practiced by other international organizations. In fact India has practice of inviting prequalification for a project based on estimated cost of project. Hence, most of major highway projects are subject to strict prequalification before entering financial biding.

As far as bidding basis is concerned, Finland, England, and Scotland use best-value procurement dominantly. Germany and Ontario award construction contracts on the basis of low price, but can use best-value procurement when project characteristics requires. The Netherlands uses best value more frequently than Ontario and Germany. The Netherlands uses it for all design-build projects and also on selected design-bid-build projects, specifically for those projects in which it shortlists contractors. The purpose of best-value selection is to balance cost with non-cost factors to achieve long-term performance and value of construction for the public. Hence, bidding is done with two cover system –one is technical bid which is evaluated first and then second cover of financial bid is opened. The manner in which tradeoff analysis is conducted between the price and technical proposals varies by country and among projects within each country. Some examples only employ two criteria of price and qualifications or past performance. If the lowest price comes from the highest technical rating, then the project is awarded to the lowest bidder. If the lowest bidder does not have the highest technical rating, then the agency performs a tradeoff analysis to determine if the higher technical scores provide the public with better long-term value. If it can be determined that better value is achieved from one of the

higher technical offers, then the award is made to someone other than the lowest bidder. In India, the two cover bidding is common for major projects but no tradeoff analysis is done to compare cost & non-cost factors.

For concession based projects, it is relevant to note that **The Public-Private Comparator (PPC)** is employed in Netherlands & UK to make a financial comparison of the viability of using a concession versus keeping a project in the public sector. The PPC compares the NPV of the concessionaire's proposal with the traditional cost of design, construction, maintenance, and operation in the traditional method. The PPC is thus useful in comparing PPP proposals for various bidders and also for comparing with traditional mode of state execution.

3.5.9 Public Information System During Construction:

Aspect of informing likely to be affected parties (mainly utility carriers) simplifies construction problems on site. The public must be kept informed before, during, and after construction. The responsibility for public information varied slightly from country to country. The highway agency takes primary responsibility for public information in Ontario, Germany, the Netherlands, and Finland. The contractor takes primary responsibility for public information in England and Scotland. In India, such co-ordination is mostly missing and hindrances are solved as they are met with. This delays the projects in India quite often in addition to hurdles for road users.

3.6 INTERNATIONAL EXPERIENCE FOR PSP PROGRAMMES ON CONCESSIONS:

Following country specific experiences for PSP and in particular on concession elaborates ground realities in achieving desired success despite initial thrust from Government. The international experience can be a good input for country like India which is yet on learning curve of PSP and in need of harnessing benefits of concessions. The concessions referred hereunder may involve private funds (i.e. PPP) or it may be limited private sector participation and it also refers to publicly managed tolling. It should be noted that PSP/PPP routes of development are found applied to only superior category of roads world over and such roads form not more than 10 to 20 % of total road network for a country.

3.6.1 Use of Concessions in Portugal for Strategic Road Development Plan:

As given in Table:III-3, Portugal has total 2271 km of superior roads out of which 1771 km are managed by private concessionaires and no concession is awarded to public body. Portugal plans to bring almost its entire superior network under private concession in near future in this decade. The Portuguese Highways Agency, Instituto das Estratas de Portugal (IEP) has made major changes in its methods of doing business to plan completion of 2,700 km through concessions by 2006 from 431 km of concessions in 1991. The primary driver for the Portuguese concession plan was Portugal's entry into the EU which necessitated strengthening trading capabilities.

Historically, the first concession for the building of a tolled motorway network dates back to 1972, with the creation of the private company BRISA to which it was granted. After 1974 revolution, the majority part of the capital of BRISA was taken by the Government, and it became practically a public company. BRISA run almost all network then onwards. Again in 1998, limits of the concession of BRISA were redefined—that is, from being the concessionaire of "all" motorways, BRISA was limited to major stretches of length of 1180 km. It is mainly failure of BRISA to construct more highways and growing needs invited more private participants in this sector. The major observations for the concession of Portugal highway sector are (Cox et al. 2002):

* Generally Portugal allowed concessions where alternative free lanes of good quality were available. But From 1998, the quality of optional freeway was ignored and that raised opposition to tolling. Public did not mind keep paying BRISA on main links but refused to pay for new links. The new projects were not seen attractive in traffic terms & hence the new projects were not benefited by competition and this also affected project viability. The Portugal operates real tolls & shadow tolls both and shadow tolling is needed when alternative route is not rendered.

* The concessions were needed to elaborate risk allocations. The party best able to manage the risk bears is allocated that risk. Like the risk of planning remains with the government. The risks associated with design, construction, operation and maintenance, latent defects, and legislation are assigned to the

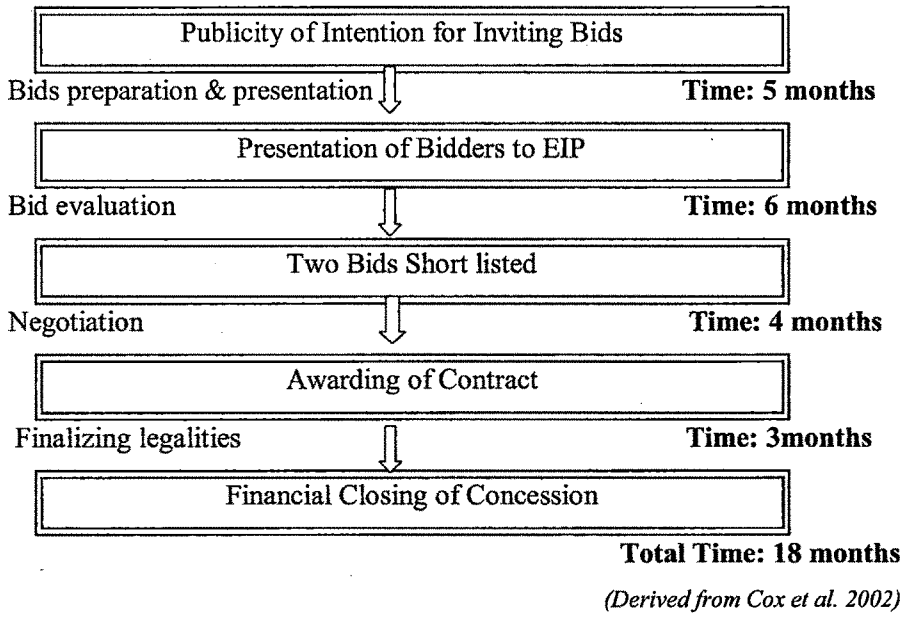
concessionaire. The responsibility for environmental, land acquisition and *Force Majeure* events is shared by both. The major risks felt were - Environment clearance & Land acquisition. The Environmental risk was mitigated by government by getting clearances before inviting bids but politically it was not always so. For land acquisition, concessions have involved a transfer of significant right-of-way risk to concessionaires, by transferring more and more of the expropriation activities to them. Concessionaires manage negotiations, and the government provides the public interest declaration. If contended, the court matter is handled by the government. This is an excellent feature of PPP.

3.6.1.1 Selection Process for Concessionaire:

The selection process for concessionaire in Portugal is narrated below that explains preparatory works undertaken by European countries while going through concession route.

Figure: III-5

Portugal case of selection for Concessionaire



(Derived from Cox et al. 2002)

As illustrated above, potential concessionaires are given 5 months to prepare their proposals following receipt of the request for tenders. They prepare proposals for presentation to the IEP. Since the proposals involve design, construction, operation,

maintenance, and other services, the evaluation takes up to 6 months to complete. The proposals are evaluated based on the Technical quality; Government's financial effort; Expected net present value (NPV) of ; Level of risk and commitment; Proposed date for full operation; Robustness of financial and contractual structure. Two proposers are short listed and the IEP enters into competitive negotiations with both. The final completion of the contract terms and contract award etc. formalities are accomplished in 3 months. Thus entire selection process takes an average of 18 months to complete. This period is almost three fold of Indian way of selecting concessionaire. In India, only most attractive stretches are taken up for concession and practically a model concession agreement format is followed with no attempts to control cost or price.

3.6.2 Use of Concessions in France for Strategic Road Development Plan:

The France has a long history of PPPs and concessions. Its first concession is as old as in 1554 for the construction of a canal. The major observations for the French highway sector are:

* The French use a real toll system with all of the cost for the roads being borne directly /indirectly by the user. Tolls account for 65 percent of the capital motorway costs, with 19 percent from the government (3 percent for maintenance and 16 percent for building) and 16 percent from the local authorities (nil percent for maintenance and 16 percent for building). The tolls themselves are used for financing (63 percent), toll collection costs (26 percent), and taxes (11 percent).

* The French motorways system has steadily grown from 1,125 km in 1970 to more than 11,000 km in 2000 (75% are tolled) and they carry more than 30000 vehicles per day per motorway on average (Lecoffre 2003). The other national roads are 32000 kms and in total 8,00,000 kms of lower category of roads. The tolling is authorized by 1955 Toll Act for creation of state owned toll road companies who will collect tolls for construction and maintenance of highways. Under state ownership profitable toll roads supports weak roads. By 2003, 8000 kms of toll roads are built under Toll Act (1955) and under operation. From this, 7200 kms are operated by 6 mainly publicly owned

companies (ASF, SAPRR, SANEF, ESCOTA, AREA, SAPN) & remaining 800 kms operated by a private company (COFIROUTE). In France toll rates are fixed by government but rates vary up to 30% over the region, type of vehicle and hour of day. Such variable tolling was started from 1992 and intentions are not to increase revenues. The toll rate is increased annually just above inflation. The present trend is handing over federal roads to local bodies.

* There were nine primary concessionaires working in France, among them Cofiroute was fully private (Cox et al. 2002). Central and regional government bodies run the remaining eight regional concessionaires through limited liability semi public companies (SEMs). Some of the more profitable SEMs support the other less profitable ones.

* Some public companies use private "firewalls" to compete with the private sector. SEMs are financed by the Caisse Nationale des Autoroutes (CNA), an autonomous public agency that raises the funds for highway construction. Private utility companies often operate SEMs under short term contracts.

* A 1985 law seems governing the client process, the quality, the cost, and the principles upon which the project is based. It also describes the roles of the engineer and contractor. This law states that the client must participate throughout the entire process. If the public owner does not have the necessary expertise, it can employ an owner's representative or a firm to do the job. But this responsibility cannot be totally transferred to third parties, as the law requires the owner must be present at all critical points in the process. As a result, the owner must have a construction manager separate from the construction team. This stipulation insists delivery of public obligation whole heartedly which is a unique feature.

* The public sector client must state/elaborate the needs of the public (as decided by State) through a "program," which is interacted upon by contractors or the concessionaires. The client must define its needs in the "program" and assess the costs. There are two milestones of cost assurance—one at the program level (at declaration of intention) and one at the bidding

time. If the bid costs are higher than the target, the engineer has to redesign. At the end of the project, the client approves the final product.

* The risk allocation profile is illustrated as reproduced below which is similar to Portugal and many European cases. To deal with land acquisition problems, Cofiroute and the other SEMs can purchase right of way on behalf of the government. Though the revenue, construction and financial risks are most important to affect commercial viability of concessions, they are left to the Concessionaire on risk –reward understanding.

Table: III-5

Risk Allocations Strategy under French Concessions

Type of risk	Who bears
Revenue and traffic risk	Concessionaire
Construction cost risk	Concessionaire
Financial risk	Concessionaire
Operation cost risk	Concessionaire
Project risk	Government
Force Majeure	Government
Government action	Government

(Source: Cox et al. 2002)

A worth mentioning brief overview of latest trend of French government is selling of own stake during 2005(Europa 2005) in three major toll road companies: a 50.3% stake in Autoroutes du Sud de la France; a 70% stake in Autoroutes Paris-Rhin-Rhône; a 75% stake in Société des autoroutes du Nord et de l'Est de la France. The proceeds were estimated to generate EUR 10 billion revenue and a portion of the money raised was decided to be allocated to the Transportation Infrastructure Funding Agency. The sale of majority stakes in three state-controlled toll-road operators was completed for a total price of $17.8 billion i.e. more than 1.5 times of expected

revenues were received. Vinci purchased France's 50 percent stake in Autoroutes du Sud de la France, which operates roads in southwest France. Eiffage and Macquarie Infrastructure of Australia purchased France's 70 percent stake in Autoroutes Paris-Rhin-Rhone (APRR), which operates roads in southeast France. A consortium led by Abertis bought a 75 percent stake in Societe des Autoroutes du Nord et de l'Est de la France (Sanef), which operates roads in northern France. Analysts do not see these privatizations to amount to much more than a drop in the bucket if France is thinking for restoring financial health. On the contrary, the Government was criticized by politicians and unions saying that overall impact of wind fall revenue by selling stake on State debt will be 4.5%, whereas intrinsic annual yield from these shares stands at 7.5%. The French initiative is like predecessor to US selling out Chicago skyway or Indiana toll road.

Another major decision was to hand over less important national trunk roads to local departments with attached 33,000 civil staff. Minister of Transportation, Dominique Perben, presented a map indicating administration of 18,400 kilometres of national trunk roads to be transferred to the *départements* from January 2006. The *départements* are currently responsible for approximately 360,000 kilometres of regional roads. This is under August 2004 Decentralisation Act and is quite contradictory to NHAI practice of divesting local departments of N.H. The transfer of roads to local departments is seen as Government undermining its role on whole network.

3.6.3 Spanish Concession Practices:

The Spanish Civil War at the end of the 1930s left the country extremely poor, a situation that persisted for decades. In the 1960s, the government realized that building infrastructure such as roads was crucial for tourism and for the development of the country. Spaniards were very poor with a very low income per capita and hence there was not enough money in the system to be invested into the country's development. Taking a bold decision, the government authorized the companies that would become the concessionaires to dip into the pockets of their partners in richer countries (Graber 2006). Those foreign loans provided the capital for the toll roads, with a backing from the Spanish Government assuring a return on the investment if the toll income did not meet expectations. The process of using toll roads to build infrastructure began in the

1960s and 1970s, in Spain & other European countries. France and Italy chose the model of having state-owned companies develop the roads, as opposed to the primarily private Spanish model. The government awarded the first road contracts at the end of the 1960s and these roads were completed by 1970s. Meanwhile, the economy was struck in 1973 by oil crisis. Hence at the inception, the PPP saw unusual erosion of viability.

In 1967, the Spanish Government planned for 3,160 kilometers of toll motorways in the Program of Spanish National Motorways (abbreviated as PANE). Up to 1972 the sections were franchised to private firms. The possibility of having motorways (even if tolled) raised great expectations, and political and institutional pressures to acquire such roads emerged all over the country (Bel & Fageda 2005). The PANE was up-dated by 1972, included 6,340 kilometers of toll motorways. Promises were high, but results did not meet expectations. The concessions were franchised for total of 2,042 kms up to the end of 1975. By 1985, no more than 1,807 kilometers of toll motorways were operating, along with 1,363 kilometers of free motorways. This is mainly due to economic crisis of seventies that discouraged private investors to go ahead till mid 1980s. In the PANE, Spain did not prefer public management (like in France & Italy) but loan warranties were availed to private concessionaires to obtain overseas funds. This decision attracted risk transfer on Government for exchange rate on external borrowings. Some or other way likewise many risks were ultimately passed on to Government and ultimately private toll roads resulted in to a costly affair. Bel & Fageda (2005) observed that Italy faced less problems from crisis because it followed network based management for balancing profitable & unprofitable stretches whereas Spain franchised individual stretches. As a result, a political decision of choosing model of public financing of motorways for 1984-1991 Roads General Plan was taken by newly elected Socialist party. The new model really clicked to produce additional 3600 km freeways during 1986-92. Fiscally this was seen possible due to introduction of Income Tax from 1977 & availability of European Community funds on some stretches of European importance. The table: III-6 depicts this trend. However, during late 1990s with out competitive pricing unprofitable concessions were facilitated by renegotiations for increase in term & in return reduction of toll or State investment in unprofitable stretches. This has resulted in implementing yearly price adjustment formulae wiping off extra ordinary profits of private parties through

capping. In survival of private toll ways, National Toll Motorways Program approved by the conservative government elected in March 1996 & 2000 helped without harming development of freeways. Also, it allowed subsidies for poor traffic stretches on private toll ways. The socialist party again gained the power around 2004 and is likely to downsize remaining of Toll Motorways Program.

Table: III-6

Spanish Toll Road & Toll Free Road Development

Year	Total Motorways	Toll motorways	% Toll/Total	Free motorways	% Free/Total
1970	203	82	40	121	60
1975	888	619	70	269	30
1980	1933	1530	79	403	21
1985	3170	1807	57	1363	43
1990	5126	1898	37	3228	67
1995	8133	2023	25	6110	75
2000	10480	2239	21	8241	79
2003	12009	2517	21	9492	79

(Source: Bel & Fageda :(2005))

The basic issue for Spain is noticed to be lengthy tendering process as referred below. The price escalation becomes effective after one year and hence this case the proposals are likely to see change in estimates significantly. It is very complicated to see that all the bidders have same set of information over such lengthy period of 33-44 months but offers are expected to come varying.

Table: III-7

Procurement of PPP Road Projects in Spain: Average Timescales Tendering Phase

Phases in Tendering	Action to be Taken by	Average Time Taken
Preliminary study & Environmental Impact Assessment (EIA)	Grantor	8-10 months
1st Public Information process	Grantor	1+1-3 months
EIA Approval and development of basic design	Grantor	4 months
Basic Design Approval	Grantor	1 month
2nd Public Information Process	Grantor	1+2 months
Tender Document preparation	Grantor	2 months
Approval and announcement	Grantor	8-10 months
Tender Period	Bidder	-
Tender Evaluation and Awarding	Grantor	1+1-3months
Concession Co. incorporation	Bidder	4 months
Detailed Design	Bidder	1 month
Land acquisition or occupation	B/G	1+2 months
TOTAL		33-44 Months

(Source: Derived from De Vera 2006)

As far as entrepreneurship is concerned Spain is guiding the universe and they run concessions in 26 countries. In the case of private investors, it is interesting to mention that three construction groups control the 90% of the network under concession (Abertis, Itinere and Cintra).The Abertis motorway network covers a high proportion of the toll roads in Spain, with a turnover representing between 70 and 80% of the total business in the sector. These groups have a global dimension because of their participation in concessions granted around the world. For example, these three Spanish firms played an active role in the French privatization process as main investors and Cintra is active in buying toll roads in US. Spanish firms' profits in the sector in Spain range from 130 million euros in 1990 to more than 600 million in 2002 and is well supported on Madrid stock exchange. Though Government offered to buy stake in private toll companies in 1970s to help out of economic crisis, many of these firms stood firm for long term business and they really made it in long run.

3.6.4 Private Finance Initiative of UK:

UK has been leading in running PPP projects under Private Finance Initiative (PFI). The motorway network (Lam 2006) in UK was developed in 1960s and 1970s with public funds and with out charging tolls. Very first privately funded (BOT type) project for UK was Channel tunnel for which construction was started in 1987. The Dartford- Thurrock Crossing and second Severn bridge were the only names up till now for this list of BOT projects. The latest addition is M6 toll motorway(2003).

The UK is more interested in DBFO type of projects without imposing direct tolling, even today. The DBFO model was introduced in 1993 under PFI of UK government. The UK Highways Agency is responsible for motorways and major roads in England and has been involved in development of "shadow tolling" or DBFO projects. The Highways Agency had launched its DBFO Road Program in August of 1994, and since then ten projects involving 770 kilometers of roadway with an estimated construction value of US $1.9 billion have been brought to financial close. This is hardly around 5% of highway network handled by Highway Agency. Presently 10% of current schemes are on DBFO basis and Agency targets to take up 30% of schemes (Clarke & Johnston 2006) on DBFO basis by 2010. The UK idea is clear that no direct tolling is preferred and various value based innovations are implemented under scrutiny of Public Sector Comparator.

Summing up, Europe has successfully seen use of PSP with innovations (without financial investment from private sector) and to some extent concessions for creating and maintaining huge network of superior roads. However, public nature of roads as an asset has compelled Governments to vary scale of private sector involvement in such programmes over the period of time. As compared to this, patron of market based economy i.e. US is having major event of a huge public funded Interstate programme(1956 onwards) which is then followed by no major road development programme by any means (public/private) finance. Now all states of US are setting up legislation for PPP. The FHWA of US recent statistics (Perez 2006) indicate that tolls are currently collected on roads in 25 States and one US territory on 4,630 miles of the 162,000 mile National Highway System. Thus toll roads are around 3% of total N.H. system. Overall there are approximately 25 discrete Interstate toll roads and about 65 significant non-Interstate toll roads in operation. After enacting the

Intermodal Surface Transportation Efficiency Act of 1991, total of 168 new toll projects are at various stages of development including opened for operations and it has required investment of $79,903 million. Basically, US are yet on the road of PPP.

3.6.5 PPP in Latin America and Caribbean countries:

As noted in Table: III-2, Latin America and Caribbean countries are leading group of countries in pursuit of PPP and hence gone through huge private investment in development and maintenance of roads. India is rushing towards almost similar type of PPP projects under NHDP and hence it is most relevant to review major developments in this region. Unfortunately this region has seen many down falls while following PPP as evident from discussions below. It is basically story of excessively optimistic demand forecasts made by Governments in Latin America and Caribbean countries coupled with poor concession design and a hurried pace leading to financial disaster and renegotiation. The World Bank (Guasch 2004) report on renegotiation suggests that transportation concessions were met with renegotiation proposal within reaching three years on average in Latin America and Caribbean countries. The proposal mostly came from operators/concessionaires but some times also from Government. The operator driven proposals were mostly for price cap related issues. A summary of points of contentions and subsequent outcome observed by World Bank in studying almost 1000 concessions in infrastructure works (including toll roads) executed in Latin America & Caribbean countries during 1980-2000 is explaining problems due to poor contract design & administration. As expected, negotiating with operators, it is the Government who mortgages public interest in this process. Mostly, these renegotiations are on non competitive basis and least subject to public notice.

The Table: III-8A and B are summary of World Bank study of 1000 concessions for infrastructure (including 276 concessions for transportations) in Latin America & Caribbean countries. Since all concessions are related to public utilities, the implications are equally relevant for concessions in road sector.

Table: III-8: A

Contract Features and the Incidence of Renegotiations for Infrastructure Concessions in Latin America and the Caribbean, Mid-1980s to 2000

Feature	Incidence of Renegotiation (percent)
Award criteria	
Lowest tariff	60
Highest transfer fee	11
Regulation criteria	
Investment requirements (regulation by means)	70
Performance indicators (regulation by objectives)	18
Regulatory framework	
Price cap	42
Rate of return	13
Existence of regulatory body	
Regulatory body in existence	17
Regulatory body not in existence	61
Impact of legal framework	
Regulatory framework embedded in law	17
Regulatory framework embedded in decree	28
Regulatory framework embedded in contract	40

(Source: Based on Guasch: WBI Development Studies (2004))

As presented under Table: III-8: A, when concessions were awarded on lowest tariff basis, 60% of such awards attracted renegotiations. Similarly when the utility was regulated through price capping, it underwent renegotiation in 42% of cases. The incidence of renegotiation was lower when regulatory framework was embedded in law (i.e. supported by law) and a regulator existed.

The details presented under Table: III-8: B explains major outcome occurred in favour of operators. The outcome of 69% of total renegotiated concessions was relief to the operator from scheduled investments conceding the arguments of operator for changed market conditions. Similarly 62% of renegotiated concessions resulted into tariff increase. The extension of concession period was the outcome for 38% of renegotiated concessions. Government was also found able to get tariff reduced in 19% of renegotiated concessions. The Government was found requesting for renegotiations based on noncompliance of agreed terms by operator, changing priorities for that sector, electoral reversals etc.

Table: III-8: B

Common Outcomes of the Renegotiation Process for Infrastructure Concessions in Latin America and the Caribbean, Mid-1980s to 2000

Renegotiation outcome	Percentage of renegotiated concession contracts with that outcome
Delays on investment obligations targets	69
Acceleration of investment obligations	18
Tariff increases	62
Tariff decreases	19
Increase in the number of cost components with an automatic pass-through to tariff increases	59
Extension of concession period	38
Reduction of investment obligations	62
Adjustment of canon—annual fee paid by operator to government	
Favorable to operator	31
Unfavorable to operator	17
Changes in the asset-capital base	
Favorable to operator	46
Unfavorable to operator	22

(Source: Based on Guasch: WBI Development Studies (2004))

Guasch (2004) pointed out from Latin America & Caribbean experience for renegotiations that all the renegotiations were not opportunistic renegotiations. In fact it was the inadequacy of provision of concession agreement that was brought out by needful or opportunistic renegotiations. He was however wary of the fact that such renegotiations wipe out expected benefits of competitive bidding since outcome of such renegotiations do not face competition.

The renegotiation history of Latin America & Caribbean countries is thus indicative of complexities in implementing concessions. As far Mexico is concerned, it had 91 concessions for transportation in above sample of 1000 concessions. Out of these 91 concessions, 51 concessions met with renegotiation which is quite high (50%) proportion. Additionally, worldwide, out of a total of 2,485 projects granted in 1990–2001, 48 private infrastructure projects were canceled with total investment commitments of US$19.8 billion. Of these, 19 were toll roads & all were in Mexico (Harris et al. (2003)). Under this background the Mexican toll programme is found cynosure for any country heading for PPP.

3.6.5.1 Toll Road Programme - Mexico:

Mexico is a large country both in terms of geography and population, covering around 2 million square km (roughly 4 times the size of France), it is the 14th-largest country in the world by surface area. Its population exceeded 100 million people (July 2006 estimate). Mexico is the 11th most populous nation in the world. Mexico is identified as one of the world's seven largest emerging market economies (with China, India, Brazil, Indonesia, Turkey, and Russia) looking to annual GDP recently exceeding around $800 billon.

In 1989, then President Salinas announced the National Highway Program for 1989-1994 to extend concessions to private Mexican entities to build 10,000 miles of modern, high velocity highways. Mexican government, through its Secretariat of Communications and Transportation (SCT) undertook to improve, upgrade, and extend the strategic highway network by way of an ambitious concession program during period 1989-1994 (Ruster1997 and Ortiz 2006). Between 1989 and 1991, the Salinas administration directed some $4.6 billion of investment toward road development and improvements nationwide, $3.4 billion of which was financed by Mexico's private sector through concessions. By the end of 1994, a total of 50 highway concessions had been awarded, representing 3,300 miles (i.e. 5300 km) of highways and eight bridges. The required investment of around $13 billion was financed through the domestic banking sector (50%); considerable concessionaire equity (30%), funded through expensive, limited-tenor, floating rate commercial loans and/or "sweat equity" (an arrangement whereby a construction company builds a facility on behalf of a concessionaire, to be later compensated through the reward of an equity state in the concession); and a remaining 20% came from public-sector grants/equity. The spectacular financial failure of this program is legendary and it is used in academic texts and on finance courses as an important example of what can go wrong with overenthusiastic large scale, national infrastructure concession programs. The salient features and issues of 1989-94 toll road concession frame work were as below.

- If two or more Mexican States were connected by road or bridge by the proposed project then concessions were issued under federal "Law of General Means of Communications", provided a free parallel highway was available.

Earlier the concession period was limited to 15 years and was extended to 30 years later under this legislation. The precondition of free alternative was found fatal to viability of programme.

- The concessions were granted to special purpose vehicles which were in reality either directly owned by or affiliates of one or more local construction companies. But the scope of concession was far above routine construction project. It required financing and collecting the tolls also along with maintenance. The concessionaire was supposed to estimate demand on toll road and free alternative as well and to phase out investments taking care of financial programme. The concessionaire was to pay certain fees to government and to maintain reserve funds for maintenance. The assets were to be transferred to government free of cost at end of concession. The ownership of project was vested to government through out the project term.
- The role of government was to decide and design project for lanes, interchanges, toll booths, construction standards, tendering procedures. The supervision was done by government. Government was thus attached to all aspects of physical work similar to a typical cash contract.
- If actual volume of traffic fell short of quantity specified in concession, he was to be compensated by proportionately extending the term of contract. This was a sort of guarantee which broke the spirit of private sector participation. The local banks blindly lent to such projects considering ultimate recourse to Government.
- Toll levels were set forth for all categories of vehicles. This toll level was subject to semiannual adjustment for consumer price index. If CPI increased by 5% above previous adjustment, the corresponding increment to toll was made. It was trend to set initial toll level at very high level looking to no other scope to hike the toll rate in real terms then onwards.
- Bid submission deadlines were so close that left limited investigative or general preparatory time. Bids were not required to be accompanied by detailed financial or operational information. Hence the resilience to stress or sensitivity analysis while reviewing financial proposal was not accommodated.
- The road concessions were awarded to the bidder offering the shortest concession period, with a maximum legally permitted term of 15 years then.

Perhaps Government wanted to get back the enhanced asset in the shortest period of time and thereby avoid public pressure for privatizing the public properties. In response, bidders proposed average term around 10 years and some times even in months. The subsequent cost-recovery requirement to repay debt and make payments to equity providers in these short periods placed intense upward pressure on tariffs. Consequently, the users of Mexican toll roads became among the users of most expensive toll roads in the world. For example, toll rates were pegged around 16-62 US cents/km in Mexico as compared to 2-9 cents/km in the United States. This in turn, led traffic away from the toll roads (particularly trucks) and hence revenue receipts went well below expectations. More than half of the toll roads reached less than 50% of the forecast volumes.

All the lacunae in design of concession and hasty implementation of programme accompanied by drastic under receipt of toll revenues marred the commercial sense of project. Meanwhile Mexican peso (currency) crisis forced the Mexican Government to devalue the peso in December 1994 & by the end of December, the peso had fallen by 66%. GDP fell by 6.2% and the rate of inflation on a 12 months basis climbed to 52% in December 1995. Short-term interest rates reached a level of 71.5% in April 1995. This crisis raised all-in interest rates to 100% and affected cash flow of toll projects in deadly manner.

The falls out of overall pathetic conception of programme were:

- ➔ No proper prequalification or detailed bidding requirements were enforced and bidding criteria suited most to local contractors who were merely interested in civil job. This lack of scrutiny was also followed by non diligence on lenders part. Hence no body really checked the feasibility of proposal for a given case.
- ➔ The project cash flow was not supported by availability of long term fixed rate financing. The local Peso denominated debt was for around five years but interest rates pegged at 1000 to 1500 basis points over those paid by Government.
- ➔ The poor selection of project led to piecemeal development instead of corridor development. Inter modal transport strategy was not worked out.

- The Government body was not capable to give timely scrutiny & approvals.
- Cost overruns & time overruns were evident due to incomplete information & poor coordination in Government. A 30% increase in cost was noticed on average. The design changes, local public resistance, not making prior land acquisition etc. raised the estimated construction cost of US$ 1.7 million to US$ 2.6 to 2.8 million. In a case, the cost increased by 200% and time delay was by 320 more months. In another case, scope of four bridges was changed to sixty bridges to appease local interest groups. Mexico-Toluca highway concession is an extreme case of extending concession period. The Mexican government granted the concession for Mexico-Toluca highway in 1989 to Promotora de Administracion Carretera S.A., a TribasA-owned special-purpose vehicle company. The concession for a very limited term of two years, four months included the construction and operation of the toll road. In 1991, this term was extended by 11 years (for adjusting for actual cost and revenue) and extended again in 2002 upto 2013, as compensation for additional construction works and then in 2006 revised upto 2031, as compensation for a negotiated tariff reduction. Thus an increase of 40 years itself reveals inadequacy of concession in handling PPP agreement.
- The 1994 crisis resulted in to economic stagnation & freight movement. More over, the traffic prediction was poor from Government and concessionaire side. Standard & Poor's (Ortiz 2006) collected & analyzed toll road traffic statistics from all the federal concessions (115 in total including 73 highways and 42 bridges) from 1994 to 2005. The traffic growth for the past 10 years has been found positive, with an average strong growth of 8% but the year-to-year variation was considerable (-12 to +14.0%). The -12% from 1994 to 1995 is owing to economic crisis in 1994. As generally checked, there is a positive relationship between GDP and toll road traffic growth in Mexico, but this relationship is not explicit here. Running a simple linear regression of GDP growth against traffic growth reveals an R-squared of 0.70. Thus, around two-thirds of the variability in the traffic growth data set is explained by GDP. For remaining explanation, it was seen that each asset behaves according to regional patterns rather than national in large countries like Mexico. The average error from the data set of 32 projects, as on 1994 was 26% (actual traffic turned out to be 74% of the forecast), the spread of the distribution that

causes the most concern. Only five out of 32 projects saw actual traffic as a percentage of guaranteed traffic exceeding 100% mark. The inherent complexities in traffic estimation is narrated by Standard & Poor's (2006) saying that even one-year-ahead projections for mature, operating facilities can be accompanied by error ranges of 10% to 20%.

➔ In some projects, trucks were found only 5% of total users as against estimated share of 20 to 45 %. A toll bridge was expected to cater to 5000 trucks per day met with only 200 users per day. These are more of examples of not harnessing demand efficiently in wake of Government underwriting.

Despite historic painful problems with toll roads, Standard & Poor's (Ortiz 2006) have recently rated the 10 Mexican toll road agencies and results are very stable except one. Four of them are rated AAA i.e. world class. This transformation is due to many corrections applied by Government after 1990s. The federal government initiated rescue programme by taking over 20 concessions (out of 52) vested to 22 highways (total 3400 km) and assumed their outstanding bank loans amounting around $ 5 billion by means of a new government entity, Fideicomiso de Apoyo al Rescate de Autopistas Concesionadas (FARAC) through the National Development Bank i.e. Banco Nacional de Obras y Servicios Publicos (BANOBRAS). No compensation was provided to equity holders who probably lost around $3 billion. As a correction, the Mexican federal government has started practice of preparing National Development plan for its term which assigns priorities to various highway projects. The MCT has developed New Concession Model for toll roads and recently Public-Private Association Scheme (PPS) for toll free roads. PPS is like shadow tolling but very few projects are undertaken. The New Concession Model is under implementation from 2003. In 2003, Mexican President launched $1.2 billion highway PPP programme with toll ceilings and $ 800 million public money support. The major policy shift in biding criteria and concession design is explained below.

Table: III-9

Mexican Toll Programme Corrections

Aspect of Concession	Corrections Post 1994
Term Extension of existing concessions	Term of 32 concessions which were not taken over was extended on average by 20 years to safe guard lender's interests.
Toll Rate revision of concessions taken over by Government	Tolls for Government undertaken concessions were reduced, 40% was reduced for trucks.
New Concession award criteria	Bid documents are more detailed and any further information is available if bidder asks. The time limits for bid study and submission are extended favourably. The SCT prepares an Executive Project & bidders may propose changes to it mentioning upfront and later on public subsidy required by bidders. The bidder shall incorporate technical, economic, and legal conditions in his proposal. The concession will be awarded to the bidder who will provide technical and financial proposal that fulfills the necessary requirements and to the one that will need the **smallest amount of public funds**. The bidder demanding lowest initial grant required at construction stage and Subordinate Contribution Commitment (to be discounted at rate specified in bid, generally around 10% per year) will be the winner.
Bidder focus.	Now it is culture of specialist toll road companies and joint ventures with international companies. They have the knowledge and experience in planning, operating, maintaining, and in particular, administration and financial managing of toll roads.
Cost and time overruns	Concessions now make specific provisions to reimburse additional capital expenditure if the scope of work is extended by SCT. To avoid time overruns, Right Of Ways (i.e. land for road purpose) are fully secured in advance.
Improved financial structures & Currency stability	The lenders and sponsors are more cautious in structuring projects. This is helped by currency stability, low inflation (3.3% in December 2005) and better integration with United States economy.
The procurement process	Public bidding in two stages; first is technical evaluation and after passing it next stage is financial evaluation. Concession terms are limited to a maximum of 30 years (when road construction is involved) or 20 years (for operating assets). The concession could be extended up to the same time period granted originally if conditions arise.

Aspect of Concession	Corrections Post 1994
Formation of Trust and viability gap funding	Now the bidders require specifying what public grant is required during construction and during operational stage. The Government will contribute initial grant and subordinated amount (called Subordinate Contribution Commitment) during the operation stage as committed at biding stage through a trust called Fideicomiso de Inversion en Infraestructura (FINFRA), created in a Governmental bank (BANOBRAS).
Construction stage mechanism	Generally, the concessionaire creates an Administration Trust to conduct the construction process. Because, in Mexico, a Trust is legally considered bankruptcy remote if properly set up. Now debt holders act as beneficiaries of such trust and trust also form a regulatory board, known as the technical committee. The concessionaire will be solely responsible of the construction of the road. The supervision job is done by three different supervisors: One named by the SCT, one designated by the Technical Committee of the Trust, and one designated by the concessionaire. This ensures transparent and corruption proof supervision. The operation of toll collection can be assigned to specialist operators.
Securitization of toll roads	This is innovative refinancing mechanism now in practice. The concessionaire will have the option to securitize the flows derived from the project, and have the option of refinancing through future securitizations subject to SCT approval. Currently in Mexico, securitization of toll roads has been limited to post construction projects i.e. projects entered in operation stage. Generally, the concessionaire creates a new trust (Issuance Trust) to administer the resources generated from the operation of the toll road. This Issuance Trust can issue bonds backed by financial guarantee insurance policy, which guarantees scheduled payments of the principal and interest.

(Source: Based on Ortiz 2006)

All these amendments are getting gradually embedded in Indian Concession models. The Central government in India also provides grant support to the concessionaire for NH works and under special scheme to important State Highways under price capping regulation which is amended practice of Mexico. The Model Concession Agreement (MCA) issued by Planning Commission of Indian Government adopts bidding criteria similar to Mexican new approach i.e. lowest grant demanded by the bidder. The

provision for refinancing and Government's partial role in three members supervisory Committee requires preparation and evaluation of financial case before award of concession in Mexico. The Indian concessions are yet focused on bidder's declaration of viability of project and hence preparation and evaluation of financial case is not given weightage by approving authority.

3.6.6 PPP in Asia- Chinese Experience:

China is seen dominating in global literature on development of expressways and various options of private sector participation for roads. In the period 1982-2002, Chinese economy has grown more than five folds while GDP has grown at about 9.5% and has reduced share of agriculture sector to 15% by 2002. This is impressive because India could manage only around 5.5% growth rate for GDP for the same period. Reason among many is, following the Asian currency crisis in 1997, China took advantage of the macro-economic slowdown to more than double its spending on highways, from $13 billion in 1997 to $27 billion per annum or more during the ensuing years (i.e. 1997-2002). This massive investment in road building is estimated to have increased China's GDP by a full 2 % per annum over the subsequent years. (Harral and Sondhi 2005) India's road expenditures averaged only $ 1 to 3 billion per annum during 1997-2002. China's domination in toll roads among ESCAPE countries can be seen from Table: III-10.

Table: III-10

Chinese Share in ESCAPE private toll road investments

Asian Country	Private investment in toll roads(2003 prices US million $) between 1990-2003
India	960.5 (4%)
Indonesia	933.8 (4%)
Thailand	632.2 (2.6%)
Philippines	1 309.0 (5.4%)
Malaysia	6 214.3 (25%)
China	14 358.4 (59%)
ESCAP Countries Total	**24 525.4 (100%)**

(Source: World Bank Private Participation in Infrastructure (PPI) database[5])

One limitation is felt while studying China that no update reports or detailed project analysis (except some ADB reports for specific road) for road sector is accessible like Western countries. However, the massive scale of investments on highways and expressways in a short period of time & especially securitization is needed to be understood while studying PSP in India perspective.

Ministry of Communications of China has planned National Trunk Highway System (NTHS) of 35,500 Km. requiring $ 504 billion from 1991 to 2010 A.D. The available revenues are estimated at $ 302 billion from road user charges and $ 29 billion from toll collection, still leaving a financing gap of $ 173 billion or about $ 12 billion per year. The gap is expected to be covered from better private sector participation & some ADB assistance. (The massive investments during 1997-2002 made 77% of NTHS completed by 2002 (Harral and Sondhi 2005). It is to be noted that most of the private funds have come from foreign investors and little from the domestic private sector however private funds totaling in last ten years are less than 10% of total flow. Recently China's financing model(Zhang 2005) for construction of new expressways has been found shifted from largely government-invested highway development to a mixture of central government financing through bonds and taxes (15 percent), provincial and local government funding (35 percent), domestic bank loans (40 percent), funding from international financial institutions (5 percent), and private investments (5 percent). Collection of tolls is the core revenue for operating and maintenance costs and repayment of loans. Thus the emphasis is more on bank finance without taking much recourse of PPP.

China has reportedly used mainly following methods under PSP in road sector (Ojiro :2003).

1. Co-Operative Joint Venture Schemes: There is no debt servicing and only non government equity participation (like a Joint venture) and hence it costs high to the project. The foreign investor is paid some higher returns from profit till he recovers his investments for their better involvement. Since equity holders expect higher returns, the current expected rate of return on cooperative joint venture equity for road projects in China is about 18 per cent.

2. Securitization: In this method, equity shares of 20 to 40 % are sold to the shareholders through initial public offer. This is low cost financing but takes lots of time in reaching this stage. Because the road company first shall reach to operation stage encountering all the risks in the completion of construction & then fulfill stock exchange stipulations like in the Shenzhen and Shanghai stock exchanges, companies must have three profitable years of operation before they can be listed. However this mode is well adopted in China and 15 Chinese expressway companies and infrastructure developers have been listed on the stock exchanges in Hong Kong, China; Shanghai and Shenzhen. The route of securitization is favourite in China and it is supported by creating a new share limited company with the equity participation of State bodies i.e. Provincial Communications Department (PCD). It requires a serious legal process before Corporatization because after this, PCD loses considerable control over public assets.

3. Revenue Bond Financing: This is somewhat unusual but adopted in case of Zhuhai Highway Company Limited wherein rated notes backed by a pledge of an entity's cash flow sources are sold in the market. In August 1996, Zhuhai Municipality in Guangdong Province executed an entity-level revenue bond financing & raised $ 200 million from investors in the United States of America. It costs moderately but requires lengthy procedure for approvals.

4. BOT Structure: This mechanism is adopted for some cases of power generation industries but rare for roads. There are too many risks seems assigned to the investors and since China initially asked for 100% foreign investments in BOT contract, response was low, considering the fact that income was to come in local currency. Second reason being, low volume of traffic. Ojiro (2003) observed that until traffic reaches 20,000 to 30,000 vehicles per day, it is hard to justify outside investment. China has not emphasized for private investment through BOT.

The latest up dates (China Daily 2006) of Chinese highways points out over helming success of their programme. In 1988, China did not have an inch of expressway but the length of expressways in China was 41,000 kilometers at the end of 2005, the world's second longest only after the United States. About 24,000 kilometers were added in 2001-05, or 4,800 kilometers per year. Also, in 2010 the total length of expressways is expected to be around 65,000 kilometers. The United States had some

90,000 kilometers of expressways in 2005. The Chinese ministry declares that the plan is to increase the total length of expressways to at least 85,000 kilometers by 2020 since it helps in pushing economy up. During the period, some 2 trillion Yuan (US$241.9 billion) will be raised for road development from overseas and private investors.

Table: III-11

Chinese Expressway Constructions

Fiscal Year	Total Length of Expressway (km)	Total Length of Road (km)
2020 (Long-term Plan)	85,000	Not found
2010 (Estimation)	65,000	2,300,000
2005	41,000	1,920,000
2004	34,288	1,870,661
2003	29,745	1,809,828
2002	25,130	1,765,222
2001	19,437	1,698,012
2000	16,314	1,402,698
1999	11,605	1,351,691
1998	8,733	1,278,474
1997	4,771	1,226,405

(Source: Mitsubishi Research Institute Inc. 2006)

Thus China is mostly relying on public funds during construction of superior roads and put it to tolling. The State body namely PCD plays a major role in financing of construction. After stabilization of cashflow, the cashflow is offered to securitization and thus the project revenue gets linkage to market which helps in sharing various risks also.

3.7 CONCLUSIONS:

As noted in this chapter, traditionally like many other nations, Indian Government has single handed attempted to achieve efficient use of public money mainly through inviting competitive bids for lowest price under strict public administration. Now Government is attempting to harness efficiency and economy through private sector participation (PSP) at varying scale for road projects. The most aspired variant of PSP is Public Private Partnership (PPP) wherein accepting the diminishing capacity of Government to invest in roads to match with sectoral needs, private sector is invited

to invest in public assets for fixed term for profits. Here, the risk and return are shared by private sector (financial returns) with Government (economic returns) for agreed tenure and asset actually remains under purview of Sovereign unlike absolute privatization. This is made possible through awarding concession to private firm to build and operate facility and then transfer free of cost to the Government body (BOT agreement). The Eleventh Plan Working Group expects such PPP projects to be a major source of investment in National and State Highways in next five years. The international experience suggests that commercial approach embedded under PPP approach restricts its application to superior roads which are generally 10% to 20% of total road network of any country. Worldover, the PPP approach has yet not generated much enthusiasm and specifically Europe (the main promoter of awarding concession of public utility to private sector) is found exercising many innovations in public administered contracts of roadwork under PSP. Regarding concessions for maintaining the roads, Europe is found applying performance based approach and many European countries are found awarding concessions preferably to Public bodies. In Europe, often public bodies are found managing long term debts from markets to cater to long gestation period of upfront investment needed for road projects declared under some national level programme. In fact many countries worldover have applied their public agencies under some ambitious road development programme but PPP under BOT/BTO/DBFO contract forms have not really emerged as a panacea to meet the investment needs. However, Mexican experience for massive construction of toll roads has noteworthy relevance with ongoing NHDP in India. The conclusions from international experience are discussed as below.

1. Under PSP, Government is assigning wider role to private sector including financing of project cost which is termed as PPP. Due to PSP, role of Government bodies handling road sector is getting thinner as it is basically outsourcing some or all of the functions of Government. The PPP is subset of PSP and it is very different paradigm of delivery system. Under PPP, it requires handing over the public assets to the private investors for many years during and after construction in terms of award of concession. The operation of concession is different than regular civil engineering job. Here, the private sector has to take care of optimum design, cost control and timely completion of project and most importantly traffic adequacy (demand side) for

commercial success of project. Due to financial convenience of Government, PPP is heavily emphasized but its commercial requirements renders it limited to commercially important routes. Hence, other forms of PPP which need not involve private investment for long term shall remain useful for development of sector.

2. Looking to the diminishing financial capacity of Government bodies, worldover the importance of PPP route is evident for inviting private investment in this sector. But PPP route involves transfer of asset to private investor whereby the public interest for economic development is served by allowing private interest to earn from users of this public asset. Here, many countries differ and hence all countries do not adopt BOOT/BOT type of projects, rather they rely on public administration of projects by setting up such public toll road companies. However the argument for efficiency and innovations inspire many countries to opt for private toll road companies through PPP route. Under any case, the viability concern of such toll road companies requires regulations. The international experience suggests that such regulations are aimed at protecting viability of such projects at minimum cost to Government. But famous economist Alfred Marshall had stressed on price or the quality of the services , or both, rather than on the traditional criterion of minimum cost to Government.

3. The Europe has remained pioneer in awarding concession to develop and operate public utilities and it has imparted many innovations in other than PPP for better private sector participation. The theme of these innovations is more trust on contractors (Outsourcing); allowing contractors to participate in development process before award of work (Early Contractor Involvement); emphasize on value based evaluation of bids instead of awarding works based on offer for lowest bid (Best Value Procurement); instead of prescribing for predetermined civil work, focusing on performance standards, the long term planning perspective; prequalifying contractors for specific need of a job etc. It is like zeal to allow contractors to work out better solutions than traditional State provisions and achieving reduction in operating cost of Government body. The international experience suggests thin structure of Government body looking to their reduced role. But above suggested innovations require considerable expertise to draft the specifications wisely so that PSP does not

turn out to be opportunistic event for contractors. As noted in this Chapter, US is said far lagging in adopting such innovations. India is also away from such innovations but outsourcing of design, bid preparation, quality related aspects and supervision are allowed atleast for NH works. The above said innovations are likely to be absorbed in Indian practice due to more and more international consultants getting involved in big projects on NH and SH.

4. Regarding European approach to concessions for new construction and maintenance, the small size of the nation is allowing them to take ample time in preparing the project case and reaching to award stage. However, by any standards, the inordinate time taken for awarding the concessions in Portugal and Spain is avoidable.

5. The pendulum of nationalization and then private participation is noticed in case of countries like Portugal, France, and Spain which raises concern over sustainability of private operations over long period of time. The changing priorities for the sector seems responsible for such treatment to this public utility. This is note worthy for Indian perspective where private sector is being invited on all fronts assuring long standing partnerships.

6. The Public-Private Comparator (PPC) is most attractive feature practiced by UK for efficient screening of private investment *vis-à-vis* public investment. The working of PPC requires good hold over cost implications of various options and it is well managed by UK. The public investment in UK is any way routed through outsourcing based PSP.

7. The Latin America & Caribbean countries have seen alarming rate of renegotiation and some cancellation of concessions awarded for public utilities. These are indicative of design of rigid and incomplete agreements. The most striking part of renegotiations and also award of concessions seem to be concern for commercial viability of private investments made in public utilities. The concern for price and quality standards as mentioned by Alfred Marshall is found not addressed while negotiating for award of concession and while taking up renegotiation.

8. The experience of toll road programme in Mexico is most eye-catching for Indian perspective. The present Mexican programme is very much similar to PPP format being used by NHAI. But apathy for reliable traffic count and improper preparation and evaluation of financial case of project are the aspects

of earlier Mexican programme quite relevant for present Indian practice. The features like Administration Trust for proper accounting of construction process, formation of corruption proof technical committee for supervision and setting up of Issuance Trust for proper accounting of operations (tolling and maintenance) are the strongholds of new approach to toll roads in Mexico. This type of financial discipline is recognized by investment rating companies by awarding AAA (i.e. world class) ratings to such projects. The refinancing of such projects during operation stage is practiced by private players which breaks lumpiness of such investments.

9. The Chinese mega project for expressways is good case for securitization of tolling operations. The major aspect is, instead of BOT type of PPP project, State supports major investment that is recovered through proceeds of initial public offer or securitization. The public support to investment through stock market is good concept to secure public acceptance of toll operations.

Having discussed the international experience with reference to PPP and design of concession, the next Chapter focuses on the development in India with reference to development of highways (National Highways in particular) and road sector.

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Endnotes:

1. Factor of Safety is ratio of what is provided in design to what is required as per known design parameters.
2. Gathered from www.kpmg.com.hk accessed on date 15-4-05.
3. Gathered from website of Wikipedia: http://www.answers.com accessed on date 30-4-05.
4. Sporadic example of concession awarded to Government of Gujarat (GOG) by Government of India (GOI) in 1999-2000 for four lanning of NH between Ahmedabad- Rajkot is worth mentioning. GOG managed loan from HUDCO and built this stretch of NH and presently, they are performing debt servicing from project cashflow.
5. This data base is available online at http://www.ppi.worldbank.org

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