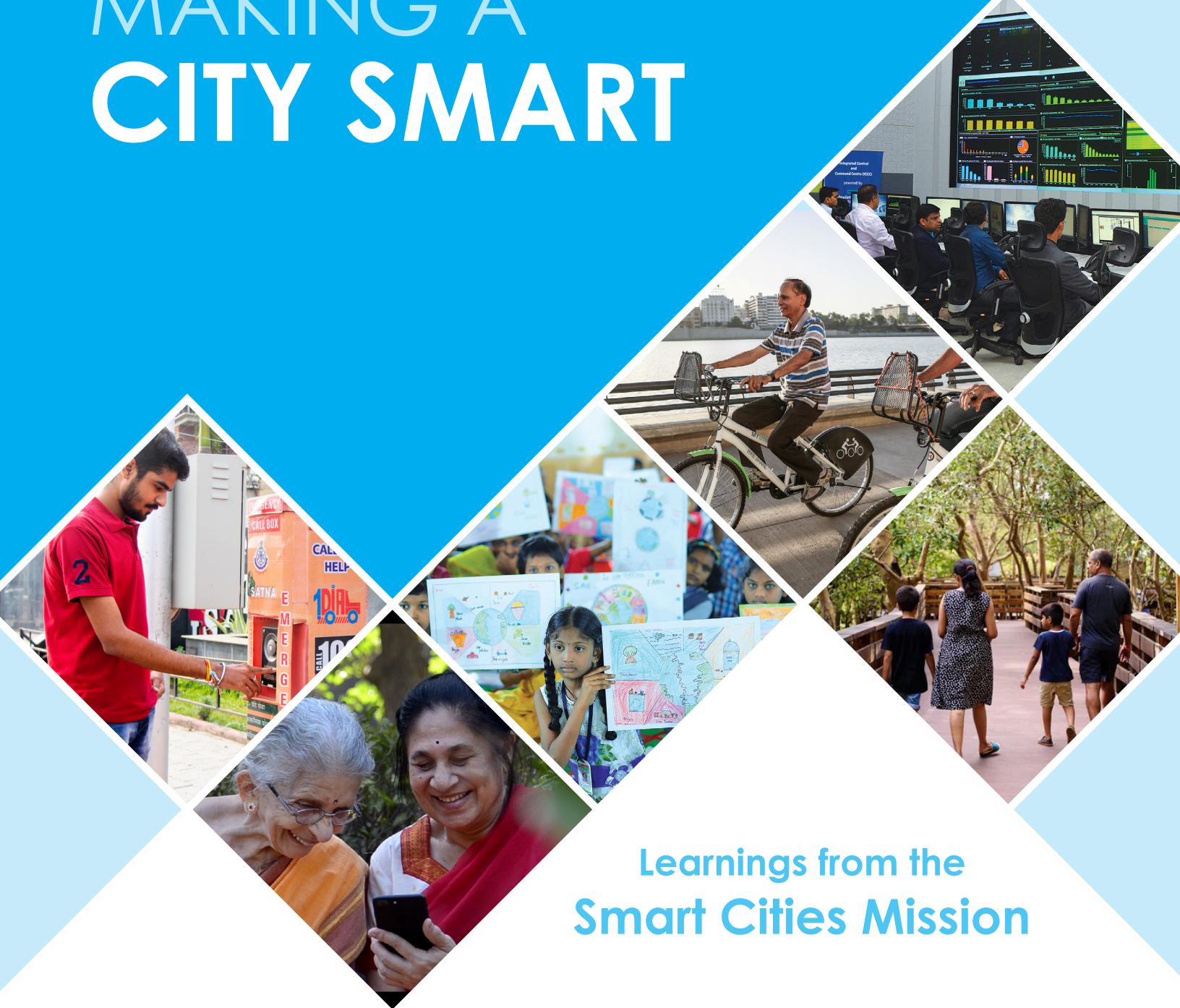


MAKING A CITY SMART



Learnings from the
Smart Cities Mission

MAKING A CITY SMART

Learnings from the
Smart Cities Mission



Ministry of Housing and Urban Affairs
Government of India



TITLE

Making a City Smart: Learnings from the Smart Cities Mission
a workbook for decision makers

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Disclaimer: This workbook is to be read as a companion document to the [Smart Cities Mission Guidelines](#). It is open source and available online at no cost.



Artists performing in the open air theatre of Chandra Park @Sagar Smart City



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“

It is the first time that certain areas in cities will be comprehensively developed in a systematic and qualitative way.

It is the first time that there has been such extensive citizen consultation.

It is the first time that allocation of funds in a government scheme is done not by decisions of ministers or officers but on the basis of competition.

Shri Narendra Modi

Prime Minister of India

(at the Economic Times Global Business Meet, 30 January, 2016)

”



FOREWORD

India's Smart Urbanisation...



I am delighted to note the release of **Making a City Smart: Learnings from the Smart Cities Mission**, a comprehensive document about principles of smart city development in the Indian context. In light of India's growing urban footprint, with more than 40 percent of its population expected to live in cities by 2030, fueling over 75 percent of its economic growth, I can think of no better guiding document to envision and implement initiatives in consonance with opportunities and challenges arising from this rapid and massive urbanisation.

Through the Smart Cities Mission - an ambitious urban development program launched by the Prime Minister Shri Narendra Modi in 2015, 100 cities have undertaken a pathbreaking journey to transform the way they provide core infrastructure and services, clean environment and better quality of life to their citizens. In the last five years, the Mission has grown from strength to strength, implementing over 5,100 projects worth around ₹ 2,05,000 crores, that are positively impacting the lives of close to 100 million citizens.

A core commitment to empowering communities, practicing of cooperative and competitive federalism and using technology as an important medium for city management have been key principles espoused by the Smart Cities Mission. This workbook expounds these principles at length, while providing an indicative framework of outcomes, a step-by-step guide to creating strategic plans, and implementing major actions in the process. The time is ripe to share the learnings from the exciting journey of India's Smart Cities, so that city administrations in all India's urban centers may use them as they go about the task of transforming their own cities into thriving urban centers.

I believe this workbook will act as a foundational document for urban planners, policy makers and practitioners. I wish the readers and users of this document the very best in their endeavours.

Hardeep S Puri
Minister of State (I/C), Housing and Urban Affairs



PREFACE

Smart Cities: Lighthouses for Urban Innovation



India has been the fastest growing major economy in the world, with an average growth of over 7 percent in the last decade. It is the world's sixth largest economy by nominal GDP and the third largest by purchasing power parity and aspires to become a USD 5-trillion economy by 2024 and a USD 10-trillion economy by 2030. Urban areas produce close to 60 percent of India's GDP and this is estimated to rise beyond 70 percent by 2030. India's growth story is, in fact, unfolding in all its cities ranging from mega city regions to small towns.

It is imperative for India to manage urbanisation well for cities to achieve their full potential on three important fronts - **liveability, economic-ability and sustainability**. Urbanisation poses significant challenges ranging from climate change impacts, high energy consumption and GHG emissions to inequitable growth, unsafe and degraded built environments and deteriorating public health.

In this overall context, in 2015, under the leadership of our visionary Prime Minister, one of the largest suites of urban rejuvenation programs anywhere in the world, was initiated by the Government of India to leverage on the opportunities and to tackle the challenges of rapid urbanisation effectively. A comprehensive approach with a three-tiered structure of programs was initiated under the overarching guiding theme of '*Sab ka Saath, Sab ka Vikas*', signalling a spirit of partnership and engagement.

The key programs are the [Smart Cities Mission \(SCM\)](#), the [Swachh Bharat Mission-Urban \(SBM-U\)](#),

"As of 2018, there are over 4,300 statutory towns and cities in India with around 40 crore inhabitants. At current rate of growth, urban population will reach around 60 crore by 2030. It is estimated that about 50 percent of the country's population (around 80 crore) will be urban by 2050 (World Urban Prospects, 2018)."

Pradhan Mantri Awas Yojana-Urban (PMAY-U), Deendayal Antyodaya Yojana National Urban Livelihoods Mission (DAY- NULM), Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Heritage City Development and Augmentation Yojana (HRIDAY) and [Urban Transport](#) with a focus metro rail systems.

These programs have been instrumental in driving the economy forward. Investments in institutions and infrastructure have created jobs, improved ease of living and helped build sustainable environments. The kaleidoscopic diversity of Indian cities has produced a variety of contextual innovative solutions to overcome infrastructure deficits and inefficiencies of service delivery and governance.

Many cities have seized the chance to converge ideas and investments of different missions for more maximising impact.

The Smart Cities Mission covers 100 cities in

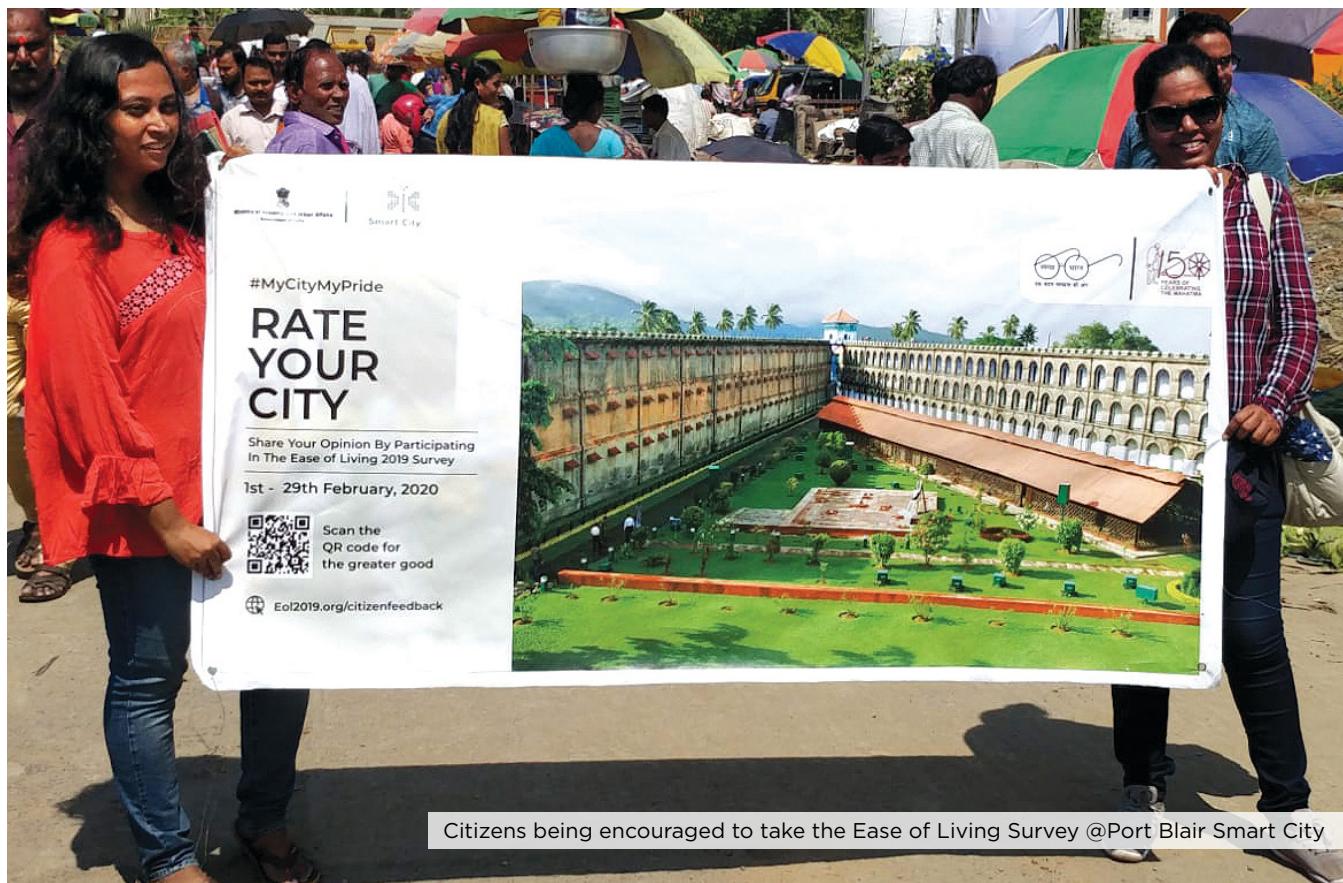
India that were selected through a two-stage competition. In fact, cities and their people put their best foot forward to win the challenge. The selected cities created Smart City proposals through extensive citizen engagement. These comprised a bouquet of projects representing the people's hopes and aspirations.

"The Smart Cities Mission of the Government is a bold, new initiative. It is meant to set examples that can be replicated both within and outside the Smart City, catalysing the creation of similar Smart Cities in various regions and parts of the country. The objective is to promote cities that provide core infrastructure and give a decent quality of life to their citizens, a clean and sustainable environment and application of 'Smart' Solutions."

Smart Cities Mission guidelines

The Smart Cities Mission is guided by following core principles:

1. **Citizens at the core:** Citizens are involved in every stage of Smart City development.
2. **More from less:** Smart Cities strive to generate more impact and outcomes from use of less resources- energy, finance and others.
3. **Cooperative and competitive federalism:** cooperative collaboration and healthy competition between States and cities.
4. **Convergence:** Smart Cities are focused on creation of integrated infrastructure and services, promotion of circular economy and sustainable habitats through convergence of financial resources and programs.
5. **Technology as a means, and not the goal:** Technology enables and provides speed and scale but is not the end result of smart city development.
6. **Inclusiveness:** Cities are for all people irrespective of age, gender, background and ability and hence they have to be inclusive to be smart.





Students travel in a smart city bus @Aurangabad Smart City

The projects being implemented by Smart Cities can be broadly categorised under the three core aspects mentioned before: **Liveability, Economic-ability and Sustainability** that are also aligned to the issues highlighted by most citizens during the citizen engagement exercises. While services like urban mobility, affordable housing, water and waste-water management, sanitation and solid waste management, safety, health, and education respond to ‘liveability’; initiatives that enhance investment climate, increase jobs and breed innovation affect the ‘economic-ability’; and at the heart is environmental ‘sustainability’ wherein everyday decisions on technology, infrastructure and investments balance both present and future concerns of society.

Aggregated at the national level, the 100 Smart Cities have proposed to execute 5,151 projects worth ₹ 2,05,018 crores in 5 years from their respective dates of selection. Financial innovation is built into the capital investment plans. The distribution of funding envisaged from different sources is approximately as follows - 45 percent from central and state governments (₹ 91,000 crore), 21 percent from convergence with other programs (₹ 42,000 crore), 21 percent from Public Private Partnerships (₹ 42,000 crore), 4 percent from loans (₹ 10,000 crore), and 9 percent from own and other sources (₹ 20,000 crore). As of November, 2020, almost 90 percent of all the approved Mission projects had been tendered, and around 70 percent had either been completed or were under advanced stages of implementation.

Over the last five years, the Mission has generated immense learnings regarding development of Smart Cities in the Indian context. These lessons continue to be learnt even as this document is being written. The concept and practice of Smart Cities is evolving and will continue to evolve with the changing needs of the residents and so will the methods and techniques that will be available to address those needs. It is indeed a matter of

pride and joy to quickly recount a few of these innovations here.

Projects range across multiple sectors at pan city as well as area level. Almost all Smart Cities have included components such as regeneration, development of vibrant and walkable public spaces, bicycle sharing, creation of cycle tracks and greener mobility practices. A number of cities are activating neighbourhood level spaces and shaping healthier, more inclusive cities. Pune has reclaimed neglected spaces for everyday recreational use by people. Bhubaneshwar has established a child friendly city center to integrate children’s specific needs with other development projects. Surat, Bhubaneswar and Indore are doing a great job of linking the citizens back to their heritage. Other initiatives like city social welfare centers and ranking of public toilets in Jabalpur show that public feedback and community engagement have been adopted by cities to become more responsive to needs of their residents.

With pan city initiatives such as improving water supply and sanitation and waste management through technological innovations, some Smart Cities have become a model for efficient resource management and service delivery. In fact, a few cities have used technology very smartly to implement, monitor and sustain reforms in services and governance.

Digital technology is a common enabler employed across projects to solve urban challenges, enable efficient city management, and foster transparent and accountable governance. Rajkot uses undeniable video evidence, which has helped reduce the crime rate substantially. In Kakinada, environment sensors have been deployed for automatic weather and air quality monitoring and lightening detection. Pune has installed flood sensors at key points around the city to collate data for timely warning and response. In Ahmedabad, provision of free Wi-Fi on BRTS corridors has

helped improve ridership. Vishakhapatnam and Bhopal have enabled tracking of buses with CCTV and GPS.

The Mission also promotes mixed land-use in area-based developments, as proximity and density reduce the per capita costs of providing infrastructure and services while creating knowledge spillovers and specialisation that hugely enhance urban productivity. This can be seen in projects developed by Bhopal, Bhubaneswar and Ahmedabad.

Smart Cities are implementing projects with a strong focus on economic returns. A number of cities are creating smart ecosystems where skilled people are getting connected to each other enabling innovation, knowledge, research, ideas and creativity. Smart classrooms in government schools and smart campus interventions in Kakinada, New Delhi and Jabalpur have helped improve learning and attendance of students. A number of cities have initiated setting up of skill development centers, incubation centers, vending zones etc., fostering an environment for entrepreneurship, innovation and co-creation. Pune is imparting skills to youth from poor families to empower them to become productive members of the society.

There have been demands from numerous sources to include other cities within the fold of the Smart Cities Mission. In this context, we have to realise that the Mission should best be looked at as a pioneering effort towards building certain

universal principles, that when adopted by any other city would potentially make it a smart city without the need of its inclusion under a Mission by that name. As a corollary, smart city principles can be thought of as software which can be installed in multiple pieces of hardware (cities) and can continue to evolve as their practice evolves in the different contexts.

India's unique set of opportunities and challenges need unique strategies. This document, "Making a City Smart: Learnings from the Smart Cities Mission" is thus of great significance as it is borne out of actual implementation lessons from ground, from different local contexts of Indian cities. It introduces urban practitioners and policy makers to the key principles that have evolved in course of the Smart Cities Mission to support their endeavours in different cities across India. The workbook also uses the existing resources and assessment frameworks of the Ministry that any city can use to become a Smart City and help other cities chart a similar course, by creating what can be described as a 'regional zone of influence'.

I congratulate the team of the Smart Cities Mission for this effort. A rising tide lifts all boats, and I urge all the readers of this document to use it as a guide in their efforts to create cities that are built around their communities. It is only then that they can truly become Smart Cities.

Durga Shanker Mishra
Secretary, Ministry of Housing and Urban Affairs

MESSAGE FROM MISSION DIRECTOR

Straight to the Point



Pursuant towards a goal of building resilient, liveable and sustainable cities, the Smart Cities Mission has ushered in a new urban discourse in India. The mission is characterised by its focus on social and economic development through the foundational premise of citizen-centric governance.

"Making a City Smart: Learnings from the Smart Cities Mission" has been created to encapsulate the learnings of the Smart Cities Mission, a rather unenviable task. The document will challenge you - a policy maker, urban planner or even the casual reader to critically assess the existing development paradigm in place in your city and help prepare you better for your endeavours in the future.

The workbook uses a simple style of writing for ease of understanding. It is broadly divided into three parts - What is a Smart City, Why a Smart City and How a Smart City. Needless to say, this cannot be construed to be a static document or a dogma, and its contours will keep evolving as the practice of Smart Cities evolves in our country.

A smart city is a journey, not a destination. This document is borne out of the work done on ground by smart city protagonists in our cities. They are the true champions, the authors of this document.

Kunal Kumar

Joint Secretary and Mission Director, Smart Cities Mission



Sensory park for the disabled @Chennai Smart City

How to use this workbook

This workbook should ideally be read in the same sequence as it is presented. Give yourself at least 4-8 weeks for a complete reading of the document.

The workbook is broadly divided into three sections as follows:

- **What is a Smart City**
- **Why a Smart City**
- **How a Smart City**

Each section discusses specific aspects and lists simple pointers that can be used to assess a city's status or performance with regard to that particular aspect. Pointers are clubbed under a 'Task', which is a call for action to achieve specific objectives. These tasks form the heart of this workbook.

These pointers will help contextualise the document's content as per the realities of your city. Thinking through them will maximise the benefits you can derive from the document, and hence you are encouraged not to jump sections but read them and think through them in the sequence as presented.

(Note that the list of pointers is not exhaustive. You may add more pointers based on the local context as well as pertaining to the opportunities and threats relevant to your city).

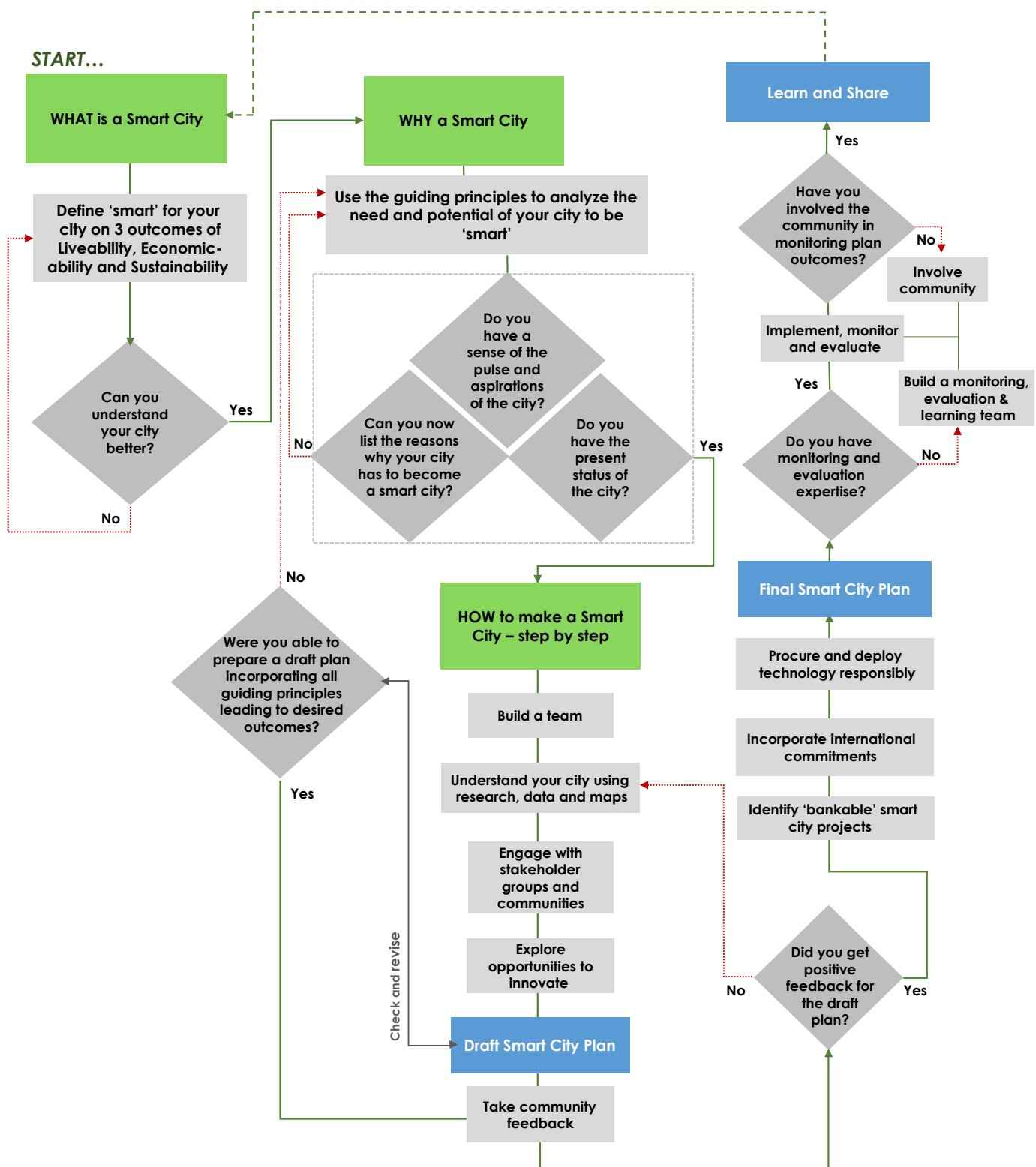
The tasks in 'Why' section builds momentum and once these have been completed, the Tasks in the 'How' section will guide you as to actual nitty gritties of preparation and implementation of Smart City Plan customised for your city's context.

This document will be most useful when multiple stakeholders/ practitioners/ researchers discuss and dissect it as a group. Hold brain storming sessions, consultations, and discussions with your teams, partners and experts; fill up the margins of the document with notes; consult with practitioners in other cities and explore what they are doing. This workbook should be read alongside the [Smart Cities Mission Guidelines](#) as a companion document for a more thorough understanding.

With an enhanced understanding of 'What, Why and How' of Smart Cities, you can be more confident as you move to create and implement the Smart City Plan for your city.

**Get started...
Wishing you the best
in your pursuits!**

Making a city smart



What is a Smart City?



Citizen using the public bike sharing facility @Gwalior Smart City

What is a Smart City?

Smart cities are cities that work.

Most importantly, work for whom? And, what do we mean by cities that work?

Cities are confluences of people; places where people live, meet, exchange ideas, earn livelihoods, access education, health and other services and enjoy a life of good quality. People are at the core of the city. Therefore, cities should work for their people. Cities that work for their people will continuously become better versions of themselves with each passing day.

"We shape cities, and they shape us."

- Jan Gehl

What do we mean by cities that work for their people?

To answer this question, we need to understand the reasons that make a city attractive to people in the first place. These reasons would be, to a large extent, different for different cities and different for different sets of people and therefore cannot be generalised. Some cities attract people for the opportunities that exist therein - markets for aggregation and trade, manufacturing, some for their cultural vibrance or their cosmopolitan vibes, and others for their ability to provide better education and health facilities, or a combination of such factors.

There are, largely, two kinds of factors that attract people to cities - 'push factors', led by distress or scarcity in their place of origin - like droughts, lack of jobs, violence, or social rifts and 'pull factors', like better opportunities for education, business and industry, leisure, art and culture. Decoding the specific reasons for which people choose a certain city over others is at the core of understanding any city's DNA - the foundational building blocks that drive the city.

The aspirations of a city's inhabitants evolve with time and hence these reasons must be studied in the relevant contexts. To understand these reasons, smart city practitioners need to ask some crucial questions, for example – which are the different communities that constitute the city, what are their current needs, how have their needs evolved, what are their hopes and aspirations, what attracts outsiders to the city, and so on. A city can be said to work for its people only if it supports them in their chosen pursuits.

If I am a migrant coming to the city for two years to earn a livelihood, my needs would include access to low-cost rental housing, cheap public transport, ration shops, financial services to send remittances back to my village, affordable tertiary medical care, creche and/or schools incase my wife and children live with me. However, if I am a student, my needs could be good educational institutions, institutional housing or affordable rentals, a diverse job market to absorb my skills, culture and recreational facilities. This is different if I am an elderly citizen for whom access to good quality healthcare and all abilities friendly infrastructure may be of priority. Similarly, residents of a city that faces floods every year, may have the collective aspiration to see it become a flood-free city, while another city that has high rate of crime may prioritise becoming a safe city over other issues.

Clearly, not all people or groups of people desire the same things. To simplify the understanding of the diversity of needs expressed by a city's diverse residents, it is useful to classify them under three broad pillars - liveability, economic- ability and sustainability. Imagine these as three folders on your computer that have multiple files of different types, dealing with different aspects. These, thus, constitute the three broad outcomes that a city

needs to target to work for its people. In other words, to answer the question ‘what is a smart city’ in another way; it is a city, which is livable,

sustainable and has a thriving economy offering multiple opportunities to its people to pursue their diverse interests.

When a city works for its people, what does it look like?

1. City that works for its migrant workers and their families.

Basheer Awal, his wife and a 3-year-old toddler are compelled to migrate out of their village in Assam because the annual flooding of the Brahmaputra River is a constant disruption to their lives, livelihoods and assets. Since Assam and Kerala have a Bi-lateral Migrant Workers’ Agreement, Basheer and his family have decided to move to Kochi Smart City.

Upon arrival at the Ernakulum Town Railway Station, Basheer and his family take a shuttle bus to the Migrant Workers’ Facilitation Center. The Center helps them register online as per the Inter-State Migrant Worker’s Act and ‘check-in’ in Kerala on the national migrant worker’s portal. This automatically

activates their access to local ration shops, health insurance under Ayushman Bharat, anganwadis and municipal schools for their child.

As per the bi-lateral agreement, Basheer and his wife qualify for a 4-week subsidised stay and meals at the dormitory of the Center. Based on their indicated interests and skills, Basheer and his wife are given training in electric bus repair and installation of solar panels. They opted to co-pay for the training once they receive their first salaries. With the Center’s network, Basheer and his wife receive job placements by the fourth week. The network also helps them review various low-cost rental housing options close to work and helps them get smart cards for multi-modal transport in the city.



Illustrative image of migrant worker and family @Kochi Smart City

2. City that leverages its local strength and retains young talent.

Agnes Nongrum is a native of the Garo Hills of Meghalaya and currently, a final year student at the National Institute of Technology, in Shillong. Along with two other classmates, she has co-founded a food startup that procures organic jackfruit from farmers in Garo hills, produces value added products and sells it across India via e-commerce platforms.

Her success reflects a state-wide focus on promoting innovation and market-driven enterprises as well as improving farmer livelihoods in rural areas. Agnes was awarded 'Entrepreneur of the Month' in December 2020 and was also selected in 100

entrepreneurs chosen from Chief Minister's Entrepreneurship-Champion Challenge. Due to the continued support she gets from the ecosystem at every step, Agnes does not feel the need to move to a bigger city like Bengaluru or Delhi.

Agnes's startup often sets up a pop-up stall to promote her brand at the Police Bazaar Farmers Market. Here, streets are made pedestrian on weekends with local music bands performing live and major football games screened in open air. This type of cultural and public space programming has made the local communities more cohesive and made Shillong Smart City a vibrant and attractive city.



Illustrative image of a food entrepreneur @Shillong Smart City

3. City that promotes a green and healthy future.

Chanda Beniwal is an e-waste worker in Prayagraj Smart City. She works at the city's 'e-Waste Collection & Sorting Center', authorised by the Uttar Pradesh Pollution Control Board, from where the waste is taken to responsible recyclers. Owing to the National Commission for Safai Karamcharis, the Prayagraj e-Waste Collective that she is part of, ensures her liveable wages and pension.

As per the Prayagraj e-Waste Collective Management guidelines, all the sanitation workers like her are involved annually in assessing the community's flood preparedness and spread awareness among

citizens. Their emergency management skills are also used during the Kumbh Mela every four years in coordination with the city's Integrated Command and Control Centre.

Chanda enjoys her weekly day off on Sundays playing badminton at the local sports center or practicing with her team for the city's annual kayaking competition. Since the COVID pandemic, the city has invested in creating several passive and active outdoor recreational opportunities along the edges of Ganga and Yamuna and also created parklets within dense neighborhoods. This is making positive health impacts on the residents.



Illustrative image of an e-waste worker @Prayagraj Smart City

Key Outcomes that define a Smart City

1. LIVEABILITY

Liveability or **quality of life** includes aspects of social well-being that enable a citizens to live a decent life in the city. Aspects like access to clean water supply, safe streets and public spaces, public transport, facilities for health and education, places for recreation and places of cultural and historical significance are all covered under this outcome. By measuring a city on these aspects against established benchmarks, a city can judge how well it is performing in enhancing livability of its residents and thereby what aspects of the city need further investments. The 'Quality of Life' indicators in the [Ease of Living Index \(EoLI\)](#) of the Government of India, is one such established benchmark. Not only does this annual



Redevelopment and beautification of Gulaua lake
@ Jabalpur Smart City

assessment help compare cities but also helps each city track whether they are working for their cities or not, over time.

2. ECONOMIC-ABILITY

Economic-ability includes aspects which impact the city's ability to be a good place to do business and provide access to a diversity of jobs. Economic activity is primarily what brings people into a city in the first place. Sustained

economic activity and investments are crucial for growth in incomes. The city's function as an economic engine is important to provide enough jobs and resources for continuous upgradation of its infrastructure. While speaking of economic-ability one has to guard against generalisations.

Economic growth is path dependent - a city with a large agricultural hinterland could have a bright future as an agro-processing hub while one with a thriving car manufacturing industry could venture into or transition with ease to building sophisticated machinery and so on. The city's skilling efforts and investments should be in sync with its local/ regional context and demand. The 'Economic-ability' indicators of the EoLI and [City GDP Measurement Framework](#) are efforts of the Government of India to benchmark economic performances of cities.



Women engaged in microskill development center @Agra Smart City

3. SUSTAINABILITY

Sustainability is a state of dynamic equilibrium between natural and built ecosystems. This equilibrium has been severely threatened with rising temperatures, extreme weather events, deteriorating air quality, more frequent floods and droughts, and declining urban biodiversity. Its dynamic property means it is affected by each new input into the system. For example, each new streetlight that is installed or each new road that is built or each new building that is erected affects this equilibrium in some way or another. Sustainability is affected by such human activities and the state of the urban environment becomes an indicator of what has gone right or wrong in the city. The ‘Sustainability’ indicators under



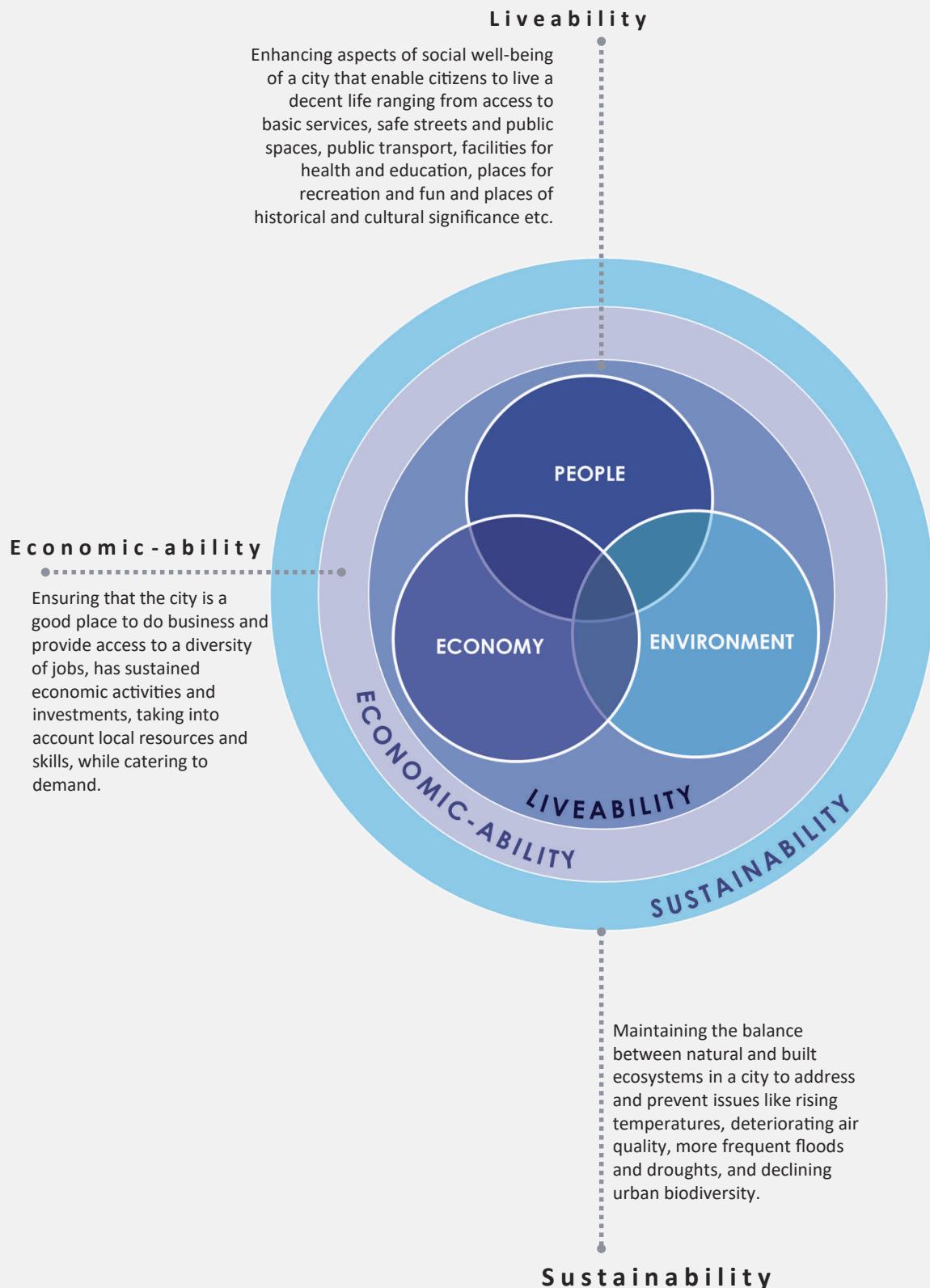
Kids engaging in tree plantation drive at a government school @Tumakuru Smart City

EOLI and the [Climate Smart Cities Assessment Framework \(CSCF\)](#) are tools formulated by the Government of India to understand a city's performance on different dimensions of sustainable development in the Indian context.

The three outcomes as discussed briefly above -**liveability, economic-ability and sustainability**, mirror the aspirations of any city's residents. Specific priorities of residents could vary from city to city, from neighbourhood to neighbourhood depending on the local context. **For a city to be able to meet its residents' needs, it needs to identify the most appropriate mix of outcomes that are desired by them and then be able to channelize its investments, policies and infrastructure into fulfilling those needs.**

There could be different ways of achieving the same outcome. For example, if the need is for level A luminosity, we can use a sodium vapor lamp of certain wattage or an energy-efficient LED lamp to provide the same. If there is a need to move 100 people from location X to location Y in the city, it can be done by putting them in 100 individual cars or 3 buses of 30 to 40 people each. If 100 MLD of water is to be provided to a locality, it can be done through a traditional pipe and tap system or through an intelligently controlled pipe and tap system, which can help reduce leakages. These are choices that every city faces. Why does it need to be smart in making these choices? The next section presents some key guiding principles to make suitable choices.

Key Outcomes to define a Smart City



LEADING THOUGHTS ON SMART CITIES

“ Smart City Mission will help prepare our cities to take up the challenges of New India; and prepare world class intelligent urban centers in India, for the 21st century. **”**

- Shri Narendra Modi, Prime Minister of India at Lucknow on 28 July 2018

“ Smart Cities are a process rather than as a static outcome, through which citizen engagement, hard infrastructure, social capital, and digital technologies make cities more liveable and resilient and, hence, able to respond quicker to new challenges. **”**

- The UK Department for Business, Innovation and Skills (BIS)

“ A smart sustainable city is an innovative city that uses ICTs and other means to improve the quality of life, efficiency of urban operation and services, and competitiveness, while ensuring that it meets the needs of present and future generations with respect to economic, social and environmental aspects. **”**

- International Telecommunication Union (ITU)'s Focus Group on Smart Sustainable Cities (FG-SSC)

“ Smart Cities are initiatives or approaches that effectively leverage digitalisation to boost citizen well-being and deliver more efficient, sustainable and inclusive urban services and environments as part of a collaborative, multi-stakeholder process. **”**

- Organisation for Economic Co-operation and Development (OECD), 2018

Why a Smart City?



Pedestrian pathways, well lit by energy efficient street lights @Namchi Smart City

Why a Smart City?

Being smart is no more a choice, **it is a need.**

Cities are in a state of constant flux. Their systems face tremendous stress from both internal and external factors. Cities also have a crucial role to play towards achieving the national imperatives of economic growth and ease of living. Moreover, the choices made by them impact climate change and energy use not only for India, but also for the entire globe. With so much at stake, we cannot afford our cities to function in a business-as-usual manner.

Making our cities smart is thus, an urgent and important need. We also know that Smart Cities are and will continue to be torch-bearers in realising the national aspiration for an urbanisation that works for all.

While most national missions are focused on a particular aspect of the multi-dimensional challenges that cities face, the Smart Cities Mission is focused on creating a model of integrated urban development, addressing cross-sectoral

issues in an integrated way. In a way, Smart Cities are a test-bed to implement and scale ideas. The most exciting part of being Smart City is being able to ideate and innovate with the assurance that lessons from one city may inform actions in cities across the country.

This section gives the **general guiding principles that emphasise why a city needs to be smart. Read these with this ‘why’ in mind as each principle defines a characteristic that a city will be able to develop as it journeys towards becoming a smart city.**

Smart Cities are platforms to test and scale ideas on the basis of which actions may be influenced at city, state and national levels.



Smart class in progress @Erode Smart City

WHY

Our future in this century will be defined by **three major trends**

Guiding principles that can help us achieve the outcomes in response to these trends

Outcomes that are desired for all cities and citizens

Measurement frameworks for Outcomes

A GROWING INEQUITIES

1. Inclusion
2. Engagement
3. Resilience
4. Adaptability
5. Healthy Urban Environment
6. Resource Conservation & Regeneration
7. Connectivity
8. Safety & Security
9. Responsible Technology
10. More from Less

B CHANGING CLIMATE



LIVEABILITY

Ease of Living Index (EoLI)



ECONOMIC-ABILITY

ClimateSmart Cities Assessment Framework (CSCF)

C 4TH INDUSTRIAL REVOLUTION



SUSTAINABILITY

Municipal Performance Index (MPI)

Swachh Survekshan

Data Maturity Assessment Framework (DMAF)

Guiding Principles

By adopting these principles, cities can begin their journey towards becoming smart.

1. Inclusion

A city is comprised of diverse communities of residents who belong to different cultures, follow different economic pursuits and express different needs. Some of these groups may be more at risk and/or marginalised than others like the low-income migrant groups that have limited political representation and are highly dependent on public provisioning of social protection. These also include communities that live in ethnic or religious ghettos and receive lesser coverage or lower quality of public infrastructure and services. High vulnerability is also experienced by ageing populations, young children, or those that are differently abled. Besides socio, economic, religious, gender, caste, age and ability related exclusions, communities also face territorial risks like living in high flood zones or from lack of property rights like in unrecognised slums under constant threat of bulldozing. These hold people back from investing in their own futures and thereby the city's future. Thus, it is imperative for local governments to be inclusive and take every citizen along. This means ensuring that all

public goods (from housing to utilities to open spaces to health and education services) are made available, are affordable and accessible to diverse citizenry without systemic biases.

Task 1

- Who are the various at-risk or excluded communities/individuals in your city?
- Are these vulnerabilities and/or exclusions by income, culture, gender, age, geography, disability? Many may be multi-dimensional.
- Are these because of underlying systemic issues or are the drivers external?
- What preventative and curative measures can you take to address them? What are their most critical needs?
- How are you harnessing the community's own potential to solve their problems?
- Who are the different stakeholders that need to come together for solutioning?
- Do you need to develop and adopt any guidelines or policies for long-term, systematic and inclusive development of this community/vulnerability?



All Abilities Park @Visakhapatnam Smart City



2. Engagement

This is the most fundamental guiding principle for any Smart City. Cities should work for their people. But, how do cities engage with people to understand what they want, what are their needs and aspirations? Putting citizens at the center of the city building process is key to building Smart Cities. Community participation must be seamlessly imbibed in the processes of governance. Smart Cities need to experiment with different modes of community participation in order to understand the pulse of their people. This is connected very strongly with the city's efforts at promoting inclusion (Task 1).



Task 2

- Is there an active culture of community participation in your city?
- Does the city have a well-used grievance recording and redressal system in place?
- Does the city regularly and extensively communicate information about initiatives and projects and related challenges and opportunities to residents?
- Does the city leverage citizen groups, experts, local firms in policy and project design?
- Does the city employ technology to connect and communicate better with its citizens?
- Are there well-developed mechanisms for collaborative problem solving?
- Are communities involved in monitoring and evaluation of civic projects?

Interaction with street vendors @Kohima Smart City

3. Resilience

Cities are threatened by sudden, acute shocks or black swan events such as earthquakes, disease outbreaks, cyber-attacks or communal violence. They also experience chronic stresses, such as high unemployment, overtaxed or inefficient public transportation systems, or chronic recurrent flooding, that weaken its fabric over time and exacerbate shocks when they inevitably occur. These are all interconnected and cannot be solved by siloed departmental approaches – i.e. one team designing disaster recovery plans, another team exploring sustainability issues, another focused on livelihoods and wellbeing, and yet another on land-use planning and infrastructure. That may be an efficient way to structure the work of a city, but it is not the most effective way. Cities are systems and not silos. Thus, building resilience, means strengthening the capacities of individuals, communities, institutions, businesses, and systems within a city to survive, adapt, and grow no matter what kinds of chronic stresses and acute shocks they experience. Depending on city to city and system to system, this could mean improving institutional capacities, improving planning and coordination, or ensuring financial viabilities. Not just for today, but also for the future.



Task 3

- What are the acute shocks (sudden, sharp events) that your city is at the risk of facing?
- Does the city have effective emergency response mechanisms in place for these? What about early warning systems or predictive analysis for preparedness?
- What are the chronic stresses that weaken the fabric of your city on a day-to-day or cyclical basis?
- What are the drivers/causes behind these?
- Is there a correlation between the shocks and stresses?
- What actions is the city already taking in response to these? How effective are they?
- What systemic measures can you undertake so that your city can bounce back faster and forward from shocks and stresses?
- Does the city have any mechanisms to mitigate/curtail the impacts on vulnerable sectors, groups and individuals?
- Has the city engaged with its stakeholders and built awareness around the risks and possible mitigation and adaptation strategies?



4. Adaptability

Cities are faced with new challenges, big or small, all the time and therefore need to be flexible enough to meet them head-on. Adaptability denotes the ability of a city to constantly evolve, reinvent or readapt its infrastructure and behaviours based on situational changes. For example, a city that is completely dependent on textile manufacturing that moves to another competitive location, it would need to diversify its economy, reskill its workforce and readapt its mill buildings for reuse. Or as cities realise the benefits of non-motorised transport and public spaces, streets will have to be redesigned to de-prioritise cars, revise parking policies and nudge citizen behaviours.

Cities need to experiment with different solutions while adapting so that the most optimal way in the given local context can be discovered. This needs cities to imbibe the test-learn-scale methodology in work. Not every effort needs to be iterative in nature. Routine items of work or works for which institutional memory is already built, may not require this approach. However, when dealing with complex problems, or being faced with new challenges, it is always better to take the iterative method of test-learn-scale to arrive at solutions, which would increase the chances of success.

Task 4

- Have you studied the workflows of various city operations? Do these need to be adapted based on technology advancements?
- What is your plan for training the staff on these adaptations?
- Does the city's infrastructure need to be adapted for changing climate?
- How would the risks and benefits be distributed between government and the private sector?
- Does the city experiment with out-of-the-box solutions as an alternative to the routine?
- Has the city adopted any such solution?
- What is the adaptability of the people and the staff in city administration with respect to the solution?
- Does the solution require huge investment? Will we be better off trying it out at small scale to begin with?
- Are urban planning practices dynamic enough to allow for adaptability?

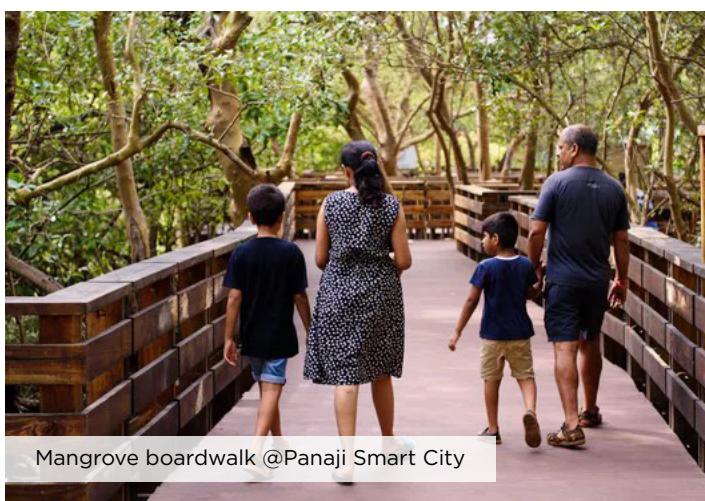


Car-free Sundays @Toothakudi Corporation

5. Healthy Urban Environment

The correlation between the environment and our physical and mental health is well understood. However, urban environments suffer from issues of polluted air and water, poor sanitation, lack of green and open spaces, unhealthy lifestyles with noise, chaos and information overload in everyday lives. Cities across the world have made it their priority to deal with these problems.

Designing compact walkable localities with mixed-use development close to public transport should become every city's priority to reduce pollution and congestion caused by cars. Besides vector borne and communicable diseases caused by unclean environment, people in our cities also face the threat of pandemics and lifestyle disorders such as obesity, hypertension, respiratory problems etc. By deploying technology and modernising systems, Smart Cities can help integrate health-related data of the citizens and health services of the city. By creating city level dashboards and better links between citizens and health workers, any city can enable better response to any health crises as well as support the overall health and wellness outcomes of communities across the city. Smart City Plan may choose to put this at the top of all planned 'actions' as this impacts people's lives in a very direct and immediate way.



Mangrove boardwalk @Panaji Smart City

Task 5

- What are the trends in communicable and noncommunicable diseases among citizens?
- Is there a causation or correlation between where they occur and hygiene conditions/pollution levels of that place? (ex: asthma-air quality, dengue/malaria-water logging)
- Is the city regularly measuring pollution levels in air, water, and soil and undertaking steps for mitigation?
- Have you evaluated the health of your natural ecosystems such as lakes, rivers, wetlands, urban forests? What do you need to do to clean, protect and rejuvenate them?
- Does the city provide opportunities for active recreation in all communities to address lifestyle related diseases such as obesity, heart disease, hypertension, diabetes and mental health?
- Is the city adequately addressing and communicating the correlation between environment, urban planning, and public health to your citizens?
- Is primary healthcare infrastructure accessible to all the citizens?
- What do you need to do to facilitate health coverage for all citizens under schemes such as Ayushman Bharat?



6. Resource Conservation and Regeneration

Water, wastewater, energy, solid waste, infrastructure, buildings etc. are all resources available with a city. Any resource that can be reused and recycled so that it remains in the system as a resource albeit being utilised for a different purpose has to be leveraged by Smart Cities. In most Indian cities the age of the built infrastructure demands either extensive improvement or complete renewal to function effectively and safely. The reuse of processed construction and demolition waste that is generated in the process of such renewal has to be adopted by all cities. Similarly reuse of treated wastewater, recycling of solid wastes and creation of renewable energy are all ways in which a city can create, regenerate and save resources. The first step is resource conservation and any wastage must be avoided by creating rules and guidelines such as for green and energy-efficient buildings, avoiding loss of water due to leakages or wastage due to inefficient fixtures etc. Adoption of such principles for resource conservation and circular economy principles for resource regeneration must become part of smart city strategies.



Hydroponic cultivation @Kavaratti Smart City

Task 6

- What are the most stressed resources in your city? (ex: land, water, energy, construction materials, sand)
- Have you assessed financial and environmental sustainability across the life cycle of these resources?
- Can you re-design the life cycle of these resources to reduce, reuse, and recycle?
 - » How is water captured, stored, distributed? How can you manage water cycles better to minimise consumption, reduce wastage, and increase recycling and reuse?
 - » Is the municipal solid waste or construction waste in your city segregated? Can it be recycled to make secondary raw-materials or products?
- What amends in building codes and development plans can support efficient use of resources?
- Have you set targets for municipal administered buildings and infrastructure (streetlights/ buses) to meet energy efficiency goals?
- Does your city have a clean energy plan?
- Can the city include these practices in government tenders and contracts?
- How can you make these financially viable? What financial incentives can you structure to foot upfront expenses?
- Have you designed public awareness campaigns for these?

7. Connectivity

Cities are the nodes in a vast network that is moving people and products from place to place across the globe. Few people ever ponder the source and journey of the products they purchase. Think of the journey an apple or an egg has made to reach your table. The same applies to products like televisions, smartphones, computers etc. This may seem to be a miracle of the modern world but is now routine because of the efficient supply chains that enmesh the entire globe. With increasing specialisation, production processes are becoming disaggregated and fragmented parts of the whole are now being produced in different parts of the world and the assembling of the final product taking place in yet another different part. While some cities look at these shifts as opportunities, others lose their space in the economic order because of their inability to create appropriate infrastructure to nurture such supply chains. It is important to understand that a city is not alone but part of a network. The growing importance of supply chains, the need for engagement with their stakeholders, the shifting dynamics of production functions and the need for appropriate logistics and other infrastructure to support the city's economy creates important demands on cities to work on smart city strategies, and understand for themselves where their niche strength and potential lie.



Smart Janpath@Bhubaneshwar Smart City

Task 7

- Which supply chains, from food to products and services, drive economy in your city?
- How resilient are your most critical supply chains to shock events and long-term stresses?
- Who bears the burden of the cost of most important supply chain failures in your city?
- Can you bolster these supply chains with local production?
- Does the new infrastructure and services in your city strengthen the existing supply chains and help develop new ones?
- What is the city doing to link its local production with global supply chains to enhance its economy? What more can be done?
- Is your city adequately served by public transport?
- Does your city have an updated Comprehensive Mobility Plan?
- Is supply and demand data spatially mapped to plan for full city coverage and timely service?
- Are last mile connectivity and multi-modal integration plans operational?
- Are all the public transit services digitally tracked and made available to riders for easy commuting?
- Has the city invested in Intelligent Traffic Management Systems?
- What is the city doing to enhance walkability and cyclability?



Moving people in and out, and around a city is one of its most vital and complicated functions. Transportation technologies have undergone dramatic changes over the past 100 years, and they continue to evolve and shape the planning and design of our cities. The biggest issues cities face is increased traffic congestion due to people's high dependence on private vehicles. However, people may have made this choice due to lack of safe and convenient public transport options, and by the time a city creates the option, people are habituated to private modes of travel. It is thus necessary to not only build

public transport infrastructure but strategies to shift people from private to public modes. Cities should encourage walking, cycling and use of public transport by all means necessary. The Government of India has stressed on equitable and smart urban mobility in its [National Urban Transport Policy of 2017](#) as well as the AMRUT and Smart Cities Mission. Providing reliable, affordable, inclusive, accessible and integrated public transport as well as safe non-motorised transport and pedestrian facilities, ensuring last mile connectivity are key goals that need to be addressed through smart city strategies.

8. Safety and Security

A city's ability to provide safety and security to all its residents, businesses and visitors is a crucial determinant of its economic competitiveness as well as the quality of life it offers. Besides crimes, issues such as unsafe and insecure living conditions, road accidents and fatalities, threats to health due to pollution, cybercrimes such as data theft etc., are also jeopardising the safety of citizens and their feeling of security. The stakeholders that are responsible for safety are stretched for resources in many cities or are not conversant with latest technology for surveillance etc. For effective strategy against unsafe roads and localities, seamless data sharing is essential among all departments in a city. Smart Cities have to embed solutions that are enabled by technology as well as driven by social innovation.



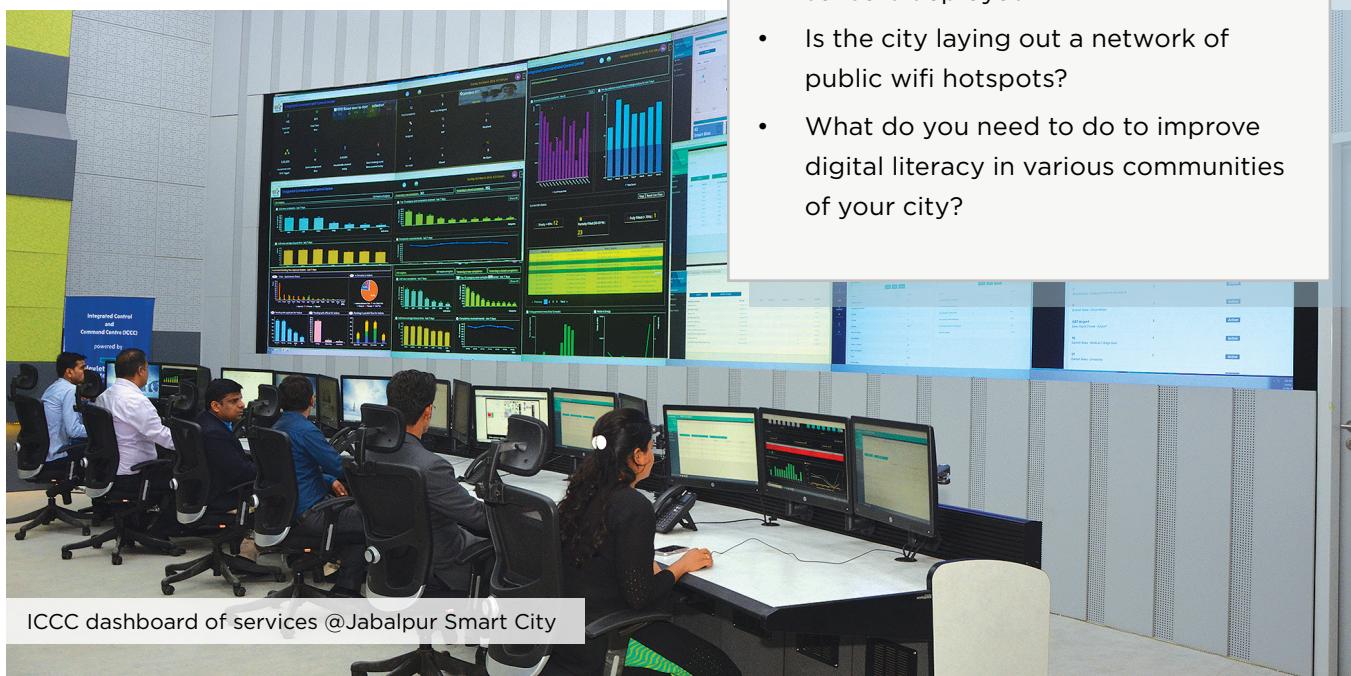
Task 8

- Do you know which areas of your city are most unsafe and insecure?
- What is being done to ensure that the most vulnerable in your city – people with disabilities, women, trans-genders, elderly, children etc., feel safe and secure?
- Have you attempted community- based policing or other social innovations to promote safety and security in your city?
- How are you building trust between civilians and police personnel/ departments?
- Is the police trained in empathetic protection and service of all citizens and recognition of biases in your city?
- Are you leveraging technology to make the city safer?
- Does your city have the right technology and talent to capture insights from cameras/sensors deployed in public spaces?

9. Responsible Technology

A lot of discussion around Smart Cities revolves around the use of technology, especially digital technology. The world is experiencing a perfect storm of emerging technologies in areas like artificial intelligence, machine learning, blockchain, advanced materials etc. These have opened up immense possibilities for our cities to solve problems in innovative ways. However, technology has to be regarded as an enabler by cities, subservient to the goals set by them. Most importantly, while investing in technology, cities have to tackle issues such as digital divide, cyber security, data privacy to name a few. Cities have now learned the lesson of testing the interoperability of a particular technology in multiple projects. Before implementing a new technology, the 'test-learn-scale' model should be adopted. Further, capacity building of target stakeholder groups should be an integral part of technology adoption strategy. If stakeholders do not see the benefits it brings to their work, they would be resistant to adopt the technology.

Responsible use of technology can foster innovation, help solve complex problems, support evidence-based decision making, ignite greater collaboration, and thus, help build Smart Cities.

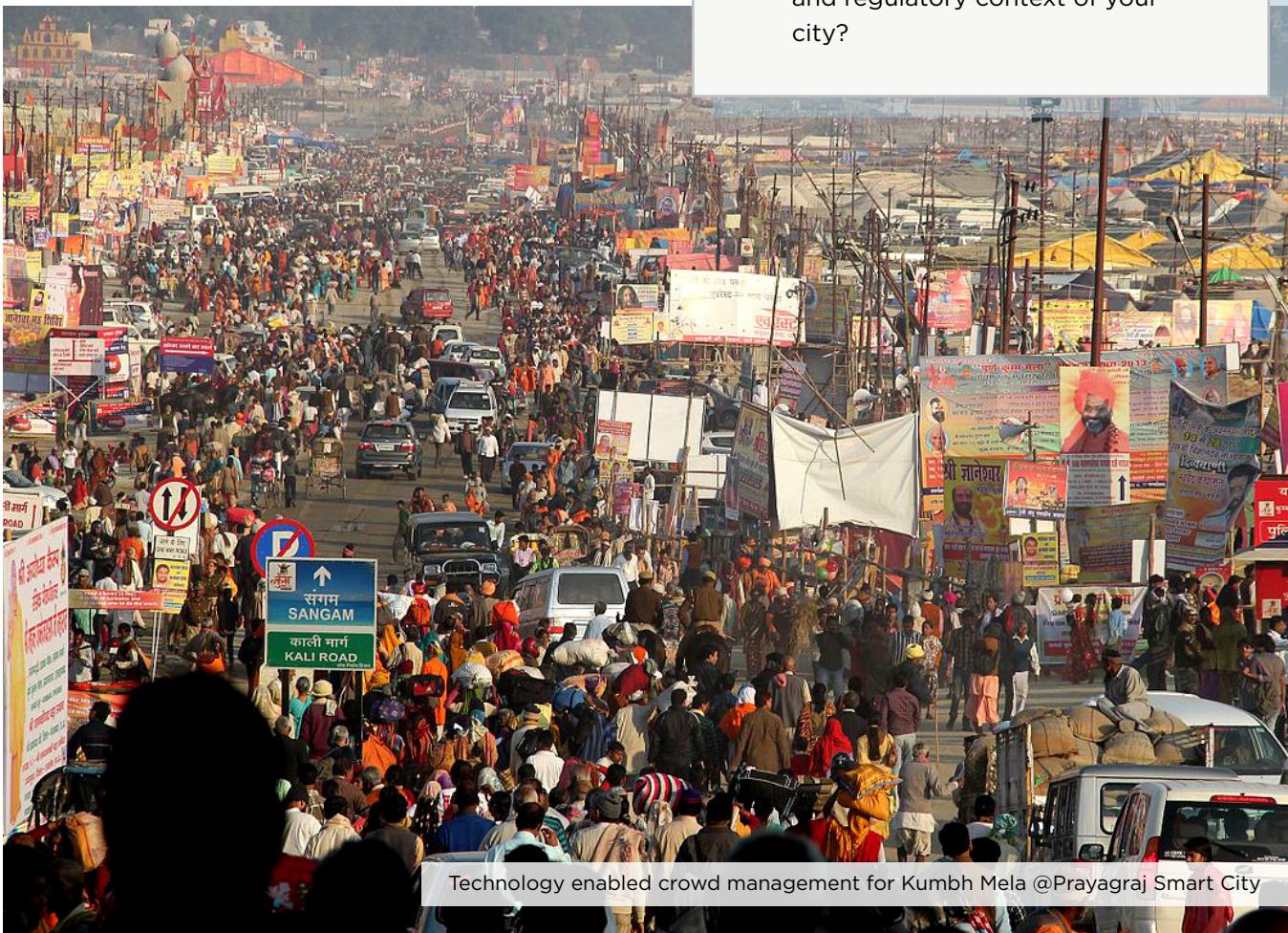


Task 9

- While answering all the above questions, where can technology provide additional value and innovation - to make the process faster, cheaper, increase coverage, outreach, monitoring, etc.? Example:
 - » deploy sensors to measure rising pollution levels or depleting ground water table and issue alerts
 - » integrate real time seat occupancy, bus routes and arrival times on passenger mobile app to improve public bus ridership
 - » use drones to improve speed and accuracy of mapping settlements and infrastructure
- What kind of data is needed and at what time intervals to make the technology useful?
- Is the municipal staff being trained in how to collect, store, analyse and dispose data?
- Does your city have the right resources (skills/processing technology) to capture insights from various cameras/sensors deployed?
- Is the city laying out a network of public wifi hotspots?
- What do you need to do to improve digital literacy in various communities of your city?

10. More from Less

Cities are always short on resources to meet rising expectations of their people. With increase in economic activity and rapid urbanisation, energy use and greenhouse gas emissions threaten to spiral out of control. Cities have to thus ensure optimisation of resource use - whether it is financial, energy, buildings or any other resources available with the city. The idea is to garner greater benefits and larger impact with lesser resources than usual. The question smart city practitioners need to constantly ask themselves is - How can the next rupee or the next KWh of power or next MLD of water help maximize achievement of the desired outcomes? There could be many ways of measuring efficiency, but what is important for cities is to imbibe the principle of optimal use of resources within the implementation mechanisms of all their functions.



Task 10

- What are some high impact, low resource solutions for the problem?
- Have you factored in the lifecycle costs of the solution?
- What trade-offs are you making when trying to get more from less?
- Is the cost benefit analysis favorable for the citizens?
- Which citizen group benefits and which group gets negatively impacted? Is this just and equitable?
- Should the city deliver the solution directly or provision it through private participation?
- If the solution is borrowed, does it suit the economic, climatic, social and regulatory context of your city?

How a Smart City?



Chappan Dukan street transformation @Indore Smart City

How a Smart City?

Journey of a thousand miles begins with a single step.

- Lao Tzu

Step by Step

This part of the document is all about getting down to brass tacks — more specifically, it focuses on how you go about integrating a city with smart city principles. We need to first acknowledge the immense work which has been carried out in the 100 Smart Cities under the Smart Cities Mission. That work forms the basis of this section. It captures key learnings, from their successes as well as failures and tries to lay out a generic roadmap that can be undertaken by any city in the country.

But before we go into the step-by-step process of the ‘HOW’, it is paramount to note that Smart Cities require immense long-term governance capacities to create and implement a Smart City Plan. Their performance is dependent on certain fundamental aspects which enable them to execute their functions efficiently. These enablers are - Services, Finance, Planning, Technology, and Governance. For a detailed description, please refer to the [Municipal Performance Index \(MPI\)](#) of the GoI. A long-term, continuous effort on improvement of these indicators by any city will create and build its endogenous strength. Let us understand these enablers in brief here.

Services

An unwritten social contract exists between the city and its citizens: the citizens pay taxes in lieu of the services they receive from the city. Ease, quality, transparency, and efficiency in processes to access these services help strengthen the social contract, thereby, increasing the trust

that citizens have on their cities. This builds capacity in the city through a virtuous cycle of reinforcement of trust.

Finance

The need for finance hardly needs any explanation. Ability to generate their own resources and to access robust sources of finance is critical to the city’s capacity to deliver solutions in line with people’s expectations.

Planning

Urban planning is at the very core of how cities evolve and function. When a city gets it right, anyone can tell on a single visit that the city works for its people. A city plan has to be cognizant of the multi-dimensional complexities that exist in cities and a city has to develop the capacity to create a dynamic, responsive and multi-scalar plan with a range of strategies from regional to pan-city to area level.

Technology

The city’s ability to harness technology for improving the efficiency of its operations, creating connectedness and communicating with its communities, and solving their problems is a critical element of its capacity.

Governance

Every city needs to have the fundamental capacity to provide good governance. This includes quality of human resources, institutional memory, ownership and accountability in all processes, and forward-looking policies for development. Any

city that has been empowered with autonomy to deal with these issues gets the ammunition to solve any challenges it faces.

As with any major enterprise, the first step is to decide on a collective vision followed by a strategic plan, including the major steps and milestones needed to get from where you are today to where you aspire to be. It is essential to discuss and build consensus with stakeholders on the broad details of the Why, What, How, and When. There is no doubt this process is tough and takes some time and intense engagement to complete, but it pays dividends as the work unfolds in the months and years ahead. Engaging with stakeholders throughout the smart city journey helps to garner support to carry the work ahead.

Begin with an open mind!

**THE LONG TERM!
Improving governance
capacities across pillars of the
Municipal Performance Index is
paramount for Smart Cities.**



STEP 1

Build a Smart Crack Team

The right team has to be put in place to successfully create and implement a Smart City Plan. Ideally, the Municipal Commissioner should serve as project director, assisted by a nodal officer and a select team from the ULB itself. Next it will help to list the diverse skills required to carry out the entire process and assess whether these are available within the ULB and how soon can they be created. In order to facilitate the process, you may decide to hire an external firm or consortium of firms to support the creation and implementation of the Smart City Plan for your city. It is important that such an external partner is the right fit for your ULB. Even if such a consultant is hired, the ULB's own dedicated team must be created to coordinate the planning and implementation efforts.

It is often tempting to contract a large consulting firm. But consider forming a consortium of local firms and civil society organisations that understand your city well and are invested in its shared future. They will carry the work forward, much beyond the terms of the contract! You may also employ both, the latter can act with the ULB as a reviewer at various stages.

Once you have hired this team, build the appropriate protocols for smooth functioning such as, administrative processes, team structure, roles and responsibilities, reporting relationships, expectations etc., and share with all the relevant project stakeholders. Capturing these in a formal project management document for consensus is essential so that everybody is on the same page about exactly how the project will be executed, managed, monitored and controlled. Simultaneously, it is also necessary to develop a project schedule with project milestones, activities, and deliverables with timelines for each. This schedule will go hand in hand with the assigned responsibilities.

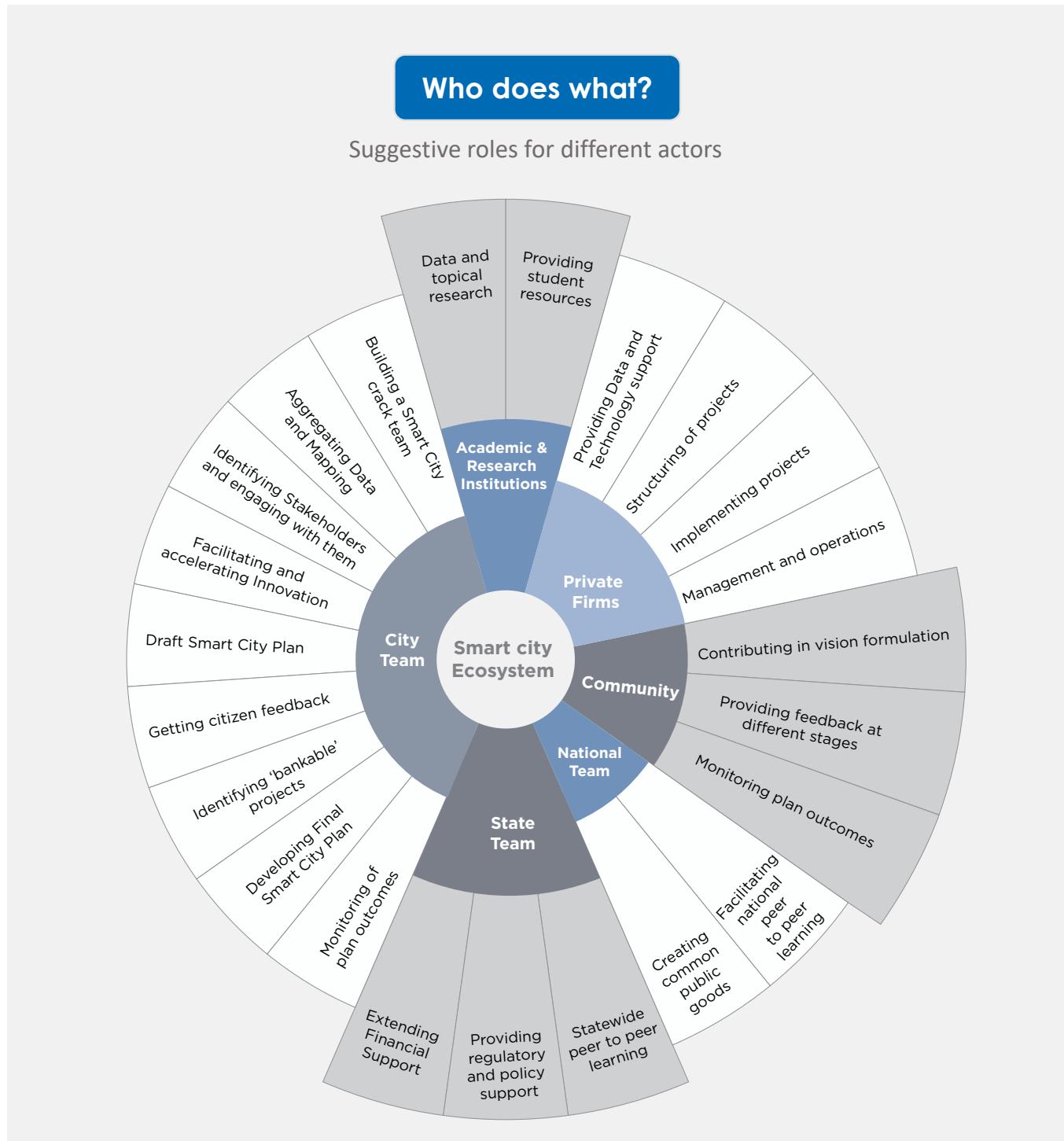
Task 11

Have You Got the Team Right?

- Do they align with your core values and ethos?
- Do they have the needed understanding of your city and do they share your vision for the city? Look beyond jargons and consultant speak!
- Does the team have the diverse expertise and experience that the project demands? Climate specialists, ecologists, gender specialists, behavioural scientists, data analysts, urban planners, urban designers, finance specialists, stakeholder and public participation experts – are some of the multidisciplinary inputs your city will need.
- Is the time committed by each team member/expert enough to ensure quality and will give you value for money? How will you make this binding?
- What is your process in case of dispute between you and the firm or between the firm and other vendors/stakeholders of the project?
- Do you have safeguards against an untimely dissolution of the contract?
- Do you have space to have the team permanently be seated in the municipal office while the plan is being prepared and implemented? Many a time, fly-by-night consultants are not able to provide the time and commitment that is needed.

As you move along in the process, you may encounter different types of issues and so it is best to set up an issue resolution system right at the beginning. Agreed-on by the entire team, this system will specify how different types of issues faced during the project will be handled. Further, create a reporting plan that clarifies agreed-on methods and channels for clear and frequent

communications to all stakeholders. Also set up a risk register to act as a repository for logging and managing project risks. The register will help document what actions were taken to mitigate or directly address the risk, if any. Refer to the Smart Cities Mission Human Resources guidelines, for further details.



STEP 2

Sense the City Through Research and Data

It is important to leave preconceived notions outside the room and focus on understanding the city through an objective lens. While sensing the city, you want to gather information about the place and its people, over time. As a first step, you can use data from census, NSSO, municipal records, and other such sources to understand trends. You can supplement this with more accurate, current, and real time data to be able to better assess current needs and make future projections. Here, big data sources like telecoms, discoms, sensor data for all types of urban infrastructures, social network data (information about events or opinions), etc. can be helpful. But while dealing with big data, it is important to prepare a framework of prioritised inquiry and questions in advance otherwise quarrying large datasets, while exciting, can take you down a rabbit hole.

You will also want to conduct spatial analysis of your city, time-series through satellite imagery is a good starting point. But in case of a small city or if you are focusing on a few neighbourhoods in a large city, drone-based mapping can capture current terrain with extreme accuracy and precision. Vehicle topped cameras can also help generate dynamic street level data.

Data is key to informed decision making. It can be used to prioritise as well as validate investments made towards any development in the city and gives the ULB confidence in terms of status quo, the gaps and the directions to take from here.

Task 12

What Data and Maps Do You Have for Your City?

- List down all sources of data for your city- related to different aspects covered in the first two sections of this workbook.
- How updated is the data for your city?
- Do you have updated maps for your city on GIS Platform?
- Do you have all the great things about your city mapped – landmarks, monuments, places of natural and cultural heritage, strengths such as big institutions and educational hubs, famous markets, handicraft and cuisine, close-by tourism destinations, products made in the city etc.
- Similarly, do you have all the vulnerabilities and threats mapped?
- Have you listed all the development related plans, schemes, missions, other national and state programmes applicable in your city?
- Have you developed a strategy of convergence for all of these - to be able to extract the best value from each of these programs?
- Through the data and maps collected are you confident about the status quo of your city? Where is your city now? What is it performing well in? What are the areas of concern? For e.g., is it weak in aspects of resilience but quite good in terms of connectivity and public transport?

Only when you know where your city is can you envision where it wants to go, and how to reach there.

STEP 3

Identify Your Stakeholders

A comprehensive exercise for stakeholder mapping is a good step 3. Getting a consensus on a shared “Smart City Plan” involves bringing diverse stakeholders together on a single forum: for example, political leaders, community organisations, major employers, transport and utility providers, entrepreneurs and SMEs, universities, and faith groups etc.

The task before these stakeholders is to agree on a vision that is compelling, sustainable, inclusive; and specific enough to drive the creation of a roadmap of individual projects and initiatives to move the city forward. At this juncture it is a good idea to interact with as many citizens that represent different

socio-economic profiles, age profiles, cultures, neighbourhoods, belief systems etc. as possible.

The 4-STEP approach to stakeholder mapping:

The process of stakeholder mapping is as important as the result, and the quality of the process depends heavily on the knowledge of the people conducting it.

- 1. Identify:** List relevant groups, organisations, and people.
- 2. Analyse:** Understand stakeholder perspectives and interests.
- 3. Map:** Visualising relationships to objectives and other stakeholders.
- 4. Prioritise:** Rank stakeholder relevance and identify issues.



STEP 4

Sense the City by Engaging with Stakeholder Groups and Communities

Armed with the right information and list of stakeholders, a well thought-out exercise of community engagement needs to be initiated. This can include public meetings in townhalls or stadia, events in parks or public places, door to door surveys in communities, or mobile app-based surveys or other digital tools to gather collective intelligence.

Engaging with community is the most important step towards sensing the city. The views of the community coupled with those of experts and a thorough analysis of available information about the city should lead to an understanding about the DNA of the city – including its strengths, weaknesses, opportunities, and threats on the one hand and the needs, hopes and aspirations of its people on the other. Cities can use the Smart Cities Mission Guidelines to help initiate this process.



Citizens using smart kiosk @Pimpri Chinchwad Smart City

Task 13

Ask the Community Some Open Questions

- If you had to write a song capturing the spirit of your neighbourhood/city/city's people, what aspects would you write about?
- Do you see the economic situation of individual households in this community improving or declining in the next 10 years?
- If you could wave a magic wand and change one thing in your community, what would you choose? Why?
- What needs to change for your area to be better?
- If you could change one perception of your neighbourhood/city by the outside world, what would it be?
- If money were no object, what would you recommend be done in your neighbourhood to make it the best place in the world to live? (A good follow-up question is: what one intervention would you recommend that would not cost any money?)
- What are aspects of your neighbourhood or your community that you think others can learn from?

You can also ask more straight forward question like 'what is your vision for the city'?



STEP 5

Innovate: Do Things Differently, 'Business as Usual' Won't Make Your City Smart

While governments and businesses have inherently different goals, entrepreneurial mindsets can help drive innovation. The Smart city planning process is a good place to initiate strong collaborations with private businesses, academia, civil society, and general citizenry to build on local ingenuity. This is true internally, as well. Departments may be encouraged to network both across divisions and up and down the professional chain. This will help in creating a seamless flow of information and ideas for example, the ideas of an officer working in the field need to reach the decision making officers in the office as these would be based on ground reality.

In the beginning you might find resistance within the ULB to do so and therefore rewarding members who are enterprising and willing to take calculated risks can be helpful. While in the long run you can set up an innovation cell, in the interim you can lean on the smart city team to roll out initiatives like hackathons with technologists, urban design laboratories, media campaigns, etc.



Students rally to save water @Aligarh Smart City

Task 14

Explore Opportunities to Innovate

- What aspects of the project will benefit from innovative ideas? Organise competitive processes like hackathons, urban design competitions, tactical urbanism (pop-up) experiments, interactions with people from other Smart Cities, call for papers, etc. to get good ideas in.
- How will you foster long-term collaboration? Create an office of innovation and collaboration with the right talent that builds relationships with external partners and pushes for sustained innovation.
- How will you provide space for controlled failure? 'Bail out of jail coupons' given to enterprising officers willing to take risks and fail, is an example of a creative way to enable this.
- How are you engaging the youth? [The Urban Learning Internship Program \(TULIP\)](#) of MoHUA for internships or creating special fellowships with knowledge organisations can help match project/department needs with talent. This will also help groom civic leaders of tomorrow.
- Create opportunities for people to innovate in their own areas and neighbourhoods by providing them means to take ownership of local public goods using schemes like 'adopt a park'; or having competitions such as 'the most child-friendly locality/neighbourhood' and other such ideas.

STEP 6

Put Together A Draft Smart City Plan Using An OKR+A Framework

Once you have sensed the city, start compiling the research, data analytics and collective intelligence that is crowdsourced to put together a draft Smart City Plan. The knowledge gained through understanding the ‘WHAT’ and ‘WHY’ for your city will get plugged in at this stage. The plan should include, a bold vision statement, clear objectives (or goals), key results (outcomes) that are being pursued, and actions (interventions, projects, programmes, and policies) that will help achieve the results. By following the process in this workbook, each city can come up with a tailor-made plan - appropriate to its local context, resources, and levels of ambition. There is no prescribed model, or one size fits all solution.

Why use the OKR+A framework to formulate the Smart City Plan?

Objectives and key results (OKR) is a well-known goal-setting methodology used by organisations to guide outcome-based work. Following this you can establish the desired outcomes (O) and break them down into key results (KR) that are measurable, time-bound, and limited in number. Using outcomes as the driver, OKRs encourage accountability in every step of achieving success through metric indicators. To make the Smart City Plan actionable, this has been adapted as an OKR+A framework, adding the ‘A’ for actions required to get the key results. Actions maybe specific projects, interventions, policies or programmes that will help achieve the key results. Actions are the engines that will drive the plan forward.

Example of a Smart City Plan using the OKRA framework

VISION

The city will have smart mobility..

OBJECTIVES (what are the outcomes you expect to achieve)

OBJ 1: Safer streets for pedestrians

OBJ 2: Smooth vehicular movement with reduced incidences of accidents

OBJ 3: Cleaner air

(Objectives are larger long-term goals that can be listed by breaking down the vision into smaller achievements or even aggregated from key result areas.)

KEY RESULT AREAS (measurable outputs)

KRA 1: Reduce Arrivals on Red by 10 percent in 1 year (the percentage of vehicles that arrive at signal when it is red). This will reduce vehicle waiting time (OBJ 2), reduce emissions (OBJ 3) and also enhance pedestrian safety at said junctions (OBJ 1)

KRA 2: Improve intermodal corridor travel time by 15 seconds in 6 months

KRA 3: Decrease Split Failures by 15 percent in 18 months (green signal time fails to meet the vehicle volume demand) (feeding into OBJ 2)

(KRs need to be as specific as possible. While writing KRs, it is important to know where you are and where you want to be - example reduce by 10 percent in 1 year)

ACTIONS (projects/policies/programs)

Each KRA needs a set of actions to realize it. For each action, one needs to select the places for intervention and the persons/ agencies responsible for getting it done. It is a good idea to tackle places with the highest perceived problem – for example, the busiest and most accident-prone intersections for the KRAs above. This would result in the biggest impact. However, sometimes, it may help to carry out smaller interventions with the impact spread across the city.



Traffic management (as one of the KRAs) @Agra Smart City



Intelligent traffic management system on Sursandan Junction @Agra Smart City

Task 15

Craft the Vision Statement

Once you have sensed the city, create a vision statement that concisely captures the aspirations of all and is acceptable to all segments of society. Vision statements should be creative and ambitious. It is the destination for which you will create a roadmap using key results, and actions (OKRAs).

You may want to create a plan that addresses multi-dimensional aspects of the city (like Indore, Surat, and Pune) or may be specific (like Varanasi's focus on heritage and culture and Ahmedabad's focus on governance).

Indore: "*Imagining Indore to Inherit, Innovate, Include, Incubate and Invest for an ideal world-class smart commercial metropolis that thrives on investment opportunities, incubating business and ideas, rich inheritance and inclusive development.*"

Surat: "*Smart Utilisation of Surat Potential for enhancing Quality of life for the citizens by Providing Equal Access to Best Quality Physical Infrastructure, Social Infrastructure and Mobility; Thus, making Surat a Futuristic Global city with focus on enhancing economy, protecting the ecology and preserving the culture of the city.*"

Pune: "*Pune, the most liveable city in India! Leveraging its rich cultural and natural heritage, strong human capital and strong business environment as key strengths, Pune aspires to become one of the most liveable cities in India by solving its core infrastructure issues in a "future-proof" way, and by making its neighbourhoods beautiful, clean, green and liveable.*"

Varanasi: "*To rejuvenate the oldest Indian living city of Varanasi as a great place to live and visit by conserving and showcasing its enriched heritage, culture, spirituality and traditions through innovative social and financial inclusion solutions.*"

Ahmedabad: "*Providing efficient, affordable, equitable and customised governance for the citizens of Ahmedabad.*"

a. Draft multiple vision statements

b. Review and select one

What is the vision statement for your smart city/sector/city area?

Task 16

Define Objectives

- a. What are your draft objectives?
- b. Review the objectives by making sure they are:
 - Clear regarding what is to be done and why
 - Concise (not more than one or two sentences)
 - Outcome oriented
 - Flexible - leave room for modifications; having a variety of possible means to achieve them
 - Inclusive - reflect the voices of all people who are involved

What are your final objectives?

Task 17

Define Key Result Areas (KRAs)

(what and how much to accomplish by when)

- a. To develop KRAs, clearly describe:
 - Baseline markers that would help assess where you are now (pre-intervention)
 - Benchmarks to access where you would be if the initiative were successful and various stages of measuring success
 - Behavioural KRAs: the changes in behaviours you would see if the group's efforts were successful
 - Population-level KRAs: the changes in community-level indicators you would see if the group's objectives were met (How would changes in an individual's behaviour add up to outcomes for all those in the community?)

What are your draft KRAs for each objective?

- b. Review the KRAs to determine if they are SMART:

- **Specific**
- **Measurable**
- **Achievable**
- **Relevant** (to the mission)
- **Timed** (date for attainment)

Be flexible with deadlines in creating KRAs as it is a time consuming task and may require many rounds of discussions.

What are your final KRAs for each objective?

Task 18

Identify Actions (Interventions/ Projects/ Programs/ Policies)

To fulfil the vision of a Smart City, a roadmap of specific projects/programs/policies are needed, including the “quick wins” and strategic long-term ones. It can be worthwhile to concentrate initial effort on those that are simplest to execute because they are within the remit of a single organisation; or because they build on cross-organisational initiatives that are already underway in the city.

Projects can also be defined under the two categories of Smart Cities Mission:

a. Projects that affect the city at large, i.e. are pan-city.

Pan city projects can leverage data and technology in order to solve problems at the city-wide level. These projects could include, for example, intelligent traffic management systems to reduce commute times, smart water systems to reduce non-revenue water or smart bins to improve waste-collection efficiency. Pan city projects may also include creation of a holistic flood management strategy or city data strategy or street design guidelines for the city.

b. Projects that are place-based.

Termed as area-based development (ABD), these projects are undertaken to develop selected areas within the city as model areas which can become lighthouses for other parts of the city. Area based regeneration, street improvements, infrastructure augmentation are all examples of such projects. Refer the [Mission Guidelines](#) for detailed description of ABD projects.

STEP 7

Communicate and Get Feedback on the Draft Plan

Once the Smart City Plan is written, it is important that it is communicated to various stakeholder groups for consultation and feedback. Stakeholders should include municipal authorities, state level departments, development authorities, transport authorities, resident associations, schools, police departments, slum inhabitants, academicians, technical experts, civil society organisations and the citizenry at large. This step is especially important to build credibility of the entire exercise. Doing so builds trust and most importantly, a sense of ownership for the plan with everyone in the city. It reflects the city's sincerity and sends the message that the city wants to implement the plan with all diligence.



Stakeholder feedback discussion @Pune Smart City

Task 19

Use These Ideas for Getting Feedback

- **Take physical objects into the communities.** Physical models, drawing boards, projections – take these to your target communities to explain the Smart City Plan, let them interact with these and give feedback. These can be orchestrated as community celebrations in parks, playgrounds, and public buildings.
- **Maintain a regularly updated and interactive website.** Host a dedicated microsite that is updated with initial analysis, community engagement, upcoming events, video documentation, and the Smart City Plan.
- **Use new media, but do not underestimate the reach of old media.** Explore and leverage Twitter, Facebook, Instagram, influencers to communicate with your direct beneficiaries as well as the wider national and international community invested in learning and following your process. But do not rule out the reach that local newspapers, radio and even local champions can have!
- **Lastly, be sure to assume an open and honest posture!** The feedback you will receive will range from keen acceptance, to constructive criticism, to aggressive pushbacks. Be sure to listen attentively with an open mind and disagree respectfully with data and topical reasoning.

Do not stop at the draft plan stage.
Continue the outreach and communication as you finalise the plan, begin implementation and regularly review progress!

STEP 8

Ensure that the Smart City Plan/ Projects are 'Bankable'

As you start finalising the Smart City Plan, you may have one or more infrastructure projects, physical or digital, that need to be prepared up to a stage where an investor is willing to engage. This may include either public or private sector financing or both. This means demonstrating that a project is 'bankable'. To achieve this you need to prove project feasibility, financial viability, demand planning, funding of operation, acceptance in the community, regulatory approvals, and legal compliance. These are usually documented under feasibility studies and detailed projects reports (DPRs).

Since there are always more projects to be completed than there are available fiscal resources, it is important to create a Capital Investment Plan (CIP) that helps implement the Smart City Plan. The CIP is a multi-year (usually 3-5 years) document that is used to identify and coordinate financing needs of capital projects within a time frame such that it maximizes benefits for the citizens.

All local public expenditures are usually divided as capital and operational, and understanding both the heads on which these expenditures will need to be made and the sources of revenue from which they will be financed is crucial to implementation of the plan. The cost of projects

Task 20

Formulate a Finance Plan

- Have you created a Capital Investment Plan for the Smart City Plan?
- Which tax-revenues and non-tax revenues have you aligned to finance?
- Have you checked financial viability of the various projects under the plan?
- Are you able to improve property tax collection in your planning area to contribute towards project financing?
- Have you reviewed land and property rents of public assets in the planning area? Can the value of these be enhanced and captured for long-term project financing?
- Do you have a special permanent budgetary fund used only for capital investment and repaying long-term debt?
- Have you conducted a credit rating for your city?
- Based on your city's credit rating, can you float a municipal bond?

Consider the following before entering a PPP:

- **Is PPP the right model for you?** Is your decision to pursue a PPP supported by feasibility studies that include a Value for Money (VfM) analysis, a Public Sector Comparator (PSC) assessment, and a sustainability analysis?
- **Considering transactional costs incurred in a PPP, does the project size justify for PPP?** If not, have you considered bundling several smaller projects?
- **Is the project bankable?** Have you figured out clear revenue streams, possible subsidies, availability payments and guarantees to instil confidence in investors and lenders?
- Is the **procurement process** transparent and competitive?
- Are you ensuring that there is a **level playing field for all firms**?
- **Do you have institutional capacity to manage the PPP?** Do you have knowledgeable and competent staff to manage the contracts of private sector partners?

of each smart city will vary depending on the level of ambition, model and capacity to execute and repay. Substantial funds are required to implement the Smart City Plan.

Government grants, if any available, should be leveraged to attract funding from internal and external sources. The success of this endeavour will depend upon the robustness of the city's revenue model and comfort provided to lenders and investors. A number of state governments have successfully set up financial intermediaries (such as Tamil Nadu, Gujarat, Orissa, Punjab, Maharashtra, Karnataka, Madhya Pradesh and Bihar), which can be tapped for support and other states may consider a similar set up. Some form of guarantee by the state or such a financial intermediary could also be considered as an instrument of comfort for the investors.

Smart Cities should take up projects extensively on Public Private Partnership (PPP) basis. The Smart Cities Mission Guidelines talk about various ways of generating funds for the implementation of the city's plan. If we see the finance mix of the cities under the Smart Cities Mission, they have proposed to execute 5,151 projects worth ₹2,05,018 crores in 5 years from their respective dates of selection and approximately 20 percent of this is financed through PPP.

STEP 9

Determine in the Smart City Plan How Your City is Contributing Towards the Country's International Commitments

The smart city principles echo almost all of the globally accepted areas of intervention towards sustainable development. Take a step away and look at the Smart City Plan of your city and understand how it fulfils or aligns with these larger objectives and agendas. Many cities across the world use different indices to demonstrate their contribution and communicate it widely.

Your plan can be responsive to two of the biggest global agendas to which India has ratified, namely, the *United Nations 2030 Agenda for Sustainable Development* and UN Habitat's *New Urban Agenda*. You can align your plan's objectives against the Sustainable Development Goals (SDGs) that are directly or indirectly related to urban development (these are Goals 6-16 and specifically Goal 11).

The *New Urban Agenda* (UN Habitat, 2016) is rooted in the idea of inclusivity - of equal rights and access of all citizens to all the benefits and opportunities that cities have to offer. The Agenda suggests the reconsideration of how cities are planned, designed, financed, developed, governed and managed, in a manner that utilises urbanisation as a tool to enable sustainable development. Imbibing smart city principles into day-to-day functioning of cities is crucial to pursue the New Urban Agenda. Reading of these documents can be the first step towards understanding the linkages with your plan.

Task 21

Align with International Commitments

- Have you mapped actions in the Smart City Plan and their outcomes against the SDGs?
- Has your city conducted the exercise of localising the SDGs?
- Do you have a goal-based implementation of the plan?
- Are you raising awareness about the SDGs among the citizens?
- Are you enabling stakeholder collaborations to achieve the goals and targets?
- Are you closely monitoring the progress made by the city towards achieving the SDGs by 2030?

STEP 10

Deploy Technology Effectively

In the previous sections, we talked about understanding the gains from technological interventions and cautioned against deployment for the sake of it. Similarly, when you are in the solutioning phase, it is useful to look at technology for enhancing functionality on top of robust infrastructure. For example, if you want to improve bus-based transport in your city, ensure that your bus routes, bus stops, frequency, and passenger capacity meet the demand and is data-driven. Then to improve uptake further, allow passengers to be able to digitally track the bus location, have a common card for all public transport with e-payment, and ensure all this data is collected and analysed with other mobility modes to continuously improve the service and user experience over time. Similar thinking can be applied to say managing flooding - with a 90 percent sound blue-green infrastructure with a 10 percent additionality from a digital early warning system.

Once you have identified, procured, and deployed the technology that will enhance the service, you can integrate it with the Integrated Command and Control Center (ICCC) in your city, if there is one. This will help you monitor the service better and help connect it with other convergent services. For example, if video cameras on a particular route capture an accident then via the ICCC, this information can be communicated to the public bus service to re-route and reflect in the citizen app for possible delays or change in routes.

Setting up an Integrated Command and Control Center (ICCC), whether a 'mature' or 'lite' version, depending on the city's capacity and resources, is helpful. Serving as the nervous system of the municipal ecosystem, an ICCC can help monitor city operations, assets, and resources; identify incidents and co-ordinate responses; and predict future trends and events for long-term planning.

As of November 2020, more than 50 Smart Cities

have set up such centers, equipped with high resolution image processing tools, real-time video feeds, data integration and analytical applications. During the pandemic, the conversion of ICCCs into COVID war-rooms proved that these are part of a city's basic infrastructure needs. Predictive modelling and targeted response capabilities will not remain limited to the current health emergency. As machines are made to learn rules-based and process judgement-based information, we will be able to use emerging technologies of AI/ML in planning and managing cities.

Effectively using all of the above requires the correct technology governance frameworks, well trained city teams, and collaborations with industry and academia. While the Mission is promoting cities to draft and adopt open data policies, several other policy and regulatory domains like cyber security, privacy, etc. remain to be addressed. Cities must invest in and build city data and technology cells with the right resources. Under the [DataSmart Cities Strategy](#), the Mission has appointed 100 City Data Officers and started training programs to create a cadre of DataSmart municipal officers and is also creating shared platforms for secure data exchange ([IUDX](#)), open data sharing ([ODP](#)) comparative assessment ([AMPLIFI](#)) and analysis ([IUO](#)). However, cities will have to lead from the front.



Task 22

Deploy, Design, Procure the Right Technology

- **Conceptualise and design the technology enhancement while drafting and finalising the Smart City Plan.**
- a. Create a working group that may have, IT Head/Chief Technology Officer, Process Owner, Technology Team- IT Department, Finance team, Vendor/MSIs- Existing System Owner (if any), End Users, Academia/ Industry Representatives.
- b. Clarify the exact problem statement and develop the conceptual design keeping in mind existing and desired technologies, SOPs, costing, human resources, business models, system integration, technology and operational risks, and KPIs.
- c. Ensure that design principles outlined under [National Urban Innovation Stack](#) are imbibed into solution architecture namely: - Scalability - Interoperability - Modularity - Evolvable - Minimalistic - Federated Architecture - Data Driven - Privacy & Security - Ecosystem Driven.
- d. Consider inviting EoI from the market players or preparing a DPR to arrive at these.

What is your proposed solution's blueprint & architecture?

What is the business model to make it viable?

Have you prepared the BoQ and costing?

- **Procure with an evaluation committee/ technology procurement consultant that you trust along with your legal and IT teams. Mind the following as you go about doing so:**
- a. Minimise vendor and technology lock in by avoiding technologies that have poor OEM/support ecosystem locally/regionally since migration may become hard and expensive. Also avoid investing in a single vendor/ technology service provider.
- b. Adopt service models like Software as a service (SaaS), Infrastructure as a Service (IaaS), Platform as a service (PaaS) to pay and scale on the go depending on demand and utilisation trajectories.
- c. If the product/service is available from state/center, then avoid procuring the same and/or reinventing the wheel.
- d. Follow government IT procurement advisory and guidelines. Data should be stored, governed, and managed as per IT Act and applicable laws of the land. Public data cannot be owned by third party or vendor at any point in time.

STEP 11

Write the Final Smart City Plan, But Remember to Keep the Plan Flexible and Iterative!

A big debate in plan-making is whether plans should be firm so they provide unidirectional guidance for all stakeholders to action or whether they should be flexible. Better ideas in response to evolving needs always come along during the life of a long-term plan. So the answer, of course, is that a good plan should be both.

The art, based on experience and understanding, is to know which parts of the plan need firmness and clarity and which parts need to allow for better ideas to emerge that would help achieve the plan's objectives going forward. The tough part is of course that everyone thinks their ideas are better than others' (that might not be the case always), and cities are often so concerned about the pressure they might face to accept every idea, that they end up preparing overly rigid plans that say no to everything except what is clearly allowed. A mature, confident city, though, crafts a plan that knows when and where to be flexible (for example, experimenting with other solutions before investing in costly infrastructure for wastewater treatment) and when and where to put its foot down and follow rigid/firm rules (such as to do with protection of environmental assets of a city).



STEP 12

Set up a Monitoring, Evaluation and Learning (MEL) System and Involve Stakeholders in Reviewing Plan Implementation

To ensure that the foot remains on the accelerator and things keep moving along, conduct periodic monitoring and evaluation of plan implementation and capture lessons to learn from it regularly (MEL) so that course correction can be done if needed.

What to do once the plan is prepared? How will it be monitored that the outcomes and goals set out by the plan are being met and who will monitor this? These questions remain unanswered by most smart city plans as well as the traditional long term city development/master plans. You could start by setting up a system to monitor the 'Actions' as described in the OKRA framework at Step-6 to as these actions are linked to key results and objectives and will help evaluate progress towards the planned outcomes. A good practice is to task a point person/s in the team to monitor progress in implementation.

However, monitoring is different from evaluation. You may choose to self-evaluate or get an external evaluation done in order to understand the impact of the projects and interventions implemented. Outside evaluations are often technical, objective

and rigorous, based on quantitative indicators and performance measures. These may be done occasionally. Self-evaluations will involve the team and local stakeholders and will be more qualitative, capturing success stories, narratives and viewpoints of people for whom the plan was made. You may create a city level M&E forum

including the elected representatives at all levels (MPs, MLAs, councillors, mayor), citizens, technical experts, RWAs, NGOs, professional bodies, slum federations, NGOs, Mahila Mandals, Chamber of Commerce etc. Capture learnings from both M&E processes and feed them back into the plan and steer the implementation strategy accordingly.



Visitors interacting with each other during Ease of Living campaign @Surat Smart City

Task 23

Monitor, Evaluate and Learn if You Want to go from Plan-Making to Implementation

- Who on your team is in charge of monitoring implementation progress?
- For regular monitoring, do you have the right data coming in to link it to key results? Do you have a dashboard or other systems in place for easy tracking?
- Have you constituted a civil society and citizens committee to monitor progress of plan implementation?
- Is this a self or external evaluation? What is the reason for selecting either?
- Who is going to conduct this review? Who is the outside evaluator and if inside, who is part of the MEL task force?
- Based on your learnings, what aspects of the OKRA need to be modified? Be sure that all iterations pass through your steering committee/any other oversight body that you have in place.

STEP 13

Do Not Work in Isolation – Learn from Other Cities and Share Your Own Journey!

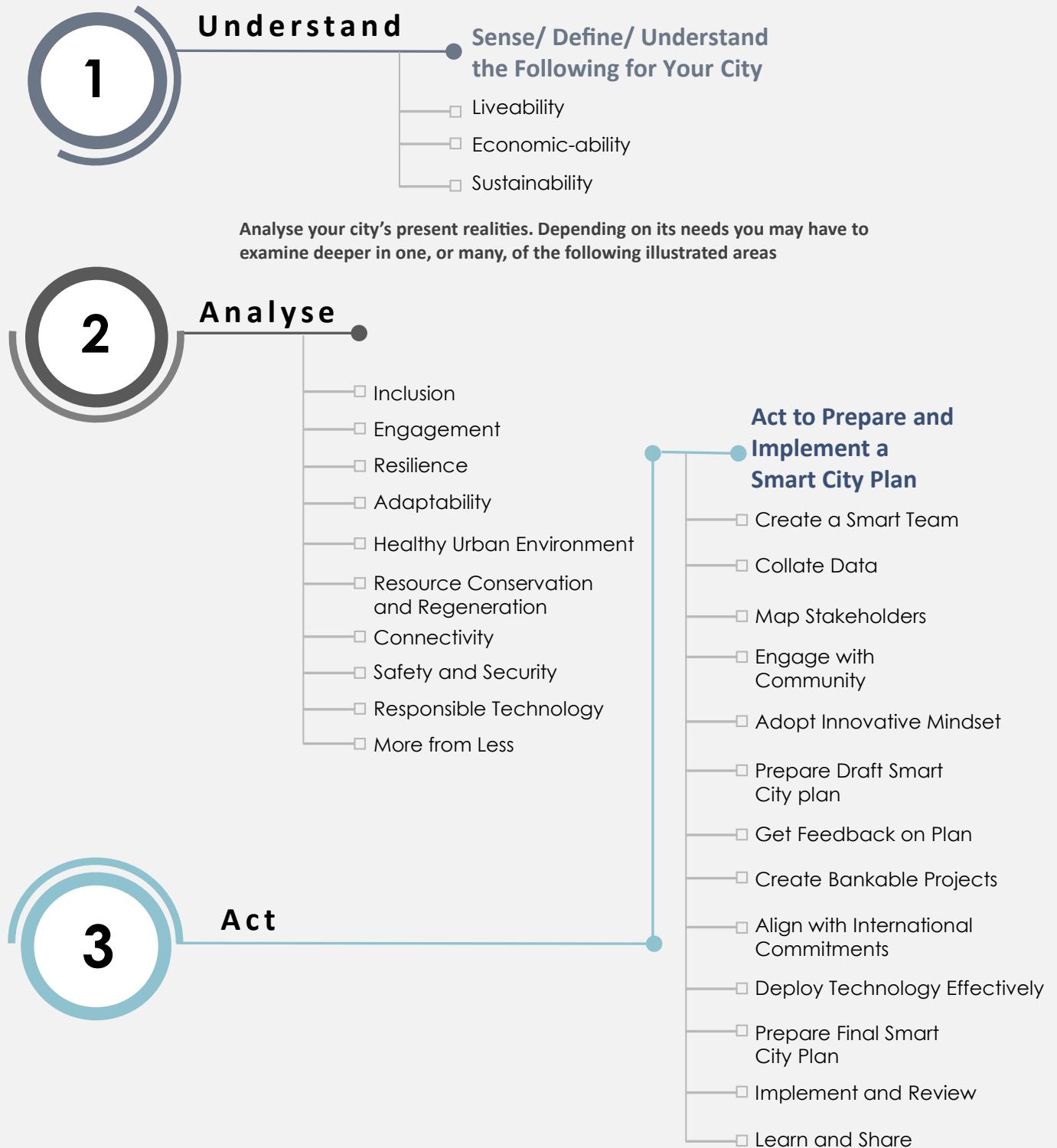
As you march forward, you may face road-blocks, may need to go back to the drawing board, may need to reinvent or improvise part of the project, or may just need inspiration to keep the spirits high!

In such times, talking to your peers in other cities, visiting projects they are undertaking, participating in their functions, attending conferences and webinars, referring to advisories from national and state programmes etc. will ensure you are asking the right questions, are armed with the necessary knowledge, and solving the necessary problems in front of you.

What you are doing will also be insightful for others and so ensure you are sharing your work at different forums, writing about it on various platforms, and hosting your peers in your city. The Mission provides a ready platform [opportunities such as conferences, webinars, video calls, workshops] and network of peers to connect with, so maximize it to the fullest. This document is a live example of what becomes possible when ideas are shared on a common platform. There are also several global city networks that you can consider becoming a part of, for similar but global exposure. The more you put yourself and your city out there, the more you will learn, inspire and grow!



Recap



Epilogue

We can think of Smart Cities from the perspective of Maslow's Hierarchy of Needs (Maslow, 1943). In order to better understand what motivates human beings, psychologist Abraham Maslow proposed that human needs can be organised into a hierarchy. This hierarchy ranges from more concrete needs such as food and water to abstract concepts such as self-fulfillment. According to Maslow, when a lower need is met, the next need on the hierarchy becomes our focus of attention. Conversely, unfulfilled needs at one level make achieving other needs at higher levels more difficult.

Local governments have primarily responded to citizens' basic needs of water, sanitation, roads, electricity, food, and shelter. As economies mature and standards of living improve, governments begin to respond to the more social needs of health and education. Once minimum standards for these are met, growth-needs begin to take priority. These include creating economic opportunities,

regulating labour standards, and attracting talent. At the top of this pyramid lies creative needs - when citizens are empowered and free to pursue self-actualisation. Here governments focus on widening what falls under public value and public goods. Cities begin to prioritise values of equity, openness, and inclusion; and invest in improving citizen experience at every step of the way.

Smart City is NOT the highest end state of a city when it is pursuing its creative needs. It does not sit at the top of a hierarchy of city needs. It is a city that works for its people – no matter the level in hierarchy of city needs. Being smart makes a city more able and agile to move from one level to the next, guided by principles of making most from limited resources, taking everyone along, quickly adapting to changes, being resilient in the face of stresses or shocks at each stage, and using technology mindfully at every step of the way to make processes smoother and faster.

*A Smart City is a journey,
not a destination.*

Abbreviations

ABD	Area-based Development
AI	Artificial Intelligence
AMPLIFI	Assessment and Monitoring Platform for Liveable, Inclusive and Future-ready urban India
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
BAU	Business as Usual
BIS	Department for Business, Innovation and Skills
BoQ	Bill of Quantities
COVID	Corona Virus Disease
CSCF	Climate Smart Cities Assessment Framework
DMAF	Data Maturity Assessment Framework
DAY-NULM (U)	Deendayal Antyodaya Yojana National Urban Livelihoods Mission
DPR	Detailed Project Report
EoLI	Ease of Living Index
FG-SSC	Focus Group on Smart Sustainable Cities
GDP	Gross Domestic Product
GHG	Greenhouse Gases
GIS	Geographic Information System
GoI	Government of India
HRIDAY	Heritage City Development and Augmentation Yojana
IaaS	Infrastructure as a Service
ICCC	Integrated Command and Control Center
IT	Information Technology
ITU	International Telecommunication Union
IUDX	India Urban Data Exchange
IUO	India Urban Observatory
KPI	Key Performance Indicator
KRA	Key Result Area
kWh	Kilowatt Hour

LED	Light Emitting Diode
M&E	Monitoring and Evaluation
MEL	Monitoring Evaluation and Learning
ML	Machine Learning
MLA	Member of Legislative Assembly
MLD	Millions of Litre per Day
MoHUA	Ministry of Housing and Urban Affairs
MP	Member of Parliament
MPI	Municipal Performance Index
MSI	Master System Integrator
NGO	Non-Governmental Organisation
NIMBY	Not-in-my-Backyard
NSSO	National Sample Survey Office
ODP	Open Data Platform
OECD	Organisation for Economic Co-operation and Development
OEM	Original Equipment Manufacturer
OKRA	Objectives, Key Results and Actions
PaaS	Platform as a Service
PMAY (U)	Pradhan Mantri Awas Yojana (Urban)
PPP	Public Private Partnership
PSC	Public Sector Comparator
RWA	Resident Welfare Association
SaaS	Software as a Service
SBM (U)	Swachh Bharat Mission (Urban)
SCM	Smart Cities Mission
SDG	Sustainable Development Goals
SOP	Standard Operating Procedure
TULIP	The Urban Learning Internship Programme
ULB	Urban Local Body
UN	United Nations
USD	United States Dollar
VfM	Value for Money
WUP	World Urbanisation Prospects

Links to resources

AMPLIFI

Atal Mission for Rejuvenation and Urban Transformation (AMRUT)

City GDP Measurement Framework

City Investments to Innovate, Integrate and Sustain (CITIIS) Challenge

Climate Smart Cities Assessment Framework (CSCF)

DataSmart Cities Strategy (DSCS)

Data Maturity Assessment Framework (DMAF)

Deendayal Antyodaya Yojana National Urban Livelihoods Mission (NULM)

Ease of Living Index (EoLI)

Heritage City Development and Augmentation Yojana (HRIDAY)

India Cycles4Change (IC4C) Challenge

India Urban Data Exchange (IUDX)

India Urban Observatory (IUO)

India Smart Cities Fellowship (ISCF) Program

India Smart Cities Awards Contest (ISAC)

Municipal Performance Index (MPI)

National Urban Innovation Stack (NUIS)

National Urban Learning Platform (NULP)

National Urban Transport Policy 2017 (NUTP)

Nurturing Neighbourhoods Challenge

Open Data Platfrom (ODP)

Pradhan Mantri Awas Yojana (PMAY-U)

Smart Cities Mission Statement and Guidelines, June 2015

Smart Cities Mission (SCM)

Smart Cities Open Data initiative

Streets4People Challenge

Swachh Bharat Mission (SBM-U)

Swachh Survekshan 2021

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Street improvement in West Kochi @Kochi Smart City



सत्यमेव जयते

**Ministry of Housing and Urban Affairs
Government of India**