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Incongruities of a Socialistic Smart City: a Case of Area Based Development in T. T. Nagar, Bhopal

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1 ABSTRACT

The Smart City mission, launched in 2015, has selected 99 cities all over India to participate in the vision of smart and sustainable living. This further initiated a chain of urban renewal projects among these cities in an attempt to produce a perfect model to instigate close association and development of nearby towns and villages, in collaboration with the Union Ministry of Urban Development. Bhopal has acted swiftly in response to this challenge, coming up with an Area Based Development(ABD) plan right in the city core in T.T. Nagar. Being a provincial city possesing several contextual assets like state-owned lands in the city centre, Bhopal has introduced this ABD as the first in India to be a redevelopment and rehabilitation project. It has been envisaged to develop with state of the art infrastucture and technological and 'smart' interventions. However, the project proposes extensive involvement of private sector and joint ventures which produces a requirement of huge capital of 2500 crores for execution (Bhopal Smart City Corporation Limited, 2016). The government of Bhopal intends to recover this investment through large-scale real estate models and commercial frameworks catering for the needs of higher socio-economic sections of the area and private organisations, leaving behind a cluster of untended and economically weak communities. This contradicts the socialistic role of government in policy-making and execution. This research intends to assess and re-imagine criterias for site selection of ABD in a smart city to act as a driver of development, rather than a caterer of developed city-centres. The study also examines the role of government and people in deciding these criterias by assessing varying scenarios of deliverables at core and periphery, establishing the need of additional participatory frameworks in centre-introduced initiatives such as the Smart City mission.

Keywords: Area-based Development, site-selection, real estate, city core, socialistic, Bhopal

2 INTRODUCTION

Cities are swiftly morphing into banks of infrastructure provisions given the rapid rate of urbanisation, at approximately two times faster than what was projected two decades ago (Distr. General, 1996). This change is particularly salient for developing countries such as India. Over the years, cities in India have witnessed a trend of rapid rural to urban shift, because urban settings account for availability of job opportunities, large pools of diverse informal economies, livelihood and resources to progress and sustain. As a result, the majority of Indian cities have realised the importance of sustainable growth, shifting willingness to level out the recent overlaps of socio-economic structures due to urbanisation. However, the current urban scenario in Indian is quite complex and challenging. For instance, India's urban population is comparitively lower than the global average i.e. 31% (Census of India , 2011) but the absolute size of the urban population is enormous (377.11 million) bringing a considerable proportion of the population to the rural-urban fringes which are in a state of utter neglect to date.

The transitioning of economies often leads to informal governance structures, scarce data and limited local capacities. Undergoing the largest global urban transition for the next few decades (United Nations Department of Economic and Social Affairs, 2014), India rests with the responsibility to upgrade the structure of its cities into a smart and sustainable framework, ensuring their durability, development and identity. Hence, the Ministry of Urban Development devised India's Smart City Mission as a national initiative to develop 99 smart cities in five years (2015-2020) with the aim to improve core infrastructure and provide citizens with a decent quality of life and a sustainable environment while relying copiously on the use of ICT in order to provide 'smart' solutions. The socio-economic circumstances in the cities of India reveal huge income difference amongst the citizens. Only a small proportion of people belonging to the high-income strata, show high levels of consumption whereas the remaining proportion barely sustains, lacking basic services and depending on the informal sector under uncertainty of jobs and lack of workers' rights; and having limited accessibility to technology. This leaves an ambiguity towards the 'smart city' model being inclusive of this range of masses. This paper addresses the challenges faced at the centre with the execution of the Smart City project in Bhopal. In doing so, the paper lays forth a contextual analysis of social and market inconsistencies influencing the project's execution.

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3 BHOPAL: CITY EVOLUTION AND SHIFTS UNDER URBANISATION

The city possesses a context of provincial establishments and constitutes a population majorly engaged in the service sector, specifically government offices. Its character morphs into urban villages as a sequence of rural periphery, gated housing communities and institutional development as one moves outwards from the state-owned land in the centre. Delineated alongside the Upper Lake, the urban density computed for the period 1977-2014 depicted urbanisation with concentrated growth around the CBD placed within close proximities to M.P. Nagar, T.T. Nagar as well as Roshanpura.

Fig 1: Population shift in Bhopal (1990-2015) and building character from T.T. Nagar (Top-right) to Misrod (Bottom-right). Map Source: Author

Bhopal grew with high intensity in the north-west and south-east zones in 1977-1992 due to rapid industrialisation of the region (Aithal, Kalal, & Ramchandra, 2014). Five major areas acted as convenient transportation corridors for automobile industries and storage units which established the layouts in the south-east, together with housing colonies and urban sprawl in other parts of Bhopal. A GIS-based analysis depicts radial urbanisation transforming into growth along transport corridors to neighbouring cities, especially NH12 and NH46 towards Mandideep (closest industrial hub), showing an occupational shift from the public to the private sector. Before this industrial advent in Bhopal, the city had only few planned industrial colonies such as BHEL in the newer planned regions, and connected to the old city. The following decade shows Mandideep and Shobhapur pulling growth pattern towards them. This highlights the requirement of appropriate basic amenities and infrastructure to cope with the growth of settlements for the common public which opens vast opportunities for real estate. Street sections along the national highways 12, 18 and 46 reveal varying and contrasting building characters with respect to the growth pattern. As the density of the connector roads decreases outwards, strip development becomes evident. Building heights decrease from G+3 to G+1 and G towards the periphery and the corridor widths decrease to two-lane highways, in sparse developments with institutional areas.

Rapid decline in population within the core-city has led to a shift in the requirement for more structured utilities towards the north-west of the upper lake, as the residential population has moved towards areas near Lalghati and Bairagarh (Daniels, 2015). As a result, many upcoming developers and real estate agencies have secured land for future development. However, poor demand assessment and growth projection analysis have led to numerous deserted townships due to lack of commercial establishments and amenities which the Smart city is aiming to provide. However, the periphery lies under the mandate of PAN-city solutions to be implemented city-wide. This part of the mission is experiencing a considerably slower pace, creating a deficit of resources for upcoming development. Hence, The periphery poses a greater need for area-based initiatives.

4 T.T. NAGAR: PROSPECTIVE

4.1 Site background and characteristics

The Smart City Corporation has chosen T.T. Nagar as the centre of the area based development project. The site covers 145.8 ha of government residential quarters, characterised by busy vehicular flows and market-spaces in the vicinity. The surrounding context is chatacterised by Sunday haats, temples, slums squatters near Roshanpura square and buildings which are essentially culture-sensitive. Features like existing BRTS nodes and proposed MRTS network lines passing through the site, assisted by feeder services make the chosen area quite well connected to the rest of the city and hence, attracts a huge inflow of small as well as large scale commercial establishments (Bhopal Smart city corporation, 2016). The ability to unlock the value of government land in the heart of the city, existing BDA (Bhopal Development Authority) projects in close proximity and dense transport connectivity made the choice of this site logically sound and relatively easy to administer. However, considering that the majority of stakeholders are private organisations and given the large scale real estate projects such as Gammon, the project seems to be catering for a context which contrasts with the existing character of the area as a whole. A detailed survey of the site reveals small markets at Jawahar Chowk and in Tulsi Nagar, adequately placed between community parks and covering over 1.3 ha while public semi-public landuse constitutes about 18% of the total site area. About 56% of the area is covered with residential quarters (G to G+3 average) and the system seems to be well balanced with the current supply of commercial areas (SPA, Bhopal; B.Plan-III, 2018).

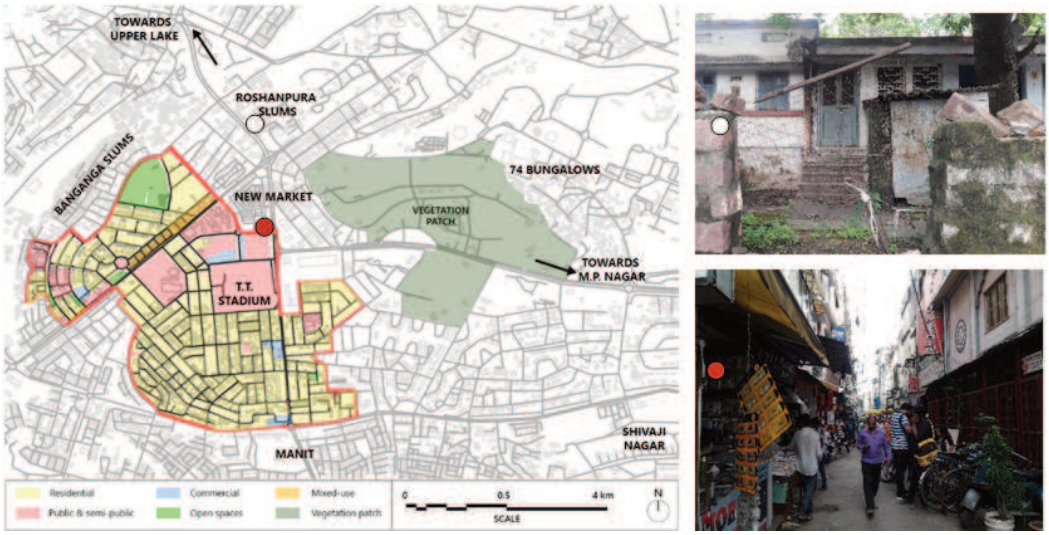

Fig 2: T.T. Nagar: Site context and local character (Map source: Author)

4.2 Local character and socio-economic outlining

A socio-economic study (SPA, Bhopal; B.Plan-III, 2018) of the slums alongside the periphery of the site and the government quarters shows that people were residing here for 10-30 years and for such a long period that the government had provided the slum inhabitants with patta (ownership) houses. However the majority of these dwellers are below the income range of Rs.5,000 to 10,000 monthly whereas the remaining service-class earns between Rs.30,000 to 50,000 per month. The majority of lower income groups are engaged in small-scale commercial activities based around the new market near the site which serves a city-wide catchment of retailers and consumers. Vendor surveys show 86% strata with possession of bank accounts, only 30% of which have linked these to their mobile phones. For a redevelopment project such as this, the economic character surrounding the site comes into play and it becomes crucial for this proposal to be socially acceptable, economically feasible and affordable for the residing population. For this, stakeholder acknowledgement switches to priority. Hence, for a corporation model manufactured under a top-down framework to be successful, it needs to be properly marketed among the people. Digital marketing has been chosen as the primary source of advertisement while the surveyed population indicates minimal possession of digital assets and low rate of computer literacy (36%) (B.Plan-III, 2018). So, any online platform-based smart proposals including apps and smart cards will possibly be rendered futile unless awareness is spread among the locals through relatively primitive methods. Considering the existing status of municipal maintenance services such as waste collection, the site provides fairly livable standards, however visually

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analysing the area as a whole displays many intricate social as well as economic networks with a balanced 'liveability' which was put to stake with the commencement of the ABD project.

4.3 Choice of site: Citizen advocacy as a harbinger of change

The proposal submitted for phase-II of the Smart city competition, held by the Ministry of Urban Development, had identified Shivaji Nagar as a prospective zone for ABD. The 134.2 ha site adjoins T.T. Nagar and shares a similar built and social context where old buildings were supposed to be demolished to give way to business centres and ultra-modern apartments (Bhopal Smart City Corporation Limited, 2015). However, the presence of vast stretches of eco-friendly areas and green cover instigated local protests against the proposal. The people of Bhopal have lived through a long history of advocacy and raising their voice against constrictions posed by government legislations. Kamal Rathi, a Bhopal-based activist and urban planner, questions the selection process and suggests other lesser developed regions like Jahangirabad, Shahjnabad and Nehru Nagar show better prospects as sites for ABD. He states, "There are some issues which may pose hurdles in the implementation of the smart city plan, the most important being handing over of government land to private developers. There is an uncertainity in the PPP model of funding too, due to shortage of funds on the ground." (Debobrat Ghose, 2016). As a result, after large scale local community mobilisation in favour of protecting the ecologically viable site, the area based development project was shifted to T.T. Nagar. The current proposal documents still bear the interventions submitted for Shivaji Nagar, now to be implemented on the land use proposed for T.T. Nagar to avoid any further delays in execution. This approach presents several uncertainities given the two sites don't share a similar physical context and distribution of economic opportunities.

Fig 3: Land-use map, T.T. Nagar (Source: BSCDCL)

S. no.	Land Use Categories	Proposed land use (%)	
1	Residential	9	55.72
2	Residential mixed use	23	
3	Commercial	6	
4	Commercial mixed use	14	
5	PSP	4	
6	Open Spaces	21	20.51
7	Utilities	2	23.76
8	Roads	21	

Table 1: Land-use distribution for ABD

5 AREA BASED DEVELOPMENT PROPOSAL

5.1 Multifaceted approach to ABD

The Area Based Development project has visualised Bhopal to be a lighthouse to incite surrounding cities into checking their urban sprawl, implementing IOT driven citizen-centric innovations and capacity-building interventions. According to the policy guidelines formulated at the central level ABD is addressed through 3 contextual approaches: retrofitting (adaptive reuse); redevelopment (city renewal); greenfield development (at city extensions). Redevelopment is prefereable for sub-optimally utilised land parcels in a city, involving

the replacement of an existing built-environment of 250 acres with a proposed layout plan, including areas of mixed land use, higher FSI and higher ground coverage (Ministry of Urban Development, Govt. of India, 2015). ABD is supported by city-wide intiatives under PAN-city interventions applying ICT solutions to upgrade the existing infrastructure to communicate visions of Smart city throughout Bhopal and boosting the mission's viability.

5.2 Integrated features of the redevelopment proposal

The T.T. Nagar proposal envisions to create a 24/7 activity based, thriving and energetic city where people have access to swift mobility modes through public transport including existing BRT and proposed MRT. The site has been planned as a high-density compact development promoting mixed use consisting of residences, offices, commercial spaces and public amenities. The key idea behind the proposal is to encourage walkability through incorporating public transport, strategically locating LRT stations throughout the site within 10 minutes reach; stationing cycle bus and sharing stops at every transit node, provisioning cycle tracks within intervals of 150 metres (Bhopal Smart City Corporation Limited, 2016). The Corporation will provide for high premium charges for parking facilities on the edge of the site to achieve vehicle-free neighbourhoods and public spaces. Transit guided development along BRT and MRT axis with 3 transit zones within T.T. Nagar linked vy using green public spaces providing last mile connectivity and smart mobility.

Infrastructure provisions are to be executed under a PPP model, providing multi-application platforms to upgrade service and utility networks with an O&M period of 15 years, projecting a potential revenue of 47 crore INR. Among the private-sector stakeholders are some of the leading corporations, including Bharti-Infratel, Ericsson, SmarX and HPL dedicated solely to the installation of Smart infrastructure.

The masterplan divides the site into various clusters/hubs, further developed by various sectors of the economy to provide a thematic set of functions and facilities. Six clusters have been identified out of which the majority have been allotted to knowledge, ICT, sports, tourism and the residential sector forming the primary elements of the project. One-third of the site area has been taken up by residential and commercial spaces constituting retail and financial institutions; public & semi-public spaces catering for a convention centre, galleries, and entertainment services. On the other hand, residential land-use comprises high rise apartments, government housing, affordable housing and EWS housing. Open spaces include pedestrian and cycling tracks, acting as a wide-stretch to serve utility provisions like swales, sewerage wells etc. A substantially focused subset of the project proposed a 45 m wide boulevard, divided into 3 parts with four central lanes of MV; a 2 metres wide median; with commercial and mixed used activities alongside 12-14 metres wide cycling and walking lanes on both sides (Tata consulting engineering limited, 2016).

With the unanticipated change in the site chosen for ABD, the focus steadily changed course from citizen-centric social interventions like skill development centres and culture-accommodating proposals to Smart solutions, using optimum range of information and technology to improve infrastructure and augment capacity to bear a density 5.68 (SPA, Bhopal- B.Plan-III, 2018) times of what currently exists. The corporation intends to facilitate the proposed layers of real estate through diverse business models, modifying the image of the citizens themselves by enhancing digital connectivity as a means to reach out to the public.

Fig 4: PAN-city solutions like Smart poles (Left) and dedicated bicycle tracks (Right) (Source: Author)

The state has decided to set up a Common cloud-based Data Centre with a Common Command & Control centre platform to be used by all smart cities of MP. Bhopal has developed its physical CCC along with a B-nest incubation centre to assist upcoming entrepreneurs as well as city-based start-ups in an attempt to modify and support the change in occupational characteristics predicted after the arrival of this mission. The CCC monitors and administers junction traffic; records and handles citizen grievance redressals and

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supervises the functioning of PAN-city infrastrusture (Bhopal Smart City Corporation Limited, 2016). The project additionally provides for Smart parking services and GPS based VTS to track real-time public transport services. The corporation has appointed joint-ventures for the development of an intercative GIS mapping and maintenance system to provide reliable, timely and accurate location-based information services.

5.3 Project evaluation and financial projections

The project stands on a corporation-limited model, subjecting it to a free-market economy which, in turn, modifies the priorities of the Smart-city corporation to be profit-yielding rather than being self-sustainable, further complexifying its translation on the ground. The central government (considered as BMC equity) and the state share equal equity of 488 crores INR for the project with a convergence fund of 486 crores INR including the budget for BMC IT. Estimates of development costs for Smart-city proposal state a figure of 3440 crores including only 875 crores for PAN-city solutions which is relatively low, thus placing strenuous suppositions on the ABD project to yield high revenue projections. The corporation intends to retrieve approximately 5450 crores INR from the sale of land alone, amounting to an equity IRR of 13.8% which is above the benchmark of average IRR of 12% for acceptance of similar projects in India (Bhopal smart city corporation limited, 2015).

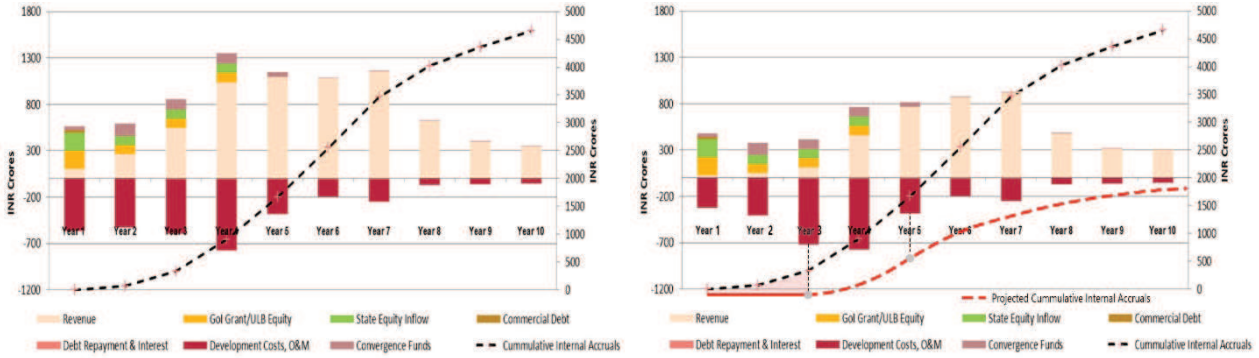

Fig 5: Smart City Bhopal financing timeline (Left) and projected changes in revenue and accruals (Right)

The devolution of funds for ABD is to take place over a period of 5 years in the ratio 6:4:1 for the respective phases. For a core area such as this, FSI for residential use is increased to 2.5 instead of average 1.5 as prescribed for the rest of the city under M.P. Bhumi vikas rules (Madhya Pradesh government, 2018). The financial timeline projects a cumulative accruals of 4652 crores at the end of 10 years where 21 crores of commercial debt is to be recovered at the end of 7 years with 12% interest. As infrastructure and real estate became the central theme in India in the past two decades, a recent rise of complications in land acquisition procedures was seen on account of amendments in the 2013 land acquisition law. This has resulted in several corporation models to incur tremendous losses and policy failures. It was thus advantageous to find such a large a land bank in a mature location like T.T. Nagar. The project in its entirety seems sustainable and financially viable, taking into consideration the social cost-benefit assessment as well as financial structuring. However, the demand assessment conducted by the corporation needs critical reviewing.

6 DISCREPANCIES AND CONCERNS WITH CURRENT EXECUTION

6.1 Development model as a subject of declines in the real-estate market

The recent dips in city's real estate scenario has substantially slowed down the ABD's progress, further reducing revenue incurred from the project. The internal accruals are thus proceeding on a much slower pace, which presents risks for the sustainability projected for the period of 10 years. T.T. Nagar previously accommodated over 2,500 government quarters on government state-owned land which were proposed to be demolished in order to vacate land for the ABD. Subsequently, relocation of the former residents had been incorporated in the Masterplan. However, absence of demand has developed an imbalance in the phasing of construction i.e. to prevent losses, the corporation only completed 43% of the initially proposed 1835 units of government housing (Bhopal smart city corporation limited, 2015). Meanwhile, delayed delivery has caused considerable inconvenience to displaced residents. As a result, BSCDCL had to collaborate with BDA by purchasing 781 (Times of India, 2018) previously unsold flats constructed in 2013 near Jehangirabad,

situated 4 km away from the site. The lack of scope in current rate of implementation has drawn out investments from the private developers, leading to elevated risks. For instance, Gammon India, one of the few influential developers in the city placed a large-scale residential project, Srishti CBD, alongside the site. The project proposed nine G+22 towers offering uncompleted state of the art services including swimming pools and lavish penthouses, making it the tallest high-rise development in Bhopal (Shrishti CBD, 2018). It has been unsuccessful in resonating a benchmark, failing to engage the service-class residents in the vicinity. As a result, such large scale projects have been rendered unreliable by the current market, showcasing extremely low occupancy rates.

Among the disclosures, the proposed Metro Rail Project has also been shelved at present, being denied funding from JICA (Pandey, 2016). This has altered the earlier supposed completion of the first phase (26 km) by 2021, creating a network of uncertainties over the outcomes of the proposal, considering TOD to be the spine of the ABD proposal.

6.2 Status of citizen participation and inclusivity

Planning for service delivery has seen a strategic shift from a centralised to a localised sphere of governance. It is regarded as an inclusive process where the community stands as a key stakeholder (Madzivhandila, 2014). Hence, the concept of community participation was supported by the promulgations of BSCDCL as a foundation, abiding operation of the ABD project. The corporation planned measures of for citizen participation like weekly 'Jan Sunwai' (Public consultations), online grievance reporting & feedback, weekly ward visits by the Mayor and interactions through social media (Bhopal smart city corporation limited, 2015). However, no previous benchmarks are available to formalise the assessment of these procedures, rendering them as experiments rather than practices. The input initiatives to accomplish this approach are based mainly around the use of mobile apps and access to online services. Bhopal Plus (The Smart City App) was launched in 2016 and revised during a year (into 3 phases), while a government-citizen collaboration platform was providing a city dashboard to the users for grievances. The ground application of the intent, however, presents a discrepancy in consultations and reach of the approach. Arun Gurtoo, an ex-convener and member of Bhopal Citizens' Forum, elaborated: "Prior to the drafting of the ABD proposal, consultations at public platforms was necessary. But, like many other local bodies, we too were not even invited. Only a few were called for their feedbacks." (Debobrat Ghose, 2016). The complain portals of the app are facing constant technical defects, leading to inefficient response and decreased usability. For instance, where the app listed more than 10,000 city-wide downloads, data retrieved from the incubation centre depicts an average registration of only 12-15 complaints. Similarly, the remaining aspects of PAN-city initiatives have also been experiencing maintenance delays and technical failures i.e. an average 75.8% of smart solutions like CCTVs, Digital Bill-Boards, WiFi hotspots as well as EV sensors are currently offline (Smart City Bhopal, 2018), except Smart lights (98.41% operational). The public bike-sharing system procures an active ridership of only 10.9% of total registered users, receiving 6-7 daily rentals on average.

Fig 6: Inside the Integrated Command and Control Centre, Bhopal (Source: Author)

Out of a total 143 samples collected amongst shopkeepers, residents and small scale vendors on the site, it was observed that 87.2% are unaware of any developments under the name of ABD (SPA, Bhopal- B.Plan-III, 2018). V.P Kulshreshtha, the Ex-JD of TCP Bhopal, states "There is a significant neglect towards marketing the ABD and innovative mechanisms to make the project legible to the general public need to be adopted." (Kulshreshtha, 2019). He also points out the absence of any demand assessment for the proposed real estate as for T.T. Nagar with respect to housing and commercial infrastructure, in turn posing probability of an adverse deviation from the desired outcome.

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7 CONCLUSION

The volume and complexity of layers that India's urbanity puts forward is quite volatile. The next decade will govern the direction and precedence of planning, possibly for an entire century. It is thus, essential to utilise the trends which the upcoming free-market economy has to offer, shaping plans to be more judicious and sustainable. Markets offer prospects to an invisible discipline of mutual benefits and needs; they simply reciprocate the social context. Hence, the socialistic role of a government can be supported by contextual attributes, further influencing real estate and financial substructuring of an area.

Governance in Indian cities involves complex overlapping of municipal and non-municipal institutions with 'tangled' jurisdictions leading to multiple poorly coordinated plans across various sectors (Pethe & Gandhi, 2017). India's federal structure places urban provisions prominently at the state and central level, with limited control for urban local bodies outside of implementation, confining their participation to policy formulation for citizens. A Top-down approach thus, dilutes ground-applications of a project, increasing possibilities of evaluation errors while placing economic benefits before equity. The Smart city, promoting a modular urban system as a concept in itself, is flawed at tje policy and implementation leveld. It is important to speculate how it translates when applied to a city with intricate social threats. The densities that Bhopal ABD estimates, being 6 times the capacity of T.T. Nagar, assumes the whole city to be a catchment. The project however, appears to be tailored only to one section of a wide-ranging socio-economic profile that the city offers. This may lead to a potential social divide where the former residents would have to bear inconvenient maintenance costs, creating uncertainities among developers as to who are the people coming here. The sudden leap from a socialistic perspective to a capitalistic approach, in a city without an adequate land market equivocates the idea of a 'smart' city and hence, the words stated in the mandate fail to systematically reach the ground. There needs to be a swift and objective understanding among the stakeholders with what went wrong. Urban renewal is usually associated with gentrification, alienating citizens in their own city. It is thus imperative to rethink the structure of approaches that guide area based development, requiring detailed land mapping and socio-economic study to quantify the need in an area. The values of the Smart city mission need to be communicated well among the locals to account local knowledge into the meaning of 'smart', generating roll-on effects and preventing cities from manufacturing something that they are not confident to disseminate.

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