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SMART CITY

Introduction

Cities are engines of economic growth, especially for a vast and developing country like India. As per Census 2011, nearly 31 per cent of Indian population lives in urban areas and contributes 63 per cent of the Gross Domestic Product (GDP). There is a need for the cities to get smarter to handle large-scale urbanization and find new ways and means to manage complexity, increase efficiency, reduce expenses, improve quality of life and attract investment. Recognizing that cities occupy an important place in India's development, the Union Government has taken the initiative to develop 100 existing cities across all States and Union territories as 'Smart City'. The duration will be five years, starting from 2015-16 to 2019-20 and may be continued further after evaluation by the Union Ministry of Urban Development.

Concept of Smart City

The concept of smart city no doubt is a new phenomenon. Making a city 'Smart' has emerged as a strategy to mitigate the manifold problems caused by growing urbanization. However, there is no one fixed criterion to define a smart city. The concept varies from country to country and, even within a country, depending on the geographical location, level of development and aspirations of the residents. The nature of an European Smart City is very different from the Indian concept of Smart City. Within India, there are wide variations in the concept of Smart City, depending on local context and resources. The concept and vision of Smart City may not be the same for Allahabad, Vishakhapatnam and Kavaratti.

In modern times, the term 'Smart City' was coined in 2007 by Professor Rudolf Giffinger of Vienna University of Technology, while conducting a study to assess the impact of European integration on urban quality of life. His study touched upon issues such as awareness, flexibility, transformability, synergy, individuality and self-decisive and strategic behaviour of the city; he ranked a city in terms of six parameters namely, smartness of economy, people, governance, mobility, environment and living conditions.

In Britain, the Department of Business, Innovation and Skills considers smart cities as a process rather than a static outcome, in which increased citizen engagement, hard infrastructure, social capital and digital technologies make cities more livable, resilient and better able to respond to challenges. The British Standards Institution, London, defines it as "the effective integration of physical, digital and human systems in the built environment to deliver sustainable, prosperous and inclusive future for the citizens". According to the Parliament's Departmentally Related Standing Committee on Urban Development (Fifth Report, Sixteenth Lok Sabha, 2015), "The smart cities should be able to provide good infrastructure such as water, sanitation, reliable utility services, health care, attract investments, transparent processes that make it easy to run commercial activities, simple and online processes for obtaining approvals, and various citizen centric services to make citizens feel safe and happy". The Report further mentions that "smart cities would be developed on four pillars, that is, social infrastructure, physical infrastructure, institutional infrastructure and economic infrastructure upon which the quality of life would depend collectively. The smart cities

would also enhance the interface between the service providers and citizen and enable them to participate actively in terms of providing feedback on the quality of service delivery, condition of infrastructure and social activities".

Broadly, a smart city contains a wish list of infrastructure, certain services and needs of the people. It refers to a developed urban area that creates sustainable economic development and high quality of life. The objective of the smart city is to promote cities that provide core infrastructure and give a decent quality of life to its citizens, a clean sustainable environment and inclusive development. Smart city is meant to set examples to be replicated, both within and outside the smart city, catalyzing the creation of similar smart cities.

Infrastructure Elements in a Smart City

As per the *Mission Statement and Guidelines on 'Smart City'* prepared by the Ministry of Urban Development in June 2015, the core infrastructure elements in a Smart City would include the following:—

- adequate water supply
- assured electricity supply
- sanitation, including solid waste management
- efficient urban mobility and public transport
- affordable housing, especially for the poor
- robust IT connectivity and digitalization
- good governance, especially e-Governance and citizen participation
- sustainable environment
- safety and security of citizens, particularly women, children and elderly, and
- health and education.

Salient Features of the Smart Cities

Some features of comprehensive development in Smart Cities are:—

- promoting mixed land use in area based developments
- housing and inclusiveness
- creating walkable localities
- preserving and developing open spaces
- promoting a variety of transport options
- making governance citizen-friendly and cost effective
- giving an identity to the city
- applying Smart Solutions to infrastructure and services in area-based development in order to make them better.

Smart Solution

Smart solutions refer to application of Information Technology and Communications (ITC) to make existing cities better. Cities may add any number of smart solutions to the area based development making government funds cost effective. There are 21 Smart Solutions as per the *Mission Statement and Guidelines* which broadly can be classified into six categories, namely e-Governance and citizen services, waste management, water management, energy management, urban mobility and others.

E-Governance and Citizen Services

- Public Information and Grievance Redressal
- Electronic Service Delivery
- Citizen Engagement
- Citizen — City's Eyes and Ears
- Video Crime Monitoring

Waste Management

- Waste to Energy and Fuel
- Waste to Compost
- Waste Water to be Treated
- Recycling and Reduction of Construction and Demolition Waste

Water Management

- Smart Meters and Management
- Leakage Identification and Preventive Maintenance
- Water Quality Monitoring

Energy Management

- Smart Meters and Management
- Renewable Sources of Energy
- Energy Efficient and Green Buildings

Urban Mobility

- Smart Parking
- Intelligent Traffic Management
- Integrated Multi-Modal Transport

Others

- Tele-Medicine and Tele-Education
- Incubation/Trade Facilitation Centres
- Skill Development Centres

Area Based Development Models

The Smart City Proposal (SCP) of each shortlisted city is expected to adopt either Retrofitting or Redevelopment or Greenfield development model or a mix thereof and Pan-city features with Smart Solutions. The models of area based Smart City development are described below:

Retrofitting

Retrofitting (Improvement) refers to planning and development of an existing built area greater than 500 acres so as to achieve the objective of smart cities mission to make it more efficient and livable. The area will be identified in consultation with citizens of the city. The existing structure would largely remain intact in this model and more intensive infrastructure service levels and a large number of smart applications would be packed into the retrofitted Smart City.

Redevelopment

Redevelopment means broadly replacement of the existing built-up environment in an area of more than 50 acres identified by the Urban Local Bodies in consultation with citizens. A new layout of the identified area will be prepared with mixed land use, higher Floor Space Index (FSI) and high ground coverage.

Greenfield

Greenfield strategy refers to introduction of most of the Smart Solutions in a previously vacant area of more than 250 acres using innovating planning, plan financing and plan implementation tools (land pooling/land reconstitution) with provisions for affordable housing, especially for the poor. Greenfield developments are required around cities in order to address the needs of the expanding population.

Pan-city

Pan-city development envisages application of selected smart solutions to the existing city-wide infrastructure. Application of Smart Solutions will involve the use of technology, information and data to make infrastructure and services better.

Smart City Proposal (SCP)

Each city has to formulate its own concept, vision, mission and plan for a Smart City that is appropriate to local context, resources and levels of ambition. Cities will prepare Smart City Proposal (SCP) using the principles of strategic planning process and the proposal will contain area-based development plans and Pan-city initiatives. The SCP prepared by cities will contain the vision, plan for mobilization of resources and intended outcomes in terms of infrastructure upgradation and smart applications. The SCP is collaborative because the objectives and funds of all government departments, parastatals, private agencies and the citizens are dovetailed during the process of preparing the SCP. As the task of preparing the SCPs is quite challenging, States/Urban Local Bodies will require assistance of experts. There are two ways of obtaining technical assistance support by hiring consulting firms and engaging with handholding agencies such as World Bank, Asian Development Bank and UN Habitat. The Ministry of Urban Development will technically qualify a panel of consulting firms, and the States and Union territories are at liberty to draw upon this panel. States also have the option of appointing a consulting firm outside the panel by following transparent and fair procedures as per State financial rules. The Ministry will also assist in tying up the arrangements with the handholding agencies.

Essential Features of Special City Proposal

The Special City Proposal will include a large number of infrastructure services and smart solutions. Some of essential features of the SLP are:

- Assured electricity supply with at least 10 per cent of the Smart City's energy requirement coming from solar
- Adequate water supply, including waste water recycling and storm water reuse
- Sanitation, including solid waste, water management
- Rain water harvesting
- Robust IT connectivity and digitalization
- Pedestrian friendly pathways
- Intelligent traffic management
- Smart Parking
- Energy efficient street lighting
- Innovative use of open spaces
- Encroachment free public areas, and
- Ensuring safety of citizens, especially children, women and elderly.

Implementation of Smart City Proposal

An independent and autonomous body, a Special Purpose Vehicle (SPV), will be set up at the city level for implementation of the Mission. It will be a limited company under the Companies Act, 2013 at the city level and will be promoted by State/ Union territories and Urban Local Body (ULB) jointly having 50-50 equity shareholdings. The SPV will be entrusted to plan, appraise, approve, release funds, implement, manage, operate, monitor and evaluate the Smart City development projects.

Each Smart City will have a Special Purpose Vehicle, to be headed by a full time Chief Executive Officer (CEO), and have nominees of the Union Government, State Government and Urban Local Body on its Board. The private sector or financial institutions could be considered for taking equity stake in the SPV, provided the shareholding pattern of 50:50 of State/UT and the ULB is maintained and the State/UT and the ULB together have majority shareholding and control of the SPV. The State Government and the ULB will determine the paid up capital requirements of the SPV, commensurate with the size of the project, commercial financing required and the financing modalities. To enable the building up of the equity base of the SPV and to enable the ULBs to contribute their share of the equity capital, Government of India grants will be permitted to be utilized as ULBs' share of equity capital in the SPV subject to certain conditions.

Monitoring

The Mission Statement and Guidelines on Smart City provides monitoring of the Smart City at three levels — national, State and city level.

National Level Monitoring: At the national level, an Apex Committee, headed by the Secretary, Ministry of Urban Development, and comprising of the representatives of related Ministries and organizations has the mandate to approve the proposals, monitor their progress and release funds.

State Level Monitoring: At the State level, there shall be a High Powered Steering Committee (HPSC) to be headed by the Chief Secretary of the State, which would steer the Smart City Mission as a whole. The Committee will also oversee the process of first stage intra-State Competition, including Smart City Proposal.

City Level Monitoring: At the City level, there will be a Smart City Advisory Forum in all Smart Cities to advise and enable collaboration among various stakeholders. This Advisory Forum will comprise of the District Collector, Chief Executive Officer of SPV, member of Parliament, member of Legislative Assembly, Mayor, local youths, technical experts and representative of the area Resident Welfare Association.

Challenges

The Ministry of Urban Development uses the challenge or competition method to select cities for funding and using strategy of area-based development. This captures the spirit of competitive and cooperative federalism. The States and Urban Local Bodies will play a key supportive role in the development of Smart Cities. Smart leadership and vision at this level and ability to act decisively will be important factors in realizing the success of Smart Cities. The stakeholders at every level need to understand the concept of retrofitting, redevelopment and Greenfield development. Sufficient investment is required, especially during planning, prior to participation in the selection process. Active participation of the people is a prerequisite for the successful implementation of the smart cities mission.

Financing of Smart Cities

Financing of Smart Cities is based on 50:50 funding pattern by the Union and State Governments/Urban Local Bodies. The Union Government will invest Rs. 48,000 crore in 100 cities across the country over a period of five years. Each Smart City, on an average, will get Rs. 100 crore per year. An equal amount, on a matching basis, will have to be contributed by the States/ULB. These funds will act as a catalyst to attract funding from internal and external sources.

Convergence with Other Schemes

There is a strong convergence between many of the sectoral schemes of the Government and Smart-Cities Mission and great benefits can be derived from such convergence. Cities can seek convergence in the SCP at planning stage with the *Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Swachch Bharat Mission, National Heritage City Development and Augmentation Yojana (HRIDAY), Digital India, Skill Development, Housing for All,* Construction of Museums funded by the Culture Department and other programmes connected to social infrastructure such as health, education and culture.

Selection Process for Smart Cities

The distribution of 100 Smart Cities among the States and Union territories is based on an equitable criterion to ensure that each State/Union territories must have at least one Smart City. The formula adopted in this regard envisages equal weightage of 50:50 to urban population of the State/Union territories and the number of statutory towns in the State/Union territories. As per this formula, 21 States/Union territories have been allotted one Smart City each, while big States like Uttar Pradesh, Tamil Nadu and Maharashtra have got 13, 12 and 10, respectively.

There are two stages in the selection process of Smart Cities. In stage 1, the State/UT starts shortlisting the potential Smart Cities on the basis of conditions precedent and scoring criteria and in accordance with the total number allocated to it. It is an intra-State competition and cities in a State compete among themselves. The highest scoring potential Smart Cities on the basis of conditions precedent are shortlisted and recommended to participate in stage 2. After evaluation by the State Mission Director and the State Level High Powered Steering Committee, the names of successful cities are sent to the Ministry of Urban Development. In stage 2, each of the 100 Smart Cities prepare their Smart City proposals giving details of model chosen, etc. and these are evaluated by experts and institutions and the winners are announced by the Ministry of Urban Development.

98 Cities selected for Smart Cities

The Government has released a list of 98 cities selected under the Smart Cities Mission on 27 August 2015(Table I). Jammu and Kashmir has asked for more time to send the name of the potential Smart City while Uttar Pradesh has sent names of 12 cities against 13 allocated to it. In terms of population, Greater Mumbai is the largest with 1,24,00,000 and Kavaratti the smallest city with 11,210 population. Out of the 98 Smart Cities, 24 are business and industry centres, 18 are cultural and tourist centres and 3 are education and health care centres.

Table - I
98 Cities selected under Smart Cities Mission

Sl. No.	Name of State/UT	Number of Cities allotted	Cities selected	Population of selected Cities
1.	Andaman & Nicobar Islands	1	1. Port Blair	1,40,572
2.	Andhra Pradesh	3	1. Vishakhapatnam 2. Tirupati 3. Kakinada	18,78,980 3,74,260 3,50,986
3.	Arunachal Pradesh	1	1. Pasighat	24,656
4.	Assam	1	1. Guwahati	9,62,334
5.	Bihar	3	1. Muzaffarpur 2. Bhagalpur 3. Biharsharif	3,93,724 4,10,210 2,96,889
6.	Chandigarh	1	1. Chandigarh	10,55,450
7.	Chhattisgarh	2	1. Raipur 2. Bilaspur	10,47,389 3,65,579
8.	Daman & Diu	1	1. Diu	23,991
9.	Dadra & Nagar Haveli	1	1. Silvassa	98,032
10.	Delhi	1	1. New Delhi Municipal Council	2,49,998
11.	Goa	1	1. Panaji	1,00,000

Sl. No.	Name of State/UT	Number of Cities allotted	Cities selected	Population of selected Cities
12.	Gujarat	6	1. Gandhinagar 2. Ahmedabad 3. Surat 4. Vadodara 5. Rajkot 6. Dahod	2,92,797 55,77,940 44,67,797 17,52,371 13,23,363 1,30,530
13.	Haryana	2	1. Karnal 2. Faridabad	3,02,140 14,14,050
14.	Himachal Pradesh	1	1. Dharamshala	22,580
15.	Jharkhand	1	1. Ranchi	10,73,427
16.	Karnataka	6	1. Mangaluru 2. Belagavi 3. Shivamogga 4. Hubballi-Dharwad 5. Tumakuru 6. Davangere	4,84,785 4,88,292 3,22,428 9,43,857 3,05,821 4,35,128
17.	Kerala	1	1. Kochi	6,01,574
18.	Lakshadweep	1	1. Kavaratti	11,210
19.	Madhya Pradesh	7	1. Bhopal 2. Indore 3. Jabalpur 4. Gwalior 5. Sagar 6. Satna 7. Ujjain	19,22,130 21,95,274 12,16,445 11,59,032 2,73,296 2,80,222 5,15,215
20.	Maharashtra	10	1. Navi Mumbai 2. Nashik 3. Thane 4. Greater Mumbai 5. Amravati 6. Solapur 7. Nagpur 8. Kalyan-Dombivali 9. Aurangabad 10. Pune	11,19,000 14,86,000 18,41,000 1,24,00,000 7,45,000 9,52,000 24,60,000 15,18,000 11,65,000 31,24,000
21.	Manipur	1	1. Imphal	2,68,243
22.	Meghalaya	1	1. Shillong	3,54,325
23.	Mizoram	1	1. Aizawl	2,91,000
24.	Nagaland	1	1. Kohima	1,07,000
25.	Odisha	2	1. Bhubaneshwar 2. Rourkela	8,40,834 3,10,976
26.	Puducherry	1	1. Oulgaret	3,00,104
27.	Punjab	3	1. Ludhiana 2. Jalandhar 3. Amritsar	16,18,879 8,68,181 11,55,664

Sl. No.	Name of State/UT	Number of Cities allotted	Cities selected	Population of selected Cities
28.	Rajasthan	4	1. Jaipur 2. Udaipur 3. Kota 4. Ajmer	30,73,350 4,75,150 10,01,365 5,51,360
29.	Sikkim	1	1. Namchi	12,190
30.	Tamil Nadu	12	1. Tiruchirapalli 2. Tirunelveli 3. Dindigul 4. Thanjavur 5. Tiruppur 6. Salem 7. Vellore 8. Coimbatore 9. Madurai 10. Erode 11. Thoothukudi 12. Chennai	9,16,674 4,74,838 2,07,327 2,22,943 8,77,778 8,31,038 5,04,079 16,01,438 15,61,129 4,98,129 3,70,896 67,27,000
31.	Telangana	2	1. Greater Hyderabad 2. Greater Warangal	67,31,790 8,19,406
32.	Tripura	1	1. Agartala	4,00,004
33.	Uttar Pradesh	13	1. Moradabad 2. Aligarh 3. Saharanpur 4. Bareilly 5. Jhansi 6. Kanpur 7. Allahabad 8. Lucknow 9. Varanasi 10. Ghaziabad 11. Agra 12. Rampur	8,87,871 8,74,408 7,05,478 9,03,668 5,05,693 27,65,348 11,12,544 28,17,105 11,98,491 16,48,643 15,85,704 3,25,313
34.	Uttarakhand	1	1. Dehradun	5,83,971
35.	West Bengal	4	1. New Town Kolkata 2. Bidhannagar 3. Durgapur 4. Haldia	36,541 6,33,704 5,71,000 2,72,000

Role of Members of Parliament

The concept of 'Smart City' is relatively new and various stakeholders, including members of Parliament, have varied ideas, definitions and approaches to this idea, which warrants evolving a broad understanding of the concept. In this context, the *"Mission Statement and Guidelines"*, brought out by the Ministry of Urban Development, is very useful and informative as it enumerates the citizen engagement in terms of taking decision for the vision of the city as well as for its implementation. The Departmentally Related Standing Committee on Urban Development, in its 7th Report presented on 31 July 2015, states that "Cities must provide world class infrastructure and services at affordable costs to give a competitive edge to the economic activities they host. As an overriding principle, 'people' would be brought to be heart of the urban agenda."

The role of members of Parliament has been duly acknowledged in the implementation of the Smart City. As per the *Mission Statement and Guidelines*, each Smart City will have a Smart City Advisory Forum at the city level and the member of Parliament would be a member of this Forum. With this provision, now members have an opportunity to associate with the working of the Smart City at the grassroot level. Members of Parliament also have ample opportunities to raise issues relating to Smart City on the floor of the House so as to fine tune and streamline the system. Besides parliamentary questions, they will also be in a position to review the Smart City projects when discussion on the subject comes up in Parliament. The Departmentally Related Standing Committee on Urban Development have a significant role as they consider, *inter alia*, the Demands for Grants, Long Term Policy and Annual Report of the Ministry of Urban Development which is the nodal Ministry in respect of Smart City Projects.

Conclusion

With the release of the names of 98 cities from all States/Union territories for making them Smart Cities, India has ushered in an era of urban revolution. It will drive economic growth and improve the quality of life of the urban areas by enabling local area development and harnessing technology, especially technology that leads to smart outcomes. The Smart City project is indeed an important initiative, laying out the path for more livable cities, providing the required growth engine for the Indian economy in the coming years. The Smart Cities aim to make urban areas modern, efficient, sustainable and most suitable for living and work. The process of setting up Smart Cities is at an early stage and how effectively it is implemented holds the key to its success.

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