



# **A METHODOLOGY FOR LOCAL ACCESSIBILITY PLANNING IN INDIAN CITIES**

PROJECT REPORT

This report was produced as part of a project titled 'Local (Low-Carbon) Accessibility Planning in Indian Cities' at the Centre for Urban Equity (CUE), CEPT University, Ahmedabad during the time period June 2013-June 2014.

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The project aims at evolving a methodology for preparation of local area plans that is based on rational and informed decision-making while being adequately representative of local aspirations.

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## Executive summary

This report presents a methodology for local area planning in Indian cities. It sheds light on the lacunae in the current planning paradigm in India which largely ignores planning at the level of a neighbourhood and has little to offer at the lower rungs of planning beyond the town planning scheme mechanism which has been adopted in certain states like Gujarat and Maharashtra. It stresses upon the need for local area planning. Through the critical analysis of international and Indian best practices in local area planning, it arrives at a methodology for local area planning that is based on the paradigms of accessibility and people's participation. It further uses this methodology to demonstrate the making of a ward plan in the Indian city of Rajkot.

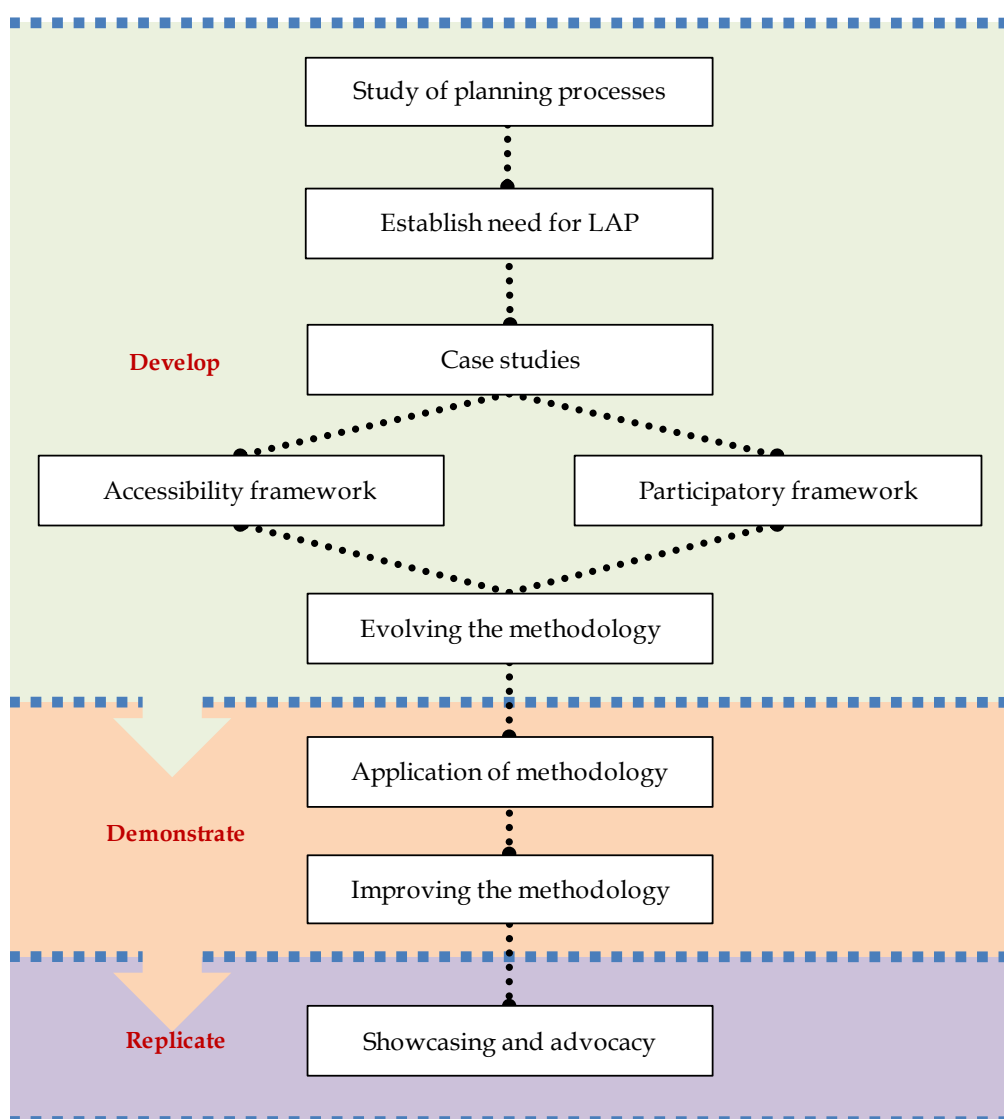


Figure E1: The components of the project

The research - of which this report is an outcome - critically analyzes the state of physical planning in India, explaining the various methods of integrating new land into cities that are growing and discussing at length the various forms of regulatory mechanisms at the disposal of the planner to control this growth. In particular, it takes a critical look at the Development Plan - Town Planning Scheme (DP-TPS) mechanism which is being touted as one of the more successful planning methods in the country. The critique reveals that the current paradigm of urban planning is at odds with the spirit of the 74th Constitutional Amendment Act (CAA) which called for decentralization of governance, while providing for involvement and engagement of the citizens with governance at the lowest levels.

The urban planning discourse at present, on the other hand, is deeply centralized and reflects the top-down approach of governance. Despite its well advertised positives, even the DP-TPS only partially engages with the citizens it is meant for. When the DP is under preparation, citizens are called for consultation. However, the suggestions put forward by citizens may or may not be considered in the final draft of the DP as there is no statutory clause that is binding in this regard. Similarly, when the TPS is under preparation, the original owners of the plots are consulted for ostensibly their 'objections' which may or may not be considered when the final scheme is prepared. Also, sites for social amenities and Socio-Economically Weaker Sections (SEWS) along with those for commercial purposes are identified in line with provisions of the Gujarat Town Planning and Urban Development Act (GTPUDA) of 1976.

It is seen that sites for social amenities are usually identified as those that do not appear suitable for any of the original plot owners. Accessibility issues are rarely taken into account. Similarly, adjacent schemes seldom 'talk' with each other, often resulting in redundancies and avoidable repetition. Another limitation of the exercise is that it does not engage with the final residents of the area, instead choosing to leave the scene once the final scheme has been notified and implemented. There is no way to assess the liveability of such schemes after plots have been allotted and built upon. Given the dynamic nature of the urban set up, this is a major letdown. To sum up, lack of consid-

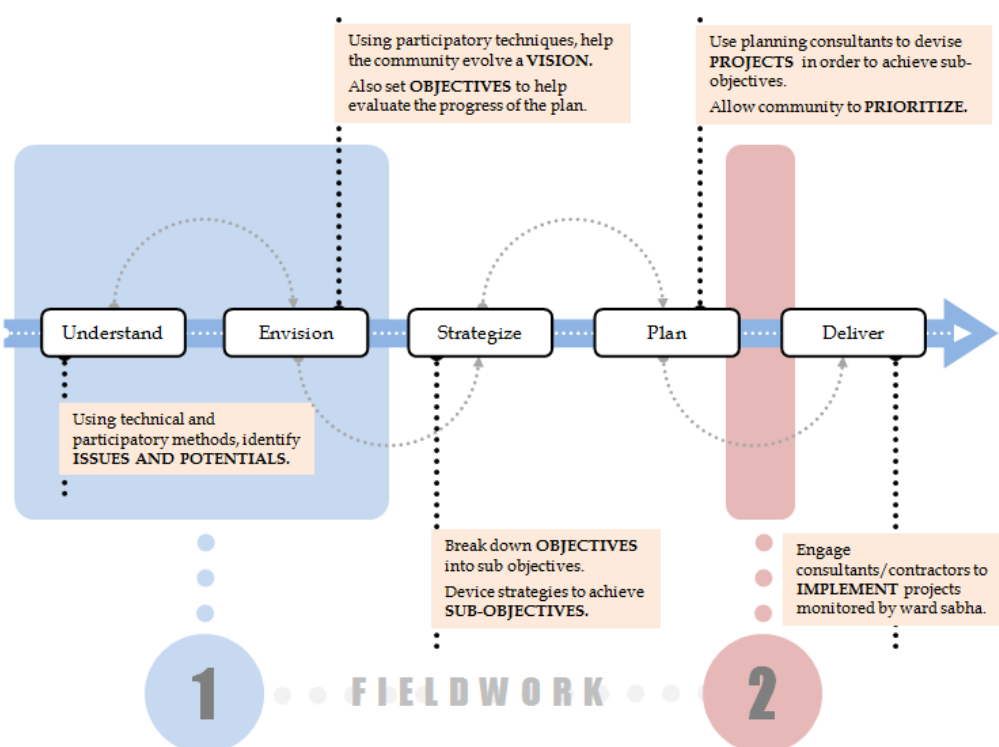
eration to people's accessibility to services, inability to interact with the rest of the city and its passive nature make the DP-TPS mechanism not the answer to the decentralization objectives of the 74th CAA. Therefore, there is a case for local area planning at the level of a ward or neighbourhood that acts as a feeding mechanism for the DP-TPS mechanism.

At the same time, several efforts are being seen across the world with regard to local area planning. The UK administration chose a new 'comprehensive' approach that involved the complete integration of accessibility planning into the land use transportation system. The 'limited' paradigm of accessibility planning, as adopted by Southern California, USA entails the monitoring of accessibility using a limited range of indicators and the use of the results to inform the transport planning process in some way, typically to assess transport equity. In contrast, the 'regulatory' approach as employed by the Netherlands avoids assessment of accessibility indicators; relying instead on land use zoning and regulation to reduce mobility.

In India, cities like Bengaluru and Pune have seen NGOs and the civil society taking the lead in mobilising the citizenry to pursue participatory budgeting, infrastructure analysis and development of local area plans. These initiatives have, sometimes at least, faced some amounts of passive resistance from the state that appears to be shaken by the sudden spurt in public awareness and demands for better infrastructure and accountability in general. The proposed LAP methodology uses concepts of accessibility and participatory planning to take urban planning to the masses. It is intended as a feedback mechanism that would enable the DP-TPS to be able to recognize and respond to local people's aspirations. It would also help in liaison with the ward budget whose contents can be arrived at through the LAP process. Finally, it is a continuous process that takes place every three to five years thereby responding efficiently to the dynamically changing urban context.

The proposed LAP methodology consists of five phases (Figure E2). The first phase, 'understand' involves the planners looking at ward in a way that helps them comprehend the role played by the ward (or the delineated area) in the context of the city. It involves the use of ArcGIS based technical analysis and

participatory methods to arrive at the deficits of infrastructure and social amenities. The accessibility maps produced as part of the technical analysis are used to help the residents identify issues and potentials of the ward. These help the ward residents to frame a vision for their ward in the second stage 'Envision'. The planner then breaks this vision into a set of achievable and measurable objectives. The third stage 'strategize' involves the planner arriving at strategies - with the help of the community, through participatory meetings - to help realize the objectives. These strategies are then transformed into projects with several options ratified by the community and form part of the 'plan'. The 'deliver' stage involves the implementation of the projects and monitored by the ward sabha. This process repeats itself every three to five years, thereby allowing for periodic evaluation of the achievement of long term vision of the ward by the residents.



**Figure E2: The LAP methodology**

The second part of this research uses the framework of the LAP methodology proposed above to develop a ward plan for one of the twenty three wards of Rajkot city. The choice of Rajkot for this purpose was based on the availability of data and past experience of having worked closely with the ward. Within the city, initially three wards namely war 9, 27 and 20 were shortlisted. Of these, ward 20 was finally selected for the purpose of demonstration of the

LAP methodology owing to its mixed residential and industrial nature, besides being located on the southern periphery of the city experiencing a level of growth that would seem exciting from the planner's perspective. Initial observations from a series of recce as well as interactions with the residents and ward corporators pointed to a lack of green spaces and integration issues within the ward. Accessibility analysis was carried out using the available data and some of the initial observations were reinforced with regard to people's accessibility or the lack of accessibility essential social amenities. This was tested and ratified or rejected on the basis of public opinion obtained through a series of discussions and interviews carried out over a period of twelve days as part of the fieldwork.

The fieldwork also helped the research team understand some of the deeper dynamics of the (un)availability of basic services like water supply, sewerage, solid waste management and storm water drainage. On the basis of these steps, a vision of a 'liveable ward' was formulated. The proposed methodology requires the setting of objectives and targets in the form of a timeline using public meetings. However, owing to limitations of time, these objectives were set by the planner in this demonstrative exercise. These objectives were then related to certain strategies formulated towards the achievement of the set objectives. Again, in the case of the proposed methodology, the community gets to select from an assortment of strategies for each objective. Here, these were done by the planner who then formulated projects and tentative budgets and phasing for implementation purposes. These projects together form the plan that the research team set out to prepare for the ward.

Overall, the project achieved the stated aim of evolving a methodology for local accessibility planning in Indian cities. This methodology was arrived at looking at the current planning paradigm and case studies across the world. The proposed methodology addressed the concept of accessibility and people's participation in planning at the lowest unit of planning that is the ward. The proposed methodology was also demonstrated in the case city of Rajkot to evolve a ward plan. If used in conjunction with the ward sabha mechanism proposed in the 74th CAA and pushed as part of the JnNURM, it can be a significant tool in deepening democracy in India. Only with sustained public

engagement in local area planning can plans be hoped to translate into reality. The proposed LAP methodology with its combination of accessibility based technical analysis of demand-supply deficits and a participatory approach hopes to achieve precisely that. □□□



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## SECTION-A

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This report consists of two sections. Section A presents the evolution of the proposed methodology for local accessibility planning in India. Chapter 1 presents arguments for the need to have a mechanism for local area planning by means of a critical appraisal of the current planning paradigm. Chapter 2 takes the reader through international and Indian attempts at local area planning as case studies, dwelling on the positive and negative aspects of these attempts. The concept of accessibility and participatory planning along with their proposed use as part of a framework for local area planning become the subject of discussion in Chapters 3 and 4. Finally, Chapter 5 presents the proposed methodology for Local Accessibility Planning (LAP), essentially local area plans with emphasis on accessibility and people's participation.

## 1. The need for local area planning in India

Planning Mechanisms are different for all states, in the Indian context. There is a regional plan which encompasses a city and some areas beyond that and there is a master plan which decided the growth pattern of the city. JnNURM, recently has mandated the city development plans (CDP), linking it with the projects. But, there is no planning mechanism for local areas, except for TP Scheme mechanisms in some states like Gujarat, Maharashtra, etc. There has already been an attempt at national level to mainstream the planning instruments like CDP (City Development Plans) and CMP (Comprehensive mobility plans) but these lack an integrated approach. In the context of changing paradigm, the existing planning system lack bottom-up, participatory, dynamic plans – both at the city level and at the local area level. There is also a great deficiency at the linkage of local area planning (having more local/contextual analysis), which can influence and improve the plans at city/regional level. There have to be local plans that integrate activities and mobility for all socio-economic groups, gender and age. Hence, if the city level plans focus on mobility and infrastructure development then the local area plans should focus on accessibility to basic services along with area improvements across the area. Ideally, the city level plans and the local area plans should feed into each other from time-to-time to create continuous planning activities. Urban areas in India lack such an approach, of integrating top-down planning with bottom-up aspirations and efforts. In fact, there are no bottom-up planning efforts at all, with a few exceptions.

Further, such plans have no meaning without integrating their implementation with the institutional and financing mechanism. The local plans should be linked with the municipal budget proposing projects. Linking planning and budgeting at area level would make budgets more target-oriented and plans more realistic and easily implementable. The 74<sup>th</sup> Constitutional Amendment, in essence is about such integration at the local level of different planning interventions along with its institutional and financing mechanisms. If such mechanisms of planning and budgeting are mainstreamed then it can rip off multiple benefits of improving of quality of urban life. Thus, it is crucial that this concept of local area plans focusing on accessibility is promoted and advocated at the national level.

### 1.1. Urban Planning in India

Planning in India is a highly centralized process owing to the Soviet-inspired approach chosen by the country after achieving independence in 1947. Economic planning is the prerogative of the Planning Commission of India chaired by the Prime Minister. Five-year plans were adopted on lines of the Soviet approach of centralized allocation of resources. Urban planning is a State subject in India. The Centre's role is, therefore, limited to laying down broad guidelines for urban development. The states are required to enact their own<sup>1</sup> versions of urban and regional planning acts on the basis of Model Regional Planning and Development Law prepared by the Town and Country Planning Organization (TCPO) in the 1970s (Mahadevia et al., 2009). There are a plethora of agencies that are connected with the realm of urban planning in the states; notably Department of Urban Development and Urban Housing, Department of Roads and Buildings or Public Works Department and others. With the 74<sup>th</sup> Constitutional Amendment Act (CAA) in place, the Urban Local Bodies (ULBs) such as Ahmedabad Municipal Corporation (AMC) have also been given the mandate to produce spatial plans for areas within their mandate. In addition, there are urban development authorities like Ahmedabad Urban Development Authority (AUDA), that are engaged in producing spatial plans for large areas in proximity of the city that are expected to experience the effects of urbanization in the coming years. Generally, plans are prepared at several scales including metropolitan region, city and ward levels. Regional Plans (RPs) are prepared- scarcely in India, though- for areas that may be bigger than a city<sup>2</sup>, as big as a state<sup>3</sup>, or occasionally even bigger than a state<sup>4</sup>. They are aimed at identifying broad sectors of growth, centres of economic activity and hierarchy of settlements. Often prepared with a horizon of twenty years, revisions are not generally undertaken.

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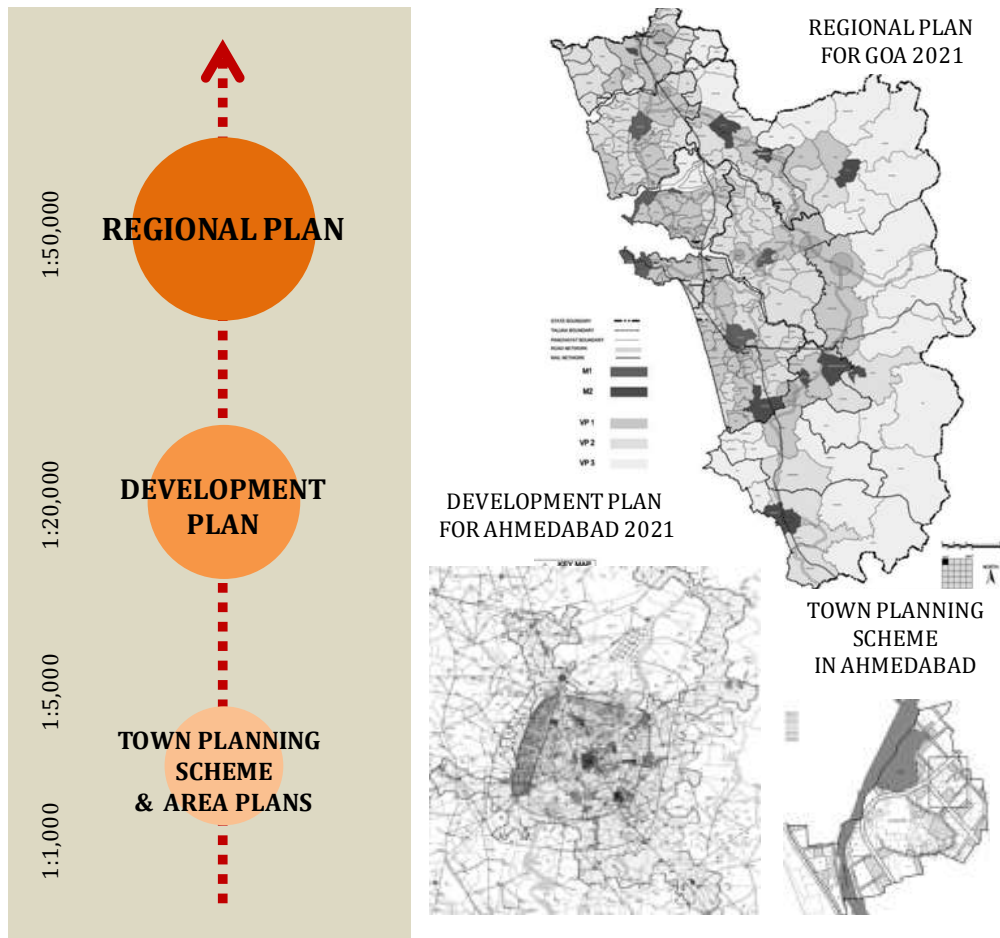
<sup>1</sup>In the case of **Gujarat**, the relevant act is the Gujarat Town Planning and Urban Development Act (GTPUDA), 1976.

<sup>2</sup>**Mumbai Metropolitan Region** (MMR), for example, encompasses Mumbai and its peripheral catchment areas covering over 4,355 square kilometres.

<sup>3</sup>**The state of Goa**, covering around 3,700 square kilometres, has a Regional Plan for Goa 2021 to its name.

<sup>4</sup>**National Capital Region** (NCR) covers around 33,578 square kilometres, and includes several districts from the states of Rajasthan, Haryana and Uttar Pradesh in addition to Delhi.





**Figure 1: Various scales of spatial planning in Indian context**

Development Plans (DPs), are statutory documents- prepared with a horizon period of twenty years- that identify and propose direction of growth, land-use, transportation network and several other projects for an ambit area comprised of the core city and its periphery. However, since there are often no capital investment plans linked to the DP, they remain mere proposals on paper, far from implementation (Mahadevia & Joshi, 2009). It must also be said that although a ten year revision period is suggested, the DP is hardly revised or updated in most cases. City Development Plans (CDPs), prepared in accordance with the requirements of the Jawaharlal Nehru National Urban Renewal mission (JnNURM), aim at attracting business investments to the city. It spells out the vision of the city (refer AMC et al., 2006) and strategizes on ways to build on the inherent strengths and improve on the city's weaknesses to attract more capital investment. Since the projects identified in the CDP have a financial plan linked to them- ostensibly to access JnNURM funds- greater chances exist of the proposals seeing the light of the day.

Town Planning Schemes (TPS), take off from where the DP process ends. It is a techno-legal method of developing serviced urban land from agricultural use. Having evolved in the twentieth century in erstwhile Presidency of Bombay, TPS came to be used in the states of Maharashtra, Gujarat, Andhra Pradesh and Kerala (Nallathiga, 2010). The new areas identified for growth in the DP are divided into workable smaller areas of 100-200 hectares (Ha). Land is pooled from all the owners and after making deductions for transport and social infrastructure, it is divided equally among the owners. The rise in land values as a result of TPS makes up for the loss of land. Besides, the original landowners may also be required to pay betterment charges, depending on the improvements carried out. TPS is the lowest scale of development planning tool, present only in some states of India.

The planning mechanisms in India have Development Plans for regional planning and determining the future growth of the city and there are T.P Schemes at micro level planning for some states in the country. The 74<sup>th</sup> constitutional amendment act proposes ward committees to be formed, for maintaining the local infrastructure and reviewing revenue collection, draft annual budget and approval of capital expenditure. Most states have not been able to implement 74<sup>th</sup> CAA in its true spirit and continued to maintain a strong hold on ULB's. In this direction Karnataka has prepared the Municipal Corporations (Ward Committee) bye-laws recently in 2013. As for Gujarat, though TPS is a continuous process, it has its own lacunae and need improvements in its implementation. Attempts have started in the Ahmedabad Municipal Corporation for Local Area plans, under the Town Planning Act. Town Planning Act also allows for selection of any area for such plans, making it a statutory document.

## **1.2. The gaps between DP and TPS**

The DP is often followed by an approach termed 'laissez-faire' where the developers take control and develop tracts of land on the periphery of the city for urban use. Such land is then divided into plots and sold, often for a premium, to people unable to afford shelter in the city centre. Provision of essential services such as water supply and sewerage take a long time. In another model of peripheral development, the city may extend major service lines till

the periphery for the developers to take-over and distribute to the individual plots. Developers may also make use of the township policies<sup>5</sup> enacted in several states to develop integrated facilities for work, shelter and entertainment in the newly earmarked areas as part of the DP (Ballaney & Patel, 2009). In any case, planning at a scale below that of the TPS is a rarity in India, barring a few attempts made in Pune and Bengaluru (Kekare, 2013). Looking at the current planning practices in India, there appears to be an inadequacy of plan preparation in India as explained in Munshi et al. (2013a), where it is argued that there is no real planning at the local level in the hierarchy of plans.

### 1.3. Evaluating the TP scheme mechanism

The Development Plan (DP) identifies areas of growth for the city, which are to be converted from agricultural use, for development. As for Gujarat TPS, the Bombay Town Planning Act came into force in 1957 in the states of Gujarat and Maharashtra. Due to couple of drawbacks, it was eventually replaced by a more recent act – GTPUDA, enacted in 1976 by the state of Gujarat. TPAs per the detailed process envisioned in GTPUDA, it involves, a) delimiting an area, b) reconstituting properties, c) levying charges for infrastructure provision, d) levying betterment charges, e) informing landowners of proposed plans, f) compensating dispossessed landowners, g) seeking consent and recording suggestions, and h) empowering quasi-judicial officers for grievance redressal (Ballaney, 2008). Ballaney & Patel (2009) opine that the perceived merits of the TPS in the Gujarat context- its image of being fair, equitable and relatively respectful of individual property rights- goes hand-in-hand with the presence of a robust enabling legislation that facilitates the relative success of supply of serviced urban land in Gujarat. The division of the land identified under development plan, into pockets of 100 to 200 hectares, are T.P. Schemes formulations. These TPS plans have detailed infrastructure design and cost estimations for the new development pockets i.e. green field development sites. It has been observed in Indian cities that there is a lack or poor quality of infrastructure in the already developed areas. There is an identifiable need of evaluating the quality of infrastructure and supply-demand gaps in the habited areas. The reservations for housing of the urban

<sup>5</sup>In the state of Gujarat, relevant policies in the domain of townships are **Gujarat Integrated Township Policy**(DoUD&UH-GoG, 2007) and **Regulation for Residential Township**(DoUD&UH-GoG, 2009).

poor in any town planning schemes are rarely utilised or built upon, forming a need of evaluating an executed TPS (Mahadevia & Joshi, 2009).

### 1.3.1. Accountability

The processes of TPS are far too centralized – too much power is vested in the State Government to approve and sanction the DPs and TPS. The State Government is responsible for undertaking both substantial reviews and procedural reviews of each and every DP (there are about 150 urban areas) and for innumerable TPSs (Ballaney, 2008). Gurumukhi (2003) also reveals, too much is at the whim of the Town Planning Officer (TPO) appointed for each TPS under the provisions of the GTPUDA, 1976. The landowners are merely consulted- for their objections and suggestions that may ultimately be ignored and not made participants, in the process of selection of sites for social infrastructure. The process of planning at the local level, therefore becomes consultative in nature rather than participatory, as might be expected in a country that embarked on the path of decentralization with a view to devolving power to the citizens. At present, also there is no link of TPS with city budgeting process.

Local Accessibility Plans (LAPs) prepared at the neighbourhood level with public participation can work towards meeting the demand for infrastructure in an area which in turn can influence the Development Plan (DP) substantially. The DP can be influenced by land use-transportation issues resolved in the LAP's. TP Schemes can help integrate newer areas into the developing city. The LAPs can suitably resolve local level deficits of social and physical infrastructure. The DP-TPS-LAP cyclic process is the framework that is being looked at in this paper, learning from the experiences of LAP across the world.

## 1.4. The case for Local Area Planning in India

### 1.4.1. Local area plan as a feedback mechanism to DP

In the planning hierarchy of India, it is proposed to bring local area plans at the level of the ward planning, taking off from where the TPS ends where applicable. In this new planning paradigm, the DP would produce the macro-level skeletal structure for the city, identifying the direction for future growth.

The TPS could continue to play its successful role in integrating new areas into the developing city. The local area plan would, in TPS areas, help in rational and scientific identification of plots for social amenities and integrate them in the new urban fabric during the preparation of TPS itself.

In older areas, the local area plan framework could be used to identify deficits of infrastructure by evaluating the supply of transport infrastructure, basic services and social amenities in view of the demand (Diwan, 2009) and integrate the same into ward-level plans with linked municipal budget implications. Local area plan in addition will also notify the conflicting land uses which can go as suggestion to TPS. The resulting interventions desired at the local level can have implications on the DP which could be integrated in the revision process. Such implications could include land-use, built-form and urban design aspects that find mention in local Development Control Regulations (DCR). Therefore, with the coming of the local area plan paradigm, it is proposed to make the DP-TPS-Local area plan framework a cyclic, mutually responsive and well-linked mechanism that would feed off each other for critical inputs during the preparation of the city's DP.

#### **1.4.2. Local area plan as a liaison to the Ward Budget**

The spatial planning unit of the local area plan is proposed to be the ward, as it has several advantages. Firstly, by making a spatial plan in an already existing administrative boundary, it would overcome problems faced by earlier planning efforts such as the lack of a statutory body to implement it. Secondly, proposals or projects suggested for the betterment of the ward via the local area plan can be financed and/ or implemented by allocations from the municipal budget. Linking these proposals or projects to a municipal budget, would ensure that they have a greater possibility of being implemented. These proposals which arise out of the local area plan would be participatory and catering to the demand of the residents of the ward. Thirdly, by using the already existing political framework, the ward corporator(s) would find it to his advantage to advocate or champion for the betterment of his ward having a planning tool, and thus ensuring a successful implementation of local area plan.

### 1.4.3. Local Area Plan as a continuous planning process

In India, greater focus is put on Greenfield development. Once an area is developed, often, no further planning efforts are made. Developed areas in the cities also lack infrastructure in some areas and somewhere it needs to be maintained. Planning, however, is a continuous process. Residents' needs change with time, and it is only appropriate to have a planning framework which is responsive to this. The local area plan is proposed to fill this gap.

### 1.4.4. Local area plan as an interpretation of 74th CAA

Whilst the purpose of the 74<sup>th</sup> CAA and JnNURM was to encourage bottom-up participation in the planning process, however the implementation of these provisions is limited across states. The 74<sup>th</sup> CAA apart from the emphasis on the formation of elected local bodies<sup>6</sup>, aimed at providing greater autonomy to ULBs by recommending the devolution of eighteen functions from the State to the ULB, including that of urban/town planning (Anon, n.d.). The 74<sup>th</sup> CAA also mandated the following: right to representation for women and other marginalized sections, formation of Ward Committees (WCs) to aid democratization and participatory decision making at the local level as well as empowering the WCs to carry out some local planning functions<sup>7</sup>. States were required to conform to the provisions of the Act by enacting their own municipal acts in the state legislature within a year of enactment of the 74<sup>th</sup> CAA. However, most states (especially Karnataka and Tamil Nadu) interpreted the Act to suit their interests and defeated the well-meaning objectives of the 74<sup>th</sup> CAA, thereby keeping a strong hold on the municipal bodies (Raghunandan, n.d.). Metropolitan Planning Committees (MPCs) were not constituted in most states. Also, the public participation in local governance through WCs was not encouraging since they were large and could not reflect the aspirations of the common man.

<sup>6</sup>Population threshold criteria for nagar panchayats (5,000-20,000); municipal councils (20,001-3,00,000) and municipal corporations (3,00,001 and above) were suggested as part of the 74<sup>th</sup> CAA. However, each state has its own criteria for declaring a local body as municipal council or municipal corporation (Datta, 1995).

<sup>7</sup>These functions include the maintenance of sanitation, solid waste management, water supply and drainage/sewerage; maintenance of roads and street lighting; maintenance of markets, parks and playgrounds; maintenance of school buildings, dispensaries and maternity and child welfare centres, if they are under the control of the municipality; review of revenue collections; preparation of draft annual budget of its jurisdictions and forward to the Corporation/Council for consideration and incorporation in municipal budget and approval of works of capital nature as well as maintenance to a limited extent of amount.

JnNURM stressed upon community participation in local governance through the enactment of a Community Participation Law (CPL). The Mission required the setting up of WCs<sup>8</sup> in the identified cities as a mandatory condition for receiving funds. Whilst they were not conceived as decision making bodies but were aimed at making the ordinary voter a part of the ULB's decision making process. In addition, they were empowered to seek and obtain information on the status of identified projects from the ULB. However, the enactment of the CPL was strongly resisted by several states, leading to it getting drafted only in the states of Andhra Pradesh, Assam, Gujarat and Karnataka. Even in these states, the Ward Committees, Ward Sabhas and Area Sabhas are not fully functional owing to official apathy, heavy backlog of identified projects and depreciating public interest (Municipal & Lama-Rewal, 2007). In addition, the enactment of the Local Area Development Scheme (LADS) of 1993 which allocated a specific sum<sup>9</sup> of money annually to the Member of Parliament or Legislative Assembly representing a constituency runs counter to the objectives of participatory planning and local governance. Such spending undermines local governance as it enables the higher representative to intervene in local issues without considering public opinion (Zerah et al., 2011). Therefore, even though measures have been taken through the 74<sup>th</sup> CAA and JnNURM towards strengthening local governance and participatory planning, schemes like the MPLADS weaken such measures, thereby disincentivizing local area plan. the public participatory methods can be used for understanding the demand side of the infrastructure, local area plan can act as an avenue where people can communicate with their elected representatives and put up their demands for an area. Through local area plan, the bottom-up and participatory aspects of the 74<sup>th</sup> CAA and the JnNURM Mission can be met to a larger extent.

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<sup>8</sup>Ward Sabhas were to be set up in areas with a smaller population, while Area Sabhas were to be set up in areas with a large population. A Ward Sabha was to perform the following functions: generate proposals and determine priority of schemes in the ward or area and forward to the Ward Committee for inclusion in Ward Development Plan; to identify the eligible beneficiaries under government sponsored welfare schemes on the basis of criteria already fixed; To identify deficiencies in the services provided by municipality; to suggest location of street lights, public taps, public conveniences etc; to cooperate with Ward Committee in maintenance of sanitation; to impart awareness on matters of public interest like literacy, health care, environmental issues and anti-pollution issues etc (Rao, 2011).

<sup>9</sup>Presently a sum of **five crore rupees** is allocated to each MP/MLA as part of this scheme subject to certain conditions on the spending pattern.

### 1.5. Conclusion

The above chapter established the need for local area planning in India through the careful study of planning processes in India. The DP-TPS mechanism was explained and some gaps were observed with regard to the ability of the TP schemes to feed into the DP. Also, the limited ability of the TP to respond to temporal changes as well as people's accessibility to social amenities was highlighted. In this respect, the need for a dynamic local area planning mechanism is established. The following chapter looks at the various approaches that have been taken by countries across the world while attempting to prepare local area plans.



## 2. Experiences in Local Area Planning

### 2.1. International experiences

Several countries have already initiated local area planning based on accessibility studies. The UK experience is a prime example of such initiatives. As Curl et al. (2011) point out, accessibility planning was successful in raising the issue of accessibility deficits for socially excluded groups in that country. Additionally, there are well-documented instances of Local Accessibility Plans (LAPs) being prepared and implemented in USA and the Netherlands (Envall, 2007). Their approaches to accessibility planning have been different, based on the priorities of their respective governments. The UK administration, according to Chapman and Weir (2008), chose a new ‘comprehensive’ approach that involved the complete integration of accessibility planning into the land use transportation system. The ‘limited’ paradigm of accessibility planning, as adopted by Southern California, USA entails the “monitoring of accessibility using a limited range of indicators and the use of the results to inform the transport planning process in some way, typically to assess transport equity” (2008, p.25). In contrast, the ‘regulatory’ approach as employed by the Netherlands avoids assessment of accessibility indicators; relying instead on land use zoning and regulation to reduce mobility. The following section features a discussion on the various aspects of accessibility planning as practised in these countries.

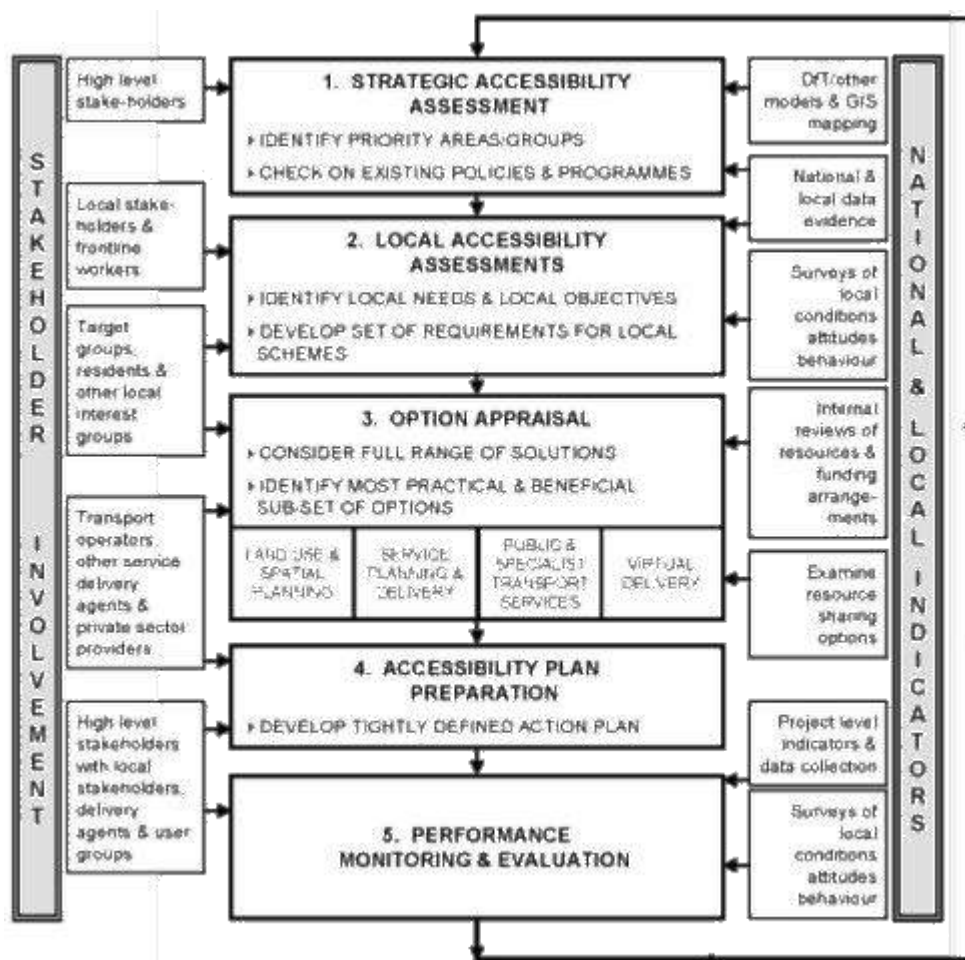
#### 2.1.1. United Kingdom

The UK experience with accessibility planning is focussed on bringing people from the at-risk category to the mainstream by addressing social exclusion (SEU, 2008). Accessibility planning is integral to the planning process and is used at all stages, from strategy preparation to project evaluation. The framework revolves around the development of accessibility strategies and plans at the local level by Local Transport Authorities (LTAs). Starting from 2006, LTAs prepared Local Transport Plans<sup>10</sup> (LTPs) that identified local priorities and set the transport policy for an area. The Department for Transport

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<sup>10</sup>In United Kingdom, **Local Transport Plans** are statutory documents prepared by local transport authorities, and required by the Transport Act 2000. They are public documents that set out the local authority's policies, strategies, objectives and targets for improving transport in their communities (DfT, 2009c).

(DfT) guides several LTAs in preparation of LTPs and ensures intra-governmental cooperation in order to achieve the desired results of accessibility planning (DfT, 2009a; DfT, 2009b; DfT, 2009c). The process of accessibility planning in UK is depicted in **Figure 2**. The LTAs use core indicators established by DfT (viz. accessibility to school education, further education, work, hospital, doctor, and supermarket/food store) as the basis for local assessments using gravity and threshold measures for both main population as well as at-risk groups. Additionally, local indicators (viz. pedestrian access, affordability, group-specific characteristics, and alternative modes of travel and service delivery, attractiveness of a service) are used to complete the picture.



**Figure 2: Key inputs and processes in accessibility planning**

Source: (Chapman & Weir, 2008)

Chapman and Weir (2008) opine that accessibility planning in UK is a structured and systematic process that assesses a wide range of aspects of accessibility using standardized indicators of accessibility. It is a continuous, outcome-driven process that requires the development and maintenance of part-

nerships with stakeholders from various levels of government and community. It enables comparative analysis of various population groups across geographical areas and provides for guidance, monitoring and coordination of the program at the national level.

### 2.1.2. United States of America

Accessibility planning in the USA is not based on any specific policy on the subject. However, a range of non-prescriptive federal policies have encouraged transport planning agencies to consider accessibility planning as an issue. The overall focus has been on achieving equality of opportunity and access to services through transportation equity. The decentralized nature of government in USA has resulted in a highly variable approach to accessibility planning across larger metropolitan areas (Chapman & Weir, 2008). The responsibility for transportation equity and assessment lies with regional transport planning agencies such as Metropolitan Planning Organizations (MPOs). The Federal Transit Administration (FTA) and Federal Highway Administration (FHWA) ensure that regional issues are addressed effectively by the Regional Transport Plans (RTPs) prepared by the MPOs.

RTPs have a horizon period of twenty years and are updated every three years. Accessibility is one of the 'system performance outcomes' that demonstrate the extent to which the RTP helped improve transportation at the system level. Additionally, accessibility assessments made during the development of the RTP- a form of scenario planning- measure the effect of transport investments on those at risk of exclusion. Accessibility indicators such as percentage of the population able to travel between work and home within 45 minutes during peak hours and percentage of retail and service jobs accessible in 45 minutes by car and public transport are used during the development of the RTP. The acceptance of car as a mode of travel to office from home and back may be noted.

### 2.1.3. The Netherlands

The Netherlands developed a new regulatory approach that gave equal emphasis to accessibility and mobility (Envall, 2007). The A-B-C location policy- alternatively named as 'the right business in the right place'- was used to

classify urban land according to their accessibility level with the aim of optimising land use in relation to the availability of public transport and demand for car use. The A-B-C policy envisaged the grouping of trip origins and destinations in close proximity. Moreover, it foresaw the location of businesses in relation to their transportation needs. The policy is applied to cities having more than one lakh population.

The A-B-C location policy applied across national, provincial and local levels of government. However, the city-based accessibility plans were prepared by the local government. The policy required the preparation of ‘accessibility profile’ for locations- graded on their accessibility level- and ‘mobility profile’ for businesses- based on their access needs. Locations having high accessibility by public transport were graded ‘A’ and located at major public transport nodes. Locations having reasonable access by public transport and car were graded ‘B’ and located along public transport corridors. ‘C’ locations have poor public transport accessibility and are located on main roads so that they can be accessed by car. Mobility profiles were assigned on basis of employment density, mobility of employees, visitors intensity and dependence on freight services. Shops are located ideally in areas grade ‘A’, offices in ‘A’ and ‘B’ areas and ‘C’ areas are allocated to businesses that are extensively dependent on transport (Table 1). Parking places in locations ‘A’ and ‘B’ are limited in order to enforce the policy (Chapman & Weir, 2008). The Dutch approach, therefore, avoids the explicit or implicit use of accessibility measures but relies on a regulatory mechanism of allocating land use and activities to achieve its aim of reducing avoidable car mobility.

**Table 1: Matching accessibility and mobility profiles**

Mobility characteristics	A-location	B-location	C-location
Work intensity	Intensive	Average	Extensive
Car dependency for business trips	Low	Average	High
Visitor's intensity	Intensive	Average	Incidental
Dependence on freight transport	Low	Average	High

Summarizing the international case studies, the UK experience was based on standard set of accessibility indicators and a special emphasis on pedestrianization and use of NMT was found in the parameters. There were forward and

backward linkages, where people got chance to go back and forth, evaluate the outputs and suggest improvements. In USA, unlike UK experience, it was based on people's accessibility by cars, which is not something one would like to encourage for an Indian compact city. In Netherlands, it was more of a regulatory approach. They had policy, based on which they evaluate land and then they allocate this land for particular land use, according to the accessibility levels.

In all these case studies, the local authorities initiated or were highly involved in the process as well as accessibility was at the core whereas Indian case studies have tried a bit more on the participatory approach to LAP.

## 2.2. Indian experiences

Although spatial planning mechanisms in India have not adopted an accessibility-based approach, however, it becomes imperative to mention local area planning efforts in Bengaluru, Delhi and Pune. The initiatives of LAP in Bengaluru and Pune were made by two non-State actors, unlike that in Delhi, whereas the state implementation of participatory budgeting in Pune is worth being studied.

### 2.2.1. Participatory ward visioning and other initiatives in Bengaluru

Bengaluru, the capital city of Karnataka is the third most populous city and the fifth most populous urban agglomeration in India. However, approximately 20% of its population lives in slums (Walk Through India, 2010). The Bruhat Bengaluru Mahanagara Palike (BBMP), the administrative body for Bengaluru city was formed in 2007 by merging the erstwhile Bangalore Mahanagara Palike, along with eight Municipal Councils and 110 villages. The BBMP area measures approximately 741 square kilometres.

**Table 2: Select demographic indicators for the year 2011-Bengaluru**

Indicator	Bengaluru City	Bengaluru UA <sup>11</sup>
Population	84,25,970	84,99,399
Sex Ratio (per 1000 males)	-	914
Literacy (%)	-	89.56

Source: Census 2011

<sup>11</sup> **Bengaluru UA** includes Bengaluru city, Chikkabidarakallu, Chikkagubbi, Doddagubbi, Doddathoguru, Guddahalli, Hunasamaranahalli, Kannur, Kodigehalli (Part), Ramasandra, Srikantapura, Ancephalya, Suggatta, Totadaguddadahalli and Vaderapura.

Many initiatives at LAP in Bengaluru were taken by a not-for-profit organisation Janaagraha that works with citizens and government to improve the quality of life. Janaagraha was founded in December in 2001 by Swati and Ramesh Ramanathan, with an aim to strengthen democracy in India via citizen participation in urban local government. A number of initiatives which were launched include – Ward Works Campaign (2001), PROOF (Public Record of Operations and Finance) (2002), Ward Vision Campaign (2003), Ward Infrastructure Index (2010, 2013), Urban Capacity Building Programme (2011). The organisation has also been instrumental in drafting the Nagara Raj Bill<sup>12</sup> (Community Participation Law).

In 2001, the first campaign, ‘the Ward Works Campaign’ was launched by Janaagraha in Bengaluru. This campaign inspired by the Porto Alegre model in Brazil, was based on the premise that local citizens should have a voice in deciding how the municipal budget should be spent in their ward (Neighbourhood Vision Campaign, 2003). This was to change the practice of making neighbourhood infrastructural decisions from that of the Ward Corporator’s discretion to one involving citizen participation. The campaign ran for four months in all hundred wards that were under the jurisdiction of the erstwhile Bangalore Mahanagara Palika<sup>13</sup> (BMP). The campaign saw varying levels of citizen participation. Although interest was displayed by residents in two-third of wards, active participation was observed in thirty-two wards. Twenty-two wards of these thirty-two were successful in incorporating the citizens’ priorities chosen in the list of works to be carried out in the wards. Of the total amount allocated for this purpose, approximately one-fifth was prioritized with citizen input (Clay, 2007).

The first stage involved mobilisation and training of citizens to conduct surveys in areas that required attention. After which, with Janaagraha assistance, the project costs were calculated based on the BMP’s schedule of rates. A prioritisation exercise was conducted with elected representatives and citizens as the costs of identified projects exceeded the availability of funds. The sec-

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<sup>12</sup> A bill to institutionalize citizen’s participation in governance by setting up, recognizing and empowering general people’s assemblies in each *mohalla* of urban areas of the state with adequate functions, functionaries and funds.

<sup>13</sup> Bruhat Bengaluru MahanagaraPalike from 2007.

ond stage involved tracking the progress of work from the Plan of Works stage till a work order was issued. The final stage involved monitoring of work with the contractor and the Engineering department, by the citizens. Thus, to discuss the status of works, implementation concerns as well as to engage citizens in planning, the Monthly Review Meetings (Ward Sabhas) were created. Attendance by officials was mandatory and information was made available on a monthly basis.

The subsequent year, Janaagraha launched a campaign directed at increasing transparency related to the budget of the erstwhile BMP which resulted in the public disclosure of quarterly financial statements in public forums. The campaign called Public Record of Operation and Finance (PROOF), was conceived by Janaagraha who collaborated with the Public Affairs Centre, the Centre for Budget and Policy Studies, VOICES and the Akshara Foundation. PROOF aimed at empowering citizens through public finance education and engagement in government financial disclosure processes, improving financial transparency paired with first-hand citizen participation and enhance government accountability through the assessment of public service delivery with standardized benchmarking (Governance Knowledge Centre, 2010).

In 2007, through PROOF, a public disclosure law was introduced in the Jawaharlal Nehru National Urban Renewal Mission (JnNURM) whereby all municipal bodies are required to disclose financial records to the public. In 2010, the Thirteenth Finance Commission included the service level benchmark framework to municipal corporations across the country. PROOF still continues to be practised in Bengaluru and operates through the service level benchmark model in other cities. PROOF has also been recognised as a World Bank best practice in the Asia-Pacific, a UNDP successful accountability idea and a recognised effort by CRISIL for the award of innovative excellence in public institutional accountability (Anon, 2003).

In September 2003, the Ward Vision Campaign was launched by Janaagraha, as the subsequent stage of the Ward Works Campaign. It was developed as a formal process so as to enlist citizen participation on various issues. This

campaign was a more intensive one and was carried out in ten wards<sup>14</sup> of the erstwhile BMP. The campaign ran with the motto of 'Change your ward to Change the world', highlighting its local scope. A Ward Vision was to be developed with a time-frame of three years, as against ten or twenty years for two reasons, one being that it could be subjected to a more rigorous monitoring as well as each Corporator had three years left in their term.

The campaign was steered by community members in each participating ward. Janaagraha provided tools for participation such as researching best practices, collecting and compiling civic information for the ward, so as to create Ward "Fact Files<sup>15</sup>" and maps etc. A book was also published by Janaagraha that gave the on-ground realities of various civic issues that affect residents along with possible solutions. A comprehensive property survey of nine wards was carried out by students. Communication strategy and outreach was planned by Janaagraha, all ten communities, volunteers and media professionals which included city-wide advertising through hoardings, flyers, banners and leaflets in English and Kannada. Communication materials in Tamil and Urdu were also provided in diverse wards. The communications strategy was modified to reach targeted groups such as the urban poor and the youth.

Each ward was broken down into smaller, recognisable areas or neighbourhoods, which was done so as to create a group identity. Issue identification was the first task, which was followed by group discussions so as to identify solutions. Expert panels were constituted so as to provide necessary information to participants on particular issues. Expert notes were made available to participants after discussions. The process was an inside-out process, which started out with the individual and progressed to a group, then a neighbourhood and finally, the ward (Anon, 2003).

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<sup>14</sup>The campaign was launched in the following wards – Vishveshwarapuram (Ward 50), Srinivasanagar (Ward 54), Padmanabhanagar (Ward 55), Ejipura (Ward 68), Jeevanbhimannagar (Ward 74), Vasanthnagar (Ward 78), Sarvagnanagar (Ward 85), Kadugondanahalli (Ward 94), Hebbal (96) and Sanjaynagar (Ward 100).

<sup>15</sup>A Ward Fact File contains information regarding the local election details, number of schools, hospitals and other infrastructure information.



In each ward, a group of five to twenty-five persons formed a 'Core Committee' which took the initiative to see the program through. The Core Committee members spent four to twenty hours per week on the Ward Planning Campaign. Formal team-building exercises and meeting-management trainings were organised for Core Committee members. Competency Development Services (CDS) was hired by Janaagraha to develop training modules and conduct trainings. The Core Committee members were responsible for the following major parts of the campaign:

- 1) Outreach to the entire ward: distributing flyers, door-to-door invitations, contacting other associations,
- 2) Marking neighbourhood areas and corrections on the map
- 3) Regular contact with Elected Officials and local administration
- 4) Organizing the venue for all ward-level workshops
- 5) Facilitating "mini-workshops" and other meetings
- 6) Staying in touch with workshop participants
- 7) Coordinating the writing of the Ward Vision Document.

A series of five workshops were held over a period of four months. In the first workshop, community members brought up issues faced by them, and marked them on individual maps via stickers, which were subsequently transferred to a larger map. Information was later transferred into Data Capture grids which were returned to Janaagraha. Between the first and second workshops, a database was created so as to generate issue-wise reports for the communities, the Corporator and the appropriate agency. Volunteers also helped communities send reports directly to the Zonal Deputy Commissioner or the Executive Engineer, followed by phone calls and office visits to explain the workshops and involve the agencies through written response or by attending the second workshop (Neighbourhood Vision Campaign, 2003)

The second workshop was divided into two sessions – one, costing issues at the neighbourhood-level, and the other on solutions to non-cost issues. Costing worksheets and Problem Solution Grids were provided in the first and second session respectively. Atleast one agency representative was present in discussions in all wards. In this session, individuals volunteered to be Citizen Anchors for the different issues, where they pledged to learn more about the

issue, talk to other community members and write a note for the Ward Vision Document. Each Citizen Anchor was provided relevant chapters of the citizen's handbook, a full report of problems identified in their locality, Costing Grids and the Problem and Solution Grid to begin his/ her task. After the second workshop, a workshop was held to for Citizen Anchors so as to explain to them their role, guide them on planning their documents as well as compiling lists of problems and solutions.

A third workshop was held so as to inform communities about the potential revenue through property taxes that their ward can generate as well as the neighbourhood costing plans, so that projects could be prioritized. Whilst the actual revenues collected by BMP and estimates by Janaagraha were compared, it was realised that if property tax collection was increased and if only a portion of which was retained for the ward, infrastructure needs could be met. This led to the idea of the Ward RECI-P (Revenue Enhancement with Citizen Participation) program.

The fourth workshop's purpose was to prioritise the list of projects and guide the process of identifying a good model, after which it was incorporated in the Ward Vision Document. The fifth workshop was focused on generating ideas about how the workshop outcomes could make an on-ground difference in each ward such as building a relationship with the Corporator, taking the Ward RECI-P idea ahead, increase participation overall as well as in the vision document presentation to the Commissioner.

On December 6<sup>th</sup>, 2003, the Ward Vision documents were presented to the city government officials who included the Mayor, Commissioner and Special Commissioner. Each Ward Vision document had the following structure – an introduction to the ward and the campaign, a prioritized grid of issues having cost and non-cost solutions as well as annexure which included maps, costing sheets, student documentation and the campaign summary. The major issues that the wards faced ranged from a stray dogs menace to introduction of new public transport routes. The following tools were used in the campaign.

- Categorisation of issues and problems to ensure a uniform structure for data collection.
- Colour-coded stickers denoting issues and maps were provided to each participant for issue identification.
- Creation of a database in which the identified issues were compiled and reports generated for stakeholders.
- Creation of the 'Problem and Solution grid' for each issue along with a second grid - 'Determining factors for each solution' which detailed out each solution by finance, policy related, citizen involvement, implementation time, jurisdiction of solution and agencies concerned.
- Creation and provision of worksheets, particularly the inclusion of costing grids which were based on the Corporation's benchmark costs, which allowed citizens to estimate costs of works by themselves.
- A Ward Yatra, was held in each of the participating ward, before the official launch of the campaign so as to sensitize community members to the ward, to do a SWOT analysis for each neighbourhood, create awareness about the campaign and to start a dialogue between residents.

In 2010, Janaagraha launched a citizen centric quality of life index that measured the outcomes of public infrastructure and services at a household level called Ward Infrastructure Index. The exercise was carried out in 198 wards under the jurisdiction of the Bruhat Bengaluru Mahanagara Palike (BBMP). Existing urban infrastructure was mapped against service quality standards. Twice a year, data was collected through primary surveys, field observations and stakeholder interviews. A methodology to measure the indicators was evolved using technical inputs, research and expert consultation. A score was used to measure the condition of the ward in a particular category. Each category consisted of a number of indicators (see Table 1), with the minimum score being 0 and maximum 10 based on specific benchmarks.

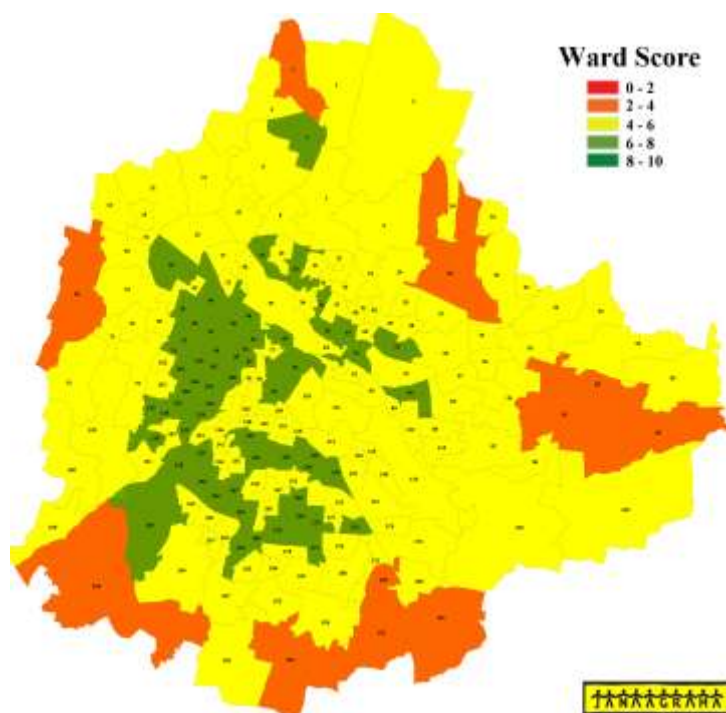
Although benchmarks were standards defined by Union or State law, however in absence of these other benchmarks based on research into Indian city

life were arrived at. In order to arrive at valid, objective and reliable indicators – indicators were measured as directly as possible by surveyors. Indicators were weighed according to their importance in the overall quality of life. Scores for all categories were compiled and formulated into an interactive GIS based map. The results of the data were published in print media and the GIS map was published online. This exercise was repeated in 2013, allowing a comparative analysis over time.

**Table 3: Categories and indicators for the Ward Infrastructure Index**

Category	Indicator
<b>Water</b>	Water pipeline coverage
	Continuity of supply (no. of hours/day)
	Quality of water supplied
	Average cost per capita
<b>Environment</b>	Air pollution
	Percentage of green cover
<b>Sanitation</b>	Access to sewerage network
	Percentage of households with daily door-to-door garbage collection
	Presence of litter bins on street
	Cleanliness of roads
	Percentage of road network with storm water drains
	Instances of flooding
	Access to public toilets
	Quality of public toilets
<b>Mobility</b>	Coverage of public transport network
	Frequency of public transport
	Speed of travel (public and private transport)
	Average cost of travel/kms
	Presence of footpaths with proper width and condition
	Presence of dedicated bicycle lanes
	Street lighting
	Pedestrian safety at junctions
	Quality of road surface
	Injuries and deaths due to accidents
<b>Public Amenities</b>	Distance to closest park
	Distance to closest playground
	Adequacy of parks and playgrounds

Source:(Janaagraha, 2011)



**Figure 3: Ward Infrastructure Index Map for Bengaluru**

Source: (Janaagraha, 2011)

The initiatives taken by Janaagraha are commendable and have been appreciated by citizens and government alike. Janaagraha's initiatives came at a time when there was a conducive environment in the form of the RTI movement, the BATF, use of IT as well as the BMP switching to a double entry and fund-based accounting system. However various issues/ learnings have been brought to light which could be incorporated in future initiatives to make them more successful.

The initiatives taken up by Janaagraha require a constant engagement with the urban local body as well as multiple agencies or departments responsible for the provision of utilities. While it is imperative to have on-board the urban local body so that deliverables or outputs can be realised, it may not always be practically possible. Janaagraha's earlier programs were faced with resistance by Ward Corporators, which resulted in the BMP Council passing a resolution in 2002, warning Janaagraha of legal action, if it did not stop misguiding people and giving an incorrect picture about the civic body's status. The former Mayor, accused it of running a parallel local self-government (Anon, 2003). The BMP officials felt that some issues were out of their jurisdiction and were unhappy because they were not given an opportunity to

help set the agenda in public meetings (Raman, 2006). In the PROOF campaign, despite the initial resistance by the BMP, they decided to continue and comply with PROOF on account of the positive attention it immediately drew. Although support from Ward Corporators was sought, it was not achieved perhaps on account of insufficient time spent communicating the potential benefits as well on account of a strong opposition note sent to the entire council by a former mayor (Governance Knowledge Centre, 2010). Later campaigns such as the Ward Vision program involved agencies like the BMTC, BWSSB, BMP and the Bangalore Police in the workshops conducted with citizens.

Janaagraha's experience with engagement of citizens provides learning which could be incorporated in future initiatives. Particularly of interest is the communications strategy followed which varied to cater to specific groups as well as the intended outreach. Other issues included preference for volunteers or facilitators who knew the local language and the area, varying levels of participation, imprecise coordination resulted in missing deadlines or planned activities not being executed and a greater specificity while discussing problems. Some of the ward initiatives taken up by Janaagraha, they were carried out only once, restricting a chronological evaluation of the ward. In certain campaigns, there was a repetition of wards selected as pilots. Another problem was that existing maps were not updated in accordance with the city's growth, resulting in time spent on updating of maps through ground surveys and satellite imagery.

### 2.2.2. Participatory budgeting in Pune

Pune city, with a population of 3.11 million is the second largest city in Maharashtra after Mumbai. Almost 22.16% of Pune city's population lives in slums. The city is also the administrative headquarters of the Pune district. The city is known for its educational institutions and is an industrial centre. The city is administered by the Pune Municipal Corporation which was established in 1950 under the Bombay Provincial Municipal Corporations Act, 1949. The city limit is divided into 76 electoral wards, with each ward having a population of around 46,000.

**Table 4: Select demographic indicators for the year 2011-Pune**

Indicator	Pune City	Pune UA <sup>16</sup>
Population	31,15,431	50,49,968
Sex Ratio (per 1000 males)	945	899
Literacy (%)	91.61	91.42

Source: Census 2011

Participatory Budgeting in Pune was initiated by Dr. Nitin Kareer, the then Municipal Commissioner of Pune Municipal Corporation. Inspired by the public meeting of PROOF in Bengaluru, he discussed a possible methodology and using this background drafted a primitive model where this could be adopted for Pune. Two different processes were followed in the PMC in 2006-07, one by the Urban Community Development Department and the other by the Zonal and Ward Offices. The UCD gathered information about participatory budgeting collected by various Resident Community Volunteers during December 2006 and January 2007. The UCD organized 1900 meetings in which 3500 works costing Rs 7 crore was submitted to PMC. The process in the Zonal and Ward Offices were conducted from February to April 2007 which aimed to cover the rest of the city as well as slum settlements. The idea of PB was initially not accepted, terming it as “Death of Democracy”, but after discussions, a basic process to carry out the PB through PMC ward offices and the UCD was worked out. The initial public meetings were held by the National Society for Clean Cities<sup>17</sup> to provide citizens an overview of the structure and functioning of the PMC as well as the process of municipal budgeting in Pune. Although a Memorandum of Understanding (MoU) was drafted, but due to conflicts was never signed, the organisations partnered each other without any formal agreement. The Centre for Environmental Education (CEE)<sup>18</sup> looked into the toolkit, material development and capacity building, while Janwani<sup>19</sup> dealt with the management and the mobilization of people for meetings. Students from University of Pune, Economics Department helped CEE to develop tools of the PB process. The citizens were invited for the meetings by advertisements in the newspaper and also by phone calls

<sup>16</sup> Pune UA includes Dehu, Dehu Road, Kirkee, Pimpri-Chinchwad and Pune.

<sup>17</sup> NSCC is a citizen’s group in Pune, which encourages the formation of mohalla committees.

<sup>18</sup> CEE is an NGO (Non-Governmental Organization), supported as a centre of excellence by the Ministry of Environment and Forests, Government of India.

<sup>19</sup> Janwani is an initiative of Mahratta Chamber of Commerce Industry and Agriculture. It was set up in 2006 and is modeled on Janaagraha in Bangalore.

to several organizations like *mohalla* committees, waste-picker's association, lions club, rotary club, senior citizens organizations, *grahak* panchayats, etc. Initially four zonal meetings were held and after wide publicity, a series of zonal meetings were held at each zonal office. The forms for suggestions given to the citizens were different for slum and non-slum areas. Using the learning from the *Janaagraha* model, CEE located a large number of volunteers and trained them to be facilitators. A few wards were selected and the works that were preferred by the citizens were identified and mapped and baseline data was collected as well. After which, an approximate costing of the project was arrived at with the involvement of Junior Engineers from PMC, resulting in the categorization of projects.

An amount of INR 2 million, out of which 0.5 million was allocated for slums, was decided by the municipal commissioner to be allocated for works of participatory budgeting process. The project cannot be more than 0.5 million and it should comprise of local needs, generally the ones that are overlooked by the ward officer or corporation. After these processes, the full-fledged PB process came into being in 2007-08, process has undergone modifications but is continued to be practiced. At the start of every calendar year, the PB process is widely publicized. Citizens and organisations are then invited to various zonal and ward meetings. Citizen Submission forms which are used to opt for a particular project<sup>20</sup> from a list of specific works to be carried out in an area as well as list any problems being faced. Forms are received and processed by electoral ward and each project is assessed for both suitability and further classified as budgetable and non-budgetable, incomplete and complete, duplications and original.

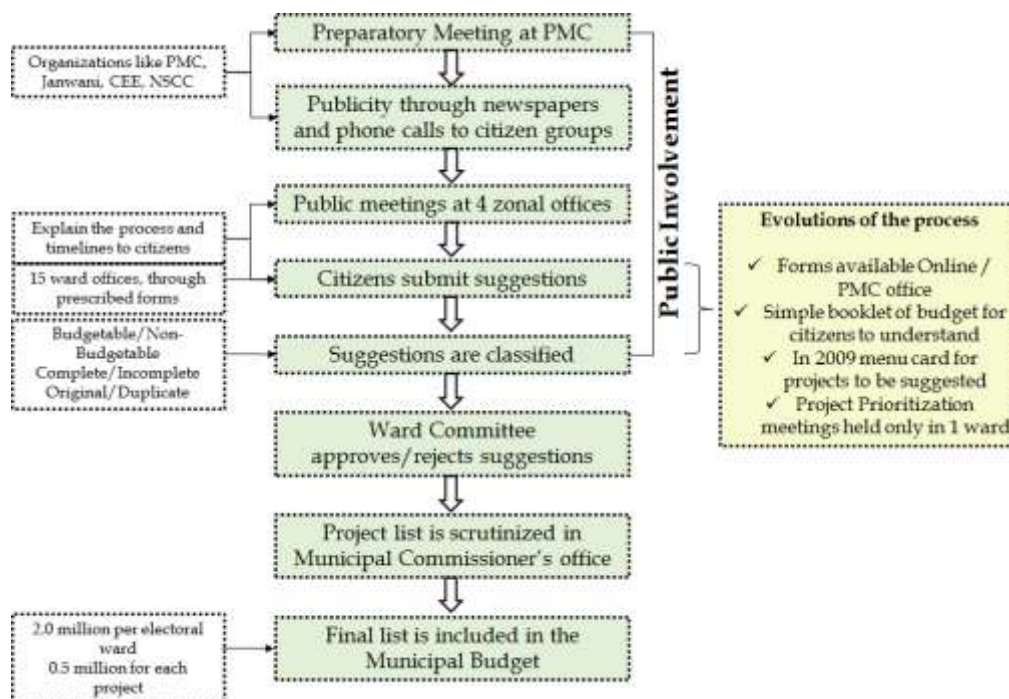
Projects are entered in a database, compiled and a rough estimate of all suggested works is arrived at. In mid-March a public meeting is held at each ward office to provide an overview of the compiled list of projects. Projects that exceed the allocated amount of Rs 0.5 million/ ward are prioritized while some depending on the scale are shifted to the main municipal budget. The phasing, implementation and monitoring of the project goes on throughout

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<sup>20</sup>The following projects can be sought— pavements and bridges, roads, street lights, traffic lights, bus stops, public parking, public toilets, waste management, water, drainage, parks/ gardens, bus stand, signage.



the year (Menon & Badgujar, 2007). If further clarifications are necessary, the respective citizen is contacted. When the PB initiative in Pune started in 2007-08, Rs. 18 crore was allotted, which increased to Rs. 26.2 crore in 2012 to Rs. 36.9 crore in 2013 on account of the interest shown by the citizens. Over the years, the organisations involved in PB such as Janwani and CEE continue their activities.



**Figure 4: The Pune model of participatory budgeting**

Source:

Along the years, there have been few modifications in this process. In 2007, Mr. Pradeshi, the then municipal commissioner concerned about the role of ward officers, directed that the suggestions from the citizens would be considered by the ward committees for inclusion in the ward budget. The project prioritization meetings stopped taking place in most of the wards, as citizens started losing interest in the process. In 2009, a web-based application was developed and positioned on the PMC website for online submission of PB suggestions. Janwani also made a book with simplified budget for PMC, even in Marathi for more people to understand and participate in the process. CEE initiated work on the menu card of items that could be suggested/ requested through PB. The menu card contains photographs of the items such as foot-paths, benches, streetlights, bus stops, etc. Now, three electoral wards were chosen to see if the projects suggested by citizens in PB were actually implemented and the status of these projects.

The initiatives taken by Pune Municipal Corporation along with the help of Janwani, CEE and other institutes for implementing participatory budgeting have been commending. The efforts involved by these institutions for the continuation of this process over these many years, is an achievement in itself. Participatory budgeting has contributed to the fact that budget is being discussed in public forum and is being reported upon in the media (Discussion with Sanskriti Menon). Secondly, it has made citizens more aware of their rights and increased demand for their inclusion in the process. The process of suggestions to be made by citizens is quite simple (filling up a one-page form) and is open to all the citizens. Even though it is open for all, the awareness and the outreach to the people has been poor therefore the citizens participating has come down over the years to 600 people in 2013, from the population of 3.11 million (Menon, 2013). The information regarding the ongoing or up-coming projects by the corporation has not been completely available to the citizens. The evaluation of the projects by ward councillors, suggested by people brings mistrust by the citizens, in the process as the implementation of the projects happen according to the ward corporators. The projects included in the budget are 65-75% of the projects suggested by the citizens and the funds used for these projects have been around 64%(averaged out for six years) of the total funds allocated for PB (Menon, 2013).

The major gaps have been the outreach, inclusiveness, transparency and institutional arrangements (Menon, 2013). The disadvantaged groups like women, elderly, people living in slums, people with disabilities, children, etc. needs to be involved in the whole process. The role of the ward corporator should be pre-defined and the prioritization of the projects should also be discussed by the citizens, to make the process transparent. On the other hand, the citizen group needs to engage themselves and monitor the implementation of their suggested works and can start suggesting projects for the overall city budget, which can actually form a bottom-up approach of public participation.

### 2.2.3. Local Area Planning in Pune

Janwani, a social initiative of the Maharashtra Chamber of Commerce, Industries and Agriculture initiated the Local Area Plan in 2012. The project planned for three months was aimed at setting up a liveability or quality of life as a criterion for evaluating development. The model was applied to three areas of the city to understand the existing situation and suggest initiatives for the future.

The exercise was initially planned for three months for three pilot areas in the city. It is important to note that the Pune Municipal Corporation had no direct involvement in this. Another local NGO – Parisar and the College of Engineering were involved in this initiative. The areas were selected by the major roads and not by the administrative boundary, not being a responsibility of specific administration. Three areas that were selected, exhibited a different character and complexity – Shaniwar Wada, JM-FC Road and Baner. Shaniwar Wada is a relatively older part of the city with a low-rise high density built form, having mixed landuse and heritage structures. JM-FC Road is a high-end commercial and education area where the proposed Pune Metro is expected to pass through. Baner, on the other hand is an area on the outskirts of the city that is seeing rapid growth in residential and commercial establishments as well as conversion of agricultural and open lands.

Due to the lack of a proper guideline related to LAP in India, the LAP attempted in Delhi by INDO-USA FIRE (D) initiative was used to develop a methodology and framework. Firstly a public opinion survey was carried out in the selected area to determine the 'Liveability' and 'Mobility' aspects for each segment of society (Janwani voice recording). Liveability and Mobility were majorly defined by supply side infrastructure like presence of trees, public transport system, gardens, etc. Existing facilities were mapped in the wards and in order to understand the people's perception, dialogues were held with citizens and their representatives. A SWOT analysis followed to screen significant issues that needed to be addressed resulting in segregation based on the time frame of intervention (short, medium and long term). Each issue was taken up as a micro-project for which proposals are being developed. At each stage of the process, stakeholder consultation, public presenta-

tions and consultation were done (Janwani voice recording). At the end of each stage of the process, outcomes, findings and proposals were documented, published and handed over to the PMC.



**Figure 5: LAP Stage Proposals**

Source: (Janwani, 2011)

The initiative taken was appreciated by various stakeholders involved, however, when the methods used were derived as the process advanced. The initiative was not undertaken by the PMC, hence the plans that were prepared did not have legal standing and hence was confined to an academic exercise.

The LAP that were prepared have to be a part of the larger DP as well as the RP, which the LAP was not. For implementing the local area plan, it is needed to have an administration boundary, which can be a responsibility of someone. The inventory of supply side infrastructure study could have been re-examined by some household surveys, knowing the demand. The other thing is, the pilot study is representing a very small section of the society, so it should be inclusive (i.e. representing all sections of the society) for the whole area. The study could have been based on the access to facilities and then arrive at the list of the projects.

#### **2.2.4. Local area planning in Delhi**

The LAP process evolved in Delhi as a product of the USAID-FIRE(D) initiative to develop the Policy Agenda and Legislative Intentions for replacing the chapter on buildings and other relevant chapters in the Delhi Municipal Corporation Act, 1957 and for framing new building byelaws for Delhi. Since the Delhi Master Plan is prepared at a very high scale and entails a high amount of abstraction, the possibility of framing policies in line with ground

realities becomes less. In order to respond to the local conditions and the aspirations of the residents, FIRE(D) realized that it becomes essential to study, analyze and plan in detail to the level of urban design plans which would enable the modification of uniform building bye-laws that are applied across the city to the area specific. Therefore, the LAP was envisioned as an interface between macro-level (master plan, zonal plan) and micro-level plans.

**Scope and content of LAP:** The LAP process was used for the following scenarios, namely:

- For planned development of urbanizing city periphery- case of Yusuf Sarai,
- In already developed areas of the city- case of Vasant Vihar,
- In old, dilapidated and unauthorized areas- case of Sangam Vihar,
- In disaster prone areas of the city, and
- In heritage areas on the verge of being lost in the surrounding environment- case of Ballimaran(EPC & TRF, 2007).

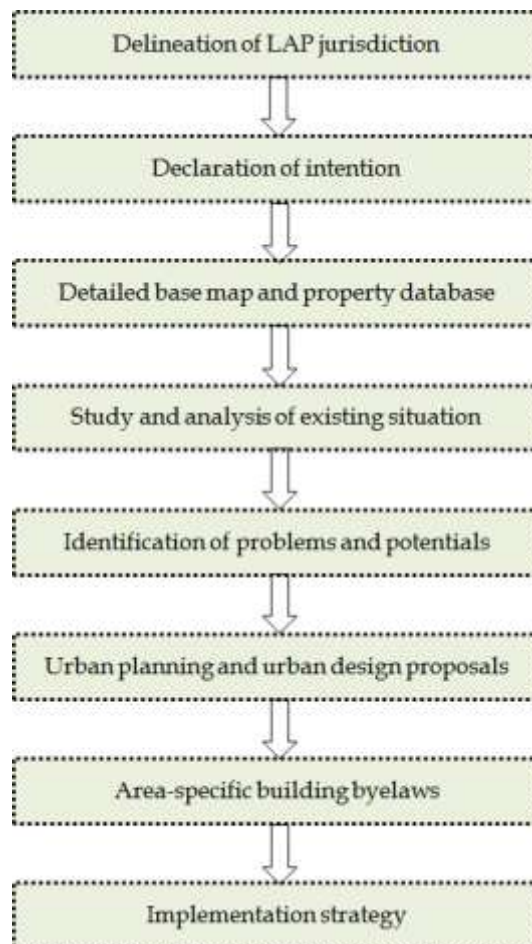
The LAP content includes preparation and implementation of Area-specific Building Bye-laws for their jurisdiction. In addition, based on the objectives, the proposals include,

- The laying out or relaying out of land, either vacant or already built upon.
- Layout of new streets or roads, construction, diversion, extension, alteration, improvement and closing up of streets and roads and discontinuance of communications.
- The allotment or reservation of land for roads, open spaces, gardens, recreation grounds, schools, markets, transport facilities, public purposes of all kinds.
- The reservation of land for sale by Municipal Corporation of Delhi for residential, commercial or industrial use depending upon the nature of development.
- Urban design provisions for the area which would include height of the buildings, built-up area, build to line details, setbacks, floor space index (FSI), margins, façade controls and circular patterns, parking space and loading and unloading space for any building and the sizes or locations of projections and advertisement signs.

- The construction, alteration and removal of buildings, bridges and other structures.
- The filling up or reclamation of low-lying, swampy or unhealthy areas, or levelling of land.

**The LAP process:** The Delhi LAP consists of a sequence of activities as shown in Figure 6 each of which are described below.

- **Delineation of LAP jurisdiction:** The precise boundary of the LAP was delineated using factors such as existing characteristics, influence zones, socio-cultural bindings, administrative boundaries, zoning in the master plan and disaster vulnerability.



**Figure 6: The Delhi LAP Process**

Source: (EPC & SVC, 2008; EPC & TRF, 2007)



- **Declaration of intention:** Official announcement by MCD to undertake the LAP for a delineated area.
- **Detailed base map and property database:** The detailed base map is prepared by conducting topographical and cadastral survey using total station equipment. The property database was prepared using the records of the MCD and the custodian of land records.
- **Study and analysis of existing situation:** Study and analysis of existing land uses, built form, densities, social and physical infrastructure provisions and its carrying capacity, traffic movement, heritage and important structures, culture and overall character of the LAP area was carried out.
- **Identification of problems and potentials:** Based on the study and analysis of the data and situation, problems and potentials of the area were identified. This was followed up by SWOT analysis to arrive at a shared vision with the stakeholders.
- **Urban planning and urban design proposals:** Based on the SWOT analysis of the previous stage planning and design proposals concerning land use, road network, basic infrastructure and service lines, plot boundaries and social amenities were proposed.
- **Area specific building bye-laws:** Bye-laws concerning means of access, plot sizes, common open spaces, building uses, Floor Area Ratio, setbacks, parking were framed in an area specific manner.
- **Implementation strategy:** The LAP included strategies for implementation including financial details, statutory time-frame, stakeholders.

**The present status of LAP in Delhi:** EPC and SVC (EPC & SVC, 2008) opine that the Delhi LAP suffered from the following limitations:

- **Changing environment:** Though the changing environment eventually ended up endorsing the FIRE(D) funded initiative of MCD for regulatory reform, in the short-term it had a negative impact on the LAP initiative. During the sealing and demolition drive of the MCD, there was widespread public unrest. Citizens at-large and occupants of potentially 'illegal' buildings specifically, completely mistrusted activities related to MCD. This made the ini-

tial stages of work – survey and data collection – difficult if not impossible in most of the LAP areas.

- **Lack of institutional capacity:** The base maps and property databases available with the MCD were inaccurate and outdated. Lack of qualified planners as well as bureaucracy was major impediments to the LAP process's timely completion.
- **Lack of experience in planning consultants:** The local consultants that were contracted to complete the local surveys and analysis were found to lack skill and competence for intensive multi-disciplinary work demanded by the LAP framework.
- **Issues in delineation:** The MCD zonal plans did not delineate LAP boundaries. As a result, considerable amount of time was spent in delineating the areas for LAP.
- **Constraints in base map preparation:** The unavailability of accurate land records and base maps with the MCD meant that a considerable amount of time went in the preparation of cadastral maps. This could have been avoided and the time thus saved could have been used for analysis and proposals instead.
- **Lack of collective thinking in stakeholders during consultation process:** The stakeholders were found to be divergent on most issues and unwilling to come to a consensus. MCD was unable to address several of the issues raised through the master plan mechanism.
- **Limits of intervention:** The vision for the city's overall structure and form is enshrined in the Master Plan and taken towards implementation in the Zonal Plans and LAP by further detailing, refinement and where needed, change. It is clear that in such a system, the onus for clarity of vision continues to rest heavily on the Master Plan. The Local Area Plan cannot ever substitute or compensate for a faulty Master Plan.

**Lessons learnt from the experience of Delhi:** EPC and SVC (EPC & SVC, 2008) opine that the following lessons were learnt from the Delhi LAP experience:

- The political leadership needs to be taken into confidence at every stage.



- The MCD must be made capable of handling such projects on a regular basis in the future. This would require establishing modern procedures.
- A systematic exercise for delineation of LAP boundaries on a rational basis needs to be undertaken for all of Delhi based on the provisions of the Master Plan and Zonal Plans.
- Preparation of accurate, detailed and legally sanctified cadastral maps, in the context of Delhi, is more appropriately taken up as a separate exercise by the government and not as a part of LAP. In the LAP process, mapping may be limited to updating of available maps using high resolution satellite images and filed checks.
- The stakeholder consultation process has to be led by the MCD as it is the official face of governance at the local level. Legitimate platforms such as Resident Welfare Associations may be officially recognized for this purpose.
- The hierarchical structure of planning from Master Plan through Zonal Plans to LAP has to be cast clearly in legislation and procedure in order to determine the appropriate amount of control and flexibility at each level.

#### 2.2.5. Ahmedabad

Ahmedabad Urban Development Authority (AUDA<sup>21</sup>) has recently published a comprehensive development plan for Ahmedabad and its agglomeration areas (AUDA, 2013a; AUDA, 2013b; AUDA, 2013c; AUDA, 2013d). As part of the plan document, a central business district and several transit oriented zones along mass transit corridors have been identified for development in the near future. For this purpose, local area planning has been proposed in these areas. HCPDPM Pvt. Ltd – a firm based in Ahmedabad that handles architectural, planning and project management assignments - has been working on the Naranpura ward plan as part of the above exercise. The ward plan's aim is to "improve pedestrian accessibility, strengthen public transportation networks, move traffic efficiently, increase open space, and enhance neighbourhood character, so that the city can increase in size

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<sup>21</sup> A parastatal body that is responsible for planning in around 1866 square kilometers around Ahmedabad city.

(sic.) and density in a sustainable and liveable manner”(HCPDPM Pvt Ltd, 2014, p.2).

The planning team at HCPDPM undertook a detailed study of the ward along with mapping exercises. Streets were mapped on the basis of their functional hierarchy. Broken links – in terms of connectivity- were identified and land use was rearranged and categorized according to the typology shown. This was done with a view to reduce the clutter produced by the land use classification adopted as part of the development plan. A portion of the defunct green strip from the earlier structural plan for Ahmedabad was found to be part of the Naranpura ward. Deliberations were made on how to make use of this resource in a ward that was short on public land.

**Table 5: Proposed zoning categories as part of the ward plan**

Sl.	Land use - AMC categories	Land use - Proposed zoning categories
1	Gamtal	Low-density residential
2	Slum	
3	Low-rise residential (Detached, semi-detached row houses)	
4	Low-rise mixed (Detached, semi-detached row houses)	
5	Low-rise residential (Apartment type)	Medium-density residential
6	Low-rise mixed (Apartment type)	
7	High-rise residential	High-density mixed (Majorly residential)
8	High rise mixed	
9	Commercial	High-density mixed (Majorly commercial)
10	Office building (Government)	
11	Playground	Park/garden/playground
12	Park/garden	
13	Private vacant land	Public/private vacant land
14	Public vacant land	

The planners at HCPDPM, through their analysis, concluded that the existing built-fabric of Naranpura ward was not suited to lively urban interactions. To this end, they found that the block sizes were too large to encourage walking. Several scenarios were created with different – mostly smaller - block sizes and evaluated on the basis of their ability to encourage walkability. Besides, the existing right-of-way was not

being used in an efficient manner resulting in lots of wastage of valuable space.

The planning team held discussions with representatives of the residents of the ward and evolved a vision for the ward which was illustrated in imagery that could convey information effectively to the stakeholders. These included proposals to change the block sizes to facilitate walking. The right-of-way was modified in a manner that included segregated space for walking and cycling protected from vehicular traffic. Missing connectivity links were proposed and several hitherto spaces were recovered for public use. In this case, there is no clarity as for the accessibility indicators as well as the public participation methods used, however the Ahmedabad Municipal Corporation has accepted the plan and is going to be implemented.

### **2.3. Conclusion**

Pune Participatory Budgeting enjoys the legitimacy of initiation by the Pune Municipal Corporation, which Janaagraha in Bangalore does not. Pune Participatory Budgeting is one of its kind initiative in India, where 183 million INR was allocated for the projects being listed upon by the citizens. The process being simple, citizens got interested but the whole process being diluted over the years with the end of prioritization meetings and the project list being finalized by the ward corporators and scrutinized by the commissioner, the citizens have started losing the interest as the trust has not been built with their own appointed leaders.

The Ward Vision Campaign in Bangalore steered by community members of the wards, coming up with the projects, costing and ideas on how to increase the revenues of corporation for improving their wards was first of its kind in the country. The outreach to specific groups of people as well as the tools for communication provided by Janaagraha for the campaign was also supportive but none of the things actually happened. The Corporation got involved in the workshops but there were conflicts between the city NGO and the corporation which ceased the implementation of the process. The PROOF cam-

paign also was successful as to which, people got aware of the municipal budget and some transparency came in but the implementation stage after knowing has not been started.

The local area planning done for Pune and Delhi have faced problems in delineation of the study area, which was then decided by the major roads instead of an administrative boundary. Bangalore has done the ward score index for all the wards having very few samples in each ward. The indicators and benchmarks used for analysing the existing situation differs for all the three cases making it difficult to choose the parameters of the quality of life of the people in an area. The demand side analysis or the people's perception/views on their needs of physical as well as social infrastructure in an area could have been an addition.

**Table 6: A comparison of various methodologies adopted for LAP**

Indicators	UK	USA	The Netherlands	India
Accessibility focus	✓	✓	✓	X
Land use-transport integration	✓	✓	✓	X
Statutory nature	✓	✓	✓	X
Ownership by the state	✓	✓	✓	X
Standardized indicators	✓	✓	X	X
Evaluation & monitoring	✓	✓	✓	X
Used for transport planning	✓	✓	✓	X
Used for development planning	✓	✓	✓	X
Type of modes	Walk, Bicycle, PT	Car, PT	Car, PT	X
Clarity of stakeholders	Local implementation	Local implementation	Local implementation	Local plan preparation
Participatory budgeting	✓	✓	✓	Partly
Social impacts assessed	✓	✓	X	X
Spatial focus	Urban & Rural	Urban & Rural	Urban only	Urban only
Project identification	✓	X	X	✓

The learning and gaps of all the three case studies will be helpful to take one step forward for local accessibility planning in Rajkot. Accessibility parameters, public participation, involvement of the local authorities, capacity building at the local level, statutory backing, and link with the municipal budget

are the key words that come out from the case studies across the world. The local area plan derived from the accessibility measures derived from international case studies and a Bangalore case study and then linking it with the municipal budget, as done in Pune, brings in the transparency aspect as well as a prima of the suggestion of a particular project to be implemented in the city. The outreach or the mobilization of people has to be strategic with some communication tools developed by Janaagraha in Bangalore and CEE in Pune case.

### 3. Accessibility framework for local area planning

Accessibility in LAP has found recent significance in planning practice and is often a misunderstood, poorly defined and a poorly measured construct (Geurs & van Wee, 2006). Several studies have focused on certain approaches of accessibility like location accessibility (say, distance to work places), individual accessibility (say, one's distance to the local grocery) and economic benefits of accessibility. In this study, accessibility measures are seen as indicators of land use, transport, social amenities and basic services development as well as policy measures for the neighbourhood. LAP would, by considering aspects of participatory planning and equity expand people's freedoms and opportunities to participate in activities of need or value to them. As in Munshi et al. (2013a), the definition of accessibility as given by Geurs and van Eck, (2001, p.35) shall be used through this study. Accessibility may be defined as "the extent to which the land use transport system enables groups of individuals or goods to reach activities or destinations by means of a combination of transport modes." This definition accounts for the components of accessibility such as land use, transport, time and individual's utility.

#### 3.1. Measures and components of accessibility

Components of accessibility that can be identified from various definitions can be categorized into the following components. The land use component reflects the spatial distribution of activities at destination such as work places, schools, colleges, hospitals, health centres, shops, markets and recreation centres as well as the demand for these activities where there are residents. Transportation component describes the transport system for an individual to cover the distance between an origin and a destination using a specific transport mode. This transport system includes the travel time (separately for each mode including actual travel cost, parking cost, congestion cost as well as waiting cost), travel costs (including fixed costs as well as variable costs) and travel effort (including comfort, reliability, level of stress & accident risks). Transport system also includes the supply side transport infrastructure (width of the road, travel speed, number of lanes and travel cost). The temporal component reflects time-based constraints such as availability of opportunities at different times of the day and time available for individuals to par-

ticipate in certain activities such as work or recreation. The individual component reflects the needs (depending on age, income and level of education), abilities (depending on people's physical condition and availability of travel modes) and opportunities (depending on people's income, travel budget and educational level) of individuals. These characteristics influence a person's level of access to transport modes (ability to own/borrow and drive a car) and spatially distributed opportunities (possessing the skills to qualify for jobs near their area of residence), and may strongly influence the total aggregate accessibility result. Several studies (Cervero & Radlsch, 1995; Geurs & van Eck, 2001) have shown that in the case of job accessibility, inclusion of occupational matching strongly affects the resulting accessibility indicators.

**Table 7: Type of accessibility measures and components**

Measure \ Component		Transport component	Land use component	Temporal component	Individual component
Infrastructure-based measures		Average travel time; Travelling speed; Vehicle hours lost in Congestion		Peak hour period	Trip-based stratification
Activity-based measures	Geographical measures	Travel time/costs based on distance decay function	Spatial distribution of opportunities	Travel time and costs differ across hours, days and seasons.	Income or education-level based stratification
	Time-space measures	Travel time		Time constraints for activity participation.	Accessibility is analysed at individual or household level
Utility-based measures		Travel costs based on distance decay function		Travel time and costs differ across hours, days and seasons.	Utility estimated for population groups

Source: (Geurs & van Eck, 2001)

Alternatively, Handy and Niemeir (1997) and Geurs and van Eck (2001) recognized four “main components of accessibility; the degree and type of dis-

aggregation, the definition of origins and destinations, the measurement of travel impedance and the measurement of attractiveness” (Envall, 2007, p.37). Geurs and van Eck (2001) suggest three main measures of accessibility; those based on infrastructure, activity and utility. The infrastructure-based approach is the most basic way of measuring accessibility and refers to the availability of a certain service or facility. Activity based planning is the most preferred approach of measurement of accessibility among transport planners. It can be used to gauge the range of choices available for users with respect to their spatial distribution and travel impedances as manifested in travel costs, travel time and congestion. Within this approach, one could use distance measure, contour measure or potential measure. Distance measure fixes a threshold distance- say 5 kilometres- for identifying facilities and services as accessible to the user. Contour measure involves fixing of a time threshold- say 45 minutes- and finds out the number of jobs or schools within that threshold from the origin. Potential measure involves finding out the probability of the demand for a particular activity being met. Utility based measures can be used to gauge the benefits individuals stand to gain from the land use transportation system. The distance, contour and potential measures have been differently placed by some researchers as place accessibility measures and individual accessibility measures.

**Place accessibility** is basically the pattern of land use and its attraction i.e. the spatial distribution of different types of activities. Measures of place accessibility normally consist of two elements namely transport and land use. The transportation component comprises the travel time, distance, travel cost for one or more modes of transport whereas the land use component includes the number of activities present in a particular location. Place accessibility measures comprise of four integral accessibility measures namely distance measures, cumulative-opportunity measures, gravity measures and utility measures.

**Distance measure** calculates the distance from point of origin to different sets of destinations. It is calculated as averages, but usually estimates the distance to a specific destination from all origin points or vice-versa.



**Cumulative-opportunity measures** evaluate the accessibility in regard to the number of opportunities available in a particular area, accessible within certain travel time or distance from the origin. This measure has an advantage of a cut-off for travel time or distance for accessibility.

**Gravity measures** were first derived by Hansen, 1959 and since then have been widely used. They weigh opportunities in an area and with a measure indicating their attraction and discounting them by an impedance measure. Accessibility at location  $i$  is defined as the attraction at destination  $j$  discounted by the distance decay function between these two points. The most closely tied function to travel behaviour theory is the negative exponential form ( $e^{-\beta d_{ij}}$ ) of distance or travel time  $d_{ij}$  which often produces the best results when compared with other measures (Handy & Niemeier, 1997; Niemeier, 1997; Kwan, 1998; Song, 1996).

**Utility measures** are based on an assumption that an individual chooses a destination as per the utility he or she stands to derive from it. The advantage is that it explores all the possible options for an individual and chooses the best one according to economic, social and physical parameters.

**Individual accessibility measures** are derived in terms of an individual's preference having specific needs in terms of choosing destination as well as mode of travel and cost of travel. This measure includes the temporal constraints as well as trip chaining, which are ignored to some extent in place accessibility measures.

Curl et al. (2011) are of the opinion that since there aren't any comparable studies on the same set of people using different measures of accessibility, no single measure could be recommended for universal use. Further, owing to the difficulty in quantifying other measures, planners usually rely on time-threshold measures of accessibility. Accessibility analysis must be performed by the local planner at the level of the local government, using suitable accessibility measures, by evaluating the existing infrastructure against set indices. There has been a long-standing debate on whether a qualitative or quantitative approach must be adopted in accessibility analysis. It is possible to combine the quantitative measures with qualitative evaluations in order to

achieve a complete understanding of the accessibility levels in the study area. In this respect, it must be said that several studies have shown that cumulative and gravity based measures are more accurate than simple measures. Some studies also show that gravity based measures give more accurate results than cumulative measures.

### 3.1.1. Factors affecting accessibility

There are several factors that may affect people's accessibility. These include transportation demand and supply, extent of mobility, availability of choices, affordability, land use pattern and mobility substitutes.

Transportation demand and supply are, respectively, the amount of accessibility that people would consume and experience under various circumstances. These may depend on several factors such as demographic attributes, purpose of travel, time of the day, distance of travel and modal split. Litman (2012) argues that depending on the latent demand for transportation and the activity on road, people's accessibility may also change.

Mobility is expressed in terms of person-kilometres and is thus a measure of physical movement, in this case, of people. Reddy and Balachandra (2010) opine that mobility compensates for local deficits in terms of opportunities of education, entertainment and business. In their opinion, urban planners are faced with the immense challenge of maintaining high levels of mobility in our cities in order to cope with the present-day lifestyle. Urban mobility needs to be sustainable and regulated suitably with a view on the limited resources at hand. Sustainable mobility could therefore be achieved by cutting down on the degree of mobility but improving on its quality, expressed in terms of its ambience, comfort and ease of access. However, as pointed out earlier, the popular approach for those in power has been to patronise mobility.

Availability of choices can significantly improve people's accessibility. It has been seen that various modes of travel offer varying levels of utility to different sets of people based upon their individual preferences, distance of commute, affordability and security (Baker et al., 2005). The presence of various

modes serving the same destination will extend the accessibility of the destination to people belonging to different socio-economic groups.

Affordability refers to the financial implications associated with the usage or non-usage of transportation. It becomes particularly important when dealing with the accessibility needs of the poor and the marginalized. Litman (2012) opines that affordability is affected by location of origins and destinations. He goes on to demonstrate how that low-income citizens forced to live in a automobile-dependant locality may find it very difficult to access destinations of choice as they cannot afford the personal mobility associated with cars. Low affordability can be addressed by developing low-cost travel modes and subsidizing user costs. The higher the ratio between public and private choices of transport, the more will be the level of accessibility, especially for the poor.

Landuse pattern can play a major role in determining accessibility. Factors such as density, mix of land uses and distances between various destinations and the origin can contribute greatly in deciding people's accessibility. The closer the destinations are to the origin, the greater will be the choices at hand for the users and hence an increase in accessibility. Landuse determines where people live and where they seek employment and leisure opportunities. In an unregulated sprawl, people would be forced to travel more to access avenues of employment and education. In such a situation, people increasingly move away from walking, cycling and public transportation, modes that the poor depend upon, and shift to private modes of transportation leading to greater congestion and diminishing accessibility (Badami et al., 2004).

Mobility substitutes can significantly alter accessibility by doing away with the need to travel altogether. This can be achieved through delivery systems that would provide door-to-door services. The internet and mobile banking services ushered in the past decade are a classic example. In the foreseeable future, organizations could make use of advanced communication systems and allow their employees to report virtually to their offices and carry out their assignments from home, thereby reducing the need to travel greatly.

However, one would imagine that even this would not eliminate office-based travel altogether.

### 3.1.2. Barriers to accessibility

Barriers to accessibility are deterrence factors to people's ability to participate in activities of their choice. It may be emphasized here that eliminating one barrier will not improve access, when other barriers remain. Halden (2005) classifies barriers to accessibility comprehensively in spatial, physical, temporal, financial, safety, environment and information categories.

Spatial barriers are the ones which deal with the supply side infrastructure like availability of network or basic services, frequency of a public transport service, availability of interchanges, etc. Even if there is an availability of a service, the design of the amenity sometimes becomes barrier to the usage. The design parameter is included in the physical barrier. Design includes pipeline design, bus station design, median design, footpath and cycle lane design, etc. Then comes the temporal barrier which deals with the capacities and frequencies of the system or a service. The availability of the service alone cannot be accessible to everyone, as it has its own taking capacity. Financial barrier can first be the affordability to use a system, costs involved for accessibility to better infrastructure facilities. Safety and security barriers are the absence of streetlights, making the street inaccessible at certain times as well as the speeds of vehicles making streets inaccessible for pedestrians to cross, etc. Information barrier is the unavailability of information of public transport routes or government schemes to make services accessible.

## 3.2. Discussion: Planning for Accessibility

Chapman and Weir (2008, p.7) define accessibility planning as "a structured process for the assessment of, and planning for, accessibility." It employs spatial analysis features of programs such as ArcGIS- a Geographical Information System (GIS) suite- to process a range of data including origins, destinations and transport network characteristics to scientifically measure the accessibility enjoyed by people to various facilities and evaluate them against set benchmarks. This enables the identification of deficits and their redressal through planning interventions. Over a period of time, it would enable the

temporal analysis of accessibility changes; thereby helping the evaluation of planning interventions made earlier.

Daniels and Mulley(2010, p.1) have a similar- yet limited- understanding of accessibility planning as “a framework and process to use accessibility indicators as a basis for transport planning.” They stress upon the use of accessibility data as “the basis for developing and implementing plans to improve accessibility.” This definition is different from the one discussed earlier in the sense that it does not foresee changes in land-use to make accessibility improvements. That said, both definitions use evidence from accessibility analysis procedures to make decisions regarding allocation of resources and thereby raising the probability of such allocations being equitable, just and inclusive.

A more inclusive definition is presented by Envall (2007, p.15) who suggests that “planning for accessibility (‘Accessibility Planning’ and accessibility-enhancing planning strategies) is a process that allows for mobility as well as non-mobility improvements to be implemented as a solution to insufficient accessibility.” The term ‘accessibility planning’ is used in his research to refer to themes of social exclusion and includes local public transport, pedestrian infrastructure, development control and other factors including service delivery. On the other hand, ‘planning for accessibility’ is used to signify improvements in transportation infrastructure such as parking management and high-speed rail. In this study, however, we shall use the concept of accessibility planning in conjunction with planning for accessibility of all.

## 4. Public Participation

Public participation has been identified as the major component of LAP, from the case studies. Participation may be defined as “the process through which people with an interest, influence, share or control development initiatives, decisions and resources that affect them” (AfDB, 2001). Participation can vary for projects with the participation of stakeholders and the type of involvement. Therefore, AfDB, (2001) has formed tools of participation to be followed for planning projects.

### 4.1. Tools for Participation

Since there are a multitude of actors involved in the LAP process, it becomes important to adopt the right tools in order to facilitate the right levels of engagement and subsequent involvement from them. In this regard, AfDB (2001) suggests the use of the following tools in order to help involve stakeholders in various planning projects right from the collection and interpretation of data to effective implementation and monitoring of projects designed to address issues highlighted as part of them.

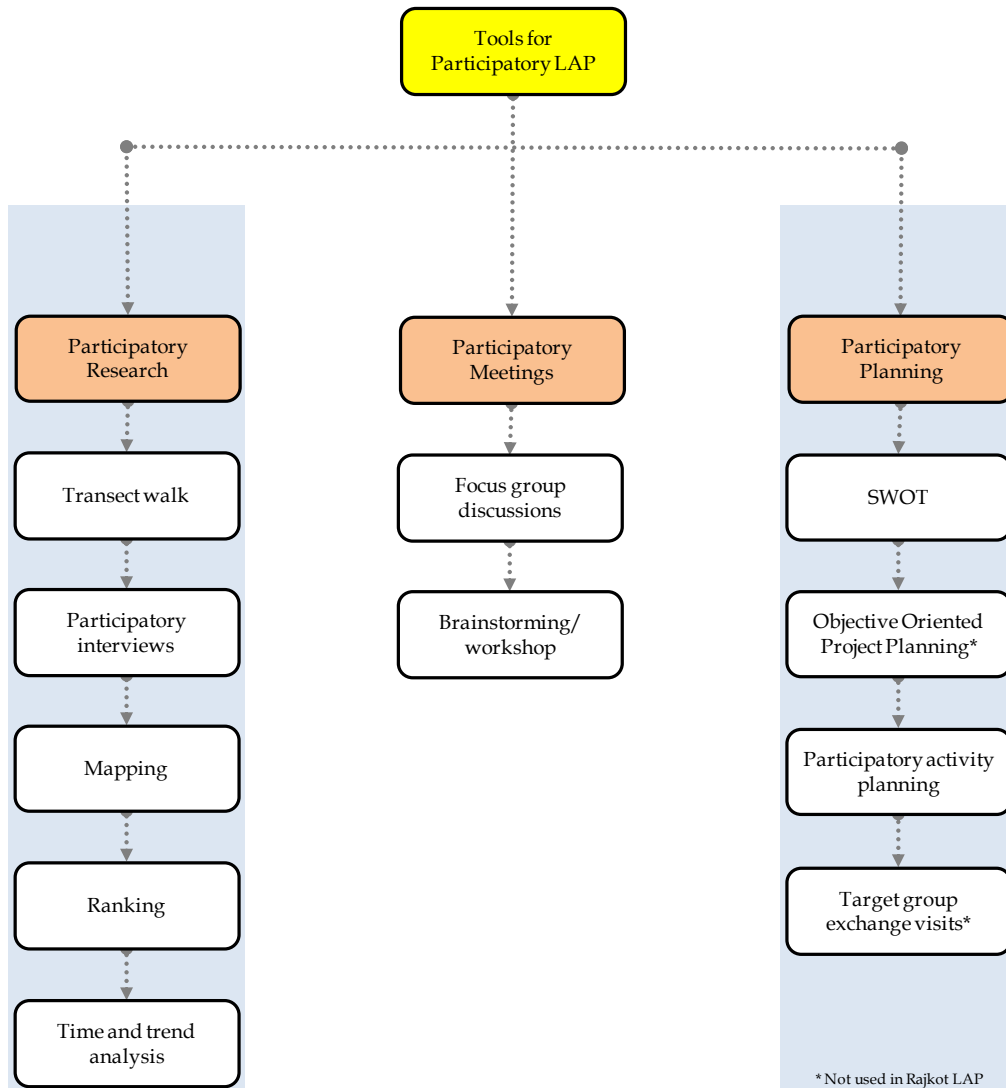
#### 4.1.1. Participatory stakeholder analysis

Stakeholder analysis is a methodology for identifying and analyzing key stakeholders in a project and planning in order to ensure their participation throughout the project (AfDB, 2001). It must be understood that no single method can be categorized as naturally participatory. One or many participatory techniques may be used to bring the stakeholders inputs into the LAP process. This choice would depend on the several factors such as a) nature of project, b) goals of the project, c) kind of stakeholders- their standing in the socio-economic ladder and inter-relationships, d) capacity of stakeholders to contribute and benefit from participatory planning, and e) presence of facilitating institutions (NGOs, CBOs) towards holding the meetings and workshops.

#### 4.1.2. Participatory meetings and workshops

Participatory meetings and workshops are conducted with the objective of getting diverse stakeholders to be assemble and collaborate on their expectations, reconcile differences and formulate action plans to address issues at

hand. These ends can be achieved through one or several means discussed below. Public meetings may be held when there is a need to disseminate information or lend clarity on a subject. On such occasions, there is a good chance that the mightier stakeholders may take control of the process. Workshops - held either as standalone exercises or as part of a public meeting - may be used to study and address issues. It helps initiate, establish and sustain engagement with stakeholders all through the project and can be used in order to reconcile differences and seek solutions to problems that may plague a community. Standing bodies may be formed when there are too many stakeholders of a kind, whose representatives may be taken to form a diverse standing body that may take decisions on their behalf.



**Figure 7: An overview of participatory tools**

*Source: adapted from (AfDB, 2001)*

#### 4.1.3. Participatory research and data collection

Participatory research can be used at various stages of a project - from planning to implementation - for assessing needs, feasibility studies and prioritization of development activities. It can also be used to collect data at various levels and is recommended for learning and understanding people's attitudes, behaviour and opinions about issues, thereby ensuring that the process is people-driven and participatory as against the consultative nature of conventional planning processes. It facilitates disaggregation of data by gender, age and community thereby driving better understanding of issues. Unlike questionnaire driven research, participatory research consists of semi-structured interviews which allow a great level of flexibility and on-the-spot innovation and analysis in response to the local conditions. However, the planner must constantly triangulate and cross-check in order to ensure the veracity of the responses collected as part of participatory research. Additionally, the planner must take care not to raise the expectations of the participants as lack of follow-up may lead to cynicism among the local population.

- ❖ **Transect walks:** The simplest participatory research technique involves local people taking the planner on a walk through the project area - ward in this context. During the course of the transect walk, the planner makes observations besides noting down the comments given by the locals regarding physical and social infrastructure in the ward. Open-ended questions are asked to solicit more information on issues that may catch the attention of the planner during the transect walk.
- ❖ **Participatory interviewing:** It is a technique that involves semi-structured interviewing based on a flexible checklist of issues - mutually agreed - around which the conversation may be more or less focussed. However, this may not be used to prevent the participants from introducing topics that are slightly connected to the topics on the list. The planner may ask the participants open-ended questions without leading or influencing the answers given by the participants. These questions may be asked as part of informal discussion in order to encourage people to be more open with their views. The responses given must be triangulated and verified by changing the manner in which it



is framed. Such interviews may be conducted at individual, focus group or larger group levels.

- ❖ **Mapping:** Mapping helps translate data conveyed through written and oral media into pictorial form thereby lending them greater clarity and ease of understanding. It helps draw people's understanding of their physical environment, socio-cultural and socio-economic linkages thereby bridging gaps between the planners and the community. The key, however, is that the maps are drawn by members of the community themselves with little, if any, help from the planners.

Physical maps could represent the neighbourhood in relation to major landmarks within the city. Areas of interest to the community such as markets, maidans and institutions could help bring in relativity to the map. Social maps depict the relative position of people in the community according to their status, economic condition or caste. These help the planner in understanding the social linkages and tensions, if any, between members of the community. Therefore, it is advisable to hold several sessions for different homogeneous groups separately. Institutional maps help depict the role of the community - its various subgroups - and other actors with regard to getting things done. Powerful actors could be differentiated from the others by use of bigger circles or colours. At the end of the mapping exercise, the participants may be asked to explain the map as this would reveal the reasons behind how people perceive different actors.

- ❖ **Ranking:** This technique can be used in order to understand how different stakeholder groups perceive different issues - especially with regard to the urgency with which these need to be addressed. For example, fixing a clogged sewer may be perceived differently by people living in the immediate vicinity and those living some distance away. A simple list of various issues in the ward may be prepared and presented for ranking to individuals. Their responses can be evaluated in the light of the reasons that made them make their choices.

The same technique can also be used to understand the preference of the residents for a certain approach from a set of several alternatives towards an

issue. A matrix with alternatives as rows and criteria of evaluation as columns shall be prepared and residents shall rank each alternative on the basis of how they perceive it to perform on each criterion. Overall ranking of alternatives may then be used to arrive at the choice of approach.

- ❖ **Trend and time analysis:** Tables, charts or diagrams when used in combination with calendars can reveal trends that help in evolving a deeper understanding of the issues faced by the residents of the ward. For example, occurrences of instances of water logging could be plotted as a graph against years to understand if the problem has aggravated over time. While it might be difficult to obtain such data from official sources, locals - especially elders - would be able to provide inputs necessary for such analysis. However, it must be pointed out that this method will need active intervention from the planner at various points of time.

## 4.2. Participatory Planning

Participatory planning makes use of data collected through research in order to convert identified objectives into concrete activities. Participatory tools can be adapted in planning processes through adoption of any of the following tools:

- ❖ **SWOT analysis:** Strengths, Weaknesses, Opportunities and Threats matrices are used to identify the nature of attributes and external factors affecting the group, activity or site respectively. It can be used in order to define project strategy, assess the capability of a group or suitability of a strategy. It involves conducting a brainstorming session that helps prepare a SWOT matrix. Once they have been identified, strategies can be made by building on strengths, overcoming weaknesses, maximizing opportunities and minimizing threats. These strategies can then be prioritized and an action plan with chronological sequence and assignment of individual responsibilities can be worked out.
- ❖ **Force Field Analysis Matrix:** Similar to SWOT is the force field matrix where between the present and desired situations, hindering and helping forces are identified. This technique is used in the case of low literacy groups.

Participation is a process through which people exercise influence over and shape the development initiatives that affect them. It involves deep engagement with the (affected) community who contribute to the development process through their suggestions and material and non-material inputs (AfDB, 2001; University of Bern, 2008). It differs from the conventional consultative processes- which normally consist of information sharing, listening and joint needs assessment- in the inclusion of shared decision-making, collaboration and ultimately, empowerment of stakeholders towards taking charge of their own development (The World Bank, 1996). As we proceed from the shallower levels of consultation to deeper levels of participation, it is generally observed that the community tends to have greater control over resources, development initiatives and their outcomes.

International experience has suggested that use of participatory techniques of planning can have cross-cutting benefits through the addressing of issues such as sustainable poverty reduction, gender equity, capacity building of community based organizations (CBOs) and better governance. AfDB (2001) also cites improvements in project design reflecting the stakeholder priorities and ground realities by drawing on local knowledge as one of the major benefits of participatory planning. Additionally, participatory planning helps verify the appropriateness of the proposed interventions besides strengthening stakeholder commitment and ownership. Issues such as equitable distribution of project benefits, and identification - along with resolution- of potential obstacles in the path of implementation are better addressed through participatory planning as it enables greater interface between the government and the governed.

Higher upfront costs, lack of enthusiasm from the city administration- owing to a perceived challenge to its powers- and ward representatives, challenges in engaging the marginalized sections, attempts by the powerful to nullify such attempts and absence of genuinely representative civil society organisations (CSOs) are just some of the risks that may pop up in the way of attempts to encourage participatory planning. However, in the absence of stakeholder participation, the projects might be exposed to risks such as low up-take, reduced sustainability, poor maintenance and limited cost-recovery of projects.

Therefore, the case to encourage participation is strong even if it implies increased initial costs as the potential pay-offs are much higher. However, trying to promote limited citizens' participation within a restricted framework to lure financial resources from development agencies (PRIA, 2012) may reduce public participation into what Baindur (2013) calls a 'mere spectator sport'.

Therefore, it becomes essential to consider the levels of participation in any development initiative. In the bottom rungs of the *ladder of participation*, people become susceptible to misrepresentation of facts and subsequent manipulation and therapy. A slightly better position would be the middle rungs where the community is merely consulted but their views are not necessarily incorporated into the development processes. In the most desirable highest rungs of the ladder, the community is allowed to willingly enter into partnerships with the authorities towards the planning, designing and implementation of development proposals. The zenith of such an approach would lie in citizens assuming complete control of the process. AfDB- acronym for African Development Bank headquartered in Abidjan, Côte d'Ivoire- suggests that participation is an "attitude" or a "mindset" (AfDB, 2001, p.7) which entails cultivating the following traits:

- focussing on people as the centre of development,
- respecting local knowledge as much as expert inputs,
- respecting the right of the stakeholders to be heard,
- sharing control over the development process with stakeholders,
- empowering the stakeholders to find their own solutions to problems, and
- valuing the process more than the product.

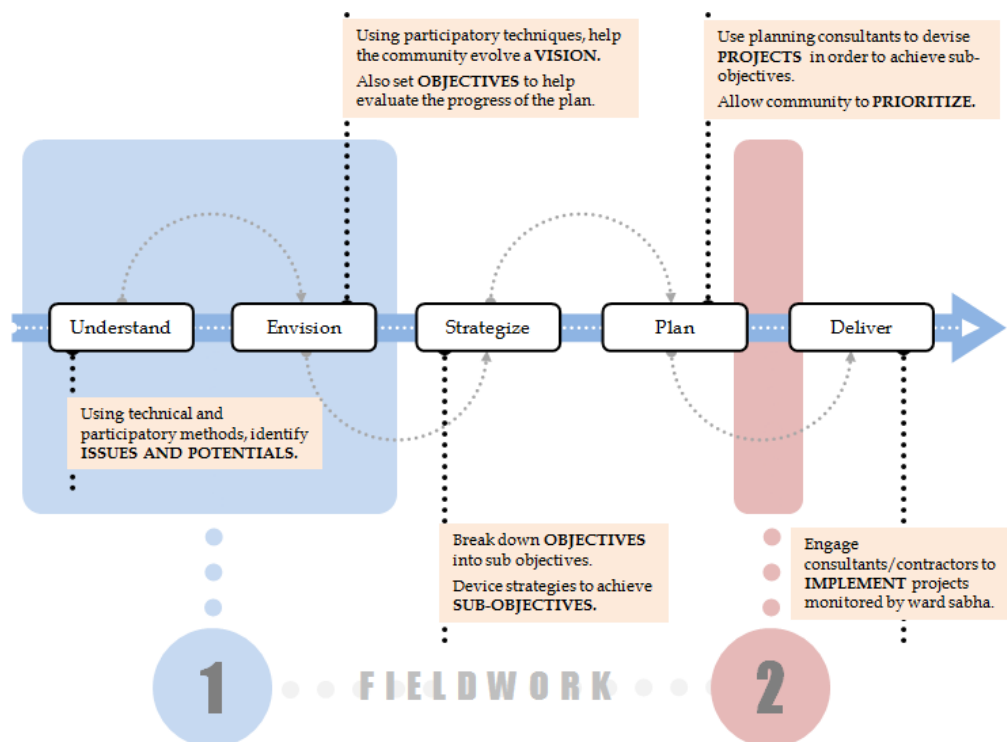
Participatory techniques of planning can have cross cutting benefits through addressing of issues such as sustainable poverty reduction, gender equity, capacity building of community based organizations and better governance. Additionally there is more interaction between the governed and the governing bodies. The 73<sup>rd</sup> and 74<sup>th</sup> Amendment Act has regularized public participation process but the process followed in Indian cities is limited to information and maximum at consultation which at least need to reach till partnership, in the above ladder of participation.

## 5. Framework for Local Accessibility Plans

In the light of wisdom gained from above case studies and literature, a methodology is derived for Local Accessibility Plans in Indian cities. It must however be emphasized that the methodology derived is a broad framework, on the basis of which cities can proceed forward and make city-specific LAP's. The selection of Rajkot city for this study is based on the availability of data and cordial working relations with the city administration owing to continuous engagement over two years resulting in a *Low-Carbon Mobility Plan* (CEPT University, 2011) for the city.

### 5.1. LAP in Rajkot

The proposed LAP methodology- which will be piloted in Rajkot- dwells extensively on accessibility measures based analysis of deficits in the availability of avenues for transport infrastructure, basic services, social amenities as well as land use and transport integration (Munshi et al., 2013a; 2013b). Additionally, with a view to facilitating a bottom-up citizen-centric approach to planning and distribution of such resources, participatory techniques of planning- as discussed in the preceding section- are proposed for LAP.



**Figure 8: The LAP methodology**  
Source: (Munshi, Joshi, et al., 2013b)

The five-stage methodology for LAP as proposed by this research after a detailed study of the existing case studies and best practices in international and Indian contexts (see Munshi et al., 2013b) is presented in Figure 8. This research is aimed at gauging deficits of transport infrastructure, basic services and social amenities in the wards and will, therefore, concentrate on issues related to their deficits.

## 5.2. Understand

The first stage- *understand*- aims at developing a comprehension of the existing conditions in the area of study. This stage commences with a reconnaissance of the area of study, marking important landmarks, community clusters, physical and social amenities and land use. Then the accessibility to these facilities is analysed technically and checked by interacting with the local community as well as their representatives about local issues. This is aimed at identifying the various needs of community and their varied access related issues that may come in handy, while having interviews and focussed group discussions with people on site. This quantitative and qualitative information together completes the understanding of the issues relating access to services.

**Accessibility analysis:** Accessibility analysis on the basis of geo-spatial data has been explored in studies like Munshi et al. (2014), Munshi & Brussel (2005), Munshi (2013). The residential area data is modelled in ArcGIS® software as origin locations. To this effect, the land, use map is tessellated into square blocks. Each tessellation is square in shape and measures four hectares in area with each side measuring 200 metres. This size should ideally be as small as possible but depends largely on the capabilities of the machine on which this analysis is to be performed. The tessellations are then assigned with data on population based on the ward number and the residential land-use component in that ward. Each centroid of the tessellation represents the origin of travel demand. Similarly, employment data and the social infrastructure is also modelled in the software as destination locations. The tessellations are fed with disaggregated city-level employment- or healthcare facility- data and such data are then transferred to the centroids just as in the case of origins of travel demand.

**Table 8: Sources of data for accessibility analysis**

Data required	Sources of data	
	Rajkot	Alternative sources
Location of people	Land use plan, Property tax data	Census block enumeration
<b>Land Use</b>		
Commercial and Industrial Activities	Land use plan, Property tax data	City Development Plan
Street Vendors	Low Carbon Comprehensive Mobility Plan (LCMP)	Transport Surveys
<b>Transport Infrastructure</b>		
Roads and data on experienced speeds	Land use plan, mobility plan	Comprehensive Traffic and Transportation Study for various cities, Transportation surveys
Data on NMT infrastructure	Rajkot Municipal Corporation	Transportation surveys
	Low Carbon Comprehensive Mobility Plan (LCMP)	Comprehensive Mobility Plan
Data on PT and IPT infrastructure	Rajkot Municipal Corporation	Transportation surveys
	Low Carbon Comprehensive Mobility Plan (LCMP)	Comprehensive Mobility Plan
<b>Basic Services</b>		
Water Supply, Sewage and Drainage Network	Rajkot Municipal Corporation	Municipal Corporation
Solid waste disposal chain	Rajkot Municipal Corporation	Municipal Corporation
<b>Social amenities</b>		
Location of schools, colleges and technical institutes, private clinics, hospitals, parks, playgrounds, community halls	Land use plan	Education department-Municipal corporation, Local chapters of MCI, doctors' guild

The travel paths are also digitized from origins to destinations. Roads have been considered to the order of local roads thereby making the study as accurate as possible. People are therefore modelled to take these travel paths to reach their attraction locations from their residential locations as in Munshi & Brussel (2005). These travel paths are assigned characteristics based on experienced speeds and congestion. For roads not having relevant data, assumptions have been made on the average speeds experienced on roads of similar category in the city. Such assumptions are necessary in order to calculate the travel time taken for people to reach their destinations. After the defi-

cits have been identified, these need to be ratified by taking the results of this process to the community, represented by a diverse group of citizens that accounts for differences in socio-economic profile, age, gender and physical capabilities. This needs to be done since technical deficits may or may not tally with the experienced deficits on the ground. Once the inputs from the community have been combined with the results from accessibility analysis, a clear picture of deficits in service-provision would emerge. This process will also result in the identification of the strengths, weaknesses; opportunities and threats (SWOT) for the ward. This would act as a significant input for the next stage, where the community would put together its vision for the ward.

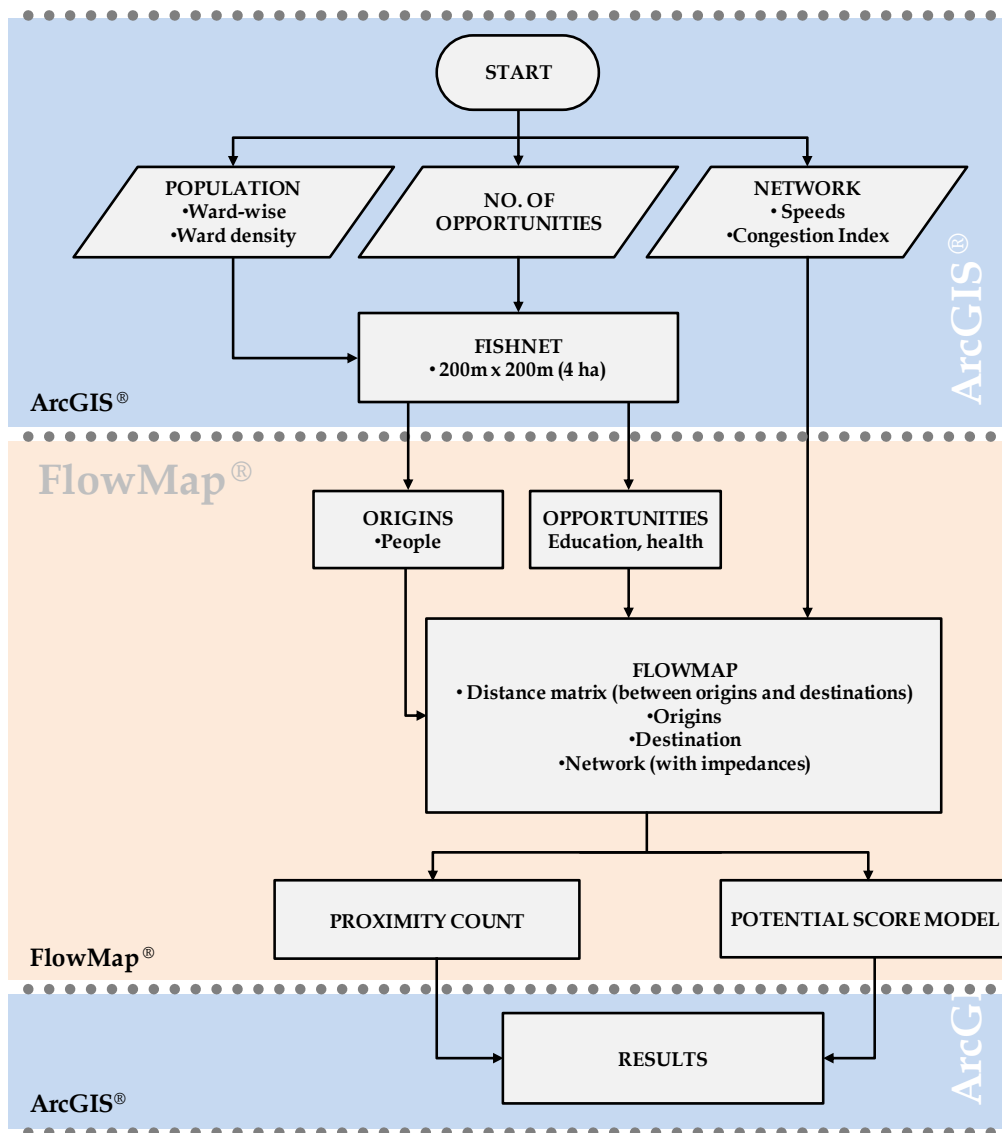


Figure 9: Data handling process for accessibility analysis



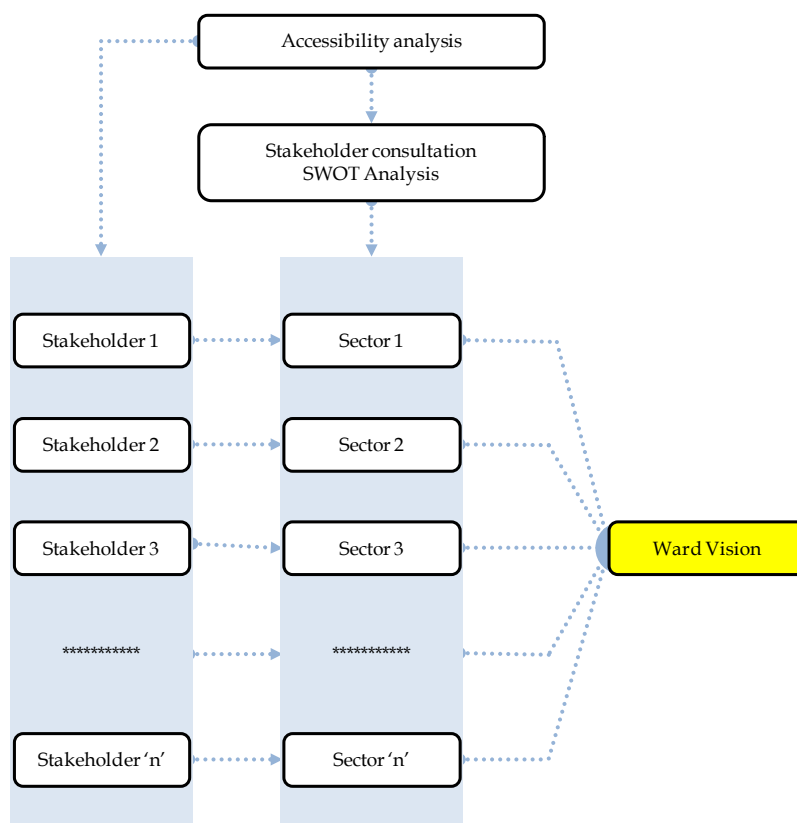
FlowMap® is used to perform accessibility analysis on the inputs generated in the previous step. Since the inputs generated in ArcGIS® are not directly utilizable in FlowMap®, it is required to convert the shapefiles (\*.shp) to FlowMap® format (\*.00x) through an intermediary format (\*.bna). Once the project is created, a distance matrix using the origins and destinations is calculated. For this purpose, FlowMap® uses the network to ascertain the shortest travel path from each origin to destination. Once the distance matrix is ready, potential accessibility analysis is done to understand the potential for each origin point to reach avenues of employment in the form of destinations. Similarly, proximity analysis is also done to understand the number of jobs accessible to the population. The whole process of accessibility analysis can be depicted as shown in Figure 9. The areas which show varying levels of accessibility are identified and primary survey is conducted at these locations to understand the challenges to accessing opportunities, especially with regard to those of education, health and social amenities.

### 5.3. Envision

The second stage- *envision*- aims at evolving a vision for the ward- one that may be acceptable to all the stakeholders involved without becoming the reflection of the aspirations of one particular set of people. Visioning is a technique employed by development planners to assist the community in the formulation of a shared view of their future and the strategies to be employed in order to attain such a vision (University of Bern, 2008). MoUD describes vision- in the context of a city development plan- to be a “vivid and idealized description of a desired outcome that inspires, energizes and helps the stakeholders create a future picture of the [city] with positive changes. It can also be defined as that position which the [city] aspires to reach in the medium to long-term” (MOUD-GoI, 2013, p.27).

The vision statement can be a collection of few comprehensive sentences that can be used to articulate the people’s collective aspirations. It needs to be simple and easy to identify with for all citizens of the city. To this effect, the outcomes of the SWOT analysis (discussed in previous sections) would come to be of great use. Having arrived at the significant opportunities and threats for the ward, the citizens can be enabled to draft a vision by being asked

questions on their expectations regarding the future of the ward within the city. For this purpose, stakeholders must be identified and engaged in a manner as advocated earlier. Within this, they can also be asked to reflect on the important attributes of this imagined future, especially with respect to matters of daily interest such as water supply, sewerage, solid waste management, availability of social infrastructure such as schools, hospitals, parks etc. The extent of change desired can be gauged from asking them about elements in the SWOT analysis that must absolutely be changed or retained. A series of such consultation with stakeholders along sectoral lines would result in a clearly articulated vision as shown in Figure 10. An example would be a vision of a neighbourhood as a “safe, vibrant and productive community.”

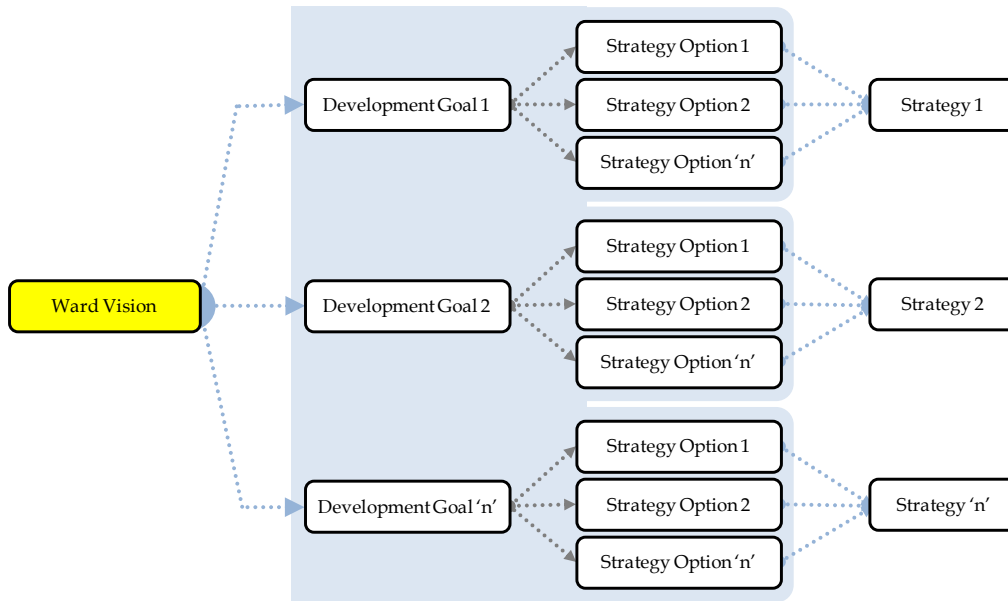


**Figure 10: Framework for arriving at Ward Vision**

*Source: adapted from (MOUD-GoI, 2013)*

The vision could then be broken down into time-bound development goals- commonly known as objectives- which are measurable and against whose progress the development process could be evaluated. For example, re-appropriating a stretch of street- otherwise notorious for eve-teasing and thereby considered unsafe for women after dusk- for public use. A timeframe for this development goal could be fixed at six months with periodic review

of progress every month. In order to achieve such goals, it becomes important to conceive strategies which must then be implemented to achieve the desired objective.



**Figure 11: Framework for breaking down ward vision into development goals and strategies**

*Source: adapted from (MOUD-GoI, 2013)*

#### 5.4. Strategize

A strategy is an approach- the preferred one among many choices- towards achieving certain development goals. In order to arrive at ward level strategies, stakeholders need to be presented with several ways of tackling the particular problem by the ward planner who would elaborate on the perils and advantages of each approach. The community could then authorize the selection of any of the options- or a combination- towards achieving the development goal. A set of such strategies may be arrived at as shown in Figure 11.

#### 5.5. Plan

After the identification of preferred strategies- with stakeholders playing a major role in their choice from a pool of several alternatives- the ward planner uses the inputs to convert each strategy- or a combination- into tenable projects. For example, with regard to the particular development goal discussed in the previous paragraphs, one strategy could be planning an evening market on the street in order to have eyes on the street after dusk. This, in combination with provision of street lights on the stretch, can be expected

to considerably improve the situation with respect to safety on the stretch of street previously considered unsafe for use after dusk. The ward planner would then prepare detailed project reports (DPRs) and approximate costs which can then be ratified by the community through the area sabha mechanism as instituted by the 74th CAA.

It must be understood that while there are some projects that- owing to their scale and budget- would need to be sanctioned by the city council, most neighbourhood improvement projects could be planned and executed at the ward level itself using the funds allocated to the ward under the city budget in combination with funds from the MP/MLA Local Area Development Scheme (LADS). For example, while allocation of a government primary school would need the sanction and patronage of the city council, smaller projects like improving local markets could be initiated at local level.

## 5.6. Deliver

After strategizing the plan, next comes the implementation. The implementation should scope all the infrastructural requirements for achieving the vision and strategies. The implementation of LAP should be planned, phased and funded. The suggestions derived from citizen participation should be ranked and prioritized and then offered as projects. This list of projects will entail physical and social infrastructure as well as other amenities required in the locality. These projects can be funded through the ward budget. Due to limited ward budget projects can be phased for the present year and the coming two years, by the citizens according to their requirements. Some of the objectives or projects which need further detailed studies can be tackled later on with a feasibility of the project checked. Effective leadership will also be required to link vision to delivery. This leadership needs to come from the local authority as a mandatory responsibility. Lastly, the implementation should be monitored on a regular basis and a framework for monitoring should be deployed by the LAP implementation authority.

As for this study, the Local Accessibility Plan's methodology has been demonstrated or tested upon a ward of Rajkot city in Gujarat. In the limited time-frame, the LAP team has been able to demonstrate the first two stages (Un-

derstand and Envision) of the methodology in detail, laying broad strategies and cost estimations for listed projects, which remains to be detailed further. Given more time, the LAP team would take this plan to the community and edit it as per the suggestions made by the community and arrive at a final plan with a final phased out list of projects, directly linked with the municipal ward budget.

## **5.7. Conclusion**

In this chapter, we have discussed the methodology for Local Accessibility Planning as a five-stage process that starts with understanding the present conditions of the ward, using it to develop a vision for the ward in partnership with the community, using it to develop strategies towards achieving the overall vision and its objectives. The plan thus developed consists of projects that would contribute towards the vision. In the next few chapters, the proposed methodology would be applied and demonstrated in the case city of Rajkot.

## SECTION-B

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This section presents a demonstration of the LAP methodology evolved in the section-A in the case city of Rajkot. Chapter 7 introduces the city and its peculiar geographical and political context. Chapter 8 dwells further into the demographical details of the city. Transport related characteristics of the city are presented in Chapter 9 including an insight into the dependence on Intermediate Para-Transit. Chapter 10 investigates the levels of service of basic services including water supply, sewerage, solid waste management and storm water drainage. Land use related aspects and accessibility to social amenities are discussed in Chapter 11, culminating in the prioritization of issues identified through the analysis. Finally, Chapter 12 presents the proposed plan for the ward evolved on the basis of the LAP methodology.

## 6. Applying the LAP methodology: Rajkot

The methodology developed in the previous section of the report will be demonstrated in Rajkot city. Owing to the previous engagement of this research team with the city of Rajkot for a Low-carbon Comprehensive Mobility Plan for Rajkot (Munshi, Shah, et al., 2013), the team had an upstart with regard to the venue of this demonstration. A good amount of data regarding demographics, land use, transportation and most notably building footprint-linked data was available. These are factors that encouraged the team to choose Rajkot over other cities for demonstrating the LAP methodology. In the following section, the city of Rajkot would be introduced before presenting the demonstration of the LAP methodology in a ward of the city.

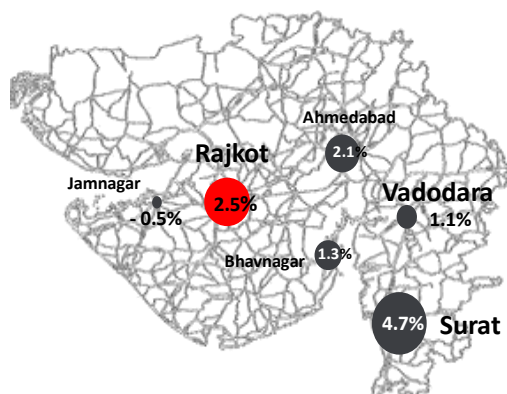


**Map 1: Location of Rajkot**

Established in the year 1608 CE, Rajkot city is located in Saurashtra region of Gujarat state of India (Map 1) on the banks of River Aji. It is connected to other urban centres of Ahmedabad, Vadodra, Surat, Junagadh, Jamnagar and Bhavnagar by rail and road. It is therefore considered to be an entry point to the Kathiawar region. There are two railway stations at Junction Plot area and Bhaktinagar. Two major national highways (NH-8A and NH-8B) as well as several state highways pass through the city. There is also an airport that connects the city to other cities in Gujarat and rest of the country.

Today Rajkot is the fourth-largest city in the state of Gujarat after Ahmedabad, Surat and Vadodra. It has experienced significant population growth in recent years owing to its vibrant industrial growth driven by Micro Small and Medium Enterprises (MSME). In the last two decades, Rajkot has grown to

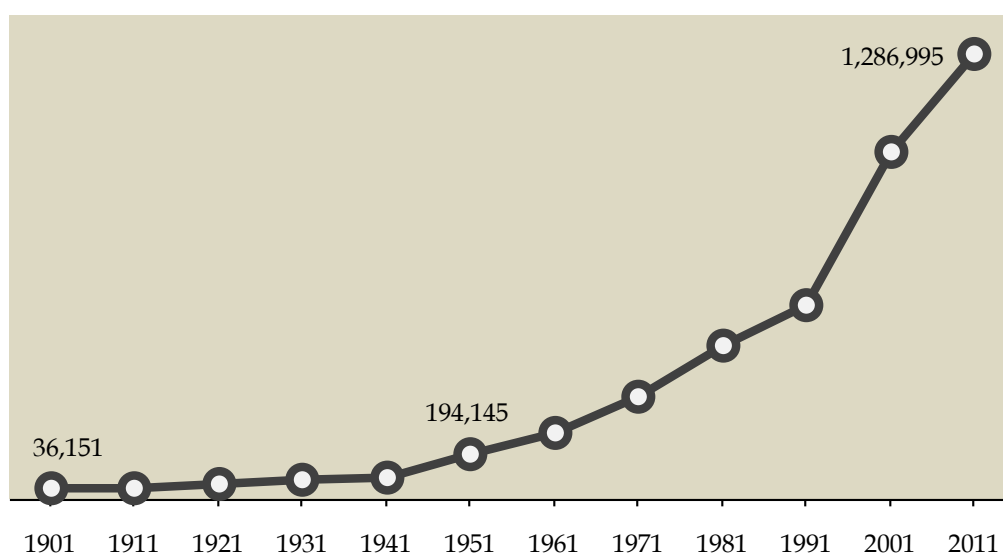
become a city of 1.3 million (Registrar General of India, 2011) and is expected to reach about 3 million, in 2031.



**Figure 12: Rajkot city in the context of Gujarat**  
(Figures in percentage are CAGR in the period 2001-11)

## 7. People

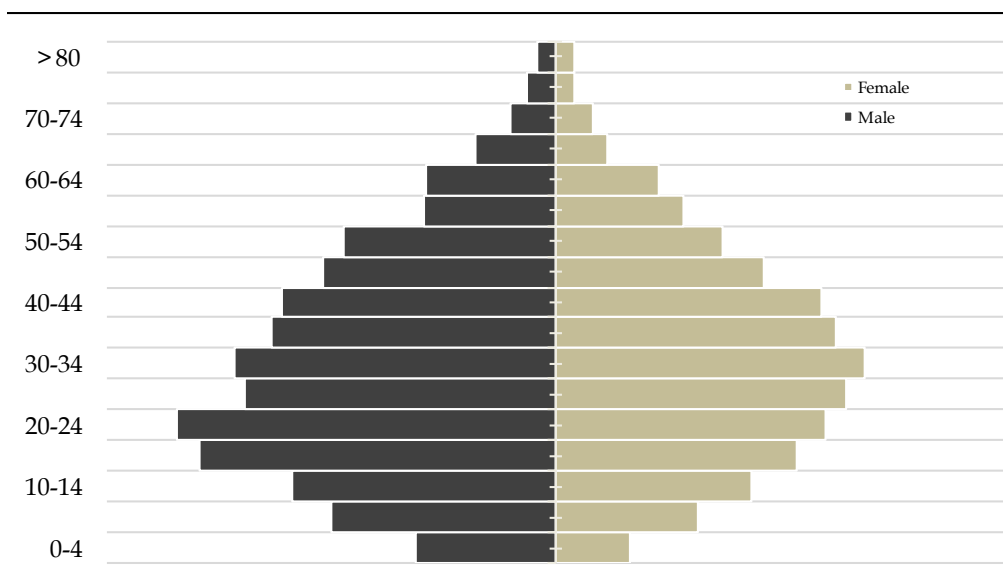
As of 2011, Rajkot is a city of close to 1.3 million people (Registrar General of India, 2011). Population has grown from one million in 2001 with a decadal growth rate of 28.31%. Rajkot city experienced a decadal growth rate of 99.04% between 1941 and 1951 because of immigration from Pakistan. Also, in the last decade from 1991 to 2001, the city registered a growth rate of 79.12% due to expansion of Corporation limits by merging surrounding villages in 1998. This explains the sudden spurt in the line graph at the 1991 milestone shown in Figure 13. Currently the city extends over an area of close to 104.8 square kilometres with a population density of 127 ppHa.



**Figure 13: Population growth in Rajkot city over the last century**  
Source: (Munshi, Shah, et al., 2013)



The sex ratio in Rajkot is alarmingly low at 816 females per 1000 males. In other words, males form 55% of the total population, whereas females form 45%. The age-sex pyramid (Figure 14) below shows that individuals in the productive age of 22 to 59 years form 60% of the population and students between 6 to 21 years of age formed 26% of the total, whereas dependents - including children between 0 to 5 years and people above 60 years of age - are only 13.65% which. This is a healthy sign in terms of future productivity.



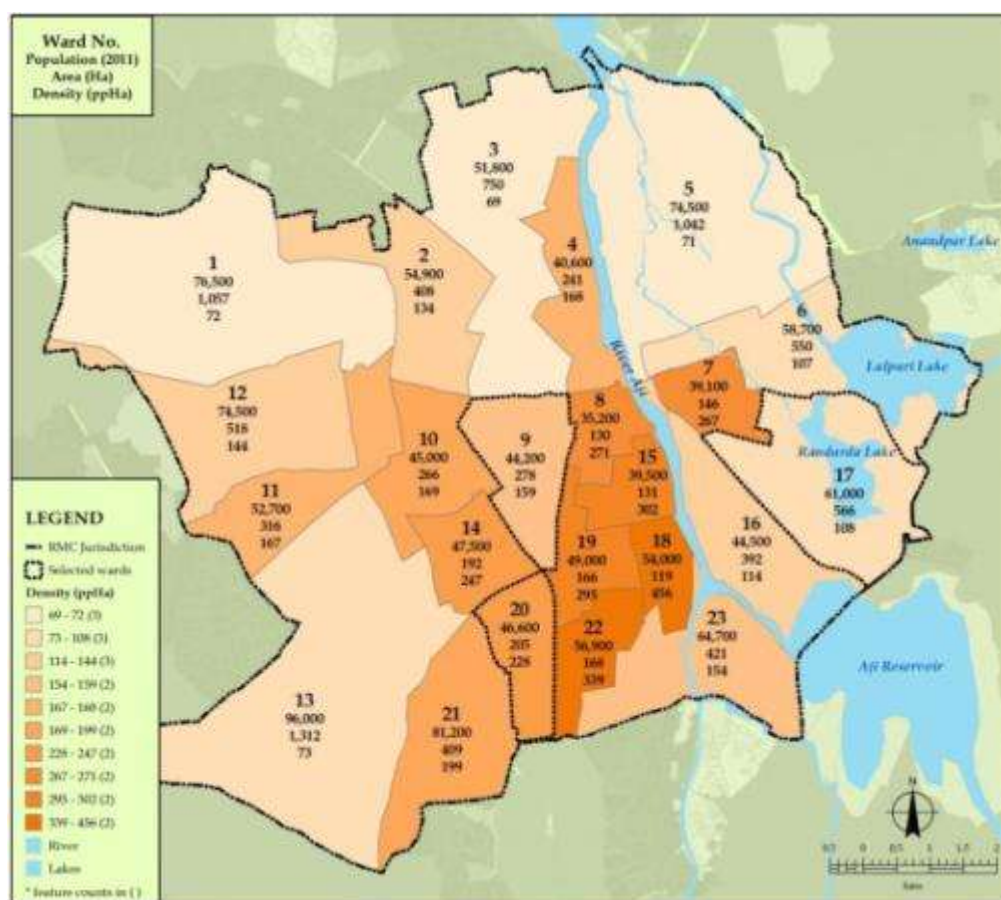
**Figure 14: Age-sex pyramid for Rajkot (2011 data)**

Source: (Munshi, Shah, et al., 2013)

The city, divided into 23 wards comes under the jurisdiction of the Rajkot Municipal Corporation (RMC). A lot more on governance and the administrative framework can be found in Section 7.3. Rajkot is far less dense than Ahmedabad (184 ppHa). Densities within the inner city are much higher than rest of the city (Map 2). Ward number 18, 22 and 15 are among the densest wards in Rajkot. Of these, ward number 15 and 18 are located on the banks of the Aji River whereas ward number 22 is on the southern corridor that correlates with the industrial development in the city. Wards 3, 1 and 13 are among the least dense wards of the city owing to their large areas, location at the periphery of the city and dearth of economic activities.

For the purposes of this study three wards were shortlisted namely ward number 9, 17 and 20. Ward 9 is part of the practical Central Business District (CBD) of Rajkot and is marked by commercial enterprises with few residential layouts barring a few new apartment complexes. It is also close to the

RMC central office. Ward 17 is located on the eastern periphery of the city. It is in a state of flux owing to various peripheral economic activities like truck body building and loading and unloading of items arriving from other cities. Randarda Lake is located within the ward as also seventeen slums are part of ward. Ward 17 is also the largest, by area, of the shortlisted wards. Ward 20 is the densest among the shortlisted wards. It has a mix of residential, commercial and industrial land use. The Samrat Industrial Area in the ward provides employment to thousands of native and immigrant workers.



Map 2: Population, area and density in various wards in Rajkot city  
Source: (Munshi, Shah, et al., 2013)

### 7.1. Demography of the wards

The demographic variables of the shortlisted wards have been summarized in Table 9. Ward 20 is the smallest, by area (2% of the city), among the selected wards but accommodates around eleven thousand households (4% of the city) with an average household size (4.25) that is closer to the figure at the city level (4.20). It is also around twice as dense (228 ppHa) as the city and has a far greater percentage (28.30%) of people from the scheduled castes as

against the city (6.50%). This may be accounted for on the basis of immigration of rural farm labour to the city in the past two decades for livelihood.

**Table 9: Demographic information for the city and wards**

Variables	Rajkot City	Ward 9	Ward 17	Ward 20
Population (2011)	1,286,955	44,200	61,000	46,600
Area (sq km)	104.80	2.78	5.60	2.05
Density (ppHa)	127	159	108	228
No. of HHs	306,809	10,650	13,525	10,964
HH Size	4.20	4.15	4.51	4.25
Scheduled Caste (%)	6.50	1.30	12.13	28.30
Scheduled Tribes (%)	0.70	0.70	0.07	0.90
General (%)	92.70	97.90	87.80	70.70
SEG1 (Slums + SEWS)	26.70	39.20	61.70	18.10
SEG2 (LIG+MIG) (%)	66.70	49.20	37.10	67.90
SEG3 (HIG) (%)	6.60	11.60	1.20	14.00

Source: (Munshi, Shah, et al., 2013)

Ward 20 has been selected for demonstration of the LAP methodology from among the shortlisted wards. The choice of this ward was influenced by the land use mix, compact settlement pattern, easy accessibility and manageable size that would help in the timely completion of the research.

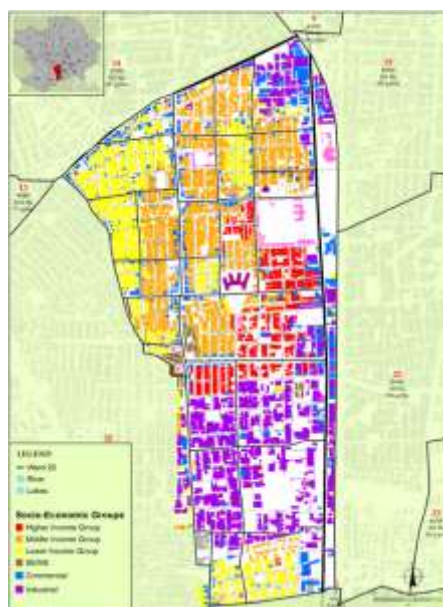
## 7.2. Ward mapping-who lives where

For the purposes of the study, only socio-economic groups have been considered<sup>22</sup>. Neighbourhoods were identified and socio-economic traits were attributed to them on the basis of housing conditions and state of infrastructure provision. The availability of building-footprint level data also helped in the process of demarcation of neighbourhoods and assignment of socio-economic traits.

In Map 3 below, one can observe building footprint level detail of various socio-economic groups. Industrial and commercial building uses have been marked separately. However, it must be said that some of the industrial

<sup>22</sup> It must be stressed here that these groups are themselves not homogeneous. Within these groups, one could further address smaller subgroups on the basis of caste, religion. This research has stuck to considering only groups on the basis of their socio-economic status, gender and age. However, conscious efforts have been made to cover all the stakeholders.

buildings are also partly being used for residential purposes with the workers – mostly migrants – staying upstairs from the manufacturing units. These residents have also been accounted for in our analysis of accessibility to various social amenities. The spatial divisions in the ward – intentional or otherwise – on income lines are quite evident in the map below.



**Map 3: The spatial spread of various socio-economic groups in Ward 20**

Source: (Authors' fieldwork, 2014)

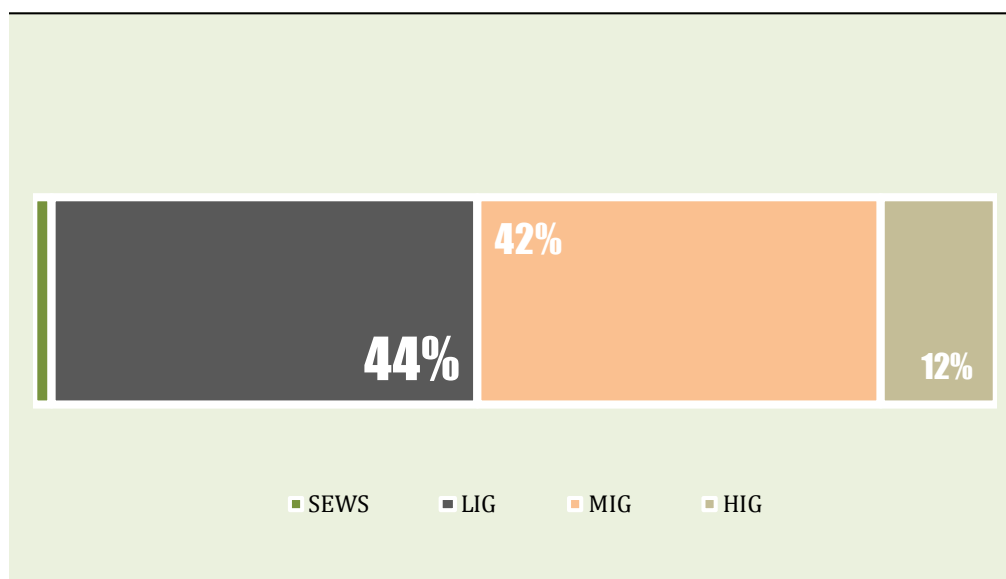
People from the High Income Group (HIG), who form a mere twelve percent of the total population of the ward, live in the central portion of the ward with good access to socio-cultural amenities (Figure 15). The northern portion of the ward and the west-central areas which have reasonably good access to most schools, clinics and other infrastructure are occupied by the Middle Income Group (MIG) who are about forty two percent of the ward's residents. People from the Low Income Group (LIG) are seen in the western and southern portions of the ward. They form forty four percent of the ward population. These groups do not appear to have good access to amenities. Our fieldwork also indicated that the state of basic infrastructure in these areas is not good as evident through unmetalled roads, lack of streetlights and poor sanitation (Picture 1). The Social and Economically Weaker Sections (SEWS) quarters are located in isolated pockets in the west and east of the ward.



**Picture 1: Various neighbourhoods in ward 20**

Source: (Authors' fieldwork, 2014)

It was found that over eighty six percent of the residents of the ward belonged to the lower and middle income groups (Figure 15). Our sampling strategy followed this pattern and therefore a lot of our discussions and interviews were conducted in the areas that were home to these groups.



**Figure 15: Socio-economic composition of the ward**

Source: (Authors' fieldwork, 2014)





**Map 4: Location of meetings, discussions and interviews with residents**

Source: (Authors' fieldwork, 2014)

Overall, a total of twenty four group discussions and ten interviews were conducted. Four discussions and an interview were conducted with residents of the high income areas. Seven discussions and two interviews were held with residents from the middle income areas. Eight discussions were held in low income residents' neighbourhoods. Three discussions and an interview were conducted in SEWS quarters. Additionally, two discussions were held with migrant groups and six interviews were conducted with commercial enterprise owners. More details on these discussions and interviews can be found in the Appendix.

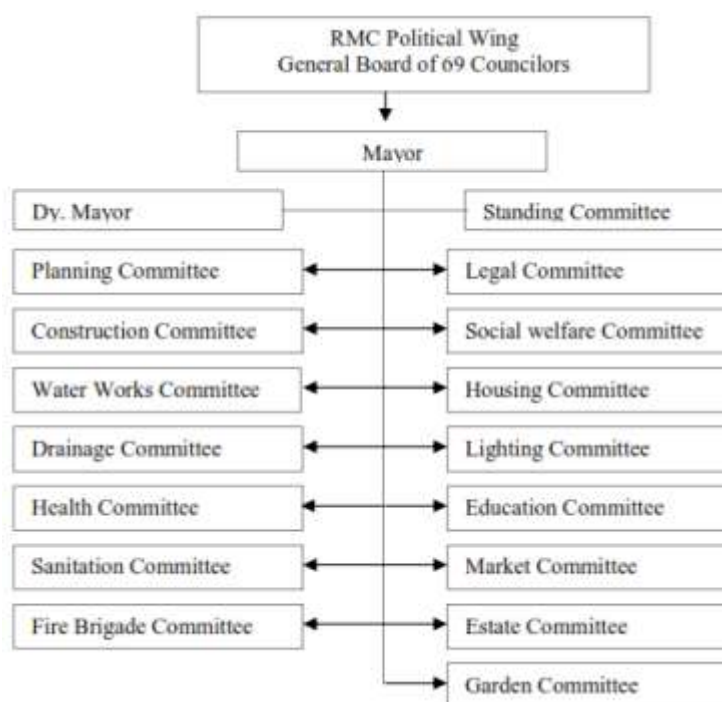
### 7.3. Administrative framework

The provision of civic amenities in the city is entrusted to the Rajkot Municipal Corporation (RMC)<sup>23</sup> which discharges functions in accordance with the provisions of the Bombay Provincial Municipal Corporation (BPMC) Act, 1949 and the 74<sup>th</sup> CAA, 1992. In addition to the provision of civic amenities, the RMC is also plays a regulatory role towards issue of building permits, vending licenses and industrial permits. The RMC has the following statutory authorities within its structure:

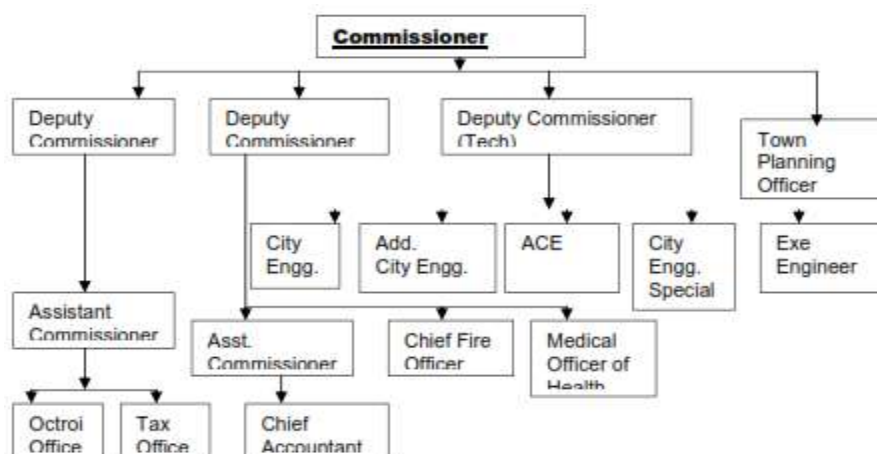
<sup>23</sup> Municipal services were run by Municipal Borough, Rajkot, under the Gujarat Municipal Act, 1963. Rajkot Municipality was subsequently converted into Municipal Corporation with effect from 19.11.1973 and the city administration was placed under the new statute of the Bombay Provincial Municipal Corporation (BPMC) Act 1949 (RMC, 2007).

- The elected councillors who form the General Body (GB) of the municipal corporation;
- These councillors send forward twelve elected members among them to the standing committee; and
- The Municipal Commissioner, appointed by the State government from time-to-time, who heads the executive wing of the municipal corporation

There are twenty three electoral wards (Map 2) in the city with each ward sending three councillors to the council for a period of five years or dissolution of the council, whichever is earlier. Of the sixty nine councillors, one-third is reserved for women. Another eleven councillors must be from the scheduled castes and backward classes. These elected members of the council elect a mayor whose term may stretch for a maximum of two and a half years. The general body is vested with powers to take policy decisions that are deemed for the development of the city. The standing committee sanctions contracts entered into between the Commissioner and contractors subject to certain limits with regard to their jurisdiction. There are other committees for various functions such as planning, construction and social welfare (Figure 16) who have delegated functions for their sectors. These committees can sanction works that involve expenditure between one to three lakhs.



**Figure 16: Structure of the legislative wing of the RMC**  
Source: (RMC, 2007)



**Figure 17: Structure of the executive wing of the RMC**

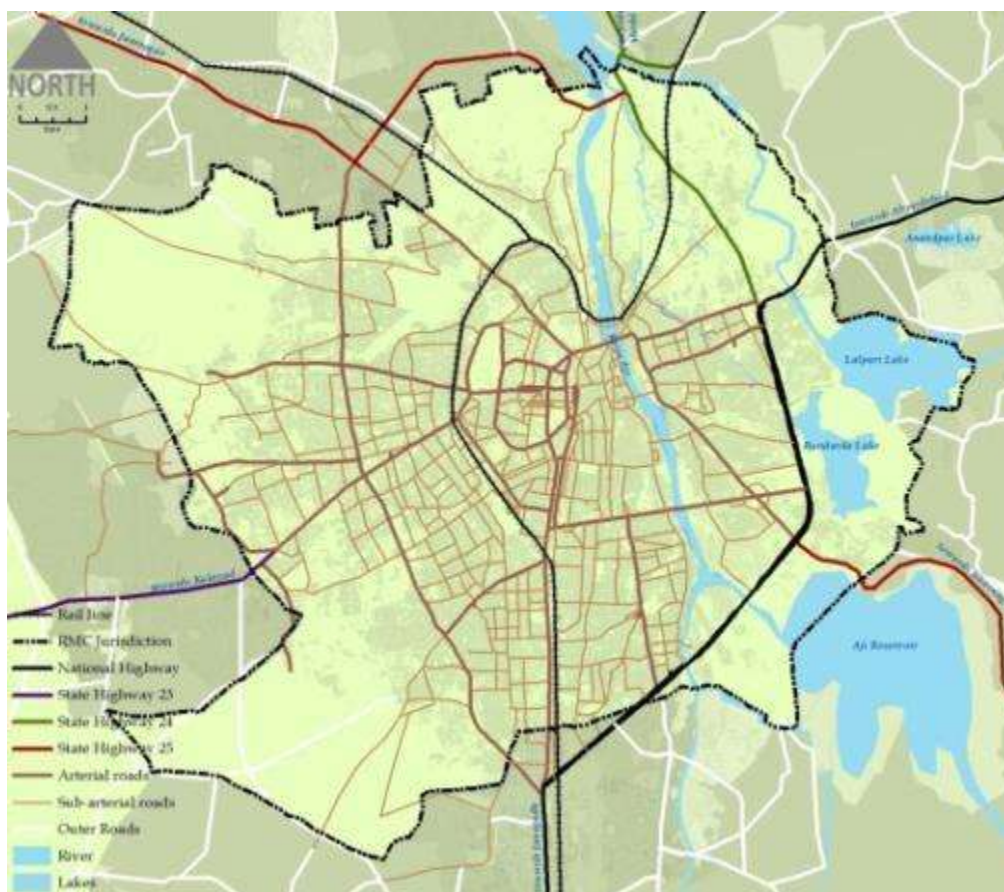
Source: (RMC, 2007)

The executive wing of the RMC is led by the Municipal Commissioner who is a State government appointee. The Commissioner is assisted in his duties by a team of Deputy Commissioners and Assistant Commissioners who themselves are reported to by City Engineers (Figure 17). At the ward level, there are ward offices for discharge of local amenities related functions. A group of such ward offices are administered by an engineer. It must be noted that Ward Committees have not yet been formed in Rajkot as against the requirements of the 74<sup>th</sup> CAA of 1992. One of the issues with city level administration in Rajkot – as with other cities in India is that the commissioner, being an appointee of the state starts to wield a level of influence over execution of projects that leads to greater centralization (Sivaramakrishnan et al., 2000).

## 8. Transport

Rajkot city is connected to other parts of the country through a well developed regional road system comprising important roads such as Gondal Road (NH-8), Ahmedabad Road (NH-8B), Jamnagar Road (SH-26), Bhavnagar Road (SH-27), Morbi Road (SH-42) and Kalawad Road (Map 5). It had a registered vehicle population of 0.48 million in 2000 increasing at an average annual rate of 9.5 percent during 1991-2001 (RMC & CES, 2004). The inter-city road based public transport system is essentially provided by Gujarat State Road Transport Corporation (GSRTC) and private buses. Local public transport is based on Rajkot Mass Transit System (RMTS) buses and Rajpath Bus Rapid Transit System (BRTS) and is supplemented by autorickshaws and *chakdas*.



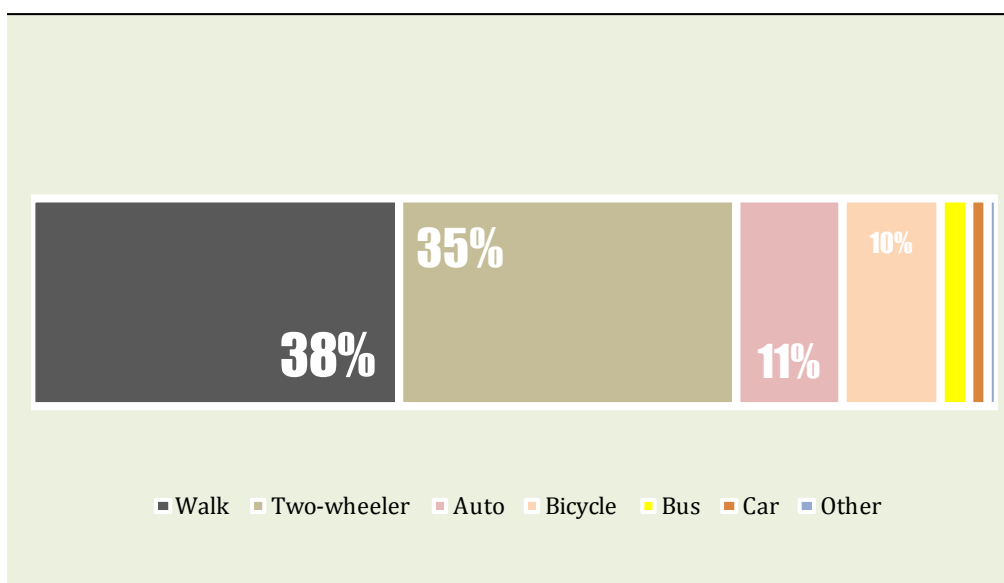


**Map 5: Rajkot road network**

Source: Authors

### 8.1. City-wide mode share

The mode share in Rajkot is a result of the distribution of land uses in close proximity of the other. Most commercial and educational land uses are located in close proximity or residences. As a result, around thirty-eight percent of trips are made by walk and another ten percent trips are made on bicycles (Figure 18). Given that the Public Transport (PT) system in Rajkot is not well established, only a paltry three percent trips are made by bus; whereas thirty-five percent trips are made by two-wheelers and only two percent trips are made by cars. In such a situation where buses are not very common, the deficit is made up by Intermediate Para Transit (IPT) which consists of autos and *chakdas*. These account for around eleven percent of total trips in Rajkot. Overall, while the combined share of walk, bicycle and buses may be found to be just over the half-way mark, it is under threat owing to rising incomes and lack of incentives to continue with these sustainable modes of mobility.



**Figure 18: Rajkot modal share by trips**

Source: (Munshi, Shah, et al., 2013)

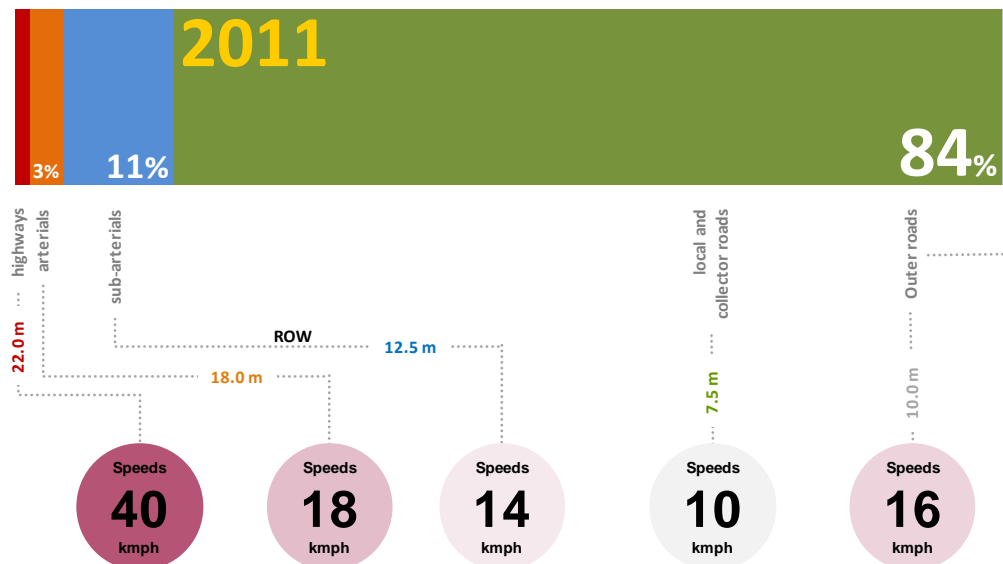
## 8.2. Road network

The RMC area has around 1799.05 kilometres of roads.. The city roads form a ring-radial pattern. There are six radials and one major ring that form the ring-radial pattern for the city of Rajkot (Map 5). These are Morbi Road, Ahmedabad Road, Bhavnagar Road, Gondal Road, Kalawad Road, Jamnagar Road and the Ring Road which facilitate regional external-internal and internal-external traffic movement. The road network inside the RMC boundary is very dense at many places, particularly in the old city area where the network does not follow any particular pattern unlike the regular grid networks in the newer developments (Figure 19).



**Figure 19: The road-pattern in Soni Bazaar area of the walled city of Rajkot**  
The river Aji in the city flows from north to south, dividing the city into the east and west. Another barrier to traffic movement within the city is the rail

network along the river in the north-south direction. Most of the city roads have an intense ribbon development of commercial activities, forming a mixed use kind of development along the arterials as well as some sub-arterials. The hierarchy of roads within the city reveals that local and collector roads form the majority of RMC roads with over eighty-four percent falling in this category. The arterials and sub-arterials form only three and eleven percent respectively. This is a reflection of the urban morphology of the city with its close-knit neighbourhoods and small building footprints (Figure 19). On the basis of these statistics and urban form, the city presents itself as an ideal case for walking non-motorized transport as the frequent intersections are bound to slow down motorized traffic to safe speeds.



**Figure 20: Hierarchy of roads in Rajkot according to experienced speeds**  
Source: (CEPT University, 2011)

Within ward 20, the share of local and collector roads (most internal society roads) is high at sixty-five percent followed by sub-arterial roads (Krishnanagar main road, Panchshil main road) at thirty-two percent and arterial roads (Gondal road, Mavdi main road) at a paltry two percent (Map 6). The ward is bound on the east by Gondal road and a rail line that goes to Junagadh. On the north, Mavdi main road separates the ward from ward 14. Krishnanagar acts as the western border for a good portion. On the south, the ward is separated from RUDA area by Khodiyar nagar main road.



**Map 6: Ward 20- Road network**

Source: Authors

Gondal road is mostly commercial in character with shops selling plywood, glass, automobiles and automotive parts. Krishnanagar main road has a mixed character with residential, commercial and industrial activities abutting the road on various stretches. Panchshil road is passes through a HIG residential area and connects Gondal road to Krishnanagar main road at Makwana Pan Chowk. The fieldwork carried out by the team brought several issues to the fore which will be discussed in the following paragraphs. It was found that several areas lacked even metalled roads (Picture 2). In these areas (like Lodheshwar) residents complained that the situation had not improved despite several representations to the local authorities.



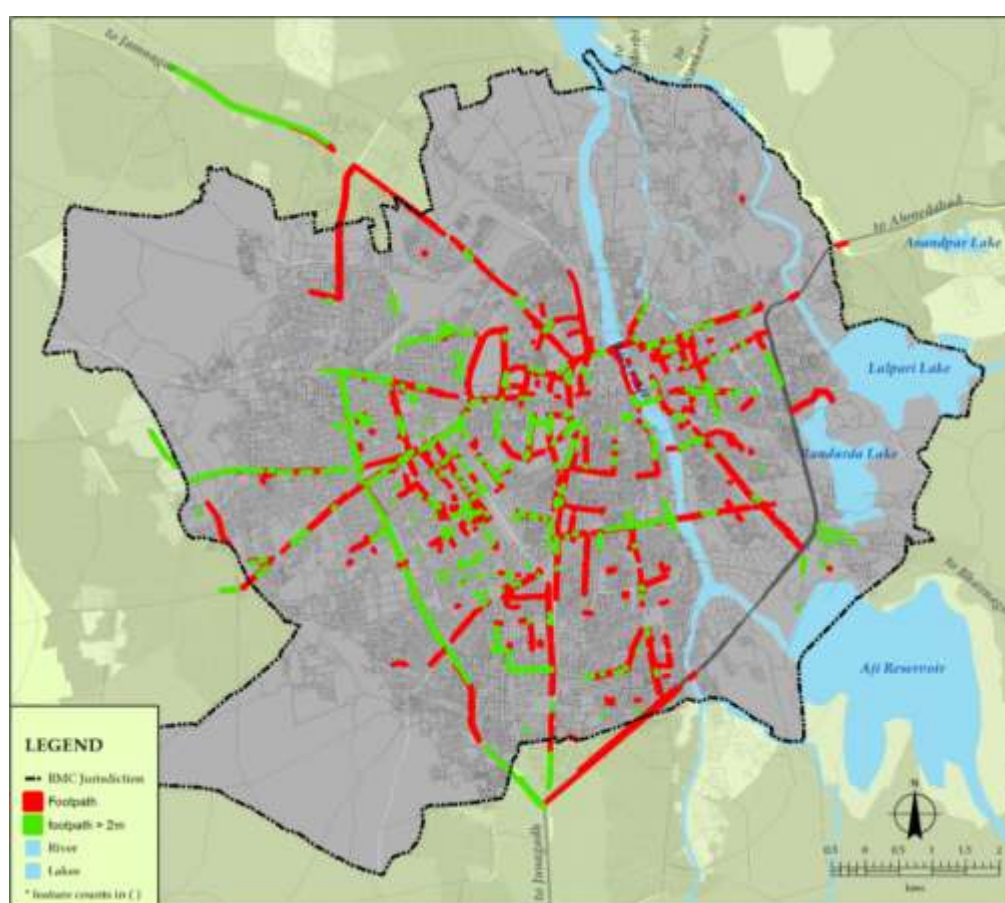
**Picture 2: A local street in Lodheshwar area of ward 20**

Source: Authors



### 8.3. Non-motorized transport

Rajkot, with its close built fabric and high percentage of local and collector roads presents itself as pedestrian and cyclist friendly city in theory. However, the real picture is far from perfect with only ten percent of all roads by length having footpaths. Even within these, only four percent of roads have footpaths wider than two metres that are conducive to walking (Map 7). As a result, people continue to use either the carriageway of some portion of the right-of-way (RoW) to walk. There are no dedicated cycle tracks in the city and they continue to use the main carriageway. Hardly any areas have any facilities that would facilitate barrier-free access.



**Map 7: Rajkot NMT infrastructure**

Source: Authors

Within ward 20, less than two percent of the streets have footpaths (Map 8) and a negligible amount of streets have footpaths wider than two metres. Even in these stretches, continuous footpaths are rare (Picture 3(a, c)). Obstacles like electric posts, waste bins, construction material and encroachments by shopkeepers have become a major disincentive for pedestrians (refer box). There are still some areas such as Panchshil road (Picture 3(b, d)) where there

are conditions that are conducive to walking and cycling, although no dedicated cycling tracks have been provided. These areas are, however, limited to the HIG areas and societies. LIG areas are mostly devoid of such facilities. Speaking to the research team, Belaben<sup>24</sup> (38, female, married with two children, LIG) said, “Since roads are built first and footpaths later, we lose our *otla*<sup>25</sup> in the process of provision of footpaths (interview with Belaben, 15-05-2014)”. She appeared to be happier to not have footpaths in her neighbourhood than have narrow namesakes which would deprive her of her much-beloved semi-public interaction space. Hansaben (40, female, married, MIG) reflected on the lack of safety on the roads saying, “Even when we go to the market, vehicles intimidate us. There are vehicles even on the footpaths”.



a) Barriers to walking on SEWS cross-street



b) Good conditions for walking on Panchshil Rd



c) Discontinuous and obstructed footpaths not conducive to walking



d) Conducive natural conditions for walking on SIA main road.

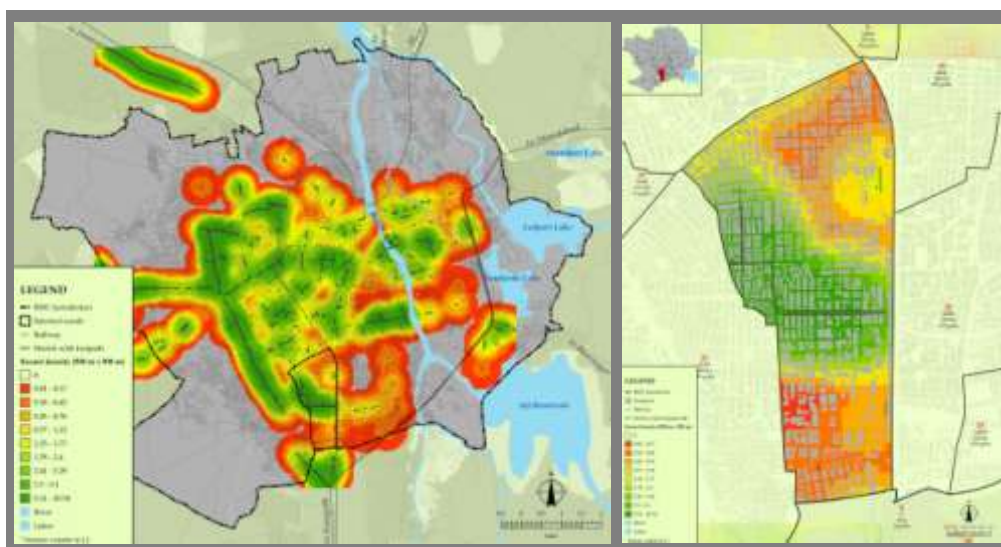
**Picture 3: A snapshot of streets from the perspective of walking in ward 20**

Source: Authors

No conditions that would favour the use of these public places by the elderly and the differently-abled are in place with frequent changes of levels and ill-designed intersections. Some of these locations have been marked in (Map 8).

<sup>24</sup> All names have been changed to withhold identity.

<sup>25</sup> An *otla* is the Gujarati version of a veranda. It is used by women (mostly) to socialize with their friends in the evenings. It also serves as a sit-out for strangers who may not be welcome into the living room.



**Map 8: Ward 20- NMT infrastructure**

Source: Authors

The absence of enabling infrastructure is a major roadblock to walking and cycling in ward 20 especially along the stretches highlighted in Map 8. People continue to walk, however, for short trips like those to the grocer or the nearby park. If these sustainable mobility practices are not incentivized by addressing the fears of the current walking population by providing foot-paths (at least two metres wide) and dedicated cycling tracks, it would be impossible to contain the continuing motorization.

#### **8.4. On-street activities**

The streets are also a venue for a host of other activities including vending, informal markets, playing, impromptu meetings and chit-chat, wedding celebrations, religious processions, loading-unloading and parking. Some of these – say on-street vending – are desirable whereas some others like on-street parking may contribute to deterioration of quality of life. In the below section, a discussion is presented on the various on-street activities in ward 20. Like most Indian cities, on-street vending is an important activity in Rajkot. Fruits, vegetables, daily-use items and cosmetics are carried around by the vendors on pushcarts (Picture 4(c)) and sold in the residential areas of the ward. There are hotspots where these vendors come to at some stage of the day and sell their wares. Some of these hotspots include Makwana Pan Chowk, Swaminarayan Chowk and Malaviya nagar road shown in Map 9.



**Map 9: Ward 20- On-street activities**

Source: Authors

Also, there are morning and evening markets at Makwana pan chowk, Geeta Nagar, Anand Mangla chowk, Ramnagar market and Swaminarayan chowk. The evening market on Geeta Nagar road is popular among residents from that portion of the ward as well as other parts of the ward (Picture 4(a)). It offers a choice of wares for people to choose from. Clothes, fruits, vegetables, plastic-ware, cosmetics and other household items are available. It comes across a vibrant public space that livens up in the evenings. At other times of the day, it remains idle barring a few vendors and autorickshaws. Some issues that came to our attention during the course of our discussion were the general dirt and garbage strewn around. Solid waste collection in the area appeared to be lax. As a result, it appeared to be a favourite spot for cattle that hindered movement in the streets.

Parking was a major issue in some areas of the ward. The residents of the area said that since there is not enough on-campus parking provided by the hospital, most visitors parked their vehicles on the 12m-wide road outside the hospital (Picture 4(b)). This had led to congestion especially in the morning when outpatients are inspected and treated at the hospital. Similar issues were also observed on Krishnanagar main road where two-wheelers and four-wheelers parked on the road-sides hindered not only the movement of vehicles but also that of pedestrians and cyclists.





a) Market on Geeta Nagar road



b) 'Free' parking on Doshi hospital road



c) Vendors on Krishnanagar main road



d) Trucks parked and unloading in SIA

**Picture 4: A glance at streets in ward 20**

Source: Authors



a) Children playing on the street



b) A wedding procession on the street



c) Cattle blocking thoroughfare



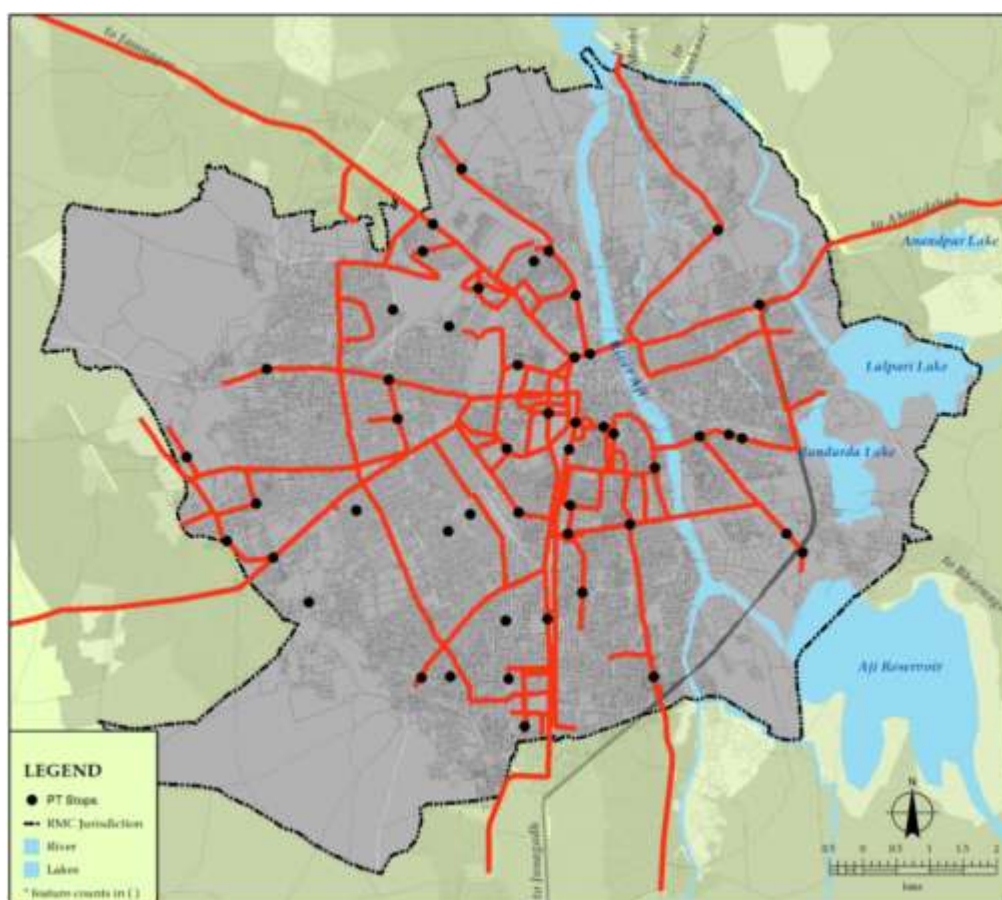
d) Residents at a neighbourhood meeting

**Picture 5: More activities on streets in ward 20**

Source: Authors

### 8.5. Public transport

The public transport system in Rajkot comprises of the Rajkot BRTS (Rajpath) and RMTS (city bus service), both being run by the RMC. In addition, there are GSRTC buses that mainly carry inter-city passengers and *chakdas* that compete with RMTS run services. PT is a recent addition to Rajkot. The BRTS was made operational only in 2013 and is yet to complete its full network (RMC-Rajpath, 2013). As of now, the BRTS corridor runs along the western flank of the ring road from Madhapar chowk to Gondal chowk covering a distance of only around ten kilometres with sixteen stops in between.



**Map 10: RMC PT network and stops**

Source: Authors

The RMTS is the latest attempt in several years to introduce city buses in Rajkot, having previously failed in such endeavours. Around six hundred eighty schedules are running on twenty-seven routes with average passenger traffic of around ten-thousand on a daily basis (RMC-Rajpath, 2013). The coverage of RMTS routes and PT stops is shown in Map 10. Map 11 shows the PT stops that fall within ward 20. The BRTS route doesn't pass through the ward.



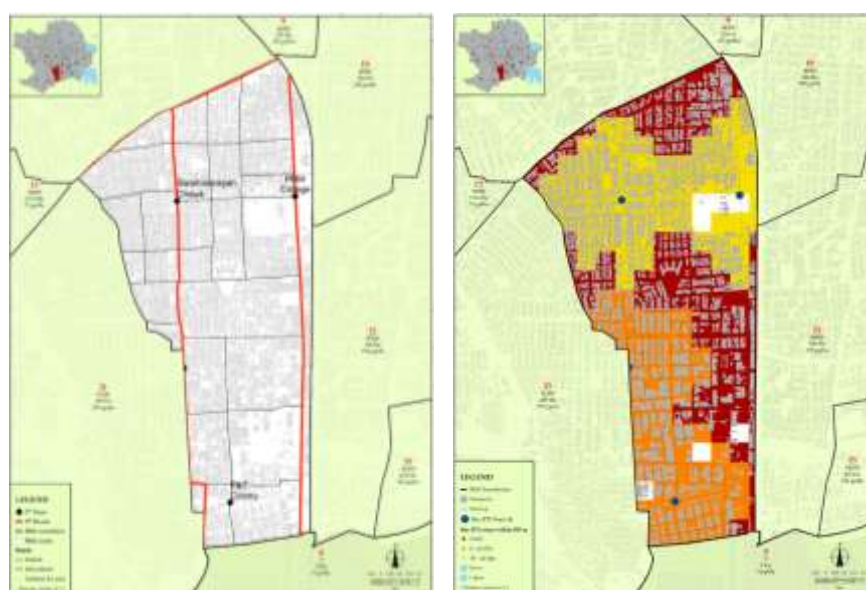
a) New buses in operation by RMTS

b) RMTS bus stop

**Picture 6: The new PT system in operation**

Source: Authors

In our interactions with the residents of the ward, it came to our notice that most residents were unaware of the *Neela* bus. For example, Kamlaben (28, female, LIG) said, “I would like to use the bus for long-distance trips. But nobody has any information on which bus goes where and when. Often it takes more than half an hour for the bus to come”. She appeared to be unhappy with the absence of information on the PT routes and timings. The tiny poster with those details on the signage post in Picture 6(b) seems to escape the attention of most of our respondents. Some of her friends also implied that since the PT stops are more than half a kilometre away from their residences, they are not inclined to use it, given that autorickshaws are available closer.



a) Routes and stops for newly launched PT system in ward 20

b) Measured accessibility: Number of PT stops within 500 m

**Map 11: Ward 20- PT accessibility and stops**

Source: Authors

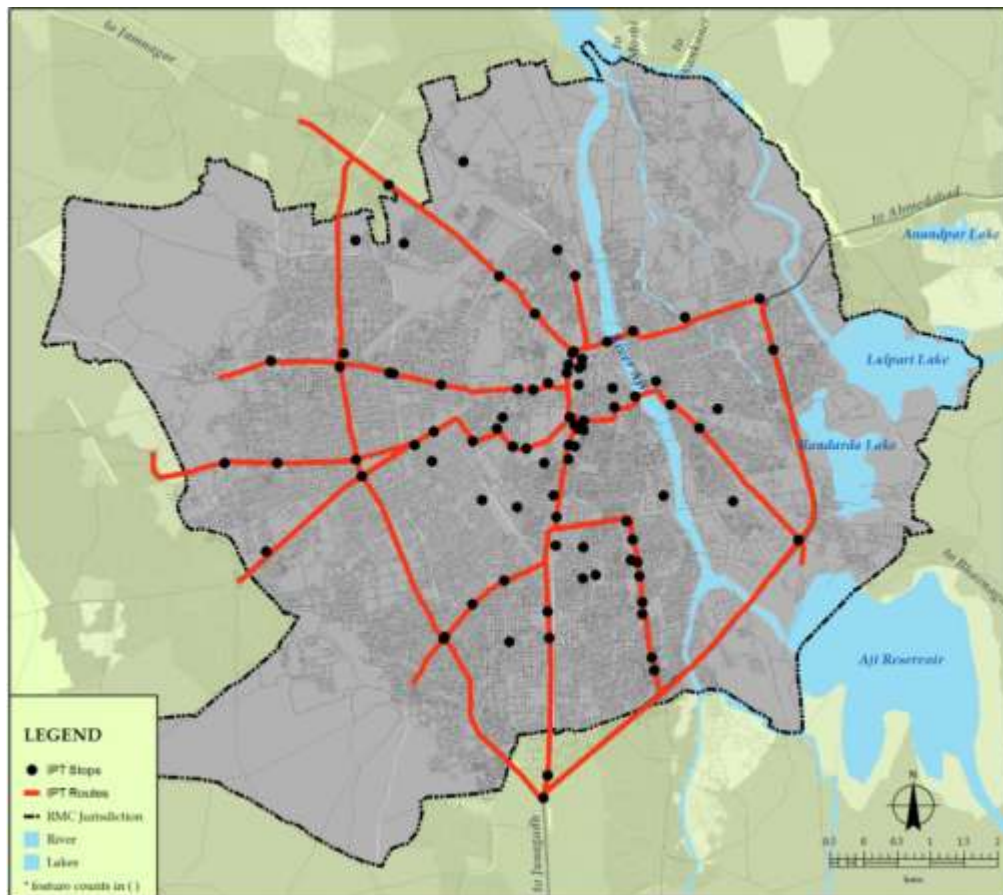
Pramodbhai (59, male, LIG) had used the service in its initial days, but did not use it any longer. He said, “They charge for tickets now. Earlier it used to be free. Since there is not much difference between bus and share auto fares, I use the latter”. Not only is the respondent aware of the bus service, but he had also used it when the RMC was hoping to popularize the service in its initial days. However, given that the tickets were no longer free and schedules were not frequent enough, he preferred to use the share auto service - available at the local junction and only marginally more expensive than the bus fare. Therefore, distance to the PT stops, lack of end-to-end connectivity and lack of information on the routes and timings are obstacles to the use of PT by the people.

### 8.6. Intermediate Para-transit System (IPT)

The Intermediate Para-transit System (IPT) is an indispensable transport system in medium sized cities of India. Size, pattern, structure, socio-economic conditions and network characteristics of these cities and service flexibility of IPT make it a vital transport system. The popularity of the system is evident from the fact that in some medium-sized cities, IPT serves nearly 80 percent to 90 percent of the total passenger trips catered by public transport (Ramdas, 2006). *Chakdas* and auto rickshaws are the transport modes offering para-transit services in Rajkot. Both these modes have supplemented the role of public transport in the city.

On average, autos operate 16 trips daily, while *chakdas* operate 10 trips daily (Munshi, Shah, et al., 2013). There are about seven major points from where shuttle service starts: Bus Terminal, Hospital Chowk, Trikon Baug, Greenland Chowk, Gondal Chowk, Kothariya Road Chowk and Rail Terminal and dispersal is mainly through Intermediate Public Transit System (IPTS). *Chakdas* from these main stands move largely on the arterials in east, west and south connecting Gondal Chowk, KKV Circle, Madhapar Chowk, Greenland Chowk and Aji Industrial area. Other than *chakdas*, there are many auto-rickshaw stands where two to six auto rickshaws are available for the public at any point of time, making trips to various part of the city. Map 12 and Map 13 show the shuttle routes mapped for the city and the ward.

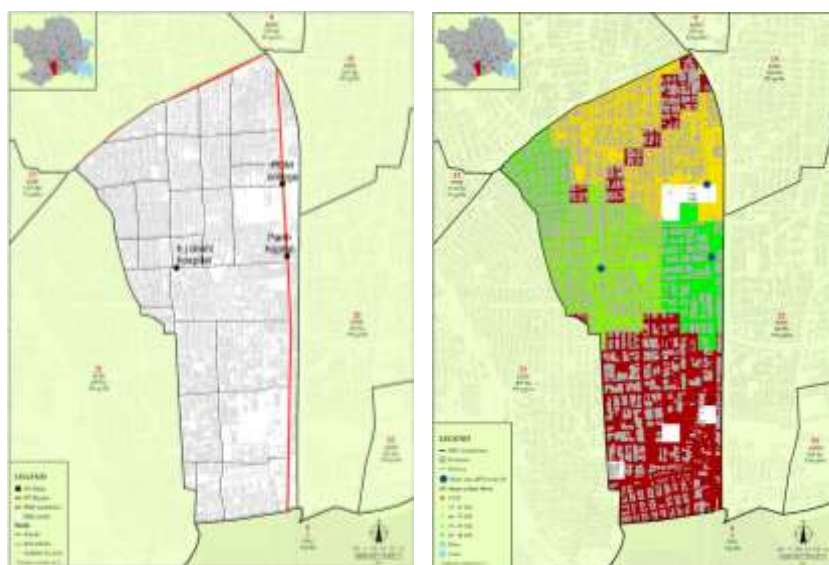




**Map 12: Rajkot IPT network and stops**

Source: Authors

In the absence of PT in Rajkot for a long time, people depended on IPT for getting around in the city. It emerged that despite the recent introduction of the PT system, IPT continues to be popular among the residents of the ward.



a) Routes and stops of IPT system (shuttle autos) in ward 20

b) Measured accessibility: Number of IPT stops within 500 m

**Map 13: Ward 20- IPT network and stops**

Source: Authors



**Picture 7: IPT system in Rajkot**

Source: Authors

Leelaben (55, female, MIG) said, “Since the buses run on the main road and do not come here, one has to walk to the bus stops [which are quite far]. Autorickshaws come all the way into the neighbourhood”. The end-to-end connectivity and easy availability offered by the IPT appeared to be enough for the residents to not think of using the PT system. Another perspective was offered by Shobhanaben (42, female, MIG) who said, “The bus doesn’t drop us anywhere beyond the bus stop; we need to use the autorickshaw from there to home. Therefore, instead of paying two fares, we prefer to take the rickshaw all the way”. This reinforces the end-to-end connectivity offered by the IPT system as a major advantage in its favour. No incidents of violence or assault were experienced by the respondents during their use of IPT system over the years. In effect, the IPT system has taken its place as a popular substitute for an (in)efficient PT system.

### 8.7. Summary

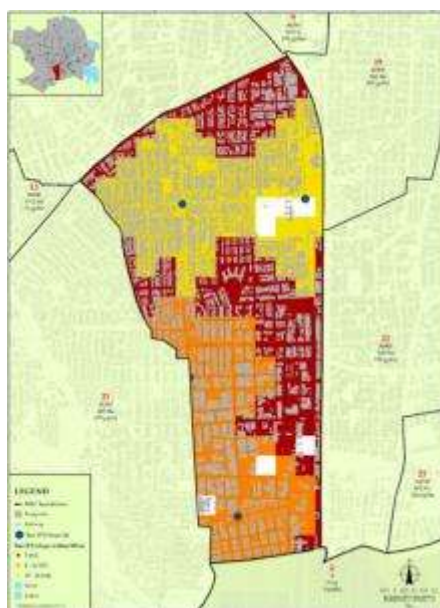
The above discussion was centred on streets and transportation in the city as well as ward 20. It is evident that streets in the ward are a venue for a host of activities as diverse as vending and marriage catering. However, with increasing motorization owing to rising incomes and lack of a credible public transport system, more and more streets are being appropriated by the automobile from the people, to whom it rightly belongs. In the absence of enabling infrastructure like footpaths and cycling tracks, there is even less incentive for people to be on the streets using sustainable means of mobility. These can, in the long run, lead to a dip in quality of life and will be addressed as part of the proposed plan.

## 9. Basic services

Rajkot is an emerging Tier-II city and faces issues on the basic services front that most other emerging cities face in this country. JnNURM funds have helped the ULB in addressing some of these issues. The following section attempts to understand and portray the state of provisioning of water-supply, sewerage, solid waste management and storm water drainage in ward 20.

### 9.1. Water-supply and sewerage

Rajkot city is on the banks of River Aji and yet availability of drinking water is one of the major issues plaguing the city. The river itself has fallen into disuse with industrial wastes and sewage being dumped into it at various locations along its course within the city. Also, since Rajkot stands on hard rock strata, groundwater resources are limited. The RMC supplies water from Bhadar, Aji, Nyari, Lalpari, Randarda lakes along with Narmada canal system. The local body claims coverage of ninety per cent of the population and seventy three percent of the area with pipeline network. Ninety percent of the slum population has access to water supply. The per-capita supply of water is around 110 litres per day as against the WHO approved quantity of 135 litres per capita per day (lpcd). RMC supplies water through house connections, stand posts, hand pumps and tankers. Of these, only house connections are charged and help the RMC achieve a cost recovery of 12.5 percent.



**Map 14: Ward 20- Areas experiencing issues with water-supply, sewerage**

Source: Authors

With regard to ward 20, our discussions revealed that water was being supplied in the morning for around twenty to thirty minutes. Most residents were satisfied with the duration and quantity of water being supplied to them. In some areas (marked in Map 14), water supply did not have adequate pressure leading to some dissatisfaction among the residents. In other areas, especially in Samrat Industrial Area, residents – most of them migrant workers (Picture 8) - ran out of water in summer and had to rely on private tankers to meet their needs.



**Picture 8: Meeting and discussion with migrant workers in SIA**

Source: Authors

Sewerage systems are yet to be provided in most of the areas of the ward. At the city level, only 55 percent of the wastewater being produced is being treated. Also, only 60 percent of the population is covered with underground sewerage network. The well-to-do areas of the ward such as Naval Nagar, Krishnanagar and Malviya Nagar have access to sewerage systems. They pay only around five hundred rupees as connection cost initially. In other portions of the ward, most houses and industries have made their own arrangements for disposal of sewerage in the form of septic tanks. Some of the residents of SEWS quarters at Makwana Pan Chowk as well as the one south to Panchshil society complained of issues like overflowing of such septic tanks which have led to quite a stench in their neighbourhood. Overall, there is a need to extend the sewerage network to other portions of the ward as well. In the short-term, there is a need for the residents' association to rectify the issues with the septic tank mechanism within their premises.



## 9.2. Solid waste management

The Solid Waste Management (SWM) department of the RMC looks after the collection, sorting, processing and transportation, and disposal of solid waste in the city. As of 2007, around 350 Tons of solid waste is generated per day in Rajkot. Its composition by percentage is shown in Figure 21. As expected, a majority of the solid waste produced is from domestic sources (82 percent), followed by industrial sources (11 percent), institutional sources (5 percent) and construction waste (2 percent).



**Figure 21: Composition by percentage of solid waste generated in Rajkot**

Source: (RMC, 2007)

The SWM department has divided the city into four zones for administrative purposes. Ward no. 20 falls in the Zone no. 3. Solid waste collection happens through street sweeping –each sweeping around 1.1 kilometres of streets – and door-to-door collection. Additionally, rag-pickers collect around 20 tons of recyclable waste every day, as an estimate. There are around fifty closed containers in the ward where the street sweepers and households can drop the waste. These bins are placed at an average distance of 3.38 kilometres from each other at the city level. Little segregation happens at source as per a household survey conducted by RMC in 2007. These closed containers are then taken to a transfer station where four-five containers are filled into a dumper and taken to disposal sites at Manda Dungar village and Nakrawadi where the waste is processed and the remaining inert matter is used for land-fill. Overall, RMC claims eighty percent coverage of all waste generated.

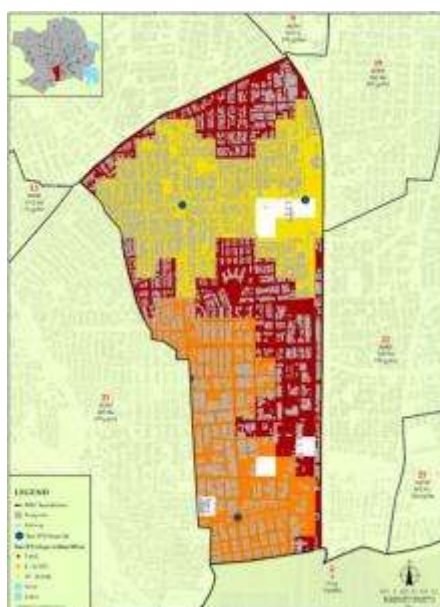


**Picture 9: A snapshot of solid-waste mismanagement in Ward 20**

Source: Authors

This claim is disputed as the research team found out during the course of our investigation. Several areas suffered from negligence in terms of solid waste management. These areas have been highlighted in Map 15. These included absence of waste bins, overflowing waste bins and dropping of construction waste in public plots (Picture 9). Additionally, residents complained that door-to-door collection of solid waste was not regular in some portions of the ward. For example, Sapnaben (29, female, SEWS) complained, “The tempovala comes at odd times when we are getting the kids ready for school in the morning. Sometimes they don’t come for a day or two. Then, we have to go the waste container bin outside which is always full to the brim.” Similarly, Mukeshbhai (42, male, migrant LIG) said, “The safaiwala hardly comes this way. Even if he comes, he does his job half-heartedly. People continue to throw their waste on the roads. Especially during the monsoons, when there is water logging, the waste floats around and causes communicable diseases.” It emerged from our discussions that people were generally unaware about segregation at source. They were also unhappy with the irregular nature of waste collection in their neighbourhoods. The SEWS quarters south of

Panchshil society suffer the most since the waste container is located just across the road. The container is taken away and replaced by the RMC irregularly and this has led to raising a stink in the neighbourhood. The Geeta Nagar market area has a comparatively high generation of organic waste which is not fully cleaned by the sweepers. As a result, the market continues to operate in deplorable conditions. Cattle rummage through the waste and cause considerable hardship to the neighbourhood residents. Similar problems haunt the Gokuldharm market as well. Overall, there is a need to streamline the waste collection mechanism in the ward.



**Map 15: Ward 20- Areas experiencing issues with solid waste management**

Source: Authors

### 9.3. Storm water drainage

The city is located on hard rock and soil is of low permeability. The nineteen natural drains that formed part of Rajkot city worked as natural storm water drains. There is very little (artificial) storm water drainage network in the city. Even RMC claims 10 percent coverage with artificial drains and only 32 percent coverage by natural drains. As a result of lack of maintenance of natural drains, they have fallen into disuse and rendered useless in draining storm water from the city. This results in severe cases of water logging in Rajkot city every monsoon (Dave, 2014). The situation in ward no. 20 is no different. There are hardly any natural drains in the ward. As a result, even short spells of rain can result in water logging as shown in Picture 10.



a) Pool of water on Krishnanagar main road



b) Water logging near Gokuldham SEWS quarters



c) Water logging on Geeta Nagar market road

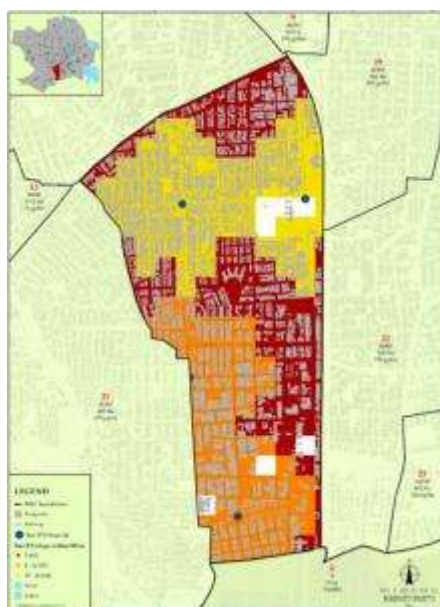


d) Samrat Industrial Area after sporadic rainfall

**Picture 10: Water logging in ward 20 after brief spell of rains**

Source: Authors

Areas that suffer the most from water logging have been highlighted in Map 16. During the course of our research, it came to light that water logging features high on the priority list of the residents. For, it appeared to have detrimental effects on aspects related to people's health, recreation and safety.



**Map 16: Ward 20- Areas experiencing water logging**

Source: Authors

Sarojben (52, female, HIG) said, “We have been told for the past eight to ten years that the roads and drains would be set right. However, nothing much has happened and water continues to accumulate in the monsoon season. The mosquitoes that breed in them cause diseases.” This sentiment was echoed by the residents from both LIG and MIG neighbourhoods. Children from Gokuldham SEWS quarters said, “Earlier, we used to play in that ground [pointing to the recently built kindergarten]. Ever since the *anganwadi* got built there, we started playing in the streets. But, we find it difficult to play in the monsoon season as the streets that we play on are flooded.” Their mothers reported that children fell ill more frequently during the rains, purportedly as a result of contamination of the water in their underground sumps. Accumulated rain water seeped in through the cover of their sump tank. Besides, they felt that there is a rise in mosquito-borne diseases in the monsoon season. As a result, storm water drainage needs to be addressed prominently in the ward plan. At least some part of the solution would have to be at the city level.

#### 9.4. Summary

Provision of basic services is essential towards making a ward plan work. The ward faces immense challenges on the twin fronts of solid waste management and storm water drainage. There are collection, sorting and transportation issues that need to be addressed at the ward level. Container bins are not collected and emptied on a regular basis. Door-to-door collection is not regular either. The resultant accumulation of waste at public places has led to a decline in environmental quality and obvious detrimental effects on health. The lack of a storm water drainage system needs to be addressed at city level. Revival of natural drains and laying of new drainage lines could be done in a phased manner.

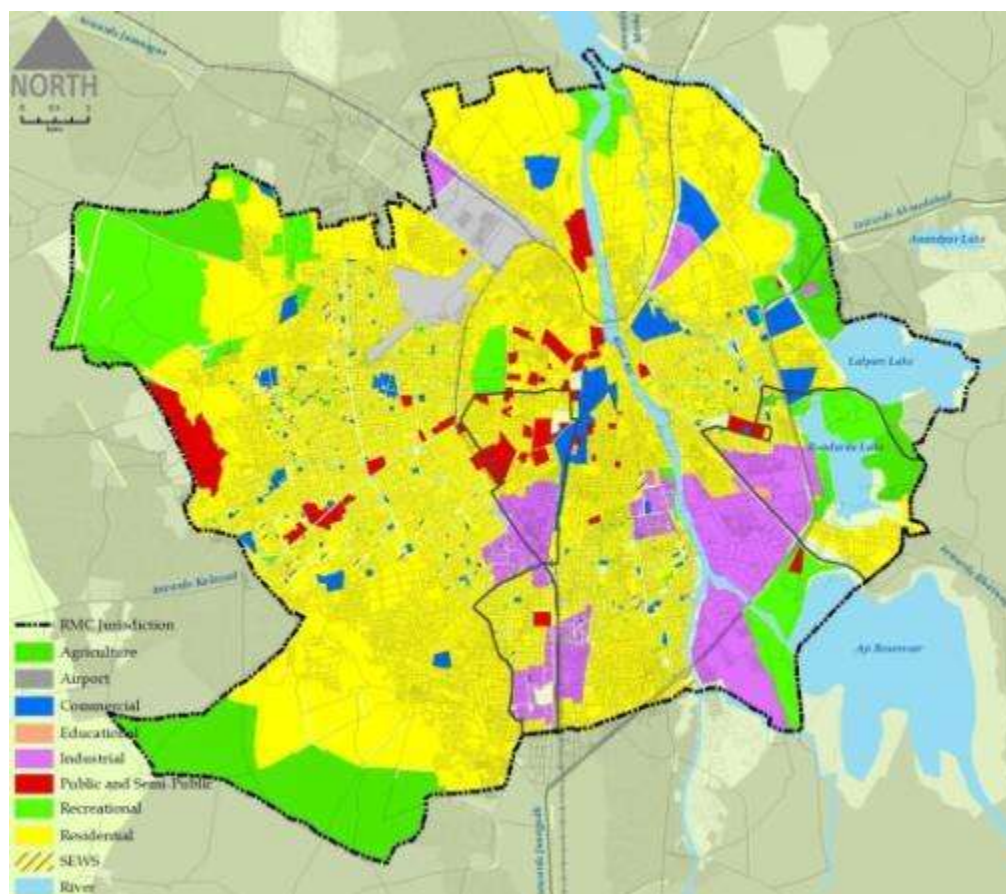


## 10. Activities

Having discussed where people live, it is important to understand the spatial distribution of activities that they like to partake in. These include jobs, education, healthcare, socio-cultural amenities and essential services. Shopping centres and other local amenities like grocery shops have been excluded from this investigation as it was felt that these may not necessarily need to be allocated as part of a local area plan and it was better to leave these to the market.

### 10.1. Land use

The land use distribution of Rajkot, as shown in Map 17, indicates that like most Indian cities, residential land use dominates the map. Technically, a lot of the residential areas are effectively mixed use land use where residences are located along with commercial enterprises like shops, retail outlets etc.



**Map 17: Rajkot land use map**

Source: Authors

As of 2011, around 55 square kilometres (53 percent) of land is under residential (effectively mixed) use which is a 26 percent rise from 42 square kilometres (41 percent) coverage in 2001. Within residential development, Rajkot has

a fine built fabric with small block sizes (less than 75 metres) and interspersed with frequent breaks. Row-house developments and low-rise apartments are the most common building typology.



a) High-rise housing in West Rajkot



b) Low-income low-rise family housing



c) Medium-rise SEWS housing quarters



d) Row-house typology of housing

### Picture 11: Housing typology in the city

Source: Authors

Commercial land use includes retail, wholesale and office areas. The amount of area under commercial use has risen to around 2.79 square kilometres (2.66 percent) in 2011 from 2.09 square kilometres (2 percent) in 2001, registering a rise of 33 percent, given the low base. These values do not, however, include the one room shops or offices that operate within residential land use as a result of the limitation of definition. Dhebar road, Yagnik road, Jagnath area, Kalawad road, Amin road, University road, Raiya road and St. Kabir road are considered to be the commercial hubs in the city.

The area under industrial land use has risen by 18 percent from 6.28 square kilometres (6 percent) in 2001 to 7.38 square kilometres (7 percent) in 2011. This includes service, light, heavy and hazardous industries. There are three industrial estates by the names of Bhaktinagar industrial estate, Aji industrial estate and Sorathiaiwadi industrial estate. Bhaktinagar industrial estate forms

part of ward number 20. Public/semi-public land use includes government offices, educational institutions, medical facilities, socio-cultural and religious facilities, amenities and services as well as crematoria and burial grounds. The area under such use has risen by 67 percent from 1.49 square kilometres (1.42 percent) in 2001 to 2.49 square kilometres (2.38 percent) in 2011. The civil hospital, Collector's office, Municipal Corporation and other such spaces form part of this land use. Recreational spaces have increased from 1.23 square kilometres (1.17 percent) in 2001 to 5.23 square kilometres (4.99 percent) in 2011, registering a rise of 325 percent. This land use includes playgrounds, stadia, parks, gardens, maidans and restricted opens spaces.

The area under roads, railways, airport, bus depots and freight complexes (combinedly, transportation) rose by 18 percent from 14 square kilometres (13.35 percent) in 2001 to 16.5 square kilometres (15.74 percent) in 2011. At the same time, area under water bodies remained constant at 2.36 square kilometres (2.25 percent). The major water bodies include Lalpari, Randarda and Aji (a significant portion) lakes. It also includes the portion of River Aji that flows through the city. Agriculture land use shrank by 20 percent from 9.95 square kilometres (9.49 percent) in 2001 to 8 square kilometres (7.63 percent) in 2011.



**Map 18: Ward 20-Areas experiencing water logging**

Source: Authors

Within ward 20, residential land use dominates with 1.24 square kilometres (59 percent) of the total area of 2.1 square kilometres. Area under industrial



land use forms around 0.65 square kilometres (31 percent) of the ward and is in close proximity to the residential areas (Picture 12). Only 1 percent of the ward area comes under commercial land use. These areas do not include the road-side shops and retail outlets that are, on account of limitations of definition, included under residential land use. The share of transportation (5 percent) and recreational (1 percent) land use is low considering that this ward has a major industrial area. The per-capita allocation of recreational spaces is a mere 0.42 square metres as against 4 square metres in Rajkot city and a recommended allocation of 10-12 square metres as per UDPFI guidelines. Table 10 presents a comparison of the land use in the city with that in ward 20.

**Table 10: Land use composition for city and ward**

Land use	City		Ward 20	
	Area (sq km)	Percentage	Area (sq km)	Percentage
Residential	55.02	53%	1.24	59%
Commercial	2.79	3%	0.02	1%
Industrial	7.38	7%	0.65	31%
Public/Semi public	2.49	2%	0.11	5%
Recreational	5.23	5%	0.02	1%
Transportation	16.50	16%	0.06	3%
Agriculture	8.00	8%	0.00	0%
Water bodies	2.36	2%	0.00	0%
Others	5.08	5%	0.00	0%
<b>Total area (sq km)</b>	<b>104.85</b>	<b>100%</b>	<b>2.10</b>	<b>100%</b>

Source: RMC

The land use pattern in the ward shall be evaluated in terms of the heterogeneity and compatibility. The importance of heterogeneity in land use cannot be over emphasized, especially in a time when debates on reducing carbon emissions through reduction/shortening of trips are gathering steam. Compatibility of adjacent land uses is necessary to prevent the rise of conflicts among people in these areas. The co-existence of industrial and residential land use, two conflicting land uses, is bound to produce conditions for conflict. Pollution (especially noise), traffic and safety concerns due to the presence of a large come-by-day-leave-by-evening population are only a few of the reasons that may aggravate the situation for the residents of the ward. At the same time, industry generates jobs and the availability of jobs in close proximity to residences may be an advantage.

**Heterogeneity:** As discussed in section 10.1 above, the ward is majorly a combination of residential and industrial land uses. Commercial land use as such does not occupy a major area in the ward. However, residential use contains, by the local development plan's definition, shops and offices in the neighbourhood. The discussion on heterogeneity would therefore be based on the neighbourhood level availability of various amenities like grocery stores, vegetable markets, milk parlours and saloons. Table 11 lists the amount of area under commercial, industrial and residential land use in the ward, using this information to derive levels of heterogeneity in each neighbourhood. Samrat Industrial Area and Laxmi Nagar are found to have a high proportion of industrial and commercial land use followed by Radha Krishna Nagar Society. Areas such as Panchshil society have very little commercial use in terms of grocery stores leading to demands for more mobility.

**Table 11: Heterogeneity of land use in ward 20 neighbourhoods**

Society	Area under land use		Extent of heterogeneity
	Commercial/Industrial	Residential	
Ambaji Kadva Plot Society	20%	80%	20%
Bholenath Society	10%	90%	10%
Dwarkesh Park Society	5%	95%	5%
Gita Nagar Society	5%	95%	5%
Gunatit Nagar Society	2%	98%	2%
Guruprasad Society	20%	80%	20%
Haridwar Park Society	15%	85%	15%
Krishna Nagar Society	3%	97%	3%
Lodheshwar Society	5%	95%	5%
Laxmi Nagar Society	60%	40%	60%
Malaviya Nagar Society	3%	97%	3%
Naval Nagar Society	7%	93%	7%
P&T Colony	0%	100%	0%
Panchshil Society	5%	95%	5%
Radha Krishna Nagar Society	40%	60%	40%
Ram Nagar Society	2%	98%	2%
Samrat Industrial Area	90%	10%	90%
Shiv Nagar Society	5%	95%	5%
Triveni Nagar Society	1%	99%	1%

Source: RMC, Primary survey 2014



**Map 19: Ward 20 Neighbourhoods**

Source: Authors

**Compatibility:** Areas such as Laxmi Nagar, Ram Nagar Society, Haridwar Park Society, Panchshil Society, SEWS quarters, Gita Nagar Society lie in close proximity to the industrial land uses Map 19. There are issues of cleanliness, pollution (particularly noise), parking, traffic, safety and security that residents of these areas have to deal with as a result of being located so close to the industries. Most of the industries located in the estate deal in ball-bearings, underground sump parts, plastics, sheet metal and foundry. They are not categorised under hazardous land use. However, the incompatibility of land use has led to some issues which will be discussed here.



**Picture 12: The juxtaposed industrial and residential land use**

Source: Authors

**Issues and people's response:** Our discussions with people revealed that people were constantly subject to the noise generated as a result of the manufacturing processes in the factories. Over a period of time, people living in the societies have reconciled to the noise which is especially an issue in Gita Nagar area where noise levels often exceed 40 dB. Lorries and utility vehicles that transport raw and finished materials to and from the factories often park themselves on the approach to the residential pockets causing hardship to the residents. Laxmanbhai (35, Male, SEWS) said, "We don't allow the children to go beyond the compound [wall] of the society, to fetch things from the nearby hop across the corner. We fear that they may encounter trucks on the way." Similarly Raniben (30, female, SEWS) said, "We have to drop our children to the [Government-run] primary school on Krishnanagar main road as it is not safe to let them go on their own through the industrial area." Crime rates within the SIA have been low over the past few years, despite the lack of street lighting and activities after dusk. The migrant workers in the SIA are valued greatly by the enterprise owners as well as the residents themselves.

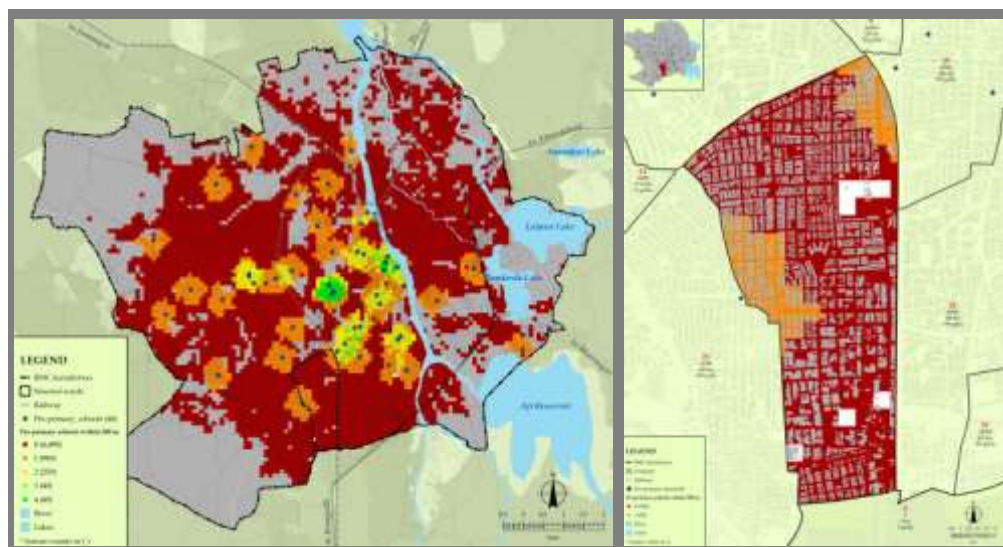
## 10.2. Social amenities

The social amenities that have been considered as part of the analysis include education (schools, colleges), health care (clinics, hospitals), socio-cultural amenities (community centres, libraries and reading rooms, and parks, playgrounds and maidans) and other amenities (police station, fire station, street-lights). Some amenities such as universities, fuel stations, banks, post offices, crematoria were thought to be beyond the scope of this research. The following section presents the measured and perceived levels of accessibility to various amenities mentioned above. In this regard, accessibility analysis has been performed as discussed in research like (Munshi et al., 2005).

### 10.2.1. Schools

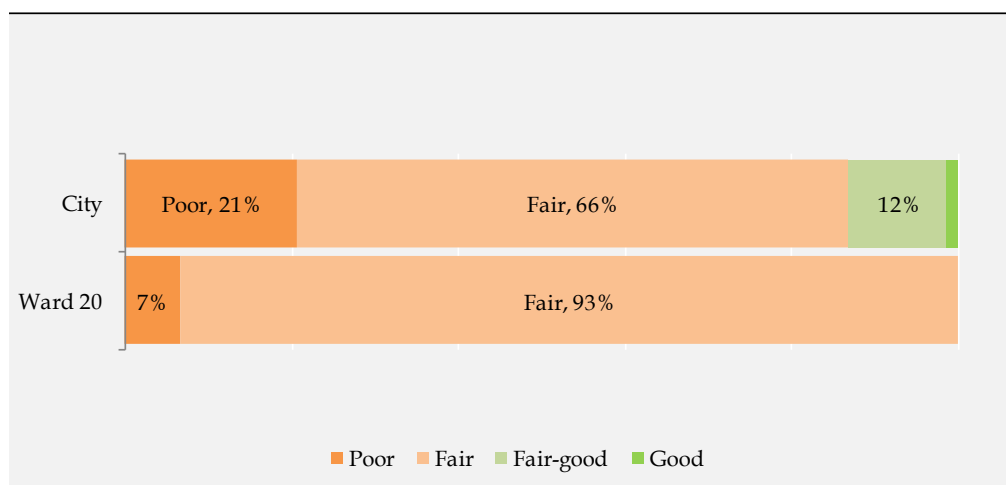
The Urban Development Plans Formulation and Implementation (UDPFI) guidelines published by the Centre for Documentation, Research and Training; Institute of Town Planners India states that one pre-primary school or nursery school of area 0.08 hectare needs to be provided for a population of two thousand five hundred, preferably near a park. Additionally, a primary school (class I to V) with strength of five hundred students needs to be pro-

vided with an area of 0.4 hectares. A senior secondary school needs to be provided for population of seven thousand five hundred. This school must cater to thousand students with area of 1.60 hectares (MoUA&E-GoI, 1996).



**Map 20: Pre-primary schools within 1300m from place of residence (City and Ward 20)**

Source: Accessibility analysis by authors (2014)

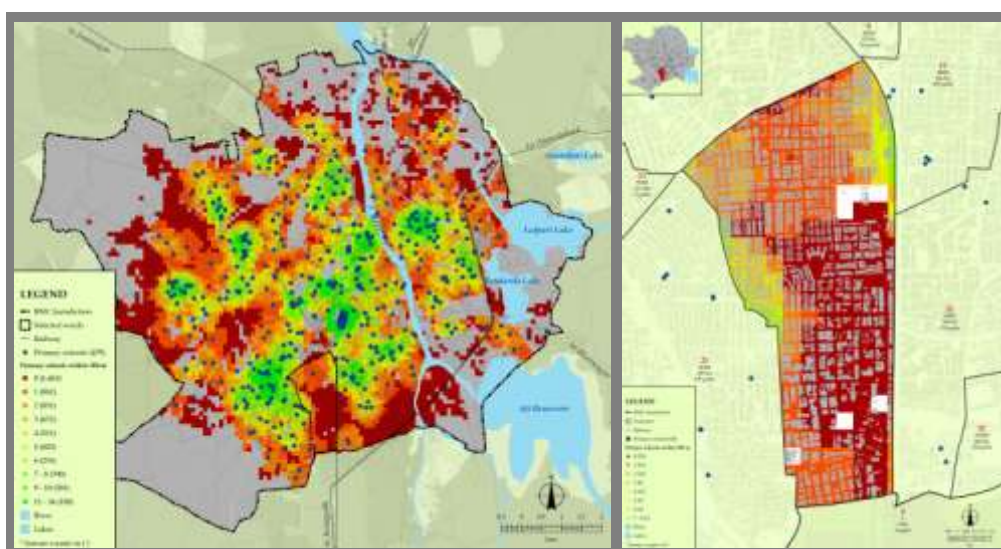


**Figure 22: Comparison of accessibility to pre-primary schools (City and Ward 20)**

Source: Accessibility analysis by authors (2014)

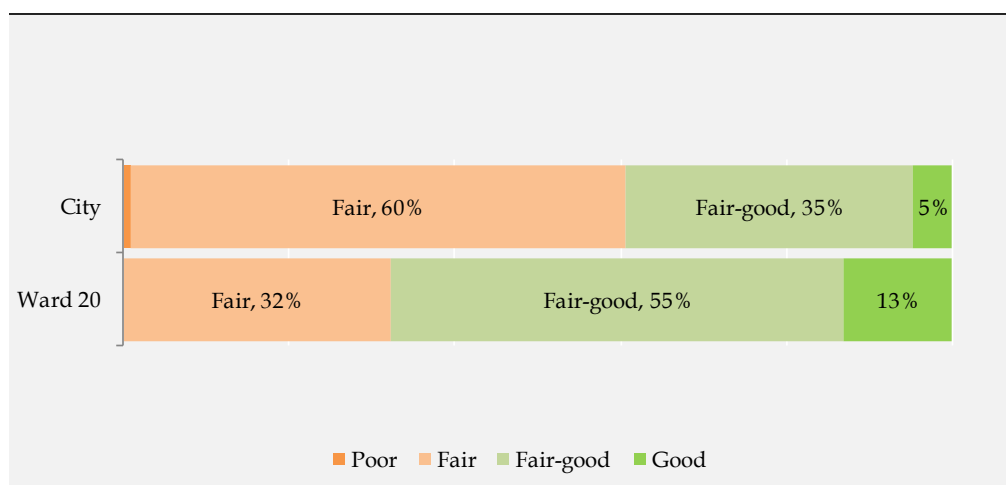
**Measured accessibility:** The accessibility analysis procedure as described in section 5.2 was carried out and the following results were observed. For a distance of 1,300 metres (which happens to be the mean distance for educational trips in Rajkot city), it was observed that 93 percent of the residents in ward 20 experienced only fair accessibility to pre-primary schools. The remaining 7 percent had poor accessibility to pre-primary schools. At the city level, only

66 percent of the population experiences fair accessibility whereas 21 percent population experience poor accessibility. Another 12 percent and one percent of the population experience fair-good and good accessibility to pre-primary schools respectively (Map 20, Figure 22). The ward appears to be doing fairly better as compared to the city here, as far as the accessibility to pre-primary schools was concerned. For primary schools, the same analysis revealed that the situation was slightly better with 68 percent of the population enjoying fair good or good accessibility to primary schools in the ward while 32 percent enjoyed fair amount of accessibility. At the city level, these figures were only 40 percent and 60 percent respectively (Map 21, Figure 23).



**Map 21: Primary schools within 1300m from place of residence  
(City and Ward 20)**

Source: Accessibility analysis by authors (2014)

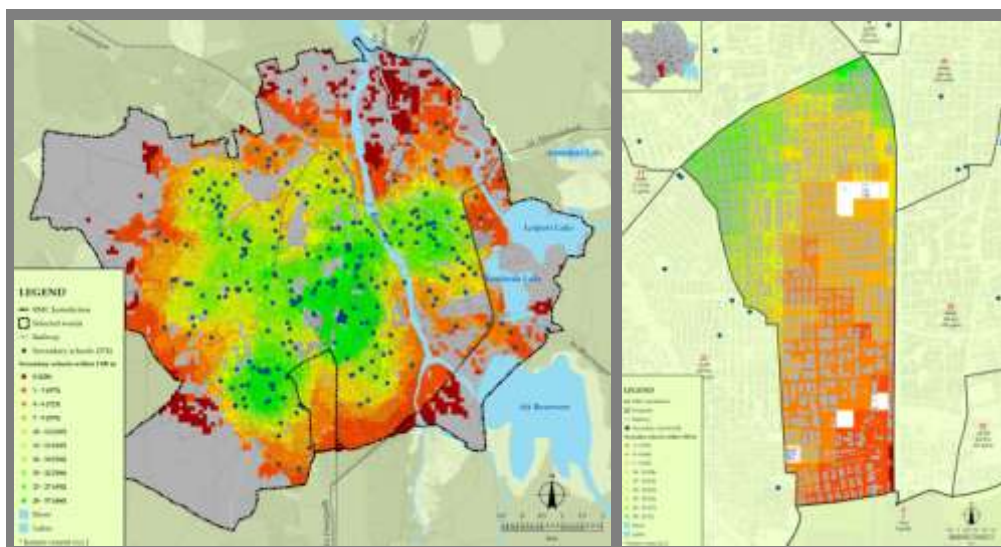


**Figure 23: Comparison of accessibility to primary schools  
(City and Ward 20)**

Source: Accessibility analysis by authors (2014)

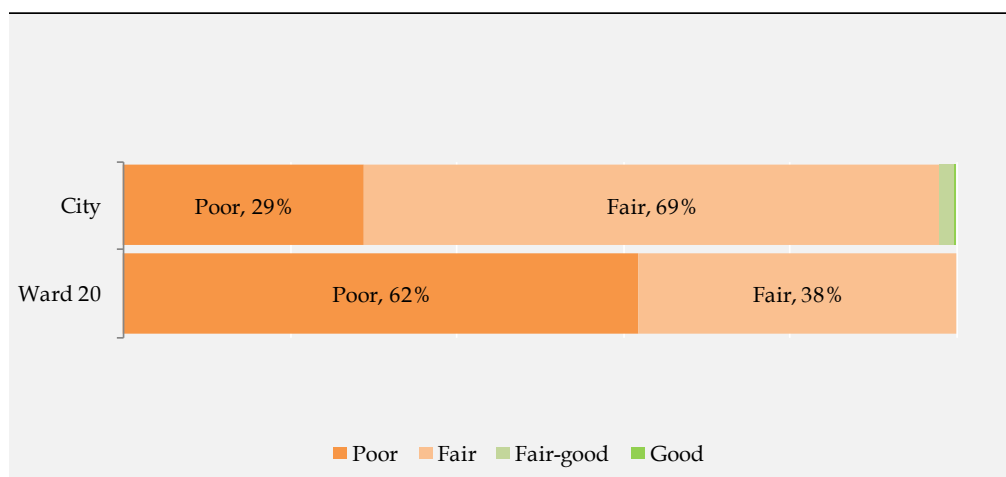


In terms of accessibility to secondary schools, the ward is certainly worse off than the city. While 69 percent of the residents of the city enjoy fair accessibility to secondary schools, only 38 percent of the ward residents enjoy fair accessibility. Similarly, while 29 percent of the city residents have poor accessibility, over 62 percent of the ward residents have poor accessibility to secondary schools. Additionally, 2 percent of the city residents enjoyed fair-good accessibility to secondary schools.



**Map 22: Secondary schools within 1300m from place of residence  
(City and Ward 20)**

Source: Accessibility analysis by authors (2014)



**Figure 24: Comparison of accessibility to secondary schools  
(City and Ward 20)**

Source: Accessibility analysis by authors (2014)

**Perceived accessibility:** The measured accessibility for schools was corroborated through interviews and discussions with the residents of the ward. There are two pre-primary schools - *anganwadis* - and two primary schools

run by the government in ward 20. Additionally, private schools such as Sarvodaya school, Panchshil school and AV Jasani school are available in the ward. However, the fieldwork revealed that only people belonging to HIG group were satisfied with the opportunities and quality of education available in the ward. Some of the HIG families were sending their children to Dholakia school in ward 12 but these were decisions made out of choice. Satishbhai (36, male, HIG, plywood trader with commercial enterprise on Gondal road) on being asked why he sent his kids to Dholakiya school instead of the nearby Panchshil school replied saying, “Sarvodaya [school] is good. But since my elder brother’s son already was already enrolled in Dholakiya school, I decided to get my own sons admitted there as well.” Predictably, they were also apprehensive of sending their children to public schools as they felt that the quality of education in these schools was not according to their expectations. Similar apprehensions were also raised by MIG respondents. Tejalben (34, female, MIG) explained the situation in the public schools in the ward saying, “Children receive little attention in public schools given that teachers are mostly unavailable.”



a) RMC run anganwadi near SEWS quarters



b) Sarvodaya HSS (Commerce stream only)



c) Sarojini Naidu school (public)



d) Panchshil school (private)

**Picture 13: A snapshot of various schools available in the ward**

Source: Authors



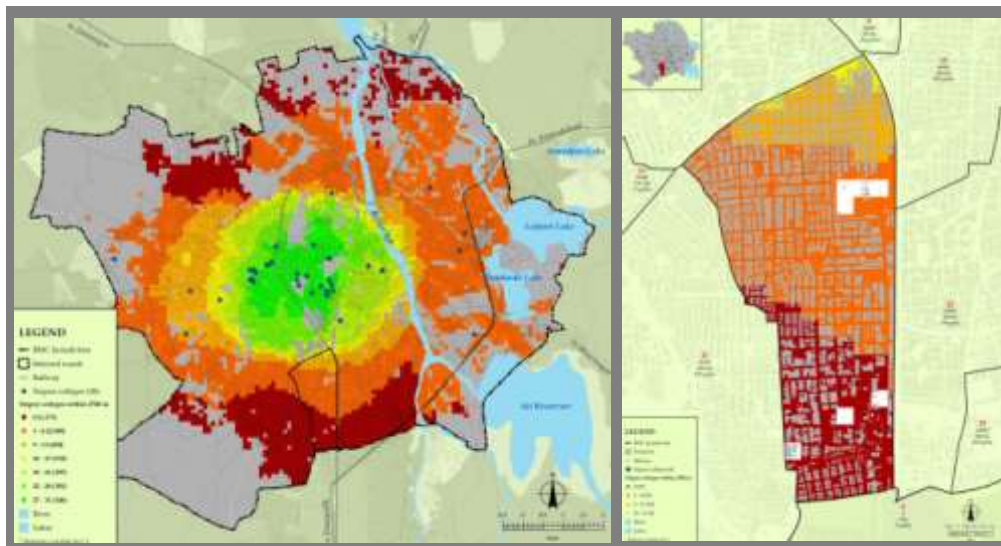
However, when LIG and SEWS respondents were asked about their take on the opportunities for schooling available in the ward, they responded saying that the private schools were out of reach for them owing to high fees. For example, Sanjanaben (37, female, LIG) said, “I had my kids admitted in the private school nearby, but they charged ten to twelve thousand rupees as fees for a year. How can I who earns only five thousand a month afford such fees?” Her response to the situation was that she had to pull her children out of the private school and enrol them in the government school, thereby opting for a trade-off on the quality of education received by the children. Some of the migrant workers in SIA were generally happy with the quality of education in the government schools. However, they were limited by the language barrier as a result of which they preferred to let their families stay back at their native places. Given the socio-economic composition of the ward (section 7.2) where close to 84 percent of the population falls under LIG or MIG categories, there is need to open up more schools that are affordable and offer a decent quality of education for students from these categories.

### 10.2.2. Colleges

The UDPFI guidelines suggest the need for a degree college of 1000-1500 students for every 1.25 lakhs population. This college needs to have an area of 4 hectares with a play field of 1.8 hectares. PD Malaviya College of commerce is located within ward 20, which is popular in Rajkot as a result of its being around for around sixty years. It has an area of around 5 hectares and hosts around 1000 students. However, it must be pointed out here that people’s accessibility to colleges has been measured at city level.

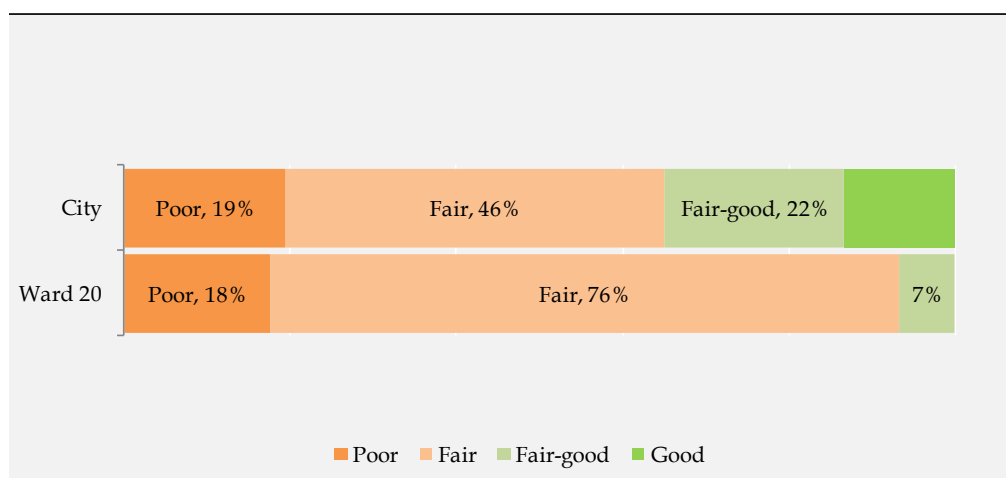
**Measured accessibility:** The contour distance used for measuring accessibility to colleges was kept as 2,700 metres which was found to be the mean cycling distance for Rajkot citizens for educational purposes. The assumption is that students must be able to cycle their way to a degree college. The accessibility analysis revealed that 46 percent of the residents of the city enjoyed fair accessibility to degree colleges. Another 22 percent of the residents of the ward enjoyed fair-good accessibility while 19 percent of the city residents suffered from poor accessibility to degree colleges. At the same time, the remaining 13 percent enjoyed good accessibility. At the ward level, the situation is

slightly worse as only 7 percent enjoy fair-good accessibility to degree colleges. Those that enjoyed fair accessibility to degree colleges formed 76 percent of the ward's population, while the remaining 18 percent suffered from poor accessibility to degree colleges



**Map 23: Degree colleges within 2700m from place of residence  
(City and Ward 20)**

Source: Accessibility analysis by authors (2014)



**Figure 25: Comparison of accessibility to degree colleges  
(City and Ward 20)**

Source: Accessibility analysis by authors (2014)

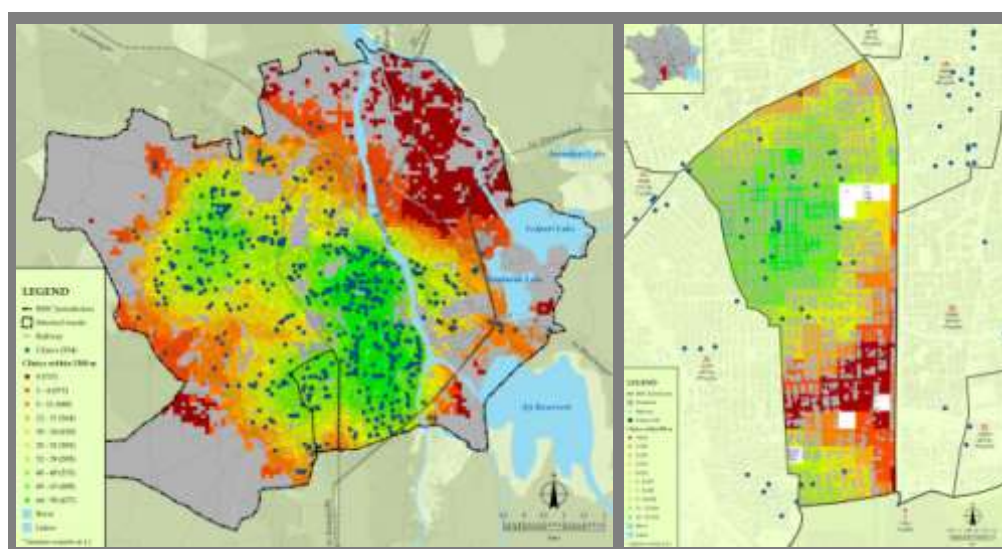
**Perceived accessibility:** The fieldwork revealed that among the SEWS and LIG groups, few adults went on to pursue college education. A notable exception from this general trend was a truck driver's son from SEWS quarters to the south of Panchshil park who went to Saurashtra University (9 kilometres away) using public transport. When the respondents were asked for the barriers to their pursuing college education, it was pointed out that since they

had financial pressures they had to look for jobs after finishing tenth or twelfth grade at school. Among the MIG and HIG groups, most of the respondents had no issues with regards to colleges as they felt that the PD Malviya College was both affordable and accessible. Owing to the goodwill that the institution has generated over the years, the comparatively low fees made the institution popular among the respondents.

### 10.2.3. Clinics

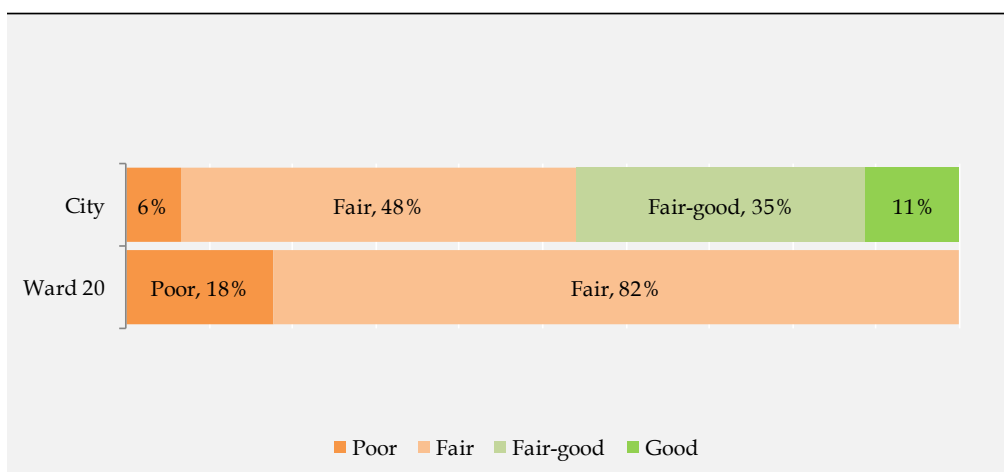
The UDPFI guidelines suggest that there be a dispensary (clinic) of area between 0.08 to 0.12 hectares for every fifteen thousand population.

**Measured accessibility:** The accessibility analysis procedure that was carried out with a contour threshold of 1,300 m (which was found to be the mean walkable distance across Rajkot) shows that at least at the city level, residents enjoy reasonably good levels of accessibility to clinics. For example, 46 percent of the population enjoys fair-good or good accessibility to clinics. Another 48 percent enjoys fair amount of accessibility and only the remaining 6 percent suffers from poor accessibility to clinics. At the ward level, the situation is slightly worse as 82 percent of the ward's population enjoys a fair amount of accessibility whereas the remaining 18 percent suffer from poor accessibility to clinics.



**Map 24: Clinics within 1300m from place of residence  
(City and Ward 20)**

Source: Accessibility analysis by authors (2014)



**Figure 26: Comparison of accessibility to clinics (City and Ward 20)**

Source: Accessibility analysis by authors (2014)



**Picture 14: A snapshot of various clinics and dispensaries in ward 20**

Source: Authors

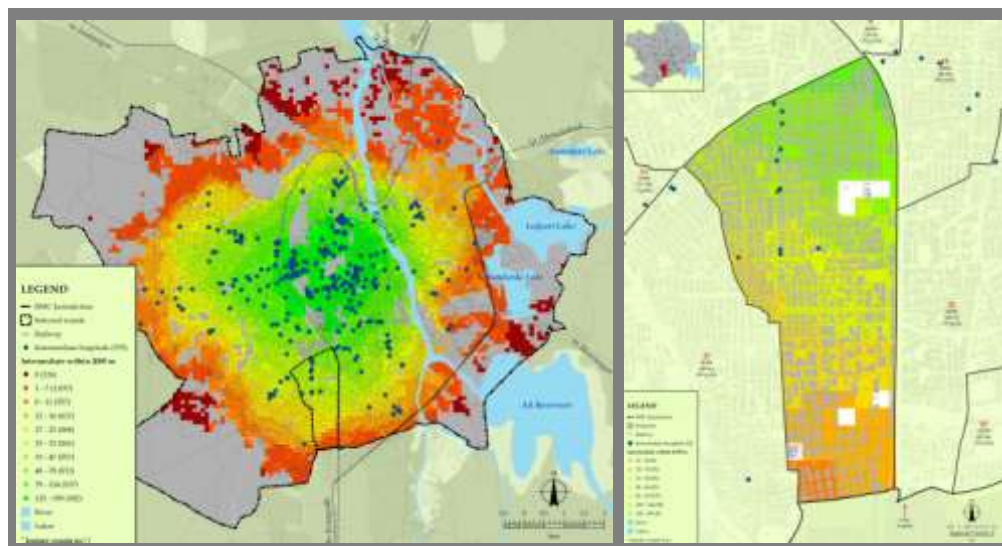
**Perceived accessibility:** Our observations during the fieldwork revealed that clinics were available at most junctions. There was a good concentration of private clinics especially on Panchshil main road, Makwana Pan Chowk, Krishnanagar main road and Ram Nagar main road. Additionally, there was a government dispensary on Krishnanagar main road functioning as Each of these locations was within a maximum of ten minutes by walk from most



residential areas. Our discussions with the residents revealed that most of the clinics charged between forty to hundred rupees depending on the prescription. The HIG respondents even talked about them placing their trust in family physicians who had treated members of their family for years. Among the MIG respondents, some preferred to avail medical care from Doshi hospital instead of clinics as they had a strong trust in the former. The LIG and SEWS respondents used the government dispensary although they complained that its functioning days were not clear. As a result, they had started using local clinics as well. In case of serious illness, they had to depend on civil hospital.

#### 10.2.4. Hospitals

The UDPFI guidelines suggest a general hospital of area 4 hectares with 500 beds for a population of 2.5 lakhs. One intermediate hospital and a polyclinic are needed for every one lakh population. The general hospital should be of 6 hectares area while the intermediate hospital needs an area of 2.7 hectares. There are several private hospitals in the ward including Doshi and Shivanand mission hospitals and the Civil hospital located 6 kilometres away.

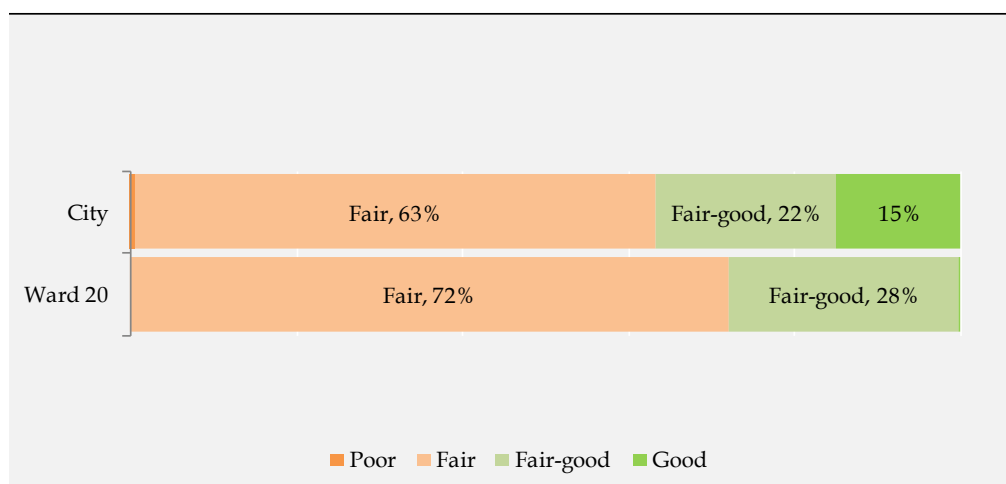


**Map 25: Hospitals within 2700m from place of residence  
(City and Ward 20)**

Source: Accessibility analysis by authors (2014)

**Measured accessibility:** The accessibility analysis revealed that in terms of accessibility to hospitals, the city was slightly better than the ward. The contour distance selected for hospitals was kept as 2,700 metres which was found to be the mean cycling distance in Rajkot. The assumption was that in case of

a medical emergency, people should be able to reach a hospital within five minutes by vehicle. While 37 percent of the city population enjoyed fair-good or good accessibility to hospitals, the corresponding figure for the ward was only 28 percent and that too being only fair-good accessibility. The remaining 63 percent of the city population and 72 percent of the ward population enjoyed fair accessibility to hospitals (Map 25, Picture 15).



**Figure 27: Comparison of accessibility to hospitals (City and Ward 20)**

Source: Accessibility analysis by authors (2014)

**Perceived accessibility:** The fieldwork revealed sensitivity to hospitals in accordance with their income levels. The first response in case of a medical issue among the residents was to visit a nearby clinic. In case of higher order medical issues, they would visit hospitals. Among the SEWS and LIG respondents, it was found that affordability was a major issue. This is illustrated in Babubhai's (36, male, LIG worker in SIA) response who says, "Usually I avoid going to the doctor. However, if the fever is a bit too high, I visit the local public health centre which supplies free medicines. I usually avoid going to the Doshi hospital as their charges are very high. Instead, I go the civil hospital, [despite it being located] far away from where I stay."

Among the MIG respondents, it was found that while some preferred to go the civil hospital for higher order medical issues, others preferred to go the nearby private hospital despite the high fees<sup>26</sup>. This was because they found the distance to the civil hospital and the travel a big drag. For example, Mala-

<sup>26</sup> Local private hospitals charged upwards from INR 200 for outpatient registration (Authors' fieldwork, 2014).

ben (43, female, MIG) says, “There is a lot of rush in the public hospital. One has to wait for two hours before your turn comes. Even after we reach there after spending fifty rupees [on auto fare], there is no guarantee that we will get the required treatment. Doshi hospital is expensive, but still...” The HIG respondents seemed very satisfied with the healthcare facilities in the ward and nearby areas. When they were pressed about the seeming lack of affordable facilities for the poor, they mostly replied saying that those that cannot afford getting treated at Doshi hospital must go to the civil hospital, unmindful of the travel time and cost disincentives involved. Overall, the respondents appeared very sensitive to the price, distance and quality of healthcare facilities as illustrated by the case in the box below.



a) HJ Doshi hospital in Malviya Nagar



b) Rajkot civil hospital at hospital chowk



c) A multi-speciality hospital on Mavdi Rd.



d) A maternity home on main road

**Picture 15: A snapshot of various hospitals used by residents in ward 20**

Source: Authors

#### **Box: The sensitivity of respondents to quality of healthcare**

“I have had bad experiences with D hospital. My father had an infection in the ear for a long time. Since we were not well-off then, its treatment had been put off for some time. Now that we had been doing well, I advised him to get it treated even if it were to cost us around twenty thousand rupees.

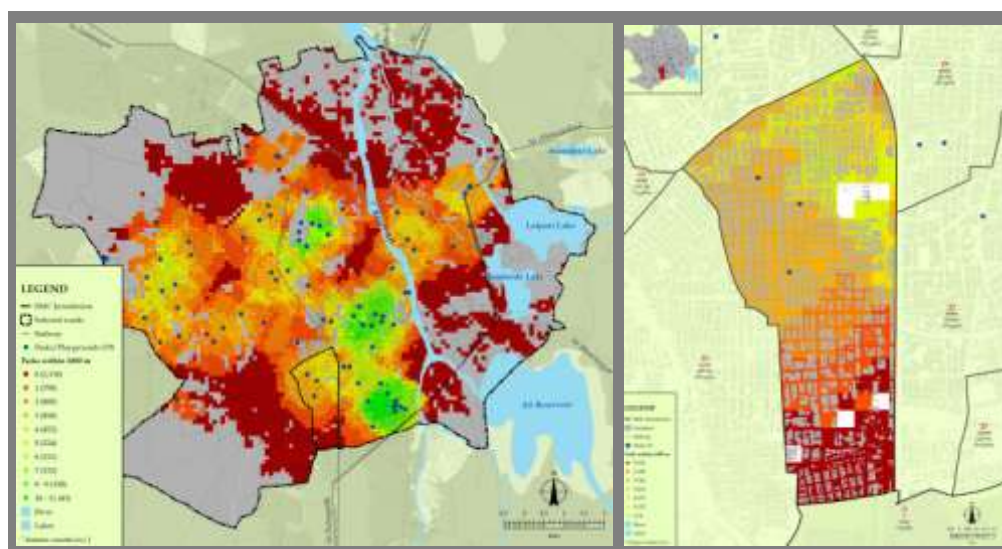


When we took him to D hospital, we were assured [by the doctor] that the treatment would be done in eight thousand rupees...all this happened around nine years ago...father was admitted in the hospital. When he was taken into the operation theatre, he suffered an [heart] attack and was admitted to the ICU. I suspect it was a case of overdose...the hospital authorities were not very cooperative or apologetic....felt like punching [them]”.

-Dhananjaybhai (40, male, MIG) on why he wouldn't use the D hospital nearby; choosing instead to go to the civil hospital five kilometres away

### 10.2.5. Parks, playgrounds and maidans

The UDPFI guidelines recommend the overall provision of 10-12 square metres per person in a city. Each housing cluster must have 3-4 local parks and playgrounds. Additionally, for a medium sized city like Rajkot, recreational open spaces shall be provided at the rate of 1.4-1.6 hectares per thousand population. Within this, lower income areas shall be provided with more open spaces and area under facilities like community halls can be merged with open spaces to suit their requirements (MoUA&E-GoI, 1996, p.164).

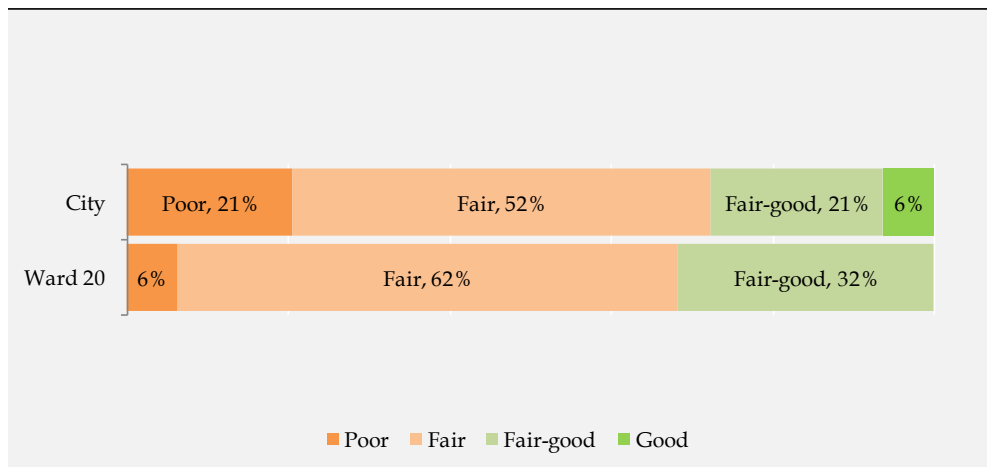


**Map 26: Parks, playgrounds and maidans within 1000m from place of residence  
(City and Ward 20)**

Source: Accessibility analysis by authors (2014)

**Measured accessibility:** The accessibility of ward residents to parks has been calculated on the basis of the number of choices they have within a contour distance of 1,000 m which was found to be the stated preferred distance to

parks and gardens in Rajkot city. At the city level, 21 percent of the population suffers from poor accessibility to parks. The corresponding figure for the ward is 6 percent. This means that the said proportion of the population have access to no parks within 1,000 metres from their place of residence. At the same time, 52 percent of the city and 62 percent of the ward population enjoyed fair accessibility to parks. Finally, 27 percent (21 percent and 6 percent) of the city enjoyed fair-good and good accessibility, whereas 32 percent of the ward population enjoyed fair-good accessibility to parks and playgrounds. Overall, the ward seems to be in a slightly better position with regards to accessibility to parks as against the city. Also, the per-capita availability of green spaces in the ward was slightly better at 6 square metres versus the 4.5 square metres in the city.



**Figure 28: Comparison of accessibility to parks, playgrounds and maidans (City and Ward 20)**

Source: Accessibility analysis by authors (2014)

**Perceived accessibility:** At the city level, the Rajkot Race Course and park appeared to be very popular among the residents of the ward with most of the respondents saying that they visited the city level facility at least once or twice in a fortnight. The attractiveness of the Race Course was on account of its size, activities possible and other facilities in its immediate proximity. The ward has three community parks in its area. The Krishnanagar garden of around 1900 square metres area is located in the northern part of the ward. It has facilities for children with a small playground and play equipment like slides and swings. This park was perceived to be attractive for children living nearby. However, since it does not enough seating or landscaped areas, adults did not find the park very attractive. The Malviya Nagar garden has an

area of around 1800 square metres and has separate landscaped areas as well as seating under trees (Picture 16). Children are able to use small unmarked areas for playing outdoor games and sports like cricket. Thus, the park appeared to attract users from all age groups. However, being located in a fairly upper class locality, it was found that people from other socio-economic groups and residing in other locations were not very keen on using this park. The third park was located in the P&T quarters in the southern most part of the ward and managed to attract users only from the said location. In this sense, it appeared to function more as a private park. Additionally, there were two parks in close proximity to the ward. The Gokuldham Park of 1,600 square metres was only 500 metres away from the Makwana Pan Chowk. The Anand Bungalow Park of around 1,500 square metres is located just across the Mavdi main road.



a) Play equipment at Krishnanagar Garden



b) Women exercising at Malviya Nagar Garden



c) Elderly and young at Malviya Nagar Garden



d) Children playing at Malviya Nagar Garden

**Picture 16: A snapshot of various parks and associated activities in ward 20**

Source: Authors

However, our fieldwork revealed that SEWS and LIG communities suffered the most from the lack of accessible parks in their neighbourhood. The existing community parks are all located far away from their localities. For example, children from the SEWS quarters near Makwana Pan Chowk said, “We

play here only [pointing to the 3m wide street within the quarters]. Earlier we could play there where the new anganwadi has been built now [pointing to the community plot that till recently served as their playground]. Now we have to play here only.” Even adults complained of not having a park nearby as a result of which they had denied their children permission to go and play in the other gardens located more than 1.5 kilometres away. One gentleman from the SEWS quarters south of Panchshil society said, “If we could get a park built here in the adjacent public plot, it would be great. Children could play and the adults could relax after a hard day’s work.” The industrial workers – mostly migrants – seemed resigned to their fates. They said that on account of lack of time<sup>27</sup>, they would not be able to use these facilities even if they were available close by. They had not been able to visit the Race Course more than once over the last twelve months. Other LIG residents also pointed out the lack of parks in their vicinity and dwelt on the need for more community level parks in the ward.

#### 10.2.6. Streetlights

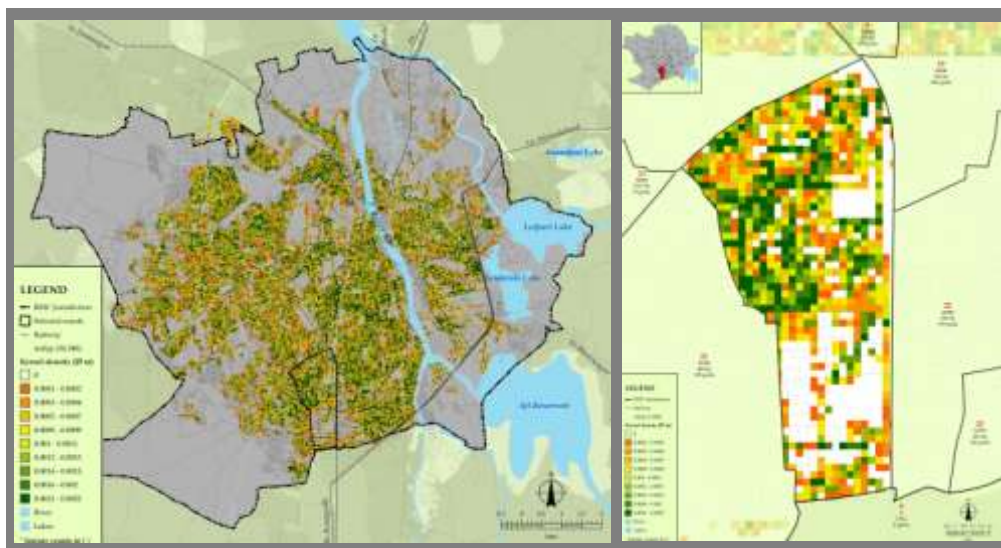
According to standards, the general amount of illumination desired on urban roads is 40 Lux. For this 9 metre high streetlights may be installed at intervals of 30 metres or 13 metre high streetlights may be installed at intervals of 40 metres depending upon whether the lights are 150 W High Potential Sodium Vapour (HPSV) lamps or 250 W HPSV lamps respectively (RMC Street lighting Department). The northern and central parts of the ward are largely residential whereas the southern portion is industrial. While the residential areas have received some attention with regards to street lighting, the industrial areas have largely been bereft of any such attention.

**Measured availability:** The kernel density based analysis of street lighting indicates that over 48 percent of the wards roads do not have any street lighting. Most of these areas lie to the south of Panchshil road, forming part of the SIA (Map 27). Even in the residential areas, few areas only benefit from the presence of streetlights at regular intervals as within the areas served by streetlights, only 62 percent have poles installed at a distance of 30m or less.

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<sup>27</sup> Some of them worked for as long as sixteen hours a day (Authors’ fieldwork, 2014)

The remaining 38 percent have either no poles installed or at distances greater than 30 metres leaving islands of darkness between them.



**Map 27: Availability of streetlights based on kernels of 30m x 30m  
(City and Ward 20)**

Source: Accessibility analysis by authors (2014)



a) Street in SIA without streetlights



b) Geeta nagar market road without streetlights

**Picture 17: Lack of street lighting is a major issue in ward 20**

Source: Authors

**Perceived availability:** The mere presence of streetlights is not enough as sometimes, the lack of maintenance or irregular intervals can compromise the levels of service offered by the streetlights. In case of ward 20, several stretches suffer from lack of proper lighting. Areas such as those in SIA become inaccessible after dusk fall due to the lack of lighting. Only light from the factories is available (Picture 17). This has led to a perception of the area being unsafe at night. Similarly, while areas like Malaviya Nagar and Krishnanagar have enough street lighting, LIG areas like Geeta Nagar main road and Lodheshwar society suffer on account of lack of street lighting. In a discussion, women from SEWS quarters to the south of Panchshil ward ex-

pressed their inability to go to the market after dusk as they felt threatened by the lack of lighting and having to go through largely uninhabited areas of the SIA. Within the quarters, where there was lack of lighting, groups of residents had come together and set up their own lighting with shared costs to light up their premises. In a way, the absence of state given street lights had helped them galvanize themselves into taking necessary action.

### 10.3. Summary of issues identified

In the preceding section, the measured and perceived accessibility to various social amenities were presented. While the measured accessibility approach evaluated the availability of various amenities like schools and hospitals on the basis of their capacities and distance from the place of residence, the perceived accessibility approach took into account qualitative aspects such as price, distance and levels of service that determine people's attitudes to using amenities. Also, a discussion on the state of transport infrastructure (including Public Transport and Intermediate Para-Transit) and basic services in the ward were presented in sections 8 and 9. On the whole, the following issues were identified:

- 10.3.1. Public Transport:** The absence of public transport in the city seems to have convinced the residents about the need to take care of their mobility needs themselves to such an extent that the recent introduction of RMTS buses has failed to convince them to shift from their current modes to it. The respondents that stated their preference to use the PT system found themselves handicapped by the lack of information about the timings of the system. It must be emphasized here that despite the presence of bus routes through Krishnanagar main road and Geeta Nagar Market road, the respondents suffered on account of lack of proper approach to the bus stops on these roads. Also, information dissemination on bus routes and timings needs to be taken on a high priority basis. The bus fares being more or less similar to those charged by share autos, especially for shorter distances, people don't appear convinced about using the buses. These also need to be taken into consideration while designing strategies to help PT gain traction.



- 10.3.2. Intermediate Para-transit Service:** Our research revealed that IPT is popular among the residents of the ward. In a middle-sized town like Rajkot, IPT could play a significant role if integrated with the PT system including the BRTS. At the ward level, efforts need to be made towards integrating IPT parking and idling spaces at Geeta Nagar where the trips start and end.
- 10.3.3. Water supply and sewerage:** Residents of the ward face water supply issues especially in the Lodheshwar area owing to lack of adequate pressure and faulty lines. The pipeline in these areas will need to be upgraded and relaid in tune with the latest demand. In terms of sewerage, the city needs to invest in covering all of the city under the sewerage network. This needs to be a long term project. As a short term measure, the SEWS quarters and Lodheshwar area that suffer from poor sanitation need to be provided with better sewage disposal systems upgrading the current septic tank system.
- 10.3.4. Solid Waste Management:** Our research revealed the presence of lacunae in the collection of solid waste in SIA area, Krishnanagar main road, Geeta Nagar market and several other areas where container bins were overflowing with garbage causing health related issues. The door-to-door collection system needs to be expanded in a way that it covers all residential areas. Also, container bins need to be collected more often.
- 10.3.5. Land use issues:** Since industrial and residential land use are located in proximity, there are issues of compatibility. Given that no hazardous land use are present in the industrial area and the employment opportunities generated by the manufacturing units, there is no need to shift the industries out of the ward. However, land use interventions that integrate the industrial area into the largely residential nature of the ward needs to be undertaken.
- 10.3.6. Roads:** The roads in the ward require immediate upgradation especially in the industrial areas and Lodheshwar. Also main roads like Krishnanagar main road and Gondal road have no infrastructure to facilitate their use by pedestrians and cyclists. These issues need to be addressed at the city level.
- 10.3.7. Schools:** The research reveals a deficiency in accessibility to *anganwadis* and primary schools, especially in the eastern portion of the ward south of the



Panchshil main road. This area is home to people from SEWS and LIG groups. The nearest *anganwadi* and primary school (government) is around 1.5 kilometres away. The nearby Panchshil and Sarvodaya school are economically inaccessible for these people. The need for public schools was felt to be of high priority during the fieldwork (Table 12).

**10.3.8. Hospitals:** The presence of an intermediate hospital in the ward or nearby wards would help the residents from the LIG or SEWS neighbourhoods to save time and money by not having to go to the Civil hospital when the medical condition requires treatment that cannot be provided by the primary health centre. As of now, they have to either depend on local private hospitals - that charge high fees - or travel six kilometres to the civil hospital. The need for a public hospital nearby was also felt to be of high priority during the participatory analysis.

**10.3.9. Community centres, libraries and reading rooms:** Among the MIG and HIG groups, the respondents did not mention any lack of community centres. However, with LIG and SEWS groups, they were priced out of accessing the nearby community centres. The only available public hall at Guruprasad chowk had too much demand during peak season. As a result, they were not able to use the community centre and made coping adjustments by celebrating their marriages on the streets. The lack of libraries and reading rooms was brought into focus by all socio-economic groups during the course of the research. The same was also reflected in our accessibility analysis.

**10.3.10. Parks, playgrounds and maidans:** The lack of community parks in eastern and southern parts of the ward came to our notice in the technical analysis of accessibility. This was also corroborated through our participatory analysis. Also, besides the available three parks, there are no ward level recreational spaces for all age groups. Nor are there any playgrounds for children to play outdoor games like cricket. At the same time, some public plots lie unused and abused with parking and illegal deposits of construction waste. This appropriation of public realm by private parties needs to be addressed.

**10.3.11. Street lighting:** There is a serious lack of street lighting in the ward manifesting in lack of access to certain pockets of the ward for women and

children. Also, it places limitations on outdoor interaction and use of common spaces in the community. The lack of street lighting in SIA has also led to safety and security concerns in that section of the ward. These need to be addressed at the ward level.

The previous paragraphs quickly summarized the various issues that were identified in the ward during the course of the research. At the same time, various socio-economic groups accorded different levels of priorities to various issues (Table 12). For example, the availability of parks and green spaces was a major issue for the SEWS and LIG neighbourhoods. The MIG and HIG groups had devised their own coping mechanisms to deal with the lack of recreational facilities.

**Table 12: A matrix of priority issues across socio-economic groups**

Categories	Land use	Transport	Social amenities	Other issues
SEWS	-	Pedestrian safety	Affordable schools, hospitals, parks.	Sewerage, SWD
LIG (migrants)	-	Costly	Language issues as barriers to education, healthcare	SWM Water supply
LIG	-	Costly, PT unreliable	Schools, community centres, libraries, parks	Sewerage, Water supply, SWM
MIG	Safety	Parking, Walkability	-	-
HIG	Safety	Parking	-	-

Source: Focus Group Discussions, Interviews (2014)

#### 10.4. Prioritization of identified issues

During the course of participatory analysis, the respondents were also asked to prioritize the various issues raised by them so as to enable the planner to propose projects and phase them over a period of three to five years over which the ward plan could be put into action. Table 13 shows the results obtained from the prioritization exercise carried out during the course of the

research. This must be read in conjunction with Table 12 so as to understand whose priorities are being addressed and at whose cost.

**Table 13: Priority accorded to various issues by residents**

Priority Issues	Ranking	Points
1 Lack of parks	★★★★★★★★★★	70
2 Lack of int. hospital	★★★★★★★	39
3 Water supply issues	★★★★★	35
4 Safety issues	★★★★★	29
5 Solid waste collection issues	★★★★	27
6 Waterlogging issues	★★★★	23
7 Road safety issues	★★★	16
8 Lack of pucca roads	★★★	16
9 Lack of gutters	★★	14
10 More public schools please	★★	13
11 Public bath	★★	12
12 Affordable community hall	★★	12
13 Public transport issues	★★	10
14 Maintenance issues	★	5
15 Lack of libraries	★	3

**Source: Focus Group Discussions, Interviews (2014)**

Issues like the lack of parks, intermediate hospital, water supply related issues, safety and solid waste collection have managed to find the top priority in the list. On the basis of the above list, the plan should be able to prioritize projects.

## 10.5. Summary

This section started with land use and description of various activity locations that serve as the destination for people to access by using the transport infrastructure from their places of residence and back. It also identified various issues of infrastructure provision and accessibility to social amenities through technical and participatory analysis. It also used participatory techniques to understand the priority accorded to solving various issues by the residents. The next section will focus on the plan formulated on basis of the analysis done in this section and based upon the methodology proposed in Section 5.

## 11. Proposed plan

### 11.1. Vision and objectives

In order to arrive at a vision, participatory meetings with the stakeholders would be convened and it is felt that the following vision would have been arrived at:

“To transform the ward into a liveable neighbourhood in the next three years.”

To this effect, the following objectives were set:

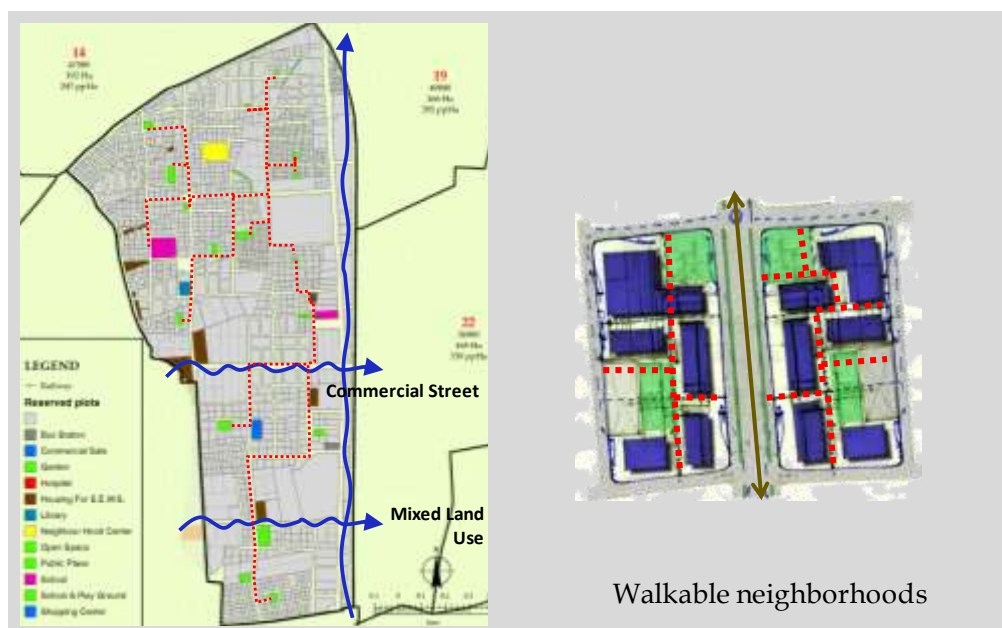
- **To improve walkability in the ward**
- **To make the ward safe for outdoor activities after dusk**
- **To improve basic services delivery**
- **To make social amenities accessible for all**

### 11.2. Strategies

The following strategies have been adopted with a view to meeting the objectives set for the next three years:

- **Walkability:** Provision of wide footpaths along major thoroughfares with continuity, signage and infrastructure allowing easy crossing for elderly and the infirm. Relaying of roads in hitherto ignored neighbourhoods with a view to make them accessible. The Krishnanagar main road will now have continuous 2m wide footpaths with a view to protecting pedestrians from heavy vehicles. At the same time, policies to prevent encroachment on the public realm by parking and dumping of waste will need to be put in place.
- **Safety:** The industrial portions of the ward are inaccessible after dusk owing to lack of lighting and activities in general. By introducing recreational activities, one hopes to see more people. To this purpose, a ward-level park may be proposed in a public plot hitherto lying abused and encroached near the ST workshop. Approach roads from all directions need to be well lit and usable for all user groups including the elderly and the infirm.

- Basic services delivery:** The areas that are currently experiencing low water pressure need to be given pipelines with augmented capacity. A central sewerage system needs to be planned for the whole city. This needs to be flagged to the RMC. At the same time, local maintenance can be undertaken for areas having poor sanitary facilities like the SEWS quarters. Solid waste collection needs to be augmented through door-to-door collection of waste on a daily basis. For this purpose, the current capacity of collection trucks needs to be augmented at the city level. Also, instructions need to be given to cover those stretches (esp. Residential pockets in Samrat Industrial Area) that are currently being avoided. Similar strategy needs to be implemented for collection of the container bins that collect other rubbish. There needs to be a city-wide proposal for cleaning of natural drains and laying of a storm water drain network in line with other cities of this scale.
- Social amenities:** The most inaccessible social amenities in the ward were found to be *anganwadis*, primary schools and intermediate hospitals along with parks. To this effect, an *anganwadi*, primary school and parks need to be provided as shown in map below. The provision of an intermediate hospital would be out of reach for the ward plan and needs to be addressed at the city level. To this effect, the demand needs to be raised at the standing committee for health for inclusion in the corporation budget.



**Map 28: Proposed land use - transport interventions**

Source: Authors

### 11.3. Projects

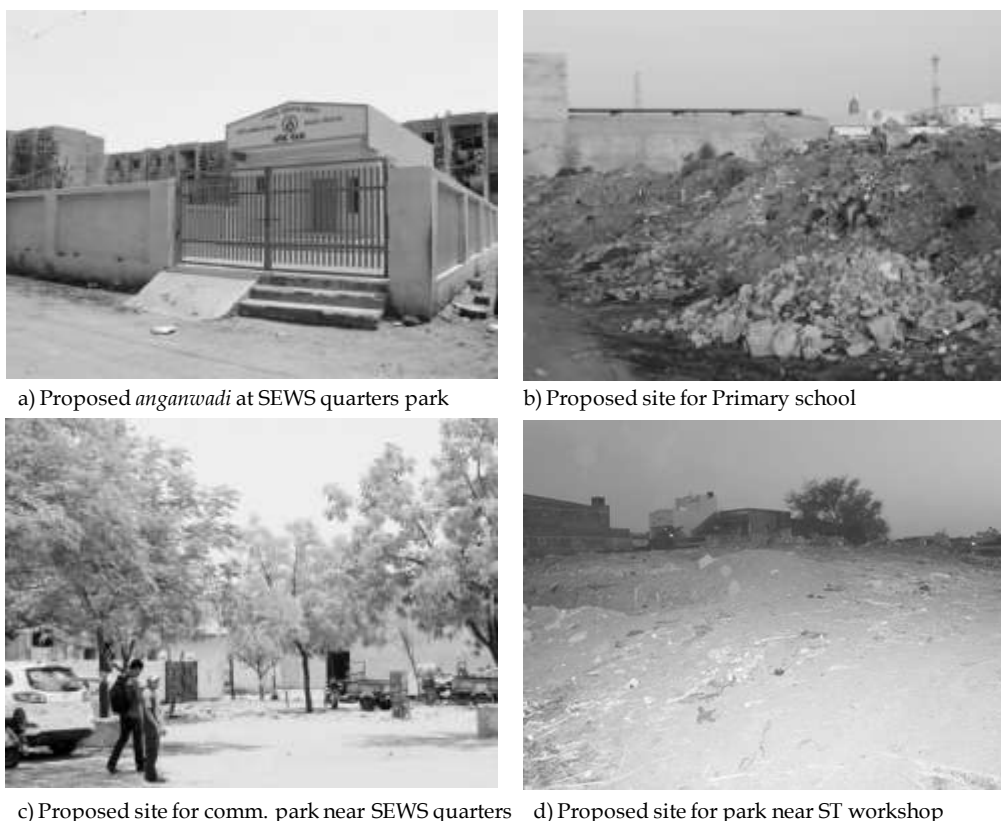
The following projects have been identified as part of the strategies to achieve the set objectives:

- 11.3.1. Provision of 2m wide continuous footpaths along Krishnanagar main road, Panchshil road:** This project would help the attainment of objectives of walkability and safety. It involves the upgradation of stretches of the footpath that have less than 2m width and provision of new footpaths on the stretches that do not have one. Along Panchshil road (24m RoW) and Krishnanagar main road (18m RoW), the existing footpaths are less than a metre in width and are discontinuous. These RoWs can be provided with 2m wide RoWs with ramps so as to enable universal access. On roads such as Doshi hospital road (12m RoW), 2 metre footpaths can be provided on one side which would help facilitate pedestrian access to facilities on this road. A total of 30,000 square metres of footpaths need to be laid under this project.
- 11.3.2. Construction of pucca roads in Lodheshwar society and select areas of Samrat Industrial Area:** With the objectives of accessibility for all residents, this project needs to be undertaken to help the residents of Lodheshwar society access opportunities like other neighbourhoods. Also, most stretches of SIA become inaccessible during monsoons as they are slushy. Therefore, close to 45,000 square metres of pucca roads need to be laid. This project would help attain the objectives of walkability, safety and provision of basic services.
- 11.3.3. Provision of street lights along Krishnanagar main road, Panchshil road, Samrat Industrial Area roads:** The provision of LED/SPV streetlights on these stretches would address the objectives of walkability and safety, thereby opening up more areas for people to relax after dusk. A total of 40 poles need to be added to these stretches.
- 11.3.4. Laying of water-supply lines in Lodheshwar society:** The water-supply lines in Lodheshwar society are old and of inadequate capacity to cater to the population that resides in that low-rise high-density neighbourhood. These pipelines need to be dug up and new ones need to be laid as per design. This would help attain the objective of provision of basic services to all. A lump-sum cost of 10 lakh rupees has been set apart for this purpose in the project.

- 11.3.5. Maintenance of sewerage system in SEWS quarters:** The SEWS quarters were constructed over eighteen years ago. Over these years, the sewer system in these quarters has not been maintained leading to unsanitary conditions. The residents claimed to not know whose responsibility it was to fix these maintenance issues. However, in the interest of the health of the ward residents, a sum of 5 lakhs has been set apart for the maintenance of infrastructure in these pockets. The RWAs will be asked to take up maintenance using these funds.
- 11.3.6. Provision of 4000 square metre zonal park in Samrat Industrial Area:** The research revealed lack of accessibility to parks especially for people from LIG and SEWS groups. While MIG and HIG managed to travel to the Race Course once in a while, the LIG and SEWS could not afford travelling all that far. Therefore, a zonal level park is proposed at the public plot near the ST workshop (Picture 18(d)). This would help address the lack of accessibility to parks as well help integrate the southern portion into the ward. By inducing activity, concerns of safety would also be addressed. The park would have play equipment, a lawn and seating facilities as well as a jogging track, thereby attracting all age groups. A sum of 70 lakhs has been earmarked for this project.
- 11.3.7. Provision of 1400 square metre community park near SEWS quarters:** The public plot near the SEWS quarters near Panchshil society will be converted into a community park at a cost of 17 lakhs (Picture 18(c)). This would not only address the lack of community parks in that neighbourhood but also help prevent the dumping of solid waste in the junction nearby. It would also help address the need for play area for children of that neighbourhood.
- 11.3.8. Provision of 1200 square metre community park near Ambedkar Health Centre on Krishnanagar main road:** The public plot to the left of the Ambedkar health centre that is currently under disuse and serves as a dumpyard needs to be reclaimed for the public realm in the form of a community park that would also accommodate a reading room/kiosk (separate project) and an amul kiosk. A cost of 13 lakhs is expected for this purpose.
- 11.3.9. Construction of *anganwadi* near SEWS quarters:** The community park



proposed near SEWS quarters would also serve as the site for an *anganwadi* (Picture 18(a,c)). The presence of the *anganwadi* close to the residential area as well as the park would be advantageous to both the kids as well as parents. It would help eliminate the need to travel for more than a kilometre to the nearest *anganwadi*. In this way, this project would help attain the objectives of walkability, safety and provision of basic services.



**Picture 18: Sites identified for proposed projects**

Source: Authors

**11.3.10. Construction of RMC operated primary school near ST workshop:** The lack of primary schools (public) in the eastern portions of the ward will be offset by the proposed school near the ST workshop opposite to the proposed park (Picture 18(b)). A sum of 60 lakh rupees has been offset for this purpose.

**11.3.11. Construction of two reading rooms in conjunction with Malviya Nagar Park and proposed park near Ambedkar Health Centre:** The reading rooms can be provided in the form of kiosks within the Malviya Nagar Park and proposed park near Ambedkar health centre at a cost of 15 lakh rupees each.

**11.3.12. Provision of bus stops at twelve pre-designated locations:** With a view to protect the bus users from the elements of weather at a cost of 6 lakh rupees.

### 11.4. Costs and phasing

The following tables present the approximate cost and phasing for the projects proposed above. It must however be emphasized that the quoted costs are purely arbitrary and intended to give a rough idea of the scale of the projects. Individual Detailed Project Reports (DPRs) would need to be prepared for each of the projects to obtain a clear idea about the actual costs.

**Table 14: Costing for proposed projects**

Sl no.	Sector	Magnitude	Units	Unit Rate (INR)	Cost (lakhs)
<b>Transport</b>					<b>1,019</b>
1	Laying of 2m wide footpaths on both sides of the road	24,000	sq m	1,850	444
2	Laying of 2m wide footpaths on one side of the road	6,000	sq m	1,850	111
3	Re/Laying of tarred roads	45,000	sq m	1,000	450
4	Streetlights	40	No.s	35,000	14
<b>Basic services</b>					<b>15</b>
1	Re/Laying of water-supply lines		est	10,00,000	10
2	Maintenace of sewer lines		est	5,00,000	5
<b>Social amenities</b>					<b>126</b>
1	Parks	3	No.s	10,00,000	30
2	Public school	1	No.s	60,00,000	60
3	Reading rooms (2 no.s)	2,000	sq m	1,500	30
4	Bus Stops	12	No.s	50,000	6
<b>Grand total</b>					<b>1,160</b>

**Table 15: Phasing of identified projects**

Sl no.	Sector	Allocation in year (lakh Rs.)		
		2015-16	2016-17	2017-2018
Transport				
1	Laying of 2m wide footpaths on both sides of the road	444		
2	Laying of 2m wide footpaths on one side of the road		111	
3	Re/Laying of tarred roads	150	150	150
4	Streetlights	14		
Basic services				
1	Re/Laying of water-supply lines	10		
2	Maintenace of sewer lines	5		
Social amenities				
1	Parks	30		
2	Public school		30	30
3	Reading rooms (2 no.s)			30
4	Bus Stops	6		
Grand total		659	291	210

**Note:** Costs shown here are purely indicative and should not be taken as binding. Individual DPRs would need to be prepared for each project.

## 12. Conclusion

The project aimed at evolving a methodology for local accessibility planning in the Indian context. The research team critically analyzed the prevalent planning paradigm in detail and identified gaps in the DP/master plan centric approach to land use planning, concentrating especially on the lack of intent to tackle local level planning issues. These have been discussed at length in Chapter 1. The centralized nature of planning -starting with economic planning at the national level - percolates all through the planning system in spite of the recent emphasis on decentralization and 'bottom-up' planning. Even in states like Gujarat which have a mechanism for planning at the scale of around 100 hectares, thanks to the provision of TP schemes in the GTPUDA act of 1976, the ability of the local community to contribute to the plans being made for their neighbourhood is at best, limited to consultation. Despite the rhetoric, the ultimate decision making powers lie with the state government which is empowered to 'approve' the plan. Also, what happens after such a 'scheme' is made and implemented is anybody's guess. Periodic evaluation of availability of various social amenities is absent and the planners' role ends at reserving plots for such social amenities purposes. Overall, there is a clear inability of the planning paradigm in India to respond to local community, temporal changes in land use and people's aspirations.

At the same time, the world is moving towards an accessibility-driven approach to planning for services, having burnt its fingers with the mobility led approach much earlier. These have been discussed in Chapters 2 and 3. It is in this context that this research project pitches forward a case for accessibility and people's aspirations based planning paradigm - one that marries technical analysis of people's accessibility to social amenities with their perception of the extent of such accessibility as discussed in Chapters 5 and 6. The methodology was arrived at by looking at - critically - examples of planning at the local level that has been experimented and persisted with in various contexts like United Kingdom, United States of America, The Netherlands and New Zealand. These case studies revealed several approaches to local area planning. Some relied heavily on a data intensive approach, whereas others were

of a prescriptive nature. In this respect, the lack of availability of neighbourhood level data in many India cities was always considered.

The proposed methodology also draws from the experiences of cities like Pune, Bengaluru and Delhi that have tinkered with the idea of participatory approach to planning. Having evolved a methodology that combined the technical accessibility analysis led approach of the UK and New Zealand with the participatory approach of Porto Allegro and Pune, the research proceeded with demonstration of the proposed methodology on the case city of Rajkot, where a ward plan was evolved using technical and participatory approach to people's accessibility to services complete with identification of projects, costing and phasing over the next five years (Chapters 7 to 12). It is hoped that efforts like these would help in meeting the objectives of the 74th CAA by helping take local level planning truly to the citizens. □□□

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## Appendices

### Appendix 1: Results of accessibility analysis

Sl.	Title of the map	Category
1	Net residential density	Inputs
2	Origins – Centroids of 100m x 100m tessellation	
3	Location of destinations - Consolidated	
4	Road hierarchy 2011	
5	Kernel density – Search radius of 400m	Outputs
6	Ward 9: Kernel density – search radius of 400m	
7	Ward 17: Kernel density – search radius of 400m	
8	Ward 20: Kernel density – search radius of 400m	
9	Distance to primary school	
10	Ward 9: Primary schools within 500m (Q1 walk)	
11	Ward 17: Primary schools within 500m (Q1 walk)	
12	Ward 20: Primary schools within 500m (Q1 walk)	
13	Primary schools – Unsatisfied demand density	
14	Primary schools within 500m (Q1 walk)	
15	Primary schools within 1000m (Q1 cycle)	
16	Primary schools within 1300m (Mean walk)	
17	Primary schools within 2000m (Q3 walk)	
18	Primary schools within 2700m (Mean cycle)	
19	Primary schools within 3700m (Q3 cycle)	
20	Distance to intermediate hospitals	
21	Intermediate hospitals within 500m	
22	Intermediate hospitals within 800m	
23	Intermediate hospitals within 1000m	
24	Gardens within 1100m (Mean distance)	
25	Distance to police chowky	
26	Police chowky- Unsatisfied demand density	
27	Distance to police station	
28	Police station- Unsatisfied demand density	