

A Century of Smart Cities

A primer on the Government of India's Smart Cities Mission

According to the Census 2011, the urban population in India grew by 31.8% as compared to 2001. About 31.2% of Indians now live in over 7,935 statutory/census towns, with the percentage of urban population being higher than the national average in as many as 19 states/UTs. Indian cities have some of the highest population densities in the world. This is not simply a demographic shift, but places cities and towns at the centre of India's development trajectory. In the coming decades, the urban sector will play a critical role in the structural transformation of the Indian economy and in sustaining the high rates of economic growth. Ensuring high quality public services for all in the cities and towns of India is an end in itself, but it will also facilitate the full realization of India's economic potential.

With this view in mind, the Government of India (GoI) launched the "Smart Cities Mission" (SCM) on 25th June 2015. The mission seeks to develop 100 cities as smart cities through the area-based development model over the next 5 years. Operational guidelines for SCM have already been issued and Phase I of the mission is already in progress, as of today. It is in this context that this primer provides an overview of the guidelines of the SCM, the proposed implementation cycle of the mission and also presents the Indian and global experience in developing smart cities.

Smart City: The Concept

While there is no fixed definition of a "smart city", there is a broad consensus on the basic elements that make a city "smart". These are:

- ✓ Availability of Core Civic Infrastructure
- ✓ Better and Accessible Governance
- ✓ Economic Competitiveness
- ✓ Participation and Involvement of Citizens
- ✓ Extensive Use of Information and Communication Technology (ICT)

A smart city would use innovative solutions to attain these objectives. According to the GoI guidelines, the objective of the smart cities mission is "...to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean and sustainable environment and application of 'Smart' Solutions." The mission also seeks to develop the initial smart cities as a role model for other cities to learn and replicate from their experience.

Core Infrastructure Elements in a Smart City

Adequate Water Supply	Assured Electricity Supply	Sanitation & Solid Waste Management	Efficient Urban Mobility & Public Transport	Affordable Housing, Especially for the Poor	Robust IT Connectivity & Digitalization	Good Governance, E-governance and Citizen Participation	Sustainable Environment	Safety & Security of Citizens, Particularly Women, Children and the Elderly	Health & Education
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Scope and Strategy

The mission will cover 100 cities over a period of 5 years (FY15-16 to FY19-20). The mission will be implemented on an **area-based development mode**, where the area-based plan would be the unit of planning and approval. The following models of area-based development have been suggested by the guidelines:

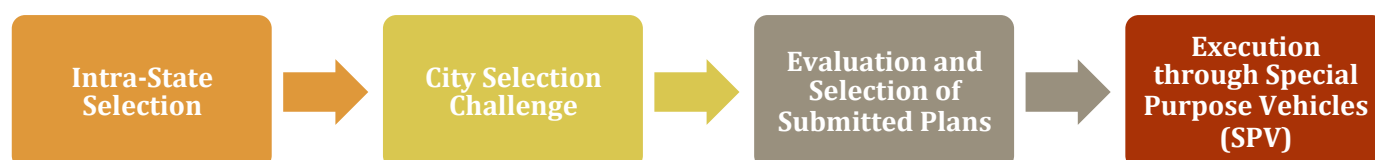
Area-Based Strategy	Minimum Area*	Method	Inclusion in plan
Retrofitting	500 Acres	<ul style="list-style-type: none"> Existing built-up area to be upgraded to make it more efficient and livable Existing structures to remain largely intact Focus on smart applications and infrastructure service levels Shorter time frame 	Smart city plan should include either one of these strategies or a mix of these
Redevelopment	50 Acres	<ul style="list-style-type: none"> Replacement of the existing built-up area New layout through mixed land use and higher density 	
Greenfield	250 Acres	<ul style="list-style-type: none"> Development of previously vacant areas around existing urban centres Extensive from-the-scratch planning 80% of buildings should be energy efficient or green 15% of housing should be affordable housing 	
Pan-city	City-Wide	<ul style="list-style-type: none"> Smart solution for existing city-wide infrastructure Should improve the service and infrastructure quality through use of ICT and data 	At least one pan-city solution must be a part of the smart city plan

* For North Eastern and Himalayan States, the minimum area proposed for development would be one-half of minimum area prescribed here.

State-wise Distribution of Smart Cities

The proposed 100 smart cities are distributed among the states/UTs based on the percentage of urban population and number of statutory towns in the state/UT. Each state/UT has at least one potential smart city. **Uttar Pradesh has the highest number of potential smart cities at 13.** A map containing the distribution of smart cities is added in the appendix of this document.

Mission Life Cycle



The potential smart city candidates will be decided by a two-stage competition among the aspiring cities.

Intra-state Selection: In the first stage of the competition, the states will shortlist the potential smart cities based on the number of slots allotted to the state. The highest scoring cities satisfying the preconditions from the state will be shortlisted and recommended by the state for the second level challenge after evaluation by state-level mission director and high-powered steering committee. The scoring criteria include evaluation on institutional capacities of the ULBs, self-financing capacities, existing service levels, past track record and reforms. **This stage is currently underway and states have been asked to send the nominations by 31st July 2015.**

City Selection Challenge: In the second stage of the competition, the shortlisted cities will prepare a detailed **Smart City Plan (SCP)**, which will include the combination of strategies and the pan-city solution(s) selected by the city. The SCP will be prepared after consultations with the residents of the city and other stakeholders and the SCP shall reflect the outcome of these discussions and the level of adherence to the consultations. The SCP will outline the financing of the development, the proposed revenue models and the execution timelines. **The SCP must also leverage convergence with other schemes such as Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Swacch Bharat Abhiyaan etc.** The creation of the SCP will be supported by private consultants or handholding external agencies, for which Rs.2 crore will be released by the central government. In addition to the core infrastructure elements, the SCP must contain:

- Assured electricity supply with at least 10% of the energy requirement coming from solar energy
- Adequate water supply including waste water recycling, storm water reuse and rain water harvesting
- Smart metering
- Pedestrian friendly pathways, Non-vehicle streets/zones and incentivization of non-motorized transport (e.g. walking and cycling)
- Intelligent traffic management and smart parking
- Energy efficient street lighting
- Innovative use of open space
- Visible improvement in the area

Evaluation and Selection of Smart City Plans (SCPs): A committee will evaluate the SCPs on parameters like impact, cost effectiveness, innovation, process, consultations etc. The cities, thus selected will receive funds from the Ministry of Urban Development (MoUD) and proceed with the execution of their SCPs. A few shortlisted cities will work on improving their SCP for the second round while the other cities will compete in the next competition cycle.

Execution through Special Purpose Vehicle (SPVs): The execution of the SCP will be done through a SPV. A limited company incorporated under the Companies Act, 2013 at the city level, **the SPV will have the State/UT government and the Urban Local Body as equal shareholders (50:50)**. Private or financial institutions may take up stake in the company provided that the holdings of the state/UT and the ULB are equal and their combined stake has majority shareholding and control. The ULBs may use the grant released by the central government for meeting the ULBs share of equity capital. The SPV will have a CEO and representatives of the central government, state government and the ULB on the board. The SPV will have complete autonomy and flexibility in the execution of the SCP. It will **“plan, appraise, approve, release funds, implement, manage, operate, monitor and evaluate the Smart City development projects”**.

Financing of Smart Cities

The mission will be a Centrally Sponsored Scheme (CSS) with a matching amount being contributed by the State or ULB. The central allocation will be **INR 48,000 crore over the next five years**. The SPVs may also raise financing from other resources at state/ULB's disposal, municipal bonds, pooled financing mechanism, other government schemes, external or internal borrowings or private sector through PPPs. The fund flow from central government will be as follows:



Monitoring of Progress

A smart city advisory board will be formed in every smart city to advise and engage all the stakeholders. It will have **the District Collector, the Member of Parliament, the Member of Legislative Assembly, the Chief Executive Officer (CEO) of the SPV, technical experts and local residents as members**. A High-Powered Steering Committee (HPSC) would co-

ordinate the mission at the state level along with the state mission director. An apex committee set up at the central level will monitor and co-ordinate the progress of the overall mission along with a national mission director.

Role Mapping

Stakeholder \ Project Phase	Satisfying the Conditions For Stage I Challenge	Short listing Potential Smart City Candidates	Preparation Of The SCP	Evaluation Of SCP And Selection Of Smart Cities	Formation Of SPV	Execution And Progress Monitoring Of The SCP
Central Govt.		✓		✓	✓	✓
State Govt.	✓	✓	✓		✓	✓
Urban Local Body	✓		✓		✓	✓
SPV						✓
MP/MLA	✓		✓			✓
Citizens	✓		✓			✓
Private Partners			✓		✓	✓

Best Practices in Smart Cities

Various successful instances of smart city solutions, in India and abroad, can serve as replicable examples to be used in development of the SCP. Following are illustrations of a mix of innovation and ICT to make a city smarter.

Area-wide Redevelopment

- **Saifee Burhani Upliftment Trust, Bhendi Bazar, Mumbai:** Redevelopment of 16.5 Acres land in middle of Mumbai city. Development of 3200 homes and 1250 commercial spaces through smart and sustainable design.

City Branding

- **I Love New York Campaign, New York City, USA:** One of the most successful branding campaign run by a city. Running since 1977, the campaign logo has given broader recognition to the city.

Citizen Engagement

- **City of New York, USA:** Over 10,000 payphones to be replaced by free public wi-fi kiosks. The kiosks will provide directions, local business guides, public service announcements and city services.

Smart Public Transport

- **Barcelona, Spain:** Public bus system designed in a grid system based on data analytics to provide better connectivity and optimal routes. Integration with traffic signal system to ensure green lights for emergency response vehicles.

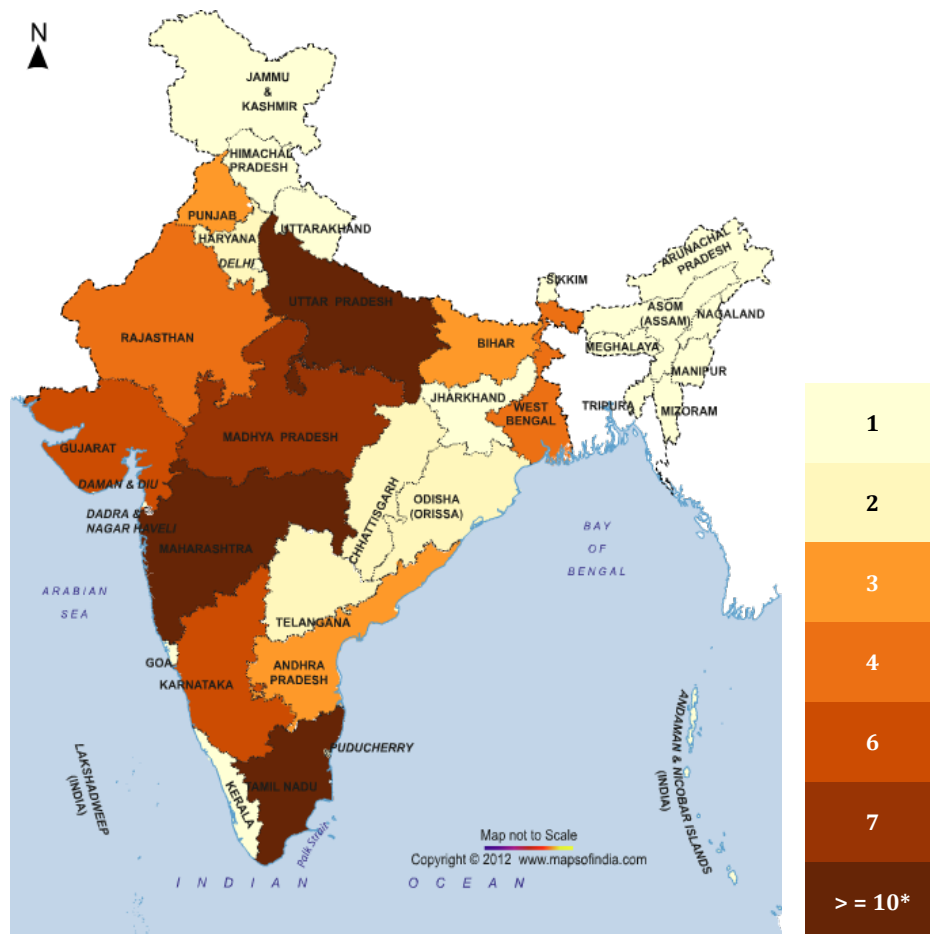
Municipal Mini-Bonds:

- **Denver, Colorado, USA:** The city of Denver met its funding requirements by issuing mini-bonds worth \$500 for subscription to its residents, enabling it to raise \$12 million in an hour. The mini-bond issue not only met the funding needs of the “Better Denver Project” but also gave the subscribers a high return on the investment along with a buy-in in the city’s development.

Conclusion

The Smart Cities Mission is an ambitious scheme, which allows broad flexibility and scope for innovation and technology. The SCM offers the platform to address the urgent need to recast the urban landscape of the country to make urban areas more livable and inclusive besides driving economic growth. This will require active collaboration and engagement of the various stakeholders. Accordingly, the stakeholders need to adopt smart solutions for efficient use of available assets, resources and infrastructure with the objective of enhancing the quality of urban life and providing a clean and sustainable environment where special emphasis will be given to participation of citizens in prioritizing and planning urban interventions. For more information on the Smart Cities Mission, including continuous tracking of the progress and more best practices, go to www.swaniti.in or follow us on Twitter @swaniti.

Appendix 1: Number of Potential Smart Cities Allocated to States/UTs



*Uttar Pradesh: 13, Tamil Nadu: 12 and Maharashtra: 10

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State-wise Allocation of Smart Cities

State/UT	Urban Population	% Of Total Urban Population	No of Statutory Towns	% Of Total Number of Statutory Towns	50:50 Weighted Formula	Allocated Cities
A & N Islands	135533	0.04	1	0.02	0.03	1
Andhra Pradesh	14745080	3.91	83	2.05	2.98	3
Arunachal Pradesh	313446	0.08	26	0.64	0.36	1
Assam	4388756	1.16	88	2.18	1.67	1
Bihar	11729609	3.11	139	3.44	3.28	3
Chandigarh	1025682	0.27	1	0.02	0.15	1
Chhattisgarh	5936538	1.57	168	4.16	2.87	2
Dadra & Nagar Haveli	159829	0.04	1	0.02	0.03	1
Daman & Diu	182580	0.05	1	0.02	0.04	1
Goa	906309	0.24	14	0.35	0.29	1
Gujarat	25712811	6.82	195	4.83	5.82	6
Haryana	8821588	2.34	80	1.98	2.16	2
Himachal Pradesh	688704	0.18	56	1.39	0.78	1
Jammu & Kashmir	3414106	0.91	86	2.13	1.52	1
Jharkhand	7929292	2.10	40	0.99	1.55	1
Karnataka	23578175	6.25	220	5.44	5.85	6
Kerala	15932171	4.22	59	1.46	2.84	1
Lakshadweep	50308	0.01	0	0.00	0.01	1
Madhya Pradesh	20059666	5.32	364	9.01	7.16	7
Maharashtra	50827531	13.48	256	6.34	9.91	10
Manipur	822132	0.22	28	0.69	0.46	1
Meghalaya	595036	0.16	10	0.25	0.20	1
Mizoram	561977	0.15	23	0.57	0.36	1
Nagaland	573741	0.15	19	0.47	0.31	1
NCT of Delhi	16333916	4.33	3	0.07	2.20	1
Orissa	6996124	1.86	107	2.65	2.25	2
Puducherry	850123	0.23	6	0.15	0.19	1
Punjab	10387436	2.75	143	3.54	3.15	3
Rajasthan	17080776	4.53	185	4.58	4.55	4
Sikkim	151726	0.04	8	0.20	0.12	1
Tamil Nadu	34949729	9.27	721	17.84	13.56	12
Telangana	13608665	3.61	42	1.04	2.32	2
Tripura	960981	0.25	16	0.40	0.33	1
Uttar Pradesh	44470455	11.79	648	16.04	13.91	13
Uttarakhand	3091169	0.82	74	1.83	1.33	1
West Bengal	29134060	7.73	129	3.19	5.46	4
All India	377105760	100	4041	100	100	100

Financing of Smart Cities

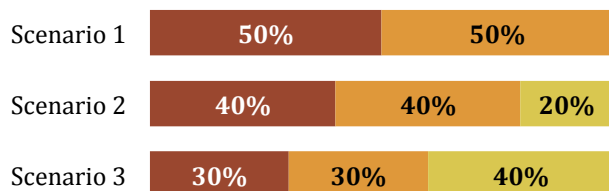
Adequate financing and financial viability is important to ensure the ultimate success of the Smart Cities. The guidelines for Smart Cities Mission mandate the formation of a Special Purpose Vehicle (SPV) for execution of the Smart Cities Plan (SCP). This would lead to a single point of responsibility and more efficient implementation. This also enables separation of financial risk from the ULBs and professional support for the project.

Financing the Special Purpose Vehicle

A Special Purpose Vehicle will be formed as a private limited company under the Companies Act 2013. The SPV will be **responsible for planning, executing and monitoring the smart city plans through joint ventures, PPP or turnkey projects**. The board of directors of the SPV will have representatives from MoUD, State government, ULB and other independent directors. A CEO will head the SPV and the respective urban local body and the state government will promote the SPV. Private investors or financial institutions may invest in the SPV through the equity route.

Equity Shareholding in SPV

■ State Government ■ ULB ■ Private Investor



The shareholding of the state government and ULB must be equal

The combined shareholding of the state government and the ULB must always be the majority stake

The state government and ULB will decide the paid up capital of the SPV based on the size of the project

The initial paid up capital of the SPV should at least be Rs.200 Crore

The ULB may use the central government grant fully or partially as the ULBs share in the SPV with prior approval from the MoUD. The state government will have to provide a matching grant for the project. In order to meet the additional funding requirement for the project, it **may also leverage internal and external resources for funding**.

Central Government Grants	State Government Share	Internal Resources of ULB	External Resources
<ul style="list-style-type: none"> • INR 194 crores in first year and INR 94 crores for the next 3 years • Can be used fully/partially to meet ULBs investment obligation in the SPV 	<ul style="list-style-type: none"> • State governments must match the central grant and any other increase in shareholding of the ULB in the SPV 	<ul style="list-style-type: none"> • Additional resources from Fourteenth Finance Commission • Convergence from other schemes like AMRUT, HRIDAY etc. • User Fees, Beneficiary Charges, Impact Fees • Land Monetization • Debt/Loans • Excess Cash 	<ul style="list-style-type: none"> • Private Investors and PPP • Municipal Bonds • Pooled Financing Mechanism • Tax Increment Financing • National Investment and Infrastructure Fund • Borrowings from financial institutions