India's Smart Cities Mission: An Assessment

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ABSTRACT In June 2015 the Modi government launched the Smart Cities Mission, a major urban development initiative designed to improve living conditions and achieve higher economic growth in 100 cities across the country. The Mission offers the State and city governments yet another opportunity to think creatively and work towards the betterment of their cities. Will India succeed in this venture, and would the future 'smart cities' be equitable and sustainable? This paper examines these questions, raises fundamental concerns and concludes that the goals can be achieved with the fair engagement of citizens and all stakeholders involved.

INTRODUCTION

One in every three Indians today is an urbanite. It can no longer be denied that the process of urbanisation—or the living of a large number of people in and around cities—has become a prominent population characteristic of India. Latest Census data show that 475 cities or urban agglomerations (UA) situated in various parts of the country registered a population of over 100,000 each; together, these accounted for about 70 percent of India's total urban population of 377.11 million.[1]

Indian cities and their peripheries are bustling with people and activity. Here, social and economic aspirations of many are being met.

Urbanisation comes at a cost, however, and an appraisal of some sectors at the city level highlights the magnitude of the crisis. In Greater Mumbai, for example, the most densely inhabited UA with over 18 million in population, there is a huge challenge to offer more humane living conditions[2] to slum households (Hhs), which are growing in numbers and at present account for more than 40 percent of the area's total HHs.[3]

Delhi, meanwhile, which is the second most populated UA in the country (with over 16 million in population), is grappling with, among other issues, severe traffic congestion and hazardous levels of vehicular emissions. With over 1,000

new vehicles being registered every day, the city's vehicular strength stood at nearly nine million in March 2015, of which the share of private two-wheelers and cars alone is as high as 94 percent.[4] Further pressure on roads is created by the daily entry and exit of thousands of private and commercial vehicles operating in the surrounding regions. Besides enormous wastage of time and money due to inefficiencies in traffic management, India's capital has been named as the most polluted city in the world by the World Health Organization in 2014, with an annual average concentration of PM2.5 recorded at 153 micrograms per cubic metre.[5]

The list of problems in Indian cities is long; among them, the lack of housing, inefficient and inadequate means of transport, and service unavailability, are most pressing. The prevailing conditions create serious implications for the city and its inhabitants. And even as the economic potential of India's cities remains grossly underutilised, social and economic inequalities are high. For example, on the economic front, the business community holds the view that India is losing out to other nations in attracting investments from foreign companies because of inadequate and poorly managed infrastructure and services in cities, as well as the procedural difficulties experienced in doing business.

When compared with other cities across the globe on various urban development parameters, Indian cities continue to lag behind. Such stagnation is a result of a confluence of factors, among them, deficiencies of various kinds in urban planning and governance, and a huge deficit in civic sense as well.

PREVIOUS RESPONSES TO CITY DEVELOPMENT CHALLENGES

The Indian Constitution puts the mandate of 'urban development' in the hands of the State. However, few State governments have been able to take sufficient steps towards development of their cities. Further, due to varying conditions—whether economic, technological, or political—many States fail to manage their jurisdictions effectively, much less aim for pushing them towards achieving global standards. This is why the Centre has on various occasions stepped up to guide city development.

The national government's response to challenges witnessed in towns and cities was seen from 1979 onwards with the introduction of the centrally sponsored scheme of Integrated Development of Small and Medium Towns (IDSMT). The objective of the scheme was to improve economic and physical infrastructure of urban settlements having populations of up to 500,000, so that these would be in a position to generate economic growth and control the problem of migration to larger cities. In this regard, the Planning Commission of India noted that "a total of 1,854 towns were covered, but the performance was not satisfactory due to lack of implementation capacities, non-availability of matching States share, and non-availability of unencumbered land for the projects".[6] In 1993, the Mega City Scheme was introduced in five cities.[7] Under this initiative, the focus was on infrastructure development, and a wide range of projects[8] were approved and implemented. The two schemes continued until 2005, but the progress was severely hampered due to various reasons including insufficiency of funds.[9]

It has been realised time and again that cities are emerging as major centres of growth and opportunity, and thus there is the imperative of adopting a superior governance approach. To this end a comprehensive scheme, namely, the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) was launched in December 2005. Under the scheme, 65 Mission cities were selected for infrastructure development and improved service delivery. Budgetary outlays were substantially hiked, service-level benchmarks and indicators[10] were adopted, and a range of state[11] and local[12] level reforms were introduced to improve the quality of governance.[13] The Mission comprised two sub-Missions, namely, Sub-Mission for Urban Infrastructure and Governance and Sub-Mission

for Basic Services to the Urban Poor. An appraisal of JNNURM reveals a worrying experience with few achievements and many failures. For example, of the total housing and infrastructure projects approved, many could not even be completed.[14] Generally, problems were experienced with regard to State and local government capacities to actively drive the Mission (physical, financial and reforms progress lagged behind), deficiencies in preparation of city development plans and detailed project reports, delays in timely release of funds from the Centre to States, difficulties in land acquisition for housing and infrastructure development, and unrealistic timeframe given to State and local governments for implementation of governance reforms.[15]

The decade-long programme came to an end in 2014-15 with a change in the country's leadership. Since then, emphasis is being laid on use of so-called 'smart' principles for improving

conditions in existing towns and cities across the country. Table 1 gives a comparative overview of these four urban development schemes.

SMART CITIES: A DEPARTURE FROM TRADITION

The launch of the Smart Cities Mission in June 2015 is seen as yet another attempt at enabling better living conditions and achieving higher economic growth in some 100 existing cities. An outlay of INR 48,000 crore (US$ 7.4 billion) to be spent over a five-year period (2015-16 to 2019-20) has been approved by the central government for this purpose. The State and local governments are expected to contribute equal amounts. According to the Mission guidelines, the entire process is being promised to be inclusive, participatory and transparent—from the preparation of smart city proposals and plans, to their implementation.[16]

Table 1: Major Urban Development Schemes Launched in India, 1979-2015

S. No.	Centrally Sponsored Scheme	Duration			Urban Centres Covered	Total Central Outlay	Funding Pattern (% share)		
		Start Year	End Year	Total Years	(Number)	(INR billion)	Centre	State	Local/ Other*
1	IDSMT	1979-80	2005	26	1854	n.a.	60	40	20-40
2	Mega City	1993-94	2005	12	05	23	25	25	50
3	JNNURM**	2005	2015	10	65	660	35	15	50
4	Smart Cities#	2015-16	2019-20	05	100	480	50	50	

Source: (i) Ministry of Housing and Urban Poverty Alleviation, Annual Report 1999-2000;
(ii) Planning Commission, Eleventh Five Year Plan 2007-12;
(iii) Ministry of Urban Development, Smart Cities – Mission Statement and Guidelines, 2015.

Notes: * Funds to be met through Institutional Finance under Mega City Scheme; and contribution by municipalities, parastatal agencies, loans from banks/financial intermediaries under other Missions.
** Funding pattern for cities with population > 4 million as per 2001 census under the JNNURM Sub-Mission on Urban Infrastructure and Governance; Provision of central assistance under JNNURM was linked to implementation of reforms by State governments and local agencies.
# Yearly instalment of funds to be conditionally released by Centre to SPVs after timely submission of City Score Card, satisfactory physical and financial progress, and other obligations.

The essential features of the new scheme, as described in the Mission statement, include: bottom-up planning based on citizen participation; complete autonomy to States and Union Territories (UTs) in preparation of project proposal, appraisal and approval; selection of cities and towns under new urban missions based on objective criteria; convergence of different schemes to enable integrated planning and better utilisation of resources for visible impact on ground; and unprecedented resource support to States and urban local bodies.[17]

Since its public announcement, the following preparatory work has been done by the Ministry of Urban Development before the scheme is made operational (see also Table 2):

- Developed an understanding of the 'smart city' concept in the Indian context

- Provided cities with the choice of their preferred area-based development strategy

- Evolved guidelines for preparation of smart city proposals

- Outlined the process and criteria for selection of 100 cities

- Described the process of financing, fund distribution and release

- Defined the structure and functions of the implementing agency

- Explained the procedure to be followed in Mission monitoring.

Emphasis on Use of a Smart Approach

At the outset, the need for conceptual clarity is emphasised. Although it may not be easy to define what a 'smart city' is, to begin with, certain boundaries could be drawn to guide city agencies and stakeholders in achieving the goals. It is universally recognised that meeting the needs of all citizens is an essential component of city planning and development, along with providing core infrastructure and a clean, sustainable and safe environment, creating employment, and enhancing incomes especially of the poor and disadvantaged. It is proposed that all such work has to be done smartly, incrementally, using fewer resources, in an inclusive manner, by applying smart solutions[18] and advanced technology. Following a smart approach, it is hoped that existing cities would be successfully transformed into smart cities, with civic agencies displaying greater levels of efficiency, and citizens enjoying a better quality of life.

Table 2: Smart Cities Mission Progress

Date	Activity
25 June 2015	Launch of Smart Cities Mission by Ministry of Urban Development; Announcement of criteria for selection of potential 100 smart cities; only capable cities to be chosen through two-stage competition
27 August 2015	Declaration of names of 98 towns and cities; Jammu and Kashmir asks for more time; 12 out of 13 cities shortlisted from Uttar Pradesh
6 October 2015	Identification of consulting firms (Indian and foreign) by selected cities for preparation of Smart City Plans; plans to be prepared under supervision of municipal and State governments based on review of previous plans; plans to contain area development action plans and financing plans for the complete life cycle of the proposal
15 December 2015	Deadline for submission of Smart City Plans by municipalities and States; Based on evaluation of submitted plans, 20 out of 100 cities to be financed during the current financial year

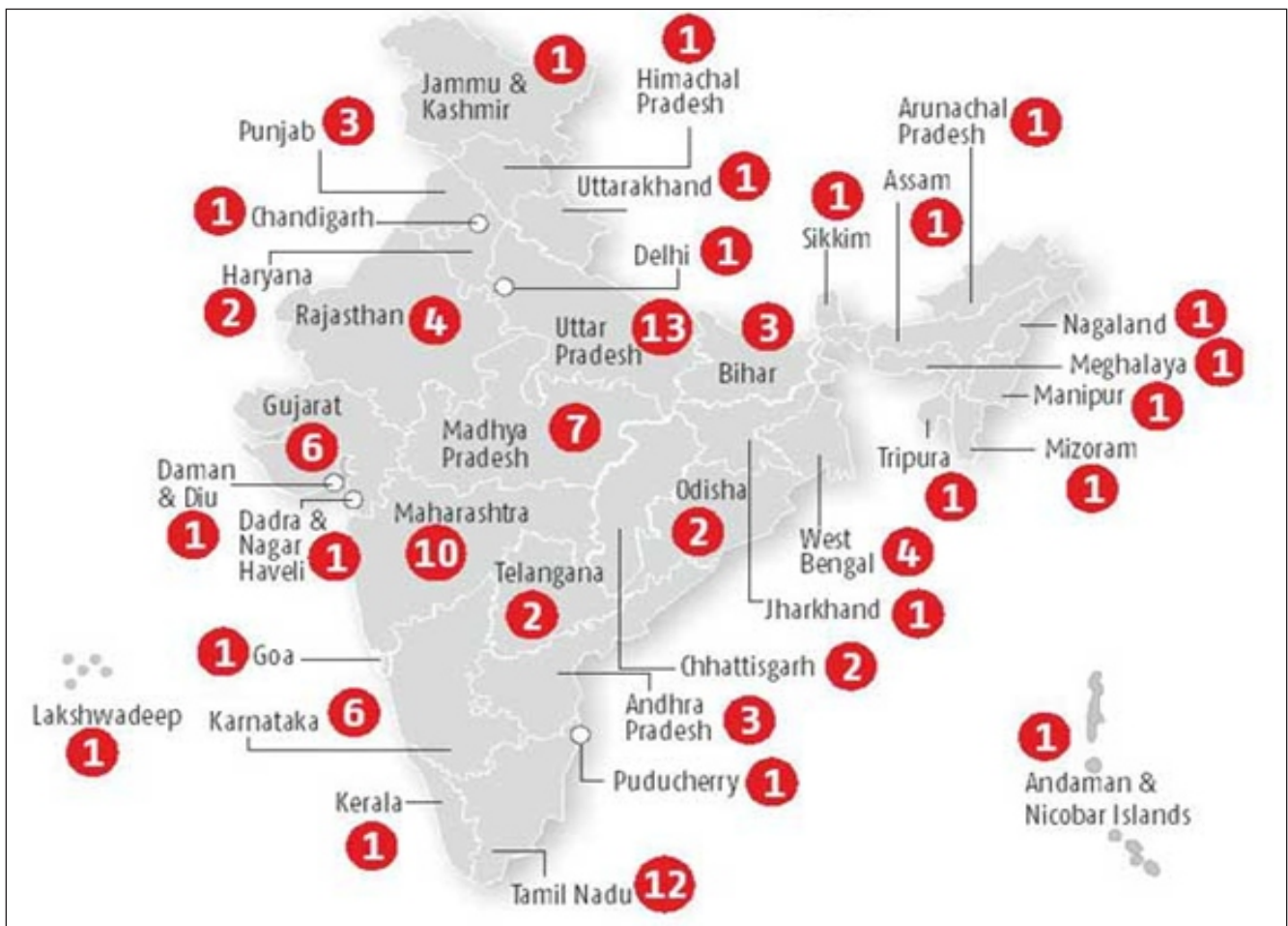*Source:* Press Information Bureau Releases.

Quality of Governance as a Basis for City Selection

India has a total of 4,041 statutory towns and 475 Class I cities / UAs, of which the Smart Cities Mission would cover 100 urban centres (towns and cities) from different Indian States and Union Territories.[19] The basis for selecting cities in the past (under JNNURM) has been the population size, and their religious/historic/tourist importance. But it is realised that in addition to these criteria, certain civic agency performance indicators should be given greater importance, such as an operational online grievance redressal system, better revenue recovery from internal sources, regularity in payment of salaries, and audit of accounts. Appropriate weights may have been given to these aspects because once the mission is operational, State and city governments would be required to deliver not only by contributing a corresponding financial amount to what is received from the central government, but also be in a fair position (i.e., have the capabilities and skills) to participate creatively in the design and effective implementation of innovative ideas.

For the purpose of selection, first, potential smart cities in each State/UT were identified by giving equal weightage (50:50) to urban population of the State/UT and number of statutory towns in the State/UT (Figure 1). Thereafter, selection is being made through a two-stage competition as per which cities within each State have competed against each other based on a set of criteria (as mentioned above), and those receiving a high score have been

Figure 1: Number of Potential Urban Centres in each State/UT Selected under India's Smart Cities Mission

Source: (i) Hello Godavari.com, 20 Cities Selected for this Financial Year, by Sowmya Gummadi, 25 June 2015;
(ii) Press Information Bureau, List of 98 Cities Selected under Smart Cities Mission, Ministry of Urban Development, 27 August 2015.

shortlisted and recommended to participate in stage two of the competition. The first stage of work has been completed, and the shortlisted towns and cities have been announced by the Union Urban Ministry.[20] The list comprises a mix of business and industrial centres, State capitals, cultural and tourism centres, and port cities. In the second stage, each potential smart city will prepare and submit for evaluation, its smart city plan / proposal (SCP) which would describe the planning and financing strategy. This work is currently in progress. Based on the previous performance in implementation of projects and the quality of SCPs, names of 20 cities would be announced initially which would be financed during the current financial year.

Area-based Development

As against the present policy of whole-city improvement, an area-based (compact) development approach is recommended, whereby the city would be improved / developed in parts. This would involve: (i) improving dilapidated built-up areas (more than 50 to 500 acres) of the existing city (termed as retrofitting, redevelopment); (ii) completely new (greenfield) development on vacant areas (more than 250 acres) within or adjoining municipal limits; and (iii) improvement of existing city-wide infrastructure (pan-city development), such as transport, water, waste, and energy management. Improving the city in portions, and building infrastructure incrementally would be a more manageable proposition, and a better way to realise long-term goals, instead of adopting the city-wide approach.

Participatory Planning

While the emphasis on participatory planning is not new in India, its extent has been limited and therefore a matter of concern. Under the ongoing Mission, Smart City Proposals (SCPs) would be prepared for use as guiding documents to create smart cities. SCP preparation is being viewed as a highly challenging exercise and thus Mission guidelines call for involvement of a wide range of stakeholders, including the citizens, consulting firms,[21] foreign governments, and various bilateral, multilateral and domestic institutions. The wealth of knowledge existing in academic and research institutions and think-tanks is increasingly being seen as valuable for designing smart solutions. In many cities of the world, a public-private-community partnership approach has been adopted to identify effective solutions which have eventually led to an improved quality of life.

New Implementation Mechanism

During British rule, formal institutions (parastatal agencies such as development authorities, housing boards, municipal governments) were established at the local level across the country to govern urban centres. Till date, these are responsible for the implementation of development schemes and projects. Due to the changing character of urban areas, numerous problems emerged over the years. Though, a large number of steps have been taken to improve the functioning of local institutions so that these are able to respond effectively to the challenges posed by urbanisation, much ground remains to be covered as many grapple with specific issues like lack of funds, expertise, technology, overlapping functions and poor inter-agency coordination. Further, the accountability of local institutions has been questioned for long.

In some specific situations, a contrary practice has been used to achieve successful results, whereby a Special Purpose Vehicle (SPV) is created to execute the work. In India, this is observed in the implementation of some development projects such as building of the Delhi Metro Rail and the Delhi-Mumbai Industrial Corridor. This mechanism is also proposed under the Smart Cities Mission, and the SPV, to be headed by a CEO and comprising Central, State and local government nominees,

Figure 2: An Idea of a Smart City

Source: Schneider Electric, http://www.gogreeninthecity.com/smart-cities, accessed on 4 November 2015.

would have complete autonomy to take decisions on preparation of smart city proposals and projects, as well as their execution either through joint ventures, or subsidiaries, or public-private-partnerships. In this work, the SPV can take assistance from consulting firms and handholding agencies. Besides, the SPV would be entitled to receive necessary support from the Centre, State and urban local governments.

SMART CITIES MISSION: AN ASSESSMENT

The Smart Cities Mission launched by the Indian government is a novel initiative aimed at carrying forward the process of planned urbanisation in the country. Successful achievement of the Mission goals (better living conditions for all, higher economic growth) would depend upon the creation of suitable conditions by the Centre, States and urban local governments.

The idea of creating smart cities has evolved in developed nations where there is a growing discussion on understanding the future of cities. It is realised that conditions in cities are becoming increasingly complex and, thus, a clearer agenda on city development must be drawn for the benefit of future generations. According to a popular definition, "Every city can become smarter. Smart cities start with smart systems,

working for the benefit of both residents and the environment. Electric grids, gas distribution systems, water distribution systems, public and private transportation systems, commercial buildings, hospitals, homes — these form the backbone of the city's efficiency, liveability, and sustainability (Figure 2). It is the improvement and integration of these critical city systems — done in a step-by-step manner — that become the cornerstones to making a smart city a reality".[22]

In India, the concept of a 'smart city' is perceived as advanced, something more suited for cities of developed nations. After all, it entails the application of sustainable solutions to overcome difficult problems and involves the use of sophisticated and expensive technology developed by the private sector. For this reason, urban India's first reaction following the announcement of the Mission by the government has been generally unfavourable. Many urban experts feel that the new approach would benefit only the influential groups and private companies, besides laying huge resources to waste; critics say the fundamental problems would be overlooked. These concerns may be seen as reasonable because previous urban development programmes have faced setbacks due to major problems. In one case, the Central Bureau of Investigation found that a section of

government officials and their franchisee had fraudulently made money for operating city buses under the JNNURM scheme.[23] It thus becomes an important responsibility of the government to address such concerns during the planning and implementation stages of the Mission, and through demonstration projects, to begin with.

The Mission will be implemented in cities that have demonstrated better governance. This makes sense because dynamic leadership would be needed to steer the activities under the proposed Mission. Moreover, in the selection of cities, consideration could have also been given to the magnitude of the problem prevailing in a certain city on the basis of suitable indicators. For example, Patna (Bihar) and Firozabad (Uttar Pradesh) show evidence of high levels of air pollution. Similarly, Vijayawada (Andhra Pradesh) and Meerut (Uttar Pradesh) have recorded above 40-percent slum households.[24] It may not be incorrect to assume that poor communities living in these cities would be most severely affected by such problems. Though smart solutions were urgently needed in such cities, these have not been chosen for improvement under the Mission. Therefore, it is important to ensure that the policy of developing towns and cities not covered under the Mission is pursued with equal vigour and smartness, and not pushed behind. Time and again, huge investments are pumped in larger cities due to which improvement of remaining urban centres has been seriously lagging behind. Such approaches are creating huge regional imbalances, which in turn result in social deprivation as well as migration of people to urban agglomerations. With the inclusion of smaller and medium sized urban centres (having population as low as 11,210) under the Smart Cities Mission, there is hope of addressing these issues.

Better performing towns and cities have been selected in a manner that all States and UTs of India are covered. In this way, every State/UT would get the chance to participate in the scheme and have something to look forward to. This is an example of an inclusive approach because all

States/UTs are being involved in the centrally sponsored scheme. Whether selection of urban centres in this manner is the best way to take forward India's urbanisation agenda is debatable. In China, for example, a spatial urban cluster development strategy has been proposed in the Twelfth Five Year Plan for meeting the country's economic and social development needs. According to this approach, a balanced urban hierarchy would be formed along major corridors spread across the country, with an urban agglomeration in the core and other urbanised areas in the neighbourhood. This is an example of planning for the nation as a whole. Even within the country, some States have prepared an urbanisation strategy to guide future growth. Kerala, for example, has proposed for having an urban hierarchy–a compact core, an intermediary urban, and a peri-urban area. Karnataka, for its part, lays emphasis on adoption of a metropolitan regional development approach so as to facilitate regional linkages and thus reduce regional disparities. Thus, the current plan of carrying out improvements as well as new development at the level of a city under the ongoing Mission should be formulated in such a manner that various national, regional and local expectations are met in the long run.

It is proposed to transform the city in parts by selecting areas of different sizes. This area-based development strategy may work out to be successful since it would be possible to attend to the area's/citizen's requirements within a limited space and that too by a single and specialised entity, namely the proposed SPV. But cities are large in size, and if some portions are selected and upgraded, whereas others are looked after in the usual manner by the existing civic agencies for a long time, it could lead to an inequitable situation. This scenario is observed in Pune, where the Magarpatta City spread over 430 acres functions as a model sub-city within Pune, whereas the remaining parts of the city could be said to be inadequately managed. Under the Smart Cities Mission, with respect to Delhi it is observed that the area under the jurisdiction of the New Delhi

Municipal Council (NDMC) has been selected because it is better governed as compared to that of Municipal Corporation of Delhi (MCD). NDMC covers an area of about 10,626 acres or 43 sq. km. (about three percent of Delhi's area and two percent of population), but the major concentration of activities and population lies within the jurisdiction of MCD. Once the work in the NDMC area is over after a few years, it may be assumed that MCD areas would be selected one by one, or simultaneously. Therefore, the smart city proposals could spell out the rationale for selection of a certain area, the order in which different areas will be selected, and the timeline by which the whole city would be covered. In order to be truly labelled as a 'smart city', drawing a complete road map would be ideal.

A Special Purpose Vehicle (SPV) would be constituted and sufficiently empowered by the State and local government to do all development-related work within the selected area (s) of the city under the Smart Cities Mission. Though the measure of putting in place a specialised agency (i.e., SPV) would ensure efficiency in the conduct of business within the selected area, simultaneously, efforts should be made to achieve the larger goals of: (i) strengthening the managerial, financial, technological, and law enforcement capabilities of existing governing institutions (i.e., urban local governments and parastatal agencies) that would also be simultaneously looking after many other parts of the city, and (ii) making the existing institutions accountable to their citizens. Attending to the requirements and challenges of existing institutions is particularly important since the SPV would be receiving their support. Some resistance or difficulties could also be faced in delegating rights, obligations, and approval or decision-making powers of the urban local governments/State urban development departments to the SPV. This problem has been observed previously at the time of implementation of various legislative provisions outlined in the Constitution (Seventy-fourth Amendment) Act, 1992. In this respect, it was noted that the experience of devolution of powers and responsibilities by the State governments to municipalities has not been very encouraging.

Besides overcoming the challenges involved in creating an efficient managerial environment, the success of the Mission would depend upon the availability of sufficient funds. This is an equally important concern of the central government since previous revenue generation efforts have not produced desirable results. The Centre promises to extend all support for creating a higher initial corpus, but eventually the pressure on State and local governments as well as the SPV would build up. In the past, revenue has been generated by some State / local governments in innovative ways, i.e., setting up financial intermediaries, pooled finance mechanisms, issuing municipal bonds, engaging with the private sector, bilateral, multilateral institutions. These approaches have worked at a few places but not everywhere. It is learnt that other sources would also be available in the future, such as the New Development Bank or the Asian Infrastructure Investment Bank. It may be said that a far more serious effort must be made to understand which model would work best for a certain city based on the available resource potential at the local level, and the Smart City Proposal should provide sufficient information in this regard. At the same time, the State and local governments should be encouraged to demonstrate better revenue collection and financial management practices.

CONCLUSION

The recent launch of the Smart Cities Mission in India is an indication of the fact that along with the initiation of many key reforms, the Indian government is giving equal importance to the work related to the improvement of towns and cities. There is growing realisation that the country and citizens would benefit enormously if cities are managed and governed smartly. Previous city improvement efforts under centrally sponsored schemes, such as Mega City

and JNNURM, have been helpful to some extent in various ways. But the government has a long way to go in achieving objectives of transforming cities into places of sustainable habitation.

The new Mission offers the State and the local government institutions yet another opportunity to think creatively and work towards the betterment of their cities. For this purpose, there is scope for them to constitute a specialised entity, focus on smaller-sized areas within the city, and involve citizens as well as experts from outside the government in the planning process. Further, the central government is receiving a positive response from governments of Germany, France, Japan, Singapore, Spain, the Netherlands, and the US, who have all made a pledge to contribute in various ways, including in planning, technology and finance.

The following issues require immediate attention:

- Clarify the perception that transforming existing cities into smart cities is not an appropriate response to addressing the growing problems in cities through demonstration projects.
- Policy of developing towns and cities not covered under the Mission must be pursued with equal vigour and smartness, and not pushed behind.
- Plan of carrying out improvements at the level of a city should be formulated in a manner that various expectations at the national, regional and local levels are met.
- Smart city plans need to spell out rationale for selection of an area within the city, the order in which different areas will be selected, and the specific timeline by which the whole city would be covered.
- City plans must address grey areas, such as provision for social and cultural practices, needs of the poor, informal and migrant workers, public safety, disaster management, energy and environment management, land encroachment, and administration of informal sector activities.
- Attention needs to be paid to requirements and challenges of existing parastatal and municipal institutions, since the proposed Special Purpose Vehicle would be receiving their support.
- There is the imperative to understand which revenue model would work best for a certain city based on the available local resource potential; Reform urban management and governance, which is an important pre-condition for generating funds required to improve urban infrastructure and make cities 'smart'; State and local governments to be encouraged to demonstrate better revenue collection and financial management practices. ORF

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ENDNOTES:

1. Census of India, Provisional Population Totals: Urban Agglomerations and Cities. New Delhi: Office of the Registrar General and Census Commissioner, 2011.

2. Access to planned housing, health, education, drinking water, sanitation, energy, security, social welfare, etc.

3. Census of India, Slum Houses, Household Amenities and Assets. New Delhi: Office of the Registrar General and Census Commissioner, 2011.

4. Government of National Capital Territory of Delhi, Total Vehicles Registered Year Wise. New Delhi: Transport Department, 2015.

5. Business Today, "Delhi is World's Most Polluted City: WHO Study", 8 May 2014.

6. Planning Commission, Eleventh Five Year Plan 2007-12, Chapter 11, p. 397.

7. Namely Bangalore, Chennai, Hyderabad, Kolkata and Mumbai.

8. Water supply and sewerage, roads and bridges, city transport, solid waste management, etc.

9. Planning Commission, Mid-Term Appraisal of the Tenth Five Year Plan, 2002-07, Part Two, Chapter 11 – Urban Infrastructure, p. 372.

10. For example, household level coverage of direct water supply connections, per capita quantum of water supplied, extent of metering of water connections, coverage of waste management services through door-to-door collection, etc.

11. For example, implementation of decentralisation measures as envisaged in the Constitution (Seventy-fourth Amendment) Act, 1992, etc.

12. For example, introduction of a system of e-governance, adoption of modern accrual-based double entry system of accounting in local governments and parastatal agencies, etc.

13. Remaining Indian towns and cities were covered under two JNNURM sub-schemes, namely Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT), and Integrated Housing and Slum Development Programme (IHSDP).

14. Comptroller and Auditor General of India, Performance Audit of Jawaharlal Nehru National Urban Renewal Mission, 2012.

15. Grant Thornton, Appraisal of Jawaharlal Nehru National Urban Renewal Mission (JnNURM), Final Report – Volume 1, March 2011.

16. Ministry of Urban Development, Smart Cities – Mission Statement and Guidelines. New Delhi: Government of India, 2015.

17. Press Information Bureau, 'Future of India's growth story is in cities which can be made smart with new initiatives', says UD Minister. New Delhi: Ministry of Urban Development, 3 September 2015.

18. For example, meeting the city's electricity requirement from renewable sources, intelligent traffic management, etc.

19. Other cities / towns in the country would be covered under a separate programme, namely Atal Mission for Rejuvenation and Urban Transformation (AMRUT).

20. Press Information Bureau, 'List of 98 cities selected under Smart Cities Mission'. New Delhi: Ministry of Urban Development, 27 August 2015.

21. Press Information Bureau, 'Mission cities pick up consultants for preparation of Smart City Plans'. New Delhi: Ministry of Urban Development, 6 October 2015.

22. Schneider Electric, http://www.gogreeninthecity.com/smart-cities, accessed on 4 November 2015.

23. The Times of India, 'JNNURM bus franchise in Rs. 28 crore scam', 17 January 2013.

24. Census of India, Slum Houses, Household Amenities and Assets. New Delhi: Office of the Registrar General and Census Commissioner, 2011.