

Challenge of Making Smart Cities in India



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Abstract

The Indian government has launched the Smart Cities Mission in June 2015 with the aim of providing a better quality of life to the citizens in 100 cities of the country. This paper describes the main features of the Mission and attempts to explain the challenges in the way forward. The information provided in the paper is presented in six sections. Section one highlights the unique characteristics of India's cities and establishes the need for better urban management. The second section describes five negative effects of urbanization to which sufficient attention has not been paid. These include informal growth in peri-urban areas, escalating water crisis, social exclusion, extension of slums, and mismanagement of solid waste. In the next section, the impact of past urban reform initiatives is discussed and attention is drawn to the difficulties being faced in overcoming some enduring challenges. Section four provides detailed information about India's Smart Cities Mission including the process followed in the selection of cities, the plan preparation and implementation strategy. Then, an assessment of the relevance and soundness of the Mission is proposed in the fifth section. In the concluding section, a list of propositions is put forward for the successful achievement of the Mission goals. It is emphasized that civic institutions should correctly understand a city's social, economic and physical requirements and its diversity, and respond accordingly. At the same time, citizens should show a greater sense of civic responsibility.

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Introduction

A noticeable global phenomenon is the concentration of people in cities and urban agglomerations (UAs). It is common knowledge that people tend to live and work in an urban setting because the available opportunities help them progress in their lives. Cities of developing countries such as India prominently display these trends. At the same time however, urban conditions in India are exceptionally different and complex. For instance, although India's urban population proportions are comparatively less than the global average (31.15 per cent as per the 2011 Census of India), the size of the population is huge (377.11 million) and is growing by the day. City/urban agglomeration (UA) level data show as many as 53 recording a population of over a million, including three – namely Delhi, Mumbai and Kolkata – that are over 10 million (Census of India, 2011a).

Besides demographic patterns, the social and economic characteristics of the urban population also help to understand the notion of Indian cities. Income differences, for example, are enormous. An insignificant proportion of India's urban population is extremely wealthy and displays very high consumption levels. At the other extreme are a large number of deprived people who struggle daily to make a living. Avenues of organized employment are inadequate and thus many job aspirants explore livelihood opportunities in the informal sector where workers rights and safety are major concerns. Moreover, the urban society is represented by an interesting mix of religious and caste groups that pursue a variety of social and cultural practices, as well as festivities. Religious ceremonies along river courses passing through cities and on public roads are a common sight.

In many ways, the conditions witnessed in Indian cities may look similar to those in many parts of the world. The concern, however, is with regard to the methods followed in managing the urban dynamics. While the governments of some developing countries such as Chile, Mexico, Colombia, Argentina, Brazil and China to name a few, have responded professionally and responsibly to the challenges posed by urbanization, India struggles to address the issue. Santiago de Chile, for example, shows progress on the journey to being smarter. It is emerging as a popular centre for doing business, and the country's largest electricity company, Chilectra, has taken steps to meet the energy requirements of a business park and electric vehicles (Fast Company, 2013). Another example is the Chinese city of Karamay (Xinjiang), which is pursuing a joint programme with IBM, involving the use of cutting-edge technology to improve transportation, healthcare and public security (China Daily, 2012).

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The citizens' quality of life index is one method, which can help in understanding and attending to the problem areas. The index is computed on the basis of data and public-opinion polls on different parameters of well-being, including income and wealth, jobs and earnings, work-life balance, housing, environmental quality, health status, education and skills, social connections, civic engagement and personal security (OECD, 2015). Country-level comparisons show Denmark, Switzerland, Australia, New Zealand and Germany doing well on these indicators, whereas many South and Southeast Asian countries including India are at the other end of the index (Figure 1).



Figure 1: Quality of Life Index, 2016

Notes: (i) Countries in green colour offer the best quality of life; (ii) Quality of life index has not been computed for countries in grey colour.

Attempts have also been made to assess the quality of life in 440 cities of the world based on similar parameters. The rankings by Mercer, a global human resources consulting firm, show Vienna and Zurich earning the top spots among European cities, with Singapore doing well in Asia. However, as far as India is concerned, the cities of Hyderabad (Andhra Pradesh/Telangana), Pune (Maharashtra) and Bangalore (Karnataka) rank 139th, 144th and 145th respectively (The Indian Express, 2016a).

Source: Numbeo, 2016.

Though there are many genuine reasons for the difficulties experienced in Indian cities, one could also say that to a great extent the problem lies in the disconnect between what is needed to be done for the urban society and what is being done by the stakeholders in governance. A continuation of this pattern of growth and governance is quite likely because the intensity and commitment with which the matter needs to be dealt with is simply lacking. For example, sufficient efforts and interventions are not being made to improve the situation in rural areas and in small and medium towns. Many are in a state of utter neglect, as evident from the abysmally poor living and livelihood conditions of their residents. One implication of this negligence is out migration of a large number of people to prosperous cities, which offer some kind of respite. But, if urbanisation is to benefit the nation and the society, then the phenomenon has to be managed correctly (Aijaz, 2015a). The current pattern in India is that city densities are increasing by the day and the obvious consequence of a governance deficit is deterioration in the urban quality of life.

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Urbanization concerns in India

A visit to any Indian city reveals the general state of affairs. The entire urban landscape looks rather like an unplanned sprawl with built up residential and commercial structures mushrooming haphazardly. Maintenance and upkeep of public places is generally lacking. A closer assessment shows noticeable imbalances in physical development and in the level of basic infrastructure and services within and between cities. While the rich live in planned and well-serviced gated complexes, households belonging to the low income group reside in informal settlements and slums with insufficient or no access to civic services. Mobility is severely impaired due to insufficient public facilities, and irregularities in traffic management often result in road accidents. When it rains, water logging happens at many places, which further restricts mobility.

As urbanization has brought together people from diverse social, cultural, economic and religious backgrounds, the problem of stress, violence and crime is rising. Assault on women has emerged as a major problem. In this respect, data released by the National Crime Records Bureau show Jodhpur (Rajasthan), Delhi and Gwalior (Madhya Pradesh) as the top three Indian cities, which are most unsafe for women (The Indian Express, 2016b). Another problem is the frequent occurrence of violence between religious communities. Ahmedabad (Gujarat) is a notable example where religious violence between the Hindus and Muslims has erupted on numerous occasions. Such incidents have created an environment of fear among the masses, and led to social polarization (PRIO and ORF, 2016; Rediff.com, 2014). Thus, Indian cities do not represent examples of planned, equitable, safe and sustainable development. This current state of affairs can be attributed to the fact that many parts of the urban setting remain completely ungoverned and unregulated, and thus a large number of citizens/informal sector workers/commercial establishments utilize public spaces and drive their motor vehicles in a disorganized manner. It is pertinent to gain a deeper and wider understanding of the difficulties that beset India's urban sectors.

Informal growth in peri-urban areas

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One of the ill effects of urbanization is uncontrolled population and physical growth in peri-urban areas. Those people who are unable to live in prime areas of a city due to the affordability factor find peri-urban areas as ideal places to reside and operate from. Haphazard growth occurs because peri-urban areas are weakly governed. Two factors are responsible for this problem. First, there is lack of clarity among the government agencies on the physical boundaries of the peri-urban areas. Neglect in monitoring physical development in such areas over a period of time allows migrant settlers to carry out contiguous physical changes. In this process, the new constructions many-a-times extend into the adjoining rural area. Due to this reason, neither the urban nor the rural agencies come forward to take ownership of peri-urban areas, and their administration gets neglected. Secondly, rural–urban jurisdiction ambiguity also prevents the agencies from formulating and applying appropriate land and building regulations.

The pressure created by urbanization has thus a severe impact on the peri-urban areas, which suffer from a host of social, economic, development and environment problems. For example, there is a sharp increase in population densities and in the number of unauthorized residential, commercial and industrial structures. Physical changes are carried out unlawfully without any reference to local development plans, development controls and building bye-laws, while necessary approvals from concerned development agencies are usually not sought (Narain *et al.*, 2013).

Furthermore, agricultural land is indiscriminately converted to urban use, resulting in reduced food grain and vegetable production. This has affected the supply of food to several cities, which are solely dependent on the rural food-producing hinterland. At a few places, the problem has been overcome to some extent with the creation of national food markets and better distribution networks. For example, under a popular business initiative (namely Safal), fresh fruits and vegetables are procured, processed and marketed in Delhi and the adjoining region, as well as in Maharashtra, Karnataka and Gujarat. But, generally, such land use changes negatively impact the livelihood of the farming community and the poor people who depend on these lands for cattle grazing and collection of fuel wood (Lintelo et al., 2001). Changes are also witnessed in livelihood patterns from predominantly agricultural occupations to trade and commerce, and service-oriented occupations (Karmakar, 2015). Persons who are unable to cope with the change suffer. In view of the unfair practices followed in land acquisition and the wide range of activities

pursued by the settlers, peri-urban areas often become a contested space. The dynamism in peri-urban areas also creates a pressure on surface and ground water resources, on which the native population is dependent.

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Social exclusion

The Indian government has a clear legislation and policy for protecting the rights and welfare of poor communities living in cities. For this purpose, a wide range of pro-poor schemes have been implemented from time to time. Empirical studies, however, reveal that the benefits of various development schemes are partly reaching the intended beneficiaries (Aijaz, 2015b). This is noted in the city of Varanasi (Uttar Pradesh), which is the parliamentary constituency of the current Prime Minister, Narendra Modi. In this city, the plight of handloom weavers is deplorable. Their silk weaving activity and income are adversely affected by numerous problems, including growth of power (electric) looms, exploitation by middle men, rising prices of computer-generated design cards used by them to print creative designs on the silk fabric, as well as poor working conditions within their houses (NDTV, 2014). In the opinion of handloom workers, sufficient measures are not being taken by the concerned government agencies to address their concerns.

The rapidly transforming and rich city of Pune (Maharashtra) presents a case of food insecurity. This is the impression among the slum dwellers who face difficulties in availing food grains and kerosene from fair price shops as per their entitlements. Such problems occur not because of food shortages in the city but due to misappropriation of food grains, which are solely meant for public distribution (Infochange Agenda, 2014). Another area of exclusion is housing. This is noted in Ahmedabad city (Gujarat), where poor communities have been relocated to the city periphery because land was needed for a river front development project (Mathur, 2012; The Wire, 2015). With respect to one case of relocation, proper housing and basic facilities of sanitation, as well as transport, health and streetlights have not been provided nor any employment opportunities created due to which the relocated families are facing great hardship.

Extension of slums

In India, as in many developing countries, urbanization has led to the formation of slums. These are areas where the poorest of the poor live. Their houses are worn down, basic civic amenities are usually not available, and the environmental conditions in the area are unfit for human habitation. Slums have come up because of migration and the city governments' inability to create an affordable housing stock for the poor migrant population. Due to negligence in monitoring vacant lands, poor migrants build temporary structures for living. Even when legal provisions are introduced for reserving houses for the poor in the housing stock created by the private builders, these are not adhered to.

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Adults and children who live in slums are engaged in a variety of activities. Many work as labourers in the construction industry. Others provide a range of services, which are not sufficiently provided by the government in all parts of the city, but are much needed by the city residents living in planned and authorised areas. Examples of services offered are sale of flowers and earthen pots, fruits and vegetables, laundry and ironing, distribution of newspapers, sale of cooked food near office and commercial areas. Some people also work as servants, gardeners, security guards, cycle rickshaws and handcart operators. Thus, in many ways, slum dwellers are playing an important role in building and running cities (The Financial Express, 2012). As mentioned above, their grievances are manifold.

In terms of numbers, about 5 per cent of India's totales population and 17 per cent of its totales urban populations lives in slums. Between 2001 and 2011, the slum population of India grew by 25 per cent (Census of India, 2011b). A worrying trend is the emergence of slums in some Northern and Northeastern States, which previously did not report their existence. Five cities - namely Vijayawada and Greater Visakhapatnam (Andhra Pradesh), Jabalpur (Madhya Pradesh), Greater Mumbai (Maharashtra), and Meerut (Uttar Pradesh) - have recorded over 40 per cent slum households. With regard to the status of amenities available to the slum dwellers, the all-India data show that many slum households do not have drinking water source (43 per cent) and toilets (34 per cent) within their premises (Census of India, 2011c).

Escalating water crisis

Human settlements require a sufficient and equitable supply of water. But the reality in most Indian cities is that this goal is far from achieved. In planned residential colonies, for example, piped municipal water is received for about 2 hours each in the morning and evening, and the water supply and pressure have gone down significantly over the years. The quality of water is another issue. In view of the current situation, residents make their own arrangements for obtaining, storing and treating water. They install powerful electric motors to forcefully pull water directly from the pipeline during supply hours, install underground/overhead water storage tanks, and buy water purification systems to protect their health. These measures have had a direct impact on their income, as observed from the increasing private (individual) costs of inadequately provided public services and infrastructure. As for unplanned colonies and slums, they present a contrasting picture of major water inadequacies. Formal systems (piped supply) have generally not been put in place and hence illegal ground water extraction is rampant. These practices have led to declining ground water levels.

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An overall assessment of the city water situation (Aijaz, 2010) reveals the following major deficiencies:

- a huge demand and supply gap,
- poor operation and maintenance of water supply systems, as well as water losses caused by leakages in transmission and distribution lines,
- excessive use/wastage by consumers resulting in part from nonfunctional and defective meters,
- contamination of surface water bodies and ground water, and
- noteworthy intra-urban disparities.

Besides access, water poses another threat. Some Indian cities namely Chennai (Tamil Nadu), Mumbai (Maharashtra), Srinagar (Jammu and Kashmir) - have experienced massive flooding as a result of either heavy downpour and/or poor management of river dam water. The situation worsens due to inadequate drainage and waste management systems and illegal construction of built structures that prevent the natural flow of water (Dolman, 2015). Lack of preparedness in dealing with water related disasters causes loss to life, livelihood and property, with lowincome communities being the worst affected.

Mismanagement of solid waste

Cities generate enormous quantities of solid waste and therefore mechanisms have been created for its collection and disposal. The sanitary condition of Indian cities is, however, unsatisfactory, as waste is often dumped by the generators at inappropriate places such as roadsides, vacant lands, open drains and surface water bodies. The situation is better at places where door-to-door collection services are available. But service providing agencies sometimes commit irregularities in handling waste. Sufficient efforts are not being made to segregate waste at source and hence the quantities generated are huge (CPCB, 2012). Such practices also rule out the possibility of recycling, as all types of waste gets mixed up. There are delays in the removal of waste from intermediate collection points, and at the final disposal sites, sufficient space for storing waste is not available. The heaps of waste lying at disposal sites is also a threat to human health because during the rainy season, water dissolves toxic waste materials and contaminates surface and ground water. As the capacity of dumping sites in some cities (such as Delhi and Ahmedabad) is exhausted, there are instances of waste being dumped by city governments on vacant lands in peri-urban areas lying outside city limits.

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Management and governance constraints affecting India's urban sector

Efforts to improve the deteriorating conditions caused by urbanization in Indian cities have been made from time to time. These include a variety of measures such as the introduction of urban development programmes, the strengthening of State and local level institutions, and the adoption of innovative urban governance practices, including institutional partnerships with non-State actors (Figure 2). Reference may be made here to two significant urban reform measures. The first pertains to the empowerment of urban local governments (or municipalities) in all the States of India. The second is the Jawaharlal Nehru National Urban Renewal Mission (JNNURM).

A series of urban sector reforms

Municipal institutions have been in existence in the country since 1882, however, these remained entirely under the control of the State legislatures for a very long time. It was gradually realized that people's expectations can be met in a much better way by strengthening local government institutions. Accordingly in 1992, the Constitution (Seventy-fourth Amendment) Act was passed. As per the Act, exclusive provisions for the empowerment of municipalities were inserted for the first time in the Indian Constitution. This legislative intervention paved the way for the constitution of a uniform typology of municipalities across the country as well as the reservation of seats in municipalities for women, scheduled castes, scheduled tribes and backward class of citizens. The Act also provided for the devolution of powers, functions and responsibilities to municipalities; the timely conduct of municipal elections; as well as the constitution of wards committees, state finance commissions, committees for district and metropolitan planning (Constitutional Provisions, 1999). With the implementation of the Act, notable change in urban governance was observed, however, efforts to decentralize administration at the level of the ward and to devolve powers, functions and responsibilities from the State to local governments met with little success mainly due to reluctance by State functionaries (Aijaz, 2012:39).

The Jawaharlal Nehru National Urban Renewal Mission (JNNURM) was launched in 2005 by the Congress-led government of Prime Minister Manmohan Singh. It was felt that instead of having a large number of separate programmes for the development of various urban sectors, there should be a comprehensive and integrated urban development programme (MoUD, 2005). During the ten-year duration of JNNURM from 2005 to 2015, financial assistance was provided to State and local governments for development of infrastructure facilities. More importantly, a series of mandatory and optional reforms¹ were implemented to strengthen work practices in municipalities, para-statal agencies and State governments.

Due to these efforts, many positive developments have occurred, the benefits of which have reached the citizens. For example, with the creation of municipal websites (by utilising the expertise of top private IT companies), a large number of residents can easily fulfill numerous requirements such as online payment of taxes, obtaining birth and death certificates and trade licenses, submission of tenders by contractors, etc. This initiative has helped in improving the accountability of government institutions and greatly addressed the problem of corruption. Sectorspecific improvements are visible as reflected by the growing number of cities offering environment friendly high-speed passenger rail services.² This facility has been put in place with financial and technical assistance received from global technological firms. With respect to drinking water supply, innovative practices (such as water harvesting, energy efficiency, awareness generation, partnerships between government departments, urban local governments, foreign companies and citizens) have led to improved water access and quality, as well as better revenue recovery from water charges and taxes (MoUD, 2010).

^{1.} Adoption of double entry system of accounting, use of IT applications in providing civic services, enactment of public disclosure law, revision of building bye-laws, etc.

^{2.} Metro rail services are now available and the network is expanding in the cities of Bangalore, Chennai, Delhi, Jaipur, Kolkata and Mumbai.



Figure 2: Urban Sector Reforms in India

In the past two years, the BJP-led government has launched several new programmes to improve the condition of urban areas in the country.³ The impact of some programmes is now being seen (MoUD, 2016). For instance, to attend to the problem of open defecation, 1.5 million individual household toilets and 76,000 community and public toilets have reportedly been constructed. Efforts are also being made to improve door-to-door collection of solid waste and data in this respect show that 34,590 wards across the country are now covered by this service. Furthermore, for the protection of heritage, plans have been prepared for 12 identified cities.⁴

Enduring challenges

Notwithstanding these recent initiatives, the fundamental question remains as to why Indian cities are unsustainable and inequitable. Indeed, when compared with global cities, Indian cities continue to lag behind on numerous development parameters despite the existence of an urban governance machinery at the national, state and local level, as well as democratic institutions, high GDP, availability of financial and manpower

Source: Figure prepared by the author.

^{3.} Major urban initiatives include: Clean India Mission, Smart Cities Mission, Atal Mission for Rejuvenation and and Urban Transformation, Housing for All, National Heritage City Development and Augmentation Plan, Ease of Doing Business, etc.

^{4.} The names of the 12 cities are: Ajmer, Amaravati, Amritsar, Badami, Dwarka, Gaya, Kanchipuram, Mathura, Puri, Varanasi, Velankanni and Warangal.

resources and implementation of a series of reform measures. There are several answers to this question, including the following:

- While most of the ingredients needed for the urban transformation exist, their full potential remains underutilised.
- There is negligence in monitoring the progress of development schemes and in the upkeep of public places.
- Sufficient efforts are not being made to understand the working conditions of functionaries (i.e., local government officials and elected representatives) and their grievances.
- Governance practices are influenced by numerous internal and external forces. In other words, due to vested interests, civic officials and elected representatives do not perform their duties efficiently and at times indulge in corrupt practices.
- When citizens see a management and governance deficit, many of them operate in an irresponsible manner.

But if Indian cities continue to be governed in this dysfunctional manner, apart from losing out on foreign investments and the employment opportunities these would generate, many sections of the Indian society will lead an inferior quality of life and urban conditions will keep worsening in the future. Today, the major social challenges before the Union as well as the State and city governments are to provide for women's safety, to create facilities for the disadvantaged groups as well as the migrant population, and to generate jobs for the growing youth population (The Hindu, 2013). Indian governing bodies also have to ensure greater access to sufficient and safe drinking water and sanitation facilities, improve conditions in slums, provide better mobility (including last mile connectivity) and parking, as well as minimize environmental pollution (Business Today, 2014). They also need to meet huge energy requirements and to regulate both the informal activities and the private sector.

The Smart Cities Mission

Whenever there is a change in government, fresh ideas are put forward to build an identity and generate interest among the citizens. Drawing upon the lessons learned from the developed world, the current national leadership under Prime Minister Narendra Modi introduced the idea of 'making 100 smart cities' to the people of the country when they were elected to power in May 2014.

A five-year programme (2015-2016 to 2019-2020)

After about one year of preparatory work, the Smart Cities Mission was launched on 25 June 2015, and its duration is for a five-year period from 2015-16 to 2019-20. Being a centrally sponsored scheme, Government of India has committed financial support of INR 5 billion (USD 74.8 million) per city over five years. An equal matching amount is to be contributed jointly by the State and urban local governments. As the financial condition of many State and local governments is weak, they have been asked to explore other funding sources, including in partnering with the private sector and in promoting land monetization. The Mission essentially calls for formulating and applying smart solutions to overcome the challenges confronting various urban sectors, such as water supply, sanitation, electricity, mobility, housing, energy and environment (MoUD, 2015). It is expected that in this manner, existing cities will function more efficiently, and thus offer an improved quality of life to their citizens, attract greater investments and generate higher GDP.

A multi-tiered selection process

To move forward in this direction, the first task before the national Urban Development Ministry was to identify potential cities from each of the Indian States and Union Territories (UTs), out of a total of 4,041 statutory cities/towns⁵ in the country. Using data on (i) the urban population of the

^{5.} Settlements declared as urban by the political executive of a State based on a set of parameters, such as population size and density, revenue generated for local administration, percentage of employment in non-agricultural activities, and economic importance of the area, are termed as "statutory", and these urban centres are governed according to the provisions of a legislative Act.

State/UT, and (ii) the number of statutory towns in the State/UT, and by giving equal weightage (50:50) to these two criteria, the potential cities have been identified, the number of which varies in each State/UT (Figure 3). The population size of these cities ranges between 11,201 and 12.4 million. Altogether, they have a total population of about 130 million, which is about 35 per cent of India's total urban population.

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Figure 3: Potential Cities to be considered under India's Smart Cities Mission



Notes: (i) Map shows location of 98 cities. Names of one city each in the States of Jammu and Kashmir and Uttar Pradesh are yet to be announced; Underlined cities in the figure have been selected for transformation in the first round/phase.

Thereafter, a two-stage competition between potential cities within the State/Union Territory has been organized (Figure 4). In the first stage, each city within a State/UT has competed against each other for being considered for financing under phase one of the Smart Cities Mission. For this purpose, the governments of all the Indian States/UTs were asked to score all the cities lying in their jurisdiction on the basis of a city government's performance, which include criteria such as the existing service levels, institutional systems/capacities, financial strength, and implementation of previous reform measures.

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Identify potential cities from each State/Union Territory (UT) for being considered under India's Smart Cities Mission (based on State/UT urban population & number of statutory towns in the State/UT)

Organize a competition between potential cities within each State/UT for being considered for financing under phase one of the Mission (based on a set of criteria pertaining to a city government's performance in the conduct of its duties)

Cities receiving a high score in the first stage of competition to prepare smart city plans (with the assistance of Indian & foreign consulting firms & citizens' inputs). Cities not chosen in the first phase to revise their proposals & participate in the next round of stage one competition



Declare names of winning cities (to be considered for financing in the first phase of the Mission)

Shortlisted cities to set up and operationalize Special Purpose Vehicles, Prepare Project Reports, Mobilise Funds

Selected cities to implement smart city projects

National, State, City level mechanism to be created to monitor physical & financial progress

Subsequently, governments of States/UTs/cities that received a high score were asked to prepare 'smart city proposals/plans'. In this endeavour, the expertise of leading Indian and foreign consulting firms has been sought. Furthermore, suggestions from over 15 million citizens have been invited through a national online portal (MyGov.in), State government portals, and other forums, such as Facebook, Twitter, SMSs, e-mails, surveys, workshops, seminars, town hall and neighbourhood meetings. Based on their inputs, the plans have been finalized and some State governments have submitted their plans (including details about the total investment to be made) to the national Urban Ministry (Table 1). The submitted plans have been evaluated by a panel of experts in stage two of the competition based on criteria such as performance of city agencies in efficient discharge of their duties, a city's vision and strategy, expected impact and cost effectiveness of the formulated smart city plan, proposals on smart solutions and best practices, and extent of inclusivity (citizen consultation including vulnerable sections of the society) in the preparation of the plan. The results of the competition have been declared, and 33 cities have been nominated by the governments of States/UTs and chosen for financing in the first phase of the Mission (Figure 3). A second round of competition will be held for those cities, which did not qualify in the first round after they submit revised proposals.

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Component	Description		
Name of city	Delhi		
Area chosen for improvement/retrofitting within Delhi	Area under the jurisdiction of the New Delhi Municipal Council		
Area	42.74 sq. km.		
Population size	249,998 (and a floating population of 1.6 million)		
Project cost	INR 27.62 billion (USD 413.22 million)		
Number of smart city projects to be implemented	42		
Project details	Pedestrian walkways and subways, cycle tracks, electric poles with incident-driven controllers, public electric vehicles and charging facility, Wi-Fi access points, digital screens showing traffic choke points, air and noise pollution sensors, rooftop solar panels, smart bus stops and toilets, rainwater harvesting, sewage treatment plants, CCTV surveillance, recreational areas		

Table 1: Salient Features of the Proposed Smart City Plan of Delhi

Source: Ministry of Urban Development.

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Considering the fact that the concept of smart cities is still in an evolutionary stage, the national Urban Ministry has not provided a set model of smart city plan. The governments of States and UTs have, however, been suggested to consider four aspects in the preparation of their smart city plans. These include:

- retrofitting, which requires identifying and making existing built-up areas of over 500 acres efficient and liveable;
- redevelopment, for replacement of existing built-up areas of more than 50 acres by preparing a new layout plan;
- greenfield development around cities, for carrying out new development in vacant areas of more than 250 acres; and
- pan-city development, which implies application of smart solutions to various urban infrastructure sectors, such as transport, water and sanitation, etc.

In sum, instead of a whole-city approach, an area-based as well as a pan-city development approach is proposed, as per which smart solutions for various urban infrastructure and services will be designed and applied in an integrated manner by using appropriate technology.

Since the launch of the Mission, a number of regional workshops and camps have been organized by the Urban Ministry to familiarize the stakeholders (including city mayors, municipal chairpersons and commissioners, government officials, domestic and global technical agencies and consultants, etc.) at the State and local level with the idea of smart cities and on how the Mission is to be taken forward. Moreover, for the implementation of the smart city plans, a Special Purpose Vehicle (SPV), headed by a full time CEO and comprising nominees of central, state and local governments, has been constituted in some cities (situated in the States of Madhya Pradesh and Rajasthan) selected in the first phase of the Mission. The constitution of SPVs for each city is a mandatory requirement, and the SPVs will have the power to approve, sanction and execute smart city projects, which may be done through joint ventures, subsidiaries, public-private partnerships, turnkev contracts. etc. Furthermore, a mechanism at the national, state and city level is proposed for monitoring the Mission progress. This provides for the constitution of representative entities that would perform a variety of tasks including a quarterly review of activities and the creation of a platform for an exchange of ideas (Table 2).

Entity	Composition	Role
National level Apex Committee	Representatives of urban ministry, related ministries and organisations	Review and approve proposals, approve release of funds, recommend mid-course correction, undertake quarterly review of activities
State level High Powered Steering Committee	Representatives of State and local government departments	Provide platform for exchange of ideas, review smart city plans
City level Smart City Advisory Forum	Representatives of district and local government departments, technical experts, local NGOs and youths	Advise and enable collaboration among stakeholders

Table 2: Proposed Mechanism for Monitoring Smart Cities Mission

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Source: MoUD, 2015.

Relevance and soundness of the Mission

Indian cities are in dire need of better urban planning and administration, and fresh ideas are urgently required. Previous efforts in this regard have met with little success due to a number of reasons. Moreover, many ideas have remained only on paper. Therefore, the Smart Cities Mission may be seen as an opportunity given to State and local governments to design and take forward smart ideas by overcoming the barriers faced in the past.

The strong points of the Mission

The smart cities proposal floated by the Urban Development Ministry is sound in many ways:

- At least one city from every Indian State and UT has been selected under the Mission, and an objective and transparent process has been followed in the selection of cities.
- Apart from some pointers by the Union Ministry on the basic features that smart cities should have (such as mixed land use, housing for all, pedestrian areas, open spaces, transport options, citizen-friendly and cost effective governance, creating city identity), it has been left to the State/UT/local agencies and the citizens to evolve their own understanding about how they want their cities to function smartly.
- Consulting firms, foreign governments, bilateral and multilateral institutions, and domestic organisations having experience in smart city development can be involved by the States/UTs in the preparation of smart city plans.
- While one portion of the city maybe improved (i.e., area-based development), there is also scope for applying smart solutions to existing city-wide infrastructure.
- A special purpose vehicle (SPV) will be constituted in each city for implementing smart projects under the Mission, as against the traditional parastatal/municipality-led model of urban development.

The national government will offer one-half of the financial support (US\$ 7.5 billion) to State/UT/local governments for meeting the project cost.

The Mission will converge with other urban development schemes of the Modi government, such as the Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Clean India Mission, Housing for All, National Heritage City Development and Augmentation Plan, Digital India, Skill Development, Financial Inclusion.

Some areas of concerns

It is, however, doubtful whether the Mission will achieve its goal of making smart cities. Some areas of concern may be described here (see also Aijaz and Hoelscher, 2015).

- Instead of the entire city, one part will be selected for carrying out the improvement work. Accordingly, during the five year duration of the Mission, only one part of the city will undergo a transformation, whereas during the same time period, the remaining parts of the city will be developed and governed in the usual manner, which is currently marked by numerous inefficiencies. This approach could thus widen development inequalities further.
- Improvement of one part of the city will have to be done wisely. For example, in an effort to provide 24 X 7 drinking water supply or electricity, the services of other parts of the city should not be affected. Currently, there is evidence that due to a continuous requirement of such services by the commercial establishments (such as Malls), government departments often resort to the practice of load shedding. This disturbs the supply in many residential areas.
- Poor and vulnerable groups may be found living within the specific areas selected from the city for the purpose of transformation. For example, the area under the jurisdiction of the New Delhi Municipal Council (NDMC) has been selected in the city of Delhi. Census data for 2011 show the existence of 4,412 slum households in this area. About 20,000 people, or 8 per cent of the total population of NDMC, live in slums. However, the smart city plan of NDMC does not provide sufficient information on how the living and livelihood condition of slum dwellers, beggars, and poor people with disabilities would be improved. Another aspect that has been neglected pertains to the regulation of informal sector workers who are currently found selling goods on roadsides and pavements that are meant for walking.

Challenge of Making Smart Cities in India

The rapid informal growth in peri-urban areas is a negative consequence of urbanization. As described in an earlier section of the paper, peri-urban areas suffer from numerous social, economic, development and environment problems. While these problems should have been dealt with, the Mission only provides for greenfield (new) development on vacant land around cities in order to cater to the requirements of the expanding urban population. With passing time, conditions in peri-urban areas will further deteriorate, making it increasingly difficult to address this issue.

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Traditional development and governance mechanisms (i.e., parastatal agencies and municipalities) have been bypassed, and the entire work of urban transformation under the Mission will be handled by the proposed city-level special purpose vehicle (SPV). Though the SPV will be represented by State and non-State actors, it will have to demonstrate improved levels of efficiency in raising project funds, and in project implementation and rules' enforcement. These matters have seriously hindered the progress of urban development in the past. Furthermore, efforts to strengthen the functioning of traditional institutions must continue, because on the one hand, the SPVs will be dependent on these for meeting their resource needs, and on the other, parts of the city not covered under the Mission will need to be efficiently looked after by traditional institutions.

Conclusion

The present leadership of India has launched the Smart Cities Mission in June 2015 with the aim of giving a better quality of life to the citizens in 100 existing cities covering all States and Union Territories in the country. A five-year timeline has been kept for completing the development projects proposed for each city. During the past one year, preparatory work has been done at the national, state and local level to take the Mission agenda forward. As per the current status of the Mission, some cities have prepared their smart city plans and constituted Special Purpose Vehicles for implementing the projects. The Union Urban Ministry is urging governments at the State/UT/local level to take pro-active steps in mobilising matching amount of funds, as well as in preparing and implementing the projects on time, so that the completion deadlines are met. The ADB and World Bank have also agreed to extend a loan for the implementation of bankable projects.

An appraisal of India's Smart Cities Mission attempted in this paper reveals that after nearly one year since the launch of the Mission, the process of physical transformation of cities is yet to begin. Hence, it may be concluded that only when the projects begin to be implemented, it will be clear how much and by when success is achieved. For the success of the Mission, this study lists down the following propositions:

- Government departments and residents in India will have to respond in a proper and responsible manner if the vision is to be achieved.
- Centre, State and local leadership must work together to find ways to deal with the complicated political environment that currently hampers urban development in a big way.
- Opportunities should be created for a continuous exchange of ideas and experiences, and the knowledge thus generated should be utilised in refining the smart city strategy.
- Smart city plans should also contain recommendations on managing neglected problems, such as public safety and security; living and livelihood of poor and vulnerable persons, and migrants; unemployment; water, drainage and sanitation deficiencies; traffic congestion and vehicular emissions; environmental degradation; encroachments and unauthorised constructions; haphazard growth in

peri-urban areas; poor management of religious and cultural festivities at public places.

- Manpower, financial and technical capabilities of traditional urban local institutions should be strengthened by organising useful training programmes, and the higher tiers of the government should offer the necessary support to ensure that the lessons learned during training are successfully implemented.
- Civic agencies should be adequately empowered for project implementation and enforcement of laws.
- State and local governments should be assisted in increasing their tax and non-tax revenues for day-to-day city management, as well as for meeting the costs involved in implementing new development projects.
- Efficiently managed services (both online and offline) should be made available to citizens for reporting complaints, such as water logging, broken road, power failure, etc, and such problems should be resolved in a time-bound manner by the concerned agencies.
- Committed non-state actors, such as NGOs and the private sector, working for the welfare of the city and its residents, should be engaged in the urban reform process.
- Sufficient awareness should be generated among the unemployed persons about various career options, and they should be assisted in starting various kinds of income-generating activities.
- Greater funds should be allocated for improving the capacity of existing urban planning education institutions, and new institutions should be build for increasing the number of urban planners and managers in Indian cities.

References

Aijaz, Rumi. *India's Urbanisation Experiences*. E-Book. Global Policy and ORF, 2015a.

Aijaz, Rumi. 'Social Marginalisation in Urban India and the Role of the State'. *ORF Issue Brief.* No. 118, December 2015b.

Aijaz, Rumi and Kristian Hoelscher. 'India's Smart Cities Mission: An Assessment'. *ORF Issue Brief*. No. 124, December 2015.

Aijaz, Rumi. *Democracy and Urban Governance in India*. New Delhi: Academic Foundation, 2012.

Aijaz, Rumi. 'Water for Indian Cities: Government Practices and Policy Concerns'. *ORF Issue Brief.* No. 25, September 2010.

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

Census of India. *Primary Census Abstract – Final Population*. New Delhi: Office of the Registrar General and Census Commissioner, 2011a.

Census of India. *Primary Census Abstract Data for Slum*. New Delhi: Office of the Registrar General and Census Commissioner, 2011b.

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

Central Pollution Control Board (CPCB). *Status Report on Municipal Solid Waste Management*. New Delhi: Ministry of Environment and Forests, Government of India, 2012.

China Daily. 'Smart city takes shape in Xinjiang', by Zhu Zhe and Cui Jia, 14 November 2012.

Constitutional Provisions Relating to Village Panchayats and Municipalities in India. Lucknow: Eastern Book Company, 1999.

Dolman, Nanco. 'Transitioning Towards a Water-Resilient City: Coping with Climate Change, Urban Densification and Water Management'. Available from <u>http://www.preventionweb.net/go/45532</u>, 26 August 2015.

Fast Company. 'The 8 smartest cities in Latin America', by Boyd Cohen, 12 March 2013.

Infochange Agenda. 'Multidimensional Poverty in Pune', Excerpts from the CCDS Study, October 2014.

Karmakar, Joy. 'Emergence of Census Towns and its Socio-Economic Condition: Case of West Bengal', *Pratidhwani the Eco.* 3 (4): 22-34, Journal of Humanities and Social Sciences, Published by Department of Bengali, Karimganj College, Assam, 2015.

Lintelo, D., Fiona Marshall and D.S. Bhupal. 'Peri-urban Agriculture in Delhi, India', *Food, Nutrition and Agriculture,* Journal of the FAO Food and Nutrition Division, No. 29, 2001.

Mathur, Navdeep. 'On the Sabarmati Riverfront – Urban Planning as Totalitarian Governance in Ahmedabad', *Economic and Political Weekly*. XLVII (47 & 48), 1 December 2012.

Ministry of Urban Development (MoUD). E-Book. Available from: <u>http://moud.gov.in/sites/MoUDEBook/moudEbook.html#p=1</u>, May 2016.

Ministry of Urban Development (MoUD). *Smart Cities – Mission Statement and Guidelines*. New Delhi: Government of India, 2015.

Ministry of Urban Development (MoUD). *National Urban Water and Sanitation Awards*, 2010. Available from: http://www.waterawards.in/nuwa-winners.php

Ministry of Urban Development (MoUD). *Jawaharlal Nehru National* Urban Renewal Mission - Overview, 2005.

Narain, V., P. Anand and P. Banerjee. 'Periurbanization in India: A Review of the Literature and Evidence', *Report for the Project – Rural to Urban Transitions and the Peri-urban Interface*. SaciWATERs. India, 2013.

NDTV. 'Silk Weavers in Varanasi Hang on by Thread, Plead for Rescue', 4 May 2014.

Numbeo. 'Quality of Life Index for Country, 2016 Mid Year. Available from: http://www.numbeo.com/quality-of-life/rankings_by_country.jsp

OECD. Better Life Index – Edition 2015. Available from: http://stats.oecd.org/Index.aspx?DataSetCode=BLI#

Peace Research Institute Oslo (PRIO) and Observer Research Foundation (ORF). *Emerging Challenges in an Urbanising India*. Project Report, 2016.

Rediff.com. Polarisation shows Gujarat has had a terrible experience, 23 April 2014.

The Financial Express. 'The urban poor deserve their due', by P.S.N. Rao, 24 March 2012.

ifri

The Hindu. 'India is set to become the youngest country by 2020', 17 April 2013.

The Indian Express. 'Quality of life: Which is the best Indian city to live in', 3 July 2016a.

The Indian Express. 'NCRB Report: These 6 Indian cities have the highest rate of crimes against women', by Vishnu Varma, 1 September 2016b.

The Wire. 'Ahmedabad is no city for the poor, says study', 12 June 2015.



