

## CHAPTER 6. Building Sustainable Urban Cities and Communities

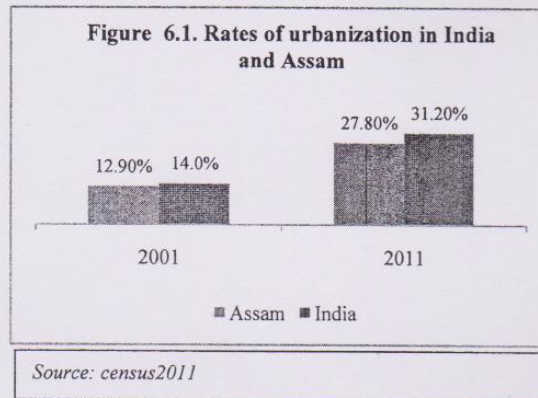
### Goal 11: Self resilient, sustainable and safe cities

#### 1. Introduction.

This chapter discusses the Sustainable Development Goals (SDGs) 11 which focuses on 'Making cities and human settlements inclusive, safe, resilient and sustainable.' Goal 11, highlights the need for adequate, safe and affordable housing and basic services for all and upgrading slums. It focuses on safe, affordable, accessible and sustainable transport systems, improved road safety especially for the most vulnerable including women, children, persons with disabilities and older persons. It stresses on the need to create sustainable urban environments with adequate space and planning, with capacity for participatory, integrated and sustainable human settlement planning and management.

#### 2. Goals and targets

Under SDG 11 the main focus areas are on developing urban transport and roads, improving urban environment, providing housing for all, and most importantly creating effective governance systems. Assam is expected to follow the nation's footprints in terms of urbanization rate. Decadal population growth of Assam (16.9%) is in sync with that of India (17.3%). Assam's economy is targeted to achieve a 10% growth rate by 2025-26 under Vision 2030. With the needs of a rapidly growing economy and population, the pressure on urban infrastructure will increase (see Appendix 6.1) requiring around Rs. 36000 crores to bridge the cost of development of infrastructure. The key areas which need to be monitored closely for achieving Goal 11 are water supply, sewerage and sanitation, solid waste management, storm water drainage, urban transport, urban housing, street lighting, master plan formulation and implementation, and enhancing capabilities of Urban Local Bodies (ULBs). These are set out in Table 6.1 with baselines and targets.



**Table 6.1: Major indicators and targets for Goal 11**

| Indicators  | Baseline 2016-17 | Target 2017-2020 | Target 2024 | Target 2030* |
|---|------------------|------------------|-------------|--------------|
| Current Gap of Road network (km)                          | 5332             | 1500             | 3832        | 1052         |
| Mortality Ratio due to Accident(per 100,000)              | 34.4             | 15.0             | 5.0         | Negligible   |
| Total Length of Public Transport System (km)              | 600              | 200              | 400         | 850          |
| Green Transport Corridors (km)                            | 3000             | 1400             | 1600        | 500          |
| Dedicated cycle track (km)                                | 1050             | 400              | 620         | 200          |
| pedestrian friendly environments in towns and cities (km) | 5000             | 2500             | 3000        | 1000         |



|   |               |        |         |        |
|---|---------------|--------|---------|--------|
| Traffic Management system (km)  | 5332          | 1500   | 3882    | 1052   |
| Adequate Road safety measures (km)  | 5332          | 1500   | 3882    | 1052   |
| No. of slum HHs covered   | 4600          | 2000   | 2600    | 500    |
| No. of Tenable/untenable slums  | 64/213        | 30/100 | 34/113  | 6/20   |
| No. of EWS HHs sanctioned   | 26,467        | 26467  | -       | -      |
| Urban housing (current gap)   | 3200,000      | 140000 | 1800000 | 224000 |
| Water Supply (current gap)  | 199 MLD       | 99     | 100     | 230    |
| Sewerage and Sanitation (current gap)   | 417MLD        | 150    | 267     | 183    |
| Solid Waste Management (current gap)  | 435 TPD       | 150    | 285     | 850    |
| Storm Water Drainage (current gap)  | 3378 km       | 1000   | 2378    | 1200   |
| Urban Transport (current gap)   | 700 buses     | 300    | 400     | 1200   |
| Street Lighting (current gap)   | 150000 lights | 50000  | 100000  | 5000   |
| <i>Source:</i> Departments' Strategy Papers and Action Plans (SPAPs), PWC report. |               |        |         |        |

### 3. Major issues, constraints, and interventions.

**i. Develop safe, affordable and sustainable urban transport systems:** The Government will create adequate, safe, affordable and sustainable transport systems. It will expand public transport systems and connect urban and per-urban areas with effective transportation systems which is vital for the proper economic development of the region. A transit oriented development approach with mobility integration services will be adopted. Some monitorable actions are:

- a. Quality of urban transport services will be improved in a phased manner in all urban areas beginning 2018 and covering all areas by 2030 and will include measures such as (a) low floor, high quality urban bus services; quality mass rapid transit systems and quality passenger amenities and bus stops; (b) provision for physically challenged persons, elderly and pregnant women; (c) smart-cards for travel in public transport systems; (d) automated traffic signalling systems in all towns and cities; (e) adequate and safe street parking facilities; (f) creation of additional lanes for cycle tracks and walkways.
- b. Management of transport services will be strengthened so that they can be provided efficiently, punctually and in a passenger friendly way. An annual passenger feedback system with monitorable quantitative scores for assessing public's perception of quality of services will be introduced in all urban areas in 2018 and improvements effected based on feedback received.
- c. Regulation of existing informal mass transport systems and proposed new systems will be strengthened by reviewing current regulations and their implementing mechanisms and introducing new strengthened regulations and implementing arrangements by 30 June 2018.



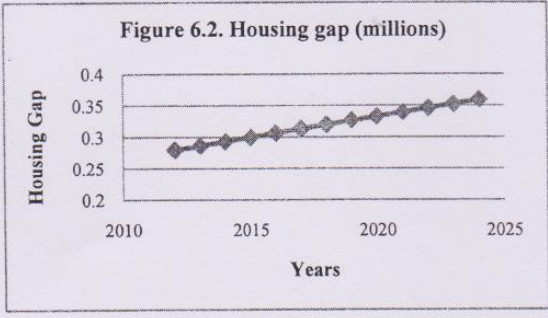
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- d. New services such as Metro systems for Guwahati will be introduced in a phased manner beginning in 2018.
- e. With an emphasis on sustainability, alternative energy resources for transport systems, with CNG filling station/ rapid charging points and provisions for service kiosks should be created by June 2018. A regulatory authority for managing battery operated green vehicle will also be created by 30 September 2018. By 2030, at least 50% of all public transport will move to EV. The State will develop an EV ecosystem.

**ii. Attain qualitative and quantitative improvement of roads.** The main challenges facing roads in Assam are inadequate planning, unsurfaced kutchra roads, poor quality and maintenance of roads, inconsistent width of roads, insufficient road network coverage and high numbers of serious accidents.

- a. *Improved road and traffic planning.* Land use and transport planning will be integrated to facilitate smooth movement of traffic. The current gap in urban roads is estimated at around 2800 kms and 500 buses (as per the 7 years strategy plan). The Government will bridge the gap in road requirements including providing adequate road networks in urban peripheries through proper planning of road networks and building of roads along with improvement of existing roads so that this gap is eliminated by 2024 and keep adding length of roads to maintain a zero gap thereafter.
- b. *Road quality improvements.* Steps to ensure good road quality will be initiated. Adequate and uniform road width with drainage will be provided. Implementation of land pooling modalities will be developed to make provision for adequately wide roads and other needs. Provision will be made for pedestrian friendly environment with a barrier-free environment for every road which integrate parks and open spaces with pedestrian movement. All urban roads will be upgraded to these higher standards along with provision of such necessary ancillary requirements in phases by 2030.
- c. *Ensuring road safety.* Strict implementation of rules and regulations will be initiated with immediate effect to ensure proper road safety. This will be coupled with adequate street lighting, proper road signage and proper colour coding systems for traffic regulation. Traffic accidents will be gradually reduced from the current high levels and brought to near negligible levels by 2030.

**iii. Provide Housing for All by 2030.** The current housing shortage in Assam's estimated at 3.13 lakh houses.<sup>28</sup> Through interpolation and extrapolation method the housing shortage for preparation of the 3-year Action Plan 2020 is projected to be around 3.32 lakhs and for the 7-year Strategy Plan the demand stands at



<sup>28</sup>Report of the Technical Group on Urban Housing Shortage (2012-17), Ministry of Housing and Poverty Alleviation (MHUPA), Government of India. The Housing Demand Assessment conducted under PMAY-U assessed the demand for housing as 2.83 lakhs of EWS houses in 2017 and around 20,000 applicants for home finance under the LIG and MIG category. Under PMAY- Gramin around 10,000 homeless families were identified in the rural areas of Assam. Therefore it is estimated that currently there is a total housing demand of around 3.13 lakhs.

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approximately 3.59 lakhs. The trend in housing gap may be seen in Figure 6.2. In addition, there is an unprecedented proliferation of slums. With the rapid growth of urbanisation, large segments of the urban population are forced to live in substandard housing with uncertain property rights and limited access to basic services such as clean water, toilets, electricity and garbage collection. Moreover the large influx of rural migrants to the urban centres in search of livelihood, shortage of affordable houses and high prices of land beyond the reach of the urban poor has contributed to the growth of slums in both public and private land. As per Census 2011, there are currently around 1.3 crore urban slum households who are in need of an affordable and quality housing. In view of these, the following interventions will be adopted to solve these problems. The Central Government has formulated a Housing for All programme under the Pradhan Mantri Awas Yojana (PMAY) the urban part of which (PMAY-U) has four main components which will be used by the state to achieve its own goal of housing for all. The State Government will after the initial phase till March 2022 review the pace of coverage under this program and take additional measures if necessary to accelerate progress so that its goal of housing for all is achieved by 2030. The four major components of PMAY-U are:

- a. *Slum upgradation.* Under (PMAY-U) there is provision for in situ slum rehabilitation of slums using land as a resource with private participation for providing housing to eligible slum dwellers. It aims to leverage the locked potential of land under slums to provide houses to eligible slum dwellers using cross-subsidy from sale of urban slum land freed for slum rehabilitation. Slums whether on Central Government /State Government /Private/ULB land would be taken up for in situ redevelopment through involvement of private partners. There are provisions for additional Floor Areas Ratio (FAR)/ Floor Space Index (FSI)/ Transfer of Development Rights (TDR) if required to provide further incentives. There is a central assistance of average ₹ 1 lac per household and state assistance of ₹ 50,000 for each project taken under this component. By March 2022, 6500 slum dwellers in urban areas across the state (excluding Guwahati) will be provided with decent housing. The program of slum upgradation will be accelerated so that by 2030 all slums in Assam's urban areas are converted to decent housing.
- b. *Housing loans to individuals.* Under the Credit Linked Interest Subsidy component of PMAY-U, home loans will be provided to the EWS/ LIG category for acquisition, construction or enhancement of houses with interest subsidy of 6.5% on housing loans upto Rs. 6 lakhs with tenure of 20 years for EWS/LIGs, and loans and beyond Rs. 6 lakhs at market rate.<sup>29</sup> Insufficient demand for the scheme appears to exist currently, however, as there is a general lack of financial literacy and affordability amongst the Economically Weaker Sections (EWS) and Low Income Groups (LIGs) even with interest subsidy. Therefore, the Government will monitor and consider reviewing the scheme to provide, if needed, more attractive terms. Under the Credit Linked Subsidy Scheme it is proposed to cater to around 11,000 beneficiaries in the period upto March 2022.

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<sup>29</sup>Interest subsidy under the scheme is calculated on NPV basis @9% discount rate. The carpet area is limited to 30 sq. m. and 60 sq. m. for EWS and LIG respectively. The preference will be given to Manual Scavengers, Women/widows, SC/ST/OBCs, Minorities, differently-abled and Transgender subject to them being EWS/LIG. The Central Nodal Agencies (CNAs) to channelize subsidy to the lending institutions and for monitoring the progress are Housing and Urban Development Corporation (HUDCO) and National Housing Bank (NHB).



- c. *Support to affordable housing development partners.* In addition, financial assistance will be provided to EWS houses being built through partnerships including – apart from between the Centre and State Government – with cities, municipalities and the private sector. Central assistance of Rs.1.5 lakh per EWS house is available provided the scheme includes at least 35% of EWS households; and builds at least 250 houses. Preference will be provided to physically handicapped persons, senior citizens, SC/ST/OBCs, minorities, single women, transgender and other weaker and vulnerable sections of society. The State Government will decide the ceiling price for EWS houses under this scheme. A total of 16,500 beneficiaries are expected to be covered by March 2022 under this component.
- d. *Beneficiary-led construction:* This component assists eligible individuals belonging to EWS categories to either construct new houses or enhance existing houses on their own. Central assistance of Rs. 1.5 lakh per house will be provided. States can consider further incentives if needed. By March 2022, 93,300 households are targeted to be covered.
- e. The State will pursue cleaner, low carbon technologies.

**iv. Strengthen Urban Local Bodies.** A landmark constitutional amendment for strengthening urban local bodies (ULBs) was the 74<sup>th</sup> Constitutional Amendment Act, 1972 where the ULBs were given constitutional status. The Act provided for transfer of several functions to ULBs and strengthening of urban local finance through setting of State Finance Commissions (SFCs). Unfortunately, the functioning of the SFC in the state has been below expectations. Among the concerns regarding ULBs that need to be addressed are (1) lack of mechanisms for monitoring the submission of reports by the SFCs and their implementation by the State Government; (2) continued reservation by states of concurrent responsibility of functions that should have been wholly devolved; (3) even for transferred functions, there is a mismatch between the functional devolution and fiscal powers of ULBs; (4) encroachment by parastatal organizations such as the Guwahati Metropolitan Development Authority, Urban Water Supply and Sewerage Board etc. into functional areas which are traditionally the domain of ULBs with severe implications for accountability and community participation by ULBs; (5) improper functioning of the SFCs and inadequate powers given for raising financial resources; (6) lack of attention to reports submitted by ULBs.

The State Government has decided to take up the following measures to strengthen ULBs:

- a. *Establishment of Technical Committees.* To strengthen the ULBs, it was proposed to constitute a State Level Technical Committee (SLTC) and 36 City Level Technical Committees (CLTCs) to handhold ULBs in the field of urban affairs as recommended by the Government of India. Now 32 DLTC has already been formed and are in place with 4 technical experts in each DLTC.
- b. *Strengthening fiscal decentralization:* In India, cities contribute to over 60% of the GDP of the country, yet total revenue expenditure of all ULBs in the country is less than 1% of the GDP. This is more acute for Assam, where ULGs finances are in a precarious condition. The poor state of ULG finances is due to (1) lack of revenue sources linked to buoyancy of the local economy; (2) constraints on property taxes, the mainstay of ULBs, owing to irregular rate revisions; (3) poor collection of revenues; (4) unrealistic pricing of urban services such as water which remain delinked from the cost of service provision, despite required under Jawaharlal Nehru



National Urban Renewal Mission (JNNURM); (5) incapacity to access capital markets through municipal bonds to raise resources;<sup>30</sup> and (6) lack of partnerships with private sector to outsource services or provide them in PPP modes. Thus, despite political decentralisation and some functional decentralisation, ULBs financial dependence on, and therefore control by, the state has increased.

The Government will address these concerns and strengthen ULB's financially so that they are progressively able to rid themselves of all state dependence by 2030. Among measures that will be taken are

- SFCs will be constituted on time and due consideration given to reports submitted by them for fiscal devolution;
  - SFCs urged to find new avenues for taxation for the ULBs based on their size.
  - Outsourcing of services and PPP modalities with private sector will be actively promoted
  - A policy devised for devolving funds to ULBs and followed vigorously.
  - IT to be used extensively for increasing efficiency in collection.
- c. *Developing accountability, responsiveness and participation in urban governance systems:* In Assam despite municipal elections and formation of ward committees etc., participation by citizens remains weak. The encroachment of parastatal organizations in the domain of ULBs has made participation further difficult. As a result, equity in mobilization of resources or in provision of services has not usually been achieved. Citizens' participation in matters of service delivery, municipal policy formulation, in preparation of master plans, projects etc., have been largely absent. There is little communication between ULBs and NGOs and the community as a whole. There are no mechanisms in place to obtain public feedback on availability and quality of municipal services provided through surveys or public forums such as consultative council meetings, public hearings, etc. Similarly grievance redress mechanisms remain weak or non-existent. The Government will redress this situation in all municipalities by 31 March 2019 through the following actions:
- Activating the Ward Committees, District Planning Committees, Metropolitan Planning Committees etc.
  - Developing citizens' feedback mechanisms e.g. through regular beneficiary surveys, public forums, telephone hotlines, etc. to determine what people need and want, and availability and quality of municipal services.
  - Install mechanisms for consulting citizens in planning and implementation of plans, programs and projects. e.g. through consultative council meetings, public hearings, etc.
  - Set up effective mechanisms of effective collaboration between ULBs and NGOs, civil society, private sector etc.
  - Put in place a system for monitoring and evaluation to determine that goals and desirable social ends of the programs/projects are attained and delivered to targeted beneficiaries.

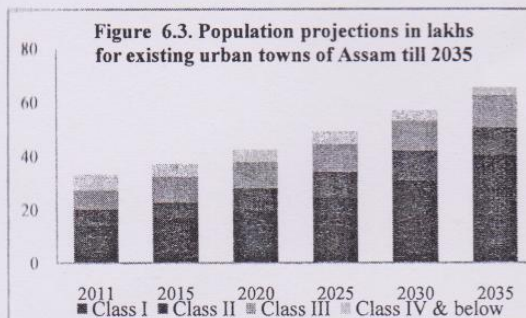
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<sup>30</sup>The Rakesh Mohan Committee Report on Urban Infrastructure (1996) mooted the use of commercial finance for urban infrastructure provision by tapping capital markets, but this has not taken off at all in Assam. This could be due to (a) public funds from JNNURM crowding out commercial funds from the capital market, (b) an inherent weakness of the ULBs in recovering the operational costs of their services, which increases their riskiness; and (c) the poor capacity within the ULBs for developing and implementing PPPs to be financed from commercial bonds.



- Establish procedures to ensure fair and swift action on suggestions, grievances, etc. by the public.

v. **Planning for sustainable and livable urban habitations.** Rapid urbanization will place tremendous strain on urban services and priority will be placed on advanced planning for creating sustainable and livable towns and cities in Assam. Class 1 towns historically have been gaining prominence in the overall urbanisation of the state. Focused development of Class 1 towns is expected to have a spillover effect of development upon surrounding smaller urban centres. In addition to Guwahati, Nagaon, Silchar and Dibrugarh; 8 new cities will also become Class I towns by 2035; and 2 by 2024. By 2035, these 12 Class 1 towns are expected to constitute around 60% of the total urban population of the state of Assam (Figure 6.3). It is important to note that the strict adherence to building byelaws will be done in the process of development and planning of other cities and towns.



Out of 97 cities/towns in Assam, master plans have been prepared for 38 cities so far; while master plans are under preparation for 45 more. By 2024 the number of urban centres are expected to rise to about 110. The Government will ensure that all master plans for all are ready by 2024 in GIS based platforms.

Livability sustainability will be emphasized in master plans. In particular

the Government will emphasize the following areas:

- Urban environment.** Assam will ensure that all urban centers meet environment norms for all air quality indicators (CO<sub>2</sub>, SPM, NO<sub>2</sub>, SO<sub>2</sub> etc.) by 2030. Similarly there are plans to develop public toilets under Swachh Bharat Mission and all urban centres will have adequate public toilets for their needs by 2024. The current gap in solid waste management of 180 tonnes per day for Guwahati will be filled by 2024. Similarly SWM gaps for all other urban centres will also be removed by 2024.
- Basic urban services.** Sustainable cities require adequate clean water supply; proper lighting; sufficient parks and playgrounds; adequate parking facilities; electric crematoriums; easy access to buildings, toilets, transport and other facilities by differently abled citizens. Municipal water supply will be made available to all urban residents of Assam by March 2024. Barrier free access for differently abled persons do exist in the building bylaws of Guwahati and the Building Rules of Assam modified in 2014. These will be given effect to on priority. There are currently plans to develop parks in Guwahati under the AMRUT project and this will be extended to other urban areas in phases. The current gap of over 75,000 lights will be fulfilled by 2024. An automated parking facility has been constructed in Guwahati near zoo road, for allaying traffic problems in Guwahati. Similar efforts will be made for other towns and cities. To promote reading and culture, a central library cum auditorium and another auditorium will be built in Guwahati and the old DC bungalow turned into a Heritage and Handloom Museum by 2017. Similarly, all needed basic urban services will be expanded in phases and gaps in such services will be removed from all urban areas in the state by 2030.



- d. *Building smart cities in Assam.* The Government will use IT to provide better urban services to citizens through the Smart cities program. Currently, Guwahati alone has been identified but The Government will extend this program to all cities by 2030.
- e. *Urban Disaster and Risk Management:* Proper flood management systems will be provided in all cities likely to be affected by 2030. Flash floods in Guwahati cause irreversible damage to ecology and property. An urban flood mitigation plan will be drafted by 2018 for Guwahati city. The Brahmaputra river front from Bharalu to Sukhleshwar Ghat will be developed and flood protected by 2017. A drainage project in the Noonmati basin in Guwahati with catchment areas will be initiated in 2017. In addition, to prevent damages from earthquakes, building rules to build only earthquake resistant structures will be strictly adhered to for all urban areas in Assam.

#### 4. Technological change and innovation

Technological progress and innovations in urban infrastructure, urban planning, institutions and organizations are taking place very rapidly worldwide, in Asia, and within India itself. The state government will actively work to keep abreast of these developments and best practices and incorporate those most useful and suitable for the state. To do so proactively, the Department of Urban Development will set up a Technology and Innovations cell by March 2018 which will coordinate closely with the Technology and Innovations Centre in Assam Administrative Staff College to accelerate adoption of urban sector innovations in the state. The following areas in particular will be prioritized:

- i. **Innovations in Housing.** Since Assam is a Bamboo rich state and construction with bamboo is a sustainable way of constructing houses, therefore PMAY-HFA (U) has designed two pre-approved Model Plans on split bamboo technology for the construction of EWS houses, which will be promoted. For this, collaboration with the Cane and Bamboo Technology Centre will be strengthened. Other innovations in low cost and safe housing technology will also be identified and adopted.
- ii. **New technology in urban infrastructure.** Construction technology (including 3D technology) in roads, bridges, flyovers, pedestrian friendly walkways will be explored and adopted.
- iii. **Innovations in participatory processes.** Major changes in participation are needed and will be pursued (see Section 3). These include citizen feedback and grievance redressal mechanisms; beneficiary consultation mechanisms to ensure proper utilization of public funds on public housing and other urban projects etc.
- iv. **Smart Cities for better municipal governance and services.** Use of IT for improving municipal governance and provision of services will be adopted across the state.

#### 5. Partnerships

Rapid urban development will necessitate creation and strengthening of partnerships as discussed extensively in Section 3 and these will be pursued proactively. In particular, the following partnerships are crucial:

- i. **Communities and citizen's groups.** The Government will encourage all cities and municipalities to establish active consultative processes with citizen's groups and



urban communities. All cities and municipal local governments will set up such active consultative processes by 30 June 2018.

i. **Private sector.** There is insufficient involvement of the private sector in creation of urban infrastructure and provision of urban services. With the rapid urbanization that will take place in Assam, public provision alone will be incapable to fill the needs. Therefore the state government will actively seek and promote private sector participation and will review policies and facilitation mechanisms by 30 June 2018 so that a proper environment for private sector participation in urban development is created.

iii. **Convergence with other programs.** Under housing, convergence will be achieved between PMAY-HFA (U) Assam and Assam State Urban Livelihoods Mission Society (ASULMS) to tap into the community human resource support available with ASULMS. Community cadres and community institutions of ASULMS work with ULBs to include slum dwellers into PMAY-HFA (U). The Government will also focus on the livelihood component under the schemes available under DAY-NULM. Comprehensive survey of slums will be done to obtain actual slum dwellers, along with an understanding of their socio-economic status. Similar convergence possibilities will be identified and synergies between programs promoted.

## 6. Resources

i. **Human Resources.** Recruitment, training and retention of capable human resources essential to meet the scope of service delivery with quality standards as envisaged under SPAP. The entire staff should be run on basis of performance based management systems utilizing modern HR methods. There is a dire need for qualified and motivated Human Resource Team at the administrative, managerial and oversight levels and in the technical levels. At the oversight level, each field level office requires a strong team for M&E, quality control, and better coordination with all concerned stakeholders. At the technical level, there is a need to increase engineers and allied IT and technical staff skilled in all areas of urban infrastructure and delivery of services. To close these gaps in a phased manner, the government will take the following steps:

- a. Creation of a proper data base of all categories of HR staff by 30 June 2018.
- b. Create a cadre, with suitable pay scales, including openings for lateral entries, to attract and retain talent by March 31 2018.
- c. Expansion of technical and allied technical staff in phases
- d. Establishing a dedicated recruitment board, for recruitment by 31 March 2018. A cadre for ULBs has to be developed. There has to be sustained efforts to recruit, train and motivate them so as to help them perform their jobs efficiently and effectively.

ii. **Financial Resources.** Necessary arrangements for mobilization of adequate financial resources is quite critical, for achievement of targets envisaged under SDG-11. Hence apart from (i) greater revenue generation from their own internal resources; (ii) it will be necessary initially for ULBs to rely mainly on grants from the state government budget and transfers from Central government; and to (iii) establish linkages with Externally Aided Projects and Corporate Social Responsibility (CSR) programs of the private sector. (v) Finally, resources can be augmented by increasingly outsourcing and partnering through PPP and other modalities with the private sector.



7. Coordination arrangements for Goal 11

| Goals  | Lead Department               | Supporting Departments   |                                     | Cross Cutting Departments   |
|--|-------------------------------|--|-------------------------------------|---|
| <p><b>Goal 11</b><br/>Sustainable Cities and Communities</p> | <p>Urban Development, GDD</p> | <p>PWD, Environment &amp; Forest (improved air quality), Power</p> | <p>Transport, Cultural Affairs,</p> | <p>Social Welfare (Gender), WPT &amp; BC, Tea Tribes Welfare, Minority Development, Char Areas, Hill Areas, Science &amp; Technology, Information Technology, Information &amp; Publicity.</p> <p>Transformation and Development, and Finance Departments (Oversight)</p> |



## Appendix 6.1: Gaps in urban infrastructure excluding Guwahati.

### Result of the As-is analysis: Gap in urban infrastructure development indicators across ULBs (excluding Guwahati)

| Sector                 | Current Supply   | Demand*               | Gap (Current)  | Gap (in 2035)**             |
|------------------------|--|-----------------------|--|-----------------------------|
| Water Supply           | 120 MLD  | 319 MLD               | 199 MLD  | 460 MLD                     |
| Solid waste management | 325 TPD  | 650 TPD               | 325 TPD  | 1295 TPD                    |
| Sewerage               | 0  | 270MLD                | 270MLD   | 488 MLD                     |
| Urban transport        | Urban Roads: 1515 Kms<br>No organised public transportation system | Urban Roads: 4072 Kms | Urban roads 2557 Kms<br>Bus depots: 26<br>Total Buses: 119 |                             |
| Street lighting        | 47,895   | 123,600               | 75,705   |                             |
| Storm water drainage   | 400 Kms  | 100% coverage         | 1,100  | 3,672                       |
| Urban Housing          |  |                       | 1.7 Lakh (EWS and LIG only)                                | 3.7 Lakh (EWS and LIG only) |

\* As per normative benchmarks

PwC

August 2014  
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### Result of the As-is analysis: Gap in urban infrastructure development indicators in Guwahati

| Sector                 | Current Supply  | Demand*   | Gap (Current)   | Gap (in 2035)**   |
|------------------------|---|---|---|---|
| Water Supply           | 70 MLD  | 190 MLD   | 130 MLD   | Expected capacity by 2035 – 421 MLD<br>Expected demand – 391 MLD<br>Gap - NIL |
| Solid waste management | 80% of total waste generated i.e 440 TPD.   | 550 TPD   | 110 TPD in collection. Treatment and scientific disposal is absent throughout the Guwahati. | 1000 TPD  |
| Sewerage               | NIL   | 147 MLD   | 147 MLD   | 284 MLD   |
| Urban transport        | Urban Roads 460 Km<br>Around 2380 vehicles providing Public transportation services | 3234 Km<br>40 buses per lakh population               | 2774 Km<br>Around 500 buses should be there   | Urban road 3558 Km<br>MRTS and BRTS system may be required                    |
| Street lighting        | 16100   | Average spacing between lamp post should be 40 meters | 70300   | 84350   |
| Storm water drainage   | 420 Km  | 100% coverage   | 2278 Kms  | 3598 Kms  |
| Urban Housing          |   |   | 1.1 Lakh  | 2.3 Lakh  |

\* As per the benchmarks

\*\* Gap if current supply levels are maintained

PwC

August 2014