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PPP in Parking Infrastructure

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VIEWS EXPRESSED ARE PERSONAL

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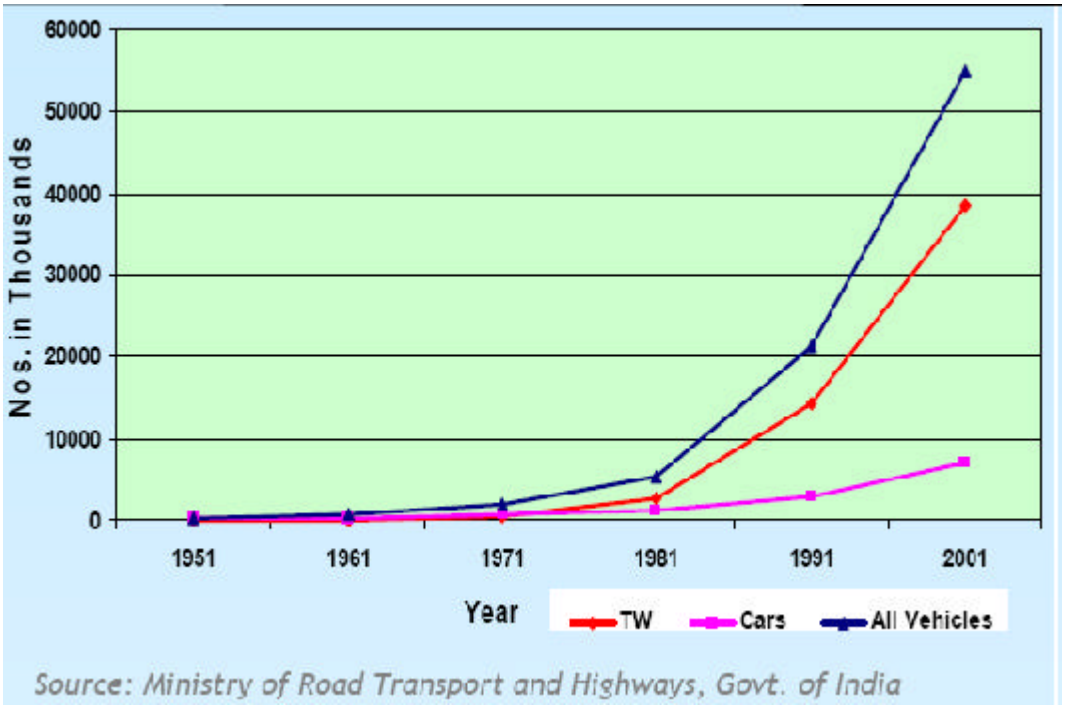
PPP IN PARKING INFRASTRUCTURE

Introduction

Growth of Vehicles

In the past decade India has gone through a rapid economic development. One of the consequences of this development is the rapid growth of car ownership and car traffic. For decades only two models of cars were known in India; the well-known Ambassador, introduced in 1948, and the Premier Padmini, in use from 1957. In the seventies and eighties some more car types were introduced, mostly small models, after Maruti Suzuki started its manufacturing. Since the nineties a much wider variety of cars has been introduced till the recent Nano, and this will continue further as a number of foreign car manufacturers from all parts of the globe are developing or planning to build manufacturing units in India, as well as are slated to launch new models for Indian roads. Along with increase in number of cars, there is a also a sharp increase in number of two wheelers, making it a complex situation to design parking project, which can accommodate both.

Figure 1: Growth of Vehicles in India



When it comes to cars, ever increasing heterogeneity of vehicle sizes in India is the first challenge for structuring the parking projects.

Table 1: Minimum and Maximum Car Dimensions in India

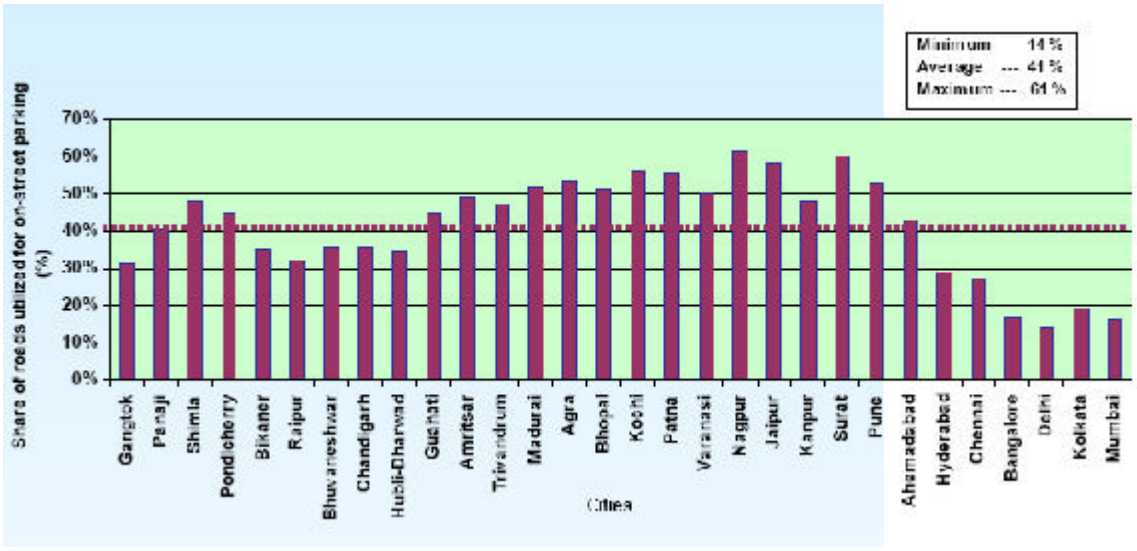
Car	Height (mm)	Length (mm)	Width (mm)	Weight (Kg)
Maruti 800 (Min[1])	1405	3335	1440	640
Rolls Royce Phantom (Max)	1632	5834	1990	2495

The length of many is less than 4.50 m and very few cars have a towing hook. However, a vast quantity of cars is nearly 4.50 m or over (Toyota Innova, Chevrolet Optra, Hyundai Elantra, Toyota Camry, Tata Sumo, Mahindra Scorpio). Details of dimensions of various cars available in India are given from Annexure 1 to Annexure 3.

On Street Parking

It has been observed that the road length used for on street parking on major road network ranges from 14% to 61% with an average of 41%. (Study of Traffic and Transportation Policies and Strategies in Urban Areas in India, Wilbur Smith Associate and Ministry of Urban Development, May 2008)

Figure 2: On Street Parking in Indian Cities



However, this proportion is lower in metro cities. Further, out of the total area occupied for on street parking, sizable share is due to non – personalized vehicles (buses, taxis, autos etc), which, would add on to the lack of concern for providing parking solutions.

Poor Pricing of Parking

In India, parking rates are found to be much lower, as compared to any other city across the globe (Figure 3). Such poor pricing of parking facilities not only contributes difficulties in arriving at the financial viability of parking projects to the private operator, but the type and quantum of hidden subsidy passing out to the car owners is also against the basic principles of welfare governance. This apart, such pricing also fails to reduce traffic congestion, as it cannot act as a car restraint measure.

[1] Nano should be smaller than this, length around 3110 mm.

Today, motorists pay for buying a car, but park it free for most of the time. This would need a paradigm change.

Figure 3: Daily and Monthly Parking Rates in USD

Sydney	Australia	44.10	587.72
Brisbane	Australia	38.09	529.19
Perth	Australia	23.25	517.16
Melbourne	Australia	30.47	340.77
Adelaide	Australia	14.83	220.50
Canberra	Australia	6.82	204.46
Hong Kong	China	28.38	748.20
Shanghai	China	11.74	220.05
Beijing	China	7.04	146.70
Bangalore	India	1.50	32.10
Chennai	India	0.96	–
Delhi	India	1.28	32.10
Mumbai	India	1.07	25.68
Jakarta	Indonesia	1.52	27.20
Tokyo	Japan	52.50	525.00
Auckland	New Zealand	8.97	256.28
Wellington	New Zealand	8.97	249.87
Manila	Philippines	2.65	42.40
Singapore	Singapore	21.06	179.24
Seoul	South Korea	12.00	200.00
Bangkok	Thailand	11.43	85.71

Figures shown have been calculated at exchange rates as of June 1, 2009.

(Source: Collier International – Global CBD Parking Rate Survey 2009)

Other Factors

Another distinguishing characteristic of the Indian parking market is high proportion of chauffer driven cars. With this, there is lesser amount of need felt among car owners for having proper parking facilities.

All this put together, creates a situation for a city manager to neglect the parking problems over other priority issues in improvements of public transport systems, which again, forms a small portion of many omnipresent urban issues of water & gutter, which the city managers are fighting on a daily basis.

Increasing Parking Needs

As against all such teething problems for the parking industry, fact remains, that on one hand, more and more parking space is needed; on the other, the quality of parking solutions is becoming increasingly important. This has been driving our cities to go beyond traditional parking solutions and experiment with either semi automatic or fully automatic parking technologies.

Secondly, in want of providing such sophisticated parking solutions out of the limited kitty of public finances available with the ULBs, which already have commitments to other priorities, most cities have experimented with PPP in provision of parking.

Recent Developments

Lessons from Procurement Processes

As can be observed from Annexure 4, there has been a considerable number of bids getting cancelled, for some reasons or the other. Even out of the finalized bids, there seems to be considerable time lag between decision on bid and actual commencement of work. For example, bids for Sector 17 in Chandigarh were finalized during late 2007 and there had been rounds of discussions between the selected developer and the ULB regarding various clauses in Concession Agreement. In case of project at Kamalanagar in New Delhi, there has been a lapse of three years since the beginning of the procurement process. In case of Mumbai, though the project was awarded way back in 2002, there was litigation and finally the facilities are now operative since late 2007. In one case in Hyderabad, where the parking project was a part of a larger redevelopment plan for a market, issue of temporary alternatives to vendors surfaced, stalling the further process. Indore is perhaps the only case, where funding support was assured under JnNURM for 20 parking projects, as monetization of land value through multiplex and malls was not possible under the regulatory frameworks in Madhya Pradesh. However, in this case too, very little progress has been observed, since release of first installment by GoI. In Kolkata, the project is running through the further phase of operational difficulties, such as, non – enforcement of "no parking zone" in the project catchment area.

On a very broad level, it can be concluded from all such learning lessons that the structuring of the parking projects on number of sustainability parameters is still in the shaping process towards its maturity.

Policy Level Interventions

There have been continuous policy level interventions taking place, so as to create a conducive environment for PPPs in parking. Major milestones in this should start from the National Urban Transport Policy. Lea Associates had formulated a parking policy for the Mumbai Metropolitan Region during 2007. In October 08, Ides Consulting Pvt. Ltd, Bangalore in association with Urban First System Pvt. Ltd, Bangalore has proposed a policy paper for parking for Bangalore. Recently, many State Governments are moving ahead with formulating parking policies, as a requisite reform under the JnNURM. Though most of those policy documents are well targeted to promoting the public transport systems over the use of personalized vehicles, specific policy level interventions for facilitating the entry of private sector in parking infrastructure still needs to be more categorically articulated. This has been targeted by a policy by Government of Maharashtra.

Policy to Promote PPP in Parking for Mumbai

Governments of Maharashtra, Urban Development Department, vide Notification No. TPB 4305/2736/CR-338/05/UD-11 dated 20th October 2008 has amended the Development Control Regulations for Greater Mumbai 1991 ("DCR") and has introduced a new Regulation 33(24) ("Regulation") with regards to granting of additional Floor Space Index ("FSI") in lieu of property

owners providing space to Municipal Corporation of Greater Mumbai ("MCGM") for development of multi storied parking lots.

The Regulation envisages that, with the previous approval of the Government for development of multi storied parking lots on any plot, abutting the roads and /or stretches of road, additional FSI as specified under this Regulation on the built up parking area shall be allowed on the land belonging to the private owners which is not reserved for any public purpose. It is also specified that parking lots so created and handed over to MCGM should be free of cost. This policy has received an overwhelming response from the private sector and number of proposals for redevelopment under this new rule 33/24 have been under consideration by the MCGM.

Box 1: Key Points of Policy by GoM for Mumbai for Development of Multi – Storeyed Parking Lots

- The minimum area of a plot that can be considered for the purpose will be 1000 square meters in the island city and 2000 square meters in the suburbs and extended suburbs of Greater Mumbai
- The minimum number of vehicles that have to be accommodated in a parking lot will be 50 with a minimum parking space of 700 square meters.
- The location of the parking space can be in the basement or on the ground or any other floor of a building with access through ramps or lifts or a combination of both.
- A Committee under the chairmanship of the Municipal Commissioner will earmark and select the plots for public parking and then seek the Government's approval.
- The incentive FSI given will be over and above the FSI permissible under any other provision of the DCR and the FSI will be allowed to be used on the same plot in conformity with DCR.
- The landowner or developer or society concerned will not be allowed to operate the public parking.
- Depending on location, the MCGM has been empowered to grant permission for development of multi-storied parking lots. If the location is within 500 meters of railway stations, state transport bus depots, metro stations, jetties, existing government and semi-government and corporation offices, tourist places (identified as such by the tourism department), important places of worship (registered under the Bombay Public Trust Act) that do not have adequate public parking facilities, then such locations will be given 50 per cent additional FSI, subject to a maximum FSI of 4 for the island city and 3 for the suburbs and extended suburbs.
- For parking lots located in other areas of Greater Mumbai, the extra FSI will be 40 per cent of the existing FSI subject to a maximum FSI of 3.5 for independent building and 3.0 for composite building for the island city, while an maximum FSI of 3 for independent building and 2.5 for composite building for the suburbs and extended suburbs.

Security Concerns and Other Issues in Policy Formulations

With growing incidences of terrorism related activities, many State Governments are being forced to modify the Development Control Rules for adequately incorporating the necessary conditions for preventing the manmade disasters. Government of Maharashtra, vide Notification No TPB 4309/749/UD – 11 dated 27th February 2009 (Post 26/11 incidence), have proposed number of restrictions on buildings "vulnerable to manmade disasters", which can include malls, star hotels, huge office premises, important government buildings, hospitals etc. Those provisions would impose restrictions on stilt type structures, surrounding open areas, entry and exit roads to such buildings, parking under the building or in basements and so on. Though there is no doubt about such security concerns, such provisions would impact the parking possibilities, particularly creation of parking infrastructure through PPP.

Box 2: Proposed Provisions of Security Control Regulations in Maharashtra

(g) The various architectural controls shall be so provided that the building is away from hub activities. Roads should not lead straight into the building in question. The number of roads to the building must be minimum. Provision for effective entry control for persons, vehicles and materials, provision of spikes to puncture tyres preventing inbound vehicles from using outbound lanes, provision of passive and active barriers, etc. shall be made

(h) The parking lot should be located away from a high rise building with proper entry control and away from the standoff zone.

(i) Parking under the building and in the basement within its internal courtyard is to be prohibited to the extent possible and where unavoidable visibility in and out of the garages must be maximized and entry should be strictly controlled as it is for approaches/ entry into the building. It shall be ensured that the ramps for the basement shall not start directly from the front open space of the building

On the other hand, academically, concepts like Transferrable Parking Rights (TPR) are also being discussed by policy makers, which should attract the private sector. This concept has still not been translated into policy anywhere in India.

Types of Concessions in PPPs of Parking Projects[2]

On-Street Parking Concession

This is the most common type of concessions observed, in which, the city is usually split up into a number of concessionary zones, with on-street parking in different zones managed by different operators. As the scope of required infrastructure investment is limited in those cases, thereby

[2] This section is based on "Guidelines and Toolkits for Urban Transport Development in Medium Sized Cities in India" prepared for the MoUD by the ADB.

minimizing startup costs, generally the concession periods are for one year. Further, a lump sum consideration amount for the concession (period) is taken upfront at the start of the concession, in addition to some kind of monthly charges. Profitability for the operator is through collection of parking charges, at the rates controlled by the ULB. Main advantages of this type of concession is the level of ease it offers to the ULB, reduction in costs of the ULB if those services were to be provided by them and indirect benefit of traffic control and regularization.

Off-Street Parking Concession

The concessionaire is selected under a tender procedure. By defining the minimum concession conditions in the contract, the ULB may incorporate some provisions for the improvement of the property, as well as other related obligations. Improvements made by the concessionaire later become municipal property. There is normally a real estate commercial component to make the project financial viable for the private operator. The concession right is valid for a specific period of time and may be extended by mutual consent of the concession parties and the ULB.

On-Street and Off-Street Parking Concession

A concession for both on- and off-street parking can be granted simultaneously, which presents a better opportunity for the concessionaire to recover the initial investment cost for construction of parking lots and resources, from income realized at on- and off-street locations. It simplifies management, provides incentives for coordination of on- and off-street capacity, ensures the control and better management of on-street spaces, while creating a demand for off-street spaces, and also contributes to financing the supply of such spaces.

Build-Operate-Transfer (BOT)

Apart from the stated possibilities for attracting private investors, other options exist for off-street parking on private land, which is municipal property. Build-Operate-Transfer, or BOT, is a broadly applied scheme for financing the construction of facilities requiring high initial infrastructure costs. Under this scheme, the Municipality provides land (which is municipal property) for the project. The private investor is tasked with organizing, financing, and constructing the required infrastructure and facilities, based on previous studies or projects. The construction requirements are agreed and financing is covered completely by the investor. After construction is complete, the investors are given the right to operate the facilities, obtain benefits from operations for a set time period (in order to recover the initial investment) as well as take care of the expenses, and obtain a profit, estimated by a financial model and previously agreed upon by both parties.

Usually, the agreement between the parties includes a guaranteed minimum annual profit for the investor, in order to guarantee that a minimum set of parameters under the financial model and the capital return are obtained.

Project Structuring Issues

When it comes to structuring of parking project on PPP basis for an ULB, number of issues needs a careful consideration. Private sector is purely profit motivated, while during the decision making in ULB, socio-economic and political issues are predominant. Finally, when the decision making reaches the stage of implementation, only the financial issues come to the fore. Ideal situation would be to have a mix of financial, economic and social indicators to achieve the practical and best possible solution to the need and very often, there is a lack of consensus among all stakeholders while reaching such win–win situation.

Demand Analysis

Very often, accurate estimation of demand for parking in the catchment area of the project location is difficult. Unlike demands for any other services, demand for parking is also a function of number of parameters, which would be beyond the control of the private operator. For example, easy access to project location, traffic flow (which can change any time with regulations from traffic police), enforcement of no parking in the catchment area, unidirectional traffic, land use pattern of the surrounding area and so on.

Choice of Technology

For arriving at the minimum required outcome of number of parking lots, number of technological options would exist, and going beyond the crucial financial indicators and cost implications, each option would have a typical set of pros and cons. Table 2 to Table 4 are illustrating few such pros and cons.

Table 2: Pros and Cons of Simple Surface Parking

Pros	Cons
• Simple technology • Low cost: Low capital, operational and maintenance costs • Vehicle parking and retrieval convenient and less time consuming in comparison to multi-storied facilities	• Requires large tracts of open land with direct access • Direct exposure to Weather elements • Higher security concerns compared to built structures • Significant human interface within actual parking area thereby increasing risks

Table 3: Pros and Cons of Ramp Based Multi Storied Parking

Pros	Cons
• Provides safety and security to the parked vehicles • Protects vehicles from extreme weather conditions • The lower levels may be utilized for providing commercial real estate facilities	• Ramps are often inconvenient and time consuming to negotiate, especially at the higher levels. • Parking and retrieval time of vehicles is high as the person has to manually access the vehicle • Attendants are required to guide to available parking spaces on each floor and also check parking availability across various levels • Ancillary facilities such as passenger lift etc are added cost

Table 4: Pros and Cons of Semi Automatic and Fully Automatic Systems

Pros	Cons
• High capacity in lesser area with maximum space utilization in a dynamic system • Completely mechanized with higher convenience and lesser parking and retrieval time • Complete protection, safety and security for parked vehicles • The lower levels may be utilized for providing commercial real estate facilities	• Suitable only in areas where there are no height restrictions • Very High Cost • Failure of technology can lead to system failure

Alternatives for Bidding Parameters

Transparency of procurement process is the vital for attracting private investors. Final selection method can be on either based on qualitative bidding parameters on a pre–declared evaluation framework, or a quantitative framework or a mix of both. In all of them, basic intentions and objectives of the ULB while conceiving the project needs to be clearly articulated, as those objectives would drive the selection of bidding parameters. Table 5 describes this further.

Table 5: Comparison of Various Bidding Parameters

Bidding Parameter	Objective / Applicability	Advantages	Disadvantages	Remarks
Maximum ECS	• To accommodate maximum parking spaces in the given plot • To minimize the commercial exploitation of the space	More number of parking spaces	More difficult to develop on PPP basis as the revenue from parking renders the non–feasible.	Optimal mix of parking as well as commercial space is desirable to improve the financial feasibility
Maximum upfront land premium	Appropriate mix of parking as well as other commercial development	• Optimum parking space along with the commercial development • Commercially attractive	Chances of over exploitation of parking space for commercial development to compensate for the premium paid.	The concession agreement should clearly stipulate the minimum number of parking space to be build
Minimum Concession period	It is useful option where the revenue from parking is significant so that the developer need not have more concession period to make the project financially feasible	Early handover of project facilities to the ULB	Financial implications may not get clearly captured in evaluation process of proposals.	Ideal, where the ULB wants back the facilities at an early date and have competencies for its future operations

Bidding Parameter	Objective / Applicability	Advantages	Disadvantages	Remarks
Minimum subsidies expected, in case of standalone parking project	This option is applicable for the locations where the site can be used for parking purpose only and it is known *a priori* that the project is financially non–viable.	It is advantageous in cases where it is essential to create the parking facility so that the developers can be motivated to construct parking.	The project becomes construction and operation contract and not the PPP in strict sense.	
Minimum parking rates	• The authority intends to provide the public parking at minimum parking fees • In cases where there are other competing parking facilities available	Users would be getting maximum benefits by getting parking at low rates	Facilities may not be properly maintained if the developer is not getting enough revenue	
Maximum revenue sharing offered	• When the authority is interested in providing parking facility as well as interested in generating revenue over the concession period. • Sufficient space available for parking as well as other commercial development	• Construction and operations are undertaken by Private operator • The authority gets regular and increasing source of income, which is not possible in upfront premium • Better parking facility can be created by involving private sector	• Chances of exploitation of parking space for commercial development to increase the revenues. • The authority may not get revenue if the project is note fetching positive returns. • Possibility of fudging of books of accounts by the operator.	The promoting authority has to constantly review the performance of the Project to obtain the offered share of revenue. Proper accounting interface needs to be clearly defined in Concession Agreement, which may become, operationally difficult.

Regulatory Framework

Supportive regulatory framework is required for taking off the parking projects on PPP mode. Particularly, Development Control Rules of the city should have flexibility, so that parking components can be added with some other high revenue generating sources to make the project financially viable. Many times, there could be situations, such that though the project land is in

possession of the ULB, there is a lack of completeness of all legal documentations to establish clear land ownership with the ULB and rights to lease it out to a private developer. Parking rates, if not left to the developer so as to be driven my market principles, should at least have the assured revision mechanisms during the concession period, and the developer would need to be legally empowered to collect the parking revenues on behalf of the ULB. For making the projects more attractive and also to result in higher possibilities of returns to the ULB, advertisement revenues can be allowed, provided, related regulations would permit so.

Box 3: Check – List by MoUD

- Does the DPR for the parking measure provide adequate attention to enforcement of parking measures, either through existing human resources or imported for the project?
- Does the DPR for the off-street parking measure include a plan for rationalizing on-street parking with appropriate enforcement?
- Does the DPR for the off-street parking measure include a robust calculation of revenue and risks?
- Does the DPR for the parking measure provide adequate attention to enforcement of parking measures, either through existing human resources or new resources imported for the project?

Other Issues

There are number of other issues, which, either directly or indirectly determines the project structuring. Briefly they are as follows.

Public / Community Acceptance

Full Understanding of the Social Character of PPP and its acknowledgement is the essential premise. PPPs in parking are still to achieve the desired level of such acceptance, as generally, parking is being looked upon as the facility to be provided to the upper class of the society. On the other hand, it should be noted and taken to masses that provision of efficient parking results into decongestion of city roads, which are meant for public transport more than the private vehicles.

Management, Technology Knowledge Transfer Issues

PPP in parking would require delegation of certain managerial issues by the ULB to the developer. Generally there is reluctance for this. On the other hand, when it comes to agreeing in Concession Agreement on transfer of all assets and technology to the ULB at the end of the concession period, developers have issues in terms of proprietary usage of the technology. Clear definitions and understanding on those issues is required while structuring the concessions.

Guarantees for Loans by the Developer

During project finance phase, developer needs to securitize some assets with the lender; however, non clarity of legitimate ownership of such assets or restrictive stipulations by the ULB for land

mortgage or reluctance to provide guarantees can make it difficult for the developer to mobilize the required resources.

Quality & Product Standards Definition

Particularly in case of semi–automatic or fully automatic designs, there is no standardization available regarding number of technical specifications, design considerations, design standards and codes, performance standards and service level indicators. In absence of such standardization, in the initial phase of those projects, vendors tend to drive the procurement process, which, finally ends into disputes, which, being too technical in nature, are difficult to resolve.

Establishment of an Independent Authority for Conflict Resolution

Finally, on the similar accepted principles in other sectors, there is a need to have an independent regulatory authority in this sector too. Government of Maharashtra is contemplating setting up of "Mumbai Municipal Parking Authority".

Way Forward

PPPs in parking projects are at a take off stage now in the context of Indian scenario. Following steps can give considerable momentum to it.

- Initiative to standardize documentation and processes during procurement stage, such as RFQs, RFPs, concession agreements etc, evaluation frameworks and procedures.
- Policy level interventions regarding modifications in DCR, creation of regulatory institutions
- Standardization of technical codes and specifications and performance parameters
- Showcasing few illustrative projects in different cities

Urban Mass Transit Company Limited, (UMTC) with support from the IL&FS Infrastructure Development Corporation Limited (IL&FS IDC), is working on developing number of parking projects on PPP mode for the Municipal Corporation of Greater Mumbai. There is a wide variety of options being handled, such as, underground parking projects completely insulated from any human interface, multilevel projects with commercial components etc. UMTC and IL&FS IDC would be happy to support other cities and State Governments also.

Annexure 1: Dimensions of Cars in India (Height 1500 – 2000 mm)

Car Company and Type	Height (mm)	Length (mm)	Width (mm)	Weight (Kg)
Maruti Udyog Ltd.				
Swift	1530	3695	1690	1010
Versa	1905	3675	1475	975
Wagon R	1660	3520	1475	885
Gypsy King	1875	4010	1540	985
Omni	1640	3370	1410	800
Grand Vitara	1727	4663	1780	1685
Zen Estilo	1595	3495	1475	855
Hyundai Motor India				
Tucson	1730	4325	1830	
Sonata 2.7 V6	1420	4745	1820	1590
Santro Xing AT	1590	3565	1525	868
Getz Prime	1515	3825	1665	
Honda Siel card India				
CR-V	1710	4555	1780	1480
Tata Motors				
Sumo	1905	4352	1700	1620
Indigo	1540	4150	1620	1140
Marina	1575	4130	1625	
Hindustan Motors				
Ambassador	1600	4325	1662	1104
Ford India				
Endeavour	1835	4958	1805	1997
Fusion	1529	4018	1720	
General Motors India				
Chevrolet Tavera SS	1765	4435	1680	1660
Chevrolet Forester 2.0	1590	4450	1735	1375
Chevrolet Aveo	1710	4310	1505	1095
Chevrolet Spark	1518	3495	1495	840
Mahindra				
Voyager	1800	4040	1690	1430
Scorpio Turbo 2.6	1916	4475	1774	1910
Commander 650 MDI	2000	4190	1700	1370
Mahinra Bolero	1810	4260	1815	1615
Mahindra Logan	1525	4250	1735	1065
Toyota Kirloskar Motors Ltd				
Qualis	1880	4415	1670	1505
Camry	1505	4815	1795	1425-1500
Corolla	1500	4530	1705	1160
Porsche				
Boxster	1295	4329	1801	1345
Nissan				

Car Company and Type	Height (mm)	Length (mm)	Width (mm)	Weight (Kg)
X-Trail Comfort	1675	4455	1765	1520

Annexure 2: Dimensions of Cars in India (Height below 1500 mm)

Car Company and Type	Height (mm)	Length (mm)	Width (mm)	Weight (Kg)
Maruti Udyog Ltd.				
Esteem	1395	4090	1575	875
Baleno	1390	4225	1690	975
Alto	1460	3495	1495	740
Maruti 800	1405	3335	1440	640
Hyundai Motor India				
Accent	1370	4250	1670	1005
Accent CRDi	1370	4250	1670	1023
Verna	1490	4310	1695	
Sonata Embera	1475	4780	1832	1443
Honda Siel card India				
New City Exi	1495	4310	1695	1045
Accord V6	1465	4830	1820	1530
Civic	1450	4545	1750	1240
Mitsubishi Motors Ltd.				
Lancer	1420	4290	1690	
Tata Motors				
Indica V2 Xeta	1485	3660	1625	980
Porsche				
911 carrera	1310	4461	1808	1435
Skoda Auto India P.Ltd.				
Superb	1489	4803	1765	1619
Octavia 2.0 - Elegance	1455	4507	1731	1330
Fiat India Ltd				
Palio 1.9 D	1440	3763	1620	1140
Petra	1455	4113	1620	1165
Palio NV	1440	3763	1620	1015
Palio Stile	1440	3827	1620	990
Ford India				
Ikon 1.3	1374	4140	1634	978
Mondeo	1429	4731	1812	1396
Fiesta	1468	4282	1686	1130
General Motors India.				
Corsa	1448	4056	1608	1040
Opel Corsa	1420	3759	1608	1010
Chevrolet Optra MAX	1445	4500	1725	1220
Vectra	1460	4596	2036	1395
Audi India				
Audi A6	1459	4916	1855	1615
Audi A8	1455	5181	1894	1850
Audi TT	1346	4041	1856	1280

Car Company and Type	Height (mm)	Length (mm)	Width (mm)	Weight (Kg)
BMW				
BMW 535d	1468	4841	1846	1735
Daimlerchrysler India P.Ltd				
S 350 L	1444	5158	1725	1810
E 270 CDI				
C 200	1426	4526	1728	1445 to 1490

Annexure 3: Dimensions of cars in India (Weight above 2000 kg)

Car Company and Type	Height (mm)	Length (mm)	Width (mm)	Weight (Kg)
Hyundai Motor India				
Terracan 2.9 CRDi	1790	4710	1800	2130
Elantra	1425	4495	1720	2170
Tata Motors				
Safari Dicor	1925	4810	1918	2115-2225
Hindustan Motors				
Pajero	1890	4655	1695	2010
Bentley Motors Ltd.				
Arnage RL	1515	5640	1932	2655
BMW				
BMW X5 4.8	1703	4667	1925	2275
Daimlerchrysler India P.Ltd				
Maybach 57	1572	5728	1980	2735
Toyota Kirloskar Motors Ltd.				
Innova	1775	4555	1770	2240
Land Cruiser Prado	1905	4715	1875	1900-2070
Rolls-Royce Motor Cars Ltd.				
Phantom	1632	5834	1990	2495
Porsche				
Cayenne Turbo	1699 to 1789	4786	1928	2355
911 Turba S cabriolet	1295	4435	1830	2020

Annexure 4: Summary of Procurement Processes of Parking Projects in India

Sr. No.	Organization	Projects Details	Duration of Bid Process	Final Status	Remarks
1.	Municipal Corporation of Delhi	Karol Baug, 2000 ECS plus commercial, O&M for 15 years, BOT	2007	Bids cancelled	Fresh tendering going on
2.	Municipal Corporation of Delhi	Defense Colony, 900 ECS plus commercial, O&M for 15 years, BOT	2007	Bids cancelled	Fresh tendering going on
3.	Municipal Corporation of Delhi	Greater Kailash-I, 1200 ECS plus commercial, O&M for 15 years, BOT	2007	Bids cancelled	--

Sr. No.	Organization	Projects Details	Duration of Bid Process	Final Status	Remarks
4.	Municipal Corporation of Delhi	South Extension Part-I & II, 1600 ECS plus commercial, O&M for 15 years, BOT	2007	Bids cancelled	--
5.	Municipal Corporation of Delhi	Lajpat Nagar, 500 ECS plus commercial, O&M for 15 years, BOT	2007	Bids cancelled	--
6.	Municipal Corporation of Delhi	Rani Bagh, 450 ECS plus commercial, O&M for 15 years, BOT	2007	Bids cancelled	--
7.	Ahmedabad Municipal Corporation	Four locations, DBFOT, but without	2008	Bids cancelled	AMC has decided to build the facilities by their own.
8.	Indore Municipal Corporation	Around 20 projects were sanctioned under JnNURM in Jan 09, as there was no commercial component and Rs. 7.00 Crore were also released by MoUD. However, there is no much progress on this yet.	??	??	??
9.	Navi Mumbai Municipal Corporation	400 ECS semi automatic and 44 fully automatic, no commercial, O&M for 5 years	2008	Bid cancelled	--
10.	Chennai Municipal Corporation	Opposite Apolo Hospital, ECS 500, no commercial, O&M 10 years, cash contract	2008	Bids cancelled	
11.	Goa	Opposite Kadamb Bus stand	??	Bids cancelled	??

Sr. No.	Organization	Projects Details	Duration of Bid Process	Final Status	Remarks
12.	Greater Hyderabad Municipal Corporation	Redevelopment of old GHMC municipal markets as Modern Markets cum Multilevel Parking Plazas – about 830 car parks in five market locations + market stalls + commercial + advertisement space	2008	Twelve out of eighteen applicants shortlisted at the RFQ stage. However bids not received as clear sites were not available.	Though consent from market associations was taken for relocating the existing vendors from the proposed project sites, GHMC could not finalize alternate sites for temporary shifting during construction
13.	Delhi High Court	1500 ECS Underground, no commercial component, so, construction & O&M for 15 years, cash contract	Dec 08 – Feb 09	Awarded	No work started.
14.	Municipal Corporation of Delhi	Project at Kamalanagar, 800 ECS + Commercial, BOT	2006	Awarded to SMS Infrastructure with technical partner Proviron.	No work started.
15.	NDMC	Public parking near Connaught Place, no commercial, O&M included	2007	Awarded to DLF, plus Simpark as technology provider	No work started
16.	Shilparamam Arts Crafts and Cultural Society, Hyderabad	600 ECs + Budget Hotel, BOT	2009	Awarded to M/s. Alif Infr Ventures Pvt. Ltd.	Work not yet started
17.	DMRC	Near Rohini Railway Station, conventional car park, no commercial	2008	Awarded	??
18.	DMRC	Near Janakpuri Railway Station	2008	Awarded	??
19.	DMRC	Delhi Railway Station, conventional parking and commercial, BOT	2009	Awarded to Pratibha Infrastructure	Work started
20.	Chandigarh Municipal Corporation	1200 ECS + commercial, BOT	2007	Subhash Projects	Construction has recently started

Sr. No.	Organization	Projects Details	Duration of Bid Process	Final Status	Remarks
21.	New Okhla Industrial Development Authority	Near golf course in Noida, 1800 ECS, no commercial, O&M for 20 years, cash contract	2008	Awarded to Simpark	Work started
22.	Kolkatta Municipal Corporation	New Market, 250 ECS underground and O&M, no commercial, cash contract	2005	Awarded to Simpark	Facilities operative
23.	MCGM	240 ECS + Commercial, BOT	2002	Awarded to Akruti	Facilities operative since 2007