National Urban Policy Framework 2018

Ministry of Housing & Urban Affairs

2018

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Executive Summary

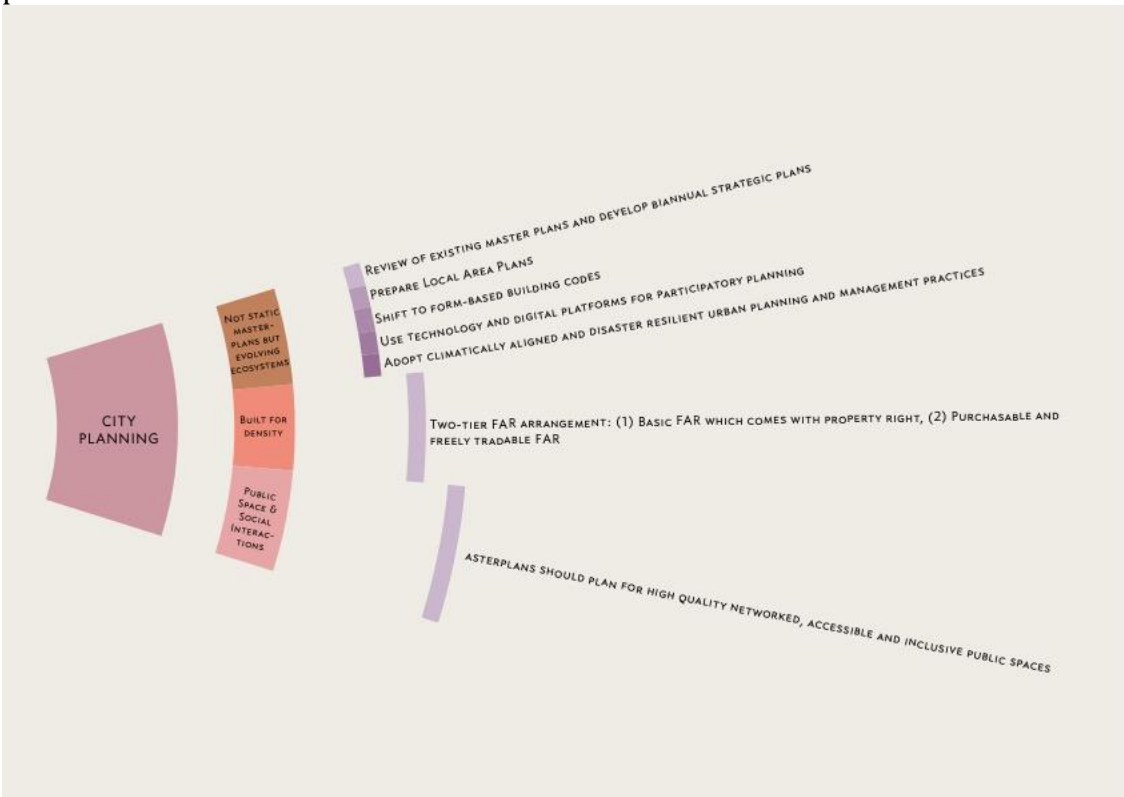
National Urban Policy Framework (NUPF) outlines an integrated and coherent approach towards the future of urban planning in India. The NUPF is structured along two lines. Firstly, at the NUPF's core lie ten sutras or philosophical principles.

Secondly, the ten sutras are applied to ten functional areas of urban space and management. Within each functional area, the status quo and its challenges are analyzed, key priorities are formulated, and specific possible actions points suggested. Recommendations are presented for these functional areas:

City Planning

Planning in ancient India has multiple similarities to post-modern planning today. In order to structure settlements areas were earmarked for different uses responding to the local culture at the time. Walkability, clusters of small plots, houses close to the plot line and narrow streets laid out in a grid were key principles in city planning at the time. Post-independence, however, city planning has become mainly the preparation of rigid master and land-use plans. These static planning tools fail to address the complexity of India's growing cities. They foster a built environment that is disconnected from the continuously changing socio-economic conditions of urban space. Rather than thinking of spatial planning in silo, the framework suggests to

integrate it with economic and social and planning as well infrastructure, housing and transport planning in order to create dynamic, entrepreneurial and inclusive master plans.



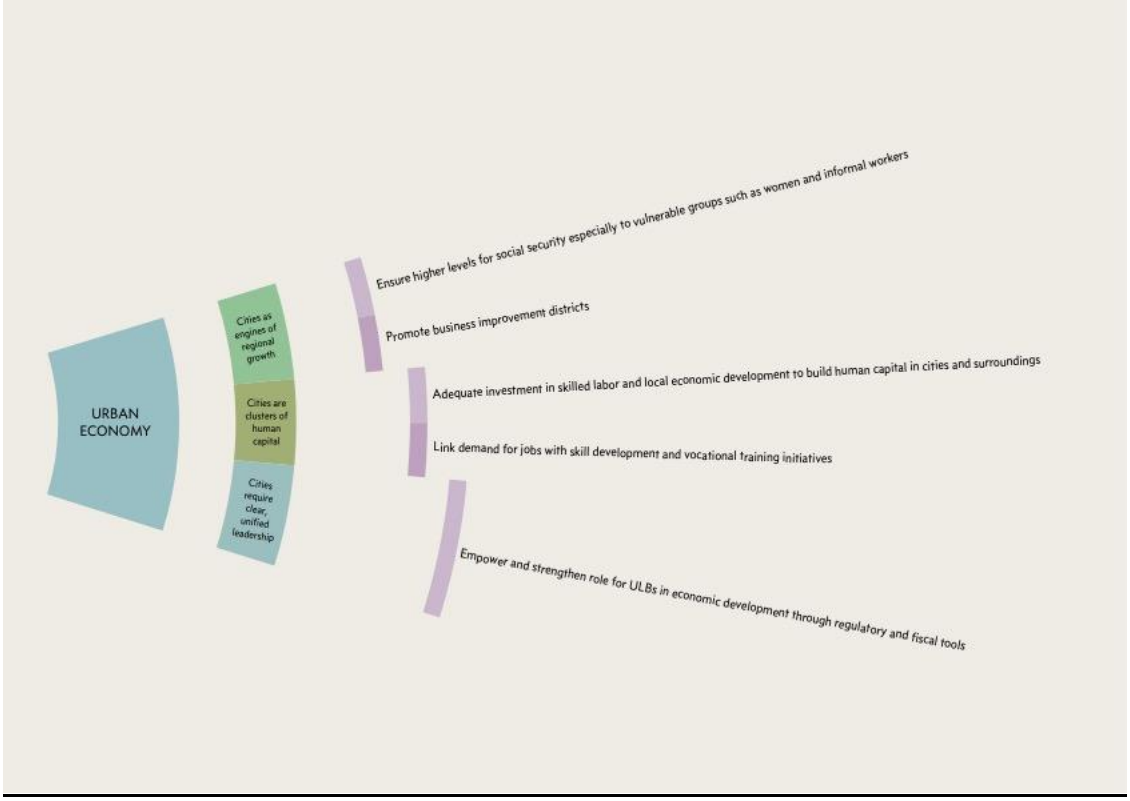
- For new master plans issue new guidelines based on principles of comprehensive planning and climate considerations.
- For existing master plans, invite applications from the public once in two-years to amend or review them.
- For each Master Plan, a Strategic Plan (e.g. one or two-year duration) should be prepared which stipulates clear links to budgets and requires coordination. Spatial planning exercise should be participatory and ensure that plans embrace diverse resident views.
- Master planning should be made more efficient and inclusive through the use of technology- GIS, GPS, remote sensing, geo-informatics etc.
- Have a two-tier FAR arrangement, with a basic FAR which comes with property right and the rest purchased from the local authority and freely tradable.
- The FAR should be sold as TDR through calibrated auctions done on a digital platform.
- Master Plan itself should divide the city into TDR zones on the basis of a combination of prevailing property prices (guidance value register), economic growth and development synergies, and other parameters that are used in demarcating Business Improvement District (BID) or Tax Increment Financing (TIF) areas.

- A small proportion, say 5%, of the total original FAR of the zone can be released into the market once every three years through well-publicized auctions conducted on an easily accessible electronic platform following the prevailing capital market regulations.
- The City's building regulations should be amended to reflect the distinction between FAR that comes with property rights and that which have to be purchased.
- Shift to Form-Based codes, which use the intended form and character of a place (or context) as the organizing principle or framework of the code.
- Local Area based Plans create a framework for enhancing the public spaces, and areas under roads by enabling redevelopment of the existing built-up environment.
- Urban areas should provide for quality public spaces, which are networked and easily accessible to all citizens irrespective of age or gender.
- Make cities adaptive to disasters and resilient to climate change through people-centred urban planning and management practices.

Urban Economy

Urbanization is a contributor to a country's economic growth. The realization of the economic potential of urbanization depends (among other factors) on the interplay of agglomeration effects and congestion forces. Agglomeration effects, the clustering of people and enterprises in cities, leads to higher levels of productivity and employment generation. Congestion, on the other hand, occurs when infrastructure and basic services are unable to keep in pace with the demands of increasing numbers of people and enterprises. Congestion effects, firstly, prevent the realization of a city's full economic potential. Secondly, they reduce the attraction of a city to knowledge workers. The presence of knowledge workers, however, correlates with the generation of income and employment for all people living in the city. Hence, agglomeration drives growths while congestion hinders it.

The potential for cities to create regional growths beyond their immediate boundaries depends on how there are integrated in their hinterlands and regions. In India, the hierarchy of settlements is highly skewed with a few large cities and many small villages. This is due, to an approach of city management that looked at urban development in silo, rather than understanding it as the interplay of a number of programs across spatial scales. In a balanced hierarchy of settlements, cities have a two-fold beneficial relationship between city and hinterland. Firstly, in an integrated network of cities, towns and villages spread effects of investments are higher which leads to greater regional equality. Secondly, a balanced network of settlements attracts knowledge workers which leads to further economic development.



National and state level policies for urban economic development

- Policy-making should visualize urbanization as a driver of economic development. Spatial planning should be integrated with economic and social planning. Policies should make operational the idea of rural-urban continuum and a balanced system of settlements. Spatial planning first needs to assess the carrying capacity of city regions determined by environmental, resource and infrastructure constraints (Sutra # 10).

Adequate Investment in skilled labor and local economic development

- Develop human capital in cities and surroundings (Sutra # 1) by paying adequate attention to link demand for jobs with skill development and vocational training initiatives. Enough space shall be created at the State and local level to address the existing skill gap in the housing- construction sector. Carrier counseling centers can be integrated with the ULBs to provide professional services. In larger cities, City Economic Councils can serve as a clearing house.

Empower and strengthen the role for ULBs in economic development

- The ULBs should be entrusted to provide social protection to informal workers (both policy and programme) with focus on women (Sutra # 1). Promote business improvement districts to improve markets, streets and

neighborhoods in collaboration with the formal/informal businesses (Sutra # 2 & 5).

Physical Infrastructure

Regarding, physical infrastructure, the NUPF focuses on developing environmentally, economically and socially sustainable infrastructure and public services particularly with respect to safe drinking water, basic sanitation and sewage, solid waste management. To this end, three elements need to be considered. Firstly, the current system of physical infrastructure provision suffers from a gap between revenues and costs. This leads to increasing economic losses for service providers as well as to deteriorating standards of the services themselves. Secondly, the miss-functioning system of public service provision has severe negative impacts on the environment. The lack of sewage disposal, for example, leads to the pollution of natural drains and rivers. Thirdly, a lack of public services worsens social challenges within cities. The shortage of public toilet facilities in slums, for instance, creates safety threats for women and girls.

Environment-friendly infrastructure

- In response to sutra 7, In an era of increasing natural resource scarcity and escalating impacts of climate extremes, physical infrastructure eco-efficiency

has vital implications for both economic and environmental sustainability. In order to reduce future carbon emissions, infrastructure needs to be designed and built to withstand future climate risks and with eco-friendly designs and construction methods in place from the outset.

- There is need to integrate economic, social and environmental considerations.
- Natural ecosystems to be recognized harnessed and leveraged as natural infrastructure systems within urban areas to enhance urban resilience.
- Designing and building infrastructure to withstand future climate risks and with eco-friendly designs and construction methods in place from the outset as well as to reduce future carbon emissions. Reduce energy demand through energy efficiency measures and renewable energy generation. Introduction and enforcement of energy conservation building codes.

Administrative Reforms to improve infrastructure delivery

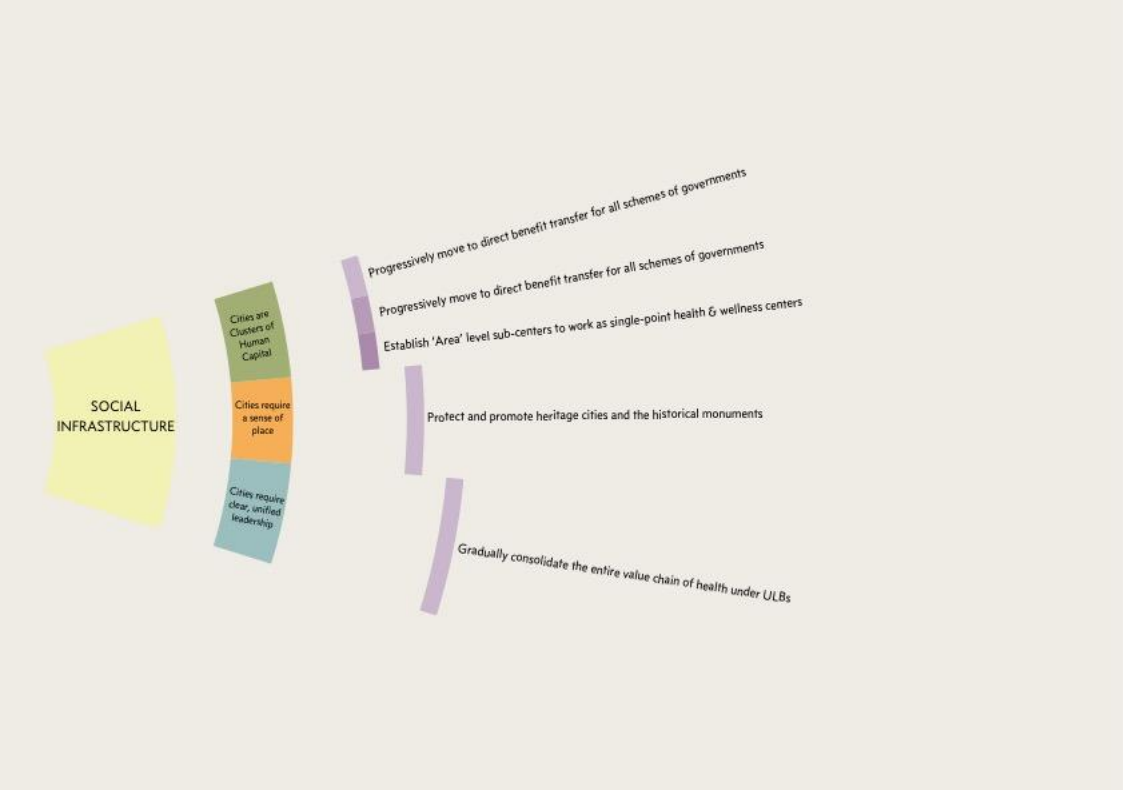
- Administrative Reforms should be introduced to enhance city level autonomy of urban local bodies in order to make them self- reliant and improve the infrastructure delivery. Performance based contracts to be used to improve efficiency and service delivery over a period of time. Special Purpose Vehicle (SPV) can be established at the city level. Formulation of policies and dprograms for rationalizing existing urban infrastructure systems and a decentralized approach to be followed with use of integrated digital technologies and Artificial Intelligence.
- There should be focus on stakeholder participation, effective people's participation and citizen awareness building.

Formulate policy and programs for efficiency and rationalization of existing urban infrastructure systems and ensure that services are available and accessible to all, affordable to all, safe to use for all including the poor, elderly, women and children.

- Freeze on sub-functions in water supply, sewerage and solid waste management to be done at the regional, city and ward levels. The goal should be on delivery of services to residents, not mere creation of infrastructure. Follow a decentralized approach by providing financial support to States for State-specific service improvement plans to achieve service standards.
- Flexibility will allow States to allocate financial resources as per their unique contexts.
- Decide on a model for solid waste management model for the urban local body (ies). In the integrated version all activities are done by a single agency and include, primary collection, secondary collection, transportation up to transfer station, treatment and disposal and reclamation.
- Use integrated digital technologies.

Social Infrastructure

Social infrastructures are the facilities that allow for the provision of social services such as education and health. They play an important role in an integrated approach towards poverty alleviation because spaces of urban poverty are not only deprived of physical infrastructure but also lack social services. Investing in social infrastructure is an investment in a city's human capital which on the long run will increase economic growth and decrease poverty levels. The focus of social infrastructure investments has to be on the most vulnerable groups of the urban poor, such as women and girls.



Integrated approaches to poverty alleviation

- Progressively move to direct benefit transfer for all schemes of Governments.

Health

- The entire value chain of health should be brought under the ULBs over a period of time. All urban local bodies should take health care closer to people and use AYUSH practitioners to provide preventive health care. ULBs should establish 'Area' level sub-centers to work as a single-point health & wellness centers. All ULBs should implement a health insurance scheme (e.g. *Ayushman*) to make healthcare affordable for all.

Education

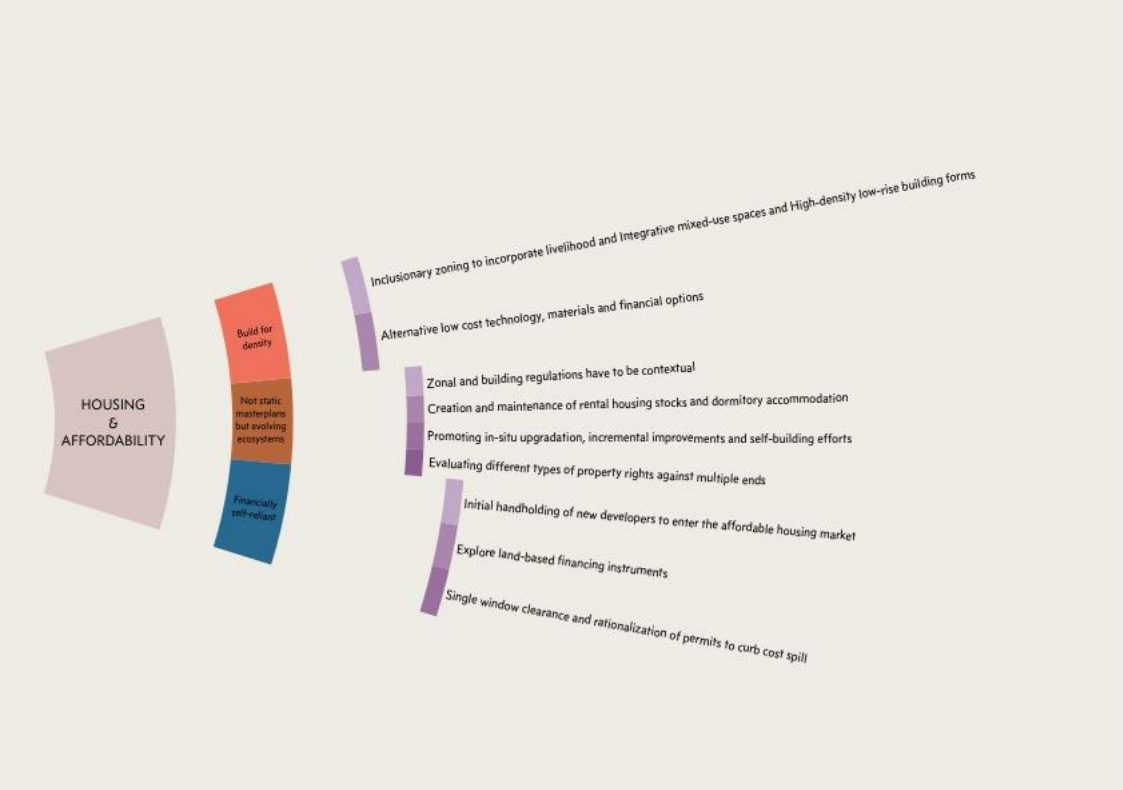
- Need based education services for the urban poor and other marginalized sections of urban society should be developed and life skills along with counseling services should be developed. Mechanisms to review the curriculum and pedagogy at different levels of education at a fixed interval should be put in place. Increasing use of digital technology to provide customized education services to children.

Culture and History

- Investment for protection and promotion of heritage cities and the historical monuments.

Housing and Affordability

India has a housing shortage of nearly 18.78 mn units. This number accounts for both homelessness and housing poverty (inadequate and vulnerable housing). Providing affordable housing to the urban poor is a highly complex challenge that cannot be addressed by either the state or the private sector. It demands for a multi-dimensional and multi-actor approach. The NUPF encourages state governments to consider various housing options and to explore different financial instruments.



- Housing programs and schemes for the urban poor should cover and include all categories of disadvantaged people. In-situ upgradation that reduces the physical and legal vulnerability of self-built housing must be part of any affordable housing

policy and should be focused on the incremental improvement of settlement. Different types of property rights must be evaluated against multiple ends.

- Reservation of land at the city, region, ward or even project level should be backed by special zoning allocations. Inclusionary zoning to incorporate livelihood and to create integrative, dynamic mixed-use spaces will increase access and mobility for low-income residents as well as bring their work into legality, allowing both access to finance as well as the possibilities of expansion and infrastructural improvement. Low-rise, high-density forms that have been successfully implemented before must be applied at scale within the new policy paradigm.
- Rental housing must be acknowledged and encouraged by policies and state policies should be designed to deliver and manage rental housing. Also create rental housing for long duration migrant population and dormitory accommodation with basic amenities for short-duration migrants close to the workplace. Support from local NGOs could be explored for accommodating the pavement dwellers.
- Viability Gap Funding (VGF or project finance) should be provided to encourage small and fresh developers to enter the affordable housing market.
- Governments should enable working and efficient single-window clearance systems for affordable housing projects.
- Availability of well-located and serviced land is critical to ensure a steady supply of affordable housing. Financial instruments underpinning affordable housing need to be made friendlier.
- Focus on alternative technology options that are low-cost and identification of appropriate new technologies.

Transportation and Mobility

The NUPF seeks to overcome the current state of urban congestion as well as unequal levels of mobility across social groups. To this end, the public transport system has to become accessible, affordable and efficient for all. This requires to place people, not vehicles, in the center of transport planning. Different modes of public transport have to be integrated into one system under a strong leadership, the Unified Metropolitan Transport Authority (UMTA). The broad objective is to promote public transport and Intelligent Transportation Systems (ITS) with proper provision for pedestrian and street infrastructure. It calls for internalizing urban transport as a key variable in urban planning exercises and establish institutional mechanisms and capacity building for better planning and management of transport systems.

- Expansion of cities and towns (if necessary) should prioritise high density mixed land use, with compulsory land allocation for public transport stops and depots.
- City and neighborhood development plans must compulsorily include suitable allocations with dedicated funds for the creation of street furniture such as footpaths, streetlights, etc. Road 'improvement' projects should not occur at the expense of footpath space or cycle tracks. Some design standards (e.g. DDA, IRCS) need to be followed in the construction and financing of footpaths and cycle tracks.
- Last mile connectivity should be ensured for all modes of transport.
- A UMTA must mandatorily be created across all Indian cities and towns with multiple modes of public transport and should have authority to make decisions on traffic flow planning, which is currently under the control of the traffic police.
- All future airports, buses, trains and metro stations should be designed in a way to ensure seamless transits for commuters switching modes, with both physical and information integration, particularly for women.
- Transport and stations should be physically accessible, particularly for the elderly, pregnant women and persons with disabilities.
- Multimodality should encourage feeder services to metro rail systems as well as how commuters can be encouraged to use the most efficient set of public transport options for their commute.
- Urban bus fleets in the country should be doubled within the next five years.
- Fiscal measures should be taken to discourage private vehicle use.

- Public bus operators should introduce Intelligent Transport Systems (ITS) into their fleets in order to monitor bus performance and revenue accurately.
- Bus route information and realtime data on bus running should be disseminated to commuters to simplify the process of journey planning through smart apps.
- Knowledge-sharing platforms should be created so that early adopters of ITS and other new technology can share their learning with newer adopters.
- Greater financial incentives should be provided to operators that embrace greener technology such as electric vehicles.

Urban Finance

Municipalities' sources of revenue are tax revenues, non-tax revenues, devolution of funds from the state government, grants from the center and state government for development schemes and borrowings. However, in most municipalities these revenues are not sufficient to cover their expenditures. The NUPF's long-term goal is to strengthen municipal finance in order to make cities as financially self-reliant as possible. It recognizes that there is little benefit of transferring responsibilities for services to local governments if they are financially too weak to effectively fulfill those responsibilities. Hence, it encourages for promoting innovative revenue mobilization techniques.

Legislative and Policy Changes

- All States to set norms for cities to meet their revenue expenditure from own revenue and minimum proportion of budget to be earmarked for capital works.
- Insert a 'Local Bodies Finance List' (LBFL) along the lines of the Union List and the State List.
- CFC/Central Government should provide guidance on the devolution on certain criteria.
- SFCs should be set up in time so that CFC has their reports for consideration in preparation of its recommendations.
- Strengthen SFCs by improving their capacity, and ensure that the state governments accept the recommendations of SFCs without major modifications.
- All States must have clear policy /law/guideline for PPP.

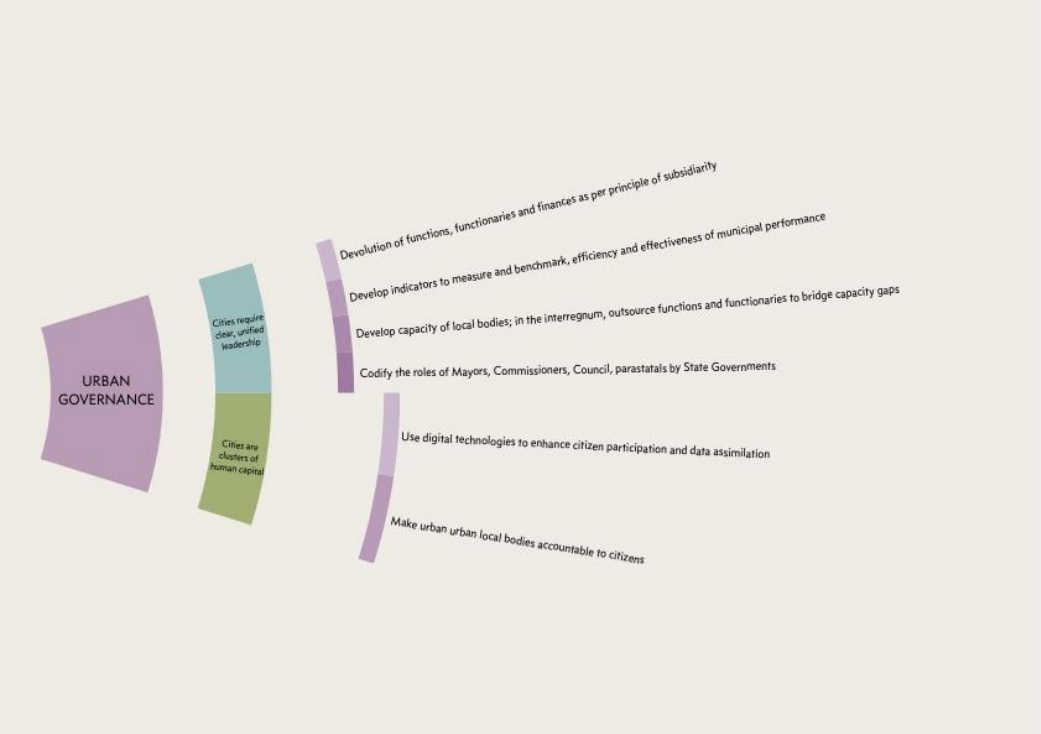
Revenue Mobilization Plan

- The base for property tax should be comprehensive with no exemptions.
- Information technology should be used for GIS mapping and linking departments, such as revenue and town planning.
- Profession tax should be collected and fully retained by the ULBs. In cases where the State Governments collect profession tax, the proceeds net of administrative costs should be entirely devolved to the ULBs.
- The user charges should be so structured as to at least meet the operations and maintenance cost of running the service.

- The Value Capture Finance Framework should be completely implemented by all the States and cities.
- ULBs who have been credit rated should implement revenue enhancement plans.
- Guidance and technical assistance to be provided for issue of bonds and introduction of PPP.
- State government clearances for ULB borrowing should be based on agreed principles and not on an ad-hoc project basis.
- Incentivize cities to invest in low-emission, climate-resilient infrastructure; encourage project preparation for mitigation and adaptation projects; and collaborate with local financial institutions to develop climate finance infrastructure solutions for cities, also known as green bonds.
- Improve procurement and contracting so that expenditure growth can be contained within targeted levels.
- There should be improved accounting system based on double entry and accrual system leading to better financial management and transparency. ULB accounts should also be regularly audited.

Urban Governance

Today, urban governance in Indian cities is often functionally fragmented and operationally inefficient with a power imbalance leaning towards state governments rather than municipalities. The principle of subsidiarity stipulates that functions shall be carried out at the smallest possible unit of governance and delegated upwards only if the smaller unit cannot perform the task. Hence, firstly, political power has to devolve to the citizens through institutionalized mechanisms of participation. Secondly, local governments have to be strengthened and unified with a codified role for the Mayor. Thirdly, local governments have to be accountable and transparent with respect to adherence to legal and financial rules, responsiveness to citizen's needs and the efficiency and effectiveness of their performance and operations.

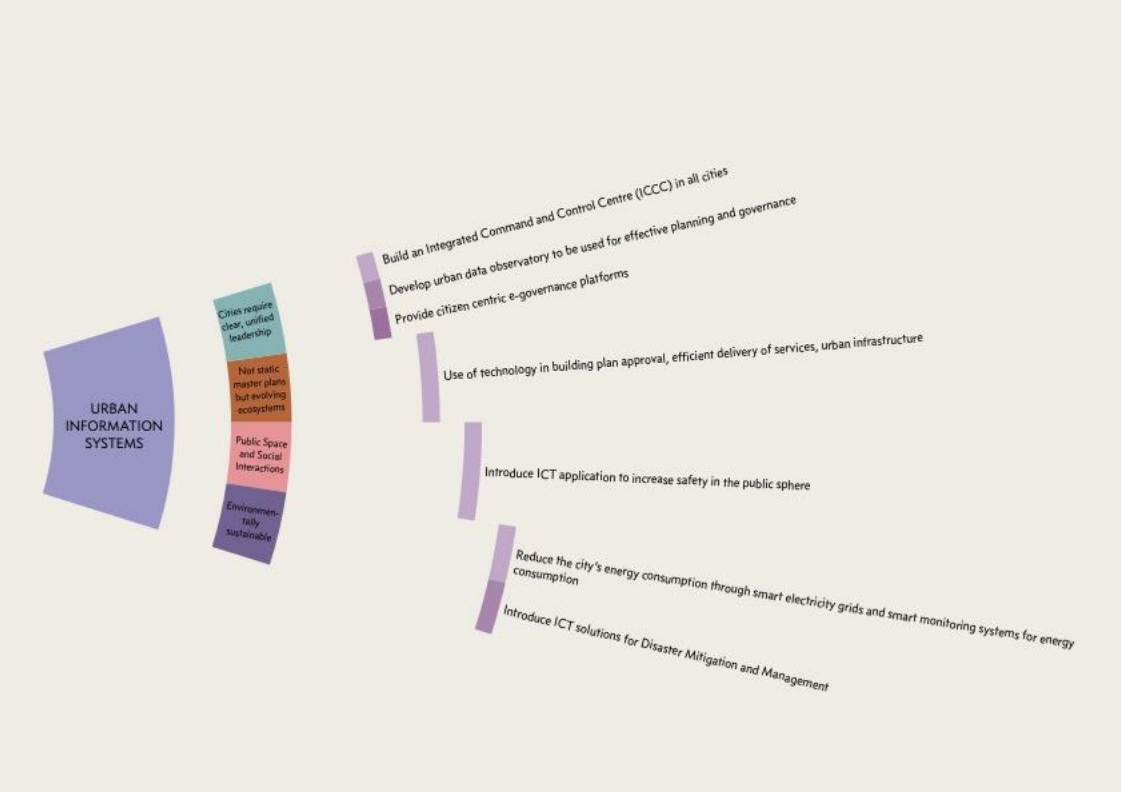


- The principle of subsidiarity should be used to devolve funds, functionaries and functions to different levels - ward committees/area Sabhas, cities and region.
- Responsiveness of municipalities will increase due to delegation of functions and giving power over municipal functionaries to ward committees/citizens.
- Municipal operations should be made transparent by, timely annual audit of accounts and other financial documents, regular internal audit.
- Indicators have to be developed for measuring efficiency and effectiveness of municipal performance (e.g. liveability) and benchmarked. Elected representative and municipal managers should be made accountable to achieve the targets set on the indicators.
- Participation should move beyond informing and consultation to delegation of power and citizen control. Digital technology has great potential to make this higher level of participation happen.
- Capacity of local bodies has to be developed. In the interregnum, outsourcing of functions and functionaries should bridge capacity gaps.
- A gender-sensitive approach to urban planning, management and governance would increase women's participation in the development of human settlement and improve the performance of cities in taking advantage of the urban potential for social development.
- Community Development Corporations should be encouraged in India focusing on providing affordable housing, economic development, operate health clinics, offer youth activities and after-school programs and run day-care centres and job training programs.

- States and cities should explore use of block chain technology for all existing land titles.
- Fragmentation of functions by codifying the roles of Mayors, Commissioners, Council, parastatals by State Governments.

Urban Information systems

Cities are a highly complex systems of systems interacting with one another in multiple ways. Conventional approaches to urban planning have ignored the value hidden in interactions across those systems - among citizens and between citizens and the city's infrastructure and the environment. All these interactions contain data. Digital technology has the potential to access the hidden value of this data to allow for the creation of development solutions which respond to the local context in an inclusive way incorporating the needs of all citizens.



Integrated City Centres

- Cities need to build Integrated Command and Control Centre (ICCC). A single citizen interface should be created where the data is available on GIS map and on-board the entire line department with mapping of their assets onto GIS.

Urban Planning and Management

- Complete disintermediation in the issue of building permissions, mutation and birth & death certificates by using technology.

- SCADA systems including smart metering solutions, water quality sensors, ICT-based solid waste management systems including digital smart bins, sensor based sorting, GPS tracking fleet, manhole sensors, etc., should address problems of physical infrastructure.
- Build and manage hierarchical databases by developing urban observatory as repository of data at town/ state/national levels.

Urban Mobility

- Urban transportation needs to be addressed through innovative ICT enabled applications and Intelligent Transport Systems (ITS) to provide more optimized and efficient travel.
- Mobility planning must consult diverse resident groups and ensure that all perspectives are accounted for.

Energy & Utilities

- Through smart electricity grids and smart metering for electricity, water and gas reduce the energy consumption.
- Deploying sophisticated monitoring and metering systems that allow energy to be highly efficient using Internet of Things.

Urban Safety and Security

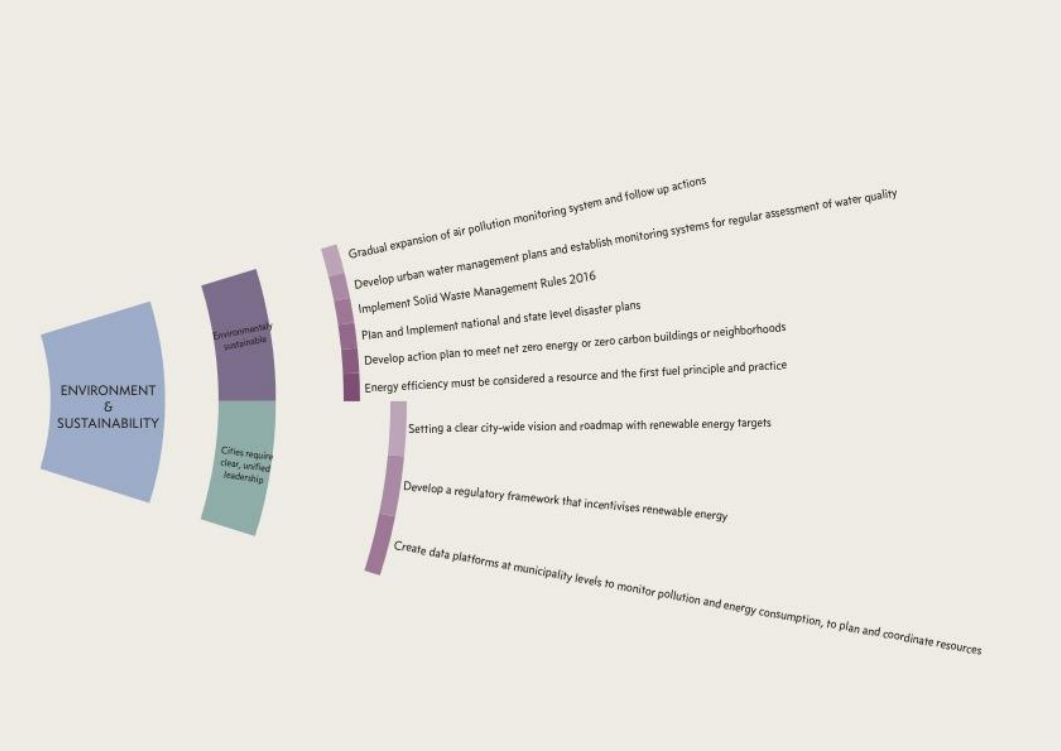
- ICT applications like Intelligent LED Street Lighting and Surveillance, networking of safety and security systems (CCTVs, police, traffic, etc.), across four stages: prevention, protection, response and recovery and video crime monitoring can help.
- Advanced ICT for Disaster Mitigation and Management is required.

Citizen services

- Providing digital platform for delivery of the citizen centric e-governance services along with mobile app.
- Develop a detailed standard operating procedure for Citizen Grievance redressal system including feedback mechanism to ensure resolution.
- Use of local language in accessing and transacting on citizen service portal.

Environment and Sustainability

The Government of India as well as the State governments recognize environmental sustainability as a key element towards sustainable urbanization and is a signatory to multiple international agreements. Nonetheless, cities are key contributors to many environmental problems such as severe air and water pollution, the generation of waste combined with the lack of a functioning disposal system as well as high levels of energy consumption. Making cities environmentally sustainable requires long-term integrated solutions for the urban planning system.



Urban air quality

- Gradual expansion of pollution monitoring stations across bigger cities as well as medium sized towns. Real-time sharing of AQI data to citizens though various channels with advisories and measures at different levels of risk coordinated by different state and local government agencies.
- Switching public transport and commercial fleets to CNG and Electric Vehicles using central schemes such as FAME. Facilitating cleaner fuel switch for industrial boilers and targeting 100% household LPG penetration. Bringing forward cleaner Bharat V automobile standards and phased rollout across the country. Phasing out of older vehicles. Stricter monitoring and enforcement of tailpipe emissions. Stricter monitoring and enforcement of industrial emissions, including those from MSMEs.
- Better maintenance and regular cleaning of roads and pedestrian areas, including improved garbage collection. Stricter monitoring of construction sites for dust control.
- Adoption of AQI goals in a gradually widening sub-set of cities, with progressive tightening of AQI targets over time.
- Increase in green space that includes forest/tree covers, parks, urban agriculture, roof gardens, etc.
- Lead investment and generation of energy from renewable sources.
- Develop and adopt scientific evidence based policy and practice in air quality management, sustainable transport, clean energy and urban development at city-level. Mandate city level targets for GHG emission reduction such as Rajkot, which has committed to reduce its GHG emissions by 16% in 2016. Include measures

like congestion charging and public transit/carpooling/active transport incentives to reduce congestion and resulting pollution.

Urban water resources

- Develop urban water management plans with a 5 to 10 year timeline to ensure safe and reliable source of water supply (including alternative water sources) by demand and supply forecasts, implementing drought-resilient water resources and a sustained emphasis on water-use efficiency. Prepare action plans for sewage management, restoration of water quality and establishing monitoring systems for regular assessment of water quality in water bodies.
- Compulsory rainwater harvesting and ground water recharge on private and public properties.
- Protect natural water sources such as lakes and wetlands within urban jurisdiction. Adopt urban water management measures such as development of integrated water resource information system.

Solid waste

- Implement Solid Waste Management Rules, 2016. Incentivize private sector participation in successful recycling and waste-to-energy systems. Promote concept of circular economy.
- Pilot community-based integrated resource recovery centers, which have proven to be an effective solution for many cities in the region. Encourage manufacturers to take on greater role in waste management and recovery and promote extended producer responsibility (EPR) principles in waste management rules. Pilot new technologies burning solid waste with generation of high-pressure steam as a by-product, which is then used as an alternative energy source for nearby communities.

Disaster Risk Reduction and Resilience

- Plan and implement national, state and local level disaster plans. Institute selective planning and administrative systems to prevent development on vulnerable and disaster prone areas.
- Establish monitoring and review platforms to identify and map hazards and risks to develop vulnerability and risk profiles of cities, which are publicly available. Invest in climate-proofing critical infrastructure as a priority. Strengthen the technical and financial capacity of local bodies and municipalities by creating national risk financing tools and partnerships with national and local institutions. Acknowledge the local-area level as the smallest scale of disaster risk-reduction planning.

Energy

- Develop action plan to meet net zero energy or zero carbon buildings or neighbourhood targets through policies & regulations, financial mechanisms and incentives. Energy efficiency must be considered a resource and the first fuel in principle and practice. Introducing innovations in EE technologies for buildings

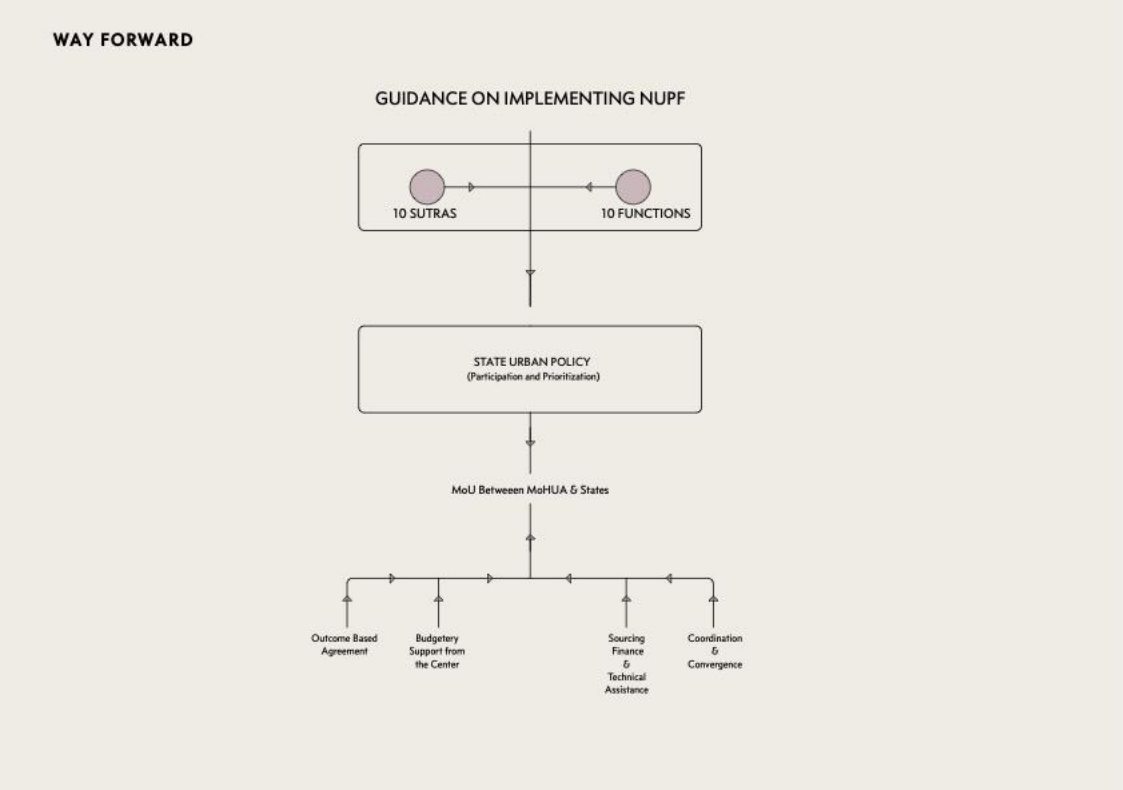
through challenge programs. Introduce municipal level energy efficiency improvement goals for different sectors. Business models for affordable energy efficient products and services. Incentivize local/vernacular solutions to improve energy efficiency.

- Setting a clear city- wide vision and roadmap with RE targets. Promote rooftop solar deployment through aggressive awareness programme, adequate financing and enabling policies for the residential customers. Address the barriers of rooftop solar deployment in the MSME segment. Facilitate the third-party procurement and sale of rooftop solar power through enabling policies and regulations for industrial clusters.
- Develop integrated plans to use both heat and energy generated from urban wastes and introduce mandatory targets for urban centres to use this resource to ensure sustainable consumption.
- Assess the potential and develop roadmap for different Tiers of cities on waste to energy.
- Plans to use heat generated from urban waste in economic production process. Explore other options available to cities to achieve their renewable energy goals. For example, District Energy/Heat/Cooling, Wind power, geothermal power, hydroelectric power, etc.
- Create data platforms at municipality levels for different parameters of energy consumptions and generation within fixed timelines, and develop recognition programmes for better performers.
- Develop best practices guidelines based on experiences from across the world on data sharing frameworks for municipalities in different Tiers of cities in India.
- Develop integrated resource planning frameworks for urban centres in India to meet long term energy requirements. Better coordination between energy departments and other departments.
- Involve stakeholders like energy efficiency agencies, RE producers, DISCOMS, consumers for planning.
- Regulatory framework that incentivizes decentralized renewable energy generation and allows consumers to trade, to sell and buy renewable energy generated off-site.
- Develop procedures for transparent disclosure of regularly updated reliability indices.
- Develop and implement plans for reliable energy supply to the city. These plans must be transparent and regularly updated to factor in changing scenario.

Next Steps / Way Forward

The NUPF recognizes the fact that urban development is a State subject. Hence, the States need to develop their respective State Urban Policies including Implementation Plans based on this framework. The Center will support the development and implementation of State Urban Policies based on the framework directly and shift away from top down central schemes.

- MoHUA will initially identify a couple of willing States to develop State Urban Policy based on the NUPF. These can then help to draft State Urban Policies across the country and thereby strengthen cooperative federalism.
- Based on that States should sign an MoU with MoHUA to implement State Urban Policies
- The respective State Urban Policy will have transitory provisions to build on the components and benefits of the ongoing GoI and state Flagship programmes (i.e. Smart Cities, AMRUT, Swachh Bharat, and Housing for All etc.). States will have flexibility to align the ongoing mission's and programs to achieve the objectives of State Urban Policy
- Based on a MoU between the MOHUA and the States, the GOI can assist the States in sourcing/organizing international Technical Assistance funding (i.e., World Bank, ADB, UN-HABITAT, USAID, GIZ etc.) to support implementation of the State Urban implementation plan.



Chapter 1

Introduction

It is widely recognized that India is urbanizing at a moderate pace. Even though the rate of urbanization varies regionally, India will become an urban majority country within a generation. This tipping point of India's urbanization process is likely to be one of the most significant human event of the next ten years. Yet, despite many efforts, India's cities are struggling to provide for their current population. Hence, there is an urgent need to revisit the country's urban strategy, including questioning some deeply embedded assumptions about urban problems and their solutions.

India's response to urbanization recognizes the international benchmarks as laid out in the Sustainable Development Goals (SDGs), the Paris Agreement on Climate Change and the New Urban Agenda (NUA). Given the growing importance of the urban sector over the past few years, India has stimulated the this sector by launching six new missions: Atal Mission for Rejuvenation and Urban Transformation (AMRUT); Pradhan Mantri Awas Yojana (PMAY) - Housing for All (Urban); Smart Cities Mission (SCM); Swatch Bharat Mission (SBM); Heritage City Development and Augmentation Yojana (HRIDAY) and Deen Dayal Antodaya Yojana – National Urban Livelihoods Mission (DAY – NULM) along with schemes and programs to improve urban mobility. The missions are aimed at improving the quality of life in urban areas. Integrated within the missions (AMRUT and PMAY) is a set of accompanying reforms, which aim to provide and improve urban services. Building both on the international frameworks as well as the national missions, the National Urban Policy Framework (NUPF) outlines an integrated and coherent approach towards the future of urban planning in India.

The NUPF is not an attempt to provide a detailed, top-down guidebook for how to build and manage Indian cities. It recognizes that most urban issues are under the jurisdiction of States or Urban Local Bodies and that solutions must be customized to the local context. One of the starting principles of NUPF 2018 is that the imposition of a standardized, tightly codified prescription is not desirable. Instead, the document presents a new way of thinking about Indian cities, which significantly departs from the earlier intellectual frameworks that still drive our thinking about urban planning. Accelerated job creation emerges as a key issue in planning for India's urbanization within the larger context of its growth and development.

The NUPF is structured along two lines. Firstly, at the NUPF's core lie ten sutras or philosophical principles. For each sutra, two illustrations are provided in order to show how the new principles play out in practice and how the ideas are different from the existing approach (but internally connected with each other). It is understood that the application of these *Sutras* will lead to somewhat different urban outcomes in different parts of the country. This plurality is part of what is being attempted by replacing a view of cities as *machines for living* with one that sees them as evolving ecosystems.

Secondly, the ten sutras are applied to ten functional areas of urban space and management. Within each functional area, the status quo and its challenges are analyzed, key priorities are formulated

and specific possible actions points suggested. Illustrations from India and around the world feature best practice examples as an orientation.

The ten pillars are:

1. City Planning
2. Urban Economy
3. Physical Infrastructure
4. Social Infrastructure
5. Housing and Affordability
6. Transportation and Mobility
7. Urban Finance
8. Urban Governance
9. Urbanization and Information System
10. Environmental Sustainability

The NUPF is the foundation for individual and strategic urban polices at the state level. Building on this framework, each state is expected to design a state policy on how to take urbanization forward paying respect to the local contexts. Since the NUPF does not enter into a policy vacuum, state policies moving the NUPF forward need to be coordinated with existing national and state level policies and create synergies with the planning system in place. Each state individually needs to classify its cities, explore trade-offs between sutras in the specific context and take advisories issued by the ministries into account. The states should also draw from URDPFI guidelines (2014) and any other knowledge products which help to strengthen their state policies.

The NUPF is not simply a template for urban policy at the state level. It is rather an integrated, coherent and well-structured outline of a new approach towards understanding city space, urban life and the management of space. It sets out out focus areas of future urban development and highlights engines for economic growths. In parts it follows the principle of loose fit, light touch at other parts it is more concrete on specific actions suggested depending on the degrees of freedom the states have on a particular urban issue.

Linkages between the 10 Sutras and ten sectors (pillars) are explained in annex power point presentation (Annex 2). Considering the diversity of sutras under the new philosophy of India's NUPF, it will be crucial to establish a mechanism to coordinate work on all pillars and sutras in an integrated and participatory manner to assure effective and efficient implementation of the NUPF. In order to support the states in formulating strategic urban state policies, the Center will set the institutional framework in place that is needed to implement suggested actions and develop models and guidelines to facilitate the implementation of these actions. Furthermore, the Center will incentivize the NUPF's implementation through means of budget allocations.

New Philosophy for India's Urban Policy: Ten Urban *Sutras* (Philosophical Principles)

Urban *Sutra* # 1: Cities are Clusters of Human Capital

Current Indian urban thinking views cities as large mechanical systems for the production and consumption of built space. This means that a city is primarily seen as a collection of buildings, roads and other forms of hard infrastructure. As a result of this approach, Indian urban planning is mostly about imposing land uses –'residential', 'commercial', 'industrial', 'recreational', public' and so on). The new framework hopes to reimagine cities as clusters of interconnected and interacting human capital.

The principle here is that cities need to invest in their clusters of human capital – which vary as per the economic and social context of a particular city. Thus, the success of urban planning and management should be judged from now in terms of the ability of a city's hard and soft infrastructure to enable the agglomeration of human capital, and to enhance socio-economically productive interactions.

One advantage of focusing on people instead of buildings is that we can break down the silos between economic, cultural, social and physical aspects of urban life. Granular division of city level statistics and their analysis can inform policymaking and target the issues more accurately. Instead we can take an integrated view of issues such as quality of life, safety, social vibrancy, social mobility, education, health, wellbeing, gender responsiveness, heritage and so on. Urban poverty, for instance, becomes a dynamic social mobility issue rather than a static "slum removal" problem. This approach will also help to make cities more inclusive.

Illustrations for *Sutra* #1

- **Socio-Economic Mobility:** The current urban framework looks at urban poverty as a static state of deprivation. Thus, slums are seen merely as a housing and lack of access to basic infrastructure problem. By re-orienting the framework to human capital agglomeration, we can look at urban poverty as a "flow" of aspired people who want to climb the socio-economic ladder, as opposed to locking people into a given level. Urban policy should be about enhancing the ladder and providing flexibility to move within and between settlements. Thus, affordable and well-located rental housing becomes just as important as encouraging home ownership.

- **Using Universities as Urban Drivers**: All great cities in the world are also home to great universities (Boston, London, New York and so on). This is not surprising as universities are an obvious way to agglomerate human capital. This was also true of pre-independence India when institutions like Benaras Hindu University, Aligarh Muslim University, Hindu College (Calcutta), etc. formed the genesis of city development. However, after independence, universities and other institutions like the IITs have typically been walled off from host cities or built in remote

locations. Thus, Kharagpur and Kanpur do not benefit from being host to leading hubs of higher learning. The new framework will explicitly encourage the policy-makers to think of educational institutions as an integral part of the urban ecosystem.

Urban Sutra # 2: Cities require a 'Sense of Place'

One of the hallmarks of post-Independence urban development in India is a uniform urban and architectural form (mostly derived from mid-20th century Western modernism) that is unaffected by regional diversity, climate, geographical landscape, culture and history. Contrast this with the wide variety of urban and architectural forms that existed during pre-colonial and even colonial times – the temple-towns of Tamil Nadu, the port cities of Kerala and Gujarat, the capitals of princely states, hill-stations, colonial civil lines, Mughal walled cities and so on. Plurality is the essence of Indianness. Urban design should be responsive to place and context, thereby reinforcing the connection with how Indians live and work, rather than be dominated by generic international models. Sadly, Indian cities have neither conserved the older parts of the city nor produced vibrant expressions of modernity in their own contexts.

The principle is to pay attention to the unique "sense of place" which is critical for civic identity and pride and to adopt planning and urban design that derives from location, socio-economic context, culture and history.

Illustrations for *Sutra* #2

- **Conservation of historic districts:** Till now, the older parts of the city are seen as a problem by civic authorities as they are congested and have aging infrastructure. The solution was often to demolish and "modernize". However, we should now see the old parts of the city as key to the identity of the city and should invest in them. Furthermore, historic districts and cultures contribute to social identity of the community, and foster social cohesion and sense of belonging. If an area has narrow roads, the solution often may be to pedestrianize rather than widen the road for cars (obviously, the exact solution depends on the specific context). The recent upgrade of the area around the Golden Temple in Amritsar is good illustration of how older parts of the city can be revitalized. However, one should also think in terms of creating new iconic buildings and urban spaces.

- **Form-based codes:** Rigid zoning and excessively prescriptive text-based codes heavily influence urban forms and architectural outcomes in India. Moreover, these codes are usually standardized irrespective of the local context. One solution is to move away from land-use and text-based controls, to form-based regulations (i.e. from textual to visual). This will shift the emphasis of urban planning from setback requirement, plot area, limits on building heights, etc.

to site design and building form as it relates to street-scaping and adjacent uses to create an appealing place. Interestingly, the 18th century urban planning of Jaipur is good example of form-based urban planning and retains a distinct sense of place to this day.

Urban Sutra # 3: Not static Master Plans but evolving Ecosystems

The dominant tool of managing urban development in India has been that of master planning, which prescribes land use and densities. Master planning is a static concept. In a rapidly urbanizing country, physical planning has to be dynamic, adaptive, iterative and continuous process of anticipating population dynamism and managing socio-economic changes taking place. Town planning practices in India are based on principles and models of the West. The West did not grapple with the problem of rapid urbanization on the scale India is now facing. The emphasis of urban planning has to shift from land-use planning to guiding complex, inter-related processes of socio-cultural, demographic and economic change.

A city consists of many systems (i.e. energy, transport, water supply, waste management, education, heath, commerce, socio-cultural activity, etc.). These systems interact and form an evolving 'system of systems', which generates complexity in cities. The ecosystem approach views the city as being more than the sum of its parts. Contrast this with the old approach that insisted on neatly zoned silos. Thus, the new approach is much more sympathetic to mixed use, and adapting to changing use patterns. Notice how this sutra connects both to Sutra #1 encouraging human capital agglomeration and Sutra #2 on the importance of context.

The principle is to deal with cities as evolving, organic ecosystems, with greater attention to the series of transitions that the city undergoes over time. Mixed and changing land uses are considered a natural part of urban management.

This approach implies constant feedback-based adjustment. Data science and GIS are necessary tools for dealing with the system-of-systems approach. However, active leadership and public participation are crucial to the success of such an approach.

Illustrations for *Sutra* #3

- **Re-deploying derelict urban spaces:** Most Indian cities have significant urban spaces stuck in outdated uses such as derelict industry, unused port, and defunct institutions so on. These are important resources that need to be re-deployed for the use of the city rather than left to fester in some hope that the old uses will somehow revive. The socio-economic needs of a city evolve and land use should seamlessly evolve along with it (except where there are environmental or cultural reasons for preservation).

- **Mixed-use clustering:** Over the last fifteen years, Singapore has deliberately clustered a wide range of activities in its city center in order to create a buzzing urban concentration. This includes a new business district, malls, residential towers, a casino, new management university, sports hub, theatres, botanical gardens, re-using heritage buildings as museums, integrating informal sector and even a Formula One track. Contrast this with how Indian planning has

traditionally seen mixed use as undesirable and messy. This silo approach meant that Delhi-NCR's response to hosting a Formula One event was to build a dedicated racetrack while Singapore just used its existing city roads.

Urban Sutra # 4: Build for Density

Almost all Indian cities are crowded and congested, especially in the historic core of the city. The response so far has been to "decongest" by limiting density through Master Plan, which has proved to be both ineffective as well as expensive. The old approach has led to the development of far-off suburbs. In turn, this has created urban sprawls that use up a lot of land, and put a heavy burden on infrastructure systems that have to cover a much larger expanse than is necessary or feasible. This is also linked to increasing commute times and traffic congestions.

The principle is to anticipate and accommodate density. Proximity to transit or to clusters of human capital naturally attracts higher densities. In new areas, in particular, infrastructure should be pre-built to accommodate high density. International experience shows that if sufficient infrastructure is installed, even dense urban environments can support a high quality of life.

Illustrations for *Sutra* #4

- **Density is critical for Public Transport:** Allowing higher density is not just an expedient solution for the problem of accommodating a large number of people, it is critical for efficiently running many forms of infrastructure such as public transport and allowing for efficient and safe non-motorized transport options. The efficiency and economic viability of safe and accessible public transport systems get severely compromised by urban sprawls. Indeed, multi-modal public transport systems are directly predicated on urban density in order to provide enough throughputs for the network (See *Sutra #6*). This is even truer for a world where we may be sharing and renting transportation solutions using digital platforms.

- **Density is not bad for Quality of Life:** The current Indian approach views decongestion as the best way to improve Quality of Life. This may be a leftover of the colonial era disdain for the Indian bazaar in contrast to the ordered civil lines of British rulers. However, some of the most successful 21st century cities in the world are very dense – Hong Kong, Shanghai, Tokyo, New York and so on. The issue is whether or not the infrastructure can support the density. This is why Indian cities should build the infrastructure for density (incidentally, it is much cheaper to build a concentration of infrastructure than build the same spread over a large area). Note, however, the desired level of density will depend on context (*Sutra #2*); the optimal density will be very different in Mumbai and Allahabad, and may be different for different parts of the same city. It is needless to say that Floor Space Index (FSI/FAR) regulation should be linked with infrastructure investment. In Seoul, as in New York and Singapore, city planners have been very selective in designating FSI levels so that they are closely aligned with infrastructure (mainly

transit capacity but also water and sanitation, pedestrian flows) and policies to develop commercial as well as mixed commercial and residential activity centers[1].

Urban Sutra # 5: Public Spaces that encourage Social Interaction

Cities exist because people value direct social, cultural and economic interactions. We need to design for public spaces that encourage such interaction between all people; both intended and planned as well as those that happen by chance. Thus, we need to think beyond the first order uses of parks, bazaars, places of worship, sports clubs etc. They all have an important second order role as places for social interaction and inclusion. We need to actively design for encouraging and supporting this interaction.

Importantly, we need to think of people-to-people interactions from an Indian social perspective. The blind application of Western urban thinking tends to overlook the way in which Indian social interrelationships function (note link to *Sutra* #2). For instance, neighborhoods need common spaces where all people can come together for celebrations, recreational activities and community. They also need to allow for interpersonal relationships that define Indian daily life – the local tailor or shopkeeper, street vendors, the evening gossip under the tree and so on. A shopping mall is only a part replacement for this.

The principle is that we need many shades of safe and accessible public spaces that encourage people to interact with each other. Moreover, we need to think of these spaces specifically for the Indian social context. In addition to meeting and recreational space they provide nature-based solutions, including air purification, reducing heat island effect and harvesting of rainwater.

Illustrations for *Sutra* #5

- **Varanasi Ghats:** There are many kinds of public spaces that encourage social interaction – public parks, public transport hubs, markets and so on. However, riverside Ghats are uniquely Indian example of such a space. The Ghats of Varanasi attract a wide variety of people and activities – tourists, pilgrims, boatmen, sadhus, and kids playing cricket, locals taking walk in the evening and so on. Indian cities need to create more such spaces that are open to all and provide a safe, accessible and enjoyable space to meet other people.

- ***Nukkads***: All successful societies create semi-public spaces where people build personal relationships or simply linger. Paris has its sidewalk cafes, London has neighborhood pubs, and Singapore has local Kopitiams. The "nukkad" is the Indian equivalent of such place making and comes in different regional forms – the Kolkata "para" or the "pol" in Ahmedabad. The *nukkads*

[1] 'Urbanization beyond Municipal Boundaries', World Bank, 2013.

provide for spaces that encourage residents to interact with each other and foster relationships through sports, celebrations, leisure, etc. Unfortunately, urban planners currently have not accounted for this aspect of Indian social life although it can be easily reinserted with minimal design effort. Notice how this illustration is linked to Sutras 1 to 5.

Urban Sutra # 6: Multi-modal Public Transport Backbone

Transportation is necessary for economic activity, social life and self-fulfillment of the city-dweller. The exact modes of transportation used in a city will depend on its size and the diversity of its socio-economic profile. The existing paradigm aims to make individual modes of transport, usually cars, more efficient in silos. Multi-modal approach, in contrast, is not merely about an emphasis on public transport but also about interchangeability. No single mode of transport is emphasized at the expense of the wider system. The introduction of new transport technologies is seen as a way to add to the richness of transport options. Nonetheless, this approach does give 'safe and accessible walkability' a special place because it is the most widely used means for interchange (the first and last mile of virtually all public transport system is walked) and the most accessible mode to every population, provided that it is well designed to support people of all abilities.

The principle is to promote multi-modal public transportation and walkability in the city. The diversity of transport solutions and interchangeability is the key, and must be tuned to the needs of the specific urban context. Note that public transport has been included as a Sutra even though it is also a functional area. This is because it provides the backbone that hardwires many other urban activities.

Illustrations for *Sutra* #6

- **Multimodal Interchangeability at Metro Stations:** Many Indian cities are now building metro stations. Delhi, for instance, now has a fairly well articulated network. However, when one exits a metro station, there is usually a gaggle of confusion – taxis, auto/cycle rickshaws, waiting cars, hawkers and so on. Moreover, there are often no proper pedestrian or cycling facilities for those who wish to walk short distances. No amount of improving the metro services will substitute for the hassle of connecting the last mile. This is why urban design must map out and manage this aspect of multimodal transport. The amount of funds required to improve this are likely to be small, but the impact will be very large. This is also a great opportunity to incorporate new forms of transport such as digital sharing platforms.

- **Pedestrian and cycling networks:** Indian urban planning tends to give very low priority to pedestrian networks even though they are critical to all public transport system (indeed, "road widening" is usually a euphemism for reducing space for pedestrians). Note that pedestrian facilities are not merely about footpaths but also crossings, signage, lighting, safety and so on. It is often said that India's warm climate is somehow an impediment to walkability. Any evidence does not support this assertion. Singapore has excellent pedestrian networks despite its hot and humid weather, whereas Bangalore is arguably a difficult place to walk despite its cool weather. Similarly, in many cities in Europe, people use bicycles to commute short distances, which are not only healthy but also an environment-friendly option. The point is to design safe, accessible and useable walking and cycling infrastructure. For instance, density (*Sutra #4*) has a real

impact on the viability of walking as a mode of transport and densely packed urban landscapes should give preference to walkability over all other forms of transport.

Urban Sutra # 7: Environmental Sustainability

Environmental sustainability is both a Sutra as well as a functional area. One cannot emphasize enough the need to design and manage cities in a way that minimizes the impact on water resources, energy resources, land use, carbon footprint and air quality. Moreover, environmental sustainability in planning improves air quality, access to clean water resources, and reduces likelihood of illnesses from endocrine disruptors. Note how these are closely linked to some of the other Sutras such as Density (Sutra # 4) and Public Transportation (Sutra # 6). Disasters affect the poor and marginalized in vulnerable situations disproportionately and thus require a more sensitive, inclusive and accessible risk reduction framework.

An additional factor that is often forgotten is resilience and mitigation to disasters, multi-hazard disaster risks, and impact of climate change. Note how this requires awareness of the geographical and geological context, and a willingness of urban planners to conduct appropriate risk profiling and early-warning strategies. Note the contrast with the current approach of imposing Cartesian order and standardized grids on non-linear natural landscapes. Strengthening good governance in disaster risk reduction strategies, improving preparedness and coordination at all federal levels, and building capacity is essential. **The principle is that city planners and managers must adapt to the local environmental landscape. This requires local knowledge and can benefit from digital mapping and satellite imaging technologies.**

Illustrations for *Sutra* #7

- **Protecting water bodies and drainage contours:** One of the major failures of Indian urban planning is the failure to protect water bodies. This is why Bangalore, a city once surrounded by lakes, wetlands and tanks, is now witnessing a serious breakdown of its water ecology. Chennai has repeatedly experienced floods in newly built areas that had ignored old water channels. Some of this happens due to unscrupulous private encroachments, but a large part of the problem is that Indian urban planning is rarely concerned with the natural contours in its rush to impose Cartesian grids on non-linear landscapes. Thus, cities in the Deccan plateau are often seen destroying rock outcrops that are an integral part of the natural landscape in order to force through straight roads.

- **Reviving the art of indigenous horticulture:** The choice of trees, as well as the design of green spaces is an important aspect of town planning. Pre-colonial and colonial era city managers have emphasized on this but it has now disappeared from the urban design conversation in India (although it is common in the rest of the world). It is important that this art is revived, especially given issues such as heat island effects and water run-off. In particular, the choice of trees must be tuned to the local ecological context. For instance, today's public parks and green spaces put too much emphasis on grassy lawns, which use excess water and derive an imported aesthetic.

In India, parks should be more about shady, native trees. This fits with the traditional Indian "*vatika"* which were about combining large trees and water bodies, rather than maintaining open lawns for e.g. Rabindra Sarovar Lake, Kolkata.

Urban Sutra # 8: Financially Self-Reliant

City governments have traditionally been dependent on higher levels of government to provide them with funds, even to undertake the most fundamental tasks of public service delivery. This has distracted cities from leveraging their local assets for generating economic activity and capturing revenues.

The principle is to encourage cities to leverage their local assets including community savings to generate more financing and revenue sources. The whole range of options needs to be explored from user charges to municipal bond financing to diverse methods of value capture financing.

It should be noted that the starting point of financial self-reliance is a transparent and up-to-date set of accounts. Once these have been established, it becomes much easier to both leverage local resources as well as draw on funds from Central and State government schemes.

Illustrations for *Sutra* #8

- **Leveraging local tourist spots:** Many Indian towns host tourist spots – these may be places of historical value, natural beauty or perhaps a popular festival. With the exception of the most important monuments, however, the bulk of local tourist spots in India suffer severely from negligence. Municipal governments need to step in to impose user charges, leverage (and control) commercial activity, and take responsibility for maintenance. This will not only generate revenues, but will also introduce some sense of local ownership. Note that the legal ownership of the tourism asset, especially when it is a historical monument, is often with the State or Central Government. There is a need for better coordination between the municipality and higher levels of Government in order to look after and leverage revenues from such assets.

- **Municipal Bond Markets:** Municipal bond markets are a very important source of financing across the world. However, despite recent experiments such as Pune and Ahmedabad, India still lacks a vibrant municipal bond market. There are many factors inhibiting the growth of the market. The poor record of the legal process in enforcing contracts also means that investors will remain wary of what would happen if a municipality cannot or will not meet debt service obligations. There are also bottom-up problems in many municipalities such as the lack of a reliable set of accounts. Note that these matters are not new and have been discussed for years. Unlike some of the illustrations for other Sutras, this is not about changing urban strategy or philosophy, but about systematic implementation.

Urban Sutra # 9: Cities require Clear, Unified Leadership

Urban governance requires both vision and internal co-ordination. This is particularly true when we are arguing for a shift from a standardized top-down approach to one that is more attuned to local context (Sutras 2, 5 &7) and where possible, bottom up based on the principle of subsidiarity. Unfortunately, Indian cities have a multiplicity of agencies and administrative nerve centers, often working at cross purposes or duplicating effort. The challenge is to attenuate the dispersed veto power of the various power centers so that urban managers can make effective decisions and trade-offs.

The principle is to implement urban governance structures that empower a unified and clear leadership, and reduce the multiplicity of decision-makers. In addition, give a voice to those 'unheard' to promote universally accessible and equitable response.

This leadership could take the form of a Mayor or a suitably empowered municipal functionary. The 74th Amendment has created the general framework, but individual States (or even particular cities) should develop suitable governance solutions that resolve this issue.

Illustrations for *Sutra* #9

- **Multiplicity of Authorities:** Agra provides an example of fragmented responsibilities within the water supply sector itself with division between the Jal Nigam and the Jal Sansthan. Further, when it comes to the provision of this service to the slum dwellers, other organizations such as the State and the District Urban Development Authority comes into the picture. However, as per the Municipal Act, this function should be under the Agra Nagar Nigam (ULB). Similarly, the PWD, the Agra Development Authority and the Nagar Nigam are responsible for different roads in the city. This level of dispersion of power is bound to interfere with governance.

- **Why do some cities work:** The City Charter of New York City provides for a strong "mayor-council" system and empowers the Mayor, as head of the executive branch, to appoint or remove any unelected officers, to prepare city budget, and administer all city services, public property, police and fire protection, most public agencies, and enforces all city, state and federal laws within New York City. Similarly, in the city of Seoul, strong leader in heart of the city drives multi-disciplinary urban renewal by leveraging stakeholder conflict, effective civic personal collaboration and massive public engagement and participation.

Urban Sutra # 10: Cities as Engines of Regional Growth

For much of the post-independence period, urbanization was seen as a necessary evil that may be tolerated but not quite encouraged. As a result, overconcentration of urban growth happened in the larger towns (specifically four metros) and the imbalance in urban hierarchy existing at the time of India's independence got magnified both in spatial and socio-economic terms. However, cities are now actively seen as engines of economic growth and centers for job creation, not just for themselves but also for the wider region (examples, Delhi-NCR, Mumbai-Pune, Bangalore-Chennai, etc.). This means that we need to think of how specific urban nodes connect to their urban and rural hinterland.

The principle is that an interconnected urban network, often driven by a large central node, can generate and sustain high rates of economic growth.

This Sutra extends the idea of a city as a bubbling, ever-changing ecosystem of various socio-economic activities (Sutra #3), and puts it in a wider regional ecosystem. This means that urban policy is not a passive response to urbanization, but an active strategy for creating interconnected and interdependent network of urban centers for employment generation and economic development.

Illustrations for *Sutra* #10

- **Using Kolkata as the engine for East India:** It is not uncommon across the world to witness interconnected urban networks dominate economic activity: the Hong Kong-Macau-Shenzhen cluster in China, Boston-New York-Washington and the San Francisco-Silicon Valley in US and so on. In India, there are regions such as Delhi-NCR, Mumbai-Pune and Bangalore-Chennai. The impact of these hubs is felt far from their immediate vicinity. Delhi-NCR, for instance, impacts economic activity in Jaipur, Chandigarh, Dehradun and Agra. This framework would suggest that the key to stimulating higher economic growth in eastern India lies in driving Kolkata as a hub and investing in connecting it more strongly to Ranchi, Patna, Bhubaneswar and Guwahati. This is a fundamentally different perspective from seeing each of these cities in isolation.

- **Smaller towns as rural growth engines:** Urban centers, small or big, are connected to its rural hinterland in many ways. The city will usually buy food; provide jobs, and services such as medical care and education. The nature of connections tends to be different for large and small towns with the surrounding settlements. In the poorer parts of the country, the quickest way to improve the lives of the people is to strengthen the network of urban and rural settlements. This will mean restoring the harmony and equilibrium of human settlements in India and a major impact will be on employment generation for the people in the hinterland. Again, this is fundamentally different from the current approach of seeing rural and urban growth in silos.

Chapter 2

City Planning
Background and Challenges

The principles of planning in ancient India are expressed in Manasara's *Shilpashastra*, Kautilya's *Arth Shastra* and Varahamihira's *Brihadsamhitha*. The structure of settlements was defined in a scientific manner wherein specific areas were earmarked for different uses such as markets, handicrafts manufacturing areas and recreational facilities. The location of town gates and the direction of roads moving out of the settlements were related to cardinal directions. Planning principles reflected the culture of that time and some of the popular examples of planned towns of this period are - Ayodhya, Indraprastha, Madurai, Vanji, Kaverippumpattinam, Kanchipuram, etc. There are a lot of similarities between ancient Indian town planning practices and post-modernism. Post-modernism looks back to a past before zoning codes made their appearance. Urban planning practices are also sometimes referred to as neo-traditional. Some of the tenets, (l) walkability, (2) smaller lots clustered together, (3) houses close to the plot line, (4) narrower streets that are often laid out in a grid pattern, (5) functional integration, and (6) more socio-economic and lifecycle integration.

Post-independence the main activity of urban planning was preparation of master plans or the so-called development plans with rigid land-use, zoning and development controls. Master plan laws in India are based on the Town and Country Planning Law of United Kingdom (1947). Taking this law as the starting point, the Government of India prepared a model Town and Regional Planning and Development Law (1962), which became the template for State Governments to formulate their state-specific laws. Master plans have aimed to be too detailed and, therefore, even after years of plan preparation exercise, zonal plans have not been completed. As a result, the growth of cities has taken planners by surprise and the livability of cities has degraded with unplanned urbanization, congestion and environmental degradation. Specifically, urban planning practiced in this way has led to the following problems. First, master planning has led to a static built environment, which is largely disconnected from the rapidly changing socio-economic conditions in urban areas of India. In order to address the fluid, constantly transforming conditions in urban areas, State Governments resort to frequent land use changes and building regularization schemes to legalize buildings/uses in contravention of existing master plans. Second, master plans are unconnected to investment planning at the city, state and national levels. As a result, master plans have largely remained unimplemented. Third, master plans fail to be truly comprehensive due to the missing link between the spatial and functional aspects. On a regional and national scale this lack of integration of spatial planning and economic planning has increased the skewed hierarchy of settlements created by colonialism and, importantly, benefits of economic planning and development schemes have not been fully realized. Finally, urban planning has been done with the male perspective. For example, housing for the urban poor rarely accounts for women's concerns and needs in terms of site designs or infrastructure provisions. Moreover, child-friendly planning principles and vibrant mix of uses to enable safer and balanced built-open spaces will have to be taken into consideration.

Priority and Actions

Priority

Urban planning should have a dynamic, entrepreneurial and gender-responsive approach. It should be transparent, user-friendly and participatory. The primary objective to generate gainful employment must be in-sync with providing housing infrastructure (Sutra # 1) and mass transportation (Sutra # 6) while conserving the environment (Sutra # 7). Moreover, urban planning should equip Indian cities to meet the needs and demands of a rapidly growing population by building for density (Sutra # 4). Urban planning needs to embrace people-centered development that understands the diverse needs of all residents and priorities people ahead of vehicles, and designs streets and public infrastructure accordingly. Well-designed public spaces form the lifeline of cities and are a significant factor in shaping vibrant communities. They help build a sense of community, civic identity and culture. Public spaces facilitate social capital, economic development and community revitalization. Additionally, urban planning has to become dynamic, iterative, adaptive and continuously evolve by shifting to Form-Based Codes (Sutra # 2), instead of just regulating height, setbacks, etc and repopulating cities (Sutra # 4), as opposed to the earlier objective of decongesting cities. Finally, the economic base of small towns in India is weak and volatile and they are unable to exert a positive effect on the surrounding rural population. In order to make cities engines of regional economic growth comprehensive plans have to be prepared for regions. The objective of integrating spatial and economic planning is to create harmony and equilibrium among human settlements and a more balanced network of cities in the region will ensure that maximum outcomes are obtained from development schemes (Sutra # 10).

Actions

Making urban planning dynamic, iterative, adaptive, gender-responsive and continuously evolving

- Issue new guidelines based on principles of comprehensive planning for new master plans. All schemes at all levels of government, the private and non-governmental sector have to be dovetailed to achieve the objectives set out in the comprehensive plan.

- Planning area boundaries should extend beyond municipal borders to encompass peri-urban areas as well so as to reduce social disparity, poverty and exclusion, providing better access to jobs and services. Urban growth boundaries must be laid out keeping in mind regional resources, vulnerable ecosystems, and climate considerations that may result in urban agglomerations living in high-risk areas.

- For existing master plans, invite applications from the public once in every two years for amendments. The requests to be examined based on principles of comprehensive plans and decisions made. In this way the existing master plans will slowly acquire the character of a comprehensive plan.

- Master plans should be dynamic and complemented with a strategic, action-oriented plan, which stipulates clear links to budgets and requires coordination and negotiation between agencies of land use, transportation, infrastructure service provision and economic development. For each Master Plan, a Strategic Plan (e.g. one or two-year duration) should be prepared. The Execution Plan should flow from ward level consultations.

- Spatial planning exercise should be participatory and ensure that plans embrace diverse resident views, including women, youth and immigrants, and integrates land use, employment, education, infrastructure, culture and natural resources[2]. Role of government agencies involved in spatial planning process, should transform from regulating and approving institutions to bodies that enable and collaborate with residents to respond to their needs and priorities.

- Master planning should be made more efficient and inclusive through the use of technology-GIS, GPS, remote sensing, geo-informatics etc. Use of common database platforms to ensure coordination.

- Participatory mechanisms at all stages of the development of masterplans have to be encouraged by the State policies.

- The issue of census towns will need to be considered by the sates when drafting urban policies.

Master plans have to build for density

- FAR should become an instrument to achieve important urban development objectives (housing; Sutra # 1). For example, to renew older and blighted areas (e.g. Bhendi Bazaar, Mumbai) of cities as well as strategically valuable areas (e.g. BKC, Mumbai).

- Have a two-tier FAR arrangement, with a basic FAR which comes with property right and the rest purchased from the local authority and freely tradable (Sutra # 3).

- Move away from the present system of single Floor Area Ratios (FAR) across the city to a system of traded FAR – certain areas like central business districts, transit corridors, important transit stations and newer developments should have higher FARs (Sutras # 3, 4 & 6). Develop a trading platform with an enabling regulatory framework to support trade in FARs.

- To start with, the revised Master Plan with higher and graded FAR should be notified. But property rights should be restricted to the existing FAR. To realize the higher FAR, construction should be permitted only on purchase of FAR. The FAR would be sold as TDR through calibrated auctions done on a digital platform.

- Given the vast variation in land prices across a city, it may not be advisable to have a single TDR market for the whole city. Instead, the Master Plan itself should divide the city into TDR zones. This could be done based on a combination of prevailing property prices (guidance value

[2] World Cities Report 2016

register), economic growth and development synergies, and other parameters that are used in demarcating Business Improvement District (BID) or Tax Increment Financing (TIF) areas. A notified slum or a residential colony could be notified as a zone. Each category of TDR would initially be transferable only within the zone.

- In the notified area, a small proportion, say 5%, of the total original FAR of the zone can be released into the market once every three years. The extent of releases can also be determined based on assessments of population growth or in pursuit of the realization of some pre-defined targeted average per capita floor space over a period of time. The sale can be done through well-publicized auctions conducted on an easily accessible electronic platform following the prevailing capital market regulations. The entire auction process should be outsourced and the bonds traded on the National Stock Exchange.

- In order to curb hoarding and speculation, the validity of a TDR should be restricted to 5 years. The owner would have to utilize the TDR and get the property tax assessment completed within this period. In exceptional cases, where the buyer was unable to develop the property due to delays in municipal and other government building approvals, the City can buy back the TDR at the same price with interest calculated at prevailing rates. In other words, no buyer, under any circumstance would be able to retain an un-utilized right beyond five years.

- Furthermore, since all transactions are done on an electronic trading platform, buyers should register with their Aadhaar numbers or corporate PANs (including the Aadhaar numbers of its Directors). Purchases by any individual or entity should be capped at 10% of the total TDR being sold so as to prevent hoarding. The trading platform should incorporate analytics that filter deviations.

- The legal framework necessary for this would not involve any legislative amendments. The City's building regulations should be amended to reflect the distinction between FAR that comes with property rights and that which have to be purchased. The City would also have to register the TDR issuance in each zone with the Securities Exchange Board of India (SEBI) to use their platform to transact the auctions.

- The Ministry of Housing & Urban Affairs has to, (1) formulate master plan guidelines that go beyond the prevailing (building-type) approach and promote differential FAR (area-specific) based vertical development, including an illustrative master plan document, (2) issue guidelines on area-based development control norms and its use as an instrument to manage urban growth and development, (3) formulate model legal document that enables the sale of FAR , (4) formulate a model FAR trading system with all the requisite documentation, (5) put in place the enabling legal framework to allow for listing and trading of FAR Bonds in electronic trading platforms, and (6) establish an electronic trading window within the existing securities exchanges for auctioning and trading FAR bonds of various cities.

From Cartesian to Form-Based Codes

- Shift to Form-Based codes. Unlike conventional codes, Form-Based codes use the intended form and character of a place (or context) as the organizing principle or framework of the code, rather than use, and regulate a series of important elements not just to create a good individual building, but to create a high-quality place. The naming conventions in Form-Based codes reflect the intended physical form and hierarchy of different places. For example, instead of a zone being labelled "single-family residential," it might be called "traditional neighbourhood." Instead of a zone being called "commercial" or "mixed use," it might be called "neighborhoodmainstreet." The terms "neighbourhood" and "main street" refer to the intended physical form or place, both of which may include a mix of uses and different building types that create vibrant walkable urbanism. While form-based codes primarily regulate an intended physical form, they also regulate use secondarily. Form-based codes often allow a range of uses that are carefully chosen to maximize compatibility between uses and the intended physical form of the zone. Guidelines on model Form-Based codes to be prepared by the Ministry of Housing & Urban Affairs for states and cities to follow, including an illustrative Form-Based code for a city.

Focusing on integrated development of planning areas

- Cities should be divided into planning areas (e.g. existing localities or a planning area) and their integrated development should be focused in order to make them more livable. Such a transformation of "Areas" may require street redesign during retrofitting or assembly of land parcels for Greenfield development or change in building codes /FAR for redevelopment. Consequently, existing Master Plans will require revision in order to include contemporary tools, such as Local Area based Plans (LAPs) and Town Planning Schemes (TPS).

- Local Area based Plans create a framework for enhancing public spaces, and areas under roads by enabling the redevelopment of existing built-up environment. This involves adoption of tools such as Form-Based Codes. It is an area-based form of regulation that supplements the desired physical form (rather than separation of uses) of development. In Town Planning Schemes (TPS), existing land holdings are merged and redistributed in a planned manner after making deductions for street right-of-way and land for public uses. Landowners derive immense benefits as they receive developed plots within an organized layout, along with all urban services like roads and other urban infrastructure.

Public spaces, walkability and resilience

- Urban areas should provide for quality public spaces, which are networked and easily accessible to all citizens irrespective of age or gender. Further, cities should plan for universal access and inclusion of the differently abled, aged, and vulnerable sections of society. Cities should plan for accessible (to mass transit) and safe public spaces and streets that encourage walking and cycling.

- Urban centers should revitalize derelict neighborhoods and low-performing areas of the city for socio-economic vitality.

- Make cities adaptive to disasters and resilient to climate change through people-centred urban planning and management practices. Demarcate no-build zones based on environmental sensitivities, especially in expansion/new growth area.

Illustrations

- **London Plan[3]:** Strategic planning in London is the shared responsibility of the Mayor, boroughs and the Corporation of the City of London. Under the legislation establishing the Greater London Authority (GLA), the Mayor holds responsibility for the formulation and implementation of the Spatial Development Strategy. It provides an overall strategy, setting out an integrated economic, environmental, transport and social framework for the development of London. Local development documents of the individual boroughs have to be in general conformity with the London Plan. Moreover, in May 2018 the Mayor of London has unveiled a new environment strategy, which seeks to make the capital zero – by 2050 and at least 50% green. The Mayor considers London Plan as the expression of national policy, tailored to meet local circumstances and to respond to the opportunities to achieve sustainable development.

- **Form-Based Codes of City of Cincinnati:** In 2012, the City of Cincinnati completed a Comprehensive Plan update called Plan Cincinnati (http://www.plancincinnati.org/). It was the first update to the Comprehensive Plan since 1980. The primary theme behind Plan Cincinnati is "Thriving Re-Urbanization." This place type approach is context specific. It begins by defining and differentiating rural, walkable urban and drivable contexts/places. It categorizes walkable urban neighborhoods' into different community types, outlines and maps them with a 5-minute walk and introduce the urban-to-rural transect as an important organizing principle. Plan Cincinnati also introduces important components of walkable urban places, such as building types, frontage types, and civic space types, with the intent that they would be further reinforced within the Form-Based Code. In parallel, the City has developed a Complete Streets Manual that took a context-driven approach to designing and planning thoroughfares. This document uses a similar methodology as Plan Cincinnati by designating rural, walkable urban and drivable places/contexts as a starting point for thoroughfare design. This document also uses the Rural-To-Urban Transect Zones as the organizing principal (the context zones) that further define how the intensity and character of the built environment influences decisions related to street design. This document is very important because it is evident that conventional automobile-centric thoroughfare designs have created unattractive, non-pedestrian friendly streets within Cincinnati's once vibrant walkable neighborhoods that have compromised the quality, character, and economic viability of these neighborhoods', and in particular their main streets. Both of these documents created a solid foundation for a transition to a Form-Based coding approach to zoning that is rooted in context with the Urban-to-Rural Transect as the organizing

[3]The London Plan, The Spatial Development Strategy for London Consolidated with Alterations since 2011, Greater London Authority, March 2016 and "Plans released to transform London into zero-carbon city", Climate Action, May 11, 2018.

principle. This method has been shown to reduce barriers and provide incentives for the revitalization of existing urban neighborhoods (including transit-oriented development) and the creation of new walkable neighborhoods.

- **Singapore Redevelopment Plan[4]:** The Singapore Urban Redevelopment Authority (URA) brought about robust urban planning. It created concept plans, which have acted as anchors to Singapore's 40 to 50-year development strategy and have been refreshed every decade using GIS mapping. The concept plan also provides broad guidelines for a set of key projects and policies essential to serve expected demand for physical and social infrastructure as well as urban design and form. This 40 to 50-year concept plan is then cascaded down to 20-year master plans that translate broad land use into actionable parcel-by-parcel planning norms and distinct infrastructure projects. To ensure the development of world-class urban plans, Singapore has invested upfront in capacity and technology and has ensured a participatory process. The URA team consists of more than 300 professionals and spends around $160 million per annum. Planners then consider the views of the public before moving to finalize content. The process of granting exemptions is clearly articulated and when granted, exemptions are transparent.

[4]Singapore Urban Redevelopment Authority, Interviews, McKinsey Global Institute analysis

Chapter 3

Urban Economy

Background and Challenges

Urbanization is a strong contributor to the growth of a country. Clustering of people and enterprises leads to higher levels of productivity and employment generation. This saving in time and money is called agglomeration economies. Congestion forces operate against agglomeration economies. Congestion occurs when infrastructure and basic services are unable to keep pace with demands of increasing population and enterprises, thus, preventing full exploitation of agglomeration economies. The Gross Domestic Product (GDP) generated per capita of urban population is a good proxy to determine the interplay between agglomeration economies and congestion effects. East Asia and the Pacific region generated 29 percent of the world's GDP with a global share of population of 32 percent (ratio of 0.91), as compared to South Asia's production of 8 percent of global GDP with a 14 percent (ratio of 0.57) share of the global urban population. As a matter of fact, South Asia resembles Sub-Saharan Africa, where the 9 percent of global urban population produces 3 percent of the global GDP (ratio of 0.34)[5]. Thus, congestion effects are preventing realization of full economic potential of urbanization in South Asia, including India.

Another negative effect is that congestion forces reduce the attraction of the city for knowledge workers. Recent evidence shows a strong link between presence of knowledge workers and generation of employment and income for all people living in the city, leading to higher economic growth[6]. It is not that prosperous cities, such as Geneva, Singapore, London, Hong Kong are not congested, but they have managed to provide high quality of life and attract economic growth even with similar or less levels of congestion.

Furthermore, urban development in India has remained isolated from planned national development. Initially, the urban was treated as an item of social expenditure and accounted for a very small fraction of the total plan budget. The rural bias in national planning has led to insufficient approaches towards managing cities. This is apparent, for example, in a rigid masterplan approach in spatial planning which will be discussed in detail in chapter seven.

The hierarchy of settlements in India is highly skewed with a few very large cities and a large number of villages. The colonial pattern of settlements has continued due to the lack of mechanisms to integrate spatial (regional, urban/rural) with sectoral investment plans in the Five-Year Plans. Additionally, rather than seeing urban development as a cumulative effect of a number of economic development programs with impacts on settlement patterns, it has been understood as an independent program operating in silo. Such a narrow view of urban development was unable to maximize the economic benefits associated with increasing urbanization.

[5]See Leveraging Urbanization in South Asia, September 2015, World Bank

[6]Before 1980s there was hardly any link between the skill level of a city's workforce and its tendency to create new kinds of work. After the 1980s new category of jobs appeared more regularly in cities with highly skilled people, as compared to cities without them. More so the accumulation of knowledge by workers happens faster in cities with knowledge-intensive industries[6].

Priority and Actions

Priority

Cities have a two-way beneficial connection with their hinterlands. Firstly, a network is formed when several cities and villages are tied together in a mutually beneficial manner. A balanced network consists of large cities, different size towns and villages. Spatial planning coordinates and converges plans operating at different levels - local, regional, state and national. The integration of spatial factors with economic and social factors of development at different scales creates a balanced hierarchy of settlements which ultimately maximizes the spread effect of investments (Sutra # 10). For example, investments in agriculture, rural development, industry, mining, commerce have to go hand-in-hand with provision of infrastructure services (Sutra # 1). Secondly, provision of basic infrastructure and services, building walkable sidewalks, nukkads, chaurahas (Sutra # 5), open spaces (Sutra # 5) and increasing the livability of localities (Sutra #2) will attract knowledge workers and lead to economic development. Urban planning in India must be directed at the priority of a balanced network of settlements while bearing in mind that this is a long term goal that has not been achieved yet even by advanced economies.

The priorities are to increase employment opportunities for all, particularly the poor; provide basic services in slums, increase the amenity value of localities and to make social services, such as health and education easily accessible to all residents. In this chapter, we only consider the actions required to create a balanced hierarchy and to integrate spatial with investment planning. Other sutras contributing to economic development are considered in the relevant functional areas (e.g. transport and mobility, health, education and physical infrastructure).

Actions

National and state level policies for urban economic development

- Policy-making should understand urbanization as a driver of economic development. Cities instead of remaining isolated centres of economic activity with weak linkages to hinterland should become vibrant centres and make full use of natural and human resources in the regions. So that over time they will expand their economic role beyond the region. Spatial planning should be integrated with economic and social planning and become a major instrument of agricultural and rural development, including anti-poverty programmes. Spatial planning should also be used to prevent lop-sided pattern of settlements. Policies should make operational the idea of rural-urban continuum and a balanced system of settlements and urbanization should be promoted as a means of encouraging agricultural and industrial activity in smaller settlements.

- The objective is to create a balance in the urban settlement system by moving away from ideas of decongesting large cities, development of small towns into a more logical system of investing in those urban growth centers which have a potential for growth and generating employment in a widely dispersed way. The National Commission on Urbanization (1988) gave general

guidelines for future urban settlement patterns and identified a list of 329 cities that have the potential to generate economic growth and to restore balance in the human settlement pattern. The Ministry of Housing & Urban Affairs will prepare detailed guidelines to decide on a list of cities to be developed keeping in view the philosophy that these cities must create employment, open up the hinterland, generate growth with equity, be engines of economic growth and catalysts of social transformation of India's economy and society. Spatial planning first needs to assess the carrying capacity of city regions determined by environmental, resource and infrastructure constraints. This will make operational Sutra # 10 to create a balanced network of settlements.

- The states should develop strategies on how to integrate the informal sector into the economic system both in terms of space but also input and output linkages.

Adequate Investment in skilled labor and local economic development

- Develop human capital in cities and surroundings (Sutra # 1) by paying adequate attention to link demand for jobs with skill development initiatives. Enough space shall be created at the State and local level to address the existing skill gap in the housing- construction sector and explore new avenues of job creation in green technologies, new and eco-friendly construction methods.

- Carrier counseling centers can be integrated with the ULBs to provide professional services to the working age population and vocational courses may be created in various sector based on the assessment of the local demands.

Empower and strengthen the role for ULBs in economic development

- The ULBs should be entrusted to provide social protection to informal workers (both policy and programme) that boost the economy and protect the rights of workers, vendors, auto driver, etc. For this wards in ULBs should be actively involved in DAY-NULM and NSDM (Sutra # 1). This will also include provisions for ensuring higher levels of economic security through social protection systems for those who are socially and economically vulnerable, in particular those living in extreme poverty, including older persons. Actions to improve the urban economy must pay special attention to women entrepreneurs in the informal sector.

- Presently, even local economic development is largely under the oversight of departments and parastatals of the State government. These should be given to the cities and wards within cities. For this the magnitude and range of regulatory and fiscal tools available to ULBs to be increased to support the region's urban growth.

- Promote business improvement districts to improve markets streets and neighborhoods in collaboration with the formal/informal businesses (Sutra # 2 & 5).

- In larger cities, City Economic Councils can serve as a clearing house between business and governments to hasten progress of specific projects, remove bottlenecks hampering economic productivity, improve ease of doing business and catalyze investments into the city.

- A quarterly City Dashboard capturing city-level investments, GDP and employment growth, financial position and financial performance and status of infrastructure projects will provide a framework of data-driven decision making focused sharply on jobs and economic growth.

Illustrations

- **Urban design to improve local economic development in Birmingham, UK[7]:** This is a case study of a local authority that has explicitly recognized that improved urban design leads to or is the key to local economic regeneration. Birmingham's urban landscape has been 're-imaged' in an attempt to attract investment and act as a catalyst for economic rejuvenation. It is demonstrated how the city council have been careful to cultivate a new image for the city through policy initiatives, with the new urban landscape playing a crucial role in the transformation of the city from an industrial to a de-industrialized, service-based urban economy. The city's new urban landscapes are not simply an expression of broader economic and socio-cultural changes, but play an active role in shaping the external and internal image of the city.

- **Partnerships for Sustainable Development of Cities in APEC Region:[8]** With objective to develop a framework for an initiative to help realize the vision for Building Better Partnerships for Inclusive and Sustainable Urban Growth in Cities of the Asia Pacific Region, APEC and Cities Alliance carried out a study of 21 economics. This report identified key areas for priority support for Partnerships: Lift economic performance and trade; Foster sustainable urban forms; Development of strategic infrastructure; Enhance city information, trade Data, and asset management systems; and Financing investment for sustainable development. Moreover, it recommended that the implementation of best practices should extend across the various systems – planning, project development and assessment, project procurement, and finance. There is need to support the development of such capacity and tap the substantial body of expertise in academic and policy institutions.

[7]https://www.sciencedirect.com/science/article/pii/026427519500041J[7]
[8]"Partnership for Sustainable Development of Cities in APEC Region", Asia Pacific Economic Co-operation (APEC) and Cities Alliance, 2018.

Chapter 4

Physical Infrastructure
Background and Challenges

In India, the main types of urban basic infrastructure are, (a) drinking water, (b) sanitation and sewerage and (c) solid waste management. For the first time the Zakaria Committee set the urban service standards and norms for these services in 1963. Since then these have been revised and presently the service standards used in India are set by the Ministry of Housing & Urban Affairs.

Generally, water supply systems can be divided into following parts - source, distribution mains, distribution network and provision of taps to households. The source of water supply in many large cities in India is located at distances ranging from 50 to 200 km. away, for example Hyderabad, the capital of the State of Telangana gets its water supply from the rivers Krishna and Godavari located far away. This enhances the cost and possibility of leakages. Another problem with water sources is inordinate dependence on sub-surface water and its adverse effects on the water table (e.g. Punjab state). Even if the water source is located close by poor maintenance and non-timely replacement leads to high technical losses. At the same time, local governments are unwilling to pass on the actual costs to consumers and this has led to grossly uneconomical tariff structures. In a large number of cities, the revenues are not even sufficient to cover the operational costs. Apart from low tariffs, the gap between the cost and revenue is also due to operational inefficiencies and pilferage. The HPEC (2011) has found that water utilities on an average are able to recover only about 30-35 percent of the cost of operations and maintenance (O&M).

In India there are three management models to look after water services (including management of sewerage services), (1) system management by department or parastatals of the State government, (2) activity management by Urban Local Bodies, and (3) sector management by exclusive water supply and sewerage boards set up for the city. The gap between the revenues and costs of water supply prevents the municipal bodies from making any substantial investments on improving or even maintaining the standards resulting in quality deterioration. Such dereliction hits the poor most, as they have to depend on marker sources of water. Poor water quality and sanitation is also a lead cause of water borne diseases and high child mortality rates in India.

Sanitation and sewerage consists of toilets and their connection to sewer systems. The toilets are classified into three types - household, community and public. Household toilets as the name implies are located in houses, community toilets are built for a group of people not having individual toilets, for example due to lack of space in slums and public toilets are located at public places (e.g. markets, railway stations). In turn, these toilets are connected to underground systems or disposal tanks (e.g. septic tanks) located near the toilets. Underground systems could be networked with the sewerage being carried to large centralized Sewage Treatment Plants (STP) or decentralized smaller STPs located in localities. The decentralized or the 'disaggregated approach' is a cheaper alternative to construction of large sewerage systems and was also suggested by the National Commission (1988).

Urban areas in India are served by inadequate sewerage systems with high dependency of the urban poor on public toilets. Many public toilets have no water supply while the outlets of many others with water supply are not connected to the city's sewerage system. The lack of proper disposal has environmental implications. First, as large parts of cities are not covered to sewerage disposal systems; wastes find their way into storm water drains, natural water courses and ultimately into major rivers. The problem gets aggravated in case of rivers near major cities. Second, the sewage carried by the underground system has to be ultimately let off in the natural drains, but after proper treatment. In most of the cities the capacity of the treatment plants is much less than the sewage flows.

The position with regard to sanitation in slums is much worse. Lack of proper toilet facilities makes women and girls vulnerable to harassment and abuse. Several non-government organizations and civic society groups have set up 'pay and use toilets', especially in slum areas. Co–production of sanitary services has been tried successfully in slum areas. The concept includes setting up of a CBO (Community Based Organization) at the grass roots, carrying out IEC activities, collecting a significant percentage of the initial capital cost from the beneficiary followed by the construction of a collective toilet block.

Priorities and Actions

Priorities

The priorities in water supply are related to the shortcomings in the present water system as articulated by the High Power Expert Committee (2011). According to the report, the main shortcomings of water supply in India are inadequate coverage, intermittent supplies, low pressure and poor quality. The priorities of the NUPF are to provide adequate coverage, regular and predictable supply of water at the right pressure and potable quality. As far as management is concerned, the following shortcomings identified by The Administrative Reforms Commission (2007) have to be addressed - public monopoly, organizational inefficiency, over staffing and lack of autonomy leading to inadequate service delivery. It is imperative to ensure that urban infrastructure and services are available and accessible, affordable, safe to use for all including the most vulnerable groups: slum dwellers, women, children, elderly and differently-abled people to achieve sustainable and inclusive development (Sutra # 1).

The Government of India has launched the AMRUT, SBM and the Smart Cities Mission. While the SBM covers all the statutory urban local bodies, AMRUT covers 500 cities with a population greater than one lakh and the Smart Cities Mission covers 100 cities. Where SBM focuses on hundred percent open-defecation free India and ensuring better municipal solid waste management, AMRUT aims to provide taps to all. While still being dedicated to these principles, the focus of the NUPF is on creating dynamic master plans (Sutra # 3), retrofitting existing infrastructure and making density-adjusted infrastructure plans (Sutra # 4) that are environmentally sustainable (Sutra # 7) and pays for itself (Sutra # 8), creating a coherent, unified, nimble and flexile management system (Sutra # 9), and dividing different activities in infrastructure provision to different levels of the city and region (Sutra # 10: e.g. water source at regional level and operation and maintenance at the ward level). Finally, all standards have to be achieved for all urban local bodies.

Actions

- There is need to integrate economic, social and environmental considerations.

Administrative Reforms to improve infrastructure delivery

- Enhance city level autonomy of the urban local bodies by sharing the powers with the third tier of government in line with the constitutional recommendation and link recovery of user charges to cover, at least operation and maintenance, by statute. Capital cost to be met through grants, bonds, etc. and recovered over a period of time by applying tools listed in the Value Capture Finance Framework (e.g. tax increment financing) of the Ministry of Housing & Urban Affairs. This will make urban local bodies self-reliant.

- Stronger institutional structures and development of specific roles for the urban local bodies/city government and understanding of critical inter-dependence amongst all levels of government. For example, a Special Purpose Vehicle (SPV) can be established at the city level with shareholding by the city and the Parastatals. South Africa has successfully experimented with such SPVs.

- Professional institutions for each of the areas of urban infrastructure governance such as, water, sustainable waste management, sewage management, drainage, transport, finances, planning, PPPs etc. should be set up by the Centre in order to guide local bodies and trouble shoot if needed.

Formulate policy and programs for efficiency and rationalization of existing urban infrastructure systems.

- A Handbook on Service Level Benchmarking has been developed and released by the MoUD, which seeks to (i) identify a minimum set of standard performance parameters for the water and sanitation sector that are commonly understood and used by all stakeholders across the country; (ii) define a common minimum framework for monitoring and reporting on these indicators and (iii) set out guidelines on how to operationalize this framework in a phased manner. This can help States to evaluate their status quo in service provision.

- Based on a model plan developed by the Center, States need to develop strategic plans for the provision of physical infrastructure that responds to their local conditions but which is directed towards the overarching goal of creating equity amongst all urban dwellers.

- This strategic state plans need to envision a long-term service provision strategy (e.g. for the next ten years) and thereby address possible future challenges such as the NIMBY-syndrome.

- In order to allow for monitoring, the state plans have to set specific targets, definition and requirements according to the local context. It needs to set basic requirements of equity in access to water for all and supply according to a given definition of potable water. 24x7 hours of supply have to be assured where possible and feasible. A target for waste reduction has to be set. Efficient management of water utilities, regular waste water recycling, tariff fixation and revision have to be implemented as standard practices by the States.

- Freeze on sub-functions in water supply, sewerage and solid waste management to be done at the regional, city and ward levels. One way is to use the principle of subsidiarity, recommended by the Second Administrative Reforms Commission.

- Follow a decentralized approach by providing financial support to States for State-specific service improvement plans to achieve service standards. Service improvement plans should be prepared by each State and city for water, sewerage and solid waste management, which outlines technical, financial and institutional strategies to achieve universal coverage. The Government of India only appraises and approves the State level plans and does not examine plans of a city or individual projects. Appraisal of state service improvement plans is done against a set of pre-determined set of criteria made available to the States.

- Context is important. The Ministry of Housing & Urban Affairs should focus on high-level objectives and not get involved in operational supervision. The service level gaps and the modality for achieving universal coverage vary widely among States and even within individual States. A common national approach will not be able to provide the flexibility that States need to devise and implement plans that suit State specific requirements. The MoHUA should encourage States to develop integrated State-wide service improvement plans for each sector.

- Flexibility will allow States to allocate financial resources as per their unique contexts. States decided the size of their service improvement plan based on their own strengths and existing situations. States where cities are able to borrow commercially or access private finance can pursue a larger service improvement plan by leveraging support from the MoHUA. Moreover, the financial share of cities varies across States and it is best left to the State Governments to decide how the residual financing (over and above national government share) is shared between the State and the cities.

- States should improve efficiency and service delivery over a period of time by switching over to performance-based contracts, as in Nagpur and Dhaka. Here, using performance-based procurement has reduced losses to less than 10 percent.

- States should decide on a model for solid waste management for the urban local bodies. This could range from an integrated solid waste management system to a completely decentralized one or something in-between. Together with this, states should decide on a governance model on to what degree the private sector should be included in public service provision.

- In the integrated version all activities are done by a single agency with the garbage hardly touching the earth and includes, primary collection, secondary collection, transportation up to transfer station, transportation from transfer stations to designated treatment and disposal facilities, treatment and disposal and reclamation and reuse of existing dump sites for the solid waste management project.This includes E-waste management also.

- Use integrated digital technologies. For example, solid waste management implies taking workers attendance by supervisors and monitoring movement of trucks carrying garbage. One way to use digital technology is to assign designated spots to workers where supervisors would photograph them using the camera of their mobile phones and transmit the photographs to the backend where data operators would manually mark the attendance of workers after seeing their photographs. Using Artificial Intelligence (AI), urban local bodies can take attendance by using cameras located throughout the city and matching of photographs using computer vision[9]. The cameras could also monitor activities, such as street sweeping, cleaning of garbage bins, and the time spent by municipal functionaries actually doing work at their designated place of work. This can be linked to payment of wages of workers. Digital technology has enabled municipal supervisors to access real time information remotely (without being present at the site) and use two components of AI - computer vision and neural networks[10]. This will make solid waste operations cheaper as supervisors need not go around taking attendance and standing in streets to oversee street sweeping. Placing attendance and street sweeping records in the public domain will lead to greater accountability of municipal functionaries and transparency in municipal operations. Using AI to count attendance and determine work done will result in complete human disintermediation and bring about unimaginable increases in efficiency of municipal operations.

- Integrate spatial plans with infrastructure plans so that the future developable areas are close to urban nodes from where physical infrastructural services could be extended without difficulty. As cities expand and service networks have to be expanded, an evaluation on extending the trunk infrastructure versus adopting distributed water-sewerage systems should be done. If distributed systems are adopted, protocols must be put in place that allows distributed systems to be connected to the trunk infrastructure. This will help increase the resilience of the entire system. The infrastructure which is built today will shape the way for the coming decades. Population data and trends along with GIS map technology should be an integral part of urban planning and infrastructure development.

Ensure that services are available, accessible, affordable and safe to use for all including the poor, elderly, women, children and differently-abled.

- Unlike in the earlier infrastructure missions the goal suggested by this framework should be on delivery of services to residents, not mere creation of infrastructure.

[9]An omnibus term used for a machine's ability to capture, process and analyze pictures without human help.
[10]Are multilayered networks that do different jobs but are also connected just like a human brain. They are expected to detect patterns just as human brain does (image recognition).

- Infrastructure to be supported by effective people's participation and involvement of other stakeholders during the planning process. Focus on stakeholder participation to bring in responsibility by involving city government, service operators (public, private), end users, investors and solution providers. Citizen awareness building shall also be part of infrastructure planning and capacity building initiatives at the local level. Engage women, in planning, maintenance and monitoring of the services.

Environment-friendly infrastructure

- In an era of increasing natural resource scarcity and escalating impacts of climate extremes, physical infrastructure eco-efficiency has vital implications for both economic and environmental sustainability. In order to reduce future carbon emissions, infrastructure needs to be designed and built to withstand future climate risks and with eco-friendly designs and construction methods in place from the outset.

- Natural ecosystems should be recognized, harnessed and leveraged as natural infrastructure systems within urban areas to enhance urban resilience.

- Dense, medium and low rise (up to four storeys) developments are able to sustainably meet energy needs for the population they accommodate. It is possible to meet 100% of the electricity demand from solar energy, with better design and hence lesser energy demand for cooling, in low-rise buildings[11]. Energy demand of dense mixed use buildings can be aggregated and can be first- reduced through energy efficiency measures (e.g. more efficient lighting, water pumping) and then met through on-site or off-site renewable energy generation. Waste heat could also be utilized for district cooling.

- Introducing and enforcing energy conservation building codes through municipal building bye-laws, mandating green building star rating certification for large buildings and creating enabling regulations for on-site renewable energy generation or off-site procurement of renewable energy by all categories of consumers. Design action plans to meet net zero energy or zero carbon buildings or neighbourhood targets through policies & regulations, financial mechanisms and incentives.

- Develop centralised data platforms for disclosure of energy and water use and waste generated by all consumer categories for better tracking and resource management.

- Use decentralized networks and a variety of proven technologies to treat sewage as locally as possible. Some examples are the technologies developed by the NEERI, Nagpur and IIT, Mumbai.

[11]Position paper on low carbon, resource efficient affordable housing http://www.gkspl.in/reports/green_buildings/2017.07.21_position%20paper_low%20carbon%20resource%20efficient%20affordable%20housing.pdf

Another way is to have dual water pipelines in Greenfield developments and charging on the consumption of fresh water minus recycled water.

Illustrations

- **Dhaka Water Services Turnaround[12]:** Dhaka Water Supply and Sewerage Authority (DWASA) provided a breakthrough in the delivery of clean, reliable, affordable, and continuous water in Dhaka. DWASA adopted District Metering Areas (DMAs) approach by dividing the city into zones with independent systems to manage flow, pressure and control Non-Revenue Water (NRW). DMAs were established and rehabilitated within six months from the start of works. NRW loss before the project was generally more than 40% or 50%. But after the project, loss rates dropped below the goal of 15%, and in some DMAs even went down as low as 1.58%. The key success factors that may be taking note of are, minimize processing and implementation delays by offering fewer contracts, designing performance based contracts by linking payments to performance indicators, provision of 100% metering at consumer end, electromagnetic bulk flow meters, pressure gauges and SCADA systems, use of trenchless technology for expeditiously laying pipes, and engaging local community to ensure smoother implementation.

- **SPVs in South Africa[13]:** In South Africa, Municipal Entities (ME) is set up to manage and develop specific services, sectors or portfolios. They are separate companies normally wholly owned by the municipality (though this is not mandatory and municipalities may hold a partial interest in a company if the other shareholders are national/provincial government or, if it's a private sector company, the municipality has a controlling interest) and regulated by one of its departments. While they may issue debt, this is tightly regulated and they are not primary vehicles for raising (off balance sheet) debt finance for general urban development purposes (which is what SPVs normally are – as in China). In S. Africa there were 91 municipal entities in 2006. Municipal entities have been utilized to perform a variety of functions. The developmental and planning function includes economic and business development (excluding tourism) with 21 entities represented. This is followed by housing services with 11 entities and water services with 6 entities. Of the 91 municipal entities, 41 entities were companies followed by 31 private companies, 6 trusts and 5 service utilities.

[12]Sharma, Manojand Melissa Alipalo. 2017. The Dhaka Water Services Turnaround, Manoj Sharma, Asian Development Bank (ADB)
[13]See Sharma, Sameer. 2018. Smart Cities Unbundled. 2018. New Delhi: Bloomsbury

Chapter 5

Social Infrastructure
Background and Challenges

Poverty is a key element of the social landscape in Indian cities. With references to urban local bodies, urban poverty has the following features:

- Growth of slums and *bustees;*
- Rapid growth of informal sector; and
- Relatively poor civic services

The poor cannot afford to pay the growing market rates of permanent (*pucca*) shelter or buy high priced land near the workplaces. At the same time, they cannot afford the cost of transportation from long distances. Therefore, they are either excluded from urban central location or they settle near their workplaces on lands normally considered unfit for living by the non-poor. Some examples are banks of river, margins of *naala* and drains, margins of rail lands, swamps, etc. Houses are located in irregular and unplanned layouts. There are minimal civic amenities leading to poor sanitation and personal hygiene. Moreover, slums are overcrowded with people living in very small living spaces. As per the Report of the Committee on Slum Statistics/Census (Sen. 2008[14]), slum population in the country was estimated at 75 million in 2001. The 2011 Census reported a slight decline to 65.49 million. Lack of basic services is one of the most frequently mentioned characteristics in all definitions of slums. Lack of access to improved sanitation facilities and improved water sources is the most important feature, sometimes supplemented by absence of waste collection systems, electricity supply, surfaced roads and footpaths, street lighting and rainwater drainage Hence, the issue of urban poverty is linked both to physical as well social infrastructure.

The service sector (also called tertiary sector) in Indian cities is different from that of the west. Industrialization in the west led to a rapid expansion of the tertiary sector in urban areas and was a manifestation of the maturity of cities. Indian cities also witnessed a rapid expansion of tertiary activities during deindustrialization practiced in the British period. However, this was not a manifestation of the maturity of the economy, as was the case of the cities in the Western capitalist world, but rather of a low level of economic development and was a corollary to the process of marginalization of the urban economy. Technical, professional, medical and educational services (except religious services) were poorly developed and employed only a few.

Another key element of the social landscape is human capital. As outlined the chapter on economic development, investment in human capital is also a key ingredient for economic development of any country. Especially in a scenario where India's economic growth is poised to be anchored in a knowledge economy. Investment in human capital can play a significant role in reducing poverty and enabling people to lead a healthy and productive life. Large-scale disparity exists in the volume

[14]Sen, Pronab. 2008. Committee constituted by the Ministry of Housing and Urban Poverty Alleviation to look into various aspects of Slum/Census and issues regarding the conduct of Slum Census 2011. New Delhi: Ministry of Housing and Urban Poverty Alleviation, Government of India

and level of educational attainment especially in primary to higher secondary education among different sections of urban areas. The access to quality school education is not available uniformly to all sections of urban society especially migrant population and urban poor. Gender based educational inequality is also a major challenge for urban India. The dropout cases are higher among girls than boys although learning outcomes of girls are better than boys. Numerous agencies work towards the provision of education. Nonetheless, in recent years, municipal and government schools have been losing out to private schools.

The health sector in India faces challenges in the form of declining role of public delivery of health services, high OOP expenses on health, issues of accessibility and affordability of health services for the poor and vulnerable, especially the slum dwellers, the migrants and the homeless. The urban poor face the dual burden of increasing burden of diseases- on the one hand, non-communicable lifestyle diseases (e.g. diabetes, hypertension, pulmonary diseases) and infectious diseases (e.g. TB, malaria and dengue) and on the other hand, urban specific health issues such as mental health, road accidents and injuries are also increasing over time. Natural and man-made disasters such as floods, earthquakes, air and water pollution, and occupational diseases also have a larger effect on the poor. Due to overcrowding in public hospitals/primary health centers, lack of adequate services and personnel especially at primary health centers, limited health facilities are available for persons with special needs and economically deprived. There are barriers in access to public health services force, which compel a large number of urban poor to visit private doctors, unqualified doctors, and local healers or rely on self-medication. This is more so for migrants and workers employed in the informal sector.

Another soft infrastructure of Indian cities has been its rich cultural heritage dating back to several centuries. Monuments, squares, streets have to be maintained in order to give a memorable experience to visitors. Literary festivals, sports activities, drama, theatres etc. are currently limited to a handful of cities only. Cities are known for good public libraries and museums. Existing libraries are not maintained properly due to lack of funds, limited library staff, unavailability of new technology and limited readership.

Generally, rural poverty was given precedence over urban poverty alleviation. Poverty removal, as a dominant objective in India's development strategy appeared for the first time in the Fifth Five-Year Plan (1974-79). The major programmes for amelioration of the conditions of the urban poor can be grouped into - shelter and physical environment related programmes; nutrition supplement programmes, including public distribution; programmes for employment generation; and programmes for the development of citizen participation and development of institutional capacities of delivery agencies.

Priorities and Actions

Priorities

Provide employment to all with commensurate incomes, affordable housing, education that focuses on learning outcomes and developing life skills, convergence of different health schemes and agencies under the urban local bodies, upgrading municipal and government school infrastructure

with digitally empowered learning outcomes of the poor and the disadvantaged, and caring for the migrants, women, children, widows, elderly and differently-abled. This will lead to realization of the full potential of cluster of human capital in cities (Sutra # 1). Building for density (Sutra # 4) involves accelerating the provision of housing for all, which also includes temporary lodging facilities of night shelters or *raynbaseras*, women hostels, crèches, old-age homes and rehabilitation centers. Promote '*Indianness*' (Sutra # 2) by maintaining monuments, heritage buildings and cultural artifacts, developing public and cultural spaces, promoting Indian cuisines and soft power (e.g. *rahadari*). These will also attract residents to public spaces, as opposed to malls, and encourage social interaction (Sutra # 5).

Actions:

Integrated approaches to poverty alleviation

- Progressively move to Direct Benefit Transfer (DBT) for all schemes of Government. Learning from Latin America and pilot projects point to the unmistakable conclusion that direct cash transfer should be a mix of categorical (e.g. paying Rs. 500 to all the poor) and conditional cash transfer (e.g. additional Rs. 300 for children regularly attending school).

- In order to minimize risk of spending disproportionately on non-durables (e.g. liquor consumption), conditional cash transfer has to complement direct transfers and conditional transfers should take care of specific public policy objectives, such as – (1) reducing specific types of poverty and disadvantage, (2) dealing with different types of risk, (3) incentivizing desirable types of consumption and promoting positive spending, (4) developing markets for products and services, (5) removing social, market, and administrative discrimination that prevent the poor to engage more fully in development processes, and (6) achieving goals emanating from wider public interests.

- DBT consisting of cash transfer founded on categorical pay-outs topped by conditional transfers to meet varying needs of diverse communities and unique characteristics of local areas in cities, with *Aadhar* to do reliability check on beneficiary identities, combined with the use of mobile phone for banking holds much promise to reduce the vulnerability of the poor and address a common complaint made against development programs that they follow a one-size-fits-all approach. Each State and city has to prepare a road map with milestones and timelines. For example, social services and social security of large number of vulnerable workers in the informal economy could be incentivized by a mix of conditional and categorical cash transfers along with ensuring the safety and security of women to raise their participation in economic activities.

Health

- The experience of Sri Lanka and Bangladesh shows that a significant improvement in governance and institutionalized delivery services has to accompany increase in funding in order to bring about a significant improvement in health over a short period of time. The entire value chain of health should be brought under the urban local body over a period of time. Increase use of digital technology to rollout a large-scale preventive health care. Converge

tracking of health, nutrition and family data at a single point in urban areas. For example, converge the ANM on Line (ANMOL) with ICT-enabled monitoring mechanisms for its Integrated Child Development Services (ICDS) scheme, known as Common Application Software (ICDS-CAS) and Information and Communication Technology enabled Real Time Monitoring (ICT-RTM).

- The *Indradhanush*[15] initiative of the Ministry of Health aims to rapidly increase the full immunization coverage of children from 65% in 2014 to at least 90% and sustain the same by 2020. It follows a "Locate and Vaccinate" approach to inoculate a range of diseases. Under the National Vector Borne Disease Control Programme (NVBDCP), six diseases have been targeted for prevention and control: Malaria[16], Japanese Encephalitis (JE)[17], Dengue, Chikungunya, Kala-azar[18] and Lymphatic Filariasis[19]. The programme has resulted in significant control of the spread of these diseases, restricting and containing their outbreak to a few pockets. All urban local bodies should implement the Indradhanush and National Vector Borne Disease Control Program, even if they have to use their own funds.

- In Tamil Nadu, the Department of Health in association with Isha Foundation ran a pilot project in a remote block. It integrated AYUSH healthcare provisioning with nutrition schemes[20] (Siddha medicine plus nutrition). The project focused on improving anemia in young girls in school through Siddha medicine. IMR fell from 24.1 to 11.2. MMR drastically reduced from 604 to 0. Before the programme, 96% of girls were anemic, which came down to 35%. Institutional deliveries increased to 80%. This shows the potential of leveraging on the AYUSH system, especially its strength in preventive healthcare. All urban local bodies should take health care closer to people and use AYUSH practitioners to provide promotive and preventive health care.[21]

- Primary Health Centre currently provides preventive and primary care related to maternal and child health (MCH), and basic symptomatic treatment. Non-communicable diseases (NCDs), account for a higher proportion of mortality and morbidity. There is an increasing prevalence of NCDs (Non-communicable diseases) among the poor in addition to the large incidence of communicable diseases. At the same time, urban health centers are unable to meet the healthcare needs of the people. Quality primary healthcare delivered close to community leads to great reduction in the disease burden on people and rapid improvement in health-related indicators. Urban local bodies should establish 'Area' level sub-centers to work as a single-point health & wellness centers called the 4th tier of healthcare to improve health outcomes at the family level. A middle-level service provider, assisted by a team of ANMs, MPWs, ASHA and Anganwadi workers, should head the sub-centers. These healthcare providers will work

[15] Launched in 2014, the successful scheme aims to immunize all children under the age of 2 years and pregnant women against 7 vaccine preventable diseases. 201 districts will be covered in the first phase. Of these, 82 districts are in the states of Uttar Pradesh, Bihar, Rajasthan, and Madhya Pradesh. The 201 districts selected have nearly 50% of all unvaccinated children in the country

[16] About 91% of malaria cases and 99% of deaths due to malaria are reported from high disease burden states namely Northeaster (NE) States, Andhra Pradesh, Chhattisgarh, Gujarat, Jharkhand, Karnataka, Madhya Pradesh, Maharashtra, Orissa, Rajasthan and West Bengal. – NVBDCP.Gov.in 2014-15

[17] The disease is endemic in 179 districts of 21 states of which Assam, Bihar, Tamil Nadu, Uttar Pradesh and West Bengal have been reporting more than 80% of disease burden

[18] Kala-azar is endemic in 54 districts (33 in Bihar, 4 in Jharkhand, 11 in West Bengal and 6 in UP) – NVBDCP.Gov.in 2014-15

[19] The disease is reported to be endemic in 255 districts in 21 states and UTs. – NVBDCP.Gov.in

[20] Integration of healthcare is an EMC Recommendation

[21] Report of the Group of Secretaries on Health, Sanitation and Urban Development, Chapter 2.

together to address all the health issues in an Area/ward and provide both preventive and curative healthcare.

- This 4th tier of healthcare must be customized and adopted based on local conditions and considerations and there cannot be a one-size-fits-all approach[22]. Health screening of both mother and child should be done for the full range of illness in every ward. This screening must especially consider rising lifestyle diseases. Increasingly, four main diseases namely Cancer, Cardio-vascular diseases, Diabetes and Respiratory Diseases account for 60% of all deaths in the country. The health programme must be expanded to bring in a universal health-checkup of entire city population and a family health card (on lines of soil health card).

- In context of providing better health service, affordability as a key metric is also important. Currently, there is high Out of Pocket Expenses (OOPE) on health in India estimated at 64% especially towards secondary and tertiary care[23]. All urban local bodies should implement a health insurance scheme (e.g. *Ayushman*).

Education

- Develop need based education services for the urban poor and other marginalized sections of urban society. Adopt outcome measures for the education and skilling activities, particularly for young women and girls.

- Life skills and counseling services should be strengthened for all young people, whether in school or out of schools.

- Develop a mechanism under which the curriculum and pedagogy at different levels of education will be reviewed and consistently upgraded to incorporate the internationally recognized best practices.

- Increasing use of digital technology to provide customized education services to children in poor and disadvantaged households. As in the Smart Cities (e.g. NDMC, Vishakapatnam, and Kakinada), develop the hard infrastructure in municipal schools at the time of introducing digital technology.

- Strategic plans to implement master plans should meet the infrastructure requirements of new universities, institutions and health facilities.

Culture and history

- More investment is needed for the protection and promotion of cities' heritage. A GIS based heritage mapping should be done to conserve and promote the historical monuments located in cities. The public participation and awareness should be done on a regular basis targeting the youth and children to protect historical monuments.

[22] Principle of Citizen Centric Administration by 2nd ARC

[23] As per the NSSO, about 6 crore people slip below poverty on account of catastrophic health care expenditures, while over 27% of hospitalized patients had to borrow money or sell assets to meet the treatment costs. This adversely impacts the gains made in poverty reduction by the country.

- Local heritage and culture should be strengthened. This could be done by training local officials and organizing events for citizens to interact with heritage sites/ culture and thereby raise awareness for their protection and preservation.

- The renovation of old public libraries and museums and opening of new libraries with adequate fund, staff and new technology should be promoted.

Illustrations

- **Healthy City Project in Korea:** A Case Study of Wonju City: In 2006, the City initiated a five-year plan, with the main objective of setting out systematic policies for healthy city project, which include life style modification, disease prevention and rehabilitation, setting healthy industry, infrastructure and environment. It also developed Vision 2020, which includes an individual approach and a socio-environmental approach. The individual approach includes life style modification and diseases prevention and rehabilitation. The socio-environmental approach comprises: physical setting, infrastructure, environment, and health industries. Advanced health technology, smart healthy city, and health tourism are included in health industries.

- **Creating Equity in Urban Education System: Shanghai, China[24]:** Shanghai is the leading educational province in China. It has brought about pioneering reforms in curriculum, assessment, and educational equity that are being emulated elsewhere in the country. The enormous social transformations in China which have led millions of families to migrate to cities created huge disparities between the quality of schools in central Shanghai and those in the suburbs or outlying areas where migrant families live. For the past ten years, the Shanghai Education Commission has focused on bringing up the bottom-tier schools through a collaborative strategy: principals and teachers from high-performing schools work with weaker schools on improving management, school culture, and teaching quality. The approaches have included principals running multiple schools, pairing of schools, clustering schools to share teaching resources, and commissioned administration, through which high-performing schools receive funds for a two-year period to improve the performance of weaker schools. After a decade, the weaker schools have improved significantly.

[24]https://asiasociety.org/sites/default/files/T/transforming-learning-in-cities-rand_1.pdf

Chapter 6

Housing and Affordability
Background and Challenges

Housing for the poor has attracted the attention of the Central and State Governments since independence. The Central Government has tried several alternatives ranging from fully subsidized programs and policies to harness the power of the market. The role of public sector for providing housing was most important beginning with the First Five-Year Plan and the objective was to provide mass housing to slum dwellers with highly subsidized houses. Later, it was realized that the strategy was not leading to the expected benefits and during the 1970s, slum clearance was replaced by radical reforms connected to land policies and public housing. The changed outlook also included providing housing finance and improvement of slum environment by developing basic and social infrastructure. Institutions like state urban development authorities and housing boards, Housing and Urban Development Corporation (HUDCO) and Housing Development Finance Company (HDFC) were set up to implement these reforms. In 1976, the Government of India enacted Urban Land Ceiling and Regulation Act (ULCRA) to use surplus land for urban poor housing. The 'Site and Services Schemes' and 'Self-help Housing' projects provided tenure rights to the urban poor. By 1980s, the government recognized the need for private sector participation, especially in providing and constructing houses and the government's role was refined as a facilitator. A specialized housing finance institution called the National Housing Bank (NHB) was established under the Reserve Bank of India (RBI) in late 1980s to regulate the housing finance market. The NHB, now regulates the specialized housing finance companies (HFCs), and acts as a second-tier lender to all mortgage originators.

The economic reforms of 1991 had effects on urban housing. A revised National Housing Policy (1998) was formulated to provide access to serviced urban land, housing finance and innovative technologies for affordable housing. The role of the private sector was also enhanced. Beginning in the 2000s, especially the 11th Five Year Plan, private-public models to provide housing was promoted. A new National Urban Housing and Habitat Policy 2007 (NUHHP-2007) was formulated as a high level document to promote various types of public-private partnerships in achieving the goal of 'Affordable Housing for All'. The Government of India launched reform oriented programmes such as Basic Services for the Urban Poor (BSUP) and Integrated Subsidy Scheme for Housing the Urban Poor (ISHUP) as part of the Jawaharlal Nehru National Urban Renewal Mission (JnNURM). Later, the Rajiv AwasYojana (RAY) was conceived having 'Slum Free India' as its main focus. In pursuance of Government's vision of facilitating housing to all by 2022, the Ministry of Housing and Urban Poverty Alleviation launched Pradhan Mantri Awas Yojana (Urban) - PMAY (U) in 2015. PMAY (U) addresses urban housing shortage by ensuring a *pucca* house to all eligible urban households by the year 2022.

As per the Technical Group Report on Urban Housing Shortage 2012, India has a housing shortage of nearly 18.78 mn units. Nearly, 95 percent of this shortage is for EWS and LIG households, that is, they make less than Rs. 200,000 a year. Of this total shortage, a large majority, 14.99 mn units are living in inadequate housing. Simply, most of the housing shortage is not homelessness, but "housing poverty", that is, "affordable yet inadequate housing". A vast majority of households make incomes

sufficient only to afford houses that cost under Rs 10 lakh. Among these, however, a dominant majority cluster at the 2- 6 lakh range, and a significant number can barely afford Rs 2 lakh. Most of these households are currently living in housing poverty - inadequate and vulnerable housing, or are homeless. Creating housing either through the public or private sector to cater to these households is a challenge[25].

Earlier housing policies, such as central initiatives like JNNURM and RAY, or state programs like Maharashtra's Slum Rehabilitation Scheme or Rajasthan's Affordable Housing Policy show a renewed emphasis on attempting to construct enough new housing units for all households in need. The units are tied to some proportion of beneficiary contribution and they are to be delivered not just through state agencies but also in the form of public-private-partnerships with developers. Yet the scale and quantum of units being built remain, as they have historically, inadequate to the scale of the problem, even though the gap is narrower in smaller towns and urban centers. What we see then is the limits of private or public action to address the scale of unmet demand for affordable housing, either alone or together.

Property rights are much more than a "title", particularly titles for individual households. This is particularly true in recent years due to the influence of theorists like Hernando de Soto who have argued that the poor are sitting on "dead capital," which if unlocked through individual, private titling would unleash trapped economic potential. However, in the unique environment of India, appropriate regimes of property rights have to be evaluated against three criteria: (a) terms of exchange, i.e. rights to buy and sell; (b) effective protection from forced eviction - secure tenure; and (c) effective protection from market-induced displacement.

Admittedly, land is scarce in urban areas of India. However, land availability in Mumbai, Delhi, Bangalore and Hyderabad is different from, say, in Nanded, Lucknow, Mysore and Nellore. First, scarcity is a far more significant concern in metropolitan regions with very dynamic land markets than in smaller urban centers. Similarly, it is felt differently across states. Second, "scarcity" arises as a particular problem when new housing units are to be constructed. Land that is occupied by existing informal settlements is "scarce" only in so far that its exchange value is compared unfavorably with use values generated by housing, or in the sense that it is unable to be used legally for housing. Simply, income-poor settlements have found, inhabited and occupied land in large numbers across Indian cities – that land is not "scarce," it just has to be made available for use. Three, "scarcity" has to be evaluated in the context of large publicly held urban land. A majority of land occupied by "slums" or low-income settlements is, in fact, not just public but owned by urban local bodies. For urban India on average, 40% of land where slums are located are owned by urban local bodies, a further 10% by other public agencies and about 3% by the Railways. There are regional variations - the numbers are high for Karnataka (nearly 60%), Tamil Nadu, Gujarat, and Delhi while they are lower for Uttar Pradesh and West Bengal (about 10%).[26]. The varied scale of impacts aside, it is fairly clear that leveraging publicly owned land appropriately could make significant gains in addressing unmet need for affordable housing.

[25] Policy approaches to affordable housing in urban India, IIHS-Rockefeller Urban Policy Partnership, 2014
[26] Policy approaches to affordable housing in urban India, IIHS-Rockefeller Urban Policy Partnership, 2014

Promoting rental housing has escaped the attention of policy makers. This is in contrast to what happened in some parts of the west. Most of them started with rental housing and gradually moved to the ownership model. For example, Germany and Switzerland have focused on social housing along with rentals. Official data is somewhat divergent on rental housing - while the Census states that about 27.5 per cent of urban households lived in rented houses in 2011, the NSS found that close to 35 per cent of urban households lived on rent in 2009. Moreover, according to the NSS, this proportion has remained steady since 1991, while the Census records a significant decline from 46 per cent in 1981. Apart from the uncertainty surrounding the numbers, the data tells us that between a quarter and a third of households in Indian cities live in rented housing and the rental housing market is almost exclusively a private market of small-scale providers. Moreover, studies have shown that providing rental housing can be cheaper for the government than subsidizing ownership. Importantly, rental housing is directly connected with livelihoods, education and opportunity, even more so than ownership housing, according to some. Households may choose to own a home away from the city for investment and future use, but will only rent where they are close to work and education. However, public policy has rarely encouraged rental housing in the private market and ownership seems to have been the singular aim of housing policies in India.

Priorities and Actions

Priorities

Nearly 95% of housing shortage occurs for households in the EWS and LIG sections. The median household income in 2011 was Rs. 60,817, which leads to an affordable housing ceiling of Rs. 3.06 lakh. Surveys substantiate this fact - less than 1% of the affordable housing units being built by private developers during 2007-18 were less than Rs. 4 lakh. As the monthly EMI or rent cannot exceed 30% of household monthly income, therefore, subsidy or Government support is required for construction of houses costing below Rs. four lakh.[27] Few states have been able to construct enough housing units and the market's ability to deliver without extensive subsidy begins above Rs. 400,000, which excludes most households with household incomes below Rs. 200,000. Accordingly, the state or the market alone or together cannot fill the housing gap. Today, affordable housing at scale has been built by the *non-corporate private market* – households, communities and local contractors (Sutra # 1).

The form of property right determines the approach (Sutra # 3). Individual titles are the most effective in creating markets of exchange, allowing households to not just have secure tenure but to leverage housing as an asset. However, it puts them at the greatest risk of market-induced displacement, especially, at the lower end of the housing market where the sale of a unit just as often represents distress rather than economic mobility, and where, importantly, re-entry into a legal housing market is not certain. In highly skewed housing, labour and wage markets, the fear of crowding out low-income residents from housing that newly circulates in the market is real whether through rising rents or house values. The question is not whether households should or should not sell but whether they are able to re-enter a legal housing market once they do. In the presence of

[27] See Policy approaches to affordable housing in urban India, IIHS-Rockefeller Urban Policy Partnership, 2014

adequate, affordable and legal housing stock to buy or rent, individual household titling is an effective strategy. In their absence, it is limited, ineffective and possibly deeply exclusionary. On the other hand, no-eviction guarantees and individual/community titles with strong restrictions on sale and exchange generate secure tenure with reduced risk of market-induced displacement. However, these property regimes are difficult to implement and often lead to artificial distortions in the market that create their own consequences. In several cities, BSUP flats allocated with 15-year restrictions on sale are often sold illegally. The States and cities have to make trade-offs between the different functions of property rights depending on their local context. For metropolitan Indian cities, for example, skewed housing markets suggest caution in using individual titling but this may not hold true for smaller towns or even for, particular, well-established settlements within larger cities.

Zonal and building regulations have to also be contextual (Sutra # 3). When houses are small, the outdoor space becomes significant. Much of the life is lived in such outdoor space. In the case of work-based settlements, the outdoor space becomes even more critical as it is where the house extends to become a work place. There are many ways in which such outdoor space could be maximized (Sutra # 2). Stilts, terraces, open spaces at different floors in multi-storied apartments, wide corridors and lobbies, wide sidewalks, courtyards between a cluster of houses and so on can be provided as outdoor spaces.

Affordable housing programs need to be so designed as to leverage social capital for enumeration, design, construction, and implementation, thereby reducing costs as well as building in upgradation, expansion and even moving out options (Sutra # 5). Prevalent financial ecosystems surrounding housing cater largely to the middle and higher income groups and bring a vocabulary of loans and minimum guarantees upon the urban poor, who in turn may lack the requisite levels of literacy and financial resources. The urban poor themselves operate at a level of immediate requirement, such as smaller houses and loan sizes, and with informal credit systems that are far removed from convention. At the other end of the spectrum, private developers often find it difficult to enter the affordable housing market given potential limitations on profitability and hesitations on part of lenders and backers. Many of the Indian cities lack fund/revenue to promote affordable/rental houses with basic infrastructure and slum redevelopment. A rethink of the financial ecosystem and encouragement of poor-centric tools will not only potentially expand and revitalize a flagging finances industry, but can potentially reduce per unit housing costs by up to 10%[28].

The advantage of self-built housing is that it is already located on land where key factors determining home locations - affordability, livelihood, work opportunities and mobility - are already met. Income-poor urban residents make housing choices largely on location of work, not the quality of housing unit. Self-built housing is a picture of tradeoffs they are willing and able to make. However, the challenge is that self-built housing is located on land that is without legal security of tenure. Therefore, the key challenge is, in addition to constructing at scale, to find innovative ways to enable communities to gain security of tenure on already existing self-built housing (Sutra # 2).

[28]A Blueprint for Addressing the Global Affordable Housing Challenge, McKinsey Global Institute, 2014

Actions

- A national housing stock must be created under the NUP Framework in collaboration with Mo/ Rural Development as envisaged under the PMAY (U) guidelines amendment issued on 12th January 2018.

- With respect to the local context and conditions all states should develop strategies to prevent slums from emerging.

- Housing programs and scheme for the urban poor should cover and include all categories of disadvantaged people such as migrant workers, single women and widows, elderly, differently abled, leprosy cured, HIV affected, and any other groups facing economic or social marginalization.

- Curb all forms and practices of de-facto housing discrimination against any individual or groups, in particular religious and ethnic minorities, women, scheduled castes and scheduled tribes, internal migrants and manual scavengers in relation to their right to housing. Enhance monitoring and protection against discrimination in relation to rental accommodation, access to credit, inheritance and ownership.

Self-built houses

- In-situ upgrading that reduces the physical and legal vulnerability of self-built housing must be part – if not the core – of any affordable housing policy. Domestic and international cases – Ahmedabad, Bangkok, Venezuela, and Sao Paulo – point to the possibilities of large impacts through large-scale in-situ upgrading.

- In-situ upgradation must be focused on the incremental improvement of settlement and not become redevelopment projects that return the focus to construction of new housing units.

- The only actors that have built affordable housing at scale are what could be called the non-corporate private market: households, communities and local contractors.

- Create partnerships and coalitions of urban change agents and communities in co-creating solutions, with governance structures providing authority and responsibility to capture knowledge and experience. It will promote a sense of ownership about the plans/programmes. This can be initiated through the existing governance structures such as Ward Sabhas, Resident Welfare Associations, Neighborhood Associations, etc.

Land titling

- Different types of property rights must be evaluated against multiple ends, (1) enabling market exchange, (2) securing tenure, and (3) protecting against market-induced displacement. Broadly, however, two property right regimes that have benefits and reflect the current housing context in urban India more closely are community titling and buying development time (the

Patta system). Community or co-operative titling with possibilities of market exchange could represent a desirable middle ground between these three ends.

- Interventions that seek to buy "development time" through innovations such as No-Eviction Guarantees are critical transitional interventions that can create more equitable housing markets in the medium-term.

Scarcity of land

- Housing of low-income households is located largely on lands owned by public agencies. For affordable housing, interventions such as using Transfer Development Rights (TDRs) for land owned by the Railways or converting occupied public land into social rentals can augment land supply.

- The state should facilitate purchase of occupied private land together with resident households.

- Vacant land must be identified and brought back into the land market, and be defined appropriately for public and private land-holdings.

Inclusionary zoning

- One of the fundamental ways in which spatial plans operate is to dictate the use of space in urban areas by demarcating zones. Two critical innovations in zoning could make the practice more inclusive and particularly apt to tackling housing shortage in the Indian context. The first seeks to create the equivalent of the "Special Zone of Social Interest" (ZEIS, in Portuguese) used in Brazil. The contextual equivalent of a ZEIS in India could take multiple forms. Mandatory reservation of land at the city, region, ward or even project level as mandated by affordable housing policies as well as the National Housing and Habitat Policy, could effectively be made more secure if backed by special zoning allocations in project, ward and city-level plans. They could well be the legal mechanism to concretize the suggestion of turning occupied ULB land into social rentals, or the establishment of community-titled in-situ upgrading projects.

- Inclusionary zoning could also incorporate livelihood to create integrative, dynamic mixed-use spaces. This requires inclusionary zoning practices that recognize the density and necessity of work and commerce in "residential" settlements and that see homes as spaces of work just as much as it requires the re-design of upgrading and redevelopment projects to include space for work. Mono-functional zoning that strictly separates spaces of "work" and "residence" does not take into account the blurred lines between these two categories especially for the poor and in contexts of housing poverty. A significant part of these conditions result not just from income poverty but the fact that current zoning regulations does not permit most home-based enterprises in Indian cities. Resettlement colonies, for example, do not permit any form of work within what are seen to be entirely residential spaces. Creating integrated mixed-use zones that see home and street as spaces of work as well as residence, therefore, would greatly increase access and mobility for low-income residents as well as bring their work into legality, allowing

both access to finance as well as the possibilities of expansion and infrastructural improvement. This will get over the rigidity of developmental controls and the inadequacy of the one-size-fits all approach. For example, flexible setbacks, layout, parking norms, and others depending on the use and scale of settlements. Furthermore, in the context of redevelopment or in-situ upgradation, especially, these flexible standards should allow for households to reach them incrementally rather than at a single point in time.

- Low-income households build dwellings and settlements over time and, often, in-situ upgradation is rejected by urban local bodies by arguing that the location is "untenable" not because of any hazard but because it stands at a great distance from minimum development control norms or service level benchmarks. Incremental development controls can overcome this issue, acting as a milestone that communities must reach post-gaining security of tenure in a specified period of time. In the Baan Mankong programme in Thailand this period was fifteen years. In this context, minimum standards and service-level benchmarks become aspirations that can be met and exceeded, rather than swords hanging over the heads of already impoverished households. Admittedly, minimum standards are necessary, we are also aware that such standards come with associated costs that can become exclusionary for many households. If, making a 25 sq. m house necessitates a cost that households cannot afford, can a 21 sq. m house with a ten-year period for expansion maybe allowed. Combining incremental and flexible controls with Zones of Special Social Interest as well as community titling rather than individual titles would open up the possibility of a new developmental paradigm that begins from how the poor actually settle the city[29].

Rental housing

- Rental housing already represents a significant proportion of low income housing practice and must be acknowledged and encouraged by policies given below. State policies should be designed to deliver and manage rental housing.

- Link livelihoods by providing rental vouchers to households living in untenable lands and not wanting their own houses.

- Converting occupied public land into social rentals could be one way to expand rental housing.

- Create rental housing for long duration migrant population and dormitory accommodation with basic amenities for short-duration migrants close to the workplace.

Beneficiary involvement

- The current G+3 vertical model is unable to allow incremental growth and expansion as well as make space for work.

[29] Junior, N. S. (2002). The Right to Housing and Prevention of Forced Evictions in Brazil. In A. Durand-Lasserve & L. Royston (Eds.), Holding Their Ground: Secure land Tenure for the Urban Poor in Developing Countries. London: Earthscan.

- Low-rise, high-density forms that have been successfully implemented before must be applied at scale within the new policy paradigm.

- It is imperative to move beyond the family-based housing unit towards communal and flexible modes suited to, for example, migrant workers.

Fixing the other end of the housing market

- In the medium-term, a functional housing market will be able to provide secure, legal, and affordable housing to different types of urban households with public support required only at its margins. Creating and sustaining such a market is not possible by just looking at one segment of it, i.e. affordable housing. Difficulties in access to credit for low income households are well known: lack of formal records of employment, income, identification and residence or simply the absence of one or all of the above; the inability to navigate written and complex procedures; irregular even if adequate income flows and the procedural innovations required on the part of lending institutions. Some ways to enable the private sector are:

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  - *Viability Gap Funding (VGF or project finance)* is critical for small/fresh developers to enter the affordable housing market. Governments would do well to encourage small and fresh developers to enter the affordable housing market by providing such funding at subsidized interest rates. Rajasthan has taken the first steps in this direction by instituting a corpus of Rs 100 Cr. (to be increased to Rs 500 Cr.) with support from the National Housing Bank.

  - *Reducing approval times to improve project feasibility:* In fact, approval timings alone have been linked to a trend of developing smaller projects to circumvent certain required approvals and save time. It is critical for governments to enable actually working and efficient single-window clearance systems for affordable housing projects. The best solution is complete disintermediation in granting building permissions.

  - *Addressing land prices vis-a-vis technology options for construction:* Land is one of the largest components of the cost of developing affordable housing projects. Land costs could vary from 20-25 per cent of the project cost in the periphery of cities to almost 80 per cent in the center[30]. Availability of well-located and serviced land therefore becomes critical to ensure a steady supply of affordable housing.

- Many government interventions, especially in public sector projects tend to focus on alternative technology options that are low-cost. Identify and streamline appropriate new technologies that can reduce construction and building maintenance costs, and ensure time-bound delivery of houses. Such strategies can be expected to reduce the cost of housing by up to 15-20% per unit[31]. However, the trade-offs with land must be critically assessed. Construction, especially in core areas of city, may not amount to more than 30-40 per cent of the cost of the project. By saving 10 or even 20 per cent on construction, the overall saving in the project might not be more than

[30]See Agarwal, Jain, &Karamchandani. 2013; Revi& Mehta. 2008.
[31]A Blueprint for Addressing the Global Affordable Housing Challenge, McKinsey Global Institute,2014

5 per cent - an insignificant saving that comes at the risk of low acceptance by potential buyers and beneficiaries[32].

- Financial instruments underpinning affordable housing need to be made friendlier towards the urban poor, and take into account their levels of financial literacy, capabilities, and inclusion. Encourage Micro Finance Companies to provide housing gap financing especially catering to the affordable housing segment.

- The National Urban Livelihood Mission guidelines must be implemented for the construction of shelter homes and night shelters, ensuring that shelters for different and particular population groups like houseless, families, distressed women, street connected children and youth are established.

- City level initiatives for Involving private partners, CSRs and NGOs for promoting and maintaining of rental stock by incentivizing usage of public land/ underutilized public buildings for rental purposes may also address the affordable rental housing need. Corporate sand firms can contribute towards housing needs of employees and other segments either through dedicated company policies or through CSR for their workers. Labor cess should be utilized for providing rental housing for the construction workers.

Slum and pavement dwellers

- Support from local NGOs could be explored for accommodating the pavement dwellers into improved living conditions, without relocating them far away from their livelihood centers.

- Ensure genuine consultation with those affected, including about rehabilitation and relocation plans prior to eviction; ensure that alternative housing is habitable, affordable, accessible and structurally sound.

Illustrations

- **Baan Mankong, Thailand**[33]: This pioneering scheme leverages existing socio-economic networks towards the delivery of desirable affordable housing. The scheme sees the government playing the role of a facilitator, and encourages communities to take the lead in processes such as enumeration, planning, and implementation. Once communities have arrived at a holistic upgrading plan, the government's nodal agency, Community Organizations Development Institute (CODI) issues infrastructure bonds and/or subsidies that can enable the realization of the proposed plans. The process not only empowers communities and begets their consensus; it also minimizes administrative overheads associated with conventional state-dictated affordable housing programs. Baan Mankong had benefitted 90,000 households across 1,546 communities by 2011.

[32] See Agarwal et al. 2013.
[33] http://thecityfix.com/blog/thailands-inclusive-upgrading-informal-settlements-terra-virsilas-emily-norford/

- **Quinta Monroy in Iquique, Chile[34]:** The firm, which was contracted with the work, was given subsidies and was tasked with rehousing the community without relocating residents to the periphery. Based on the 'half good house approach' that emerged out as creative solution through community participation and planning workshops, the firm constructed just half-homes, three-story structures that included a kitchen, a bathroom, structural walls, and a staircase spread in a row house pattern. The rest of the houses, allotted empty slots between the half-buildings, were left to the residents themselves to construct, offering double the space normally given to social housing residents. This spacious footprint based on the principles of incremental social housing could expand and become more valuable as residents improved the homes with their own labor and resources. Hailed as a Pritzker renown, the project ensured community members wereneither alienated nor displaced. At Quinta Monroy, the value of the houses rose rather than fell, unlike the case in many social housing projects.

- **Yerwada, Pune, India[35]:** This low-income settlement leveraged community resources to undergo a dramatic and entirely bottom-up in-situ transformation. Community groups were involved extensively in project planning and enumeration, while efforts were made to retain as much of the existing local fabric by building upwards instead of outwards with the mentorship of architect Prasanna Desai. Once plans were agreed upon by all, the community identified human resources that could help with construction, while others were engaged in the task of collecting monetary contributions towards upgrading from the beneficiaries. The scheme is noted for its success in avoiding conflict regarding resettlement and building a sense of pride and ownership within the community.

- **Minha Casa Minha Vida, Brazil[36]:** "My House My Life" is Brazil's first-ever effort at large-scale public housing program launched in 2009. The Programme was designed to stimulate the production and acquisition of new housing units for the low income population by offering financing options to either buy a home constructed by the government or to renovate an existing one. Families with monthly incomes of less than R$5,000 were invited to apply, with priority given to families who earn less than R$1,600 per month. To do this, the Programme created special mechanisms to mobilize the private sector to build homes for this income bracket, and designed innovative arrangements of subsidy and finance for selected beneficiaries to acquire new homes. The program has already helped 10.5 million low-income people in the country.

[34]King, R., M. Orloff, T. Virsilas, and T. Pande. 2017. "Confronting the Urban Housing Crisis in the Global South: Adequate, Secure, and Affordable Housing." Working Paper. Washington, DC: World Resources Institute

[35]http://citiscope.org/story/2015/seven-lessons-successful-slum-upgrading-project.

[36]Scaling-Up Affordable Housing Supply in Brazil, UN Habitat 2013.

Chapter 7

Transportation and Mobility
Background and Challenges

In Indian culture streetscape has been an integral part of urban planning. Streetscape consists of both the natural and built environment of the street, particularly its visual effect on people. Streetscape was important in India from the earliest times of Harappa and Mohenjodaro, through the Vijayanagar town of Hampi, right up to Jaisingh's Jaipur I the 18th century. Buildings were not allowed to be placed at random points on a site, but were organized to form continuous facades, thus defining the public right-of-way. For example, in the pink city of Jaipur, facades of the buildings relate to the public spaces their internal way in the rooms. When the British first settled in India they found the conditions in the cities to be unhealthy, noisy and distasteful. So, they constructed independent colonies outside the city, in the form of cantonments for the military and civil lines for the officials and businessmen. The spatial layout of cantonments followed a different pattern. Land being very cheap by western standards, bungalows could be built on several acres. These were free-standing structures, set in the middle of large compounds. This pattern was largely an outcome of the need for spatial (since the large compound, like the *maidan*, served to keep the natives at a distance) and a yearning by the colonial administrators for a return to the 18th century English country squire life. Additionally, the British began by cutting straight streets through more congested areas and the people uprooted were resettled in the sites wherever they could be easily found. Roads were widened without any attention being paid to streetscape. Straight roads were required in order to detect encroachments. This method was expensive and, importantly, unpopular with most of the displaced. Patrick Geddes, who visited India during 1915 and 1919, suggested one way out of this.

This continued even after independence when roads were widened to bring them in accordance with the road widths suggested in master plans. For example, the streetscape on Dadabhai Naoroji Road in Bombay has been lost because all new buildings (e.g. the rebuilt Alice Building which was destroyed a decade ago in a fire) have to be placed along a new, deep setback line. The result has been a jolting visual break and the virtual destruction of the character of that section of Dadabhai Naoroji Road. Pushing back all the buildings to the new setback line is unlikely to happen in the future and even when it happens the streetscape would be irreversibly destroyed. Such road widening is hardly practiced in Paris, London and New York despite traffic growing on roads[37].

A significant outcome of India's accelerating urbanization in the last few decades has been the exponential increase in motorization across Indian cities and towns, which was primarily driven by demand for private vehicles, especially two wheelers. Among several reasons, the increasing urban sprawl of large cities and the inability of public transport systems to keep up with increasing travel demand have been cited as major factors contributing to the increased demand for private vehicles along with inefficient seamless connectivity for the existing public transport.

[37]National Commission on Urbanization (1988)

The result of higher private vehicle ownership has also been evident in terms of declining air quality, increased pollution and rising vehicle fatalities, with several alarming statistics emerging. The economic cost of traffic congestion just in Delhi, Mumbai, Kolkata and Bengaluru has been estimated at approximately USD 1,470 billion[38]annually. The combination of increased urban sprawl and lack of public transport have disproportionately affected the most economically vulnerable sections of urban society.

A major driver of urban India's increased traffic congestion has been lack of policy-based reforms that gives greater primacy to private vehicles, such as expanding roadway capacity at the cost of public vehicles, which incentivizes purchase of private vehicles adding to congestion. It is thus necessary to focus on moving people rather than vehicles, by encouraging walking, cycling and the use of public transport. The Government of India had acknowledged the importance of this principle in its National Urban Transport Policy of 2017. The NTP and AMRUT as well as Smart Cities Mission which aimed to fund urban infrastructure (including transport) and essential services to the urban poor, together represent significant policy steps towards advancing equitable urban mobility, smart mobility and reducing congestion.

At present, there are several issues that exacerbate the problem of excess motorization. These challenges all represent opportunities to improve equitable urban transport in India by providing reliable, affordable, inclusive, accessible and integrated public transport as well as safe non-motorized transport facilities. There are issues such as different modes of public transport operate in silos and fragments, rather than as part of an integrated network; lack of focused investment in road-based (e.g. bus) public transport leading to inadequate, low quality bus fleets and services and decreasing ridership; lack of designated space for road based public reduces its appeal to commuters who can afford other modes of transport, since they use the same space as private vehicles resulting in slower commute; lack of facilities and street infrastructure for non-motorized transport (e.g. walking, cycling) and active travel which either make it inconvenient or unsafe for pedestrians and cyclists particularly women; and lack of a comprehensive parking policy, leading to significant road space being taken away by street-parked private vehicles. Furthermore, women face significant safety challenges on public transport. High-profile cases of sexual harassment and violence have recently highlighted an on-going issue, whereby women are unable to use public transport, particularly at night. This in turn restricts their access to employment, education and services.

Priorities and Actions

Priorities

Mobility planning must consult diverse resident groups and ensure that all perspectives are accounted for. In particular, women tend to take multiple, cross-city trips, as opposed to traditional transport planning that is focused on city-center (male) commuters.

38http://image-src.bcg.com//Images/BCG-Unlocking-Cities-Ridesharing-India_tcm21-185213.pdf

Undoubtedly, traffic zones are required for the exclusive use of vehicles on highways, but recent postmodern practices in Europe are also looking at roads as "social zones". Unlike traffic zones, social zones integrate car and pedestrian movement. The combination of traffic with pedestrian movements, children's play, and social activities is based on the "woonerf principles" developed by Niek de Boer and Joost Vahl in the Netherlands during the 1960s and the 1970s. The principle is to bring traffic engineering and urban design together. Shared space is another woonerf principle that is applied to transform busy traffic intersections. In Friesland market town of Oosterwolde, different types of traffic intermingle giving an impression of chaos and disorder; in fact, traffic negotiates the junction using eye contact and care for other types of transport. No state regulation or control is visible and traffic movement depends on informal convention and legibility. The city of Christiansfeld, Denmark used "ambiguity and urban legibility" in street design to reduce high death rates on the town's central traffic intersection. Traffic signals and road markings were removed. No mode of transport was given priority and pedestrians, buses, cars, and trucks used eye contact to negotiate the junction. Surface treatment, lightning columns, and junction corners were squared-up. The purpose was to make the intersections resemble the center of the town or to create a public realm. Expectedly, the number of killed or seriously injured (KSI) during the last three years was reduced to zero; moreover, traffic backups were reduced. Compared to junctions having traffic signals, ambiguous junctions prevent accidents, reduce delays, and are cheaper to construct and maintain. Similar integration of urban design and traffic engineering is taking place in the UK in the "Home Zones" program, started in 1999. The principle followed in Home Zones is that contextual design can be employed to influence traffic speeds and driver behavior. The idea of roads as social zones, particularly in congested 'Areas' of cities is an idea worth pursuing (Sutra # 2 &5).

At the same time Indian cities require integrated, safe public transport network wherein commuters can easily reach their destination using the most efficient set of public transport options available. At present, the lack of investment and safety obtaining a seamless connectivity such as lack of feeder services discourages the use of public transport. With this walking and cycling have to be encouraged as these have been neglected through lack of investment in walking and cycling infrastructure. In order to ensure that citizens move away from using private transport for short trips, infrastructure for active, non-motorized transport has to be created (Sutra # 6).

Public Transport has to become inclusive. It has to accessible to all parts of society especially the vulnerable groups in order to create equity amongst citizens. Indian cities have to be caring cities by encouraging 'availability of accessible and affordable transportation for older persons'. Many countries have issued laws and policies to ensure the mobility of older persons, through lowering transportation costs, giving special discounts and other measures. Older people face enormous difficulties in moving from one place to another, even within the city limits, because of transportation- and security-related issues (Sutra # 1, 2 & 5). There is a difference between the transport requirements of men and women. Women's perspective is hardly taken into consideration while designing the transportation policies and infrastructure. As a result, women have less access to motorized transportation and wherever it is available, public transport is often less than adequate. This has various effects on women, which are mostly reflected in poor workforce participation and increased incidences of women related crimes. On the other hand, gender responsive transport infrastructure can free up women's time, thereby increasing the opportunities

of young girls to pursue education and women to pursue income generating activities and employment.

Master plans have to encourage a more dispersed but functional and closely knit pattern of urban settlements at the regional level, replace traditional concepts of home-work-place relationships with transit-oriented development, have a clustered pattern of both mono- and multi- functional settlements around a central core-city, linked by fast movement corridors, enabling de-concentration and decentralization of population and use state-of-art transport technologies for inter-city and intra-city mass transportation systems (Sutra # 3).

Indian public transport, for the most part, still relies on old technology and fails to make adequate use of data for improved transport planning, resulting in complicating the process of using public transport for the commuters. Usage of satellite navigation technologies for high-resolution satellite imagery and GIS capabilities integrated into the Intelligent Transportation System; there will be an end-to-end solution for the entire spectrum of challenges.

Actions

The provision of a public transport will be subsidized by the Center.

The traditional policy responses to congestion are to build more roads and expand public transport. Information technology enabled platforms have the potential to integrate people, businesses and products under a set of rules set by the owner or operator, similar to e-commerce sites matching buyers and sellers. A simple platform integrates bus services equipped with GPS and an app that allows commuters to see bus locations and wait times. However, this will not increase vehicle utilization and car occupancy. An emerging alternative is a platform that provides Peer-to-Peer (P2P) services. A P2P service is a decentralized platform whereby two individuals interact directly with each other, without the intermediation of a third-party. These are also called shared services and what is required is an app that mixes and matches a variety of public and private means of transport. Shared service combines mass-transit with a growing variety of private services and has the following benefits, (1) private capital is integrated into public transport, (2) closer link is established between supply and demand, and (3) reduction in congestion as commuters will be diverted from crowded routes to less congested ones. In this way, shared services have the potential to leapfrog the conventional steps followed in transport planning.

Active transport

- City and neighborhood development plans must compulsorily include suitable allocations with dedicated funds for the creation of street furniture such as footpaths, streetlights, etc. for safe commute of pedestrians and cyclists and cannot be diverted for other purposes. Road 'improvement' projects should not occur at the expense of footpath space or cycle tracks. Last mile connectivity should be ensured for all modes of transport.

- Design standards (e.g. DDA, IRCS) with provisions of safety audits need to be followed in the construction of footpaths, cycle tracks and pedestrian crossings in safety zones like schools,

hospitals, markets etc. and financial incentives from the respective state and central governments should be based on inclusion of such design standards.

- A comprehensive street vending policy needs to be implemented, with dedicated space allocation for vendors. One way is to reorganize street activities, as in the smart streets being developed in the Smart Cities Mission.

- An institutional arrangement should be established in order to ensure common understanding and coordination between departments and agencies (e.g. SPV).

Integrate public transport

- In the existing system different public transport agencies (bus, metro, ferry, etc.) operate in silos, often competing and working at cross-purposes, a Unified Metropolitan Transport Authority (UMTA) with an overarching transport vision must mandatorily be created across all Indian cities and towns with multiple modes of public transport. The UMTA should also have the authority to make decisions on traffic flow planning, which is currently under the control of the traffic police.

- All future airports, buses, trains and metro stations should be designed in a way to ensure seamless transits for commuters switching modes, with both physical and information integration, and ideally provisions for common or one time ticketing which will also lead to saving time.

- Both transport and stations should provide adequate safety measures to ensure the safety of all users, particularly women.

- Transport and stations should be physically accessible, particularly for the elderly, pregnant women and persons with disabilities.

- Multimodality as a concept should not be restricted to creating feeder services to metro rail systems; rather, how commuters can be encouraged to use the most efficient set of public transport options for their commute.

- Buses should be given priority as much as possible, with dedicated lanes on corridors with a high flow of buses. Urban bus fleets in the country should be doubled within the next five years to increase frequencies, riderships and reliability. Performance standards for the buses in terms of fuel efficiency / alternative fuel use should be included.

- The NUPF discourages private modes of transport. Fiscal measures should be taken to discourage private vehicle purchase and usage in terms of higher Motor Vehicle and fuel taxes. The revenue gained from increased taxation should be used to fund public transport. On-street parking should be priced at a rate high enough to discourage casual private vehicle trips. This revenue can further be used to fund public transport.

- Expansion of cities and towns (if necessary) should prioritise high density mixed land use, with compulsory land allocation for public transport stops and depots.

Utilize technology and data

- Public bus operators should introduce Intelligent Transport Systems (ITS) into their fleets in order to monitor bus performance and revenue accurately;

- Bus route information and realtime data on bus running should be disseminated to commuters to simplify the process of journey planning through smart apps.

- Knowledge-sharing platforms should be created so that early adopters of ITS and other new technology can share their learning with newer adopters;

- Transit data should be shared across transport agencies across cities to identify where multimodality can be improved until the establishment of a UMTA;

- Open source data and standardization policies should be instituted so that researchers and public policy practitioners have access to recent, accurate data for policy recommendations;

- Greater financial incentives should be provided to operators that embrace greener technology such as electric vehicles. (E.g. of Scandinavian countries – recent MoU with them)

Illustrations

- **Metro Bus, BRT System in Mexico:** In 2005, Mexico City introduced Metro Bus; the first line of 20km stretch was laid along its busiest corridor. Primary benefits of Metro Bus includes considerable reduction in the local emissions and its resultant health impacts, significant reduction in greenhouse gas emissions, and also reduce travel time along its routes in peak hours[39].

- **Metro cable Car system in Medellin, Colombia:** The city of Medellin, Columbia has a number of informal settlements on its steep hillside. Therefore to connect these settlements to the city center, an initiative of the Metro cable cars was made. The metro cable project developed an integrated design along with other forms of mass transit and strengthened the pedestrian network hence providing mobility for all irrespective of their location or socio-economic status. The first line provided access to over 230,000 residents in 12 localities and the second line serves 315,000 residents while connecting 37 districts. Hence, metro cable project attained and surpasses its goal of providing equitable mobility and improving the quality of life for the existing informal settlements in the peripheral areas.

[39] The Benefits and Costs of a Bus Rapid Transit System in Mexico City, May 2008

- **Bike Cycling, Denmark**[40]: In Denmark there is a coherent network of segregated lanes designated as cycle tracks serving as public transport in the country. Ample bike parking complements extensive cycling rights of way in Denmark; full integration with public transport, comprehensive traffic education and a wide range of promotional events intended to generate enthusiasm and public support for cycling. In addition to their many pro-bike policies and programs, Denmark makes driving expensive through a host of taxes and restrictions on car ownership, use and parking. Strict land use policies foster compact, mixed-use developments that generate shorter thus more bike able trips. "Door to Door strategy" focuses on the connections between cycling and public transport.

[40] Making Cycling Irresistible: Lessons from the Netherlands, Denmark, and Germany-Pucher and Buehler, 2008.

Chapter 8

Urban Finance
Background and Challenges

Municipal institutions gradually evolved during the British period. Lord Mayo, Governor General (1869-72) issued a resolution giving more functions to the elected bodies. In 1882, Lord Ripon further extended the scope of local government and devolved certain taxation powers. Despite the transfer of several functions to municipal institutions, availability of adequate financial resources was always an issue. Gopal Krishna Gokhale had moved a resolution in the Indian Legislative Council on 13 March 1912, which read: *That this Council recommends to the Governor General in Council that a Committee of officials and non-officials may be appointed to enquire into the adequacy or otherwise of the resources at the disposal of local bodies in the different provinces for the efficient performance of the duties, which have been entrusted to them and to suggest, if necessary, how the financial position of these bodies may be improved* (ARC 2008; pg. 222).

The Government of India Act 1919, provided for clear demarcation of powers to the local bodies and included in its range of municipal taxes, tolls, land tax, tax on buildings, vehicles and boats, tax on animals, octroi, terminal tax, tax on trade, professions and callings, tax on private market and tax on municipal services like water supply, lighting, drainage and public conveniences. In his Presidential Address at the Provincial Local Bodies Conference at Surat in 1935, Sardar Vallabhbhai Patel, who was the Chairman of the Ahmedabad Municipality, said, "*It is being said that the franchise of the electorate has been enlarged and the local bodies have been given very wide powers. True, I accept it. But what good would come out of it unless and until the question of local finances is settled first. The extension of franchise and widening the scope of duties would be like dressing a dead woman* (ARC 2008; pg. 222). The Government of India Act (1935) established a two-tier federation and changed the entire approach to urban local governance and reduced the taxation powers of local bodies transferring these to the provinces. This structure was retained in our Constitution. The powers of the states over local bodies are kept in List II (State List) of the Seventh Schedule and the authority to tax is restricted to the Centre and the States, thus, States were empowered to decide on functions and financial powers of the municipalities.

The 74th Constitutional Amendment Act did not provide for a 'municipal finance list' in the Constitution to match the municipal functions listed, thereby, signaling an 'incomplete devolution' package and leaving the issue of financial devolution to state governments. Municipal bodies in India can levy and collect only those taxes that state governments choose to devolve from their powers as specified in the State List in the Seventh Schedule to the Constitution. The Amendment introduced two features to strengthen the finances of urban local bodies, (1) a provision for the setting up of State Finance Commissions (SFC) every five years, and (2) a requirement that the Central Finance Commission (CFC) suggest measures to augment the Consolidated Fund of States for supplementing the resources of local bodies on the basis of SFC recommendations. The idea behind setting up SFCs and making recommendations every five years was to bring about certainty, clarity and consolidation in the transfers to local governments. Certainty could be achieved through ensuring revenue sharing of taxes on goods and services. Clarity could be achieved if SFCs formulated more transparent, formula-based processes for sharing taxes. In addition, improved

functioning of SFCs would enable ULBs to get the bulk of their funds in one transfer annually rather than having to rely on project- wise grants.

Most state governments have set up SFCs, and these SFCs have made recommendations to their state governments on devolution to their ULBs for the upcoming five-year period. However, in actual practice, SFCs have typically functioned with inadequate technical and financial support, and their recommendations have mostly not been implemented. The HPEC (2011) found that some states have partially devolved funds, while others have not devolved at all. Yet others such as Kerala and Goa did not accept the SFC recommendations on transfers because the state's resource base was 'strained'. The expected benefits to local bodies have not been realized. In contrast with the limited success achieved on the devolution of funds from state governments to local governments in India, countries like Brazil and South Africa have made tremendous strides in devolution. In both Brazil and South Africa, transfers are legally guaranteed and revenue-sharing arrangements have served to increase municipal revenues significantly by consolidating transfers and making them predictable. This has also enabled municipalities to attract external debt to finance their spending on infrastructure.

Generally, there are four sources of finance for urban local bodies – tax revenue (e.g. Property tax, advertisement tax); non-tax revenue (e.g. rents, interest, fees, parking fees, user charges for public utilities, such as water, sewerage); devolution of funds from the state government; grants from the Centre and state government for development schemes; and borrowings. Property Tax is the most important source of revenue for local governments. Originally, 'Annual Rental Value' (ARV) was the basis of levy of property tax. The ARV is defined as the reasonable rent a property may fetch or actually fetches. The ARV method of assessment has many drawbacks - the process of assessment is opaque, gives a lot of discretion to assessing officials, and is inelastic and non-buoyant. As a result, a large number of municipal bodies have switched over from the traditional ARV based assessment to the 'Unit area' or the 'Capital value' methods. Municipal boundaries are not expanded to keep pace with growth of cities in the outskirts, therefore, a large number of properties fall outside the jurisdiction of the municipal bodies. In larger cities, urban development authorities develop areas and these areas are not assessed till such time these areas are technically 'handed over' to municipal bodies. Usually, this takes several years. State laws often provide for exemption to a number of categories of buildings such as those belonging to religious or charitable institutions, which often include almost all private educational and medical institutions. Unauthorized constructions are quite common in almost all cities in India and generally these are not taxed. One reason is the fear among municipal authorities that demands for regularization would be strengthened once tax is levied. A large number of properties belonging to the central and state governments are not taxed because of the provisions of Article 285 (Exemption of property of the Union from State taxation) of the Indian Constitution. Similarly, leased municipal properties are not taxed. Such properties, though in possession of occupants for a long time, often generate very small incomes for the local government. The collection efficiency of property tax is low. Some of the reasons identified are, poor data base management, improper upkeep of records, collusion between taxpayers and recovery officers and lack of understanding of the tax regime.

Local government is a State subject and different states have authorized the local bodies to levy different kinds of taxes. Some of these taxes are professional tax, advertisement tax, entertainment

tax, tax on entry of tourists, animal tax, water tax and lighting tax. Additionally, local governments levy several cesses like education cess, library cess, beggary cess, etc. The income from these sources is much lower as compared to property tax. Professional Tax has large potential of generating significant resources for the local governments. However, there is an upper ceiling of Rs 2,500 prescribed under the Constitution {Article 276(2)} and this limits the collection of this tax.

The most important sources of non-tax revenues are user charges, which are the payments a citizen has to make for using public services. These include water charges, sanitation and sewerage charges, waste collection charges, charges for street lighting, fees for parking, fees for use of congested roads by motorists, fees for use of local services, etc. Generally, states and cities charge a much lower rate for providing these services as compared to the actual cost of providing these services. There are several reasons for charging low rates for these services. First, there is reluctance on the part of the elected local governments to charge fair rates for fear of becoming unpopular. As a result, there are insufficient resources available for maintaining and running these services and the quality of service declines. This leads to a vicious where and citizens resist any increase in service charges due to poor provision of services. Second, economic and financial expertise is unavailable at the local level (especially in case of smaller municipalities) to assess at correct rates for services provided by the utilities. Third, poor paying capacity of a segment of population is used as an excuse for not charging even from others, who can and should pay.

Parking fee is an important instrument of revenue enhancement through user charges for local governments. It also influences commuting choices in favor of public transport. With the emergence of a large middle class and the absence of good systems of public transport, this instrument has significant potential for generating revenue for local governments in India. However, most metropolitan cities of India have inadequate provision for parking space for vehicles, and this is combined with a negligible charge for parking (either legally or illegally). The average daily parking rate in Indian cities is around USD 2 (Rs 90), while cities in other developing countries charge in the region of USD 10-15 (Rs 450-675) per day (HPEC; Colliers International 2010). This results in poor revenues and large- scale traffic congestion on roads.

Generally, all municipal laws provide for imposition of fines for a large number of civic offences. Although the amount recovered from these fines may not be significant, their levy has a salutary effect on compliance of various municipal laws and byelaws and indirectly leads to increase in municipal resources. However, imposition of such fines is a rarity. One reason is that the power to impose fines is not given to the municipal authorities and proceedings in the court of a magistrate have to be instituted. Thus even for imposition of a small fine, prosecution has to be launched in a criminal court. Due to the time and effort involved, municipal authorities rarely launch criminal proceedings and this gives rise to the feeling that the municipal authorities are 'soft' in enforcing the law and is a major reason for widespread violation of civic laws.

The borrowing powers of local governments are limited and they have to seek the approval of the State Government for any borrowing. Municipal bonds are one type of borrowing with great potential to raise money from the capital market. Municipal bodies, especially in larger cities have taken recourse to raising resources by floating municipal bonds. The Bangalore Municipal Corporation was the first municipal body to raise funds by issuing bonds in the early 1990s backed by a state government guarantee. Later, the Ahmedabad Municipal Corporation floated municipal

bonds, which were not backed by any state guarantee. Since then several creditworthy cities/parastatals have floated bonds - Tamil Nadu (Chennai, Madurai, and Tamil Nadu Water and Sanitation Pooled Fund), Karnataka (Bangalore, and Karnataka Water and Sanitation Pooled Fund), Andhra Pradesh (Hyderabad, Visakhapatnam) and Maharashtra (Nagpur and Nashik), etc. Since small and medium local governments were unable to access capital markets directly on the strength of their own balance sheets, and the cost of transactions was also a barrier, pooled financing mechanisms were started. Pooling mechanism enable capital investments to be pooled under one borrowing umbrella in order to reap the benefits of economies of scale. Only Tamil Nadu and Karnataka have issued municipal bonds by pooling municipalities. The total amount of capital raised in the municipal debt market is Rs 1224 crores (Ministry of Housing & UrbanAffairs. In July 2015, SEBI notified a new regulatory framework for issuing municipal bonds in India.

Municipal bodies often have a wide range of assets on their balance sheets ranging from infrastructure networks to public buildings, from housing to municipal shopping centers as well as land. Asset management involves deciding what to do with these assets. These can be leased out. The issue is how to determine the true economic cost. Another way is to sell the assets in order to generate resources upfront for infrastructure creation. A necessary requirement for leveraging land for revenue generation is proper upkeep of land records. Presently, the system of keeping of land and property records does not ensure a clear title. There is no convergence between the registration process, the property taxation system and the record of rights maintained by the revenue department of the State Government.

Many cities in China have financed more than half of their infrastructure investment from land leasing and have also borrowed against the value of land on their balance sheets to fund infrastructure investments. Land leasing in China, for example, involves sale of long-term occupancy and development rights. For example, Shanghai, during the period 1992-2004, generated over USD 12.5 billion from land leasing while Shenzhan generated 80 percent of its local Government revenues from land leasing. Even in India, the Delhi Development Authority (DDA) (Source: Based on annual report of DDA) has generated over Rs.6, 000 crores as revenue from sale of developed land in the middle 2000s, largely for commercial uses.

Apart from the traditional modes of revenue generation, there are many innovative sources of resource generation to increase the resources of municipal bodies. One is value capture finance (VCF). Value capture is based on the principle that private land and buildings benefit from public investments in infrastructure and policy decisions of Governments (e.g. change of land use). As the additional value is generated by actions other than landowner's direct investment, value capture is distinct from the user charges or fees that agencies collect for providing services. Value capture finance is a more efficient form of resource generation as compared to direct sale of lands to raise funds. Conversion charges, betterment charges, impact fees, and development charges are the most frequently used VCF tools in India. Recently, the Ministry of Housing & Urban Affairs has designed a Value Capture Finance Framework to be followed by the States and cities.

An emerging mode of resource mobilization is Public-Private-Partnerships (PPPs). PPPs bring together the social concerns of the municipal bodies and the professional competence of the private sector. Urban transport, waste management, housing, roads and bridges are some of the sectors

where PPP models have been successfully used. PPP models, however, require utmost care on the part of municipal bodies as inadequate scrutiny, faulty contracts, weak monitoring and evaluation mechanisms and above all financial weakness may lead to skewed arrangements where public interest may suffer in the long run. Municipalities require strong institutional capacities before going in for PPP projects.

Priorities and Actions

Priorities

The revenues of urban local bodies have to increase year-on-year in order to cover increasing costs of operation and maintenance of municipal facilities and capital works. Smaller urban local bodies should be able to recover at least a part of their revenue expenditure (which is a sum of operation and maintenance costs as well as costs of establishment & salaries) from their own revenue receipts while larger bodies should recover full revenue expenditure. Moreover, all urban local bodies should spend some part of their total expenditure for asset creation and capital expenditure. This approach is to encourage cities to leverage their assets to generate more revenue sources and other sources of finance and is in consonance with the Sutra on "Financially Self-Reliant" cities (Sutra # 8).

There are several opportunities to enhance ULBs revenue generation capacities through improvement of property tax and user charge collections, implement credit enhancement plans, adopted innovative financing methods such as value capture and issuance of municipal bonds. One of the major drawbacks of property tax based on Annual Rental Value (ARV) is that it is non-buoyant. The tax fixed for a property remains unchanged till such time an overall revision in the property tax is undertaken in municipal areas. Such revisions in some places have not taken place for several years or even decades. The Unit Area Method overcomes this problem to some extent as the different factors for assessment of tax can be changed periodically so as to reflect the market values. Property tax based on 'capital value' overcomes this problem completely, as taxes are self-assessed by the property owner every year and while doing so the market value prescribed for that year is taken into account. This ensures that the property tax reflects the current market value and hence is buoyant.

Urban local bodies should increasingly move over to financing 'lumpy' capital expenditure using municipal bonds and the Government of India could incentivize this. Appropriate VCF tools can be deployed to capture a part of the increment in value of land and buildings. In turn, these can be used to repay debt raised through bonds. Value capture tools should be aligned to the strategic/master plans (Sutra # 3). By developing infrastructure, the quality of life will improve making the city an engine of regional growth (Sutra # 10). Municipal bonds have several other benefits for municipal efficiency (Sutra # 8). Funds mobilized through municipal bonds are used for economically viable projects. Successful implementation of projects based on municipal bonds requires strong financial and administrative capabilities in the municipalities. Municipalities will have to follow economic pricing for their services so that their actual costs are recovered from the citizens. Investment grade credit rating, modern accounting mechanisms (e.g. accrual accounting), identification of viable

projects, levy of appropriate user charges and transparency in the decision making process are necessary pre-conditions for a successful bond issue.

Actions

Legislative and Policy Changes

- All States to set norms for cities to meet their revenue expenditure from own revenue and minimum proportion of budget to be earmarked for capital works. The norms will be different for different size cities in each State. To make this operational, states and cities to enter into a MoU with annual targets. Similarly, user charges should cover at least full operation and maintenance costs. Grants should be used to induce urban local bodies to become self-reliant.
- Insert a 'Local Bodies Finance List' (LBFL) along the lines of the Union List and the State List.
- CFC/Central Government should provide guidance on the devolution on the basis of a formula, taking account of the level of economic activity, population levels, extent of poverty, capacity to mobilise resources, etc. of the ULBs.
- SFCs should be set up in time so that CFC has their reports for consideration in preparation of its recommendations.
- Strengthen SFCs by improving their capacity, and ensure that the state governments accept the recommendations of SFCs without major modifications.
- All States must have clear policy /law/guideline for PPP.

Revenue Mobilization Plan

Property Tax

- Property tax should be decomposed into a general tax and a service component. Water tax and sewerage tax should be replaced by appropriate user charges.
- Property tax should gradually transit from ARV to tax based on capital value.
- The base for property tax should be comprehensive with no exemptions.
- The base for levy of the property tax should be revalued every year based on annual indexation for inflation. This will avoid large increases in property tax. Tax assessment should be based on self-assessment, and tax collection should be through digital means.
- The ULBs should have the flexibility to fix the tax rate in respect of property tax on constructed buildings, subject to meeting a portion of their revenue and capital expenditure. For this State Governments to issue guidelines.
- Information technology should be used for GIS mapping and linking departments, such as revenue and town planning.
- Service charges should be collected for the use of city services on unauthorized buildings on which property tax is not levied.

Professional Tax

- The ceiling of Rs 2,500 on profession tax should be revised upward to, say, Rs 10,000 by making appropriate amendment to the Constitution.

- Compliance and administrative procedures for assessment and collection of the tax should be kept extremely simple.
- Profession tax should be collected and fully retained by the ULBs. In cases where the State Governments collect profession tax, the proceeds net of administrative costs should be entirely devolved to the ULBs.

Non-tax Revenue: User charges and fees

- Where services can be measured and beneficiaries are identifiable, user charges should be assessed and collected. Water and sewerage charges should be levied separately.

- The user charges should be so structured as to at least meet the operations and maintenance cost of running the service. If capital costs are not met out of the user charges, then an appropriate VCF tool should be used to recover capital costs. These should be revised every year based on a formula.

- Trade licensing fee should be collected based on self- assessment.

- The Value Capture Finance Framework should be completely implemented by all the States and cities.

Municipal Revenue Enhancement Plans

- ULBs who have been credit rated should implement revenue enhancement plans.

- ULBs with investment grade rating should be encouraged through incentives to issue bonds.

- Guidance and technical assistance to be provided for issue of bonds and introduction of PPP.
- SEBI regulations on issue of municipal bonds to be amended to enable pooled financing by a group of ULB guidelines.

- State government clearances for ULB borrowing should be based on agreed principles and not on an ad-hoc project basis.

- Incentive cities to invest in low-emission, climate-resilient infrastructure; encourage project preparation for mitigation and adaptation projects; and collaborate with local financial institutions to develop climate finance infrastructure solutions for cities, also known as green bonds.

- Improve procurement and contracting so that expenditure growth can be contained within targeted levels.

- There should be improved accounting system based on double entry and accrual system leading to better financial management and transparency. ULBs accounts should also be regularly audited.

- CSR funds and PPPs with corporates can be explored for improving municipal services.

Illustrations

- **Restructuring South Africa's Fiscal System**[41]: The Constitution of the Republic of South Africa (1996) established a unitary state with three autonomous but inter-dependent spheres of government: national, provincial and local. The local governments are responsible for the provision of basic urban services like water, sewerage, solid waste management, roads and electricity distribution. In order to accomplish this, some clear sources of revenue have been delineated. The Municipal Property Rates Act allows municipalities to set their own property tax rates with certain restrictions. The municipality determines user charges for water and sanitation facilities. Equalization Grant (EG) is an unconditional grant, which is a share of national revenues allocated to local governments and provinces as their equitable share. This grant goes directly into the operating budgets of local governments. Whereas Municipal Infrastructure Grant is a conditional, multi-year and formula driven grant available to municipalities to finance all their infrastructure needs.

- **Property Tax Reforms in Bangalore**[42]**:** The Bruhat Bengaluru MahanagarPalike (BBMP), previously Bengaluru Municipal Corporation, launched the optional Self-Assessment of Property Tax Scheme (SAS) in 2000. Due to the SAS, property tax collection in Bengaluru increased by 33 percent during 2000-01. SAS-2008 has shifted to the concept of Unit Area Value from Annual Rateable Value. Filing of annual property tax returns in Bengaluru is now mandatory. Up to 10 percent of the returns filed are to be verified randomly. The BBMP has supplied a handbook to taxpayers, explaining how self-assessment of property tax can be calculated. An online tax calculator is also made available. Now property tax can be paid online, at computerized kiosks in 'Bangalore One' centers, municipal offices and banks. Bengaluru is the first city in India to adopt GIS-enabled database for property tax on a city scale, identifying 1.7 million properties and assigning them unique Property Identification Numbers (PID). Due to SAS, property tax collection in BBMP increased by 39 percent between 2009-10 and 2010-11.

[41] HPEC 2011.

[42] "Revenue Improvement Planning in Metropolitan Cities: A Case Study of Hyderabad and Bengaluru Municipal Corporations", HUDCO Chair Program, University of Hyderabad, 2017.

Chapter 9

Urban Governance
Background and Challenges

The origin of municipal bodies is associated with the British and their main motive was to mobilize local fiscal resources for local works such as water supply, drainage, primary education, public health, roads and streets, parks and play-grounds, street lighting as well as enforcing building bye-laws and maintenance of local police force by associating influential Indians with local administration. Later, reforms were introduced, including elections, ultimately ending up with the process of introducing an elected council with an elected Chairman in 1920 under the Montague-Chelmsford Reforms. However, the British did not want the municipal governments to be strong, as they had created them as concessions to the national sentiments and to assuage the feelings of national leaders who were then fighting for greater participation of Indian people in government. These local self-governing bodies were largely left to fend for themselves without any technical and administrative guidance or financial support.

The most important task at the time of India's independence was to consolidate more than 400 princely states into one nation. Therefore, the Constitution did not give prominence to the local bodies at that point of time and legislative powers remained with the Center and the state - the two tiers of Government - as separate "subjects". As in the United States of America, the urban in India is a state subject. It was only in 1993 that the 73rd and 74th Amendments of the Constitution came into effect and were aimed to bring about a fundamental shift in the nature of governance. Article 243P (e) recognizes a municipality as an institution of self-government and Article 243W proposes that the Legislature of a State may, by law, endow "the Municipalities with such powers and authority as may be necessary to enable them to function as institutions of self-government and such law may contain provisions for the devolution of powers and responsibilities upon Municipalities." Thus, the state governments have the principal constitutional responsibility for urban development. Since then municipalities have been created and elections are, by large, being held. The Constitutional Amendment has 'recommended' that state governments assign them a set of 18 functions under the Twelfth Schedule. However, as the Administrative Reforms Commission (2008) noted, this has not led to real decentralization of power to the municipalities. The Amendment is even less clear on the devolution of finances leaving it to the discretion of state legislatures. State governments have only partially complied with devolution, and this has typically not been accompanied by the devolution of funds and functionaries.

Article 243 R (2) (b) of the Constitution provides that the legislature of a State may, by law, provide the manner of election of the Chairperson of a municipality. While there is no reference to the Mayor of a big city in the Constitution, 'Chairperson' is clearly a generic term, and includes the Mayor. The Chairperson's role and functions have not been clearly defined. The Chairperson/Mayor in urban local government in most states enjoys primarily a ceremonial status. In most cases, the Commissioner, appointed by the State Government, has all the executive powers. In general, the Chairperson/Mayor chairs the council meetings and has only a peripheral role in urban governance. However, in Kolkata, the Chairperson and Mayor are two separate functionaries, the former chairing the Corporation meetings, and the Mayor-in-Council exercising certain executive functions. The

manner of election and term of office of the Mayor/Chairperson varies from State to State. In most major states, the Chairperson is indirectly elected by the elected councilors. The term of mayors also varies from five years to one year. For example, in the year 2008 the term of office of the Mayor/Chairperson was five years in Andhra Pradesh, Kerala, Madhya Pradesh, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. It was one year in Assam, Delhi, Haryana, Himachal Pradesh and Karnataka, and the councilors elected a new Chairperson every year by rotation.

In the world, there is wide variation in local laws and customs regarding the powers and responsibilities as well as the manner of election of the mayor. The mayors of New York and London are popularly elected by direct vote every four years. The mayor of Toronto is elected by direct popular vote once in three years. The mayors of Tokyo, Sydney and Athens are also popularly elected. In Paris, the mayor is chosen by proportional representation. The mayor of Rio de Janeiro is popularly elected by a two-round majority system. In Mexico City, Bogota and Buenos Aires the mayors are popularly elected. In Johannesburg, the executive mayor is at the top of the list of proportional representative candidates of the party that aims for the majority support. In almost all these cities, the city government is a powerful institution with very real and effective role in the management of most aspects of the city. The mayor is usually the head of the executive branch of the city government. In most cases public infrastructure and services are under the city government's control.

Another unique feature of India is the presence of a large number of Parastatls or*guangos*, as the British call development authorities and functional organizations, which are quasi-government bodies. These include development authorities, housing boards, slum clearance boards, water and sewerage authorities, etc. These are not elected; they are directly appointed by state government and are accountable to it. They operate within city limits, but are not answerable to the local bodies because they are above them. The mushrooming of such organizations has resulted in a dichotomy in urban management in which the existing, decaying, largely inadequate services become the responsibility of the municipalities, whereas the entire capital input into city expansion, together with the profit thereon; fall to the share of the functional organizations or development authorities.

The presence of these parastatals has led to the proliferation of a multiplicity of agencies at the city level. Such parastatals mushroomed in the 1960s and 1970s, in the hope that they would provide technical competence for the provision of various services and utilities. While the argument for this is greater capacity and professionalism, this structure also directs the accountability of these officials upward rather than towards local governments.

Most of the ULBs are understaffed (technical and general), the existing staff has limited skills in handling projects, and there is frequent transfer of officers in the absence of dedicated municipal cadre. There is absence of suitable institutional framework for supporting continuous capacity building efforts, which is not based on demand but routine ad-hoc trainings. The platforms and systems for people's participation are not functional. This has resulted in inadequate collection of disaggregated data that can inform policy discourse and commensurate resource allocation. Many ULBs have still not been able to utilize the advantages of ICT to improve the quality and cost effectiveness of public services, and to collect and manage data in ways that make it possible to provide information in an integrated manner at the local level for decision-making.

Priorities and Actions

Priorities

Fragmentation and multiplicity of agencies at the city level has to be addressed together with empowering the Mayor (Sutra # 9). Additionally, appropriate governance arrangements have to be decided and settled by State Governments at the regional, city and ward levels.

Responsibility of planning, managing and resource raising and allocation should be transferred to the municipalities. Full decentralization should be done and capacity of local institutions has to be built. For example, if municipal operations are transferred to ward Sabhas and area committees, they should be adequately staffed and funded. In Madagascar, the management of municipal water resources was transferred to the local community eventhough did not have the management capacities to maintain the water system or raise finances to fund the expansion of the system. The result was increased user charges and water scarcity.

Decentralization should be based on the principle of subsidiarity[43]. The principle of subsidiarity stipulates that functions shall be carried out closest to citizens at the smallest unit of governance possible and delegated upwards only when the local unit cannot perform the task. The citizen delegates those functions they cannot perform, to the community, functions that the community cannot discharge are passed on to local governments in the lowest tiers, from lower tiers to larger tiers, from local government to the State Governments, and from the States to the Union. This is recognition of human capital possessed by citizens and micro governance units, such as ward committees, Area Sabhas, neighbourhood associations and RWAs. (Sutra # 1).

Largely, accountability of public institutions has focused completely on prevention of activities not specifically authorized by law or rules and integrity of the public system or maintenance of financial propriety, which in practice means adherence to financial rules. Attention should be paid to other dimensions of accountability – responsiveness towards felt needs of people, performance of municipalities in terms of efficiency, effectiveness and transparency.

The National Commission on Urbanization (1988) found that although local body elections were being held there was no power of recall of councilors and no real accountability of councilors to the electorate till the next elections. The involvement of citizens in decision-making was almost zero and their interaction with civic officials was largely restricted to pushing their individual cases or meeting officials to resolve their individual problems. The priority should be to view citizens as partners and give them direct citizen control through ward committees and area Sabhas or directly using digital technology. Data collection and assessment through such interactions should be promoted at the municipal level with focused importance to social indicators for goal setting.

[43]Also recommended by the II Administrative Reforms Commission (2008)

Actions

- Fragmentation of functions has to be fixed by codifying the roles of Mayors, Commissioners, and Council has to be codified by State Governments. The powers of parastatals have to be devolved to the urban local bodies. In the interim devolution of power of parastatals can be done to Special Purpose Vehicles with joint control by the state and city governments. Ward Committees and area Sabhas should be established in all cities with clear delegation of funds, functions and functionaries. This is the mandate in Article 243S-*"one or more wards, within the territorial area of a Municipality having a population of three lakhs or more"*.

- In order to enable people to understand the link between their vote and the consequences of such a vote in terms of provision of public goods and services, contemporary ways of accountability should be explored, such as recall and referendum. For example, if executive powers are given to Mayors, adequate accountability mechanisms have to be built-in.

- The principle of subsidiarity should be used to devolve funds, functionaries and functions to different levels - ward committees/area Sabhas, cities and region. For example, if water has to be supplied to the city and its surroundings it should be a function of the region (water district); however, the operation and maintenance should be given to the ward committees.

- Responsiveness of municipalities will increase due to delegation of functions and giving power over municipal functionaries to ward committees/citizens. Citizens should be compensated for non-redressal of grievances and non-adherence to citizen charters. Digitally enabled social audit should be introduced.

- Municipal operations should be made transparent by, timely annual audit of accounts and other financial documents, regular internal audit, follow-up action on audit reports for correcting financial irregularities, and fixing responsibility for lapses and use of sanctions against those who are responsible for such lapses.

- Indicators have to be developed for measuring efficiency and effectiveness of municipal performance (e.g. liveability) and benchmarked. Elected representative and municipal managers should be made accountable to achieve the targets set on the indicators.

- Citizen participation means the institutional arrangements that permit citizens to work in partnerships to get things done. However, not all ways of participation are equal. Participation should move beyond informing and consultation to delegation of power and citizen control. Digital technology has great potential to make this higher level of participation happen.

- Capacity of local bodies has to be developed. In the interregnum, outsourcing of functions and functionaries should bridge capacity gaps.

- A gender and child sensitive approach to urban planning, management and governance would increase their participation in the development of human settlement and improve the performance of cities in taking advantage of the urban potential for social development.

- Community development corporation (CDC) is a neighbourhood-based organization in the United States that works in partnership with public- and private-sector for new investments to improve conditions in low-income communities. Community Development Corporations should be encouraged in India focusing on providing affordable housing, economic development, operating health clinics, offering youth activities and after-school programs, and running day-care centres and job training programs.

- It is important to have Standard Operating Procedures (SOP) along with data infrastructure and responsibility fixation both at city level and its integration to the regional level.

- In tune with 74th CAA, the local authorities will be empowered for both capital and revenue expenditure rather than creating multiple SPVs for infrastructure provision and maintenance such as water supply boards, metropolitan development authorities, spatial area development authorities. However, SPVs are an attractive institutional arrangement in the interim when the role of existing parastatals have to transferred to the local authorities.

- There have been some efforts by Central[44] and State Governments towards confirming land titles streamlining this issue. Rajasthan government has constituted the Rajasthan Urban Land (Certification of Titles) Bill 2016 to issue certificate of ownership to state residents living in urban areas[45]. Title guarantee rests on an accurate and exhaustive inclusion of every single property transaction in a centralized register maintained by the State and cities. It is important that this register should not be subject to manipulation; otherwise there will hardly be any benefit of the land title law during implementation. Digital technology enables property transfer to be made tamper proof. One way of ensuring that property transfers are tamper proof is to digitalize using **blockchain**[46] technology. States and cities should explore use of blockchain technology for all existing land titles.

- MoHUA to review and revise Model Municipal Law 2013.

Illustrations

- **Metropolitan Governance in London, UK**[47]: In metropolitan London, the boroughs (equivalent to India's municipalities) are responsible for civic administration. The mayor drives key citywide strategic functions, including economic development, transportation, metropolitan planning, and police and emergency services. Autonomous agencies with leaders appointed by the mayor are responsible for key functions. For example, Transport for London (TfL) is run as a corporatized agency with an independent board appointed by the mayor and a CEO responsible for running the operations. At the same time, these agencies use contracts with the private sector drawn with clear service agreements and predefined tenures to stimulate

[44]In August 2008, the Cabinet approved the Department of Land Resources "National Land Records Modernisation Programme" (NLRMP), which would implement title registration throughout the country. In 2011, MoRD prepared a Model Land Titling Bill.
[45]At present, it is voluntary for the owners to apply for this certificate. Application fee is 0.5% of the land rate determined by a District level committee to encourage more people to join this new scheme.
[46]Exploratory work in Sweden, Honduras, Georgia
[47]www.tfl.gov.uk

competition and to improve the efficiency and quality of services. Through the chief executives of the agencies, the mayor ensures delivery on annual targets.

- **Governance of Metropolitan Cities, China[48]:** This country has a different policy but has driven transformation of its cities through two key choices. First, Shanghai (like Beijing) has special status in China's administrative system as a directly administered municipality, the equivalent of a province or a state. Second, China's major cities have mayors who are powerful political appointees and whom the central government holds accountable for delivering economic growth and improvements in the quality of life of their cities. China's cities, too, have recognized the necessity of separating policy making from infrastructure construction and service delivery, especially given the scale of the country's urban transformation. Large cities have created stand-alone SPVs to build basic infrastructure, supplementing the work of policy bureaus that exist inside the city government; the Shanghai-Chengtou Water business unit. While many of these SPVs were carved out from within government departments, some were created from scratch.

[48]McKinsey Global Institute

Chapter 10

Urban Information Systems
Background and Challenges

Conventionally, cities have been using information technology and communication in three ways, (1) use a single application to address burning problems, say, waste collection, and then add more applications as per the needs and priorities of the city, (2) build infrastructure and add services, and (3) experiment with a number of applications without having a long-term or definitive vision in place. The conventional ways ignore the value hidden in human interactions - among themselves, with the city's infrastructure (e.g. roads, bridge, and parks) and the environment. These interactions contain data and information and digital technology has the potential to recognize and capture the hidden value in their interactions. This untapped resource for creating solutions and economic growth is called "surplus city"[49]by the Climate Group.

A city consists of systems (e.g. transport, solid waste). Systems, in turn, consist of humans and infrastructure elements. Interactions occur within systems and between systems and this "system of systems", generates complexity in cities. Digital technology has the potential to recognize and capture these interactions and the whole becomes greater than the sum of its parts once the information that flows in the "system of systems" is captured. In the smart cities, the "system of systems" integration was done in the Smart City Command Centre.

Cities consist of systems, such as the transport system, water and sewerage system, electrical system, and park system. Projects are prepared within the systems in silos without considering the interaction between people, systems and technology. The Climate Group calls these *hidden interactions*. Capturing these *hidden interactions* has the potential to generate economic growth[50]. A well-developed digital infrastructure allows cities to access, share, collate and use the information contained in the interactions among people and with systems. The ability to capture, classify and analyse information from different systems and use this to plan for city operations as a united "system of systems"[51] brings unexpected and broad ranging benefits[52].

This will require more sophisticated systems of city governance and management. These will extensively use automation including Artificial intelligence, Internet of Things (IoT), big data analytics etc. The creation of diverse platforms and the collection and publishing of city data will provide the opportunity to transform city life by allowing cities and their citizens to create, monitor, and measure progress of their cities in a more informed way. Access to urban data could lead to more informed and empowered citizens as well as help governments make more informed decisions.

[49]Information Marketplaces: The New Economics of Cities, The Climate Group and others; pg. 15.
[50]Information Marketplaces: The New Economics of Cities, The Climate Group and others.
[51]Information Marketplaces: The New Economics of Cities, The Climate Group and others; pg. 24.
[52]This is also called city view and its power has been recognized by the European Union, which is offering funding for cities in Europe to develop comprehensive urban planning tools.

The emergence of cloud-based services, more powerful mobile devices, sensors, artificial intelligence, big data and analytics present a huge opportunity for cities to enter a new phase of technological development and enable new ways to deliver services to citizens. Intelligent sensor networks will become increasingly critical to the basic functioning of cities. In the near future we expect to see smart cities and buildings that are net producers of renewable energy, connected and optimized transport systems and a range of e-services such as e-health, e-education, e-commerce, e-governance and teleworking, resulting in major changes across society which will lead to sustainable urbanization.

Some of the major ICT-related urban planning challenges are lack of empirical data at town/ state/ national levels, lack of updated accurate base maps, lack of map data of underground infrastructure, outdated techniques of ground survey, use of citizens applications in silos, inadequate sharing of data/information among city line departments in a coordinated manner, lack of standard operating environment in a critical/emergency situation, inadequate technical skills required to manage ICT infrastructure, absence of real-time monitoring of critical city infrastructure, etc.

Priority and Actions

Priority

What is required is an integrated application of digital technologies to infrastructure and services to improve them. The improvement could happen in several ways, such as municipal operations being performed at a lesser cost or use fewer resources, making municipal activities more accountable and transparent, improving delivery of citizen services and performance of infrastructure. Cities will also be able to use leapfrog technology to vault over stages prescribed by the conventional development approach.

It is necessary to build a centralized single source of Information of all citizen centric services/functions/operation by consolidation of city infrastructure /assets into a single operations platform for delivery of services, monitoring of environmental parameters as well as handle exigencies in disasters (Sutra # 9) (Sutra # 7). The platform for ICT should enable engagement of the citizens from all walks of life including from social media, to share their views, opinions, triggers in case of incidences/ emergencies, compliance with feedback mechanism, cross collaboration and generate vital information for the benefit to the city to help it prepare and manage better (Sutra #5). The infrastructure so created should be scalable (both horizontally and vertically) to accommodate growing needs of the services and interoperable units (field devices, sensors etc.) (Sutra #4).

Such a system deployment demands building and leveraging suitable skill sets (Sutra # 1) within the city for long term sustenance of the city management, therefore a continuously enriching capacity building and skill development as well as management plan is required to be put in place by the city. A combined and effective use of people, process and technology is required, which should eventually become a part of day-to-day city operation to enable long-term sustenance.

A large amount of data is generated by the use of city infrastructure and citizen services and it carries vital city information and provides deep insight to the way city operates. This should be used extensively for planning, re-design, and proactive preparation for future growth as well as for handling any emergency/ disaster situation. A possibility of monetization of the inter-connected data generated in the city should also be explored for long-term financial sustenance of city operation. (Sutra # 8).

Actions

Integrated City Centers

- It is imperative that spatial data infrastructure (SDI) should be the backbone of the urban information system.

- Cities need to build Integrated Command and Control Centre (ICCC), located in a well accessible area, which should function as a Nerve system of the city where digital technologies are integrated for co-ordination among city stake holders/ line departments under a defined standard operating environment. This center will integrate smart urban components like cameras, sensors, solid waste management, Wi-Fi, smart lighting, smart parking, traffic signals, to name a few, including essential services and provide centralized Monitoring and decision making capabilities for city administration (Sutra # 9), apart from managing city operation including municipal services. This center needs to be a combination of People, Process and technologies. An IoT (Internet of Things) Platform based on open standards, to be integrated to measure and track events across a myriad of field equipment, sensors etc. and correlates these to initiate appropriate actions. The smart city center to extensively use data analytics and artificial intelligence to provide real time responses as well as provide insight to various city activities and trends to help adapt to the changing needs to the citizens (Sutra # 2). Local Skills to be developed to manage such centers both operationally and technologically (Sutra # 1) who can respond to the situations/compliant in an effective way, with a local touch where use of local language (Sutra # 2) will come handy. The vision should be to implement holistic and integrated solution for long-term sustenance. The Smart city center will function as single source of information and resolution of the civic functions of the city, helping it handle critical and emergency situations as well and provide assistance to the citizen at the time of emergencies. (Sutra # 7 & 9). The city to create a single citizen interface where the data is available on GIS map and on-board the entire line department with mapping of their assets onto GIS. The same to be integrated with smart city centers for managing city operation effectively through coordinated efforts among various line departments. (Sutra # 3). The GIS Data, whether generated or collected, to be available to all under open data policy.

Urban Planning and Management

- Complete disintermediation in the issue of building permissions (e.g. Andhra Pradesh and Telangana), mutation and birth & death certificates by using technology.

- SCADA systems including smart metering solutions, water quality sensors, ICT-based solid waste management systems including digital smart bins, sensor based sorting, GPS tracking fleet, manhole sensors, etc., are meant to address problems of physical infrastructure. (Sutra

#3). Smart water systems that measure water flow and pressure have the potential to significantly reduce water leakage and loss.

- Build and manage hierarchical databases by developing urban observatory as repository of data at town/ state/national levels with common data structure, generation of geo-database using Very High Resolution Satellite Imagery for creation of base maps for planning, use of Ground Penetrating Radar (GPR) to collect information of underground utilities, latest techniques such as Total Station and GPS, LIDAR for ground survey, Digital Elevation Modeling (DEM) using LIDAR and drone survey for large scale mapping, etc. to be used for effective planning and governance.

Urban Mobility

- Urban transportation needs to be addressed through innovative ICT enabled applications to provide more optimized and efficient travel, through Route monitoring and Optimization, shared transport and better transportation system integration, making travel across multiple modes of public and private transportation more attractive. (Sutra #6)

- Intelligent Transport Systems (ITS) to provide innovative services relating to different modes of transport and traffic management and enable users to be better informed and make safer, more co-ordinate and 'smarter' use of transport networks which includes automatic road enforcement, variable speed limits, dynamic traffic light sequence, intelligent parking management, etc.

Energy & Utilities

- ICTs are necessary for including renewable energy in the electricity grid as well as making existing grids more efficient, reducing losses and increasing speed. Through smart electricity grids and smart metering for electricity, water and gas, ICT reduce the energy consumption of billions of commercial and residential utility service subscribers worldwide (Sutra #8) and significantly contribute to reducing greenhouse gas emissions. (Sutra #7)

- Deploying sophisticated monitoring and metering systems that allow energy to be highly efficient using Internet of Things, where each appliance (refrigerators, automobiles, computers, solar panels) can communicate with each other through the internet so that they are operating as an evolving, efficient and effective system (Sutra #3), retrofitting existing infrastructure to make it smart and more efficient. Smart grid applications include utility-based demand response programmes via broadband Internet communications or advanced metering infrastructure (AMI) systems; remote troubleshooting to minimize cost; and flexible control of appliances to reduce power consumption during peak periods. (Sutra #8)

Urban Safety and Security

- ICT applications like Intelligent LED Street Lighting and Surveillance, networking of safety and security systems (CCTVs, police, traffic, etc.), across four stages: prevention, protection, response and recovery and video crime monitoring can help.

- Advanced ICT for Disaster Mitigation and Management: These include early warning systems, Forest fire evacuation systems, mathematical models for decision support systems, media disaster communication and medical information systems. (Sutra #7)

Citizen services

- Providing digital platform for delivery of the citizen centric e-governance services with single access to social protection schemes, insurances, pension system etc. along with mobile app. The platform should be interactive and citizen should be able to contribute on it.

- Develop a detailed standard operating procedure for Citizen Grievance redressal system including feedback mechanism to ensure resolution.

- Implement Open data Policies (making the data available publically) and empower citizens by bringing transparency and citizen engagement environment (Sutra # 5). This will help in building innovative application and impact analysis. Necessary legal framework is required to be put in place to ensure protection of citizen privacy and security of the data. The complete process is also to be known transparently and on-demand, in term of what, how and who is managing the data from city administration/Authority side. The trust building exercise with citizens should be carried out to on-board them on this.

- Implementation of citywide common payment card to access multiple city services with ease.

- Use of local language in accessing and transacting on citizen service portal (Sutra # 2)

Illustrations

- **Open NYC: Ensuring transparency and fostering civic innovation:** The NYC Open Data portal, that hosts multiple datasets to ensure transparency and foster civic innovation within New York City, operates under the Open Data Law (Local Law 11 of 2012), one of the most robust Open Data policies in the world. The Mayor's Office of Data Analytics (MODA) and the Department of Information Technology and Telecommunications (DoITT) partner to form the Open Data team. The Technical Standards Manual (TSM) includes data standards and citywide policy, and is periodically revised by the Open Data team to reflect new Open Data requirements for City agencies.

- **One Map of Singapore: Thematic app:** One Map is an application developed by Singapore Land Authority which provides the most detailed, authoritative and timely updated thematic map of Singapore on daily/weekly/fortnightly basis. The application includes map services such as Land Query, School Query, Bus Explorer, Traffic Query, Map Styles and Find Nearby, where citizens can find amenities and government information around their location. There are over 100 thematic datasets contributed by various government agencies.

- **Integrated Command & Control Centre Project in India:** State of art command and control center to seamlessly integrate all elements to monitor & manage entire city operations and

enable fast and efficient citizen service delivery in an integrated way, are being developed under Smart Cities Mission and are already operational in cities like Pune, Surat, Vadodara, etc.

Chapter 11

Environmental Sustainability
Background and Challenges

Environmental sustainability received a fillip with the publication of the Brundtland Report that gave birth to the concept of sustainable development, defined as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs". The American Planning Association defines sustainability as, "whether the Earth's resources will be able to meet the demands of a growing human population that has rising aspirations for consumption and quality of life, while maintaining the rich diversity of the natural environment or biosphere." A central principle of sustainable development is a holistic view of life where all objects and activities are interconnected and mutually affect one another and in turn affected by each other. Concretely, sustainable development aims to strike a balance between economic development, environmental conservation and promotion of equity. These are also called the 3Es of sustainable development.

The Government of India recognizes environmental sustainability as a key element towards sustainable urbanization and is a signatory to multiple international agreements, including the Paris Agreement, the Sendai Framework for Disaster Risk Reduction, and the Quito Declaration on Sustainable Cities and Human Settlements for All, International Solar Alliance among others to steer India towards a low carbon, resource efficient and sustainable future. This is reflected in India's Nationally Determined Contributions (INDCs) to the Paris Agreement that foresee a decrease in GHG intensity of the economy by 33-35% between 2015 and 2030, through such measures as accelerated deployment of renewable energy and energy efficiency. India is ranked fourth on concentrating solar thermal power (CSP) and fifth on biomass generation and wind power[53]. The cities and states are also playing their part in advocating for sustainable growth by participating at international forums and committing to the localizing the Global Agenda 2030.

India's cities are amongst the worst affected in terms of air pollution with 14 out of 15 most polluted cities worldwide being located in India including Delhi, which is ranked as the world's most polluted city[54]. Urban air pollution is a complex problem with numerous sources including vehicular exhaust, emissions from industry and power plants, dust from construction sites and roads, crop burning, garbage burning, inefficient use of energy in buildings, excessive use of biomass for cooking and heating, hazardous industrial waste, among others. In many north Indian cities such as the NCR, the problem becomes particularly acute in winter as the pollution builds up near ground, prompting emergency health warnings.

The significant challenges affecting the urban water supply are related to its availability, quality and reliability. The depletion in access to safe and usable surface and groundwater sources in urban areas is occurring at an alarming rate. Untreated wastewater, industrial pollutants, solid waste and medical waste, pollution by agrochemicals and runoff from roads and storm drains are the primary cause of contamination and degradation of freshwater, marine and terrestrial ecosystems in and

[53]Transformative Urbanization for a Resilient Asia-Pacific, Asia-Pacific Regional Report for Habitat III. March 2016

[54] The study assessed more than 4,300 cities in 108 countries. https://edition.cnn.com/2018/05/01/health/air-pollution-cities-who-study/index.html

around cities. The municipal wastewater treatment capacity can only service 29 percent of the wastewater generated in urban areas[55]. Across the region, rivers contain as much as three times the world average of human waste derived bacteria. Management of urban water resources are affected by the fragmented nature of regulatory bodies and weak implementation of policy and regulations.

Cities are the hubs of resource use as well as the biggest generators of waste. The solid waste profile of urban areas cover household waste, construction and demolition waste, e-waste and more, which are expected to increase and worsen in coming decades with rapid urbanization. The inadequate capacity for collection of solid waste leads to open dumps spread across the cities. Urban flooding is a recurring phenomenon in major economic hubs such as Mumbai, Chennai, Bengaluru, and Gurugram. The financial loss from the urban floods in Chennai in 2015 is estimated to be more than INR 15,000 crores[56]. Urbanization has also exposed relatively higher number of people to the risks and vulnerability from natural disasters, global warming and climate change related phenomenon such as flash floods, droughts, and heat waves, which are exacerbated due to poorly serviced areas, lack of affordable housing resulting in the increase in informal settlements often located in low lying or hazardous areas.

Energy use in buildings and vehicles is also one of the key contributors to Urban Heat Islands (UHI) in cities and poor indoor & outdoor air quality. Globally, cities are taking up voluntary commitments to clean energy (e.g. 100% renewable energy)[57], driven by increased resilience, decreasing dependence on fossil fuels and meeting carbon emission mitigation targets. These cities are investing in energy efficiency (EE) improvements in parallel with push to renewable energy (RE) generation to accelerate transition to zero energy and zero carbon cities. Thus, India's rapid urbanization is occurring at a risk of generating social and economic gains at the expense of environmental sustainability. A business as usual approach to environmental sustainability will culminate in huge social and economic losses in urban and peri-urban areas. The time has come to make environmental conservation the overarching goal of urban development.

Priorities and Actions

Priorities

Addressing environmental sustainability requires a long-term vision and concerted policy framework. Based on existing and on-going diagnostics, there is an impending urgency to address deteriorating air quality, degradation of water resources and waterways, non-existent treatment and disposal of solid waste, and recurring risks from natural disasters. Long-term climate risks need to be integrated in long-range planning processes to mainstream urban resilience and risk mitigation practices in urban environmental planning (Sutra # 7).

[55]The urban centers in India accommodating approximately 70 percent of the urban population generate 38,000 million liters per day of wastewater, whereas the treatment capacity if about 11,000 mld.Source: India Habitat III National Report. 2016. MoUHA.

[56] https://www.oneindia.com/india/chennai-floods-caused-economic-loss-2-2-bn-study-2055791.html; https://www.livemint.com/Politics/qvGI9LAhTbgnOzitBskhSN/Chennai-floods-may-cause-financial-losses-of-over-Rs15000-c.html;

[57]http://lup.lub.lu.se/luur/download?func=downloadFile&recordOId=8894582&fileOId=8894590

Recognizing the complexity of cities and the dynamism and scale of urbanization, environmental sustainability must be mainstreamed at all levels of government, and by enabling participation of all urban stakeholders. Environmental sustainability requires an integrated approach across urban sectors to plan proactive measures to prevent, avoid and minimize adverse impacts from the natural systems upon which our communities, businesses and infrastructure systems depend. In this regard, it is recognized that master plans must be dynamic and continuously monitored to fit the changing context (Sutra # 3). To this end, planners and developers must be conscious of the changing environmental landscape and must ensure that their decisions respond intentionally and responsibly to environmental challenges.

India falls under the high-risk zone for potential mortality due to multiple hazards, which include earthquakes, floods, cyclones, droughts, tsunami and landslides[58]. With high densities of population concentrated in cities often in areas unsuitable for habitation due to high exposure and vulnerability to natural hazards, disaster risk mitigation and resilience schemes are imperative to ensuring long term, sustainable social and economic improvement. Infrastructure and physical assets are also at high risk due to poor resilience to disasters. Improper planning has resulted in large expanses of impermeable surfaces which both exacerbates the heat island effect and increases surface water runoff by six times resulting in inundation of cities. This flooding is made more dangerous by the lack of proper sanitation and solid waste disposal in many urban areas. As cities become inundated by water, polluted with human waste and toxic materials, risk of illness is heightened. In turn, lack of proper sanitation and paralysis of transport networks increases rates of transmission while hindering access to hospitals or sufficient medical treatment. Lack of resilience in built infrastructure has harmful effects that cascade well past destruction of physical property and infrastructure that can hamper social development and economic progress for communities who face repeated disasters.

Urban India need to act on multiple fronts to reduce the loss in procurement, optimize generation of clean energy and improve energy usage for attaining self-sufficiency. Addressing the impending challenges of overshooting planetary boundaries require the future Indian urbanization process to encourage existing and emerging cities to move towards net zero in energy consumption. The principle of energy self-sufficiency also requires focused attention on multiple crosscutting areas like urban planning and development, transport, waste management, water supply etc. It is also important to ensure that these crosscutting interactions are guided and shaped by climate and social justice. All this will require clear unified leadership (Sutra # 9).

Actions

Urban air quality

- Gradual expansion of pollution monitoring stations across bigger cities as well as medium sized towns. Real-time sharing of AQI data to citizens though various channels with advisories and measures at different levels of risk coordinated by different state and local government agencies.

[58]World Bank. 2015. "Leveraging Urbanization in South Asia: Managing Spatial Transformation for Prosperity and Livability." Conference edition. South Asia.

- Switching public transport and commercial fleets to CNG and Electric Vehicles using central schemes such as FAME (Faster Adoption and Manufacturing of Hybrid & Electric Vehicle) along with phased scrapping of more than 15-year-old vehicles.

- Facilitating cleaner fuel switch for industrial boilers and targeting 100% household LPG penetration.

- Bringing forward cleaner Bharat VI automobile standards and phased rollout across the country. Phasing out of older vehicles. Stricter monitoring and enforcement of tailpipe emissions.

- Stricter monitoring and enforcement of industrial emissions, including those from MSMEs.

- Better maintenance and regular cleaning of roads and pedestrian areas, including improved garbage collection.

- Stricter monitoring of construction sites for dust control.

- Adoption of AQI goals in a gradually widening sub-set of cities, with progressive tightening of AQI targets over time, dovetailed with the National Clear Air Program (NCAP), which includes preparation of Air Quality Management Plans backed by source apportionment studies.

- Increase in green space that includes forest/tree covers, parks, urban agriculture, roof gardens, etc.

- Lead investment and generation of energy from renewable. India is ranked fourth on concentrating solar thermal power (CSP) and fifth on biomass generation and wind power.

- Develop and adopt scientific evidence based policy and practice in air quality management, sustainable transport, clean energy and urban development at city-level.

- Mandate city level targets for GHG emission reduction such as Rajkot, which has committed to reduce its GHG emissions by 16% in 2016.

- Include measures like congestion charging and public transit/carpooling/active transport incentives to reduce congestion and resulting pollution.

- Ban open burning of agricultural and municipal wastes, and short-life Polyvinyl Chloride (PVC) and chlorinated plastics.

Urban water resources

- Develop urban water management plans with a 5 to 10 year timeline to ensure safe and reliable source of water supply (including alternative water sources) by demand and supply forecasts, implementing drought-resilient water resources and a sustained emphasis on water-use efficiency.

- Prepare action plans for sewage management, restoration of water quality and establishing monitoring systems for regular assessment of water quality in water bodies.

- Require decentralized common effluent treatments plants in business parks and clusters of small-scale industries with minimum treatment standards before discharge into municipal infrastructure. Strict regulations such as 'polluter pays principal' to act against water source pollution should be mandated on all small scale and large-scale developments.

- Promote policy tools to conserve water, minimize waste and ensure equitable distribution through development and management of integrated water resources.

- Compulsory rainwater harvesting and ground water recharge on private and public properties through local, state, and central levels by amending bye-laws and policies.

- Protect natural water sources such as lakes and wetlands within urban jurisdiction and indirectly impacted due to urbanization by adopting legal and institutional mechanisms at city and state levels. Mapping of the existing water bodies (lakes/ponds etc.) across the cities and developing plan of action to preserve the same with the involvement of local community shall be given priority (blue infrastructure mapping of the cities).

- Adopt urban water management measures such as development of integrated water resource information system for open data, and regulatory defragmentation to ensure the coordinated and integrated functioning of various institutions.

Solid waste

- Implement Solid Waste Management Rules, 2016 which require segregation, transportation, treatment and disposal and established targets for different waste streams

- Adopt scientific methods of solid waste management by utilizing central government schemes such as Swachh Bharat Mission

- Incentivize private sector participation in successful recycling and waste-to-energy systems

- Promote concept of circular economy by recycling construction and demolition waste, secondary resource recovery from e-waste, organic waste to compost and end-of-life vehicles.

- Ensure recognition and registration of workers involved in dismantling and recycling of solid waste under the state labor department.

- Pilot community-based integrated resource recovery centers, which have proven to be an effective solution for many cities in the region.

- Encourage manufacturers to take on greater role in waste management and recovery and promote extended producer responsibility (EPR) principles in waste management rules.

- Pilot new technologies burning solid waste with generation of high-pressure steam as a by-product, which is then used as an alternative energy source for nearby communities.

Disaster Risk Reduction and Resilience

- Plan and implement national and state level disaster plans. Localize the strategies by supporting cities in strengthening building codes and retrofits, drainage capacity, protection for critical infrastructure, and emergency action plans as a balanced approach for short and long term disaster management strategies.

- Institute selective planning and administrative systems to prepare GIS based disaster-zoning maps with single and multiple hazards for better management and mitigation strategy and to guide overall development avoiding vulnerable and disaster prone areas.

- Prepare risk profile of the city, which are publicly available, and establish monitoring and review platforms, to guide the planning and development process.

- Invest in climate-proofing critical infrastructure as a priority.

- Strengthen the technical and financial capacity of local bodies and municipalities by creating national risk financing tools and partnerships with national and local institutions.

- Acknowledge the local-area level as the smallest scale of disaster risk-reduction planning. Cities are as resilient as their weakest links; introduce community resilience awareness programs in vulnerable communities to increase resilience capacities, and integrate local data and community participation in disaster management and resilience planning at the local level

Energy

Net zero energy buildings

- This is an area were proactive central facilitation will lead to positive results.
- Develop action plan to meet net zero energy or zero carbon buildings or neighbourhood targets through policies & regulations, financial mechanisms and incentives

Energy efficiency

- Energy efficiency must be considered a resource and the first fuel in principle and practice. This must be reflected in mandating utilities to implement Demand Side Management (DSM) measures, mandating energy efficiency building codes for all types of buildings.

- Introducing innovations in EE technologies and materials for buildings through challenge programs

- Introduce municipal level energy efficiency improvement for different sectors.

- Business models for affordable energy efficient products and services.
- Incentivize local/vernacular solutions to improve energy efficiency.

Renewable energy deployment

- Setting a clear city- wide vision and roadmap with RE targets.
- Promote rooftop solar deployment through aggressive awareness programme, adequate financing and enabling policies for the residential customers.
- Address the barriers of rooftop solar deployment in the MSME segment.
- Facilitate the third-party procurement and sale of rooftop solar power through enabling policies and regulations for industrial clusters.
- Develop integrated plans to use both heat and energy generated from urban wastes and introduce mandatory targets for urban centres to use this resource to ensure sustainable consumption.
- Assess the potential and develop roadmap for different Tiers of cities on waste to energy.
- Plans to use heat generated from urban waste in economic production process. Explore other options available to cities to achieve their renewable energy goals. For example, District Energy/Heat/Cooling, Wind power, geothermal power, hydroelectric power, etc.

Data Driven Decision Making

- Create data platforms at municipality levels for different parameters of energy consumptions and generation within fixed timelines, and develop recognition programmes for better performers.
- Develop best practices guidelines based on experiences from across the world on data sharing frameworks for municipalities in different Tiers of cities in India.
- Develop integrated resource planning frameworks for urban centres in India to meet long term energy requirements.
- Better coordination between energy departments and other departments.
- Involve stakeholders like energy efficiency agencies, RE producers, DISCOMS, consumers for planning.

Reliable energy supply

- Regulatory framework that incentivizes decentralized renewable energy generation and allows consumers to trade, to sell and buy renewable energy generated off-site.

- Develop procedures for transparent disclosure of regularly updated reliability indices.

- Develop and implement plans for reliable energy supply to the city. These plans must be transparent and regularly updated to factor in changing scenario.

Illustrations

- **Integrating resilience parameters in DBMS, Panaji, Goa[59]:** The City has designed and adopted a citywide and multi-sectorial Database Management System (DBMS) which is comprehensive urban infrastructure inventory and a tool for rapid climate vulnerability assessment to support city level planning efforts for climate resilient infrastructure services in coastal areas. The sector-wise forms in the DBMS could be accessed to record, retrieve, and update information to support the city government to identify hotspots, critical infrastructural services and address the impacts of sea-level rise in its planning strategies, acting as a starting point to initiate climate resilience planning and retrofitting of infrastructure assets and services. A key impact of this tool was institutionalizing the process of collecting multi-sectorial data at the urban local body (ULB) level as CCP appointed a nodal person for administering and managing this database, along with coordinating the task of recording and updating the missing data gaps as well as recording the new data fields proposed for climate resilience planning.

- **End-to-End Early Warning System, Surat[60]:** The Surat Municipal Corporation is anchoring the establishment of an end-to-end early warning system for floods. In order to establish an end-to-end warning system covering three states, a trust- Surat Climate Change Trust (SCCT) was established representing members from key institutions. The main objective of this project was to reduce the impacts of floods and resultant damage in Surat. This was achieved through setting up of a Warning System to monitor and forecast extreme precipitation events in Upper and Middle Tapi basin as well as Khadi (tidal creeks) floods. Flood warning system in the city includes installation of weather systems; data transfer mechanism from catchment to reservoir to city level, development of weather and flow prediction models, improvement of existing flood preparedness and formulation of action plans.

- **Seoul taking actions to address Climate Change:** The Seoul Metropolitan Government (SMG) has implemented 'Action Plans for Promise of Seoul' - detailed action plans by sector - for addressing the impacts of climate change. The city's action plan on climate change strategizes on implementing policies to reduce GHG emissions and adapt to climate change by managing performance indicators in line with major SMG policies. The plan also aims at connecting sectorial goals with projects that can engage citizens. It includes evaluating project performance

[59]Climate Resilient Infrastructure Services Brief. Case Study, Panaji, TERI.
[60]India: End to End Early Warning System for Ukai and Local Floods in Surat City. TARU Leading Edge. https://reliefweb.int/report/india/india-end-end-early-warning-system-ukai-and-local-floods-surat-city

with citizens and verifying performances through GHG inventory. The main goals of the action plan include reducing GHG emissions by 25% by 2020 and 40% by 2030 below 2005 level.

Chapter 12

Recommendations and Way forward

India is likely to become an urban majority country within a generation. However, India's cities are already struggling to provide for current population. In this context, NUPF 2018 is prepared and is not an attempt to provide a detailed, top-down guidebook to cities. It presents a new way of thinking about Indian cities and job creation emerges as a key issue in planning for India's urbanization. The NUPF stands on ten sutras or guiding principles:

1. Cities are clusters of human capital;
2. Cities require a 'sense of place';
3. Not static Master Plans but evolving ecosystems;
4. Build for density;
5. Public spaces that encourage social interactions;
6. Multi-modal public transport backbone;
7. Environmental sustainability;
8. Financially self-reliant;
9. Cities require clear unified leadership; and
10. Cities as engines of regional growth.

The vision underpinning NUPF 2018 is to see cities as complex and changing agglomerations of people who are constantly interacting with each other, with socio-economic institutions and with the built environment. The soft and hard infrastructure of the city provides the backdrop for such interaction and are not ends in themselves. The exact optimization of a specific city, therefore, depends crucially on local context and cannot be done through the blind application of some Cartesian ideal. This is why the new approach emphasizes preservation of heritage, revival or even invention of local architectural styles, the importance of regional linkages and environmental sustainability – all of which vary from city-to-city. This fits with the fact that plurality is the essence of Indianness.

Since human capital agglomeration and un-codified human interaction are so important to this new model, the emphasis is on clustering economic, social and cultural infrastructure. Therefore, in contrast to the past, the new approach encourages mixed use and bringing together social groups. Except hazardous industrial activities, NUPF 2018 discourages urban master plans based on neat silos and rigid text based codes. Instead, the urban landscape is managed by monitoring the form and, where necessary, through strategic interventions. This requires greater emphasis on situation awareness of evolving trends rather than a rigid adherence to some idealized end-point. Similarly, there is active encouragement for public spaces that are open to all and encourage interaction. Thus, parks, museums, iconic monuments, sports facilities and bazaars are key to the "sense of place" of a city. Social infrastructure such as universities, places of worship, and entertainment hubs need to be part of the urban fabric rather than segregated from the flow of the city. Indian cities still depend on iconic public spaces and buildings of the colonial and pre-colonial period. Twenty-first century Indian cities need to preserve/revive the old and think of building completely new spaces/buildings/institutions. Note the shift from the previous civil engineering approach to cities.

Another important break with the past is the idea that Indian cities need to be managed by building for density. The older approach was to "decongest" the city. Quite apart from the environmental and public transportation arguments for density, this fits with the fact that NUPF 2018 sees social and economic agglomeration as the purpose of the city. Moreover, there is greater focus on movement of people to, within and between cities. This relates both to daily movement of commuters as well the movement up the socio-economic ladder. The former explains the emphasis on investing in multi-modal public transportation, especially in walkability. The latter explains the emphasis on rentals and secondary real estate markets. This recognizes the fact that socio-economic mobility requires the ability to change homes and buy/sell property with ease. Thus, the city is made inclusive by virtue of socio-economic mobility, mixed uses, shared public spaces, public transportation and so on. Notice the contrast with the earlier approach that saw urban poverty and inclusion in static terms.

The obvious question that arises is: who and how will we apply the new approach? In the absence of a mechanical set of codified steps given from the top, there has to be much greater emphasis on developing a vision at the local level and a unified urban leadership that can implement it. An important ingredient will be the ability of the individual cities to leverage local resources (land, tourist sites, property tax, parking/advertising space) to gain a degree of financial independence. All of this will require rethinking urban administration. Many successful models exist at national and international levels that can be emulated. The constitutional framework already exists and different states can use the framework to resolve this issue in their own way. Again, the NUPF 2018 has refrained from being too prescriptive.

Two further issues will need to be considered – capacity and transition. The old approach had one big advantage in that it provided a set of top-down text based codes that required no more than draftsmanship to plan and to enforce an outcome, no matter how sub-optimal. The new approach needs much more active engagement, institutional memory and deeper understanding of the evolving dynamics of the city. The local state/municipal authorities will now have to think about how to manage the city real time rather than follow some pre-existing codes or rigid master plans given from the top. Vision, monitoring and feedback loops matter in this new approach. This requires design capacities that will be scarce in most cities, especially smaller ones. This is why the union government Budget 2018-19 proposed the establishment of 18 new schools of planning and architecture (as autonomous institutes within the IITs). The state/municipal governments now need to find ways to upgrade their urban planning functions to become the designers of a sustainable and inclusive urban future.

NUPF 2018 does not expect urban authorities to shift overnight to the new approach. The sudden removal of existing codes and master plans may not be advisable, as this would create a governance vacuum. It will take many years for the new organic, decentralized framework to replace the old urban planning and architectural approach stuck in mid-twentieth century "modernism". Nonetheless, by laying out a clear set of principles, it is hoped that it creates a way for the new thinking to gradually permeate urban planning and management across India. Urban evolution takes place slowly but, once embedded, its impact can remain in place for decades or even centuries. Therefore, a systematic and sustained effort to spread the philosophical principles and embed them

in our urban thinking will pay rich dividends in the long run. A beginning has already been made through the HRIDAY and Smart City missions where individual cities have been asked to create a bottom-up vision for themselves. As urban communities and municipal managers get used to thinking about issues and solutions in a context-based way, we will be able to finally grapple with India's urban problems.

Annex 1

O-17024/1/2017-H (EFS – 9027339)
Government of India
Ministry of Housing & Urban Affairs
(Housing Section)
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Room No. 220, C Wing,
Nirman Bhawan, New Delhi – 110 011
Dated October 03, 2017

Office Order

Subject: Constitution of the Committee to draft the "National Urban Policy" – regarding.

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In order to draft the "National Urban Policy" which lays out how cities should be planned and managed to promote sustainable urbanization in a holistic manner, a Committee is set up with the approval of the competent authority, comprising the following:

(i)	Dr. Sameer Sharma, Additional Secretary (Urban Affairs), Ministry of Housing & Urban Affairs	Chairman
(ii)	Mr. Shiv Das Meena, Joint Secretary (AMRUT), Ministry of Housing & Urban Affairs	Member
(iii)	Mr. Amrit Abhijat, Joint Secretary (PMAY), Ministry of Housing & Urban Affairs	Member
(iv)	Mr. Sanjeev Sanyal, Principal Economic Adviser, Department of Economic Affairs, Ministry of Finance	Member
(v)	Prof. Jagan Shah, Director, National Institute of Urban Affairs (NIUA)	Member
(vi)	Dr. Bimal Patel, President, CEPT University	Member
(vii)	Mr. Hitesh Vaidya, India Country Manager, UN-Habitat	Member

2. The Committee is mandated to outline the draft Policy in consultation with all stakeholders keeping in view of the challenges due to rapid pace of urbanization in the country. The Committee will submit the draft "National Urban Policy" within 3 months from the date of constitution of the Committee.

3. The Committee will be provided technical assistance and any other inputs by Capacity Building for Urban Development (CBUD), National Institute for Urban Affairs (NIUA) and Human Settlement Management Institute (HSMI). The Committee will be free to co-opt any expert professional, on need basis.

4. This issues with the approval of competent authority.

(Sailesh Jogiani)
Under Secretary (Housing)
Tel: 2306 2252

To

Members of the Committee

File No.O-17024/1/2017-HOUSING-UD 19

Receipt No : 1016533/2018/HOUSING SECTION

O-17024/1/2017-HUA (EFS 9027338)
Government of India
Ministry of Housing & Urban Affairs
(Housing Section)

Room No. 220, C Wing,
Nirman Bhawan, New Delhi – 110 011
Dated February 15th, 2018

Office Memorandum

Subject: Request for nomination of an Adviser from NITI Aayog who is dealing with Housing and Urban Affairs related matters to the Committee to draft the "National Urban Policy" - regarding.

The undersigned is directed to state that this Ministry with the approval of the competent authority has constituted a Committee to draft the "National Urban Policy" under the chairmanship of Dr. Sameer Sharma, Additional Secretary (Urban Affairs), Ministry of Housing and Urban Affairs. A copy of the Office Order relating to constitution of the said Committee is enclosed herewith for ready reference.

2. It has further been decided, with the approval of the Competent Authority, to request NITI Aayog, to nominate the Adviser concerned who is handling Urban Affairs related issues, to the above Committee. NITI Aayog is, accordingly, requested to nominate the Adviser and convey the contact details to this Ministry for necessary action.

3. This issues with the approval of the competent authority.

Encl: as stated.

(Sailesh Jogiani)
Under Secretary (Housing)
Tel: 2306 2252, Fax: 2306 1018

To

Chief Executive Officer,
NITI Aayog,
Parliament Street,
New Delhi - 01

Annex 2

National Urban Policy Framework

A New Philosophy for India's Urban Policy

Introduction

- India will become an urban majority country within a generation
- Yet, India's cities are struggling to manage even current population
- There is an urgent need to revisit the country's urban strategy
- The National Urban Policy Framework 2018 (NUPF 2018) presents a new way of thinking about cities. It recognizes that:
  - Top-down guidebooks don't work
  - Urban solutions must be local and contextual
  - Cities need to propel sustainable development and job creation
  - Cities need to enhance Social and Economic mobility

NUPF 2018 – A New Philosophy

10 Sutras and 10 Functional Areas for the way forward

10 SUTRAS

1. Cities are clusters of human capital
2. Cities require a sense of place
3. Not static master plans but evolving ecosystems
4. Build for density
5. Public spaces that encourage social interaction
6. Multi-modal public transport backbone
7. Environmental sustainability
8. Financially self-reliant
9. Cities require clear, unified leadership
10. Cities as engines of regional growth

10 FUNCTIONAL AREAS

1. Economic Development
2. Physical Infrastructure
3. Social Infrastructure
4. Housing and Affordability
5. Transportation and Mobility
6. Urban Planning and Design
7. Finance
8. Governance
9. Information System
10. Sustainability

Urban Sutra #1:

Cities are Clusters of Human Capital

PRINCIPLE: Cities need to invest in their clusters of human capital

WHAT DOES THIS MEAN?

- Focus on people, not buildings
- Focus on quality of life, social mobility, education , culture and health

ILLUSTRATIONS:

- Socio-economic mobility: Urban policy should enhance the socio-economic ladder; provide flexibility to move within and between settlements. Ownership Vs Rental
- Universities as urban drivers: Universities are an obvious way to build human capital. Leading hubs of higher learning should be thought of as an integral part of the urban ecosystem

Urban Sutra #2:

Cities need a sense of place (Indianness)

PRINCIPLE: Pay attention to the unique sense of place critical for civic identity and pride. Adopt contextual urban design. Plurality is the essence on Indianness.

WHAT DOES THIS MEAN?

- Urban design should be responsive to place, historical/geographical/economic context
- Urban design should reinforce the connection with how Indians live and work

ILLUSTRATIONS:

- Conservation of historic districts: Invest in the old parts of the city, like Amritsar around the Golden Temple. Create new iconic buildings and urban spaces.
- Move from excessively prescriptive, rigid and standardized text-based codes to regulations that integrate form-based codes into existing zoning/development codes as a hybrid model based on an implementation plan that looks at site design and building forms – like 18th century Jaipur.

Urban Sutra #3:

Not static master plans, but evolving ecosystems

PRINCIPLE: Deal with cities as evolving, organic ecosystems, with greater attention to how the city transforms over time

WHAT DOES THIS MEAN?

- Planning processes that are dynamic, adaptive, iterative and continuous
- Embracing mixed and changing land uses
- Constant feedback-based adjustment, with active leadership and public participation

ILLUSTRATIONS:

- Mixed-use clustering: Do not build in silos. For instance, Singapore has deliberately clustered a wide range of activities in its city centre, including a Formula One track using existing roads -- unlike Delhi, which built a dedicated race track
- Re-deploying derelict urban spaces: Reuse old and defunct ports, industrial buildings, institutions and so on to reflect the changing socio-economic needs of the city

Urban Sutra #4:

Build for density

PRINCIPLE: Anticipate and accommodate density – if sufficient infrastructure is installed, even dense urban environments can support a high quality of life

WHAT DOES THIS MEAN?

- Infrastructure should anticipate and accommodate density.
- Avoid urban sprawls (build up, not out). Optimal Density will be related to context (Optimal for Mumbai may not be appropriate for Udaipur).

ILLUSTRATIONS:

- Density is not bad for quality of life: Most successful 21st century cities are very dense. Indian cities should not build to decongest but instead build for density
- Density is crucial for public transport: High density is critical for efficiently running public transport. Multi-modal public transport systems are directly predicated on density

Urban Sutra #5:

Public spaces that encourage social interaction

PRINCIPLE: We need many types of public space that encourage people with interact with each other.

WHAT DOES THIS MEAN?

- Design spaces for people-to-people interaction from an Indian perspective
- Create spaces that accommodate the personal relationships that define Indian daily life

ILLUSTRATIONS:

- Varanasi ghats: The ghats of Varanasi are a great example of spaces that are safe and open to all
- Nukkads: Semi-public spaces where a resident can build relationships with the local shopkeeper, tailor and barber is an important aspect of Indian social life

Urban Sutra #6:

Multi-modal public transport backbone

PRINCIPLE: Promote multi-modal public transportation and walkability

WHAT DOES THIS MEAN?

- Ensure a diversity of transport solutions
- Incorporate walkability and interchangeability in public transport planning

ILLUSTRATIONS:

- Multi-modal interchangeability at metro stations: Urban design must map out and manage the hassle of interchanging to the last mile
- Pedestrian networks: Prioritize pedestrian networks as they are critical to all public transport, which means not only footpaths but also proper crossings, signage, lighting, security and so on

Urban Sutra #7:

Environmental sustainability

PRINCIPLE: City planners and managers must adapt to the local environment using a blend of local knowledge and new technologies

WHAT DOES THIS MEAN?

- Design and manage cities to minimize their impact on water resources, land use, carbon footprint and air quality
- Build in resilience to disasters

ILLUSTRATIONS:

- Protecting water bodies and drainage contours: Failure to protect water bodies is a result of both unscrupulous private encroachments and a rush to impose Cartesian grids on non-linear landscapes
- Reviving the art of indigenous horticulture: It is important to revive the art of designing green spaces and choosing trees given issues such as heat-island effects and water run-of

Urban Sutra #8:

Financially self-reliant

PRINCIPLE: Encourage cities to leverage their local assets to generate more financing and revenue sources, exploring all the options

WHAT DOES THIS MEAN?

- Maintaining a transparent and up-to-date set of accounts of urban local bodies as well as other urban service providers
- Exploring methods to widen resource base such as user charges, municipal bond financing and value capture financing

ILLUSTRATIONS:

- Leveraging local tourist spots: Municipal governments need to impose user charges, leverage (and control) commercial activity, and take responsibility for maintenance of tourist spots. This will generate revenues and introduce a sense of local ownership
- Municipal bond markets: India lacks a vibrant municipal bond market because of problems such as the lack of proper instruments for pricing, a poor record of enforcing contracts and the lack of a reliable set of accounts

Urban Sutra #9:

Cities require clear, unified leadership

PRINCIPLE: Implement urban governance structures that empower a unified and clear leadership, and reduce the multiplicity of decision-makers.

WHAT DOES THIS MEAN?

- Shift from a standardized top-down approach to one attuned to local context
- Develop governance solutions to manage the multiplicity of agencies working at cross-purposes

ILLUSTRATIONS:

- Multiplicity of Authorities: The agencies that have a say in the water supply to Agra's slum dwellers are: the Jal Nigam, the Jal Sansthan, the State Urban Development Authority, the District Urban Development Authority and the Agra Nagar Nigam. This level of dispersion of power is bound to interfere with governance.
- Why do some cities work: The City Charter of New York City provides for a strong "mayor-council" system and empowers the Mayor, as head of the executive branch, to appoint or remove any unelected officers, to prepare city budget, and administer all city services, public property, police and fire protection, most public agencies, and enforce all city, state and federal laws within New York City. Similarly urban renewal driven by strong leader in Seoul, delivered multi-disciplinary urban renewal in heart of the city by leveraging stakeholder conflict, effective civic personal collaboration and massive public engagement.

Urban Sutra #10:

Cities as engines of regional growth

PRINCIPLE: An interconnected urban network can generate and sustain high rates of economic growth

WHAT DOES THIS MEAN?

- Cities are active engines of growth and centres for job creation, not just for themselves but for the wider region
- Urban policy needs to create an interconnected and interdependent network of urban centres

ILLUSTRATIONS:

- Using Kolkata as the engine for east India: The key to stimulating higher economic growth in eastern India lies in driving Kolkata as a hub and investing in connecting it more strongly to Ranchi, Patna, Bhubaneswar and Guwahati
- Smaller towns are rural growth engines: The quickest way to improve the lives of the hinterland is to invest in services available in the nearby small town