Comparison, Analysis and Way Forward of Various Parking Policies in Metro Cities of India

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ABSTRACT

Major parts of India are moving towards urbanisation leading to rise in population in cities, globalisation and increased motorisation. Rise in number of motor vehicles creates huge demand for parking in the cities, causing various problems like traffic congestions, pollution, etc. This paper focuses on review of parking policies for various Indian metro cities to understand the means adopted by such cities to deal with this emerging parking issue for our country at a policy level.

In this study parking policies of Surat, Bengaluru, Pune and Delhi are reviewed. As all the cities and towns are unique in nature and also the available resources change from city-to-city, a common toolkit is developed by ADB (Asian Development Bank) for Ministry of Urban Development (MoUD), Government of India, depicting objectives for the parking policies.

In this paper, the author suggests that as the directives are the means to achieve objectives, the objectives of parking policy need to be more focused.

INTRODUCTION

Parking Policy is gaining importance in India due to increasing urbanisation and vehicle population in cities. However, "the fact that cars typically spend 95 per cent of their lives parked somewhere means

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that finding a place to park a car is potentially of greater importance than concern over a lack of available road space to accommodate it while it is moving" (M Valleley & R Garland, 1997). This assumes, of course, that a car is used on average for only one hour a day despite, generally, being available for use at any time (D Palmer, C Ferris, 2010). Additionally, it is imperative to note that one vehicle requires at least two parking places—one at residence and another at work place; requirement at recreational place is in addition to the said two spots. Basis review of 11 cities across the world, parking also causes problems to dynamic (flowing traffic) as about 30 per cent of traffic is generated due to vehicles searching for parking spots (Parking Cash Out, 2005).

It is interesting to note that 80 per cent of time in a week vehicles are parked (Institution of Highways and Transportation, 2005); however, more research is focused on aspects related to vehicles in motion such as congestion, environmental and safety aspects. The application of parking pricing and supply restrictions is ''the most widely accepted and readily accepted method'' of limiting car use (Institution of Highways and Transportation, 2005) it is a topic that has received comparatively lesser focus in formulating polces for the future.

Parking Policy

Parking policies can permit one to optimise and facilitate the management of parking by implementing several strategies and functionalities in response to solve the various issues occurring by the parking. So, parking policies help to manage the traffic inside and outside the parking areas.

Provision and management of parking spaces initially emerged as ''important but rather narrow concerns about safety and the obstruction of traffic flow on the streets'' (Institution of Highways and Transportation, 2005). This resulted in development of policies and standards and to provide off-street public car parks. Well-designed parking policies, contribute to efficient usage of transport network, higher densities, lower emissions and inclusive urban design (Stubbs, 2002). While, poorly designed policies can act in the opposite direction.

The parking policies generally consist of few general elements like details and demography of the city, their urban structure, current issues and challenges of the city, availability of infrastructure and the need of city. Then the policy also consists of legal provisions, current Act and legislations, mobility plans, etc. It also talks about the aim and objectives to be achieved through various types of strategies.

Policy Objectives

A toolkit for urban transport development which was developed by Asian Development Bank (ADB) for Ministry of Urban Development, India (PADECO Co., Ltd., 2008). Objectives dictate framework of directives in Parking Policy and key objectives as identified in toolkit are mentioned in Table 1.

TABLE 1: POLICY OBJECTIVES IDENTIFIED IN ADB-MoUD TOOLKIT

Objective	*Strategies*
To discourage the use of private vehicles thereby encouraging public transport	Reduce private vehicles usage
To remove obstacles from carriageways thereby improving the steady flow of traffic and increasing carriageway capacity	Remove obstacles
To contribute to a city's economic activities by ensuring a 'turnover' of different vehicles rather than long stay vehicles in commercial areas	Continuous vehicle flow in commercial areas
To satisfy social objectives of supplying adequate parking space at certain locations for certain social groups, e.g. residents, mobility disadvantaged.	Supplying adequate parking space

Source: PADECO Co., Ltd., 2008 & Research Analysis.

So as per the ADB toolkit, the objectives are to discourage the use of private vehicles and encourage them to use public transport. Second objective was to remove the obstacles from the carriage way width by increasing traffic carrying capacity. Third objective was to ensure continuous vehicle flow or turnover in commercial areas. The fourth objective too was to supply adequate parking spaces at certain locations in the city for specific social groups. Each city will have a different policy objectives on the basis of characteristics and availability of existing infrastructure in a particular city.

In India, there are 53 cities having population of more than one million of which nine cities have population greater than four million which are considered for this study. These are namely – Delhi, Ahmedabad, Surat, Mumbai, Pune, Hyderabad, Bengaluru, Chennai and Kolkata. Of the mentioned nine cities, four cities were considered further for detailed study on the basis of availability of information and nearness of their characteristics. Hence, comparative study of parking policies has been undertaken for Surat (Surat Municipal Corporation, 2018), Bengaluru (Directorate of Urban Land Transport, 2020), Pune

(Pune Municipal Corportation, 2016) and Delhi (Transport Department, Government of National Capital Territory of Delhi, 2019).

Comparative summary of Parking Policy objectives of above mentioned four cities is mentioned in Table 2.

TABLE 2: COMPARATIVE SUMMARY OF PARKING POLICY OBJECTIVES

City	Objectives	Category
Surat	To manage demand through pricing and other means.	Demand pricing
	To reduce private vehicle usage and dependency through "Travel Demand Management (TDM)" strategies	Reduce private vehicles usage
	To support public transport use wherever possible.	Promote public transport
Bengaluru	Move from chaotic parking to well organised parking	Organised parking
	Move from free parking to paid parking	Paid parking
	Move from Government-driven parking supply to market-driven parking supply and management	Market-driven demand and supply management for parking
	Move from passive and weak enforcement of parking regulations to active management of parking demand	Strengthen enforcement and management
Pune	Achieving 80 per cent of motorised trips by public transport by 2031 as mentioned in comprehensive mobility plan of Pune, 2008 by encouraging use of public transport using public parking policy as a travel demand management tool.	Promote public transport
	Achieving at least 50 per cent reduction in total vehicle kilometre travelled (VKT) in Pune by year 2031 by creating effective parking management system.	Reduce private vehicles usage
	Transforming at least 10 per cent on street parking spaces to public open spaces or NMT infrastructure by rationalisation of parking spaces in the initial year of policy implementation.	Recreating street parking spaces
Delhi	(Not available as Objectives are not mentioned in parking policy)	-

Source: Surat Municipal Corporation, 2018; Directorate of Urban Land Transport, 2020; Pune Municipal Corportation, 2016; Transport Department, Government of National Capital Territory of Delhi, 2019 & Research Analysis.

In Surat city, first objective was to manage the demand through pricing. Second was to reduce the dependency on users of private vehicles through various strategies and third objective was to promote public transport.

While, in case of Bengaluru the objectives were defined a bit more in detail which comprised of having organised parking spaces, moving from free to paid parking, to promote market-driven demand and supply management for parking spaces and to strengthen enforcement and management of parking regulations.

In the case of Pune city, it can be observed that the policy objectives are not subjective in nature. First objective talks about achieving 80 per cent of motorised trips by public transport by the year 2031 that is directly quantifying their aim to promote and shift public from private to public transport. The second objective talks about a reduction of 50 per cent in total vehicle kilometres travelled by the year 2031. And the last objective talks about recreating street parking spaces by transforming at least 10 per cent of street parking spaces to public open spaces or Non-motorised Transport (NMT) infrastructure and that too in the initial years of policy implementation.

Comparative assessment of policy objectives for various cities is as mentioned in Table 3.

TABLE 3: COMPARATIVE ASSESSMENT OF POLICY
OBJECTIVES FOR VARIOUS CITIES

Objectives	*UTD Toolkit*	*Surat*	*Pune*	*Bengaluru*	*Delhi*
Reduce private vehicle usage	■	■	■		Objectives not mentioned in Parking Policy
Remove / minimise obstacles	■				
Facilitating continuous vehicle flow in commercial areas	■				
Supplying adequate parking spaces / Organising parking spaces	■			■	
Demand pricing	■				
Promote Public Transport		■	■		

(contd.)

Recreating street parking spaces			■		
Moving to paid parking				■	
Market-driven demand & supply management				■	
Strengthen, Management & Enforcement				■	

Source: (PADECO Co., Ltd., 2008), (Surat Municipal Corporation, 2018), (Directorate of Urban Land Transport, 2020), (Pune Municipal Corportation, 2016), (Transport Department, Government of National Capital Territory of Delhi, 2019) & Research Analysis.

In case of Delhi's parking policy it was directly focusing on directives; hence, policy objectives were not available for review. Most common objectives were to reduce private vehicle usage, supplying adequate parking spaces / organising parking spaces and promoting public transport. While, various other objectives were to remove / minimise obstacles, facilitating continuous vehicle flow in commercial areas, demand pricing for parking, recreating street parking spaces, moving to paid parking, market-driven demand and supply management and strengthen management & enforcement.

Policy Directives

Each city will have different sets of directives focusing on various aspects to achieve the objectives set forth in the parking policy. Policy Directives can be classified into three categories for comparative study as mentioned in Table 4.

TABLE 4: CLASSIFICATION OF POLICY DIRECTIVES

Category	*Inclusions*
Policy, Legal and Planning	Formulating policies, legislations, bye-laws and plans, so as to create a new framework or to strengthen the existing framework regulating various aspects of parking policy
Administrative	Formulating Implementation Cells, enforcement measures / responsibility and management aspects for implementing various directives. So this majorly deals with enforcement and management side.
Direct action	Action items which are well-formulated and fit for direct implementation with limited legislative and administrative actions

Source: Research Analysis.

Now we will discuss and compare each type of directive at a city parking policy level.

Policy, Legal and Planning Directives

There are about five different policy, planning and legal directives which were identified while reviewing parking policy for Surat, Pune, Bengaluru and Delhi. Same has been presented in Table 5.

TABLE 5: COMPARATIVE SUMMARY OF POLICY,
LEGAL AND PLANNING DIRECTIVES

Directive	*Surat*	*Pune*	*Bengaluru*	*Delhi*
Parking bye-laws				
Area level parking plan		■	■	■
Proof of parking	■			■
Freight Management Plan	■			
Parking norms reconsideration	■		■	

Source: (Surat Municipal Corporation, 2018), (Directorate of Urban Land Transport, 2020), (Pune Municipal Corportation, 2016), (Transport Department, Government of National Capital Territory of Delhi, 2019) & Research Analysis.

- *Parking Byelaws*: This comprises of formulating specific byelaws for parking purposes in addition to building byelaws, and Development Control Regulations (DCRs). This directive is not present in any of the parking policies.

- *Area level Parking Plan*: This comprises of formulating a specific area level parking plan wherein the entire city will be divided into various zones and each zone will have a unique and an independent parking plan. This directive has been adopted across various cities like Pune, Bengaluru and Delhi.

- *Proof of parking*: This directive dictates that there should be proof regarding availability of parking prior to purchase of a vehicle. This had been a part of parking policies for Surat and Delhi.

- *Freight Management Plan*: Talks about formulating a specific plan for moment and parking of commercial vehicles in this city. This directive was witnessed specifically in Surat as it requires significant freight movement in city for textile related businesses.

- *Parking Norms*: These have been given consideration in Surat and Bengaluru. This comprises of revisiting and making

suitable amendment in norms relating to parking spaces that is General Development Control Regulations (GDCRs).

Administrative Directives

Administrative directives generally comprise four aspects relating to implementation, enforcement and management of various directives set forth in the parking policy. There are about four different administrative directives which were identified while reviewing parking policy for Surat, Pune, Bengaluru and Delhi. Same has been presented in Table 6.

TABLE 6: COMPARATIVE SUMMARY OF ADMINISTRATIVE DIRECTIVES

Directive	*Surat*	*Pune*	*Bengaluru*	*Delhi*
Implementation Cell		■		■
Enforcement	■	■	■	■
Management of public parking			■	
Parking revenue management		■	■	■

Source: Surat Municipal Corporation, 2018; Directorate of Urban Land Transport, 2020; Pune Municipal Corportation, 2016; Transport Department, Government of National Capital Territory of Delhi, 2019 & Research Analysis.

- *Implementation Cell*: This directive dictates establishment of an independent implementation cell for enforcing parking policy directives and managing parking aspects. This directive was highlighted in traffic policies for Pune and Delhi.

- *Enforcement*: It is a necessary measure for any policy to be effective and efficient. Hence administrative directives with regards to enforcement have been clearly brought out in traffic policy of all the cities namely Surat, Pune, Bengaluru and Delhi.

- *Management of public parking*: Talks about the framework surrounding public parking that is operated by some private agencies through a contract on, PPP mode or any other suitable framework for managing on street and off street parking spaces across the city. This measure has been noticed in Bengaluru only.

- *Parking revenue management*: It is an aspect dealing with usage of revenue which has been collected as parking charges or penalties or towing charges for upgrading parking and Non-Motorised Transport (NMT) infrastructure. This aspect has been talked in traffic policy for Pune, Bengaluru and Delhi.

Direct Action Directives

Direct action directives form majority of the directives mentioning the traffic policy. As we can see in this combined assessment, there were about five directives relating to policy, planning and legislations, four directives relating to administrative side; there are about 13 direct action directives as mentioned in Table 7.

- *On-street parking*: It identifies the specific location on the street as a parking space. This also talks in detail the necessary provisions and codes to be followed for on-street parking. This directive has been witnessed in various cities like Pune, Bengaluru and Delhi.

- *Parking pricing*: is one of the most talked about directive in all the traffic policies. This deals with suggestion to have a fair parking pricing along with necessary guidelines on deciding the parking charges. This has been talked about in all the cities under study.

TABLE 7: COMPARATIVE SUMMARY OF DIRECT ACTION DIRECTIVES

Directive	*Surat*	*Pune*	*Bengaluru*	*Delhi*
On-street parking		■	■	■
Parking pricing	■	■	■	■
Parking permits	■			
Park & Ride (incl. NMT)	■			■
Technology adoption		■	■	
Promote public transport				
Parking sharing	■			
Regulating Intermediate Public Transport System (IPTS) and transport vehicle parking	■		■	■
Off-street and multi-level parking		■	■	■
Residential on-street parking			■	■
Parking for differently abled persons				■
Charging facilities for electric vehicles				■
Junk vehicles				■

Source: Surat Municipal Corporation, 2018; Directorate of Urban Land Transport, 2020; Pune Municipal Corportation, 2016; Transport Department, Government of National Capital Territory of Delhi, 2019 & Research Analysis.

- *Parking permits*: It deals with issuing permits for a particular time duration to park a vehicle at a designated location. This directive has been discussed in traffic policy for Surat city only.

- *Park & Ride* (*incl. NMT*): This directive aims to increase the usage of public transport by facilitating availability of adequate parking spaces around boarding or alighting points of respective modes of public transport. This also talks about promoting NMT in integration with public transport system. This has been talked in public policy for Surat and Delhi.

- *Technology adoption*: It mainly focuses on increased penetration of technology in parking management; so as to provide convenience to users and motivate them to park at designated locations only. This has been more in focus introduced in cities like Pune and Bengaluru.

- *Promoting public transport*: Its reference has been made in parking policies for several cities like Surat, Pune, Bengaluru and Delhi.

- *Parking Sharing*: It is a unique concept which is found in parking policy for various cities in Gujarat. This aims to share and utilise available urban spaces or unused parking spaces available in a particular area.

- *Regulation of Intermediate Public Transport System (IPTS) and transport vehicle parking*: Focuses on regulating IPTS and good carrier parking. This is critical because promoting public transport will lead to increased usage of IPTS, so in case proper regulations and parking management are not being done for the same then this would lead to increased chaotic situation. This aspect has been directly or indirectly talked in parking policy for cities like Surat, Bengaluru and Delhi.

- *Off-street and multi-level parking*: Directive deals with identification, development and management for such facilities. This has been given due importance in parking policies in all major Metro cities.

- *Residential on-street parking*: It is a typical issue faced almost in all the metro cities in older or already developed areas because at that particular point of time parking wasn't considered as a major attribute for development control regulations. However, managing residential on-street parking has been talked only in traffic policy for cities like Bengaluru and Delhi.

- *Parking for differently abled persons*: It is a unique and independent consideration made in traffic policy of Delhi. However this indirectly forms a part of on-street, off-street and multi-level parking development guidelines.

- *Charging facilities for electric vehicles*: It is a very critical aspect which needs focus on government's aim of gaining significant change in e-mobility by 2025 and 2030. Hence, parking infrastructure in all fronts, i.e., on-street, off-street and mutli-level should give due importance to such aspects. Providing charging facilities has already been part of many Development Control Regulations (DCRs) but incorporating same in parking policy is need of the hour to promote increase in e-mobility. However, same has been talked about only in Delhi's parking policy.

- *Junk vehicles*: It is again an aspect which has been explicitly mentioned in Delhi's parking policy. It dictates directly in line with scrappage policy. Hence, national policy is to be followed by all states of Union of India; this can be considered to be indirectly addressed in all cities.

CONCLUSION

Urbanisation, higher incomes and enhancement in living standards—all these factors have led to an increase in number of personal transport vehicles. This has directly created pressure on available land as a resource for parking spaces. In order to tackle parking related issues in a better format, all major cities in India have started preparing and implementing parking policies.

 Of the nine cities with population more than four million, parking policy of four cities namely Surat, Bengaluru, Pune and Delhi were studied in detail.

Parking policy comprises of two sections, viz. objectives and directives. Policy objectives are important as these set the tone for entire policy including directives and means for its implementation. It was found that objectives of parking policy lack clarity in majority of cities due to some inherent and city specific issues. Hence, formulation of policy objectives shall be more focused considering regional characteristics and city specific issues. This can be achieved by encouraging citizen participation at the start of the process. A participative survey of citizens should be undertaken to understand what are the key issues according to citizens, what are their requirements / expectations and what according to them are the means to achieve objectives and resolve the issues.

Further, the policy objectives in majority of the parking policies reviewed by the author were subjective in nature. Objectives of the parking policy should have quantitative aspects linked to it as in the case of Pune's parking policy.

Directives are the means to achieve objectives i.e., directives are actual actionable tasks. The author found that in certain cities few objectives had no directives and few directives were without any objectives. Objectives and strategies, i.e., means to achieve such objectives have to be interlinked and they cannot be independent in nature. This has been very well drafted in parking policy of Bengaluru by mapping the policy directives to objectives. Hence, the author suggests that each objective should have a set of directives which are explicitly mapped and brought out clearly in policy. This mapping can be optimally achieved by organising various brain storming sessions between policy makers, citizens and implementing authorities during policy formulation stage.

The article is concluded by suggesting the objectives of parking policy to be more focused considering local prevailing conditions in each city and to be quantifiable in nature. Further action items, i.e., directives for achieving each objective should be clearly mapped with each objective. Citizens and subject expert engagement is also necessary during formulation of policy. These are the essential ingredients for the parking policy to be implementable and successful in true spirit.

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