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Sustainable Urban Land Development**An approach for economic viability of Infrastructure Development****Ashima Banker¹**¹*School of Planning, Anant National University, Ahmedabad***Abstract**

Rapid Urbanisation trends worldwide has resulted in 54% of the world population living in urban areas, in 2014 from 39%, in 1980. As per 2014 Revision of World Population Prospects, UN, 2014, India & China are expected to be the largest contributors to the estimated increase in urban population till 2050. Most of the grunt of the population growth is going to be seen on big cities or mega-cities, with Asia to struggle most with estimated 60% of the megacities by 2025, most of them across India and China (13th annual edition of Demographia World Urban Areas, 2017).

Amongst the various challenges faced by these megacities, providing developed land (i.e. land with access to infrastructure facilities) for future developments and city infrastructure within the limited funds available with the city & state governments, is a major one. Indian cities, due to limited funds often face delays in infrastructure development (due to high costs of land acquisition) resulting in haphazard development.

Land acquisition for industrial, urban and infrastructure development has always been a contentious subject. For land development – land acquisition and land pooling are the two methods adopted in land acquisition process. Land acquisition is carried out under act (LAA), while land pooling is carried out using the provision of related town planning schemes like in the Gujarat. A public private partnership mode plays an important role in the land acquisition and in development of Land

This study attempts to analyse the mechanisms followed under the two methods and the benefits of each. It also recommends mechanism to provide for larger pockets of developed land to be used by the Urban Local Bodies for public purposes, generate revenue and provide for additional development provisions for the developers (for larger public good). The suggested tools & recommendations will in addition to cutting the cost of acquiring land will fetch capital to the project that would make the project self financed and self sustaining, releasing the financial pressure from the Urban Local Body.

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Keywords

Sustainable Land Development; Public Private Partnership; Land Pooling; Town Planning Scheme; Gujarat

1. Introduction

Urbanisation trends worldwide have been observed to be growing at an alarming acceleration with the urban population increasing from 1.73 billion people (39% of world population) in 1980 to 3.96 billion people (54%

of the world population) in 2014. Variations in level of urbanisations observed across developed nations (82% in North America) and developing nations (48% & 38% in Asia and Africa respectively) brings with it its own set of opportunities and challenges. 90% of the estimated increase in urban population till 2050 is projected to be in the continents of Asia & Africa, India & China being the greatest contributors (2014 Revision of World Population Prospects, UN, 2014)

While urbanisation brings with it increased economic growth, income levels and economic opportunities, the challenges it is bringing with it cannot be negated, particularly in the developing nations. The impact of population growth on the environment, social and economic development is of great concern. In 2000, Asia had more than half of the world's largest cities, including ten 'mega-cities' (with populations in excess of 10 million). This number increased to 21 out of a total 35 megacities worldwide in 2017. The continent is estimated to house 60% of the megacities by 2025, most of them across India and China (13th annual edition of Demographia World Urban Areas, 2017).

Burgeoning at a rapid pace, these megacities, need to address varied challenges. One of it being providing developed land (i.e. land with access to infrastructure facilities) for future developments and city infrastructure within the limited funds available with the city & state governments. India, the second most populated nation of the world and one of the largest contributor (the other one being China), to increased urban population by 2050 has experienced increasing tendency towards metropolitanization of its cities in the recent past. Needless to say the limited funds often leads to delays in infrastructure development (due to high costs of land acquisition) resulting in haphazard development.

Post 1990s, Public Private Partnership (PPP), a boon and catalyst in promoting provision for Urban and Infrastructure, is being used by city governments across developing and developed nations for improved delivery of infrastructure services and urban development. PPP is becoming the preferred method for public procurement of infrastructure, infrastructure services projects and urban development projects throughout the world. While provision, operation and maintenance of many of these infrastructure facilities is important, high cost in the land acquisition often lead to delays in implementation and successful completion of many of these infrastructure development Projects.

2. Public Private Partnership for Land Development in India

2.1. Partial Land Acquisition - Land Development by Private Developers

In India, typically land has been developed by the Urban Local Body under full or partial land acquisition carried out under the Land Acquisition Act, 1894. There have also been planned cities like Chandigarh, Gandhinagar, NOIDA etc developed vide 'Full Land Acquisition Model'. However, since this requires a large amount of capital investment to be incurred by the Urban Local Body (ULB) it is seldom preferred.

Most cities in India use the 'Partial Land Acquisition method' in which they acquire land parcels as required by the Development Plan for provision of public amenities, services and infrastructure like roads, parks etc. Nonetheless, in addition to the land acquired for public facilities & utilities, this method too requires to either acquire land parcels (which means large funds required) for regularising plots or leave it for haphazard development within the major roads. Gurugram is an excellent example where the ULB through private sector intervention has ensured effective and proper development of these areas with adequate physical and social infrastructure.

2.1.1. Case 1 : Gurugram

Located in the Southern periphery National Capital city of Delhi, the city of Gurugram (erstwhile Gurgaon) has witnessed immense development over the last two decades. Identified as one of the rapidly growing satellite town in the National Capital Region, the city has grown from populating approximately 15 lac in 2001 to 26 lakhs in 2017. Congestion, stressed infrastructure and need for larger land parcels in Delhi forced many people to choose

Gurugram for their residence.

Haryana Urban Development Authority (HUDA), the Urban Local Body (ULB) of Gurugram operates under the Haryana Development and Regulation of Urban Areas Act of 1975, which legally allows development of land as colonies by licenced colonizers permitted to develop land parcels to the range of 100-200 acres. HUDA is responsible for formulating the Development Plan defining predominant land use zones, trunk infrastructure and pockets for future developments. Until the year 1985 HUDA was taking the responsibility of acquiring land, formulating master plans of the sectors, providing infrastructure and making the plots available for private buyers.

Post 1985, the private developers have taken an active role in providing serviced land at a rapid pace to meet with the market demand. While HUDA is responsible for the provision of trunk infrastructure (and thus acquisition of land for this purpose), the private developers are required to provide access, social infrastructure and other public use in 45% of the total land (in the range of 100-200 acres) they acquire (read purchase) from private land owners. These developers are required to get a license from HUDA as a colonizer, for carrying out the task and develop within two years of purchasing the land. There is also a mandate to accommodate Economically Weaker Section (EWS) Housing within the remaining 55% of land. The colonizer is responsible for the "... construction, maintenance and upkeep of all roads, open spaces, public parks and public health services for a period of five years from the date of issue of the completion certificate and thereupon to transfer all such roads, open spaces, public parks and public health services free of cost to the Government of the local authority. . . ." (The Haryana Development And Regulation Of Urban Areas Act, 1975). This mechanism reduces the financial responsibility of providing serviced land, lets the market provide the housing size, typology and pricing as per market demand, along with generating competitiveness amongst private developers providing good quality housing integrated with daily needs and social infrastructure.

2.1.2. Case 2: Lucknow

Lucknow, a town centrally located, in the state of Uttar Pradesh, has experienced a very high growth rate to the tune of 65.66% in past two decades. Responding to the housing demand of this rapidly growing city the public agencies like Lucknow Development Authority (LDA), Uttar Pradesh Housing Development Board, Uttar Pradesh Awas Vikas (taking care of Rural Areas) etc, have been actively engaged in the process of housing supply right from the beginning. Similar to Gurugram, in an attempt to further support the public sector agencies throughout the state, reputed private developers, are engaged in land development, as a licensee.

In Lucknow the private developers are granted the raw land by LDA, comprising of Marketable and Non-marketable areas. The cost of this land is payable by the developer to LDA in eight stages: 10% of the cost of land plus external development charges within 45 days from the date of issue of the license; 15% of the cost of land within 90 days from the date of issue of licenses and the balance 75% cost payable in six half yearly equal installments. The private developer is also required to reimburse the development authority for the total cost of external trunk services provided like water supply, sewer line, and main H.T. electric feeder line provided at open point outside the allotted land for further connection. The licensed developer is supposed to provide internal development works like provision of piped water supply to individual plot and constructed house with Over Head Tank / Under Ground Reservoir for sufficient storage of water, sewer lines, internal roads as specified in the development controls of LDA, surface drainage, social facilities like post office, bank, electric substation, shopping centres etc. in accordance with the prevalent norms in Master Plan of Lucknow by LDA. Thus, though the ULB is required to incur an initial expense for land purchase and trunk infrastructure implementation, the same eventually comes back to the ULB.

Similar to the case of Gurugram, only 55% is available for residential areas and the remaining 45% is used for provision of internal services & social infrastructure. Provision of EWS housing is also mandated to be provided by the developer. The internal facilities of the colonies are maintained by the developer for a stipulated time period as mutually agreed upon by the developer and the ULB, after which it is handed over to the respective public

department for further maintenance. The developer benefits from selling the 55% of the serviced residential area. However, since the land values are not very high in this city it takes longer (as compared to Gurugram) for the developer to break even.

2.2. Land Pooling & Land Readjustment – Town Planning Scheme

The Land pooling mechanism, popularly known as Town Planning Scheme (TPS), prevalent in Gujarat since a century now (the first town planning scheme was in the year 1925), is an effective tool which is used by the State Government and the ULBs to carve out land for common neighbourhood level infrastructure like roads, garden, social amenities etc.

Facilitated under the Gujarat Town Planning & Urban Development Act (GTPUD) 1976, the Town Planning Scheme mechanism provides for generation of serviced land to be used for future developments. An effective mechanism which takes into account existing developments, existing geographical/historical features to be protected, major connectivity existing and as proposed in the Development Plan (DP), the land use zone as proposed under the DP etc, TPS are primarily planned in greenfield areas. However, there have been instances where these have been implemented after a certain amount of development has taken place. Similar, to the previous case of partial acquisition, TPS mechanism also allows for 25-50% of land to be carved out for providing roads, public utilities and social infrastructure, this mechanism has proved to be an effective tool for providing walkable communities with daily needs, parks / gardens and other neighbourhood level social facilities in every neighbourhood. The mechanism however, does not require either the developer (in case of gurugram) or the ULB (in case of Lucknow) to acquire the remaining 60% of the land. Instead, the individual private land owners continue to hold the 50-75% of their land which is given back to them, almost where the original land parcel was located, with an advantage of access, basic facilities like water, sanitation & electricity and a regularised shape/size for more effective development and use. A major strength of this mechanism is its participatory approach through land owners consultations.

2.2.1. Case 1: Ahmedabad

Ahmedabad Urban Development Authority (AUDA), ULB for the city of Ahmedabad, has been designing and implementing TPSs across the city for providing serviced land for urban development. The TPSs of Ahmedabad have been used as an efficient means of expanding urban infrastructure without compulsory land acquisition and an equitable, participatory and cost-effective mechanism for providing serviced land.

Rapid population growth in Ahmedabad city and saturation of the areas within the city limits lead to enormous growth in its peripheral areas post 1980s with consequential large-scale housing development in the peripheral areas. However, due to lack of adequate infrastructure and road network, the peri urban areas sprawled haphazardly. In order to facilitate smooth movement of future growth of traffic and traffic congestion of Ahmedabad an outer ring road was conceptualized in the Revised Development Plan 2011.

Implementation of urban roads have, by default, been always considered to the responsibility of the Government (read ULB), resulting in the availability of funds to govern the implementation. In an attempt to explore alternative funding means to effectively implement city level infrastructure AUDA was able to implement such a large scale project. The TPS tool was efficiently used to create the SP Ring road as a city level infrastructure, 76 km long 60 m wide, planned with a long term vision keeping in mind the future growth areas. Land required for the SP Ring Road was carved out through combination of land acquisition (only 13.1 km) and implementation of 46 TPSs during 2000 to 2010. The final TPS layout plans were prepared keeping in mind the alignment of the ring road. This reduced financial cost of the project by a considerable amount. This participatory approach ensued rapid and efficient implementation of city level infrastructure facility.

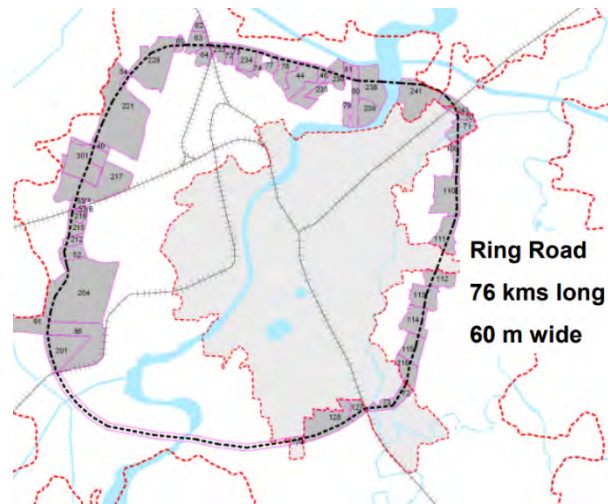


Figure 1. Town Planning Schemes along the SP Ring Road

2.2.2. Case 2: Gandhinagar

Gandhinagar Urban Development Authority (GUDA) is a Government of Gujarat undertaking constituted under Gujarat Town Planning & Urban Development (GTP&UD) Act-1976 to control unplanned urban spread and to regulate planned development in urban agglomerations of Gandhinagar taluka. GUDA was established in 1996 by Urban Development & Urban Housing Department, Government of Gujarat with a prime objective to carry out the sustainable planned urban development of the area and creation of basic infrastructure in the area falling outside the periphery of the capital city Gandhinagar Municipal Corporation.

Gandhinagar Urban Development Authority (GUDA) has used TPS mechanism since its inception. In the year 2006 it used the TPS mechanism in successfully amalgamating government land for creating institutional zone 'Knowledge Corridor' in city of Gandhinagar. The area selected for formulation of this TPS was strategically chosen where there were large amount of government land. This government land was, however, scattered. Land Pooling and readjustment along with 40% deduction resulted in amalgamating large land parcels required for housing Institutions like Pandit Deendayal Upadhyay University (PDPU), Gujarat Law University, Seismological institute, Gujarat Energy Research and Management Institute, etc. It also provided for land area required for common facilities like convention centre, food courts, hostels etc.

Once again TPS mechanism was creatively used to create a city level infrastructure with no land acquisition to be done by the ULB. This method can be utilised to even create large scale commercial areas which can be given to the private sector for development or sold for generating revenue.

2.3. Conclusion

The cases studied here provide a range of approaches in which private sector have contributed constructively in generating serviced land for urban development. The case of partial acquisition in Gurugram & Lucknow demonstrated adequate neighbourhood facilities. However, since most of the areas / colonies are developed by the private developers as individual colonies, and sometimes gated, many of the facilities, particularly gardens, play areas, community halls etc have their access limited to a certain set of population, residing in the colony. Also, there is no existing phasing mechanism, ensuring simultaneous implementation of adjoining projects which leads to unsatisfactory public facilities in neighbourhoods till the whole area gets developed. This method, nonetheless, encourages a competitiveness amongst different colonizers to provide their best in terms of quality and livability, so as to make their project more saleable than the other.

Lucknow has proved to be a similar situation with the difference being in public amenities being available to all. However, the large capital investment required to be made by the ULB (though paid by the private developer later)

in the beginning, increases the financial load on the ULB. Nonetheless, the Lucknow model lets the ULB get the reimbursement towards the implementation of trunk infrastructure which is done by the ULB. A mandate of provision of EWS housing takes care of housing the urban poor, which is an important responsibility of the ULB. The TPS mechanism, used in Gujarat, in general, eradicates the issue of public areas and their access. There is also a general satisfaction level of the land owners due to the participatory consultations carried out during the process. However, the land pricing variation is very dynamic in this case as the plots closer to garden or commercial areas experience more escalation than those close to a railway line or public utility area. The reduced financial load on the ULB for acquiring land towards provision of roads and public facilities is the greatest advantage this mechanism imparts. The cases of Ahmedabad and Gandhinagar discussed employs the use of this tool further in an innovative way for carving out large land parcels for accommodating city level infrastructure. In addition to the reduced cost due to no land acquisition, this takes lesser time (due to its participatory approach) and has an ease of acquiring land for speedy implementation of city level infrastructure.

Table 1. Comparative Analysis of Land Development Mechanisms

Parameter	Partial Land Acquisition		Land Pooling & Land Readjustment - TPS	
	Gurugram	Lucknow	Ahmedabad	Gandhinagar
Case Study	Gurugram	Lucknow	Ahmedabad	Gandhinagar
% Land for Public Use	45	45	40	40
Land Acquisition for Public Land	Yes	Yes	No	No
% Land for other Development	55	55	60	60
Land Acquisition for other development (Developer/ULB)	Developer	ULB	No	No
Access to public facilities	Access to limited population sometimes	Full access to public	Full access to public	Full access to public
Level of facilities / amenities created	Neighbourhood	Neighbourhood	Neighbourhood & City Level	Neighbourhood & City Level
Financing / Implementation of trunk infrastructure	ULB (funded from service charges towards total built up from developers)	ULB (Later reimbursed by the Developer)	ULB (funded from betterment charges collected from private land owners)	

2.4. Recommendations

The study and analysis makes it evident that the TP Schemes mechanism and contribution of private sector in Urban Development has proved beneficial in reducing the cost of development for the ULB and in catalysing development in terms of quantity of serviced land / no. of houses, Quality of Construction and cost recovery. Partial acquisition method used in Gurugram provides the same benefits. However, the possibility of creating city level infrastructure is possible only through the TPS model. The participatory approach of TPS model particularly ensures less controversy and a greater acceptance of the development efforts.

Land acquisition, even for public purpose has become a time consuming process sometimes leading to unending litigation. The acquisition process besides being time consuming also becomes cost prohibitive while some

landowners feel that they have not been adequately compensated. The town planning scheme being followed as an alternative method to assemble the land for urban development activities is a faster and financially affordable manner without taking recourse to compulsory acquisition of land. The development of an area wholly by town planning scheme would be more feasible than other options as the TPS has more advantages over land acquisition when planning at a large scale.

The following recommendations can further have the possibility of creating large land parcels for public purposes, generate revenue and provide for additional development provisions for the developers.

2.4.1. Delineation of TPSs wrt Government land

TPSs need to be delineated with an attempt to have the possibility of amalgamation of government land. This would have the possibility of creating more than 50% of the total area being available for public purpose. Typically for a TPS 10-12 % are goes under roads, about 4-5% under social amenities, 2-3% under gardens, about 10% for EWS housing. The remaining land can be used towards establishing commercial spaces for housing daily needs and also have some balance which can be sold or given on lease to private agencies for development. This would have the ULB generate a high land value and thus greater revenue as the land thus sold/leased would have access to all utilities and facilities. This was successfully implemented to create the knowledge corridor in Gandhinagar.

Government of gujarat has proposed a halol-savli special investment region (SIR) in the Vadodara/Panchmahal district of gujarat over an area of approx 122 sq km. The combined area of the government waste land and the government land across the delineated site is 354.3 Ha. At present this area is all scattered across the SIR area in smaller land parcels. The usage of these land parcels is limited in their current location ad site. However, when combined these land parcels can create a larger land bank of a significant size, which can be put to a greater use of a larger facility or in this case create a CBD of this large scale which will also generate large revenues for the Regional Development Authority (RDA).

This Land Bank can be used in the following ways towards revenue generation:

The developed land for public & semi public amenities which can be sold at higher price than acquiredThe land can be developed as a major business development zone (CBD) which can generate large revenues in the future.

2.4.2. Larger sized TPS

Typically the TPSs have been of the size 100-200 ha. The land carved out from 40-50% deduction can be used for providing the public purpose use. This area can further be increased to have large pockets created, in case need be, for providing for a sub-city level or sector level facility like city level park, stadium, water treatment plant etc. This combined with amalgamation of government land can further this towards generation of land for saleable purpose too.

2.4.3. Simultaneous planning / designing of adjacent TPS

In the case of Outer Ring Road and its implementation, planning of adjoining TPSs simultaneously or in conjunction with the others with a clear objective of creating a city level infrastructure resulted in the effective land generation. This can happen only if the TPSs (which are more like local area plans) are comprehended and planned with the larger picture in mind. For example, if there is a need to create a large city level garden the same can be created by carving out pockets from 3 or more TPS, ensuring a large open area pocket eventually collating to provide for the city level amenity.

The above mentioned tools and recommendations will in addition to cutting the cost of acquiring land will fetch capital to the project that would make the project self financed and self sustaining, releasing the financial pressure from the urban local body.

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